From:	donlingoldeis, POA
To:	Craig, Bill
Subject:	FW: [EXTERNAL] Donlin Gold EIS
Date:	Thursday, February 25, 2016 6:59:11 AM

-----Original Message-----
From: Garner Unok [mailto:garner_unok@lksd.org]
Sent: Wednesday, February 17, 2016 10:15 AM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold EIS

Garner Unok

PO Box 1949

Bethel, AK 99559

garner_unok@lksd.org <mailto:garner_unok@lksd.org>

February 17, 2016

U.S. Army Corps of Engineers

Blockedwww.poa.usace.army.mil <Blockedhttp://www.poa.usace.army.mil/>

Keith Gordon <Blockedhttp://donlingoldeis.com/Contacts.aspx#> , Project Manager
<Blockedhttp://donlingoldeis.com/Contacts.aspx#>

Keith.Q.Gordon@usace.army.mil <mailto:Keith.Q.Gordon@usace.army.mil>

907-753-5710

To Whom It May Concern :

My name is Garner Unok and i'm a regular young boy from a small remote village of Kotlik, AK it is located on the North Mouth of the Yukon River the Donlin Gold Mining operation has came to mind from people from many different communities that is spread all over the state of Alaska.This mining operation has many different opinions such as questions and suggestions whether they are for it or against the Donlin Gold Mine operation. It has brought up many different issues and conflicts about whether or not have the Donlin Gold Mine operation.

TWL 3 I'm against the mining operation I strongly do not support the development in the creation of the Donlin Gold Mine operations do to of all the toxins and pollutions that are at risk of happening to our society and the destruction of our land and our natural dried goods and native ways of collecting and gathering subsistences that use natives use the to keep our freezers full over the long winter days. One day there was this company that is going to destroy and ruin our ways of life the way that we use to live and what our elders had done and teached us of our ways of life will be gone foreven.

One of my reasons why i'm against it is not only from the Kuskokwim i'm a regular young boy from a small remote village of Kotlik, AK it is located on the North Mouth of the Yukon River it is home to a little over 600 people. Here are some of the reasons why I'm against the Donlin Gold Mine because it
DAM 2 taken up lots of land and all the toxins, pollutants and tailing of the tons of thousands of unused wastes that can easily cause a disaster that could kill off wildlife and find its way to the spawning grounds

where the salmon go to spawn out. This mountain that is adapted to the ecosystem runs and plays an important part in our economy and the ecosystem to help the wildlife produce more offspring. Say to show respect you have to respect the land and not respecting the land can make a huge impact in our ecosystem that we live in and the wildlife.

TWL 3

SUB 15

All the toxins, pollutants and tailing will soon find it way and successfully kill the natural beautiful itself and kill off the wildlife and cause the human society to catch a sickness that possible cause a tragic incident to many families in communities that lives up and down the Kuskokwim River and possible the Yukon River and find its way of killing off my natural ways of gathering subsistence that i inherit from my elders that had teach me of our ways of life. The questions is, how can it be sustained and maintain this historic tragic event? How can we successfully keep it from failing and causing a massive destruction to the ecosystem?

Sincerely,

Garner Unok

From:	Cochon, Grace
To:	donlingoldeis, POA
Cc:	Philip Johnson; Newman, Sheila M POA
Subject:	[EXTERNAL] U.S. Department of the Interior Comments: Donlin Gold Project
Date:	Tuesday, May 31, 2016 3:12:02 PM
Attachments:	ER 15-0658 - Donlin Gold DEIS - DOI Comments.pdf Enclosure 1 FWS Request for Spill Fate Analysis on the Kuskokwim.pdf Enclosure 2 FWS Comment Matrix.pdf Enclosure 3 BLM Comments Matrix, May 2016.pdf Enclosure 4 BLM Comment Matrix, October 2015.pdf Enclosure 2 FWS Comment Matrix.docx Enclosure 3 BLM Comment Matrix, May 2016.docx Enclosure 4 BLM Comment Matrix, October 2015.docx

Hello Mr. Gordon,

Attached is a comment letter and enclosures from the U.S. Department of the Interior and its bureaus for the Donlin Gold Project Draft EIS. For your convenience, I've attached both pdf and MS Word copies of the enclosure comment matrices.

After you have received this message, our office would very much appreciate it if you or someone from your office could please confirm your receipt of the attached comments

Thank you very much,
Grace

--
Grace Cochon
Regional Environmental Protection Specialist
U.S. Department of the Interior
Office of Environmental Policy and Compliance
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United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501-5126

9043.1 May 27, 2016
ER 15/0658
PEP/ANC

Mr. Keith Gordon
Project Manager
U.S. Army Corps of Engineers
P.O. Box 6898
Joint Base Elmendorf Richardson, Alaska 99506-0898

Subject: Draft Environmental Impact Statement for the Donlin Gold Project, Alaska

Dear Mr. Gordon:

The U.S. Department of the Interior (Department) has reviewed the U.S. Army Corps of Engineers' (USACE) draft environmental impact statement (DEIS) on the Donlin Gold Mine Project (project). The Department's U.S. Fish and Wildlife Service (FWS) and Bureau of Land Management (BLM) are participating as cooperating agencies for this project.

The Department appreciates the opportunity for the FWS and BLM to serve as cooperators, as well as the significant communication and coordination provided by the USACE and the efforts of their contractor (AECOM) to draft a DEIS for this complex project. We provide the following comments and recommendations for your consideration in revising this document, which are submitted in accordance with the Endangered Species Act (16 U.S.C. 1531-1544), Marine Mammal Protection Act (16 U.S.C. 1361-1407), Migratory Bird Treaty Act (16 U.S.C. 703-712), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), Clean Water Act (33 U.S.C. §1344), Fish and Wildlife Coordination Act (16 U.S.C. 661-667e), Alaska National Interest Lands Conservation Act (ANILA) (16 U.S.C. 410hh-3233, 43 U.S.C. 1602-1784), National Wildlife Refuge System Administration Act (16 U.S.C. 668dd-668ee), Federal Land Policy and Management Act (43 U.S.C. § 1732), National Trails System Act (16 U.S.C. § 1241), National Historic Preservation Act (NHPA) (16 U.S.C. 470), and National Environmental Policy Act (NEPA) [(42 U.S.C. 4321-4347 1969) with Implementing Regulations (40 CFR parts 1500-1508)].

General Comments

Many issues identified in previous comment letters from the FWS and BLM have yet to be addressed. These issues include, but are not limited to, the potential for spills, mercury transport, groundwater and surface water contamination, invasive species, and issues associated with the Iditarod Trail, all of which could have irreversible or irretrievable impacts on the environment.

NEP 6 The Department is concerned with the level and quality of the analysis in the DEIS and that the scope of changes required may trigger the need to issue a supplemental or revised DEIS in order to comply with NEPA and associated regulations (see 40 CFR 1502.9(c)). The Final Environmental Impact Statement (FEIS) and NEPA process must have legal sufficiency in order to allow the BLM to issue a defensible record of decision (ROD) and the associated right-of-way for the project. Incorporating the substantive changes needed directly in the FEIS would not provide the public an opportunity to review and comment on the changes and therefore may not meet the requirements of 40 CFR 1503.1, which addresses public, tribal, and governmental participation. We recommend preparation and broad distribution of a revised DEIS, allowing agencies and the public an appropriate opportunity to comment.

Our review of the document focuses on matters that are of importance to the Department, including the sufficiency of the DEIS and the analysis of potential impacts on fish, wildlife, and habitat, as well as cultural, paleontological, and subsistence resources. Listed below are our primary concerns with the DEIS. More specific comments are provided in Enclosures 1 (FWS Request for Spill Fate Analysis on the Kuskokwim River and Kuskokwim Bay), 2 (FWS Comment Matrix), 3 (BLM Comment Matrix, May 2016) and 4 (BLM Comment Matrix, October 2015). The BLM and FWS provided numerous comments (October 2015) on the internal draft and AECOM's response to many of them stated "to be resolved after release of DEIS." We strongly urge the USACE to take this opportunity to address the issues identified by the Department and its bureaus, make recommended changes, and release a revised DEIS with the opportunity for meaningful public review. The BLM and FWS will continue to work with the USACE as cooperating agencies to address outstanding issues. NEP 6

- NEP 7 As currently written, the DEIS lacks sufficient analysis to adequately distinguish the full range of potential impacts of the project. Full disclosure of potential effects on the environment, local people, and the subsistence way of life is hindered by the structure of the summary impact levels provided in the DEIS. There are two main problems with this approach: the problem of the scale of the analysis and the use of categories, both of which can lead to minimizing the perception of potential project impacts. For example, the document assesses project-related impacts at very large scales; therefore, the potential impacts are presented as relatively minor. Analyses conducted at a more localized scale might result in different conclusions. The DEIS also uses broad categories that do not allow a detection of a difference between alternatives, even though a difference exists. We strongly recommend that the summary impact levels approach be removed in the revised DEIS.

- NEP 7 The USACE and the cooperating agencies agreed during a meeting on May 5, 2016 that the project's potential environmental effects need to be more clearly described (quantitatively and qualitatively), in order to be understandable to the reader. The terms used to describe and summarize impacts throughout the DEIS diminish the real and measurable impacts of the proposed project, as well as differences in environmental consequences and risks across alternatives. Summaries should be presented that are concise, clear, and to the point. As was agreed upon at the May 5th meeting, use of characterizations such as minor, moderate, and major will be removed and the analytical framework will be reevaluated by the USACE and AECOM. We recommend that the

revised DEIS use a structure similar to the BLM's 810 Analysis on Impacts to
NEP 7 Subsistence in Appendix N of the DEIS. This analysis uses information presented by the project to evaluate potential impacts on subsistence, pursuant to Section 810(a) of ANILCA. Any frequently used terms should also be well defined to avoid confusion as to their meaning.

- The document does not adequately analyze how proposed alternatives differ from one another in terms of potential project impacts and opportunities to avoid, minimize, and mitigate said impacts. The effects for some alternatives are identified as being the same, when in some cases, the effects are different and need to be adequately distinguished. For example, on page ES-54 under Soils, Section 3.2, it states that Alternatives 3a, 3b, 4, 5a, and 6a have the same effects as the Proposed Action; however Alternatives 4 and 6 (Port and Gorge pipeline segment) involve two different site locations, possible soil conditions, and topography. Alternative 4 also has more soil disturbance because it involves additional road construction to get to the mine site, yet this distinction is not
PAA 63 borne out in the impacts analysis. Please see Enclosures 2, 3, and 4 for other specific examples. An in-depth analysis of alternatives that identifies the amount and types of resource loss and their interrelated functions in the ecosystem is needed to guide the development of effective avoidance, minimization, and compensatory mitigation. At the May 5th meeting between the USACE and federal cooperating agencies, the USACE stated it would reexamine and revise the comparison of the alternatives as necessary. We support this revision and recommend that the DEIS provide a clear depiction of the potential impacts of the proposed project, as well as the options available to avoid, minimize, or mitigate adverse impacts to fish, wildlife, and the habitats upon which they depend. The revised evaluation of these potential impacts on resources should be quantitative, where possible.

- As discussed with the USACE and cooperating agencies, we recommend that the cumulative effects in the DEIS be reexamined and more clearly identified. Including a
NEP 6 revised analysis of cumulative effects in the DEIS would allow for more robust identification of potential mitigation and compensatory mitigation strategies.

- The risk of environmental degradation, including mercury management and transport, groundwater and surface water contamination, and fate and effects of spills that could impact aquatic environments of the Kuskokwim River and Kuskokwim Bay need to be fully analyzed and disclosed (see Enclosure 1 for a detailed modeling spill risk request from the FWS). For instance, we are concerned the mercury analyses may substantially
MIT 28 underestimate the amount of mercury that may be liberated into the local and regional environment from the project. We are also concerned about the storage and annual transport of an estimated 11 tons of liquid mercury from the mine to an off-site repository. We strongly recommend that the USACE resolve previously submitted FWS comments on these issues prior to releasing a revised DEIS, so that adequate analysis is presented to agencies and the public for comment.

- SUB 17 We recommend the USACE use the Alaska Department of Fish and Game, Subsistence Division harvest data presented in the DEIS to evaluate project impacts to subsistence. Rather than simply presenting the data, we recommend the USACE provide a more detailed assessment of likely impacts to subsistence resources. Specifically, we recommend the USACE identify the potential impacts to aquatic resources, both immediate and long term, and the human consumption risk of contaminants under normal mining operations (e.g., gaseous mercury emissions and fugitive dust) and for each modeled spill scenario, as well as describe in an easily understandable way how this would translate to impacts on subsistence resources, including salmon or whitefish, for each community.

- SUB 21 Although ANILCA Section 810 impact thresholds are different than those under NEPA, we recommend that determinations regarding the extent of impacts on subsistence resources in the revised DEIS be made consistent with the BLM's 810 Analysis on Impacts to Subsistence. The BLM will continue to work with the USACE and AECOM to address this issue.

- CLA 10 There are discrepancies in AECOM's responses to the BLM (Technical Memorandums, July 28, 2015 and August 31, 2015), resulting in the continued need for an invasive species plan in the DEIS, related determination of impacts by alternatives, and identification and evaluation of mitigation strategies. We recommend that all of these items be incorporated in the revised DEIS. This issue was not discussed at the May 5th meeting with the USACE and will require additional follow-up by both parties.

- WAQ 6 During the course of public meetings and the comment period for the DEIS, the proponent described changes to water treatment processes in the various alternatives that are not consistent with those described in the DEIS. Such changes would affect the impact analysis; therefore, we request that the revised DEIS reflect changes in the water treatment process and associated impact analysis.

- NHPA 1 The NHPA Section 106 Programmatic Agreement (PA) will need to be finalized and signed prior to the signing of the ROD, and we recommend that the PA-related requirements are as fully described as possible in the FEIS. The PA outlines the framework of what the proponent must do to comply with Section 106 after the ROD has been signed. Cultural resources in the area of potential effect need to be identified as part of the affected environment, evaluated for National Register of Historic Places eligibility, and analyzed for potential effects. The agencies' efforts to identify, evaluate, and mitigate effects to cultural resources need to be disclosed in the NEPA/EIS process. These elements are necessary to effectively inform the public of our required procedures for dealing with both the known and currently unknown cultural resources during the construction and operation phases of the proposed project. There are multiple signatures needed for the PA, and we anticipate active involvement by approximately 24 federally-recognized tribes, Native corporations, and other cooperators and stakeholders. The PA will likely take up to 1.5 years to complete, which would coincide with the issuance of the ROD.

Specific Comments

The Department recommends the following sections of the DEIS be revised and released for a second public review and comment period of no less than 90 days:

- Executive Summary,
- Chapter 2 - Alternatives,
- Chapter 3 - Environmental Analysis, Synopsis and Summary of Impacts for each resource with emphasis on the following topics:
NEP 6
  - Chapter 3.6 - Groundwater Hydrology,
  - Chapter 3.10 - Vegetation,
  - Chapter 3.21 - Subsistence,
  - Chapter 3.24 - Spill Risk,
- Chapter 4 - Cumulative Effects,
- Chapter 5 - Mitigation,
- Appendix Q - Essential Fish Habitat Assessment, and
- Any additional chapters affected by revised mercury analyses.

The Department bureaus with cooperating agency status, the BLM and FWS, provide specific recommendations for these chapters, as well as other comments on the DEIS in Enclosures 1, 2, 3, and 4.

Thank you for your continued coordination on this project. The FWS and BLM look forward to working with the USACE to continue resolving these issues, which will allow the BLM to issue the necessary ROD and subsequent right-of-way authorization. If you have any questions regarding these comments and recommendations, please contact Ms. Jennifer Spegon, FWS Biologist, at (907) 271-2768 or jennifer_spegon@fws.gov, or Mr. Mark Spencer, BLM Anchorage District Manager, at (907) 267-1205 or m1spence@blm.gov.

Sincerely,

Philip Johnson
Regional Environmental Officer – Alaska

Enclosures

Enclosure 1. The U.S. Fish and Wildlife Service Request for Spill Fate Analysis on the Kuskokwim River and Kuskokwim Bay

Spill Fate Request

The U.S. Fish and Wildlife Service (FWS) requests development of spill fate models that quantify the area impacted and the duration contaminants would be in the system were a chemical release to occur at the mine site or during the transportation of fuel, cyanide, or mercury. Although certain types of spills are described qualitatively in the spill risk chapter of the draft environmental impact statement (DEIS), the results lack details required to analyze the environmental impacts of a diesel, mercury, or cyanide spill or a larger tailings release.

HZM 17 This information is needed to analyze environmental hazards, compare the environmental risk of the different alternatives, and inform spill response planning. Fate and transport modeling will improve spill response plans, which will reduce the environmental hazard of a spill. This information is essential to analyze impacts on endangered species, aquatic and subsistence resources, and compare project alternatives (40 CFR 1502.22 (a)).

To assist with analyzing impacts and protecting wildlife and sensitive habitat, we recommend the results of all the models requested below be mapped in the DEIS, as was done for the tailings release scenarios. These maps should show gradients in concentrations of hazardous chemicals (including mercury, arsenic, cyanide, selenium, and diesel) and the spatial extent (volume of solids and water released at the mine site) of each release. The models should identify spill fate and ecological receptors, as well as quantify the duration of ecological effects from each type of spill (e.g., these are different for cyanide versus mercury).

The FWS is requesting quantitative fate and transport modeling for 1) a tailings dam breach, 2) a breach of a cyanide container, 3) a diesel barge grounding and spill, and 4) a mercury container breach, releasing these contaminants into the Kuskokwim River, Kuskokwim Bay, and Kuskokwim Shoals. Specific requests for each spill scenario are described below.

DAM 4 1. **Tailings Dam Breach Scenario** - The FWS requests that a realistic volume of tailings be modeled in a revised tailings dam breach scenario and included in a revised DEIS. The analysis that was conducted, even with the low relative volume of tailings modeled at 0.5 percent of the total tailings impoundment volume at year 27 and stopped within five hours of the breach, indicated that some of the 2.6 million cubic yards of tailings lost would reach the Kuskokwim River and bury sections at the confluence of Anaconda and Crooked Creeks in up to ten feet of tailings. A more realistic spill scenario would be 20 percent of total wet tailings storage facility volume, in five-year increments up to 30 years. This analysis should compare the risk of the proposed alternatives for the project. We recommend that the DEIS compare the risk of dam failure release from Alternative 2 to the risk of dam failure for the operating pond in Alternative 5A. This modeling should be conducted for high flow conditions in Crooked Creek and the Kuskokwim River; for example, the model could include a 50-year or 100-year flood event, incorporating the Scenarios Network for Alaska and Arctic Planning (SNAP) climate projections for the region.

HZM 17

2. **Cyanide Spill** - The FWS requests that the DEIS include a quantitative analysis of a cyanide tanktainer breach. Since cyanide will be transported over water in a chemical form that reacts in water to produce an acutely lethal compound, a quantitative analysis of this risk will inform response planning for a cyanide spill into the Kuskokwim River. The FWS recommends the DEIS incorporate a quantitative model of the resulting plume mapped on a time series and a description of the time required for total degradation of the cyanide in the aquatic environment. This type of analysis is critical to our understanding of the potential environmental consequences to fish and aquatic resources in the Kuskokwim River. This analysis should specify the volume of sodium cyanide spilled into the water and incorporate two hydrologic scenarios for the Kuskokwim River. The first is the lowest flow during which barge transport would occur. We request this analysis because low river flows might increase the probability of barge grounding and because low flow conditions will lead to less mixing and dilution of cyanide. The second hydrologic scenario requested is for the mean July flow under SNAP climate change scenarios. Analysis of average conditions will facilitate response planning efforts, including optimal placement of cleanup supplies in this remote area.

FSR 12

3. **Diesel Spill** - Although the DEIS does specify a volume of diesel hypothetically spilled from a barge into the Kuskokwim River, the analysis of plume movement and dissipation is only qualitative. The FWS requests that the same fate and transport modeling that was conducted for tailings at the mine site be conducted for diesel fuel spilled in two ways. The first is from a river barge into the Kuskokwim River, and the second is a larger volume from an ocean barge into the Kuskokwim Shoals. Please map the areal extent of the initial spill and include identification of ecologically sensitive areas in this analysis. The FWS can provide an example of this type of hazard assessment applied to ecologically sensitive areas in the Gulf of Mexico. The analysis should indicate how far diesel would travel (geographic extent) and how long it would remain in the environment (temporal extent) for both the river barge and the ocean barge spills. The analysis should account for currents and tidal flushing in the Kuskokwim Bay and the lower Kuskokwim River. As with cyanide, we request that the river barge spill analysis be conducted under two hydrologic scenarios for the Kuskokwim River. The first is the lowest river volume at which barges are projected to run. This will show the environmental consequences of diesel remaining at higher concentrations for longer, due to less mixing and dilution by river currents, and also contaminating near shore sediments when the river is low. The models should include a quantitative description of the time course for degradation of diesel in water and nearshore sediment, as these results are critical for biological assessment of spill impacts. The second requested river scenario is for July mean flow, which will facilitate response planning, including the optimal amount and placement of cleanup equipment.

HZM 13

4. **Mercury Spill** - Similar to the contaminants noted above, but perhaps more important due to its environmental persistence, high toxicity, and already elevated concentrations in this area, the FWS recommends that the USACE include a quantitative fate and transport model for a loss of a mercury container in the analysis of alternatives in the DEIS. According to the DEIS, Chapter 2, "Donlin Gold estimates the mine would remove approximately 34,600 pounds of mercury per year from the gaseous waste streams." This mercury would be shipped on the Kuskokwim under the proposed Alternative 2. Unlike the cyanide tanktainers, there is no plan to equip mercury containers with global positioning system (GPS) units, so it is unclear how a mercury container would be recovered if lost overboard. For this analysis, we request an evaluation of the loss and

subsequent breach of a one metric tonne "pig" of mercury into the Kuskokwim River. We request that this scenario include models that run at the highest river flow conditions that are realistic for barge transport. High flow conditions may increase the probability of a spill and an unrecovered loss overboard of mercury, which in turn would be expected to increase the spread of this persistent chemical and enhance mixing with riverbed sediments. The quantitative model should include an evaluation of where the mercury would go and how far it would spread, and this chemical fate should be mapped and the time course described in the revised DEIS. The
HZM 13 model should also provide estimates of the mercury concentrations in water and sediment and their chemical forms through time, as well as estimate what proportion of mercury would be methylated if a flask ruptured and contaminated bottom sediments. This analysis will enable biological assessment of this risk and may lead to identification of additional mitigation measures necessary to reduce identified risks, such as incorporating the use of GPS units on the flasks, drums, and pigs employed for mercury transport to aid in their recovery if lost.

MIT 28 Moreover, we recommend that the DEIS state the ultimate disposal location of the mercury. Due to the risk to aquatic resources from a spill, we also request that the DEIS include an analysis for
PAA 48 alternatives other than barging, such as onsite chemical immobilization, sealed or vitrified disposal, and using aircraft to move mercury offsite.

NEP 6

Donlin Gold Mine DEIS
DEIS – Cooperating Agency Review through April, 2016
USFWS Comment Response Matrix

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS DEIS New Comment	Entire DEIS		General Comment on the entire DEIS			New Comment DEIS	Recommend the Summary of Impacts in the Executive Summary, Synopsis and Summary of Impacts for each resource in Chapter 3 - Environmental Analysis revised. In addition the USFWS recommends Chapter 3.6 - Groundwater Hydrology, Chapter 3.24 - Spill Risk, Chapter 4 - Cumulative Effects, Chapter 5 - Mitigation, and Chapters affected by revised mercury analysis in the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter.	
CHAPTER 1: PURPOSE AND NEED								
USFWS 1	1.1		The Corps is joined in this effort by many cooperating agencies, including five federal and state agencies and five tribal governments (see Figure I-1) that are	Comment: Suggest modifying the language with an explanation that cooperating agencies will be providing recommendations to the Corps. According to	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			working together to ensure that this EIS provides a sound basis for agency decisions on permitting and other federal actions related to the proposed project.	the Cooperating Agency MOU, the Corps makes the final decisions. The Corps is joined in this effort by many cooperating agencies <u>with permitting authority or other special expertise</u>, including five federal and state agencies and five tribal governments (see Figure I-1) that are working together <u>to provide recommendations to the Corps to</u> ensure that this EIS provides a sound basis for agency decisions on permitting and other federal actions related to the proposed project.				
USFWS 2	1.1.1		Chapter 4 documents proposed mitigating measures to modify the proposed project design or operations to beneficial effects and reduce impacts and harmful effects to the physical, biological, and social environments.	Comment: To provide consistency and clarity throughout the document, suggest the term “beneficial” be changed to the term ”impact” when this term is used in reference to environmental effects. Effects and impacts are	Edited	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				synonymous; effects include those resulting from actions which may have both beneficial and detrimental effects, even if on balance agencies believe that the effect will be beneficial (40 CFR §1508.8).				
USFWS 3	1.1.1		Chapter 4 documents proposed mitigating measures to modify the proposed project design or operations to beneficial effects and reduce impacts and harmful effects to the physical, biological, and social environments.	Agree with the physical, biological and social classification system used in this document. We suggest the term human environment be incorporated throughout the document. (40 CFR § 1508.14). The term human environment provides recognition of subsistence areas along the Yukon Delta Refuge and validates recognition of the important relationship among people, communities and their environment.	Edited	The text is acceptable.		
USFWS 4	1.1.1		Chapter 4 documents proposed mitigating measures to modify the proposed project	<u>Language change associated with 2 comments above:</u> Chapter 4 documents	Edited	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			design or operations to increase beneficial effects and reduce harmful effects to the physical, biological, and social environments.	proposed mitigating measures to modify the proposed project design, alternatives, or operations to reduce impacts and harmful effects to the human environment including the physical, biological, and social environments.				
USFSW 3	1.1.2		Insert new text box above, *BLM's role as a Cooperating Agency:*	Comment: Agree with introducing the purpose of NEPA. Although this direct quote is lengthy, we suggest adding it because it reflects the purpose of public, state and federal engagement in the NEPA process. The National Environmental Policy Act (NEPA) is our basic national charter for protection of the environment. NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The	Added as requested.	Text is adequate.	Recommend the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter.	

NEP 6

NEP 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork—even excellent paperwork—but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment (40 CFR §1500.1)				

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS 4	1.2		Major project components of this proposal at the time site include excavation of an open pit; waste treatment facility (tailings impoundment); a waste rock facility; a mill facility; and a dual fuel 227 MG power plant. Transportation infrastructure to support the mine would include a 5,000-foot airstrip, a 30-mile road from the mine site to a new barge landing near Jungjuk Creek on the Kuskokwim River, and expanded port facilities in Bethel. A 313-mile, small-diameter (14-inch), natural gas pipeline from the west side of Cook Inlet to the mine site would provide energy for the power plant at the mine site. The Natural Gas Pipeline component includes a right-of-way (ROW), aboveground	Comment: The description of the pipeline component may be clarified by adding the components from page 1 of the Donlin Final Preliminary Gap Analysis Report: Major project components of this proposal include the mine site; transportation infrastructure; and the natural gas pipeline. - The Mine Site Infrastructure and Processes component included the proposed open pit, milling and ore processing, waste treatment facility (tailings storage facility), waste rock facility and overburden stockpile, dual-fuel 227 MW power plant, utilities, services and infrastructure, mine	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			facilities (compressor station, pig launcher and receiver station, and main line valves), temporary work areas outside ROW, design and construction procedures, and decommissioning and abandonment. The proposed mine would produce about 59,000 short tons[1] per day (53,500 tonnes per day) of ore for approximately 28 years to supply an onsite mill, which would produce approximately one million ounces of gold per year through froth flotation and cyanide leaching of concentrate. The proposed mine and related facilities would have a total footprint of approximately 16,300 acres. Figure 1-4 provides additional summary information.	maintenance and safety controls, and mine site closure and reclamation. - The Transportation Facilities component includes expanded port facilities at the Bethel cargo terminal, river barge traffic, barge landing at Jungjuk, 30-mile mine access road, 5,000-foot airstrip, transportation facilities, and closure and reclamation of the Transportation Facilities. - A 313-mile, small-diameter (14-inch), natural gas pipeline from the west side of Cook Inlet to the mine site would provide energy for the power plant at the mine site. The Natural Gas				

[1] The term “short tons” refers to the English measurement of 2,000 pounds, while the term “tonnes” refers to a Metric measure of 2,000 kilograms.

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				Pipeline component includes a right-of-way (ROW), aboveground facilities (compressor station, pig launcher and receiver station, and main line valves), temporary work areas outside ROW, design and construction procedures, and decommissioning and abandonment.				
USFWS 5	1.2		footprint	foot-print	Edited.	The text is acceptable.		
USFWS 6	1.3.1			Remove extra space after "consideration of the" in first sentence.	Edited.	The text is acceptable.		
USFWS 7	1.4		… significant effects on the physical, biological, and human environment.	Agree with the use of the three broad categories of physical, biological, and social environments to discuss individual elements of the human environment and suggest adding the term, as revised. … significant effects on the human environment including the physical,	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				biological, and social environments.				
USFWS 8	1.4.5		The FWS is participating in this EIS process in regard to three regulatory responsibilities. First, the FWS manages the Yukon Delta National Wildlife Refuge, which includes uplands along the Kuskokwim River from below Aniak to the mouth of the river. The potential for project activities to affect lands or resources on Yukon Delta National Wildlife Refuge warrants FWS involvement in the EIS. Refuge management authorities are specified in the National Wildlife Refuge System Administration Act as amended. Section 303 (6) of the Alaska National Interest Lands Conservation Act (ANILCA) established the Yukon Delta Refuge and specified the	Comment: Since this paragraph is under the heading of 1.4 Lead and Cooperating Agency Roles, we suggest the subject be limited to our roles, responsibilities, and authorities as a cooperating agency. Replace current section 1.4.5 with: The FWS has responsibility and special expertise to conserve, protect and enhance fish, wildlife and plants, and their habitats for the continuing benefit of the American people. These responsibilities include conservation of fish and wildlife resources (including mitigation planning); subsistence management on public lands; maintenance and improvement of water quality in the interest of these resources;	Edited.	The edited text is acceptable but the third bullet (bolded in column 1) should be moved to the Clean Water Act section 1, Page 1-25.		

CLA 11

CLA 11

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			purposes for which it was established and would be managed. As with other federal lands, Title VIII of ANILCA established the provisions for subsistence management on the refuge. Second, the FWS enforces several laws pertaining to conservation of species. Of particular importance is the Endangered Species Act (ESA), under which the FWS enforces protection of a number of marine mammal and bird species potentially affected by the project. Specifically, the FWS will provide consultation regarding project impacts on listed species as required under Section 7 of the Act. The FWS regulatory framework for management of species also includes the Marine Mammal	preservation, restoration, and maintenance of naturally functioning ecosystems on which these resources depend; and working cooperatively with other resource agencies to effectively gather high-quality information on species, their habitats, and the potential impacts of human development on these resources. The FWS has statutory authorities under many laws including the Fish and Wildlife Coordination Act, the National Wildlife Refuge System Administration Act, the Alaska National Interest Lands Conservation Act, the Endangered Species Act, the Marine Mammal Protection Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act (detailed in Section 1.9 below).				

Donlin Gold Mine DEIS
DEIS – Cooperating Agency Review through April, 2016
USFWS Comment Response Matrix

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			Protection Act (MMPA), Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (see Section 1.9.18). **Third, during evaluation of Section 404 of the CWA permit applications, the FWS consults on impacts to fish and wildlife from the proposed or alternative projects as well as measures to mitigate these impacts. FWS has the ability to elevate specific cases or policy issues pursuant to Section 404(q).**					
USFWS	1.4.5			Suggest removing the language that appears to have a hierarchy or prioritization of roles, responsibilities, and authorizes as a cooperating agency. Section 1.9 below provides detailed explanations of each of the authorities. To provide clarity and	Resolved with edits made in USFWS Comment 8	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				concision, limit Section 1.4.5 to a brief introductory statement.				
USFWS 9	1.5		Governmentsn.	Governments	Edited.	The text is acceptable.		
USFWS 10	1.7		The issues were selected for analysis based on review of scoping comments. These issues are briefly described in this section and documented as statements of concern in the Scoping Report.	This may be easier to read if we introduce the organization that follows in subsection 1.71, 1.72, and 1.73, see suggested revision. Based on scoping comments issues below are organized by their relationship to the physical, biological, and social environments. These issues are briefly described in this section and documented as statements of concern in the Scoping Report.	Edited.	The text is acceptable.		
USFWS 11	1.7.1		Climate Change: The proposed project could contribute to climate change via greenhouse gas emissions. Climate change impacts to the physical environment (permafrost, glacial discharge, precipitation, river levels, storms, and	Comment: Sources and sinks of greenhouse gas should be considered separately from issues related to climate change (climate driven changes). A separate section should be added for issues related to Greenhouse Gas.	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			flooding events); biological environment (vegetation, fish, and wildlife); and social environment (subsistence, barge traffic).	Emissions and Greenhouse Gas: The proposed project could contribute to greenhouse gas emissions through both the removal of carbon sinks (such as permafrost and vegetation) and the addition of carbon sources emissions from vehicles, power generation, and incineration. Climate Change: Climate driven changes over time and the impacts expected on the project area will be analyzed for: the physical environment (permafrost, glacial discharge, precipitation, ground water, surface water, river levels, storms, flooding events, and increased erosion); biological environment (vegetation, fish, and wildlife); and social environment (subsistence, barge				

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				traffic). Climate change models will be analyzed to predict the range of climate driven change that may be expected over the life of the project.				
USFWS 12	1.7.1		Floodplains: The proposed alternatives could introduce facilities into floodplains, which will need to be assessed in the EIS. (Section 1.9.28, Executive Order 11988, *Floodplain Management.)*	Comment: Additional detail should be added this section to further explain the potential impacts associated with introducing facilities into floodplains such as risk of hazardous spills, sedimentation, and impacts on water quality. Floodplains: The proposed alternatives could introduce facilities into floodplains, which could increase risk of hazardous spills, sedimentation and impact water quality. Potential for changes in river geomorphology, and impacts on fish, wildlife, habitat, and subsistence activities will be analyzed under physical, biological and	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				social environments in the EIS. (Section 1.9.28, Executive Order 11988, *Floodplain Management.)*				
USFWS 13	1.7.2		Birds: …There is potential for displacement, contamination, and mortality from project components or spills; strikes from above-ground infrastructure; removal of nests; and attraction of scavengers; issues that will be considered in light of the requirements of the *Migratory Bird Treaty Act* (Section 1.9.17).	Migratory Birds and Their Habitat: …There is potential for displacement, contamination, and mortality from project components or spills; strikes from above-ground infrastructure; removal of nests; and attraction of scavengers; issues ~~that~~ will be considered in light of the requirements of the *Migratory Bird Treaty Act* (Section 1.9.17).	Edited.	The text is acceptable.		
USFWS 14	1.7.2			Add a separate section for Bald and Golden Eagles, and Their Habitat and provide additional discussion. Bald and Golden Eagles, and Their habitat: The proposed project could have potential impacts to bald and golden eagles and their habitat. Activities may result in	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				removal of nests, loss of habitat, and disturbance of birds during construction, operation, and maintenance of the project. Issues will be considered in accordance with Bald and Golden Eagle Protection Act (Section 1.9.18).				
USFWS 15	1.7.2		Threatened and Endangered Species: The *Endangered Species Act* requires an analysis of impacts on all federally listed threatened and endangered species, and the EIS will also evaluate effects to species of special concern identified by the State of Alaska. Construction and operation plans for the proposed project will be analyzed to determine whether these activities could disturb these species or their prey species.	Comment: Section 7(a)(2) of the Endangered Species Act states that each Federal agency shall insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat, see suggested revision. Threatened and Endangered Species: Section 7(a)(2) of the Endangered Species Act states that each Federal agency shall insure that	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Construction and operation plans for the proposed project will be analyzed to determine whether these activities could directly or indirectly affect these species or their habitat.				
USFWS 16	1.7.2			Comment: Add a separate section for Special Status Species, Species of Conservation Concern, and Subsistence Species provide additional discussion. Special Status Species, Species of Conservation Concern, and Subsistence Species: The EIS will evaluate effects to species of special	Currently within Chapter 3 of the EIS we discuss Special Status species and protected species within the birds and marine mammal sections. See text inserted for clarification	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				concern identified by the State of Alaska…				
USFWS 17	1.7.2		Vegetation: Some vegetation clearing would be required at the mine site, infrastructure, and the gas pipeline ROW. Fugitive dust could affect adjacent vegetation and habitats, both tundra and riverine. Impacts to vegetation could include introduction of exotic or invasive species.	Comment: The Vegetation section should consider the major environmental aspects of removal of the vegetative layer: 1) consider soil erosion; 2) loss of topsoil with its native vegetative seed bank; 3) challenges during reclamation; and 4) spread of invasive plant species (invasive weeds). Vegetation: Vegetation would be cleared at the mine site, infrastructure corridors, and the gas pipeline ROW. Removal of vegetation could result in: soil erosion; loss of topsoil with its native vegetative seed bank; delayed reclamation; and spread of invasive plant species (invasive weeds). In addition, fugitive dust could affect adjacent vegetation and habitats, both tundra and	Edited.	The text is acceptable.		

WET 1

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				riverine.				
USFWS 18	1.7.2		Wetlands and Aquatic Communities:	This section should include concepts of high value wetlands or wetlands that might be unique or relatively scarce in the area.	Added text that refers to this as issue to be evaluated in Chapter 3.	The edited text makes it sound as if only "high value wetlands or wetlands that might be unique or relatively scarce" would be analyzed.	Please revise, to indicate all wetlands will be analyzed.	
USFWS 19	1.7.3		Iditarod National Historic Trail or Land Ownership, Management, and Use	The Yukon Delta Wildlife Refuge and the Susitna Flats State Game Refuge should be identified under one of these sections.	Edited.	The text is acceptable.		
USFWS 20	1.9.1		This EIS was prepared according to regulations implementing NEPA (42 USC 4321 et seq.), which state that an EIS must provide detailed information regarding the proposed action and alternatives, the environmental impacts of the alternatives, potential mitigation measures, and any adverse environmental impacts that cannot be avoided if the proposal is implemented. Agencies are required to demonstrate that	Comment: This paragraph begins referencing "this EIS" then moves to a general reference. It could be misinterpreted as referring to the Cooperating Agencies, only some of which have permitting authority. Suggest removing this sentence, see suggested revision. This EIS was prepared according to regulations implementing NEPA (42 USC 4321 et seq.), which state that an EIS must provide detailed	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			these factors have been considered by decision makers prior to undertaking actions such as issuing permits.	information regarding the proposed action and alternatives, the environmental impacts of the alternatives, potential mitigation measures, and any adverse environmental impacts that cannot be avoided if the proposal is implemented. The EIS will include analysis of measures to avoid and minimize impacts to fish, wildlife, habitats, and subsistence activities, and to provide compensatory mitigation for impacts which cannot be avoided or minimized.				
USFWS 21	1.9.4		The ANILCA, Public Law 96-487 (16 USC 3101 – 3233), added 106 million acres to federal conservation units in Alaska. Title III of ANILCA combined two existing wildlife refuges, enlarged them, and created the Yukon Delta National Wildlife Refuge	Yukon Delta included three existing wildlife refuges: Nunivak Island Reservation, Hazen Bay Migratory Bird Waterfowl Refuge, and Clarence Rhode National Wildlife Range. The ANILCA, Public Law 96-487 (16 USC 3101 – 3233), added 106 million acres to federal	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				conservation units in Alaska. Title III of ANILCA combined three existing wildlife refuges: Nunivak Island Reservation, Hazen Bay Migratory Bird Waterfowl Refuge, and Clarence Rhode National Wildlife Range and created the Yukon Delta National Wildlife Refuge				
USFWS 22	1.9.12		Some marine mammals, including the northern sea otter, are managed by FWS.	Some marine mammals, including the Pacific walrus and northern sea otter, are managed by FWS.	Edited.	The text is acceptable.		
USFWS 23	1.9.17		Under the *Migratory Bird Treaty Act*, takings are prohibited unless expressly authorized or exempted. Losses from habitat impacts are also considered takings under US law.	Please remove the language about what is considered take, see suggested language for the revision. Under the *Migratory Bird Treaty Act*, takings are prohibited unless expressly authorized or exempted. The EIS will address potential impacts of the project and associated infrastructure on all birds protected under the Migratory Bird	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				Treaty Act including birds of conservation concern and areas of bird concentrations.				
USFWS 24	1.9.18		The *Bald and Golden Eagle Protection* Act (16 USC 668 *et seq.*) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The Donlin Gold project area contains bald eagle and golden eagle habitat, but would not result in the take of bald or golden eagles.	It is too early in the analysis process to make definitive statements about take, please replace this language, see suggestion. The *Bald and Golden Eagle Protection* Act (16 USC 668 *et seq.*) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. Eagle take permits may be necessary for activities that result in removal of nests, loss of habitat, and disturbance of birds during construction, operation, and maintenance of the project. The EIS will identify the presence of eagles or their nests in the project area (along	Edited.	The text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				with associated infrastructure routes), and analyze potential impacts of the proposed project on both bald and golden eagles as protected under the Bald and Golden Eagle Protection Act. Alaska specific information can be found at: http://alaska.fws.gov/eaglepermit/index.htm.				
USFWS DEIS New Comment	DEIS 1.10.19	1-32	FISH AND WILDLIFE COORDINATION ACT			New Comment DEIS The full text of the FWCA would be more applicable. Suggest revising the text.	Suggest revising text as follows: The Fish and Wildlife Coordination Act, as amended, (FWCA), (16 U.S.C. §§ 661 et seq.), requires the agency that is authorized to permit or licenses changes in a water body to first consult with the FWS and appropriate State fish and game agency. The FWCA provides that wildlife conservation shall receive equal consideration, and be coordinated with other features, of the	

EDIT 3

EDIT 3

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
							development project. The FWCA authorizes the FWS to conduct surveys and investigations to determine the possible damage of proposed developments on wildlife resources, to make recommendations for preventing their loss or damage. The term wildlife resources is explicitly defined to include “birds, fishes, mammals, and all other classes of wild animals and types of aquatic and land vegetation upon which wildlife is dependent” (16 U.S.C. 666 (b)). Further the FWCA states that reports determining the possible damage to wildlife resources and an estimation of wildlife loss shall be made an integral part of any report prepared or submitted the agency with permitting authority (16 U.S.C.	

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EDIT 3							662 (b),(f)).	
EDIT 3 USFWS DEIS New Comment	DEIS Table 1.10-2	1-37	Bald and Golden Eagle Protection Act <u>FWS permits relocation of bald and golden eagle nests that interfere with resource development or recovery operations</u>.			New Comment DEIS Suggest the text be more project specific.	Suggest revising text as follows: Eagle take permits may be necessary for activities that result in removal of nests, loss of habitat, and disturbance of birds during construction, operation, and maintenance of the project.	
WILD 6 USFWS DEIS New Comment	Table 1-10-2	1-38	Endangered Species Act of 1973 (ESA) FWS provides consultation <u>on effects</u> to threatened or endangered species, and to designated critical habitat, and issues incidental take authorizations. Species include terrestrial mammals, plants, birds, Pacific walrus, northern sea otters, and polar bears. (NOAA also administers the ESA.)			New Comment DEIS Suggest the text address only the species located within the action area, remove polar bear.		
USFWS 25	Table 1-3		Under US Fish and Wildlife Service (FWS)	For the sake of consistency it may be helpful to list authorizations from	Edited.	The text is acceptable.		

PAA 10

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				section 1.9 above. Noted missing: the Marine Mammal Protection Act.				
CHAPTER 2: ALTERNATIVES								
USFWS 1	2.2		The EIS contractor completed preliminary screening, which was reviewed and refined by the Corps and cooperating agencies.	The EIS contractor completed preliminary screening, which was reviewed and refined by the Corps. There were options reviewed and approved by the cooperating agencies to be carried forward for further analysis in the EIS but were subsequently eliminated in Step 4 without sufficient justification and without cooperating agency agreement (Specifically Transportation Options Accepted as of 08-23-13: TI34; TI35; TI38; and TI39).	Noted.	No, the comment was not addressed adequately. The specific transportation option was addressed in detail but the general comment applies to other options that were eliminated.	Recommend an Alternative that considers constructing both a diesel and a natural gas pipeline in one corridor be fully analyzed in the DEIS.	
USFWS 2	2.2.1.1.2		Where the order of magnitude cost review was not sufficient to decide whether an option was economically feasible, it was advanced for	Although the Service agrees that alternatives that are clearly infeasible or impractical be eliminated, provided there is sufficient justification, we are	In the March 12, 2014 alternatives workshop, there was additional discussion and clarification of	Yes, the analysis in the Technical Memo dated March 05, 2014 from URS is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			additional review, and additional information gathered before reaching a screening conclusion.	concerned that alternative transportation routes may have been dismissed prematurely without conducting adequate analysis in the EIS.	the Service's concerns related to transportation routes. Additional analysis of transportation routes using the Yukon River for barging was conducted. The Corps evaluated the additional information and dismissed transportation routes relying on the Yukon River.			
USFWS 3	2.2.1.2		Alternatives to barging;	The Service recommends alternatives to barging be analyzed. Otherwise, there would be no alternatives other than barging on the Kuskokwim River analyzed in this EIS and this bullet would need to be revised. Specifically we recommend that an alternative for a road between the Yukon and	See comment response above.	Yes, the analysis in the Technical Memo dated March 05, 2014 from URS is acceptable.		

PAA 10

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				the Kuskokwim River be analyzed in the EIS.				
USFWS 4	2.2.1.2		• Alternatives to barging;	The Service recommends alternatives to barging be analyzed. Otherwise, there would be no alternatives other than reduce impacts from barging on the Kuskokwim River analyzed in this EIS and this bullet would need to be revised. Specifically we recommend that an alternative for a road between the Yukon and the Kuskokwim River be analyzed in the EIS.	As it is not technically or economically feasible to transport cargo to the mine site without barges, Alternatives 3A and 3B explore reduced barging options. Additionally, constructing a road between the rivers would still require barging; but on both rivers.	The general comment about analyzing Alternatives to reduce impacts from barging on the Kuskokwim River is not fully addressed.	Recommend an Alternative that considers constructing a diesel pipeline parallel to the proposed natural gas pipeline be analyzed in full detail in the DEIS.	
USFWS 5	232		These common features are largely due to the use of standard construction and environmental protection measures.	These features are similar due to the use of conventional methods of construction and standard environmental protection measures. Suggest adding a footnote with the definition of mitigation[3]. As stated in this section the meaning of "standard construction	Comment noted.	Text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				and environmental protection measures" is not clear. The term could be interpreted as standard operating procedures, best management practices, or design features. The meaning is further convoluted by the definition of terms "design features" and "mitigation measures" provided on Page 83. [3] "Mitigation" includes: (a) Avoiding the impact altogether by not taking a certain action or parts of an action. (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment. (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the				

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				action. (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFC §1508.20). See Page 83 for further recommendations.				
USFWS 6	2.3.2		FEATURES AND ENVIRONMENTAL PROTECTION MEASURES COMMON TO ALL ACTION ALTERNATIVES	DESIGN FEATURES AND MITIGATION MEASURES[3] COMMON TO ALL ACTION ALTERNATIVES The Service suggests the term "mitigation measures" be used in place of "environmental protection measures". Suggest adding a footnote with the definition: "Mitigation" includes: (a) Avoiding the impact altogether by not taking a certain action or parts of an action. (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (c) Rectifying the impact by repairing,	Comment noted.	Text is acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				rehabilitating, or restoring the affected environment. (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFC §1508.20) [3] "Mitigation" includes: (a) Avoiding the impact altogether by not taking a certain action or parts of an action. (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment. (d) Reducing or eliminating the impact over time by preservation and				

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				maintenance operations during the life of the action. (e) Compensating for the impact by replacing or providing substitute resources or environments (40 CFC §1508.20)				
USFWS 7	2.3.2		Features common to all action alternatives are discussed in the following sections and Section 2.3.2.4: Common Features – Environmental Protection Measures describes the protection measures (often permit terms and conditions or regulatory requirements) that would potentially be implemented for any of the action alternatives.	Features common to all action alternatives are discussed in the following sections. Section 2.3.2.4 describes the design features and mitigation measures (often permit terms and conditions or regulatory requirements) that would potentially be implemented for all of the action alternatives.	Text changed as suggested.	Text is acceptable.		
CLA 30 USFWS DEIS New Comment	2.3.2.1.4	17	Auxiliary fleet vehicles would be used for road maintenance, bench development in the			New Comment DEIS	Recommend text be revised. Please remove or otherwise make this paragraph relevant to	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLA 30				open pit, construction of the WRF, and miscellaneous mine site projects. Graders would maintain the haul roads, including the mine access road. Water trucks would spray roads and working areas to mitigate dust impacts to air quality.				the subject. The subject of the section is Flotation; it's unclear what fleet vehicles have to do with flotation?	
HZM 8	USFWS DEIS New Comment	2.3.2.1.4	19	FIGURE 2.3-5			New Comment DEIS	Suggest revising this information. Ore processing involves sequential steps after the ore has been transported from the open pit to the nearby facilities. Are there Arsenic controls in the process outlined in Figure 2.3-5? What are the projected Arsenic emissions from this autoclave step?	
HZM 8	USFWS DEIS New Comment	2.3.2.1.4	19	FIGURE 2.3-5			New Comment DEIS	Suggest revising this information. Identify the type of acid used in the acid washing step.	
AIQ 7	USFWS DEIS New Comment	2.3.2.1.4	20	Gas vented from the autoclaves would be cooled and sent to the mercury abatement			New Comment DEIS	Suggest revising this information. Describe other hazardous air pollutants (HAP) that	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
AIQ 7				system.				are present in autoclave gas and how these are being removed prior to discharge into the environment.	
HZM 3	USFWS DEIS New Comment	2.3.2.1.4	20	After stripping (desorption of gold from carbon), the barren carbon particles would be re-generated using high temperatures in a rotary kiln to remove organic contaminants and to capture mercury.			New Comment DEIS	Suggest revising this information. Describe the capture process for mercury (Hg) and discuss whether or not it will it capture other HAPs.	
HZM 3	USFWS DEIS New Comment	2.3.2.1.4	20	off gas from the retort is cooled to condense mercury and then passes through sulfur-impregnated carbon columns to capture any residual mercury.			New Comment DEIS	Suggest revising this information. Is there a way to remove the carbon from this step and facilitate Hg reduction and formation of HgS?	
CLA 12	USFWS DEIS New Comment	2.3.2.1.4	20				New Comment DEIS	Suggest revising this information. How will the Dore bars be taken offsite?	
HZM 9	USFWS DEIS New Comment	2.3.2.1.4	20	SO2 gas would be added at a rate sufficient to reduce the weak acid dissociable cyanide (CNWAD, referring to those			New Comment DEIS	Suggest revising this information. Describe the chemical reaction including the end products that will be discharged to the	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 9				cyanide species measured by specific analytical techniques) levels in the tailings to <10 parts per million (ppm) prior to discharge				tailings facility. Is the cyanide (CN) transformed or destroyed in this reaction?	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	21	Donlin Gold estimates the mine would remove approximately 34,600 pounds of mercury per year from the gaseous waste streams.			New Comment DEIS	Suggest revising this information. Donlin Gold estimates the mine would remove approximately 17.3 tons of mercury per year. Please describe the total amount of Hg estimated to be in the ore body and its eventual fate – a figure may help? Although Hg will be removed, our understanding is only ~50% of the total Hg of what would be released would be recovered, see USFWS comment in Water Quality. The totals need to be transparent to the reader in the document.	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	21	Table 2.3-2: Mercury Control Efficiency			New Comment DEIS If this process describes the removal of Hg from	Suggest additional information be provided. This information would be	

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HZM 3							the gas, it does not describe the proportion of Hg that continues on down the line in the ore/tailings this makes the percentages somewhat misleading.	more transparent if put in context of total Hg in the ore. There are footnotes on these numbers; however it's unclear what they reference? A more transparent presentation of this information would follow the Hg from the ore, and show % removed versus percent going downstream, as a % of the original estimated amount in the ore by mass.	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	22				New Comment DEIS	Suggest revising this information. What are the process temperatures, could a catalyst be added to oxidize the elemental Hg at some of these steps.	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	22	The primary mercury removal bank is filled with a sulfur-impregnated carbon that captures mercury through chemical adsorption (chemisorption). The			New Comment DEIS	Suggest revising this information. Is there also a straight condensation step that pulls the elemental Hg?	

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HZM 3				mercury combines with the sulfur in the carbon to form a stable mercury sulfide compound (cinnabar).					
HZM 10	USFWS DEIS New Comment	2.3.2.1.5	23	Carbon-in-leach tailings are detoxified, combined with flotation tailings in neutralization, and transported to the TSF.			New Comment DEIS	Suggest revising this information. How are carbon-in-leach tailings "detoxified"?	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	24	A mercury suppressant in the form of UNR 829 would be introduced at the TSF reclaim water header to precipitate residual mercury remaining in solution as an insoluble sulfide-mercury particle.			New Comment DEIS	Suggest revising this information. What is the chemistry of UNR 829?	
HZM 3	USFWS DEIS New Comment	2.3.2.1.5	24	There is a possibility that any remaining mercury in the tailings solution could be released as a gaseous emission.			New Comment DEIS	Suggest revising this information. What is the estimate for the proportion of Hg going to the TSF? The TSF may be a substantial source of Hg emissions, particularly if tailings are wet. Please include the estimate for how many tons of Hg will go to the TSF each year in this paragraph. Provide an emissions estimate	

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HZM 3								under wet and dry stack conditions if possible.	
CLA 30	USFWS DEIS New Comment	2.3.2.1.6	24				New Comment DEIS	Suggest revising this information. 205 tons of NaCN per year is a very large amount of CN to transport on the Kuskokwim River. The risk of environmental degradation and spill fate that could affect aquatic environments of the Kuskokwim River and Kuskokwim Bay need to be fully analyzed and disclosed.	
CLA 30	USFWS DEIS New Comment	2.3.2.1.7	25	The mine site is expected to operate with an annual water surplus during operation based on estimated water requirements, as well as the large amount of runoff anticipated from the American and Anaconda Creek basins that would be captured in major project facilities.			New Comment DEIS	Suggest revising this information. Please provide a range of amount of the projected water surplus.	
WAQ 15	USFWS DEIS New Comment	2.3.2.1.7	25	Excess contact water would be treated and discharged under an			New Comment DEIS	Suggest revising this information. Describe (and analyze effects in	

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WAQ 15				Alaska Pollution Discharge Elimination System (APDES) permit.				subsequent chapters) methods for using mixing zones to meet water quality standards.	
HZM 8	USFWS DEIS New Comment	2.3.2.1.7	25				New Comment DEIS	Suggest revising this information. Please describe at what point the selenium and insoluble or complexed arsenic will be removed?	
HYD 7	USFWS DEIS New Comment	2.3.2.1.7	26	The water treatment plant would be designed for a peak treatment rate of 4,671 gallons per minute (gpm) and an average rate of 2,946 gpm. The discharge location would be to Crooked Creek below Omega Gulch.			New Comment DEIS	Suggest revising this information. Please describe how these numbers relate to the instream flows for Crooked Creek – what percentage does add to existing flow?	
PAA 14	USFWS DEIS New Comment	2.3.2.1.9	30	The WRF would be unlined.			New Comment DEIS	Suggest revising this information. Although the WRF is unlined, it is proposed to be inundated with contact water at times according to water treatment plan above. Describe why the WRF is unlined or not proposed to be lined.	

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DAM 1	USFWS DEIS New Comment	2.3.2.1.9	31	Based on the waste rocks characterization as either PAG or NAG, it would be placed in one of three areas: Â· American Creek drainage WRF, Â· ACMA pit backfill, or Â· Anaconda Creek drainage TSF dam			New Comment DEIS	Suggest revising this information. The plan is to construct the TSF dam out of waste rock. Due to the risk of rock degradation for PAG rock, it is therefore very important that the onsite classification of the rock is correct. Describe the plan to ensure that onsite classification of the rock will occur during construction.	
WAQ 12	USFWS DEIS New Comment	2.3.2.1.9	33	NAG waste rock would also be dumped around the PAG waste rock to isolate the PAG from the exposed final surface of the WRF and to neutralize runoff from the PAG.			New Comment DEIS	Suggest revising this information. Describe the buffering capacity of the NAG rock.	
WAQ 12	USFWS DEIS New Comment	2.3.2.1.9	33	Waste rock classified as <u>PAG 5 would usually be mixed with surrounding NAG</u> waste rock and dispersed on the WRF to produce a well-mixed blend.			New Comment DEIS	Suggest revising this information. It is disconcerting to see "usually" in this sentence. Under what conditions would the PAG rock NOT be mixed with NAG rock? What is the plan to ensure this mixing will happen, as it is pivotal	

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WAQ 12								to the stability of the rock pile. How will adequate buffering capacity of the NAG rock be ensured?	
PAA 19	USFWS DEIS New Comment	2.3.2.1.9	33	Each PAG 6 cell would be covered with a low permeability cap to minimize infiltration of surface water.			New Comment DEIS	Suggest revising this information. At what point will each cell be capped? How long will each cell be exposed in the environment prior to cap placement?	
HZM 8	USFWS DEIS New Comment	2.3.2.1.10	35	antifreeze (ethylene and propylene glycol) â€“ recycled and reused on site whenever possible			New Comment DEIS	Suggest revising this information. Describe what where antifreeze would go if it was recycled or reused.	
HZM 16	USFWS DEIS New Comment	2.3.2.1.10	37	Sodium cyanide would be shipped from the manufacturer to the mine site on barges as solid briquettes in 22-ton International Standards Organization (ISO) approved type 2 watertight sparge tank-tainers.			New Comment DEIS	Confirm how much sodium cyanide would be transported in each shipment, there have been other numbers used in previous versions, e.g. 24-ton and 32-ton.	
MIT 28	USFWS DEIS New Comment	2.3.2.1.10	38	Mercury and mercury-containing materials would be managed in accordance with a Donlin Gold Mercury Management Plan that is currently under			New Comment DEIS	The USFWS recommends Donlin Gold develop a Mercury Management Plan. This should be included as part of the proposed action.	

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MIT 28			development.					
MON 4 USFWS DEIS New Comment	2.3.2.1.1 2	39	The monitoring would remain in place, depending on compliance history, up to or beyond 30 years – until each specific facility is physically and chemically stabilized.			New Comment DEIS	Suggest revising this information. This sentence implies that water will not require treatment in perpetuity. Is this true? If so, what has changed in the water management plan?	
USFWS 8	2.3.2.2		These include a general cargo terminal in Bethel, a general cargo terminal at an upriver port site (e.g., the Junkjuk Port site or Birch Tree Crossing (BTC)), a mine access road between the port site and the mine site, and an airstrip at the mine site.	These include general cargo terminals, a mine access road between the port site and the mine site, and an airstrip at the mine site.	Text changed as suggested.	Text is acceptable.		
HZM 4 USFWS DEIS New Comment	2.3.2.2	42	A 5,000-foot long by 150-foot wide gravel airstrip capable of supporting DeHavilland Dash 8 and Hercules C-130 aircraft.			New Comment DEIS	Suggest adding information. If the plan is to take in C-130s describe why the sodium cyanide and mercury cannot be flown to and from the site.	
USFWS 9	2.3.2.2		The Proposed Action and Action Alternatives include shipping cargo consolidated at marine	The Proposed Action and Action Alternatives include shipping cargo consolidated at marine	Yukon road alternative has been considered and dismissed.	Yes, the analysis of the Yukon to Kuskokwim road alternative in the		

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			terminals in Seattle and Vancouver and then shipped via ocean barges across the Bering Sea up the Kuskokwim River to a cargo terminal in Bethel. At Bethel, cargo would be transferred from ocean barges to river barges for towing up the Kuskokwim River to the upriver port site. Cargo would be transported by truck from the port site to the mine site. Transportation Features common to all alternatives include:	terminals in Seattle and Vancouver and then shipped via ocean barges across the Bering Sea up the Kuskokwim River to a cargo terminal. At Bethel, cargo would be transferred from ocean barges to river barges for towing up the Kuskokwim River to the upriver port site. Cargo would be transported by truck from the port site to the mine site. Transportation Features common to all of the Kuskokwim River-dependent alternatives include: The Service suggests adding a Yukon-to-Kuskokwim road alternative, as well as modifying and moving this language to a section specific to the Kuskokwim River alternatives.	Additional explanation has been added.	Technical Memo dated March 05, 2014 from URS is acceptable.		
USFWS DEIS New Comment	2.3.2.3.4	93	Road system then via ice road			New Comment DEIS	Suggest revising this information. Describe the alternative plan in	

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							the event future climate does not support ice road construction. How likely is this, given climate change scenarios for the region?	
USFWS 10	2.3.2.4		EPMs are measures applied to avoid, minimize, reduce, rectify, or compensate for adverse environmental or social impacts.	EPMs include design features and mitigation measures applied to avoid, minimize, reduce, rectify, or compensate for adverse impacts on the human environment.1 Revise this sentience with the term "human environment". This NEPA term portrays the importance of not only environmental and social impacts but includes the relationship of people with that environment. This is especially appropriate in reference to impacts on Subsistence lifestyles. ("Human Environment shall be interpreted comprehensively to include the natural and physical environment	Text changed as suggested.	Text is acceptable.		

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				and the relationship of people with that environment" (40 CFR §1508.14)). The Service suggests incorporating the definitions here from Page 83 with suggested revisions: Mitigation involves a search for specific means, measures or practices that would reduce or eliminate the effects of the proposed action or alternatives. Mitigation measures are those measures that could reduce or avoid impacts and have not been incorporated into the proposed action or an alternative. Design features are design or operational features that reduce impacts and that have been incorporated into the proposed action. 40 CFR §1508.14 "Human Environment" shall be interpreted				

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				comprehensively to include the natural and physical environment and the relationship of people with that environment.				
USFWS 11	2.3.2.4		Note to reviewers: The details of this section will be developed when the proposed EPMs are identified in conjunction with the analysis of environmental consequences.	There may be revisions to our comments on subsequent versions of the Mitigation Section. Mitigation measures are determined through environmental analysis. Without analysis, it is difficult to provide an effective review.	Comment noted. The EIS team looks forward to comments following the submission of Environmental Consequences and mitigation.	See USFWS comments in the Mitigation Section.		
USFWS DEIS New Comment	2.3.4	145	Alternative 3B would also eliminate the barging of diesel fuel after construction, eliminating the 58 fuel barge tow round trips per year required under Alternative 2. This would result in a <u>48 percent reduction in total river barge traffic.</u>			New Comment DEIS	Suggest revising this information to provide a more transparent analysis of changes from existing (baseline) conditions. In barge traffic for example, it is unclear in this sentence what this 48% reduction refers to as a baseline? Is it the proposed action or the no-action alternative? For example, if the difference in barge traffic is considered over the life of the project, the number of	

BARG 17

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BARG 17								barges traveling the Kuskokwim approximately doubles (from no-action) under the diesel pipeline alternative, and it nearly triples under the preferred alternative (a 174% increase in the number of barges traveling the Kuskokwim over the No Action Alternative), versus a 123% increase for Alternative 3B and a 98% increase for alternative 3A). Analyze the change from baseline barge traffic if Alternatives 3A and 3B were implemented concurrently.	
PAA 10	USFWS 12	2.3.4.2.1		The primary differences between this alternative and Alternative 2 are the replacement of the natural gas pipeline with a diesel fuel pipeline, reduced barge trips due to elimination of diesel barging,	This alternative was to add a diesel pipeline in the same corridor as the proposed natural gas line.	Correct. Text modified for clarity.	This alternative was proposed during scoping to add a diesel pipeline in the same corridor as the proposed natural gas line.	Recommend an Alternative that considers constructing both a diesel and a natural gas pipeline in one corridor be fully analyzed in the EIS.	

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PAA 10				increased consumption of diesel, and decreased natural gas consumption.					
	USFWS 13	2.3.4.2.2		Removal of large boulders protruding above the sea floor shown on navigation charts would present navigation hazards and would need to be identified and removed during construction. Because the dock would be extended to the design water depth, it would not be necessary to dredge at the dock or in shipping channels, either initially or for maintenance.	Suggest adding clarifications as to why this action is not considered dredging. This first statement (referring to removal of large boulders) appears to contradict the second one (referring to no dredging).	Text modified for clarity.	Text is acceptable.		
DAM 9	USFWS DEIS New Comment	2.3.6	159	This alternative was suggested during scoping to avoid the <u>perceived risk</u> of releases from the tailings dam proposed under Alternative 2.			New Comment DEIS	Recommend revising. Since there is a risk to the environment from dam failure, the use of the word "perceived" before the word "risk" in this document makes the EIS appear biased in favor of the project.	
PAA 57	USFWS DEIS New	2.3.6.1	159	The total volume of filtered tailings that			New Comment DEIS	Suggest revising. Please compare the total	

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PAA 57 Comment			would be produced is approximately 239,500 acre-ft.				volume of filtered tailings with the total volume of the slurried TSF so these numbers can be compared without referring to the prior section. Perhaps in this sentence present this as a proportion of the TSF volume in Alternative 2.	
PAA 29 USFWS DEIS New Comment	2.3.6.1	159	This alternative includes two options: · Option 1: The dry stack TSF would not be lined with an LLDPE liner. The area would be cleared and grubbed and an underdrain system placed in the major tributaries under the dry stack TSF and operating pond to intercept groundwater base flows and infiltration through the dry stack and convey it to an SRS. The underdrain system would be extended upstream as			New Comment DEIS	Recommend Option 1 for an unlined dry stack be eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	

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PAA 29				the dry stack footprint increased over time. Flows collected in the dry stack underdrains will be conveyed beneath the upper dam, the operating pond liner and the main dam before discharging to the SRS collection pond. Water collecting in the SRS pond would be pumped to the operating pond, lower CWD, or directly to the process plant for use in process. · Option 2: The dry stack tailings would be underlain by a pumped overdrain layer throughout the footprint, with an impermeable LLPDE liner below. The rock underdrain and foundation preparation would be completed in the same manner as Option 1.					
PAA 57	USFWS DEIS New Comment	2.3.6.1	159	The footprints of the operating pond impoundment and the			New Comment DEIS	Suggest revising. Include a comparison of the "footprint" after	

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PAA 57			dry stack tailings pile would be approximately 1,070 acres and 1,393 acres, respectively at the conclusion of mining. The ultimate combined operating pond and dry stack footprint would be 2,463 acres. By comparison, the Alternative 2 combined TSF and operating pond footprint would be 2,394 acres at the conclusion of mining.				the operating pond is drained during reclamation. At this point, the dry stack could be approximately half the size of the slurried TSF. The dry stack Alternative could greatly reduce risk of the dam to catastrophically fail and flood Crooked Creek and the Kuskokwim River.	
PAA 40 USFWS DEIS New Comment	2.3.6.1	161	During closure, the tailings would be covered with soil, an LLDPE cover, and vegetated. The cover would be graded to the southeast to direct surface runoff to Crevice Creek.			New Comment DEIS	Suggest clarifying this information. It is unclear why the tailings cannot be covered with soil and vegetated incrementally, this would substantially reduce dust transport, and Hg and other HAP emissions. The covering should be compared with the dry-stack tailings option, the fact the tailings are dry is projected to reduce Hg emissions substantially.	

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PAA 29	USFWS DEIS New Comment	2.3.6.1	161	The filter plant for Alternative 5A is expected to lead to a 2 percent increase in power consumption. Additionally, for Alternative 5A, the amount of exposed tailings would be increased by 70 acres at the end of Year 1 and 560 acres at Year 23 when compared to Alternative 2. Dust control would include rotating work/deposition fronts, using barriers such as silt fences, and spraying with binders such as Entac or equivalent.			New Comment DEIS	We propose the following mitigation measure for Alternative 5A: To control dust, the dry stack tailings should be reclaimed incrementally rather than wait until closure.	
CLA 30	USFWS DEIS New Comment	2.3.6.1	161	Transporting these items to the mine site would require an estimated additional seven barge tows per year on average, for an annual total of 129 round trips, an increase of 6 percent.			New Comment DEIS	Suggest clarifying this information. It doesn't make sense to have 7 annual and 129 annual barge trips in the same sentence. Also, what is the 6 percent increase relative to?	
PAA 63	USFWS DEIS New Comment	2.3.8	167	Table 2.3-43: Comparison of Alternatives			New Comment DEIS There are multiple instances where	We recommend the analysis devote substantial treatment	

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PAA 63							positive aspects of Alternatives exist but only select negative differences are highlighted in Table 2.3-43.	to each alternative so that reviewers may evaluate them on their comparative merits (CFR 40 1502.14). Please provide a clear comparative analysis of Alternatives 2 and 5A.	
PAA 10	USFWS DEIS New Comment	2.3.8	167	Diesel Consumption: 1 20 Mgal /year Table 2.3-43: Comparison of Alternatives			New Comment DEIS	Suggest providing analysis of an Alternative that considers constructing both a diesel and a natural gas pipeline in one corridor and including this Alternative in Table 2.3-43.	
CLA 30	USFWS DEIS New Comment	2.3.8	167	Table 2.3-43: Comparison of Alternatives Tailings storage and operating pond footprint: 2,463 acres			New Comment DEIS	Suggest clarifying this information to include only the acreage of the TSF in this comparison, not the TSF and the operating water pond.	
CLA 13	USFWS DEIS New Comment	2.3.8	169	Table 2.3-44: Summary of Impacts. There would be minor differences in the amount of bedrock and rock aggregate resources disturbed and distributed. Summary impacts			New Comment DEIS	Suggest clarifying this information. The analysis should consider and make transparent to the reader the extent to which Alternative 5A reduces the risk of a tailings dam failure.	

CLA 13

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			would be minor to moderate.				This makes the DEIS seem biased toward Alternative 2. Please see further comments in the chapter on spill risk.	
USFWS 14	2.4.1		Mitigation involves a search for specific means, measures or practices that would reduce or eliminate the effects of the proposed action or alternatives. Mitigation measures are those measures that could reduce or avoid impacts.	Suggest the terms mitigation and design features be united. According to the NEPA CEQ Mitigation and Monitoring Guidance, dated 14 January 2011, the statement that is underlined is not an accurate depiction of mitigation: According to CEQ, mitigation measures help prevent or eliminate damage to the human environment in many ways. Both Federal agencies and applicants may include mitigation measures as components of the project design. Agencies may also consider mitigation measures as alternatives during analysis in the EIS (CEQ Appropriate Use of Mitigation and Monitoring and	For the purpose of this document, design features are incorporated into proposed alternative, and mitigation measures would be extra measures taken beyond.	Text is acceptable.		

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				Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact).				
USFWS 15	2.4.1.4		Table 2-25: MS-42 This option would further reduce the base flow in Crooked Creek because under the proposed action, water from the dewatering wells would be discharged after treatment to the creek.	Suggest further clarification of this rationale. This statement appears to be a contradiction.	Text modified for clarity.	Text is Acceptable.		
USFWS 16	2.4.1.9		Table 2-34: Table in general.	Some of these options were reviewed and approved by the cooperating agencies to be carried forward for further analysis in the EIS but were subsequently eliminated in Step 4 without sufficient justification and without cooperating agency agreement.	Additional analysis and discussion with CAs has occurred since the original draft chapter was provided and justification statements have been revised.	Suggest further analysis of select options that were reviewed and approved to be carried forward by the cooperating agencies for further analysis.		
USFWS 17	2.4.1.9		Table 2-34: TI-34, Rationale column	The Service suggests this option be one of the road options carried forward for further analysis. This justification is not sufficient for elimination of this option, suggest	Additional justification added.	While the text is acceptable, the EIS should analyze options other than the Kuskokwim River for transportation of fuel and other contaminants.		

PAA 54

PAA 13

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PAA 13				more in depth analysis.				
PAA 13 USFWS 18	2.4.1.9		Table 2-34: TI-35, entire row	This justification is not sufficient for elimination. How do substantial impacts to adjacent floodplain and wetland areas in this option differ from those on the Jungjuk port?	Text has been clarified.	While the text is acceptable, the EIS should analyze options other than the Kuskokwim River for transportation of fuel and other contaminants.		
PAA 13 USFWS 19	2.4.1.9		Table 2-34: TI-36, entire row	The Service suggests this option be one of the road options carried forward for further analysis. In order to reduce fragmentation, corridors should be shared and if another project is considering a transportation corridor this EIS should consider it as well.	Additional analysis and discussion with CAs has occurred regarding this option. It remains dismissed.	While the text is acceptable, the EIS should analyze Alternatives other than the Kuskokwim River for transportation of fuel and other contaminants.		
PAA 13 USFWS 20	2.4.1.9		Table 2-34: TI-37, entire row	This justification is not sufficient for elimination of this option. Suggest this option be included for further analysis with TI 36.	Additional analysis and discussion with CAs has occurred regarding this option. It remains dismissed.	While the text is acceptable, the EIS should analyze Alternatives other than the Kuskokwim River for transportation of fuel and other contaminants.		
PAA 13 USFWS 21	2.4.1.9		Table 2-34: TI-39, Option Description column	Suggest this option be analyzed with options TI-34 and TI-35 or TI-36 and TI-37.	Additional analysis and discussion with CAs has occurred	While the text is acceptable, the EIS should analyze Alternatives other		

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PAA 13						regarding this option. It remains dismissed.	than the Kuskokwim River for transportation of fuel and other contaminants.		
	CHAPTER 3.0: APPROACH AND METHODOLOGY								
	USFWS DEIS New Comment	3.0					New Comment DEIS	Refer to our accompanying cover letter addressing comments on the DEIS.	
NEP 7	USFWS 1	3.0	General	3.0.4 METHODS FOR DETERMINING LEVEL OF IMPACT	The Service suggests the methodology presented in section 3.0 be further refined and down-scaled into the individual resource section to present the environmental impacts of the proposal and the alternatives in comparative form, to sharply define the issues and provide a clear basis for choice among options by the decisionmaker and the public (40 CFR §1502.14). NEPA regulations require Federal agencies: “Devote substantial treatment to each alternative	No change. There are several premises behind our approach. First, only Alternative 2, the proposed action, is comprehensive, including all project components and subcomponents, and all phases. The other alternatives address limited components and otherwise rely on the remaining components in Alternative 2. The current approach	There are problems with the analytical approach that have not been adequately addressed in the DEIS.	The summery level approach has resulted in analysis that leads to a category of minor, moderate, or major instead of disclosing effects. This type of analysis does not address quantifiable effects nor does it allow for the combination of multiple minor, moderate, or major stressors that often result in cascading effects on resources. Refer to our accompanying cover letter addressing comments on the DEIS.	

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NEP 7					considered in detail including the proposed action so that reviewers may evaluate their comparative merits." Yet in many of the resource sections, the proposed alternative is described in detail, impacts are disclosed but effects of the proposed alternative are minimized, then it is stated that the other alternatives will have similar or greater impacts. For example, Section 3.8 on Air Quality, page 3.8-4 states, "Taken all together the effects of Alternative 2 on air quality would be minor… The effects of other alternatives on air quality would be similar to those of Alternative 2."	focuses on the components that are different under an action alternative, without repeating the impact assessment of the components that remain the same as found in Alternative 2. Similarly, the action alternatives do not create difference in impacts in all resources. For example, alternatives at the mine site, since they fall within the mine site footprint, may not create different impacts in some resources.			
NEP 7	USFWS 2	3.0.4.1	3.0-3	The direct and indirect effects for each resource or resource	According NEPA regulations, context means that the	Further explanation of the criteria has	The issue of using the terms "intensity, duration, extent, and	Recommend the "summary level of impact," approach be	

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NEP 7			use are analyzed on the basis of the factors of intensity (magnitude), duration, extent, and context of the impact (40 CFR 1508.27).	significance of an action must be analyzed in several contexts. Significance varies with the setting of the proposed action, such as "in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole" (40 CFR 1508.279a)). Analysis in larger contexts such as regional, national or global may be appropriate for analyzing National policy or conducting an EIS for programmatic actions that cover multiple States, but this is a site-specific action. Therefore we recommend that context generally be considered at the local, regional, or State level.	been added to Section 3.0.4.1, and where the descriptions of context are introduced. It explains that that the criteria descriptions are general and that resource-specific descriptions are provided in Chapter 3. The recommended language appears to encompass a portion of the geographic extent dimension.	context" to scale impacts has not been resolved.	removed in the revised DEIS. Full disclosure of potential effects on the environment, local people, and the subsistence way of life is hindered by the structure of the summary levels of impact ratings. There are two main problems with this approach. The first is a problem of scale; the level of project related impacts are compared to very large boundaries, therefore project related impacts are considered relatively minor. The second is a problem of categories that are so broad that they do not allow a detection of a difference between alternatives, even though a difference exists. Summaries should be presented that are concise, clear, and to the point. Terms such as minor, moderate, and major	

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NEP 7							should be removed.	
NEP 7 USFWS 3	3.0.4.1	3.0-4	Temporary	According NEPA regulations, both short and long-term effects are relevant" (40 CFR 1508.279a)). Therefore we suggest changing the term "temporary" to use the term "short-term" when analyzing effects throughout the document.	No change. The meanings are the same; the effort to change would be high.	The issue of evaluating comparative merits has not been adequately addressed.	Information on Page 3.0-4 should be removed or modified. Refer to our accompanying cover letter for detailed recommendations.	
NEP 7 USFWS 4	3.0.4.1	3.0-4	Context Common: The affected resource is not rare in the locality and is not protected by legislation, such as the Endangered Species Act, Migratory Bird Treaty Act,, or Wilderness Act. The portion of the resource affected does not fill a unique social or ecological role within the locality or the region.	"Context" in section 3.0.4.1 appears to be a scale for determining the ratings in the next section, which could be appropriate but the scaled-down approach as presented in each of the resource sections, appears to be arbitrary. See Table 4.3-6 for an example. Impacts from GHG emission are being considered as common because "Affects usual or ordinary resources; not depleted or protected by legislation." When analysis is too broad it results in similar	See response to FWS 2. Descriptions for impact criteria were based on federal NEPA guidance (40 CFR 1508.27) and other recent NEPA analyses. This framework is used throughout the EIS and is adapted as necessary for each resource.	The issue of evaluating comparative merits has not been adequately addressed.	Information on Page 3.0-4 should be removed or modified. Refer to our accompanying cover letter for detailed recommendations.	

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NEP 7					determinations for all of the alternatives, the analysis no matter how well written may become useless, as it provides no real method of comparison for the decision maker or the public. We suggest using a context that would generally consider significance within the setting of the proposed action, the local environment, region, and State rather than the entire United States or the world as a whole. Such as how do GHG emissions for each alternative compare to similar GHG emissions for similar actions in the State of Alaska?				
NEP 7	USFWS 5	3.0.4.1	3.0-4	**Unique:** The affected resource is protected by prescriptive legislation, such as the Endangered Species Act or the Wilderness Act and/or the portion of the resource affected fills a unique	This scale of “Context” appears to be a scale for determining the ratings in the next section, which could be appropriate but the scaled-down approach in the Impact Assessment Criteria, for	Impact criteria retained. See response to FWS 2 and FWS 4.	The issue of evaluating comparative merits has not been adequately addressed.	Information on Page 3.0-4 should be removed or modified. Refer to our accompanying cover letter for detailed recommendations.	

NEP 7

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			social or ecological role within the locality or the region	each of the resource sections, appears to be arbitrary. Such as in Table 3.14 1: Impact Criteria for Effects on ESA-Listed Birds - the redefined criteria limits uniqueness to " species listed as endangered under the ESA, or those listed as threatened or proposed for listing under the ESA **with small or declining populations**. This downscaling circumvents comparative analysis for the public and the decision makers. See pages 3.14-16 for a precise example. Specifically for the Threatened and Endangered Species Section 3.4, the Service suggests removing the comparative table (Table 3.14) altogether. The ESA makes it clear that all Federal agencies should participate in the				

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NEP 7				conservation and recovery of threatened and endangered species. The alternatives should be analyzed to determine which ones reduce the risk of harm to threatened or endangered species and critical habitats under the ESA.				
CHAPTER 3.4: METEOROLOGY								
CLIM 8 USFWS DEIS New Comment	3.4	3.4-2	Alternatives 2, 3A, 3B, 4, 5A, and 6A: Any climate or meteorological impacts that would be attributable to the Donlin Gold Project would be due to the project's contribution to overall greenhouse gas emissions			New Comment DEIS Contaminant fate is affected by climate (solar radiation, wind, water temperature, and flow direction). Risk of mobilization of contaminant air and water is reduced by separating (squeezing and treating the water), stacking, and reclaiming tailings in a dry stack, as presented in Alternative 5A.	Suggest revising text as follows: Alternatives 2, 3A, 3B, and 4, and 6A: Climate or meteorological impacts attributable to the Donlin Gold Project would be due to the project's contribution to overall greenhouse gas emissions, distribution of airborne emissions, and potential groundwater contamination mobilized during mining operations, all of which could be exasperated by mechanisms driven by	

CLIM 8

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							climate and meteorology. Alternative 5A would reduce mobilization of contaminants by sequestering and burying dry stacked tailings concurrently with mine operations.	
USFWS 3	3.4.1.1		* Based on BGC's analysis, if a synthetic data set was generated for a given climate parameter, it was assumed for the purposes of establishing baseline conditions in this EIS, that the synthetic data are more characteristic of the overall climate at the proposed mine site than the short-term data collected on-site.	Recommend using Scenarios Network for Alaska & Arctic Planning for modeling meteorological changes over time. McGrath is located on the opposite side of the Kuskokwim Mountains. As the Native Village of Chuathbaluk has stated, McGrath does not have weather patterns similar to the proposed mine site. Meteorological data plays a critical part in modeling groundwater and pit lake volumes over the life of the mine and the water treatment in perpetuity. Downscaled global climate change scenarios should be	We believe that BGC's analysis, conducted for the purpose of preparing a water balance calculation, appropriately represents baseline climate conditions predicted by the available historical records pertinent to the mine site. <u>SNAP data are considered in the analysis of climate change effects on mine water balance and the pit lake</u>	Change is acceptable. SNAP data are considered in the analysis.		

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				used to predict the range of future meteorological changes over time. The University of Alaska has provided streamlined planning tools for project planning on their Scenarios Network for Alaska & Arctic Planning (SNAP) website at http://www.snap.uaf.edu/	in the climate change discussion in Chapter 4. Text added to Section 3.4.1.1 to clarify and provide cross-reference to climate change section for reader.			
USFWS 4	3.4.1.2		* The data collected at Jungjuk and BTC monitoring stations were obtained over a period of two years. Due to this short collection period, the data may not represent long-term trends in the area. No synthetic datasets have been generated by Donlin Gold for the proposed transportation corridor, however; and short-term site-specific data in this case were considered more characteristic of the area than long-term data collected farther	Recommend using the Scenarios Network for Alaska & Arctic Planning (SNAP) for modeling meteorological changes over time.	No edit needed. See response to FWS 3.	Change is acceptable. SNAP data are considered in the analysis.		

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			away.					
CHAPTER 3.5: SURFACE WATER HYDROLOGY								
USFWS DEIS New Comment	Synopsis	3.5-1	Effects on Crooked Creek flow could vary widely depending on season, precipitation conditions, bedrock hydraulic conductivity (K), phase of mine operations, and distance from the mine. For example, Crooked Creek flow below the mine site near Crevice Creek would be reduced by 20 percent in winter under average precipitation and K conditions, and by 26 percent in dry conditions, during late operations (year 20 onward). The greatest flow reduction experienced near the mouth of Crooked Creek (at Bell Creek about 8 miles downstream of the mine) is projected to be 4 to 10 percent under the above conditions. In the event			New Comment DEIS	The Synopsis in the Surface Water Hydrology section was one of the most informative and well written and provides a good example of how other sections of the document should be updated. There was no summary level impact or justification language included, just facts.	

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			that K is higher than expected, 45 to 100 percent of Crooked Creek flow could be reduced in winter near the mine site under average to dry precipitation conditions, with much of the flow restored below Crevice Creek (16 to 40 percent reductions) due to tributary inflows. Reshaped topography would permanently alter surface flow at the mine site. Beginning at closure, surface water from the TSF and Seepage Recovery System (SRS) would be diverted to the pit. Around year 52 after closure, water from the filling pit lake would be pumped to maintain freeboard and hydraulic containment of all contact water, and would be directed through a treatment plant prior to release into Crooked Creek, a					

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				condition that is expected to be permanent.					
HYD 7	USFWS DEIS New Comment		Table 3.5-26	Max Month column			New Comment DEIS	Suggest clarifying in what month the max flow reduction occurs. At low flows times (i.e. winter) the impact of flow loss could be greater than at high flow times.	
FISH 14	USFWS 8	3.5.2.2.1		3.13.1.1.1 * JUNGJUK ROAD CORRIDOR	Recommend this section be described in more detail. This section needs to analyze culverts and bridges in more detail. Ice conditions at breakup can be very important for culvert and bridge design.	Culvert and bridge data presented in introduction of section. Additional stream crossing information is provided in Appendix 3.5A. Stream crossing design flows for culvert selection and bridge construction will be established during final design. Final design in mitigation in EC section.	Change acceptable.	Recommend the following mitigation measure to reduce impacts on fish and aquatic habitat: Culverts and bridges should be designed for fish passage.	
HYD 8	USFWS DEIS New	3.5.2.2.1	3.5-30	With the exception of … and Montana Creek,			New Comment DEIS	Suggest analyzing the spill risk associated	

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HYD 8	Comment			all watersheds traversed by the road are tributaries of Crooked Creek.				with different road placement options. Placing all facilities and transportation infrastructure in the Crooked Creek/ Kuskokwim River drainage maybe less of a risk than having the Angyaruaq road and airstrip in the Montana Creek drainage. Placing infrastructure in two drainages complicates spill response and puts resources in the Iditarod drainage at risk.	
HYD 1	USFWS DEIS New Comment	3.5.2.2.1	Table 3.5-16	Eagle Creek Minimum and Maximum Discharge			New Comment DEIS	Suggest clarifying the information in Table 3.5-16. Are these minimum and maximum measured discharges? There was no continuous monitoring so the annual peak flow is not known.	
HYD 1	USFWS DEIS New Comment	3.5.2.2.1	3.5-33	Typical flows in the North and South forks of Getumna Creek…			New Comment DEIS	Suggest defining or clarifying the "typical" average annual, bankfull, and summer low flow.	
HYD 1	USFWS DEIS	3.5.2.2.1	3.5-33	The average depth of			New Comment DEIS	Suggest clarifying	

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HYD 1	New Comment			the channel...				information to define "average depth of the channel," including: average depth of water (and at what discharge); height of bank; height to ordinary high water mark; and top of bank to lowest point in channel.	
HYD 5	USFWS	3.5.3.2.1		The effect of this flow reduction on Crooked Creek is expected to be of low to medium magnitude, in that it may or may not be within historic seasonal variation.	Suggest analyzing the rating criteria below and modifying the effects determination for Crooked Creek to medium to high, in that substantial flow diversions and changes in flow systems are likely to affect nearby uses or environments. High: Substantial flow diversions and changes in flow systems are likely to affect nearby uses or environments, the design is not likely to adequately protect nearby uses or environments for the expected range of conditions	Text added to reflect comment, and the potential effects on Crooked Creek changed to medium to high.	Partially addressed, text was changed to: "The effect of this flow reduction on Crooked Creek is expected to be of medium to high magnitude, in that it may or may not be within historical variation in the summer, but could have substantial effects on low flow during winter.	We suggest the following mitigation for minimum flows to reduce impacts on fish and aquatic resources: Regulating flows back to Crooked Creek should be considered in the design to adequately protect nearby habitats and environments for the expected range of conditions.	

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USFWS	3.5.3.2.1		average annual flow conveyed through the spillway to lower Snow Gulch would be approximately 933 gpm	Suggest analyzing the rating criteria and modifying the effects determination. This is an average annual flow. It is assumed the flow will be variable with flow peaks attenuated by the reservoir and at times flow may be zero when water use draws the reservoir level below the spillway. The impact therefore will be variable and at times will be high.	Text added to reflect comment.	Change acceptable.		
USFWS	3.5.3.2.1		It is assumed that the water treatment plant would operate into perpetuity. The average annual discharge of treated water from the ACMA pit lake to Crooked Creek after mine closure is estimated to be 3,311 gpm (7.3 cfs)	This statement implies supplies will be need after the life of the mine. Is there a barge schedule and onsite storage plan to supply, diesel and maintenance supplies for the operation of the pumps and treatment plant?	Supplies/fuel needed during post closure will be greatly reduced from operations. A detailed schedule and storage plan does not exist at this time.	Acceptable.		
WAQ 30 USFWS DEIS New Comment	3.13.3.2.1	3.13-87				New Comment DEIS	Suggest clarifying this information. Will there be water temperature changes associated with the	

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FISH 3 WAQ 30 MIT 24								Snow Gulch reservoir and spillway? Water temperature changes should be cross referenced and used in the analysis of impacts on Fish and Aquatic Resources in Chapter 3.13. We propose the following mitigation: The USACE should work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek.	
HYD 1	USFWS DEIS New Comment	3.5.3.2.1	3.5-62	...American Creek contributes about 3 to 24 cfs of flow to Crooked Creek... (summer monthly average, Section 3.5.2.1.2)			New Comment DEIS	Suggest revising this information. Add period of record dates to "(summer monthly averages, Section 3.5.2.1.2)" reference. Reference Table 3.5-5 specifically, not just the section.	
HYD 4 CLIM 2	USFWS DEIS New Comment	3.5.3.2.1	Table 3.5-25				New Comment DEIS	Suggest revising this information. PMP and PMF are based on synthetic 1940 to 2010 weather records; there is no discussion of uncertainty or range of	

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HYD 4 CLIM 2							values, or the effect of climate change on the PMP.	
HYD 7 USFWS DEIS New Comment	3.5.3.2.1	Fig 3.5-21				New Comment DEIS	Suggest revising this information. Figure 3.5-21 needs to be adjusted for Crooked Creek loss due to pit dewatering (applicable to all water balance diagrams).	
MIT 31 USFWS DEIS New Comment	3.5.3.2.1	3.5-83	Page 3.5-83 …the magnitude of direct and indirect impacts is anticipated to range from low to medium, but <u>would likely be up to a high magnitude in winter</u> or if a high hydraulic conductivity conditions exists. Page 3.5-85. However, <u>there would be no additional mitigation measures</u> to adjust Crooked Creek to its altered flow regime given that the magnitude of impacts to the channel is anticipated to be <u>low. Release of treated</u>			New Comment DEIS This is one example where the analysis does not lead to the conclusion and opportunities for mitigation to reduce impacts on the environment are not being implemented.	We propose the following mitigation: The USACE should work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek.	

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MIT 31				water from the water treatment plant during winter months was considered; however, it was determined that water would be needed for process water during the low flow winter months.					
MIT 31	USFWS DEIS New Comment	3.5.3.2.1	3.5-85	Release of treated water from the water treatment plant during winter months was considered…			New Comment DEIS	Recommend the following mitigation: To avoid water reduction in Crooked Creek between Snow Gulch and Anaconda Creek, the discharge point for treated water should be relocated higher in the watershed above the mine. If the water treatment plant cannot be used to regulate flows back to Crooked Creek during winter, consider the feasibility of creating a flow regulation reservoir, or possibly use Snow Creek for this purpose.	
HYD 8	USFWS DEIS New	3.5.3.2.1	3.5-99	The runway would be constructed on a ridge			New Comment DEIS	Suggest clarifying this information. Consider	

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HYD 8	Comment			in the upper Montana Creek watershed				the effects of fuel and other hazardous material storage for operation of the airstrip and the spill risk they present to Montana Creek/Iditarod River, and additional watershed outside the Crooked drainage.	
	USFWS 6	3.5.2.1.2		* Peak discharge occurs during the summer months in any given year, as roughly 65% of the average precipitation falls between June and September (BGC, 2011a).	Recommend the gauging effort be extended to capture peak precipitation. Looking at the USGS gage data on Crooked Creek, peak discharge typically occurs in mid-May, during break-up.	Text added to new Lower Crooked Creek section regarding USGS gauge data and peak discharge.			
MIT 31	USFWS DEIS New Comment	3.5.2.1.2	3.5-10	Snow Gulch… used as a contingency source of freshwater…			New Comment DEIS	Recommend including the following mitigation measure: Water should be discharged year round to Crooked Creek to reduce effects on system from stream flow reductions. The USACE should work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek.	

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MIT 31								Surface water would drain as natural flow variations over the spillway unless this water is used as a contingency source for mine processing. This means that during low flow years when Crooked Creek needs the water, the impact would be the greatest. This information should be cross referenced and used in the analysis of impacts on Fish and Aquatic Resources in Chapter 3.13.	
HYD 3	USFWS DEIS New Comment	3.5.2.1.2	3.5-9	Gauging Stations section			New Comment DEIS	Suggest revising the information in the gauging introductory paragraph. Because the gauging is only conducted during open water, the snowmelt peak is not captured which is usually the peak of the year.	
HYD 1	USFWS DEIS New Comment	3.5.2.1.2	3.5-9	Surface water hydrologic data collection sites vary from the surface water			New Comment DEIS	Suggest revising text as follows: Discharge is useful at water quality sampling sites to	

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HYD 1				quality monitoring sites because they are achieving different goals (SRK 2012c). …				calculate total load.	
HYD 1	USFWS DEIS New Comment	3.5.2.1.2	Table 3.5-4	Snow Gulch Minimum and Maximum Discharge at Station SNOW			New Comment DEIS	Clarify if information in Table 3.5-4 is from the gauge record or measured discharge. It does not coincide with peak flow from the USGS Crooked Creek gage.	
HYD 3	USFWS DEIS New Comment	3.5.2.1.2	3.5-10 to 22	<u>Gauging Stations</u>			New Comment DEIS	Please make it very clear that the gauging and analysis does not include the snow melt period and may not include the peak flow of the year.	
HYD 1	USFWS DEIS New Comment	3.5.2.1.2	Table 3.5-6	June avg. Discharge row - Average column			New Comment DEIS	Suggest clarifying this information. An average monthly discharge for June is given based on year of data. Change to NA.	
HYD 1	USFWS DEIS New Comment	3.5.2.1.2	3.5-15	In 2006, there was no flow recorded due to ice in the channel.			New Comment DEIS	Suggest clarifying if there was 0 cfs measured or no measurement was made.	
HYD 13	USFWS DEIS New Comment	3.5.2.1.2	3.5-17	…the data provide an indication of monthly discharge			New Comment DEIS	Suggest clarifying this information. The data provide two years'	

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HYD 13				characteristics during the open -water season.				worth of data for August and September flows. This is not long enough to make a general statement, could be used for a comparison with other stations during the same time period.	
HYD 3	USFWS DEIS New Comment	3.5.2.1.2	3.5-15	…shows the peak discharge occurring in mid-August,			New Comment DEIS	Suggest clarifying this information. There is no breakup/snowmelt peak data for this site and the USGS Crooked Creek gauge was not running to show that this was the peak of the year.	
HYD 13	USFWS DEIS New Comment	3.5.2.3.2	3.5-57 and Table 3, Appendix G	…it was determined that the best method for estimating peak flows was through the use of USGS regional regression equations (CH2MHILL 2011a, Curran et al. 2003).			New Comment DEIS	Suggest clarifying this information. The regional regression equations from Curran et al. 2003 have a range of applicability for the variables used. Outside of these ranges the error is undefinable. Region 4, Cook Inlet, lower end of the applicable range for drainage area variable is 1.07 square miles. For Region 6, Yukon/Kuskokwim, it is	

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HYD 13							1.29 square miles.	
TRAN 1 USFWS	3.5.3.2.2		primary cause of bank erosion along the lower Kuskokwim River is related to thermoerosional niching associated with high water levels. Therefore, based on this evaluation, it was concluded that barge-induced waves would not significantly impact Kuskokwim River bank erosion rates	One mechanism for bank erosion by waves is removal of loose material at the base of the bank, making the bank more susceptible to mechanical erosion and thermoerosional niching.	Text added to reflect comment.	Change acceptable, see additional comment.	Suggest the summery level approach is avoiding a hard look at the combinations of multiple minor, moderate, or major stressors that often result in cascading effects on resources. • Suggest combining analysis under the Barging section 3.5.3.2.2 to the Chapter on Transportation 3.23. • Suggest analyzing the effects of barging on Kuskokwim River geomorphology. • Address interrelated effects of sedimentation, aquatic impacts, fish, subsistence, other vessels (transportation) etc. in appropriate resource Chapters.	
BARG 8 USFWS	3.5.3.2.2		The potential for bank erosion from propeller wash and scour is	This section needs to expand the analysis of increased bank erosion.	Text added to reflect comment.	Not addressed adequately.	Suggest analyzing direct and indirect effects. The project	

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BARG 8				discussed in the following section. When the tugs are close to shore, it is possible that the propeller jet could cause erosion/scour of the river banks, an effect that is not likely to return to normal after spring breakup or high flows.	Cumulative effects of waves from boat wake should be analyzed.	Boat wake effects are <u>addressed in previous section under "Wave-Induced Bank Erosion</u>."		related effects of erosion from boat wake needs to be analyzed as an additive effect to baseline erosion in addition to effects from sedimentation caused by scour erosion from tugs (Page 3.5-107).	
BARG 10	USFWS DEIS New Comment	3.5.3.2.2		…propeller wash from tugs at the new and existing facilities could result in increased bed scour in the immediate vicinity of the docks…			New comment DEIS and compliment provided: USFWS suggests more factual descriptions of effects. For example, propeller wash from tugs at the new and existing facilities could result in increased bed scour in the immediate vicinity of the docks.	Suggest the direct and indirect effects of propeller wash on fish, subsistence users, and changes in river geomorphology be analyzed in more detail.	
FISH 2	USFWS DEIS New Comment	3.5.3.2.2	Table 3.5-29	≥ 73,000 cfs Cargo and fuel requirements could be delivered within a <u>60-day period under</u> average flow conditions.			New Comment DEIS	Suggest clarifying this information. How cargo and fuel requirements could be delivered within a 60-day period under average flow conditions, as	

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FISH 2								suggested in the text. Would there be more barge passes per day on the Kuskokwim River?	
BARG 8	USFWS DEIS New Comment	3.5.3.2.2	3.5-108	…scour from the proposed tugs would be measurable above baseline conditions and could represent a potential change to the local flow system. The proposed project would add roughly twice as many barge trips (about 122 per year) to the current barge traffic (about 68 per year), and would erode 1 to 2 more parallel troughs in shallow water with the proposed 4-propeller configuration than existing tugs on the river would, with scour depths estimated to be about one-half foot deeper than those from existing tugs. With time and distance from the proposed tugs, as well as distance from the			New Comment DEIS	Suggest further analysis of direct and indirect effects. Describe potential environmental effects on fish and aquatic resources, and on long-term changes in river geomorphology.	

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BARG 8				shallow critical areas, turbidity would decrease to background levels due to settling and dispersion, and the depth of erosion would decrease to near baseline levels.					
HYD 11	USFWS DEIS New Comment	3.5.3.2.2	3.5-105	Wave-Induced Bank Erosion Potential maximum wave heights from barge traffic were calculated using both the PIANC (1987) and Sorenson and Weggel (1984) equations (BGC 2015m). Wave heights during upstream travel were calculated to be between 0.05 and 0.22 feet (Table 3.5-30), and downstream travel wave heights were calculated to be between 0.34 and 0.74 feet (Table 3.5-31) due to increased barge speed. As a percentage of river tractive energy, barge-generated wave energy would vary			New Comment DEIS	Suggest further analysis of direct, indirect, and cumulative effects. Wave induced bank erosion should be analyzed in addition to the erosion that is already occurring in the area as cumulative effects.	

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HYD 11				between 3 and 12 percent. Furthermore, the primary cause of bank erosion along the lower Kuskokwim River is related to removal of loose material at the base of the bank, making the bank more susceptible to mechanical erosion and thermoerosional niching associated with high water levels.					
BARG 11	USFWS DEIS New Comment	3.5.3.2.2	3.5-104	Wave-Induced Bank Erosion Although barge-induced bank erosion could increase bank erosion above natural erosion rates, a study of the wave height and energy generated from barge traffic (BGC 2007c, 2015m) indicates that the increase due to project barge traffic is likely to be small.			New Comment DEIS	Suggest revising this information. Analysis presented makes assumptions based on reports from BGC that had a number of uncertainties: the calculations for wave predictions were based on the navigation channel located in the center of the river, but that is not usually the case. The deepest part of the channel is rarely located in the center. According to cross sections provided in the River Barge Fleet Design and Operations	

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BARG 11								Addendum No 1 (AMEC 2014), the navigation channel varies to as close as about 50 feet from the bank to follow the deeper channel. Suggest using collected data to provide more accurate wave predictions.	
BARG 11	USFWS DEIS New Comment	3.5.3.2.2	3.5-105	**Table 3.5-31: Maximum Wave Heights for Empty Return Voyage**			New Comment DEIS	Suggest revising this information. Voyages downstream will not be empty. The proposed action is to ship mercury downstream. Calculate downstream vessel speed with vessels loaded with mercury and other planned downstream cargo. Recommend using the data presented in other reports to provide more accurate wave predictions.	
BARG 11	USFWS DEIS New Comment	3.5.3.2.2	3.5-105 Table 3.5-13	As a comparison to baseline conditions, for <u>a typical twin or triple screw tug</u> currently			New Comment DEIS	Suggest clarifying this information. This appears to say, a typical tug under these	

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			operating on the river at 75 percent of maximum power (about 300 hp /propeller), the depth of erosion in shallow water (3 - foot under-keel clearance) would be about 3 feet per propeller, or about ½-foot less than the tug size proposed by Donlin Gold.				circumstances would create 3 foot deep scour troughs where Donlin tugs would create 3.5 foot deep scour troughs. If that is case, describe the environmental effects of that increase. Use clear and plain language to describe environmental effects.	
USFWS DEIS New Comment	3.5.3.2.2	3.5-110	The proposed project would add roughly twice as many barge trips (about 122 per year) to the current barge traffic (about 68 per year), and would erode 1 to 2 more parallel troughs in shallow water with the proposed 4-propeller configuration than existing tugs on the river would, with scour depths estimated to be about one-half foot deeper than those from existing tugs. – With time and distance from the proposed tugs, as well as			New Comment DEIS	The analysis does not disclose a clear and transparent depiction of interrelated consequences to assess direct, indirect, and cumulative effects, and practical methods to avoid or minimize adverse impacts on fish, wildlife, and subsistence resources Suggest further analysis of interrelated effects on these resources. How would prop scour affect fish, aquatic habitat, and will there be changes in river geomorphology?	

FISH 6

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FISH 6				distance from the shallow critical areas, turbidity would decrease to background levels due to settling and dispersion, and the depth of erosion would decrease to near baseline levels				Describe interrelated consequences to assess cumulative effects and practical methods to avoid or minimize adverse impacts on fish and subsistence resources.	
HYD 3	USFWS DEIS New Comment	3.5.2.1.3	Table 3.5-13	Water Balance Calibration Results			New Comment DEIS	Suggest revising this information. Table 3.5-13 is missing snowmelt periods.	
HYD 1	USFWS DEIS New Comment	3.5.2.2.3	3.5-41	Water depth in the main channel of the Kuskokwim River depends on <u>local weather</u> conditions (AMEC 2014)			New Comment DEIS	Suggest clarifying this information. With a drainage area of 60,500 square miles and channel morphology variations affecting depth in a reach, what is the definition of "local weather conditions" that can affect water depth in a reach of the Kuskokwim River?	
HYD 1	USFWS DEIS New Comment	3.5.2.2.3	Table 3.5-22	Kuskokwim River Flood Magnitude and Frequency at USGS Crooked Creek Gauging Station			New Comment DEIS	Suggest revising text as follows, "...USGS Kuskokwim River at Crooked Creek Gauging Station."	
HYD 13	USFWS DEIS New	3.5.2.2.3	Table 3.5-22	Discharge (cfs) values			New Comment DEIS	Suggest revising this information. The	

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HYD 13	Comment							proper discharge to use from Table 4 in Curran et al. 2003 is the weighted peak stream flow (for this station with 47 peaks it does not make a difference). Curran et al. (2003) is being superseded by: Curran, J.H., Barth, N.A., Veilleux, A.G., and Ourso, R.T., 2016. Estimating flood magnitude and frequency at gauged and ungauged sites on streams in Alaska and conterminous basins in Canada, based on data through water year 2012: U.S. Geological Survey Scientific Investigations Report 2016–5024, 47 p., http://dx.doi.org/10.3133/sir20165024.	
HYD 1	USFWS DEIS New Comment	3.5.2.2.3	3.5-46	...the most substantial of which was between Akiachak and Tuluksak. Very little bank erosion...			New Comment DEIS	Suggest clarifying this information. Quantify "most substantial" and "very little"	
BARG 9	USFWS DEIS New Comment	3.5.2.2.3	Figure 3.5-15				New Comment DEIS	Suggest clarifying this information. At the scale of the map and	

BARG 9

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							with the colors used for erosion and deposition, it is difficult to see the areas of erosion versus deposition.	
USFWS	3.5.3.2.3		Thalweg depths have been determined based on site-specific calculations of the 100-year event scour depth at each crossing	If the pipe will be left in the ground after closure than a 100-yr design event may not be adequate.	Potential effects of a larger event post closure discussed in the pipeline closure section.	Did not check pipeline closure section to ensure change was adequate.		
USFWS	3.5.3.2.3		• Wattles, silt fences, brush berms, or rolled erosion control products would be installed parallel to the shoreline across the entire construction ROW to intercept sediment before it enters the receiving water body;	Erosion control methods are not 100% effective; they are dependent on proper installation and constant maintenance.	Text edited to reflect effectiveness of erosion control methods. Additional maintenance of erosion control methods discussed under Operations as well as in Section 3.2.3.2.4 (reference added to text as well).	Change acceptable		
USFWS	3.5.3.2.3		Pipeline construction would not result in long-term alterations to stream flow, stream profile, or structural components of streams and other water bodies	Please provide additional analysis as there will likely be permanent changes to overland/ shallow groundwater flow across/along the	Text added.	Change acceptable		

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			crossed by the pipeline.	construction ROW due to soil compaction, trench backfill material and vegetation changes.				
USFWS 7	3.5.2.1.4 3.5.2.2.1		3.13.1.1.2 * SURFACE WATER USE 3.13.1.1.3	Recommend this section be described in more detail. There is not enough discussion to evaluate the use of the methods in the reference, Curran et al. Estimates of standard error of prediction, confidence limits and equivalent years of record should be reported.	The standard error of prediction and equivalent years of record added to Table 3.5-13. The magnitude of the standard error of prediction provides an indication of the variability associated with predictions made with the equations. Computing the confidence limits was not felt to be necessary for the purpose of the EIS.	See new comments on surface water.		
HYD 13 USFWS DEIS New Comment	3.5.2.1.4	3.5-27	…using USGS regression equations developed for Alaska (Curran et al. 2003)…			New Comment DEIS	Provide corrections: The region 6 equations have an applicable range, 1.29 - 321,000 square miles for the drainage area variable. For basins out of that	

HYD 13

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							range the error is undefinable. Unnamed Creek, Omega Gulch, Lewis Gulch, and Queen Gulch are below the applicable range for the equations. Curran et al. (2003) is being superseded by Curran, J.H., Barth, N.A., Veilleux, A.G., and Ourso, R.T., 2016, Estimating flood magnitude and frequency at gaged and ungauged sites on streams in Alaska and conterminous basins in Canada, based on data through water year 2012: U.S. Geological Survey Scientific Investigations Report 2016–5024, 47 p., http://dx.doi.org/10.3133/sir20165024.	
USFWS	3.5.3.2.5		The implementation of Alternative 2 would have minor to moderate impacts on surface water hydrology in the proposed project area.	Suggest the analysis may result in a determination that there will be high impacts associated with surface water in the proposed project area.	Agree that there could be high magnitude effects (such as the mine component), however, this	Change acceptable		

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					does not necessarily change the overall rating of moderate, as given in 3.0.4.2.			
BARG 9 USFWS DEIS New Comment	3.5.2.3.6	3.5-59	Stream bank erosion is caused by a change in stream morphology from an increase in stream flow, usually during flood events.			New Comment DEIS	Suggest clarifying this information. Check for validity. Does this mean to imply 90 streams along the corridor that show signs of erosion are changing morphology type due to increasing stream flow? This statement is a vague generalization of one possible driver of bank erosion and not needed as an introduction to this section introducing/summarizing Table 3, Appendix G.	
MIT 31 USFWS DEIS New Comment	3.5.12	3.5-9	Base flows in these streams are the result of groundwater discharge, and higher flows are a result of precipitation events, as well as snowmelt during spring break up.			New Comment DEIS	Water discharged year round to Crooked Creek could reduce effects on system from stream flow reductions. We suggest the following mitigation measures: Suggest the USACE	

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MIT 31								work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek.	
MIT 31	USFWS DEIS New Comment	3.5.12	3.5-9	Minimal discharge measurements have (NOT) been taken during the winter period due to the formation of thick channel ice in Crooked Creek and its tributaries (BGC 2011f).			New Comment DEIS	Suggest clarifying this information. If discharge measurements have (NOT) been taken during the winter period due to the formation of thick channel ice in Crooked Creek, then it is advisable to consider how water will be discharged during freezing conditions (e.g. conditions that mimic groundwater upwelling) to maintain winter flow rates. We propose the following mitigation measure: Winter discharge measurements at the Crooked Creek gauging stations should continue to be monitored.	

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USFWS 9	3.5.		3.13.1.1.4 * SURFACE WATER HYDROLOGY	This section needs to be much more detailed. There is not enough discussion to evaluate the use of the methods in Curran et al. Estimates of standard error of prediction, confidence limits and equivalent years of record are not reported.	The standard error of prediction and equivalent years of record added to Table 3.5-13. The magnitude of the standard error of prediction provides an indication of the variability associated with predictions made with the equations. Computing the confidence limits was not felt to be necessary for the purpose of the EIS.	Acceptable		
USFWS 5	3.5-10		* Steam Flow	Recommend more research and studies if necessary to estimate flow during winter and spring melts periods. Spring break-up and winter are two very important time periods in terms of stream flow. Break-up is typically the peak discharge and it is	Stream flow and stage monitoring during winter and spring break-up conditions added to mitigation section.	See new comments on surface water.		

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					the peak stage due to ice in the channel. Winter low flow is very important ecologically.				
	CHAPTER 3.6: GROUNDWATER HYDROLOGY								
NEP 6	USFWS DEIS New Comment	3.6		General Comment on the entire Chapter			New Comment DEIS	Recommend the entire Chapter on ground water be revised and that the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter.	
GRD 2	USFWS DEIS New Comment	3.6.1.2.1; Affected Environment, Hydrogeological Setting & Data Sources – Mine Site	3.6-4 – 3.6-5				New Comment DEIS	Suggest the Groundwater Hydrology section 3.6 be revised. We our concerned about potential groundwater impacts, see details below.	
GRD 2	USFWS DEIS New Comment	3.6.1.2.1; Affected Environment, Hydrogeological Setting & Data	3.6-4 – 3.6-5				New Comment DEIS	Suggest the Groundwater Hydrology section 3.6 be revised. Availability of groundwater level/head	

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GRD 2	Sources – Mine Site						measurements and consequences for the development of the conceptual hydrogeologic model upon which the effects analyses for groundwater are currently biased. Available groundwater level/head measurements have been interpreted to suggest that groundwater flow in the vicinity of the mine site is largely topographically-controlled under pre-project conditions (locally downhill and toward local streams/drainages) at all depths at which the project may have groundwater-related effects. The key component of the conceptual hydrogeologic model on which the effects analyses for groundwater (and estimates of pit	

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GRD 2							inflow/dewatering rates) have been biased [Section 3.6.1.2.1, DEIS; 2014 and earlier Conceptual Hydrogeologic Model reports; 2014 Numerical Hydrogeologic Model report]. However, information provided in the 2007, 2011, and 2014 Conceptual Hydrogeologic Model reports (monitoring well and piezometer specs) indicates that the groundwater level/head measurements used to develop this conceptual model (and current estimates of pit inflows/dewatering rates) are: 1) largely from wells/piezometers completed at depths of < 400 ft bgs, which corresponds to less than the upper 25% of the planned depth of	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 2							the pit; 2) sparse at greater depths (≥ 400 ft bgs); i.e., limited to the immediate area of the proposed pit, a maximum of 10 measurements (during any given period), and a maximum depth of 613 ft bgs which corresponds to roughly the upper 1/3 of the planned depth of the pit (with the exception of two collocated measurements at ~800 ft bgs); and 3) unavailable (or unreported) at ≥ ~800 ft bgs, depths corresponding to the lower 55% of the planned pit and portions of the groundwater flow system that underlie the future pit and are relevant to the groundwater effects analyses. A cursory evaluation of the limited	

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GRD 2							groundwater level/head measurements reported at > 400 ft bgs (~10), confirms that groundwater flow at depths of 600, and perhaps 800 ft bgs, like flow at shallower depths, is largely topographically-controlled under pre-project (current) conditions. Below this depth, however, no groundwater level/head measurements have been reported. However the conceptual hydrogeologic model developed for the project, on which the effects analyses for groundwater are ultimately based, assumes that this condition persists to all depths at which the project may have groundwater-related effects (up to and in excess of ~1,800 ft	

GRD 11

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GRD 2							bgs, the planned depth of the pit). No groundwater level/head measurements have been analyzed to determine if local (topographically-controlled) flow transitions into the regional groundwater flow system at such depths – creating the potential for offsite transport of contaminants at depth in the subsurface during certain stages of the formation of the pit lake and thereafter under the current closure plan (addressed in a later comment). Moreover, if regional groundwater flow is encountered at depths intersected by the pit or affected by pit dewatering, then the areal extent of dewatering-induced drawdown, areal extent of reduced	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 11							streamflows, and inflows to the pit (required dewatering rates) may be significantly underestimated by the current NEPA analyses. Data should be obtained and analyzed to address this critical deficiency in the conceptual hydrogeologic model and groundwater effects analyses. Static (pre-test) head measurements from packer tests conducted in 13 deep holes at maximum depths of ~800 to 1,500 ft bgs should be available (according to the 2007 Conceptual Hydrogeologic Model report) and may be useful in detecting any regional flow encountered at ≤ 1,500 ft bgs; but would not be sufficient to	

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GRD 11								characterize the regional gradient (if present) since collected over a series of years (2004 - 2007), and would not provide information about conditions at the depth of the lower ~20% of the planned pit (≥ 1,500 ft bgs), or greater depths at which dewatering impacts will occur. Regional groundwater flow should be identifiable as head or groundwater level measurements that are relatively uniform (in space) and roughly southwesterly given the topography of the overall region; that is, toward the Kuskokwim River and extensive marshlands further southwest.	
GRD 2	USFWS DEIS New Comment	3.6.1.2.1; Affected Environ ment, Hydroge ological	3.6-4 – 3.6-5				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	Availability of aquifer parameter estimates based on hydraulic field tests and consequences for the	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 2	Setting & Data Sources – Mine Site						development of the conceptual hydrogeologic model upon which the effects analyses for groundwater are currently biased: Available aquifer parameter estimates from hydraulic field tests have been interpreted as sufficient to represent aquifer properties at the scale needed to assess the potential groundwater-related effects of the project – a key component of the conceptual hydrogeologic model on which the groundwater effects analyses (and estimates of pit inflows/dewatering rates) have been based [Section 3.6.1.2.1, DEIS; 2014 and earlier Conceptual Hydrogeologic Model reports; 2014 Numerical Hydrogeologic Model	

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GRD 2							report]. However, information provided in the 2007 and 2014 Conceptual Hydrogeologic Model reports (descriptions of the available hydraulic tests and resulting parameter estimates) indicates that analytical aquifer parameter estimates used to develop the conceptual model are based: 1) largely on packer tests in bedrock units, and slug tests in surficial deposits, which due to the scale of the tests (volumes of material stressed) represent the primary permeability of the tested units and only limited (localized) secondary permeability; and 2) sparse multi-well multi-day pumping tests, a total of 6 at	

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GRD 2							5 locations across the mine site, concentrated in or just outside the westernmost portion of the planned pit at depths ≤ 800 ft; most conducted at depths of less than or equal to ~500 ft, and many at depths ≤ 150 ft. Seven single-well pumping tests have also been performed (4 in the vicinity of the westernmost portion of the planned pit, 3 near or south of Anaconda Creek) but were not more than a few hours to minutes in duration and conducted at pumping rates of ≤ 20 gpm (most < 5 gpm). The hydraulic field tests performed to date are either too small in scale (packer, slug, and small single-well pumping tests),	

GRD 2

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							or too few in number and limited in areal and vertical distribution (the multi-well multi-day pumping tests), to characterize the aquifer properties of major hydrogeologic units at the mine site at the scale needed to assess the potential groundwater-related effects of the project (approximately the scale of a multi-well multi-day pumping test). There is also a problem with the scale. Numerous estimates of hydraulic conductivity based on packer and slug tests are available for the site, but not representative of the conductivity of the major hydrogeologic units at the scale needed (the scale of grid blocks used in the numerical	

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GRD 2							groundwater flow modeling and scale at which pit inflows / dewatering rates have been estimated), which is approximately the scale of a multi-well multi-day pumping test. Nor can these conductivity estimates be "scaled up", which is fundamental, as well as supported by the results of hydraulic tests performed at the site. Estimates of hydraulic conductivity from the available packer and slug tests underestimate the conductivity of important hydrogeologic units, particularly bedrock units, at the scale at which potential groundwater-related effects should be evaluated, and consequently should not be used to constrain the	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 2							calibration of the numerical groundwater flow model or estimate pit inflows / dewatering rates. No large-scale hydraulic field tests (multi-well multi-day pumping tests) are available for depths > 800 ft bgs (which correspond to the lower 55% of the planned depth of the pit and greater) that can be used to complete the development of the conceptual hydrogeologic model. Estimates of hydraulic conductivity reported for different bedrock types (e.g., GWK, GWK/SHL, GWK/SLT, SHL/INT/GWK, SHL, etc.) based on pumping tests (the needed scale) vary 2 to 3 orders of magnitude [Table 7,	

GRD 2

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							2014 Conceptual Hydrogeologic Model report] and do not appear to be distinguishable by rock type. The hydraulic field tests performed to date are not sufficient to differentiate the conductivity of various bedrock types at the scale needed for the effects analyses. This notwithstanding, individual estimates of hydraulic conductivity (based on a variety of hydraulic tests) have been averaged by rock type in an effort to estimate the mean conductivity of each major lithology (and combinations thereof). Unfortunately, conductivity estimates were averaged without regard for the scale of hydraulic tests, making these results unreliable.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 2							Estimates of the mean conductivity of various rock types, as well as different sediment types, provided in Tables 4 and 5 of the 2014 Conceptual Hydrogeologic Model report should not be used to constrain the calibration of the numerical groundwater flow model or estimate pit inflows/dewatering rates. Individual estimates of bedrock conductivity (based on a variety of hydraulic tests) have been averaged according to the depth of test intervals to conclude that the hydraulic conductivity of bedrock decreases significantly with depth (one order of magnitude from the first 300 ft to the next, another order of magnitude below ~600 ft. Conductivity	

GRD 2

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							estimates were averaged without regard for either rock type or the scale of hydraulic tests, making this result unreliable. Moreover, no such trend (significant/consistent depth decay) is evident in the numerous conductivities estimated from packer tests [values reported in Table 6 of the 2007 Conceptual Hydrogeologic Model report]. If the hydraulic conductivity of bedrock is erroneously assumed to decay with depth, particularly given the lack of conductivity estimates based on large-scale hydraulic tests at > 800 ft bgs, then the areal extent of dewatering-induced drawdown, areal extent of reduced streamflows, inflows	

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GRD 2							to the pit (required dewatering rates), and potential for offsite transport of contaminants at depth in the subsurface is likely to be significantly underestimated by the current NEPA analyses. The current conceptual hydrogeologic model reflects that heterogeneities in the hydraulic conductivity of bedrock are largely attributable to rock type (lithology) and depth [2014 Conceptual Hydrogeologic Model report]. Upon inspection, no clear trends are evident with respect to either rock type or depth in numerous conductivities estimated from packer tests [2007 Conceptual	

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							Hydrogeologic Model report, Table 6], as previously noted. More likely, the documented heterogeneities are due to secondary structures at the scale of packed-off test intervals (foliation and individual fractures), which suggests that secondary structures, even at the scale of a packer test, contribute significantly to the conductivity of bedrock units. By extension, fault gouge and/or damaged (fracture) zones associated with any number of faults mapped in the vicinity of the planned pit [Appendix A of the 2014 Conceptual Hydrogeologic Model report] can significantly affect the propagation of dewatering-induced drawdown, pit inflows/dewatering	

GRD 2

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							rates, any offsite transport of contaminants at depth in the subsurface, and capture of water from streams (at discrete locations). To date, however, faults have been excluded from the conceptual (and numerical) hydrogeologic models as potential hydrologically significant structures; including faults for which extensive fracture/damaged zones have been documented in core from the site [photos, Appendix A]. Given the infeasibility of conducting sufficient large-scale hydraulic field tests (particularly at depth) to elucidate the role of these large-scale structures, the focus should be on obtaining sufficient additional groundwater level/head data	

GRD 2

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GRD 2								(which can be obtained at depth) to explore and account for the hydrologic effects of fault gouge/damaged zones through a sufficiently detailed calibration of the numerical groundwater flow model.	
GRD 1	USFWS DEIS New Comment	3.6.1.3.2; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Groundwater Flow Systems – Mine Site	3.6-8				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	Other issues with the conceptual hydrogeologic model upon which the effects analyses for groundwater are currently based: Information provided about the locations of stream gages (including continuous versus intermittently gaged sites) is insufficient to evaluate what stream reaches are gaining, losing, or neither in the vicinity of the mine site under current (pre-project) conditions; or to verify that the reach of	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 1								Crooked Creek adjacent to the planned pit is presently a gaining reach. Specifically, there do not appear to be sufficient gages on Crooked Creek to identify gaining/losing reaches based on the locations of gaging stations depicted in Figures 7-9 of the 2014 Conceptual Hydrogeologic Model report. Given the importance of establishing baseline conditions, as well as the necessity of specifying streams as sources/sinks during calibration of the numerical groundwater flow model, the conceptual model should be revised to clarify this important information.	
GRD 2	USFWS DEIS New Comment	3.6.1.3.2; Affected Environ ment,	3.6-8				New Comment DEIS Suggest the Groundwater	The current conceptual hydrogeologic model for the mine site [2014	

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GRD 2	Groundwater Occurrence & Aquifer Characteristics, Groundwater Flow Systems – Mine Site					Hydrology section 3.6 be revised.	Conceptual Hydrogeologic Model report] provides no description of the configuration of groundwater flow below the water table (pre-project conditions), specifically at depths greater than 600 to ~800 ft bgs, as described in earlier comments; notwithstanding the certainty of groundwater-related project effects at depths of 1,800+ ft (the planned depth of the pit and pit dewatering). This fundamental deficiency in the conceptual hydrogeologic model should be remedied prior to the construction/calibration (or reconstruction/ recalibration) of the numerical groundwater flow model used to perform the groundwater effects analyses.	

GRD 11

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USFWS DEIS New Comment	3.6.1.3.2; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Groundwater Flow Systems – Mine Site	3.6-8				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model [2014 Conceptual Hydrogeologic Model report] includes no discussion or recognition of the possible presence and/or implications of regional groundwater flow at depths at which the project is likely or certain to have groundwater-related effects, ~1,800+ ft bgs. One of several implications of the project (pit) intersecting the regional groundwater flow field is the potential for offsite transport of contaminants at depth in the subsurface during certain stages of the formation of the pit lake and thereafter under the current closure plan (addressed in comments to Section 3.6.2.2.1). Given the clear presence of	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 11							regional groundwater flow at some depth in the area of the mine site/pit, and its potential implications for groundwater flow in excess of current estimates into the area of the site (and pit), and offsite transport of contaminants, this deficiency in the conceptual hydrogeologic model should be resolved.	
GRD 11 USFWS DEIS New Comment	3.6.1.3.2; Affected Environ ment, Groundw ater Occurren ce & Aquifer Characte ristics, Groundw ater Flow Systems – Mine Site	3.6-11				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model [2014 Conceptual Hydrogeologic Model report] includes no discussion of locations where boundary conditions can be defined over the full range of relevant depths for the purposes of simulating groundwater flow in the vicinity of the mine site and evaluating the response of the system to dewatering	

GRD 11

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							and other project activities; i.e., definable/physically-tenable boundary locations and conditions in the vicinity of the mine site. The 2014 Conceptual Hydrogeologic Model report states only that "Groundwater enters the system as recharge from precipitation and snowmelt and leaves the system at [creeks, gulches, and low lying areas] and via evapotranspiration." This implies that groundwater "no-flow" conditions exist at all depths at which the project may have groundwater-related effects (≥ 1,800 ft bgs) at a combination of locations that are implied to surround the entire mine site (but are so far largely undefined), which is physically untenable.	

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GRD 11							Any additional information provided in this regard is limited to Figure 31 of the 2014 Conceptual Hydrogeologic Model report, which suggests that Crooked Creek acts as a groundwater "no-flow" boundary at all depths of interest (on the west), including 1,800+ ft bgs, which is again physically untenable. No clear hypothesis has been advanced concerning the locations of definable/defensible boundaries for groundwater flow north, east, and south of the mine site to depths of 1,800+ ft bgs (which additionally must be sufficiently distant from the pit to be utilized during predictive numerical simulations of pit dewatering). Nor has	

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GRD 11							any rationale been provided for conditions that can be prescribed at the bottom (base) of the numerical flow model, or the elevation at which the base of the flow model should be defined. Given the significant impact of lateral boundary locations and conditions on the results of the groundwater effects analyses, this deficiency must be remedied before the numerical groundwater flow model is constructed/calibrated (or reconstructed/ recalibrated), if the analyses are to provide a useful and defensible assessment of the groundwater-related effects of the project.	
GRD 17 USFWS DEIS New	3.6.1.3.2; Affected	3.6-11				New Comment DEIS	Whereas the current conceptual	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
Comment	Environment, Groundwater Occurrence & Aquifer Characteristics, Groundwater Flow Systems – Mine Site					Suggest the Groundwater Hydrology section 3.6 be revised.	hydrogeologic model for the mine site [2014 Conceptual Hydrogeologic Model report] includes descriptions of precipitation, potential evapotranspiration and sublimation rates, and extensive descriptions of groundwater temperatures and permafrost (the latter extending to a reported ~14 ft bgs which corresponds to less than the upper 1% of the planned depth of the pit), it includes no information that can be used to constrain estimates of groundwater recharge during the construction/calibration of the numerical groundwater flow model – either its rates or factors affecting its spatial and temporal distribution. Please revise/update the current hydrogeologic conceptual model to	

GRD 17

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GRD 17							include any available information, or the lack thereof, regarding this critical component of the site's hydrogeology (which significantly effects the calibration of the numerical flow model and subsequent analyses). Some of this information has been provided in the description of the numerical model, but not as part of the conceptual model.	
GRD 4 USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity & Specific	3.6-12				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model [2014 Conceptual Hydrogeologic Model report] reflects conclusions concerning the hydraulic conductivity of various sedimentary bedrock formations defined and delineated in detail by the Dolin Gold 3-D geologic framework model (for the immediate area of the planned pit), which was developed to support resource exploration.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 4	Storage – Mine Site						Per an earlier comment, the hydraulic field tests performed to date are not sufficient to differentiate the conductivity of basic rock types (e.g., greywacke, shale, siltstone, and broadly speaking intrusive rocks), and are likewise insufficient to differentiate the conductivity of particular sedimentary formations identified in the vicinity of the planned pit ("mid greywacke", "mid shale", "basal greywacke" versus "main greywacke", "basal greywacke", "upper greywacke" and some "other shale" units inferred to be "basal shale", "main shale", and "upper shale"). Whereas these conductivities may be estimatable as part of the calibration of the numerical model	

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							using PEST, they cannot be estimated based on the available hydraulic tests. Please revise the conceptual hydrogeologic model accordingly.	
USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity & Specific Storage – Mine Site	3.6-12				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	Section 3.6.1.3.3 suggests (as does the 2014 Numerical Hydrogeologic Model report) that all bedrock in the vicinity of the mine site, sedimentary rocks and intrusive dykes, sills, and other intrusive bodies alike, should be considered a single hydrogeologic unit for the purposes of these groundwater effects analyses. This appears to be an outcome of the limitations of the available hydraulic test and groundwater level/head data. No physical rationale is provided for assuming that the primary and secondary permeability of Kuskokwim Group	

GRD 4

GRD 4

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GRD 4								sedimentary rocks and intrusive rocks are indistinguishable. This "lumping" may have a significant effect on the outcome/quality of the groundwater effects analyses. Efforts should be made to remedy this deficiency (with sufficient additional groundwater level/head calibration data and recalibration of the numerical flow model).	
GRD 4	USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity &	3.6-12				New Comment DEIS. Suggest the Groundwater Hydrology section 3.6 be revised.	As part of the development of the current hydrogeologic conceptual model [2014 Conceptual Hydrogeologic Model report], individual estimates of bedrock conductivity have been grouped and averaged as a function of drill hole collar elevation, for which there is no apparent physically basis; these values are also averaged without	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 4	Specific Storage – Mine Site						regard to rock type or the scale of hydraulic tests, compromising their utility.	
GRD 3 USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity & Specific Storage – Mine Site	3.6-12				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	Numerous faults identified in the area of the planned pit (confirmed as part of the most recent update to the 3-D fault model) have been excluded from the current conceptual hydrogeologic model (and subsequent groundwater effects analyses) based on a lack of evidence of their hydraulic influence/character in the available hydraulic test and groundwater level/head data, which are sparse (particularly with respect to their vertical extent) – addressed in earlier comments. At the same time, the developers of the conceptual model acknowledge that zones of enhanced *or* reduced hydraulic	

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GRD 3							conductivity may be associated with any particular fault (actually both – not mentioned); and specifically that increased fracture intensity, zones of disintegrated rock, and silt/clay gouge have been documented at the locations of major faults in drill core in the area of the planned pit. They moreover argue that sensitivity analyses performed with the numerical groundwater flow model, for which there are sparse/inadequate groundwater level/head calibration data, support their conclusion that faults identified in the pit area, and by extension elsewhere in the vicinity of the mine site, have "[no] significant control on groundwater flow".	

Donlin Gold Mine DEIS
DEIS – Cooperating Agency Review through April, 2016
USFWS Comment Response Matrix

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GRD 3							The omission of faults as potentially hydrologically significant structures from the current conceptual hydrogeologic model is poorly supported, physically-untenable (given direct observations of fault gouge and major fault damaged/fracture zones in core), and based primarily on sparse available hydraulic field observations which cannot be reasonably expected to reveal the hydraulic character of these discrete structures, regardless of scale. Due to the potential effect of this omission on the results of the groundwater effects analyses, this deficiency should be remedied; particularly in the case of faults which are known to be of similar extent	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 3								and depth as the proposed open pit (which are acknowledged to exist). Sufficient groundwater level/head measurements should be obtained to evaluate the role/effect of these potentially hydrologically significant structures through the calibration (recalibration) of the numerical groundwater flow model.	
GRD 3	USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters:	3.6-13				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model for the mine site includes little discussion of faults that have been identified outside the footprint of the planned pit [text of the 2014 Conceptual Hydrogeologic Model report]. Nor does the updated fault model	

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GRD 3	Hydraulic Conductivity & Specific Storage – Mine Site						(Appendix A of the report) appear to include a complete description of known faults in the area of American Creek (location of the future waste rock facility); or a description of known faults in the area of Anaconda Creek (the location of the future tailings facility, where surficial deposits are particularly thin per Figure 4 of the main report, a maximum of ~3.5 ft). Given that fault gouge and fault damage/fracture zones may have a significant effect on groundwater flow outside (but in the vicinity of) the planned pit, and in the areas of the future waste rock and tailings facilities (as is the case at many mine sites), the current hydrogeologic conceptual model and	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 3								groundwater effects analyses should be revised to include this important information.	
GRD 3	USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity & Specific Storage – Mine Site	3.6-12				New Comment DEIS Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model [2014 Conceptual Hydrogeologic Model report] should be revised to include a discussion of the potential hydrologic significance of large-scale folds identified in the vicinity of the mine site in Kuskokwim Group sedimentary rocks. Major fracture zones are often located along the axes of large anticlines (at least one of which has been mapped at the site and shown in a number of report figures). If sufficient groundwater level/head measurements are obtained, it may be possible to identify	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 3								any zones of enhanced conductivity that are present along the axes of these major anticline(s) through the calibration (recalibration) of the numerical groundwater flow model.	
GRD 4	USFWS DEIS New Comment	3.6.1.3.3; Affected Environment, Groundwater Occurrence & Aquifer Characteristics, Aquifer Parameters: Hydraulic Conductivity & Specific Storage – Mine Site	3.6-13				Suggest the Groundwater Hydrology section 3.6 be revised.	The current conceptual hydrogeologic model [2014 Conceptual Hydrogeologic Model report] includes estimates of specific storage based on the available pumping tests. In particular, estimates based on two tests, the MW07-11 and MW13-03 multi-well multi-day pumping tests, are reported to range from 1E-7 to 6E-5 ft^{-1}, i.e., 2½ orders of magnitude; which although accurately reported, provides little information that can be used to	

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GRD 4								constrain the calibration of storage coefficients in the numerical groundwater flow model.	
GRD 4	USFWS DEIS New Comment	3.6.1.4.1; Affected Environment, Mine Site Groundwater Model, Model Setup & Calibration	3.6-14 - 3.6-16				Suggest the Groundwater Hydrology section 3.6 be revised.	The concepts on which the current numerical groundwater flow model are based [2014 Numerical Hydrogeologic Model report] have been somewhat updated from the conceptual model described in the 2014 Conceptual Hydrogeologic Model report, as is customary during the development of a numerical model. However, the current numerical model has inherited many of the issues identified with the "conceptual model" (see earlier comments), including but not limited to: • The assumption that the hydraulic conductivity of bedrock units	

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GRD 4							(sedimentary and intrusive rocks) decreases (decays) with depth, which is unsupported by the results of hydraulic field tests conducted at the site to date. Specifically, bedrock conductivities, within and outside the pit area, were optimized during the model calibration to available groundwater level/head measurements, subject to an assumed rate of decay. The effect of this is that conductivity estimates at ≤ 600 to 800 ft bgs, where groundwater level/head calibration data are available, were not freely optimized by	

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							PEST, but rather forced to approximate observed groundwater levels/heads in a way that reproduces the assumed trend (imposed using a “zonation” scheme which has not been described in the DEIS or 2014 Numerical Hydrogeologic Model report). Below ~600 to 800 ft bgs (roughly model layers 8 and 9 which represent the lowest portion of the pit and rock below it), this trend would have simply been extended in the absence of any calibration data during the calibration process – leading to arbitrarily low estimates of	

GRD 4

GRD 4

GRD 3

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							bedrock conductivities, particularly at depth. This is significant in that underestimating the conductivity of bedrock units, particularly at greater depths, may have caused: pit inflows (required dewatering rates), the areal extent of drawdown created by pit dewatering (and consequently areal extent of declines in stream baseflows), and rate of formation of the pit lake to be underestimated. • Faults have been omitted from the numerical model as potentially hydrologically significant structures (i.e., during the model	

GRD 3

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							calibration process), based primarily on a lack of evidence of their influence/ presence in sparse hydraulic field data which (are particularly limited in their vertical extent and) cannot be reasonably expected to easily reveal the hydraulic character of such discrete structures, regardless of their scale (upon simple inspection). Faults were also omitted from considerations during the model calibration process despite direct observations of fault gouge and major fault damaged (fracture) zones in core from the area of the planned pit. Given that major	

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GRD 3							gouge and/or damaged (fracture) zones can be associated with faults, their omission from the model calibration process may have significantly impacted the optimization of aquifer parameters (primarily that of bedrock units), as well as the results of model simulations intended to: evaluate pit inflows (required dewatering rates), the areal extent of drawdown created by pit dewatering (and consequently areal extent of declines in stream baseflows), and rate of formation of the pit lake. This is particularly true for the 5 faults in the area of the planned pit that	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 3							are believed to be of similar extent and depth as the proposed open pit: the Donlin, ACMA, Rochelieu, AC, and Lo faults. Unfortunately, since any given fault can impede flow (normal to strike), enhance flow (along strike), or both (have associated gouge *and* damaged zones), the effects of this omission on the results of the groundwater effects analyses, including estimates of pit inflows (required dewatering rates), cannot be anticipated. Moreover, since the omission of any hydrologically significant fault(s) from the model has likely affected the optimization of	

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GRD 3							bedrock conductivities, the sensitivity runs performed to assess the effects of omitting faults from the model (model calibration) may have been less than informative. Additionally, there appear to be at least two faults similar in extent and depth to the proposed pit, the AC and ACMA faults, which trend northwest and NNW, respectively, beneath Crooked Creek from the pit area. The potential for these faults to promote (enhance) the capture of water from Crooked Creek has not been assessed.	
GRD 2							• Spatially limited groundwater level/head calibration data.	

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GRD 2							As previously noted, currently available groundwater level/head measurements are largely limited to ≤ 600 to 800 ft bgs, which corresponds to roughly the upper 45% of the planned depth of the pit. Additionally, the available data have been collected over a number of years, averaged for the purpose of providing calibration targets for the current numerical model. As a consequence, the calibration of bedrock conductivities at depths greater than ~600 ft bgs was essentially unconstrained (except for broad upper and lower parameter limits	

GRD 2

GRD 5

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							set in PEST based largely on conductivity estimates from packer tests). This reviewer also respectfully submits that the reliability of the current numerical flow model, consequently these groundwater effects analyses, are additionally impacted by: • The assignment of no-flow boundaries at the locations of topographic divides north, east, south, and west of the mine site (all sides of the site) through the full depth of the numerical model. This implies that groundwater flow at all depths at which the project is likely (or certain) to have groundwater-	

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GRD 5							related effects (~1,800+ ft bgs) is "local", and that no regional groundwater flow is present at such depths; which is unsupported by the available groundwater level/head measurements; groundwater level/head measurements at ≥ 800 ft bgs unavailable. This is significant in that the assignment of no-flow lateral boundaries at all depths of possible interest, and at all locations around the mine site/model domain, has no doubt had a pervasive effect on the calibration of distributed groundwater recharge, aquifer	

GRD 5

GRD 17

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							parameters, and streambed conductivities, as well as all subsequent effects analyses performed using the numerical model. Additionally, the imposition of no-flow boundaries on all sides of the model domain precludes any simulation or accounting of the effects of regional groundwater flow. • Uncertainties regarding the distribution of areally distributed groundwater recharge. It seems somewhat untenable, that areally distributed recharge to the groundwater system would be adequately simulated as uniform over the	

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GRD 17							entire model domain given that, depending on location, sedimentary rocks, intrusive rocks, colluvium, or alluvium predominate at the near surface with significantly different hydraulic properties. This is significant in that the distribution of groundwater recharge has a pronounced effect on the optimization of both aquifer parameters and streambed conductivities, with particular implications for the reliability of estimates of dewatering impacts on stream baseflows, as well as pit inflows (required	

GRD 17

GRD 4

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							dewatering rates) and the rate of formation of the pit lake. • The compound effects of underestimating bedrock conductivities during the calibration of the numerical groundwater flow model. The areal extent of dewatering-induced drawdown (consequently areal extent of reduced streamflows) is underestimated if the hydraulic conductivity of bedrock units is underestimated during the numerical model calibration, particularly at depth (addressed in an earlier comment). Likewise, required	

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GRD 4							dewatering rates are underestimated by the model if the conductivity of bedrock units is underestimated (during the model calibration), especially at depth. Since estimated dewatering rates are an important input to model predictions of dewatering-induced drawdown, the effects of underestimating bedrock conductivities is compounded, increasing the likelihood that the areal extent of drawdown (and areal extent of reduced streamflows) has been significantly underestimated using the current numerical flow	

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GRD 4							model.	
GRD 5 USFWS DEIS New Comment	3.6.2.2.1; Environmental Consequences, Alternative 2 (Donlin Gold's Proposed Action), Mine Site – Closure, Reclamation, and Monitoring, Pit Lake; (also Sec 3.7, Water Quality)	3.6-24 - 3.6-33				Suggest the Groundwater Hydrology section 3.6 be revised.	Whereas far from a comprehensive review of the numerical modeling, the issues identified are substantial. Following the collection of additional groundwater level/head observations at adequate depths/ times, some consideration should be given to updating the structure (including the locations of lateral model boundaries/ boundary conditions) and calibration of the numerical flow model to improve the reliability of: • estimates of pit inflows / required dewatering rates; • estimates of dewatering-induced drawdown in the vicinity of the site (areal extent, depth, and	

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GRD 5								magnitude) and its recovery; • estimates of changes in stream baseflows due to pit dewatering (areal extent, magnitude, and timing) and their recovery; • estimates of the rate of formation of the pit lake; and • other project/closure-related numerical analyses.	
GRD 6	USFWS DEIS New Comment	3.6.2.2.1; Environmental Consequences, Alternative 2 (Donlin Gold's Proposed Action), Mine Site – Closure, Reclamation, and Monitori	3.6-33 - p 3.6-35				Suggest the Groundwater Hydrology section 3.6 be revised.	Possible substantial misconception regarding the hydraulics of the pit lake during its formation and once "maximum managed stage" is established. The pit and partially-formed pit lake act like a very large partially-penetrating well, the depth of the "sink" defined by the level of water in the pit. Consequently, the zone of converging	

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GRD 6	ng, Pit Lake						flow (capture) which is created by the pit, and then partially-formed pit lake, is finite in its vertical extent (due to the finite extent of upward flow components induced), and the zone of capture follows the rising level of water in the pit lake. This is recognized, although not clearly articulated in the DEIS and elsewhere in the supporting documents. What does not appear to be recognized, but has significant ramifications for the fate of any contaminated water generated or disposed of in the pit, is that these conditions (capture of limited vertical extent) will also prevail once the level of water in the pit lake reaches and is maintained at the somewhat reduced	

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GRD 6							"maximum managed stage" (which is otherwise protective of Crooked Creek). Contrary to what is currently hypothesized, the pit (in its entirety) will not be rendered a sink for groundwater flow as a result of maintaining the level of water in the lake at a maximum managed stage of 331 ft amsl (or any other level below the steady pit lake elevation) – containing any contaminated water in the pit lake. Rather, at depths that exceed the finite vertical extent of capture, any contaminated water in the pit lake will be free to flow out of the (former) pit into the surrounding groundwater flow system(s). Depending on the depth below ground surface at which contaminated water	

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GRD 6							flows out of the pit lake, it *may be* discharged to local streams, drainages or lowlands. If groundwater flow in the vicinity of the mine site is truly "local" at all relevant depths, as hypothesized by the current conceptual and numerical models, then contaminated water in the pit lake (below the zone of upward flow/capture) is *certain* to be discharged over time to local streams and low lying areas. Alternatively, depending on depth in the pit lake, contaminated water may be introduced to and transported offsite by regional groundwater flow, which would likely be southwesterly (in the direction of the Kuskokwim River and extensive marshlands	

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GRD 6								beyond); or may be introduced to and transported by local, as well as regional, groundwater flow away from the former pit, and possibly the site, in different directions.	
MIT 31	USFWS	3.6.2.2.1	2	Pit dewatering would be initiated during the construction phase. Initially, approximately 17 wells would be drilled around the perimeter of the initial excavations and pumped at an average total rate of approximately 1,700 gpm when the dewatering system is turned on two years prior to operations.	Please provide a map of the wells and well depths, this information would be useful in analyzing potential mitigation measures. For example, could a well field of more shallow dewatering wells be drilled between Crooked Creek and the pit in order take back the groundwater by pumping it back to the creek before it reaches the pit?	Figure 3.6-6 has been added showing the locations of dewatering wells.	Comment was partially addressed.	We propose the following mitigation measure: Water should be discharged year round to Crooked Creek to reduce effects on system from stream flow reductions. The USACE should work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek	
GRD 6	USFWS	3.6.2.2.1; Environmental Consequences, Alternative 2 (Donlin Gold's	3.6-33 - p 3.6-35				Suggest the Groundwater Hydrology section 3.6 be revised.	Implications for the planned disposal of acid-generating waste rock, seepage from the unlined WRF, and tailings-contaminated liquids in the pit at or after closure: Given that water at depth in	

GRD 6

PAA 14

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
	Proposed Action), Mine Site – Closure, Reclamation, and Monitoring, Pit Lake; (also Sec 3.7, Water Quality)						the pit lake is certain to flow out of the former pit during the formation of the pit lake and once “maximum managed stage” is established, any contaminants generated or disposed of in the pit at or following closure can be expected to be transported away from the pit lake over time – fate unknown absent improvements in the current groundwater flow model. In addition to contaminant risks arising from the planned disposal of seepage from the WRF and tailings-contaminated liquids in the pit, a significant volume of acid-generating waste rock is to be placed in the pit prior to the pit filling with water under the current closure plan; exposed to a combination of air	

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PAA 14								and water for a considerable period of time (years), before being submerged in the lower portions of the pit lake from which (contaminated) water will be free to flow into the surrounding groundwater flow system(s) over time. The above notwithstanding, these contaminant risks can be greatly reduced or eliminated by modifying the closure plan to preclude the disposal of acid-generating waste rock, seepage from the unlined Waste Rock Facility, tailings-contaminated liquids, and any other contaminants of environmental concern in the pit/lake.	
GRD 10	USFWS	3.6.2.2.1	5-6	Four monitoring/seepage recovery wells would be installed; two on	Please clarify this section. If this is a completely closed system, then how could	The point of measurement for Anaconda Creek is at the			

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			each side of Anaconda Creek, downgradient of the tailings pond. On each side of Anaconda Creek, one deep (328 feet) and one shallow (164 feet deep) well would be installed. The wells would be capable of pumping 45 to 90 gpm each and would discharge to the SRS pond. The purpose of the wells is to create a completely closed flow system to capture any potential leakage from the TSF or SRS pond into the groundwater system. The combined diversions of groundwater and surface water are expected to reduce average flow in Anaconda Creek by approximately 30 percent at Year 20 of mining (Table 6.2, SRK 2012). …the location of the WRF in the surface water and groundwater	Anaconda Creek only be reduced by 30%?	confluence with Crooked Creek. Additional flow enters Anaconda Creek below the closed flow system. The text has been changed to clarify this.			

GRD 10

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 10			flow systems that drain into the pit lake create a closed system …					
GRD 9 USFWS	3.6.2.2.5; Environmental Consequences, Summary of Impacts for Alternative 2	3.6-42 – 3.6-43				Suggest the Groundwater Hydrology section 3.6 be revised.	Based on information and analyses provided in this DEIS and supporting documents, deficiencies exist in the current hydrogeologic data and analyses for the mine site which this reviewer concludes are substantial (please see detailed comments). Given these deficiencies and uncertainties, this reviewer disagrees that direct (and cumulative) effects to groundwater-related resources, including impacts to streamflows and water quality, under Alternative 2 (Donlin Gold's Proposed Action) have been adequately characterized and, in particular, that net overall groundwater-	

GRD 9

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
							related impacts following closure have been demonstrated to be "minor".	
USFWS	3.6.2.2.1	7	If water quality does not meet standards, then the SRS would be operated indefinitely and SRS water would be pumped to the pit lake (see Section 3.7, Water Quality). The local diversion of groundwater beneath the TSF through the rock underdrain would continue permanently.	The following analysis from Alternative 5A would pertain to all of the Alternatives: "The hydraulic containment system of the SRS would require monitoring, analysis, operation, periodic repair, and management to assure its continuing functioning and effectiveness in perpetuity. Considering the long duration of pumping, the harsh climate and the remote location, the potential for pumping failure is high and the consequences of a failure merit examination. As a mechanical system with many task-critical components, system failure should be regarded as a distinct probability. Calculations suggest that	Only Alternative 5A is proposed without a liner under the tailings. Under the other alternatives, the expected condition is that the liner under the TSF would prevent water from leaking from the facility and pumping from the SRS could be discontinued at some time in the future. We agree, however, that the condition could occur in closure under other alternatives before decommissionin g of the SRS. Text moved to	Accepted.		

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				if the SRS pumping system were to go completely off-line, the SRS would likely fill to overflowing and/or loose hydraulic containment with respect to groundwater in approximately two weeks, although there are many variables such as time of year and amount of drawdown at the start of the failure that could affect this calculation. Still, considering these variables, this is a very short timeframe in which to identify a problem, diagnose the cause, acquire any necessary components, and effect repairs, especially if it occurs during winter conditions. If hydraulic containment of the groundwater system is lost, it is likely that contaminated groundwater would enter the flow system towards Crooked Creek	Alternative 2 and cross-reference added to analysis of predicted SRS water quality in Section 3.7, Water Quality. Text in Alternative 5A has been revised to describe difference in duration between Alternatives 2 (long-term) and 5A (permanent).			

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				and it would be impractical to retrieve because it would relatively quickly flow outside of the radius of influence of the SRS wells. Thus, considering the lifespan of the system, the impacts of this alternative are considered to be high in magnitude and permanent in duration." The environmental impacts if the SRS pumping system were to go completely off-line need to be analyzed.				
USFWS	3.6.2.2.1	8	Groundwater resources would be affected in a local area of approximately 20 square miles encompassing the proposed pit, WRF, and TSF; however impacts would mostly remain on the east side of Crooked Creek.	The analysis should expand on this 20-mile radius, what are the consequences of 20-miles of this watershed being affected? What would be the effects to the other aquatic resources of the maximum drawdown? Are there avoidance and minimizations measures or compensatory mitigation options?	There is not projected to be a 20-mile radius of impacts, rather a 20 square mile area. This is an area roughly 4 miles by 5 miles in size.	Accepted.		
USFWS	3.6.2.2.4	11	Thus, considering the lifespan of the system,	The analysis in Alternative 5A would	Only Alternative 5A would pump	Explanation accepted.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			the impacts of this alternative are considered to be high in magnitude and permanent in duration.	pertain to all of the Alternatives: “Thus, considering the lifespan of the system, the impacts of this alternative are considered to be high in magnitude and permanent in duration.”	water from the SRS in perpetuity ("considering the lifespan of the system"), which drives the magnitude and duration of the impacts. No text changes made.			
USFWS	3.6.2.2.4	11	Global climate change could also have unpredictable impacts on water balance and availability. These impacts are further discussed in Section 3.26, Climate Change.	An integrated hydrologic model such as the one commissioned by USFWS for the Chuitna mine should be considered.	The Chuitna model was evaluated. A comparable modeling exercise to the Donlin project was not undertaken. See response to CSP2 comment above.	Change is acceptable. SNAP data are considered in the analysis.		
USFWS	3.6.2.5.1	13	Alternative 5A, in contrast, is designed without a liner under the dry stack tailings and the dry stack is therefore expected to leak water into its subdrains in perpetuity (BGC 2014e).	Why is the Dry Stack in this Alternative unlined? Could lining the dry stack be considered as a mitigation measure?	A placeholder has been added to indicate that this item is still under consideration and will be revised following receipt and evaluation of information requested in RFAI #55.	Not addressed in the DEIS.	Recommend addressing previous comments on this subject.	

GRD 7

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS	3.6.2.5.1	14	The hydraulic containment system of the SRS would require monitoring, analysis, operation, periodic repair, and management to assure its continuing functioning and effectiveness in perpetuity. Considering the long duration of pumping, the harsh climate and the remote location, the potential for pumping failure is high and the consequences of a failure merit examination. As a mechanical system with many task-critical components, system failure should be regarded as a distinct probability.	This is good analysis! Where is this analysis for Alternative 2, see above comment about page 11? What is the back-up plan, are there measures to reduce impacts?	Alternative 2 differs from Alternative 5A by having a liner under the TSF. This liner is expected to allow decommissioning of the SRS as the TSF stabilizes and data are collected showing that the TSF does not leak water requiring diversion to the pit lake. Thus, Alternative 2 lacks the pumping failure risk in perpetuity that is part of Alternative 5A. We agree, however, that the condition could occur in closure under Alternative 2 before decommissionin	Change is acceptable. SNAP data are considered in the analysis.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					g of the SRS. Text added to Alternative 2 to describe. Text has also been added to Chapter 5, Mitigation, to describe long-term monitoring and maintenance activities to reduce risks and impacts associated with the SRS under all mine site alternatives.			
USFWS	3.6.2.5.1	14	Calculations suggest that if the SRS pumping system were to go completely off-line, the SRS would likely fill to overflowing and/or loose hydraulic containment with respect to groundwater in approximately two weeks…	This is good analysis. Where is this analysis for Alternative 2? Furthermore, what would happen in bad weather conditions, a 100-year storm event, issues with climate change, or loss of power?	The SRS for Alternative 2 is expected to be operated for a much shorter duration as a result of the lined TSF under Alternative 5A, lowering the risks of such a failure. Also, the liner is expected to reduce	No, this issue has not been addressed in the DEIS.		

CLIM 8

CLIM 8

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					leakage from the TSF such that the environmental consequences of a failure would be much lower. We agree, however, that the condition could occur in closure under Alternative 2 before decommissioning of the SRS. Text added to Alternative 2 to describe. The effects of extreme events and climate change on mine structures are described in Chapter 4, Cumulative Effects. The SRS pond and wells are designed to handle 3 days of underdrain flow plus the 200-year, 24-hr			

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLIM 8					rainfall event (BGC 2011).			
MIT 2 USFWS	3.6.2.5.1	14	…considering these variables, this is a very short timeframe in which to identify a problem, diagnose the cause, acquire any necessary components, and effect repairs, especially if it occurs during winter conditions.	This is good analysis. Where is this analysis for Alternative 2? How many times could the SRS pumping system need parts or maintenance or the life of the mine and into perpetuity?	See above response. Additionally, mitigation measures have been added to include monitoring and maintenance plans and stocking of parts annually in closure.	Could not find this addressed in the DEIS.		
MIT 2 USFWS	3.6.2.5.1	14	<u>If hydraulic containment of the groundwater system is lost</u>, it is likely that contaminated groundwater would enter the flow system towards Crooked Creek and it would be impractical to retrieve because it would relatively quickly flow outside of the radius of influence of the SRS wells. Thus, considering the lifespan of the system, the impacts of this alternative are <u>considered to be high</u>	This is good analysis. Where is this analysis for Alternative 2? Could a secondary hydraulic containment system be established in order send water back to the TSF in case of emergency overflow? For example, could a well field of more shallow wells be drilled between Crooked Creek and the pit?	The likelihood of leakage from the lined TSF under Alternative 2 is much lower than for Alternative 5A. We agree, however, that the condition could occur in closure under Alternative 2 before decommissioning of the SRS. Text added to Alternative 2 to describe.	Adequate.	We support the proposed mitigation measure for a secondary hydraulic containment system depending on performance history of the SRS in operations.	

MIT 2

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			in magnitude and permanent in duration.		A recommendation has been added to Chapter 5, Mitigation for consideration of a secondary hydraulic containment system depending on performance history of the SRS in operations.			
USFWS	3.6.2.8.1	21	• Dewatering water intended for discharge to Crooked Creek could be released upstream of the pit between October and April.	Did the analysis consider the location in which discharge water upstream on Crooked Creek, such as Lewis Gulch or Grouse Creek?	Not under Alternative 2. BGC memorandum Predicted Changes to Streamflow (July 11, 2014) analyzes several streamflow scenarios including return of pumped groundwater further upstream than the current outfall. However, this is not included in the	Explanation acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					current proposed project and was not analyzed under Alternative 2. It is however, proposed under Alternative 5D and included in that analysis. Clarification of details in BGC (2014) as to the location, timing, and scenarios that include upstream discharge were included as questions in RFAI #60. Mitigation recommendation to be revisited following receipt of response to RFAI #60.			
USFWS	3.6.2.5.1	14	If hydraulic containment of the groundwater system is lost, it is likely that contaminated groundwater would enter the flow system	This is good analysis. Where is this analysis for Alternative 2? Could a secondary hydraulic containment system be established in order send water back	The likelihood of leakage from the lined TSF under Alternative 2 is much lower than for Alternative 5A. We agree,	Accepted, a recommendation has been added to Chapter 5, Mitigation for consideration of a secondary hydraulic containment system	We support the proposed mitigation measure for a secondary hydraulic containment system depending on performance history of	

MIT 2

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 2			towards Crooked Creek and it would be impractical to retrieve because it would relatively quickly flow outside of the radius of influence of the SRS wells. Thus, considering the lifespan of the system, the impacts of this alternative are considered to be high in magnitude and permanent in duration.	to the TSF in case of emergency overflow? For example, could a well field of more shallow wells be drilled between Crooked Creek and the pit?	however, that the condition could occur in closure under Alternative 2 before decommissioning of the SRS. Text added to Alternative 2 to describe. A recommendation has been added to Chapter 5, Mitigation for consideration of a secondary hydraulic containment system depending on performance history of the SRS in operations.	depending on performance history of the SRS in operations.	the SRS in operations.	
GRD 10 USFWS	3.6.2.8.1	21	• Dewatering water intended for discharge to Crooked Creek could be released upstream of the pit between October and April.	Did the analysis consider the location in which discharge water upstream on Crooked Creek, such as Lewis Gulch or Grouse Creek?	Not under Alternative 2. BGC memorandum Predicted Changes to Streamflow (July			

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GRD 10					11, 2014) analyzes several streamflow scenarios including return of pumped groundwater further upstream than the current outfall. However, this is not included in the current proposed project and was not analyzed under Alternative 2. It is however, proposed under Alternative 5D and included in that analysis. Clarification of details in BGC (2014) as to the location, timing, and scenarios that include upstream discharge were included as questions in RFAI #60. Mitigation			

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GRD 10						recommendation to be revisited following receipt of response to RFAI #60.			
	CHAPTER 3.7: WATER QUALITY								
WAQ 9	USFWS 5	3.7	This comment refers to a response to one of our earlier comments on Table 3.7-30	Comment Response: *The numbers in the table do not include the recirculation factor. That estimate is now included in Appendix H, renamed "Tailings Pond Water and Pore-Water Quality in Buried Tailings."*	Thank you for including this information. Because the numbers in table 3.7-30 do not include the recirculation factor (our understanding based on AECOM's R2C), it prompts the reader to assume the actual surface water concentrations in the tailings storage facility will be 5x the numbers that are presented as "pond water" in the table. It is therefore difficult to assess the possible environmental effects on migratory birds. Because tailings pond water chemistry is important to the	In fact, the values in Table 3.7-30 were for predicted TSF pond water and DID include the recirculation factor of 5. However, due to the addition of the Advanced Water Treatment water management plan in Alternative 2, the concentration due to recirculation is predicted to only be about 3 times, not 5 times. Accordingly, the	This has not been addressed adequately. We remain concerned about high levels of Arsenic, Mercury, and Selenium in water that are projected to occur due to this project.	We remain concerned about high levels of Arsenic, Mercury, and Selenium in water that are projected to occur due to this project. Moreover, we are concerned that the results of the pit chemistry modeling suggest that at some point beyond the 100 years modeled, the pit lake may lose stratification upon which the water treatment plant relies. We are concerned that if the pit lake "turns over" it will not be feasible to treat it to meet AWQC in perpetuity.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 9					assessment of environmental impacts, we suggest this be described fully in the main document and not in an appendix. Please clarify the projected surface water concentrations of toxic elements in the tailings pond in this table, given the recirculation factor.	numbers in the new table listing TSF pond water concentrations will be less than in the original Table 3.7-30.			
MIT 28	USFWS 2 Continued	3.7		…captured by the control technologies available. At present time, there are no feasible alternatives to recover mercury from the flotation tailings or TSF. The mercury associated with the flotation tailings fraction is not available for capture by existing control technologies. Donlin has installed state-of-the-art mercury controls to reduce emissions and	The USFWS remains concerned about the amount of mercury that will be released into the surrounding environment as a result of this project, in particular as toxic and bioavailable forms of mercury will enter fish and wildlife resources and negatively affect subsistence users.	To be resolved after release of the DEIS.	T The draft EIS inadequately addresses, and the contributing analyses may substantially underestimate, the amount of mercury that would be liberated into the local and regional environment from the Donlin project. The mid-Kuskokwim region already has elevated mercury in fish (Matz	Recommend additional mercury analysis; see the cover letter to DEIS comments.	

MIT 28

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			will be utilizing UNR 829 to stabilize mercury in the TSF (RFAI #302 r1).			2012, BLM/FWS unpubl. data), resulting in consumption guidance due to mercury from the State of Alaska. The USFWS is concerned about all upper trophic level fish consumers, including migratory birds and raptors, that occur in the project area, and impacts to subsistence uses of Yukon Delta NWR. Even trace amounts of mercury released into the environment can be converted into methyl mercury (Eckley et al. 2015) given the right conditions (which are present in the project area).		
USWS 10	3.7.2.1	207-210	* Water Quality	Donlin's baseline surface water sampling program	The Kuskokwim River	Accepted		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				is limited to the immediate mine area. It needs to be expanded to include the transportation corridor (Kuskokwim River barge traffic). Water quality should be characterized in the Kuskokwim River for at least two reasons: 1) there is a contaminated site upstream (Red Devil mine) that could impact "baseline" water quality at the Crooked Creek confluence with the Kuskokwim and for an unknown stretch down river; 2) water quality and sediments must be characterized at planned port locations, including measurement of petroleum hydrocarbons. Petroleum hydrocarbon contamination is common at port facilities, especially if fuel is transferred there.	downstream from its confluence with Crooked Creek is considered within the transportation corridor for this analysis. Water quality in the Kuskokwim River is characterized in Section 3.7.2.1.2. Sediment quality in the Kuskokwim River is discussed in Section 3.7.2.3.2. and includes measurements of petroleum hydrocarbons in sediments at the locations of proposed transportation facilities			
USFWS 11	3.7.2.3.2	254-256	Table 3.7-13	Please show comparison values that were used (referenced from RWJ	Table has been edited accordingly.	Accepted.		

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				reports), similar to Table 3.7-12.				
USFWS 12	3.7.2.3.2	257	Gasoline range organics (GRO) were not detected in 2010 at any of the eight stations sampled. Diesel range organics (DRO) and residual range organics (RRO) representing anthropogenic hydrocarbons, were detected at concentrations lower than background levels (RWJ Consulting Inc. 2010)	Please provide actual hydrocarbon data including detection limit, and describe how "background levels" were derived.	An additional table has been added, showing measured concentrations of hydrocarbons and pesticides in Kuskokwim River sediments.	Accepted.		
USFWS 13	3.7.2.3.2	257	Paragraph begins "Several previous studies have measured mercury levels in the sediments of the Kuskokwim River….." and ends "total mercury concentrations in the Kuskokwim River decreasing downstream from McGrath."	Please add a figure to illustrate this paragraph.	Text added to tie results described in this regional paragraph to project area results listed in Table 3.7-12 for stations shown on Figure 3.7-12.	Accepted.		
USFWS 14	3.7.2.4	257-258	Section begins "As stated on the Alaska …DNR website: Mining	Very well written explanation; nice job making it	Comment acknowledged.	Accepted.		

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			101"…and ends "has a neutral or basic pH"	understandable to lay reader.				
USFWS	3.7.3.2.1	2	Table Waste Rock Tonnage Estimates	Please add a table summarizing the geochemistry of each rock type described below including concentrations of chemicals of concern (As, Se, Hg, Pb, Cu, Cd, Ni, Zn), the number of samples, and some measure of the range of variation found for each analyte in the samples (SE, sd, etc.).	A table was added to the Geochemistry Affected Environment section (Table 3.7-18: Distribution Statistics for Selected Elements in Waste Rock).	Accepted.		
USFWS	3.7.3.2.1	3	Geochemical testing of a small number of overburden samples (see Section 3.7.2.4.2) suggests that most of the overburden tends to be "inert" geochemically, with essentially no neutralizing potential or acid generating potential.	How many samples are referenced in this sentence? Suggest using the terms "neutral" or "pH neutral" rather than "inert" which implies a lack of toxicity, which is not the case if overburden generates toxic effluent despite neutral pH.	The sentence was revised to state the number of samples (33). The term "inert" was modified to "pH-inert" and the next sentence clarified that the material has essentially no buffering potential.	Accepted.		
USFWS	3.7.3.2.1	3	• NAG 1-4 • However, they	Given that the potential to generate drainage	The question of a liner for the	This comment was not adequately	Suggest providing additional analysis in	

PAA 14

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			do have the potential to generate drainage with concentrations of arsenic above applicable water quality criteria (AWQC) (SRK 2007). Because antimony and mercury were found to be positively correlated with arsenic and typically show geochemical coherence with arsenic, these constituents could also potentially leach from these rocks.	with concentrations of arsenic and selenium would be above applicable water quality criteria, please provide reasoning for not evaluating lining the WRF to eliminate potential contamination of surface and ground waters.	WRF was addressed in the file “Donlin_Lined_WRF_Memo033114.pdf.” Instead of a liner, the WRF was designed to take advantage of the terrain to catch all drainage into the CWD during operations and the pit after closure. The option of adding a liner under the WRF was carefully considered. The liner would be expensive to install and would not provide an environmental benefit. See Appendix C, Alternatives Development Process for additional detail.	addressed in the DEIS.	the DEIS.	
USFWS	3.7.3.2.1	3	• The PAG 7	Will this low-grade ore	The stockpile	Accepted.		

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			rock has the potential to generate acid in a few years or less (SRK 2007, 2012c). It is not planned to be put into the WRF, but would be stored temporarily in the low-grade ore stockpile until it can be transferred as backfill into the ACMA Pit.	stockpile be lined? How will water flow through this area be controlled?	will not be lined. The liner would be expensive to install and would not provide an environmental benefit. A berm would be built at the downstream end of the stockpile to keep drainage from the stockpile out of American Creek and the pit. Runoff from the stockpile, as well as from the Lower CWD, would be pumped back into the CWD. This discussion has been added in a new Low-Grade Ore Stockpile section.			
USFWS	3.7.3.2.1	4	…tailings from the mine site would be comprised of about 64 percent water and 36 percent solids by weight.	Suggest creating a comprehensive table that compares environmental consequences by alternative. For	Agree. Table 3.7-42 has been added for alternative comparison.	No, the comment was not addressed adequately.	Suggest revising this information. Comparing the composition of percent water to solids for Alternatives 2 and 5A	

PAA 16

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 16					example, comparing the composition of percent water to solids for Alternatives 2 and 5A may illustrate a marked difference in risk of long-term impacts on fish and aquatic species due to dam failure.			may illustrate a marked difference in risk of long-term impacts on fish and aquatic species	
WAQ 7	USFWS	3.7.3.2.1	4	The and porewater could increase beyond the results shown in Table by as much as a factor of five due to re-circulation of tailings water into the flotation and hydrometallurgical processes (SRK 2007).	Are all the major components predicted to increase by a factor of five over what is presented in this table? If so, given that they are realistic projection of tailings water composition under operational scenarios, please add these estimates to the table.	This information has been added to the Geochemistry discussion, which is concentrations of constituents in the TSF pond now found in Appendix H.	No, the comment was not addressed adequately.	Suggest clarifying this information. It is concerning that information about concentrations of constituents in the TSF pond is only in an appendix.	
	USFWS	3.7.3.2.1	5	Table: Final Plant Tailings Liquor - Metals Analysis	If these concentrations are projected to increase under operational scenarios, they should also be presented tabularly and be compared to water quality standards. It is standard practice to present water concentrations in ug/L, not mg/L. Please bold or highlight values that	Total and dissolved metal concentrations are shown on the table. Units were changed to ug/L for metals. No information was given on the analysis method. Additional geochemistry information was	Yes, this has been adequately addressed.		

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				exceed the state water quality criteria so they may be seen more easily. Please clarify. Were these "total recoverable" or "dissolved" metals samples? Was the water filtered prior to analysis? Was the analysis by ICP/MS?	added to the Geochemistry discussion, which is now found in Appendix H.			
USFWS	3.7.3.2.1	5	Table : Aluminum	There is a standard for Al, it's unclear why this is not presented. http://dec.alaska.gov/water/wqsar/wqs/ There are multiple different water quality standards (drinking water, acute and chronic criteria for freshwater life). It's unclear why only one is presented per element, and also unclear why each was chosen and some are missing?	The most stringent AWQS have been added to the table. The AWQS for aluminum has been added to the table. The water quality data presented in this section are compared to the most stringent applicable water quality standards (for all designated water uses). This	Yes, this has been adequately addressed.		

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					is explained in Section 3.7.1.2.1.			
USFWS	3.7.3.2.1	5	Table Cobalt 60.05	There is no footnote 6. Please describe where these values came from. Are these hardness based state water quality criteria? The values are quite high relative to other values seen for these metals and aquatic life, are they derived using the hardness of the tailings water?	Original WQS were from SRK 2012c, Water Resources Management Plan. AWQS were changed to most stringent standards. Footnote 6 added.	Accepted.		
USFWS	3.7.3.2.1	6	Table Mercury	Please explain why these results differ so much among the tests. How many samples were run per test?	As discussed in Section 3.7.2.4.4 Tailings, the tailings from the Phase 2 pilot testing are more representative of the combined ore types that would be processed through the process facilities. Comparison of the Phase 2 results with the prior tests show the variation	Accepted		

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					across ore samples. Some of the differences in the liquor are likely due to differences in the original solids concentrations of the tailings and some due to changes in the metallurgical method. To better clarify this, the discussion was expanded and a table (from SRK 2012c, Table 4-2) was added to show the concentrations of metals in the solid phase of the tailings.			
USFWS	3.7.3.2.1	6	Table: Antimony	Please explain why these were so different from 2006 to 2007. Is this difference thought to be ore or process based?	Please see response in the row above.	Accepted		
USFWS	3.7.3.2.1	7 - 8	Runoff from the pit	Has the chemical	The pit-lake	No, this has not been		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 11			walls and groundwater seeping into the pit would likely react with the rocks and is thus considered "contact water." This water would be pumped out of the pit during construction and operations, but would be allowed to remain in the pit after closure. Eventually, the entire water column may overturn, depending on the temperature structure of the lower layer and the amount of cooling at the surface. Overturn through the water column could take less than a day or occur over several weeks, and causes mixing which replenishes the oxygen throughout the depth of overturn, potentially to the bottom of the lake.	composition of the pit water been modeled? If so, please provide a table of predicted pit water concentrations at the surface and the deeper strata? What is the potential for the pit lake to mix vertically under different weather conditions? Has this method of a stratified pit lake undergone proof of concept at another mine of similar size elsewhere?	model and sensitivity analyses, including wind mixing are discussed in detail in the Closure/ Pit Lake section of Appendix H. Stratified pit lakes presently exist at a number of mine sites of various sizes (e.g., Berkeley Pit, Butte, Montana; Summer Camp Pit Lake, Getchell Mine, Nevada; Waterline Pit Lake, Equity Silver Mine, south-central British Columbia).	adequately addressed.		
USFWS	3.7.3.2.1	12	Construction Overburden removed from the pit and TSF that is planned for later	Overburden piles that leach arsenic and other metals should be lined and drained away from	The text has been reworded. Runoff from the SOB will be	Although adequately addressed, we have remaining concerns.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			use in reclamation would be stored in the overburden stockpiles located near Crooked Creek……there is the possibility for arsenic leaching and ARD from overburden. In addition, potentially metals-leaching materials from the mineralized zone of the open pits will be included in the South Overburden Stockpile (SOB) ……water could infiltrate stockpiles and flow through berms towards Crooked Creek. The effects of this drainage on water quality in Crooked Creek could range from low intensity (below water quality standards) to high intensity (exceeding water quality standards), and are expected to be local in extent and long-term (potentially lasting through operations).	Crooked Creek. Why is leachate not captured and pumped to the lower CWD as described in the Operations section below?	pumped from the sediment pond to the CWD. Mitigation recommendations have also been added that include more detailed sampling of the overburden prior to development of the stockpiles, to further investigate whether they would need to be placed so as to drain away from Crooked Creek. If built as planned, WQ monitoring is recommended to investigate whether water collection/pumping structures need to be added downgradient of the stockpiles.			
USFWS	3.7.3.2.1	12	Details of the American	This seems like it will	The question of	Accepted.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			Creek WRF construction are given in Section 2.3.3.1.8. The foundation is planned to be built of coarse waste rock to allow drainage from the facility as well as discharging springs in the valley bottoms.	certainly contribute to reduced water quality due to As, Se leaching in perpetuity. Why not line creek drainage with non-leachable, non-pag rock, then install a liner over that base, then treat the water infiltrating through the waste rock to remove elements of concern prior to discharge to surface water? The contact water pond design helps, but still allows for substantial contamination of groundwater by the minerals in the waste rock.	a liner for the WRF was addressed in the file "Donlin_Lined_WRF_Memo033114.pdf." Instead of a liner, the WRF was designed to take advantage of the terrain to catch all surface- and groundwater drainage into the CWD during operations and the pit after closure. The option of adding a liner under the WRF was carefully considered. The liner would be expensive to install and would not provide an environmental benefit. See the alternatives appendix for additional detail.			

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS	3.7.3.2.1	12	The water quality of seepage from both the NAG and PAG portions of the WRF during construction could exceed water quality standards for certain constituents, which would be considered a high intensity impact if released to the environment.	Please provide model estimates for water quality of seepage water and show in a table relative to water quality standards.	Seepage from the WRF during construction would be captured by the CWD or the berm downgradient from the low-grade ore stockpile (discussion added). Model estimates for WQ are presented for the Lower CWD during operations in Table 3.7-29. Water quality during construction is expected to exceed that during early years of operations.	Accepted.		
USFWS	3.7.3.2.1	13	Two freshwater diversion dams are planned to be maintained during construction and the first 3 years of	What happens to the freshwater after the first 3 years of operations?	In year 3 of construction, the dams would be decommissioned to allow for additional	Accepted		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				operations.		tailings storage. (Sentence added.)			
BIRD 1	USFWS	3.7.3.2.1	13	Based on modeling results, this water is predicted to exceed AWQC for several constituents including aluminum, arsenic, iron, lead, manganese, and molybdenum.	Please present model results in a table – this will help to assess potential for wildlife effects, e.g. on migratory birds. Is wildlife hazing planned for the TSF and CWDs?	EIS Section 3.7.2.2.1 (Existing Groundwater Quality Conditions – Mine Site) Tables 3.7-10 and Table 3.7-11 give the range of concentrations. There are no wildlife hazing activities planned for the TSF and CWDs at this time. The potential impacts of the open water areas at the mine site on wildlife species are discussed in Section 3.12, Wildlife.	Accepted. We remain concerned about the potential for the pit to be a nuisance attractant to migratory birds in perpetuity.	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
PAA 14	USFWS	3.7.3.2.1	13	Operations As discussed previously, the materials in the SOB stockpile have the	Is this facility bermed and lined? If not, why not?	The SOB is to be bermed, but not lined. Mitigation recommendatio ns have been	New text presented in the DEIS states, "Water from the sediment pond has the potential to leak	Recommend the following mitigation: To reduce risk of water contamination toward Crooked Creek the	

PAA 14

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			potential to leach metals. Therefore, seepage and surface runoff from the SOB is planned to be captured and pumped to the lower CWD for use in process.		added that include more detailed sampling of the overburden prior to development of the stockpiles, to further investigate whether they would need to be placed so as to drain away from Crooked Creek. If built as planned, WQ monitoring is recommended to investigate whether water collection/pumping structures need to be added downgradient of the stockpiles.	into groundwater. The sediment pond is located near the edge of the cone of depression created by pit dewatering, so that the direction of groundwater flow during at least part of the operations period is assumed to be towards Crooked Creek."	south overburden stockpile should be lined.	
USFWS	3.7.3.2.1	13	then the pH is predicted to decrease near the end of mine life to about pH 3.2, with sulfate concentrations increasing to about	Will there be seepage post-closure or is it anticipated there will be no discharge once the facilities are capped?	Seepage post-closure will be reduced due to the cover. As discussed in the closure section, remaining	Accepted		

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			18,000 mg/L.		seepage is planned to be collected and pumped to a deep layer of the pit lake post-closure.			
USFWS	3.7.3.2.1	13	be high intensity and long-term, because a number of constituents are predicted to exceed AWQC throughout the mine life. For example, arsenic concentrations are predicted to be approximately 25 mg/L, selenium 0.15 mg/L, antimony 2.5 mg/L, and mercury 0.08 ug/L.	If these facilities are not lined, how will impacts to groundwater be prevented?	Impacts to groundwater will only occur on the mine site. The WRF was designed to take advantage of the terrain to catch all surface- and groundwater drainage into the CWD during operations and the pit after closure.	No, impacts on groundwater have not been fully addressed.		
USFWS	3.7.3.2.1	14	Table: Porewater Quality for NAG and PAG Portions of WRF during Operations	This table is helpful. Please show concentrations in ug/L, which facilitates comparison with water quality standards.	Tables have been changed to show metals in ug/L.	Accepted.		
USFWS	3.7.3.2.1	15	The toes of the WRF would be checked for seepage on a monthly basis, and as soon as practicable after significant precipitation	Will the design ensure that water does not pool elsewhere in the WRF?	The WRF is built on a layer of porous rock and is not lined. If water pools	Accepted		

PAA 14

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			events. If seepage is observed, the location and flow rate would be recorded, and a sample collected for water quality analysis; and		elsewhere in the WRF, it will eventually flow to the groundwater, which will be captured by the lower CWD or the pit.			
USFWS	3.7.3.2.1	15	The predictions for the isolated PAG cell porewater in Table (mixed PAG) were based on an earlier waste rock management plan that assumed PAG 6 and PAG 7 are both included in the PAG dump	This section was well done.	Comment acknowledged.			
USFWS	3.7.3.2.1	16	assumed to have a concentration factor of five, due to the recirculation	Clarify whether the numbers reported in the table account for the recirculation factor or not. Both should be included to improve clarity. If only one is presented, it should be the concentrated tailings water, because this most closely represents the operational tailings water scenario.	The numbers in the table do not include the recirculation factor. That estimate is now included in Appendix H, renamed “Tailings Pond Water and Pore-Water Quality in Buried Tailings.”	No, the comment has not been adequately addressed. Thank you for clarification. We reiterate that this information is too important to be contained in an Appendix and rather should be included in the main EIS document.		

WAQ 7

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS	3.7.3.2.1	17	The model results suggest that reduction increases iron by several orders of magnitude, as well as arsenic and antimony by about a factor of seven. Several constituents are predicted to exceed AWQC for both end members, including pH (low), sulfate, TDS, arsenic, cadmium, cobalt, copper, manganese, mercury, molybdenum, nickel, antimony, and selenium. o	Please bold the concentrations of the elements that exceed AWQS and present these standards in the table. Please use ug/L. Ensure that any operational concentration factor due to water recirculation is accounted for in the reported concentrations.	The water quality tables have been edited to incorporate this comment.	Yes, the comment has been adequately addressed. This has improved the readability of the tables.		
GRD 6 USFWS	3.7.3.2.1	17	Thus, the impacts of seepage of TSF porewater in terms of water quality would likely be high intensity and long-term, but local in extent.	Clarify the spatial extents (i.e. where might this seepage occur if the TSF is fully lined) and predicted volume of seepage from the TSF (e.g. gallons per day) that will be collected. How would this be predicted to change under a dry stack alternative?	Further discussion can be found in Section 3.6, Groundwater Hydrology.	No, the comment has not been adequately addressed.	We look forward to working with the USACE regarding our concern that after the pit fills the contaminated groundwater may flow toward Crooked Creek.	
WILD 8 USFWS	3.7.3.2.1	18	Thus, the impacts of this water in terms of water quality would	Please describe the environmental effects of this, include potential	All impacts have been deleted from the	No, the comment has not been adequately		

WILD 8

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			likely be high intensity and long-term, but local in extent.	mitigation for migratory birds, and describe how it may be conducted in perpetuity.	Geochemistry section. The potential impacts of the open water areas at the mine site on wildlife species are discussed in Section 3.12, Wildlife.	addressed. The analysis does not disclose a clear and transparent depiction of interrelated consequences to assess cumulative effects and practical methods to avoid or minimize adverse impacts on fish, wildlife, and subsistence resources.		
USFWS	3.7.3.2.1	19	Table: Post-closure Seepage Water Quality for NAG and PAG portions of the WRF	This is a good table, except it needs to clarify why only some constituents are listed and others are not listed.	Only those constituents expected to exceed AWQS are listed. Clarification was added.	Accepted		
USFWS	3.7.3.2.1	20	The expelled tailings water, along with infiltration through the overlying cover, would flow through the coarse rock layer. At closure, the tailings water is expected to continue to exceed water-quality standards (Table 3.7 7) and would have a high	Clarify to where the expelled tailings water would flow.	Additional clarifying text has been added.	Accepted		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			intensity, local impact.					
USFWS	3.7.3.2.1	20	The consolidation water is predicted to decrease exponentially from approximately 4,000 acre-feet to 800 acre-feet during the first 10 years after closure, and then remain at approximately 800 acre-feet until Year 51.	The quantitative estimates in this section are easy to read. However, please add total acre-feet in the pit for reference, and add the water volume of Crevice Creek.	Quantitative estimates have been revised and additional estimates added for pit lake and average annual flow rate for Crooked Creek at Crevice Creek.	Accepted		
USFWS	3.7.3.2.1	21	The assumptions of oligotrophy and no interaction between bottom waters and backfill essentially guaranteed that the deeper layers would be oxic, even though many pit lakes, including ones referenced in the Lorax (2012) report, have been found to be anoxic at depth.	As a sensitivity analysis, please model the effects on pit water stratification if these pumps from the WRF and TSF were to fail. Please describe the temporal sequence of events if failure were to occur.	No sensitivity analysis was conducted on this exact scenario. However, based on an understanding of pit lake stability, it is likely that if the pump failure occurred after the initial onset of stratification, then it would not affect stratification substantially. The continued addition of high-salinity water at depth is not	No, the comment has not been adequately addressed.		

WAQ 9

WAQ 9

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					critical after the stratification has been developed. Continued fresher water input at the surface helps maintain stratification. Whether the deep water turned anoxic or remained oxic, there would not be enough of an effect on the TDS to cause destratification. The discussion of oxic vs. anoxic is a “red herring” and has been removed.			
USFWS	3.7.3.2.1	26	Table: Water Quality of Runoff from Backfill and Highwall Waste Rock Used in Base Case Pit Lake Model	How were the elements presented in this table chosen?	The constituents shown in the table were those expected to exceed AWQS. (Other major constituents and metals were also included for each water source in the	Accepted.		

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						model.)			
WAQ 18	USFWS	3.7.3.2.1	27	The depth of the top of the pycnocline was found to decrease over time in the model, from about 230 feet in Year 53, to between 80 and 120 feet in Year 99	At what point (year) will the lake reach it's overflow point, with water leaving the pit requiring treatment? Is water treatment planned in perpetuity? From what depth will the water be pumped and treated? If pit water were not pumped and treated, from where would the pit overflow, and what would be the environmental consequence (because it is difficult to irrefutably ensure perpetual water treatment, seeing this endpoint would be useful). Please describe the consequences of eventual pump failure.	The lake is expected to reach its maximum level in Year 52. A discussion of the likelihood and time that it would take to fill the remaining freeboard above the managed lake level and reach the overflow point (estimated 6 years) is provided in Section 3.5, Surface Water Quality. Water treatment is planned in perpetuity; however, it is likely that this will not be truly "in perpetuity" because eventually all the PAG rock would react and the metals	No, the comment has not been adequately addressed.		

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					leached out of the rock surfaces. Water would be pumped from the lake surface. The pit spillway (required under DNR dam safety regulations) would be located at the lowest point on the rim in its southwest corner. Due to the long time it would take for the pit to fill to the overflow point above the managed lake level, it is considered very unlikely that a pump failure would be unrepairable in this timeframe. NEPA does not require analysis of worst-case scenarios.			
USFWS	3.7.3.2.1	27	In this case, even in	Which result? Please	"In this case" is	No, the comment		

WAQ 18

WAQ 9

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WAQ 9				Year 99, all constituents of interest exceed AWQC, showing the importance to treatment costs of maintaining a permanently stratified pit lake, because this result would likely require reverse osmosis to treat the sulfate and TDS.	clarify	the case in which the lake completely mixes in Year 55 and then re-forms a pycnocline. The wording has been changed to clarify this.	has not been adequately addressed.		
WAQ 11	USFWS	3.7.3.2.1	27	In the base case (interpreted to be the most likely scenario), as well as the extreme winds and decreased salinity sensitivity cases, antimony, arsenic, manganese, mercury, and selenium concentrations exceeded AWQC.	Please clarify this sentence by defining base case. Were these exceedances for surface water? Are surface waters in a stratified pit predicted to meet AWQC standards or require treatment to meet standards? If so, which constituents are predicted to need treatment, and how will the elements more recalcitrant to standard treatment (As, Se) be removed?	The base case is that case with expected climatic conditions and the input water quality shown in tables found in Appendix H. Surface waters are not expected to meet AWQC standards. Additional tables in Appendix H show which constituents are predicted to need treatment. Treatment is discussed in Section	No, the comment has not been adequately addressed.		

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					3.7.3.2.2, Surface Water Quality, Mine Site, Closure.			
USFWS	3.7.3.2.1	29	Table: Shaded cells exceed AWQC.	Please use this shading like this for exceedance all tables. It greatly improves readability.	Shading has been incorporated into additional tables, where appropriate, to identify water quality parameters in excess of the applicable water quality standards.	Yes, the comment has been adequately addressed.		
WAQ 11 USFWS	3.7.3.2.1	33	Surface water from the pit lake would eventually be treated to meet AWQC (i.e., reduced to medium intensity) and discharged.	How will this be monitored to determine whether treatment is needed?	Per the Donlin Gold Project Monitoring Plan, water quality monitoring by depth would occur every 5 years after closure.	Partially addressed, this is a pretty wide time step for monitoring.	Suggest clarifying adding information about bonding for reclamation.	
WAQ 10 USFWS	3.7.3.2.1	34	Treatment (if necessary) of all pit dewatering groundwater prior to discharge into Crooked Creek;	Please model the downstream effects if pit water could no longer be treated. Consider dilution and model the extent of water quality effects on Crooked Creek and the	As described in Section 3.5, due to the long estimated time it would take for the pit to fill to the overflow point above the	No, we remain concerned about the ability to treat water in perpetuity.		

WAQ 10

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				Kuskokwim River, if applicable.	managed lake level (estimated 6 years), it is considered very unlikely that a pump failure would be unrepairable or water treatment could not be upgraded in this timeframe. NEPA does not require analysis of worst-case scenarios.			
USFWS	3.7.3.2.2	35	The main source of water discharged to Crooked Creek during construction would be from pit dewatering,	Please restate the quantity of water to be discharged to Crooked Creek.	Text has been edited accordingly.	Accepted		
USFWS	3.7.3.2.2	35	Concentrations of dissolved antimony, arsenic, iron, and manganese, and total concentrations of aluminum, antimony, arsenic, copper, iron, lead, and manganese in the pit dewatering water would be expected to be greater than the concentrations	How will the outflow be monitored to ensure that AWQC are met?	Samples of discharged effluent would be collected, analyzed, and reported in accordance with effluent limitations and monitoring requirements, which would be specified as	Accepted.		

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			specified in the most stringent AWQC (BGC 2014b).		conditions to the APDES permit.			
USFWS	3.7.3.2.2	35	the larger contribution of surface water inputs relative to treated groundwater inputs would be expected to result in negligible change to water temperature within Crooked Creek during construction	Please specify the respective volumes of water in treated groundwater versus base flow of Crooked Creek.	The volumetric rates of water discharged from the pit dewatering system relative to Crooked Creek volumetric flow rates are described in Section 3.5, Surface Water Hydrology.	Accepted		
WAQ 10 USFWS	3.7.3.2.2	35	As a result of the effective water management and treatment processes proposed under Alternative 2, impacts to water quality in Crooked Creek resulting from discharges of treated pit dewatering water would be low to medium in magnitude because the effects would be below, or treated to be below, AWQC.	Please describe the environmental consequences to water quality and quantity as well as fish and aquatic habitat if pumps or treatment system were to fail.	In the event of pump failure during the construction phase, the failed pump would be fixed or replaced in a timely manner. If the treatment plant breaks down during the construction phase, discharges to the environment would be	No, we remain concerned about the ability to treat water in perpetuity.		

Donlin Gold Mine DEIS
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					stopped until the treatment plant is fixed. Impacts to fish and aquatic habitat are described in Section 3.13, Fish and Aquatic Resources.			
USFWS	3.7.3.2.2	35	NAG waste rock with metal leaching potential could be used for construction of the lower CWD.	Please clarify whether the CWD is lined to prevent contact and metal leaching.	The CWD is not planned to be lined. There is potential for the generation of seepage and runoff with elevated metals concentrations derived from metal leaching; however, the ACMA pit would intersect American Creek downstream of the dam, so the runoff cannot migrate off site. The same is true for potential seepage from the Lower CWD.	Accepted.		

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					Seepage would be collected either in the ACMA pit dewatering system or at a proposed ore stockpile berm designed to minimize surface runoff to the pit. Ultimately, water in the Lower CWD would be used as process water.			
USFWS	3.7.3.2.2	35	Existing surface water temperatures downstream of the mine site vary between 0 and 9.16 degrees C depending on the time of year, and construction activities are not expected to have any substantial impacts on surface water temperatures	Provide a reference to where impacts from water temperature are analyzed in the Fish and Aquatic Resources section.	Impacts to fish and aquatic habitat are described in Section 3.13, Fish and Aquatic Resources (Stream Temperature Changes).	Accepted		
USFWS	3.7.3.2.2	36	Runoff from these overburden stockpiles would be managed by intercepting and directing surface runoff	How does this storm compare to the weather conditions that caused flooding in the area in 2011	The flood described in this article was the result of an ice jam on the	Accepted		

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			toward settling ponds sized to contain a 10-year return period, 24-hour duration storm (SRK 2012c).	(http://www.adn.com/article/western-alaska-highest-kuskokwim-river-flooding-memory)? Are these facilities, as well as the contact water impoundments and the tailings dam, designed to withstand such a storm with rains on top of rapid snowmelt in springtime?	Kuskokwim River. The storm frequency analysis and runoff modeling was used to inform settling pond sizing consider snowmelt depths and concurrent rainfall for various return periods (Source: BGC 2011c, Hydro-Meteorological Data: Synthesis and Analysis Final Report, Tables 7-1, 7-2, 7-3 and 7-4). The precipitation excess (i.e., expected runoff) of the snowmelt and concurrent rainfall are considered in the model.			

MIT 28

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USFWS	3.7.3.2.2	37	The greatest potential impacts to surface water quality at the mine site during construction would likely result from suspension of sediment caused by in-stream construction and erosion of cleared stream banks in the American Creek and Anaconda Creek watersheds.	Please analyze the cumulative effects of surface water impairments on Crooked Creek.	Cumulative effects of erosion and other impacts on Crooked Creek surface water quality are described in Chapter 4 (Section 4.4.1.7.2).	No, the cumulative effects section is inadequate. Please see our comments on Chapter 4 for suggestions on how to improve the analysis.		
USFWS	3.7.3.2.2	38	• Inputs of mercury to surface water from runoff and atmospheric sources; and	Does this analysis consider methylation of baseline Hg in soils due to dam flooding?	Impacts from dam flooding will be analyzed following receipt of additional information requested in RFAI #62.	No, we continue to be very interested in results of RFAIs regarding mercury.	Recommend Donlin Gold develop a Mercury Management Plan.	
USFWS	3.7.3.2.2	38	The average estimated discharge flow over the operational phase of the mine is 863 gpm, although there would be periods of no discharge when all pit dewatering water is used in the process (BGC 2014b).	Thank you for providing the average here. Please also provide a measure of variation (interquantile range, min/max), and also include these measures for the baseline flows of Crooked Creek in this section for comparison. A figure would be useful here, showing seasonal	Detailed information describing temporal dynamics of estimated discharge flow rates over the operational phase of the mine are discussed in	Accepted		

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				(predicted monthly) variation.	Section 3.5, Surface Water Hydrology.			
USFWS	3.7.3.2.2	38	During the operational period, a plume of contaminated groundwater would flow from the WRF towards the pit.	It's unclear why the plan appears to contaminate groundwater rather than install a liner in the WRF to prevent contamination and collect seepage from atop the liner. Please clarify.	The option of adding a liner under the WRF was carefully considered and dismissed from further analysis because it was determined that a liner would not provide an environmental benefit, and would be expensive to install. See Appendix C for additional detail. In addition, the question of a liner for the WRF was addressed in the file "Donlin_Lined_WRF_Memo033114.pdf." Instead of a liner, the WRF	Accepted		

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					was designed to take advantage of the terrain to catch all surface- and groundwater drainage into the CWD during operations and the pit after closure.			
USFWS	3.7.3.2.2	38	would likely contain higher concentrations of certain constituents such as sulfate, TDS, manganese, and zinc relative to the water produced from the pit perimeter wells, due to interactions between the in-pit dewatering water and PAG areas within the pit in the presence of air.	Please clarify that these levels will be elevated before, but not after treatment, correct?	Correct. Additional clarifying text has been added.	Accepted		
USFWS	3.7.3.2.2	39	Table 3.7-12: Water Quality of Wells in Mineralized Zone at Open Pit	This table is well done. The shading improves readability. Please report concentrations in ug/L.	The tables have been modified to report concentrations in the most appropriate units.	Accepted.		
USFWS	3.7.3.2.2	40	In the HDS treatment process, the effective removal of base metals	Provide information on the non-base metals with more complex	WTP efficacy for removal of arsenic and	Accepted, but please see USFWS concerns about pit		

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			results from the formation of co-precipitates with iron.	chemistries such as As and Se.	selenium is shown in *Table 3.7-34, Expected Effluent Water Quality for Treated Discharge to Crooked Creek.* Removal of arsenic by co-precipitation with iron is common practice in the water treatment industry, and results in the formation of iron (III) arsenates, which are stable compounds and insoluble in water. Selenium is not expected to be present in pit dewatering water at concentrations exceeding the AWQS.	destratification.		
WAQ 9 USFWS	3.7.3.2.2	40	Due to potentially low concentrations of dissolved iron in the	What is the source of the iron sulfate? Is it present in waste rock, or	The iron sulfate added to the WTP feed would	Explanation accepted, however the USFWS remains	Suggest clarifying this information. How would a lack of pit	

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WAQ 9			feed, addition of ferric sulfate as a source of iron may be needed to enhance treatment efficiency and arsenic removal. Mercury is typically removed to below the most stringent effluent limit if there is sufficient iron present in the feed (SGS 2012).	will it also be barged in?	be from allochthonous sources; i.e., it would be reagent grade $Fe_2(SO_4)_3$, shipped in from off site.	concerned.	destratification alter the amounts of this material required for water treatment?	
USFWS	3.7.3.2.2	40	This mixture would overflow to the second reactor and the discharge from the second reactor would be treated with flocculent and discharged into a clarifier.	What is the chemical composition of the flocculent?	"Magnafloc 10" (Applied Water Treatment Inc., 2013). Magnafloc 10 is a very high molecular weight, slightly anionic polyacrylamide flocculant supplied as a free flowing granular powder. It is a non-toxic synthetic polymer.	Accepted		
USFWS	3.7.3.2.2	41	water treatment process, and the treated effluent water would be discharged	Will this discharge meet the hardness based WQ standards calculated using the hardness of	Yes. The hardness-based standards for cadmium,	Accepted		

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			through an APDES permitted outfall to Crooked Creek (SGS 2012).	baseline Crooked Creek flows? Presumably this effluent will be very hard, which will increase the allowable levels of copper in the effluent. If the baseline of Crooked Creek has a hardness of 10 (for example) and the effluent has a harness of 100, more copper (e.g., and other metals with hardness based WQ standards) would be allowed in the effluent than if the hardness level for the water originally in Crooked Creek were used for the calculation. Please clarify what water will be used to calculate the hardness based WQ criteria for acceptable metals concentrations in treated effluent. If the effluent hardness value is proposed for use, please model the resultant water quality in the stream once the two waters are mixed so that a determination may be made about	copper, lead, nickel, and zinc were derived using a hardness of 78.58 mg/L, which represents the 15th percentile measured hardness at Station CCBO, Crooked Creek immediately below Omega Gulch. The 15th percentile was derived from data collected from 1996 through 2012.			

WAQ 9

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				whether the hardness based WQ standards are ultimately met.				
USFWS	3.7.3.2.2	41	The process would be operated at a pH between 9.0 and 9.5 in order to achieve effective precipitation of arsenic and manganese as a result of co-precipitation with iron;	Would this process be effective for Se?	Co-precipitation with iron (i.e. ferrihydrite adsorption) is known to be an effective treatment method for selenium, and is established by EPA as best demonstrated available technology for selenium treatment. However, selenium concentrations in the influent to the WTP during operations are expected to be below those specified by the most stringent water quality standard, so the efficacy of the operations water treatment	Is that true for treatment of projected pit lake water prior to discharge in stratified and destratified scenarios; if the pit lake does not remain stratified—and the time trajectory of model results suggests that it will not—then will Selenium concentrations still be below the most stringent water quality standards? Please provide model results that show water chemistry data for a destratified pit lake and describe whether it will be feasible to treat this water to meet the most stringent AWQS for these constituents given currently available		

WAQ_9

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					plant for treatment of selenium is tangential to the focus of this section.	technology.		
USFWS	3.7.3.2.2	41	Table 3.7-13: Expected Effluent Water Quality for Treated Discharge to Crooked Creek: Selenium	Please clarify why Se is estimated to be so low in this feed chemistry when other parts of the EIS describe Se – containing leachable rock types? For example, some values in Table 3.7-14: Water Quality of Major Inflows to Pit at Closure, show Se levels much higher than these for rock types in the mineral deposit. Is it a reasonable assumption that the water chemistry in a mined and broken bedrock will match that of existing groundwater in an undisturbed bedrocks currently sampled? Please verify that a sensitivity analysis has been done for this input water using some of the other values in table 3.7-9? If so, do the	Concentrations of selenium in the pit dewatering groundwater would be much lower than those in the tailings pore water, for example, because the tailings have different physical and chemical properties relative to the materials contacted by the groundwater naturally present in the aquifer. These differences in physical and chemical properties, as well as the	No further comment.		

WAQ 8

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				proposed water treatment methods work to remove Se at higher levels? It would be useful to see a sensitivity analysis modeling the efficacy of water treatment at higher WTP feed concentrations for all metals, not just Se.	presence of oxygen in the atmosphere, lead to increased rates of chemical weathering in tailings and waste rock, which influence the chemistry of the water that would flow into the pit post-closure. The weathering processes and reasons for differences in water quality in the various compartments of the water balance model are explained in detail in the Geochemistry section of the PDEIS.			
USFWS	3.7.3.2.2	42	For metals, the WTP feed chemistry is based on the 95th percentile dissolved pit perimeter well chemistry	Were “total recoverable” samples taken? Have these data been used as example inputs to the WTF feed? Is it possible	The effluent water quality predictions are based on observations from a pilot	Accepted – we remain concerned about the technical feasibility of treating water in perpetuity.		

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WAQ 8				constituents that might be filtered out in a “dissolved” water sample may cause interferences in the proposed WTF system that would reduce its efficacy?	scale plant used to treat a bulk water sample from the pit area as well as on operational data from full scale HDS plants in use at other mines.			
USFWS	3.7.3.2.2	42	The average ratio of diverted surface water to treated groundwater discharged to Crooked Creek is 1.21:1, with a range over the life of the mine of 0.85:1 in Year 15 of operations to 100 percent of the flow originating from diverted surface runoff in Year 25 of operations.	This is very helpful. Please provide similar estimates for ratios of treated water volume to base flow in this section.	The volumetric ratios of discharged water relative to total flow in Crooked Creek would vary seasonally and over the life of the mine, depending on precipitation, runoff from surrounding areas, hydraulic conductivity of bedrock in the vicinity of the pit, and other factors that are discussed in Section 3.5, Surface Water Hydrology, and	Accepted		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					Section 3.6, Groundwater Hydrology.			
WAQ 21 USFWS	3.7.3.2.2	42	The American Creek FWDD, for example, would have a pumping capacity of 3,963 gpm	Has mercury methylation and subsequent bioaccumulation been modeled in these newly flooded areas?	The potential for mercury methylation and bioaccumulation in the FWDD and CWD reservoirs would be insubstantial due to the low concentrations of dissolved organic carbon to support heterotrophic bacterial activity in these reservoirs, and the lack of higher trophic level biota, which would be requisite for bioaccumulation.	We remain concerned.	We remain concerned about levels of mercury to be released into the environment due to project activities.	
USFWS	3.7.3.2.2	43	Concentrations of total aluminum, total iron, and total manganese generally increase with increasing stream flow because these metals are primarily	Is this a linear relationship, or is it curved, e.g., driven by flooding?	Higher stream discharge is usually associated with higher flow velocity which entrains	Accepted. This description was improved in this version of the DEIS.		

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			associated with sediments which consist of naturally occurring minerals and organic material.		sediments from the substrate, increasing the concentration of the total fraction of metals in the water column. This was noted in area streams by Arcadis (2012) for total aluminum, total iron, and total manganese. The relationship is not linear, and is driven by flooding to some degree. It should also be noted that the concentration of some analytes can decrease with increasing stream flow because of dilution.			
USFWS	3.7.3.2.2	44	Inversely, the lower flow rates in Crooked Creek that would occur as a result of surface water diversion and	This does not necessarily flow logically. It depends on the drivers of increased concentrations at high	Additional clarification has been added to the text.	This description was improved in this version of the DEIS.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			reduced base flows associated with Alternative 2 would be expected to result in decreased total concentrations of aluminum, iron, and manganese in the water.	flows, and how they operate in the undisturbed setting. While this logic might hold with a linear relationship, it may fall apart if numerical correlations are driven by a few high values that occur only during floods. Please provide further support for this line of reasoning.				
USFWS	3.7.3.2.2	45	The disruption of wetlands within the proposed project area may decrease existing rates of methylation (SRK 2012c).	Please address quantitatively how “disruption of wetlands” in the proposed areas of the mine site may increase or decrease mercury methylation. Please model the potential for Hg methylation and bioaccumulation in the FWDDs and the CWD using baseline soil concentrations.	The subsection “Estimated Changes in Mercury Methylation Rates in Wetland Systems” has been added to the PDEIS in response to this comment. In addition, quantitative estimates of changes in methylmercury concentrations in surface water are provided in the subsection	We remain concerned mercury modeling.		

MIT 28

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					"Predicted Methylmercury in Surface Water."			
USFWS	3.7.3.2.2	45	Concentrations of both total mercury and methylmercury in surface water and sediment would be monitored by continued sampling during operation of the mine.	Where will these concentrations be monitored? What will be done if HgCH3 exceeds criteria during operations?	Sampling would be collected and analyzed for a long list of analytes including total mercury and methylmercury from the following surface water monitoring sites, per the 2012 Plan of Operations, Monitoring Plan: Snow Gulch Fresh Water Reservoir, Crooked Creek (upgradient of ACMA pit; CCBW), Crooked Creek below Omega Gulch (CCBO), Anaconda Creek (ANDA) and Crooked Creek below Crevice	No, the comment is not adequate.	Suggest further analysis. Please specify what corrective actions would be taken if mercury exceeds allowable concentrations in the environment? Would affected areas be remediated? Is this technologically feasible?	

MIT 28

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					Creek (CCBC). There are no applicable water quality criteria for methylmercury measured in water samples. However, if methylmercury concentrations increase beyond expected levels, then corrective actions would be taken.			
USFWS	3.7.3.2.2	45	concentrations of total mercury detected in 465 water samples collected between June 2005 and June 2013 ranged from 0.518 to 260 nanograms per liter (ng/L)	Please report concentrations in the same units throughout the document. The standard reporting unit for concentrations in water is ug/L. It would be helpful to standardize all water concentrations in this document to this measure, including this section and the tables. It is confusing (and not transparent to those readers who are not familiar with	This issue has been corrected in the revised text. Concentrations of mercury and methylmercury in water are now reported in nanograms per liter (ng/L).	Accepted.		

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				environmental chemistry data) to switch the reporting unit by 6 orders of magnitude at this point in the document.				
USFWS	3.7.3.2.2	45	Category 1 sites, 18 from Category 2 sites, and 34 from Category 3 sites.	Please define these categories.	Additional clarifying text has been added.	Accepted.		
USFWS	3.7.3.2.2	45	Studies of mercury mass balances in forest-dominated catchments have shown that mercury inputs to aquatic systems are more heavily dominated by contribution from wetland runoff (St. Louis et al. 1996; Selvendiran et al. 2008; Berndt and Bavin 2012), rather than atmospheric deposition.	The use of scientific literature here to support this assertion is appreciated.	Comment acknowledged.	Accepted.		
USFWS	3.7.3.2.2	45	Current estimates of methylmercury production in project area wetlands are low, and not expected to increase substantially due to the project	Has the potential for mercury methylation in recently flooded project areas such as the FWDDs been modeled?	To date, there has been no quantitative modeling to predict mercury methylation rates in the freshwater	We remain concerned about mercury levels.	We remain concerned about levels of mercury to be released into the environment due to project activities.	

WAQ 21

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WAQ 21						reservoirs. It is assumed that the potential for mercury methylation and bioaccumulation in the FWDD and CWD reservoirs would be insubstantial due to the low concentrations of dissolved organic carbon to support heterotrophic bacterial activity in these reservoirs, and the lack of higher trophic level biota, which would be requisite for bioaccumulation.			
AIQ 5	USFWS	3.7.3.2.2	46	Mercury deposition rates are projected to increase in these watersheds by 2.3 to 4.8 μg/m2/y, with an average increase of	What part of the process will emit Hg? Please provide further analysis on why mercury deposition rates are projected to increase in	Additional text has been added.	Partially addressed, the additional text clarifies the modeling that was done and the results.	Please see our comments specific to the mercury modeling below.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
AIQ 5				3.55 µg/m2/y, an increase of 42 percent as a result of the activities proposed under Alternative 2.	these watersheds, or refer the reader to a section of the document that supports this statement.				
WAQ 21	USFWS	3.7.3.2.2	46	Because the rates of mercury transformation and transport in upland/wetland systems and aquatic sediments are not expected to change as a result of the project activities, a linear response between atmospheric deposition rates and mercury concentration in surface water is assumed	Although this assumption is reasonable in most cases, it would be helpful to see newly flooded areas such as the CWD and FWDDs modeled separately.	Comment acknowledged. As mentioned previously, potential for mercury methylation and bioaccumulation in the FWDD and CWD reservoirs would be insubstantial due to the low concentrations of dissolved organic carbon and nutrients to support heterotrophic bacterial activity in these reservoirs, and the lack of higher trophic level biota, which would be requisite for bioaccumulation	Partially adequate, the additional text clarifies the modeling that was done and the results. Please see our comments specific to the mercury modeling below.	We remain concerned about levels of mercury to be released into the environment due to project activities.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					.			
USFWS	3.7.3.2.2	46	The model simply assumes a linear relationship between atmospheric deposition rates of mercury and concentrations of mercury in surface water.	Good work, easy to follow. This chapter does a good job of stating the assumptions.	Comment acknowledged.	The chapter continues to be clearly written. However, we have concerns about some of the methods and assumptions see new comments below.		
USFWS	3.7.3.2.2	48	However, site-specific BAFs to explain methylmercury partitioning between water and fish tissue are not presently available for the area of consideration under Alternative 2.	It is unclear why the units for Hg are different.	Text has been edited accordingly.	Accepted.		
USFWS	3.7.3.2.2	49	The concentrations of constituents in the TSF pond and pore water could increase beyond the results summarized above by as much as a factor of five due to recirculation of tailings water through the process circuit (SRK 2007).	This estimate appears to be the more relevant estimate to use for comparison to AWQC	The predicted concentrations of TSF water are given in Table 3.7-29. These include the factor of 5 concentrations. The water quality criteria are given in this section to provide the reader with a frame of reference for	Accepted.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
						interpreting the predicted concentrations of constituents in the Waste Treatment Facilities, but as stated in the PDEIS, water quality in the TSF is not subject to regulation under the CWA or the APDES permitting program.			
BIRD 1	USFWS	3.7.3.2.2	49	TSF are not subject to regulation under the CWA or the APDES permitting program.	Are there mitigation measures that can be used to deter migratory birds from landing on the TSF?	Mitigation measures for all resources are now located in Chapter 5.	We remain concerned	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
PAA 16	USFWS	3.7.3.2.2	49	Direct adverse effects to surface water quality in the Anaconda Creek watershed would result from operation of the TSF during the	Suggest creating a comprehensive table that compares environmental consequences by alternative. Suggest	Agree. Table 3.7--42 has been added to show water quality impacts by alternative.	It is good to have the table; however the summary impact ratings are too broad to show a difference across alternatives in		

PAA 16

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			operational phase of the mine. The effects would be local in geographic extent and long-term in duration. The magnitude of impacts would be considered high within the TSF impoundment because the TSF water would exceed water quality regulatory limits for the constituents listed above, but would be mitigated through seepage capture and recycling to have a low intensity effect on water quality downstream of the TSF SRS.	comparing this alternative with Alternative 5A, which considers dry stack tailings. Recommend including a cost comparison in the feasibility analysis.		most cases. We are concerned the analysis is not transparent.		
USFWS	3.7.3.2.2	49	Water quality issues in the CWD reservoirs would be managed during operations by limiting storage volumes in the lower CWD not to exceed 405 acre-feet more than 5 percent of the time	How do predicted rain events, especially during breakup, factor into this design?	The storm frequency analysis and runoff modeling consider snowmelt depths and concurrent rainfall for various return periods (Source: BGC 2011c,	Accepted.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					Hydro-Meteorological Data: Synthesis and Analysis Final Report, Tables 7-1, 7-2, 7-3, and 7-4). The precipitation excess (i.e., expected runoff) of the snowmelt and concurrent rainfall are considered in the model that was used to inform the water balance calculations.			
USFWS	3.7.3.2.2	53	Monitoring to demonstrate seepage water quality would continue for both the SRS pond and collection wells until analytical results indicate acceptable chemistry for discharge.	How often will monitoring occur? How many acceptable results will determine end of discharge treatment?	Monitoring of the seepage collection system would occur quarterly until the results indicate a stable condition. If the seepage water is not suitable for discharge, it would continue	Accepted		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
						to be pumped to the pit lake. The SRS would be operated for the required compliance period during closure. Seepage not suitable for discharge without treatment would be piped to the ACMA Pit (BGC 2014b).			
PAA 29	USFWS	3.7.3.2.2	53	The impacts to surface water quality resulting from the reclaimed tailings facility would ultimately depend upon the long-term performance of the engineered cover and the TSF liner.	Please describe how the consequences would change if the pit were lined under Alternative 5A.	Consideration of a lined tailings storage facility is discussed in Chapter 2, Alternatives.	Yes, comment was addressed.	Recommend Option 1 for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A	
WAQ 22	USFWS	3.7.3.2.2	54	. The geographic extent of such impacts would be considered local to regional due to the potential for impacts inside and outside of	Please provide a map of predicted Hg concentrations in soil at closure.	Figure 3.8-5 shows annual total mercury deposition in the project area due to stacks and	Comment was partially addressed. We are concerned about the analysis that underlies these figures. Please see		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 22			the immediate project area due to mercury deposition from atmospheric sources,		fugitives.	new comments below.		
USFWS	3.7.3.2.2	55	The duration of any changes to surface water quality resulting from increased barge traffic would be intermittent (low water conditions only) and temporary, and water quality would be expected to return to pre-activity levels within hours of a barge passing.	Please restate how much barge traffic would increase per day on the river during shipping season. Page 30 of the Fish and Aquatic Resource section states barge traffic would increase up to 280 percent over existing levels. Suggest this paragraph include this relative increase, for example, “The duration of any changes to surface water quality resulting from 280 percent increase in barge traffic would be intermittent (low water conditions only) and temporary, and water quality would be expected to return to pre-activity levels within hours of a barge passing.”	Text has been edited accordingly.	Accepted.		
MIT 19 USFWS	3.7.3.2.2	55	Potential impacts resulting from runoff of water from NAG rock	Since runoff water from NAG rock used for road construction could	Materials that could act as sources of	No, concern still remains. Is there a sampling and	Recommend the following mitigation to develop a sampling and	

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MIT 19			used for road construction could include inputs of arsenic, selenium, antimony, and possibly other constituents of concern, to area surface water resources, including Jungjuk Creek.	include inputs of arsenic, selenium, antimony, and possibly other constituents of concern, it's unclear why a different source of rock that would not contaminate surface waters would not be analyzed.	contaminants of concern would not be used for road construction, and other material sources would be identified.	analysis plan for confirmation sampling of road materials?	analysis plan to ensure PAG rock and other sources of contaminants are not used for construction at the mine or for road surfacing.	
USFWS	3.7.3.2.2	56	The majority of rivers and streams on the pipeline route would be crossed by open cutting in the winter months when flows are lowest and disturbance of the river and streambanks can be held to a minimum.	Suggest providing a brief overview (or reference to the section) that describes why pipelines would be cut through streams or directionally drilled under them and the criteria used to determine which method would be used this determination.	Please see Chapter 2, Alternatives.	Accepted.		
USFWS	3.7.3.2.2	56	pipe would be buried to a depth that is below the scour potential of the particular river or stream, and	Is this method the same for Alternative 3B, the diesel pipeline?	Please see Chapter 2, Alternatives.	Accepted.		
USFWS NEP 6	3.7.3.2.2	59	Additionally, while there are some large-scale projects proposed in the region, they are generally still considered to be speculative, and are	According to the NOVA Gold website, mining in this area may be more intensive than the proposed project, suggest adding information that	This is generally still considered speculative, and not considered reasonably foreseeable.	We suggest reasonable foreseeable development near the Project be discussed in the Cumulative Effects		

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NEP 6				not considered reasonably foreseeable.	indicates the mine may expand at some point. "Donlin Gold is situated within a three-kilometer segment of an eight-kilometer mineralized trend. With multiple drill prospects and targets existing along that trend, substantial exploration potential exists." (http://www.novagold.com/section.asp?pageid=22228)		chapter. The description on their website sounds reasonably foreseeable: "Beyond its already large mineral endowment, Donlin Gold has substantial exploration potential, with the opportunity to expand the current open-pit resource along strike and at depth. Considering that the current pit occupies only part of a three-kilometer segment of an eight-kilometer mineralized gold belt, in NOVAGOLD's view it is possible that Donlin Gold's mine life, already measured in decades, will be greater than anticipated" .		
WAQ 13	USFWS	3.7.3.2.2	60	The geographic extent of such impacts would be considered local to regional, due to the	Please describe the sources of mercury from the project and how they might be	Gaseous mercury emissions are the main	Partially addressed, the explanation provided here, is a clear and succinct	Suggest clarifying this information. Provide a clear and transparent depiction of the fate of	

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WAQ 13			potential for impacts both inside and outside of the immediate project area due to mercury deposition from atmospheric sources, and the resources impacted would be considered common to important in context.	mitigated? Is this fugitive dust from tailings or waste rock or is it emissions from the autoclave than may be scrubbed, thereby reducing this footprint?	pathway by which mercury would be transported from the exposed surfaces of the pit, ore stockpile, and Waste Rock Facility. Some mercury will also be released due to “fugitive” dust emissions and wastewater discharges from the site. Finally, mercury would also be emitted from the ore processing facilities. Based on a processing rate of 59,000 tons of ore per day and an average ore mercury content of 1.7 mg/kg, approximately 37 tons/yr of mercury are expected to	description of mercury fate from ore to tailings. Please describe the fate of 19.5 tons/year of mercury going to the tailing pit. Over the life of the mine this is about 20,000 tons of mercury behind the dam.	the mercury. Suggest revising text as follows: Approximately 37 tons/yr of mercury are expected to move through the ore processing facility. Of that 37 tons/year**,** 52.6% would be deposited in the TSF. Approximately 19.5 tons/year of mercury are expected to be deposited TSF.	

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WAQ 13						move through the ore processing facility. Of that 37 tons/year**, 52.6% would be deposited in the TSF**, 47.2% would be recovered from the emission control equipment during processing, and only 0.2% would be released to the atmosphere as mercury vapor. (See SRK July 2014, Mercury White Paper.)			
	USFWS	3.7.3.2.2	60	During construction, NAG waste rock with potential for metal leaching would be used for construction of the lower CWD.	Please provide more information (or reference to the section that describes) why this facility is not proposed to be lined, as the TSF will be?	Discussion of alternatives can be found in Chapter 2, and Appendix C.	Accepted.		
GRD 6	USFWS	3.7.3.2.3	61	the intensity of direct impacts to groundwater resources during the construction	Please describe whether and to what extent installing a liner in the CWD would mitigate	While the CWD ponds would not be lined and some seepage	Accepted, however we remain interested in the potential for migration of		

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GRD 6			period would be high,	these impacts.	may occur, the seepage would drain to the pit and be managed with mine drainage.	contaminated groundwater once the pit is full.		
USFWS	3.7.3.2.3	61	However, the WRF and underdrain would not be lined and some water from these facilities would leak into the underlying groundwater system (	Please describe (or reference the section that describes) the environmental consequences of installing a liner beneath this facility, and compare that option to the current unlined option.	Lined waste rock facility was considered and dismissed from further analysis (see Chapter 2 and Appendix C).	Accepted. See comment about linear above.		
PAA 16 USFWS	3.7.3.2.3	62	Therefore, operation of the TSF would not be expected to result in impacts to groundwater quality.	Suggest creating a comprehensive table that compares environmental consequences on ground water by alternative. Suggest comparing Alternative 2 with Alternative 5A. Recommend including a cost comparison in the feasibility analysis.	Agree. Table 3.7-42 has been added to show a comparison of impacts by alternative.	Partially addressed, however Table 3.7-42: “Predicted Pit Lake Surface Water Quality Estimates at Closure Year 99 and Predicted Base Case Post-Treatment WTP Effluent Water Quality” does not show a comparison of impacts by alternative.	Recommend addressing previous comment.	
PAA 41 USFWS	3.7.3.2.3	62	Concurrent and final reclamation of WRF, TSF, remaining overburden stockpiles, and associated	Please describe how the risk of a tailings dam failure like the one at the Polly Mine, and other mines will change	The risk of tailings dam failure from a number of geohazards is	Comment not adequate and we do not agree with this statement. The dry stack tailings cannot	Suggest clarifying this information. Conduct similar failure modeling for Alternative 5A as was done for	

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			disturbed areas are designed to reduce infiltration and manage stormwater runoff.	under Alternative 5A, the dry stack tailings alternative, relative to the current design. Analyze the duration of the risk of catastrophic tailings dam failure under Alternative 2, and how long after operations cease that risk will remain (i.e., discuss the natural dewatering rate of tailings and at what point post closure they would be predicted to attain the level of consolidation that would equal the dry stack tailings alternative). Suggest creating a comprehensive table that compares Alternative 2 with Alternative 5A. It would be informative here compare how each alternative would affect surface and ground water quality in the project area.	described in Section 3.3. These risks would be the same between Alternatives 2 and 5A during operations, as the dam designs would be the same. The duration and differences between alternatives during closure/post-closure and expected consolidation are also described in Section 3.3. Table 3.7-42 has been added to show a comparison of impacts by alternative.	fail and contaminate the Kuskokwim river the same way slurried tailings can.	Alternative 2, using a more realistic spill scenario. Contact water and slurried tailings are not the same material and we are interested in a thorough analysis of the environmental effects of failure of these two different types of dams. The current comparison is inadequate.	
USFWS	3.7.3.2.3	63	provided that pit lake	Please describe the	Under	The issues are not	Suggest revising this	

PAA 41

GRD 6

GRD 6

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			levels are properly managed to maintain a net inward groundwater gradient to the pit	environmental consequences if pit lake water were not properly managed in perpetuity. Please describe the geospatial and temporal extents of this consequence.	Alternative 2, the pit lake levels would be properly managed in perpetuity. Mismanagement of the pit lake at any point in the future is not considered part of Alternative 2 and will not be analyzed in the EIS.	addressed adequately. It is unclear how groundwater will continue to flow towards the pit once the pit is full. Please describe why the groundwater would not flow through the pit and continue towards Crooked Creek, carrying contaminants with it. See our recommendations in Groundwater Hydrology section 3.6.	information.	
USFWS	3.7.3.2.4	63	On the basis of this analysis, Alternative 2 would result in moderate impacts to groundwater quality at the mine site.	Please describe the safety measures that would prevent a spill like this from occurring. How would releases be contained if a pipeline break were to occur? http://rt.com/news/211551-oil-spill-devastates-israel/	The intent of this comment is unclear. The article mentioned in this comment is about a crude oil pipeline in Israel, and it is not germane to the alternatives considered in the Donlin PDEIS.	Accepted.		
USFWS	3.7.3.2.4	65	pit, because the	Please describe the	The actions	No, the issue is not	See our	

GRD 15

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GRD 15				affected groundwater would be intercepted by the pit and the pit dewatering system (BGC 2014c).	environmental consequences were the pit dewatering system to fail. How would this change the spatial extent of groundwater contamination, and how quickly would contamination occur?	proposed under Alternative 2 do not include failure of the pit dewatering system. Failure of the pit dewatering system is not analyzed in the EIS.	addressed adequately.	recommendations in Groundwater Hydrology section 3.6.	
WAQ 29	USFWS	3.7.3.2.4	65	When pit dewatering activities are stopped, water would temporarily flow from the pit into the bedrock depressurized by dewatering wells underlying the proposed project area, resulting in inputs of sulfate and metals, and decreased pH, to the deep bedrock portions of the aquifer (SRK 2012c).	Please include the depth of the aquifer and its hydrological connection to Crooked Creek, or refer the reader to other sections in the document where this information can be found.	Cross-reference to pertinent information in in Section 3.6, Groundwater Hydrology, added earlier in this section.	See recommendations in Groundwater Hydrology section 3.6.		
GRD 15	USFWS	3.7.3.2.4	65	The magnitude of impacts to groundwater resources would be high locally, as the quality of <u>groundwater would not meet regulatory criteria</u> at certain	Please describe the spatial extent and timing of events for environmental consequences were pumps to fail and the cone of depression not maintained.	Failure of the pit dewatering pumps and failure to maintain the cone of depression around the pit	See our recommendations in Groundwater Hydrology section 3.6.		

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GRD 15			discrete locations within the proposed project area, but low magnitude outside the cone of depression.		are not considered part of Alternative 2, and the effects of such low likelihood failures are not considered in the EIS.			
MIT 28 USFWS	3.7.3.2.4	67	). The model results demonstrate an estimated 2.5 percent increase in sediment mercury concentrations closest to the Donlin Camp and 0.2 percent increase at the Bell Creek watershed (	This in an excellent assessment, however, please expand on it by modeling bioaccumulation of Hg into a food web that includes benthic invertebrates and resident fish. Please describe potential deleterious effects of elevated Hg exposure on a 10-year old resident fish 10 years after site closure, and describe predicted tissue concentrations in this type of fish and Age 2 Coho salmon. Please predict toxicological effects on sensitive life stages (e.g. eggs and fry).	Impacts to fish are discussed in Section 3.13, Fish and Aquatic Resources.	Accepted.	Recommend Donlin Gold develop a Mercury Management Plan.	
WAQ 21 USFWS	3.7.3.2.4	68	In sediments, the average TOC	How are these concentrations	An altered flow regime in	Please see our questions about		

WAQ 21

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			concentration is low (1.7 percent), the pH is neutral (7.1), and average sulfate and sulfide concentrations are relatively low (13,000 and less than 5,000 µg/kg, respectively) (	predicted to change under the proposed altered flow regimes and discharges (e.g. in Crooked Creek) proposed for the project.	Crooked Creek associated with Alternative 2 is not expected to influence TOC, pH, or sulfate concentrations to the degree that rates of mercury cycling or methylation would be affected.	sulfur in the Soil section 3.2.		
USFWS	3.7.3.2.4	68	Even if sulfate concentrations were to increase in some stream sections, as a result of water treatment plant discharge, the low TOC concentrations would continue to limit methylation potential in stream sediments	Please refer the reader to the section that describes how human waste is proposed to be treated and where it would be discharged.	Treated sewage effluent from the STPs would report to the TSF after secondary treatment in accordance with ADEC permitting requirements. A septic tank and leach field would be installed at Angyaruaq (Jungjuk) Port, resulting in no additional effluent to the STPs. Because sewage treatment plant	Accepted		

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					effluent would be discharged to the TSF, and not to the environment, it is not expected that the effluent would have any effect on mercury methylation rates in sediments, and it is not relevant to the discussion here.			
USFWS	3.7.3.2.4	68	The primary project-related mechanisms of impact to sediment quality in the transportation corridor under Alternative 2 would be associated with the construction of shoreside facilities at the Bethel and Angyaruaq (Jungjuk) ports, and occasional sediment disturbance by propeller wash during low water periods in the Kuskokwim River.	Please quantify this statement in terms of predicted barge traffic under Alternative 2 and compare it to traffic under an alternative including a diesel and LNG pipeline. Please restate the typical and minimum draft for the barges this section.	The following comparison is provided under Alternative 3A: Potential impacts to water quality in the Kuskokwim River resulting from increases in suspended sediment concentrations and turbidity at some shallow water locations would decrease by	Accepted.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					approximately 32% under Alternative 3A relative to Alternative 2, assuming a linear relationship between the number of barge trips and the potential impacts to water quality resulting from barging. Barge specifications are described in Chapter 2, Alternatives.			
USFWS	3.7.3.2.4	69	and occasional sediment disturbance by propeller wash during low water periods in the Kuskokwim River.	Please quantify this statement in terms of predicted barge traffic under Alternative 2 and compare it to traffic under an alternative including a diesel and LNG pipeline. Please describe what the typical and minimum draft for the barges will be in this section.	The requested comparison is provided under Alternative 3A, Summary of Impacts for Alternative 3A, Surface Water Quality. Barge specifications are described in Chapter 2,	The comment has not been addressed adequately. Alternatives need to be compared more thoroughly in terms of a combination of multiple stressors that often result in cascading effects on resources.	Request separate analysis of barge traffic under concurrent implementation of Alternatives 3A and 3B, both pipelines in one corridor, as well as phased development of the project with the pipelines being built first to limit shipping on the Kuskokwim River.	

BARG 17

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BARG 17					Alternatives.			
USFWS	3.7.3.2.4	69	Under Alternative 2, fine-grained sediments eroded or resuspended as a result of construction activities and barging could contribute to increased sediment loads and deposition, which could potentially result in effects to sediment quality at downstream locations.	Please describe the environmental consequences of this siltation/sedimentation on fish and aquatic habitat.	The potential effects of increased sedimentation on fish habitat are discussed in Section 3.13, Fish and Aquatic Resources.	Accepted.		
NEP 7 USFWS	3.7.3.2.4	74	In addition, potential impacts to water quality in the Kuskokwim River resulting from increases in suspended sediment concentrations and turbidity at some shallow water locations would decrease by approximately 32 percent under Alternative 3A relative to Alternative 2, assuming a linear relationship between the number of barge trips and the potential impacts to water	Thank you for performing this analysis. Please repeat the expected total number of barges and barges per day in this section for both Alternatives 2 and 3A.	The direct and indirect effects for Alternative 3A would be similar to Alternative 2. Although the Bethel and Dutch Harbor ports would not require as much expansion under Alternative 3A, and barge traffic on the Kuskokwim River would be reduced by 32 percent from Alternative 2	The comment has not been addressed.	Suggest further analysis and clarification. Remove summary of impact scales. The categories are so broad that they do not allow a detection of a difference between Alternatives, even though a difference exists; a reduction of 32% in barge traffic is not a small change for subsistence users or resident or fish and wildlife.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7				quality resulting from barging.		levels, the relatively small scale of these changes would not change the conclusions that were reached under Alternative 2.			
WAQ 27	USFWS	3.7.3.2.4	74	The contribution of Alternative 3A to cumulative effects to surface water quality would be minor to moderate.	Please repeat the recommended analysis of effects on surface water quality from the low probability, high consequence event of a large diesel spill on the Kuskokwim River.	Analysis of effects on surface water quality from the low probability, high consequence event of a large diesel spill on the Kuskokwim River are discussed in Section 3.24, Spills.	The comment has not been addressed.	Suggest clarifying this information. This section on spill risk requires additional work. Please see our comments on Spill Risk section3.24 for specific recommendations	
PAA 10	USFWS	3.7.3.3.2	78	The diesel pipeline proposed under Alternative 3B would result in substantially greater risk to surface water resources from spills or pipeline rupture relative to the natural gas pipeline proposed under Alternative 2.	Suggest combining Alternative 3A and 3B alternatives for the dual pipeline alternative to Alternative 2. Please describe the environmental consequences of installing BOTH a diesel and a natural gas pipeline (adjacent to	The alternatives development process is discussed in Appendix C.	No, the comment has not been addressed. Suggest comparing this combined 3A 3B Alternative for a dual pipeline to Alternative 2	Request a separate analysis of implementation of Alternatives 3A and 3B, both pipelines in one corridor.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 10					each other) on barge traffic and the potential for spills (both high probability, low volume) and low probability high volume, therefore high consequence. Suggest comparing this combined 3A 3B Alternative for a dual pipeline to Alternative 2.				
PAA 10	USFWS	3.7.3.3.2	79	Under Alternative 3B, a diesel pipeline would be constructed instead of the natural gas pipeline proposed under Alternative 2	It's unclear why both pipeline are not considered. Please clarify the logic behind this decision.	The alternatives development process is discussed in Appendix C.	No, the comment has not been addressed. Suggest comparing this combined 3A 3B Alternative for a dual pipeline to Alternative 2	Request a separate analysis of implementation of Alternatives 3A and 3B, both pipelines in one corridor.	
	USFWS	3.7.3.3.2	82	Impacts to surface water quality could result from leaching of arsenic, selenium, antimony and possibly other constituents of concern from the NAG rock used for road construction.	Why is NAG rock proposed for road construction in this alternative, whereas it is not for Alternative 2. Why are similar practices not proposed for this alternative?	NAG rock would not be used to construct the BTC access road. Material sites along the road would provide the material for road construction.	Accepted		
WAQ 26	USFWS	3.7.3.4.3	85	The dry stack would be covered at closure with the same planned cover material as for Alternative 2. Seepage	Could the dry stack be reclaimed incrementally? What is seepage from the dry stack tailings projected	Yes. Under Alternative 5A, the dry stack tailings material would be	No, the comment has not been addressed.	Suggest clarifying this information. It is unclear in the current version whether the estimates for dust are	.

WAQ 26

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			recovery would continue in perpetuity, and monitoring in closure and post-closure would be the same as Alternative 2.	to be versus the Alternative 2 slurry tailings?	progressively reclaimed during the operations phase and completed at closure. The seepage from the dry stack facility would be more concentrated, and of greater volume than that described under Alternative2.		factoring in this progressive reclamation as a mitigation strategy for dust and mercury volatilization.	
USFWS	3.7.3.5.1	86	Alternative 5A includes a dry stack tailings disposal in contrast to the Alternative 2 conventional slurry tailings disposal within a lined TSF. This disposal method involves dewatering the tailings in a filter plant to produce a compactable, partially saturated material called a filter cake, with a moisture content of 19 percent by mass (BGC 2014a).	Please describe the moisture content of the slurry tails here for contrast.	Slurry tailings from the mine site would be comprised of about 64 percent water and 36 percent solids by weight. This information is included of the description of the tailings composition elsewhere in the EIS.	Yes, the comment has been addressed.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS	3.7.3.5.1	86	The TSF of Alternative 5A would include an upper unlined cell of filtered tailings, a lower fully lined operating pond, an SRS, fresh and contact water diversion channels, and overburden stockpiles.	Please describe why a liner is not proposed for the dry stack alternative.	A comparison of lined and unlined facilities was performed. The main dam and impoundment require lining due to the potential for significant seepage loss through the dam rockfill and foundation bedrock. The dry stack impoundment does not require lining as there is no pond and the improved drainage with an unlined dry stack improves stability. (BGC 2014a). Appendix C describes the alternative development process further.	Yes, the comment has been addressed. We appreciate that a liner is being considered for Alternative 5A. The analysis of this option clearly shows that this option lessens the environmental impact of the project to groundwater resources.		
USFWS	3.7.3.5.1	86	Construction of the dry	Please describe the	A tailings dam	No, the comment	Suggest further	

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PAA 41			stack would be ongoing throughout the mine life as the tailings are produced. The operating pond size would be expanded in campaigns every 4 years to store the anticipated volume produced during the intermediate years (BGC 2014a). The SRS would be constructed downstream of the main dam and operating pond. The water collected would be pumped either to the operating pond, the lower CWD, or to the process plant for use as process water.	differences in risk of catastrophic tailings dam failure, such as at the Polly Mine, for Alternative 2 and Alternative 5A, dry stack tailings.	failure is considered a part of neither Alternative 2 nor Alternative 5. A tailings dam failure spill scenario is under development and will be presented in Section 3.24, Spill Risk, of the Draft EIS.	has not been addressed adequately.	analysis and clarification. The spill response section is inadequate. The environmental consequences of a TSF failure of a realistic size and duration must be considered. Moreover the difference in risk of this occurrence needs to be transparent in the analysis. Please see our comments in the cover letter and on the Spill Risk section 3.24.	
WAQ 18 USFWS	3.7.3.5.1	86	Alternative 5A is expected to result in a substantial increase in the volume of water that is stored in the operating pond and then pumped to the pit at closure. Accordingly, the pit lake would fill more rapidly than for Alternative 2, reaching its	Please describe how this scenario compares with a drawdown pump/seepage recovery pump failure in Alternative 2.	The possible consequences of SRS pump failure are described in Sections 3.7.3.2.2 (Alternative 2, Mine Site, Closure) and 3.7.3.5.1 (Alternative 5A, Surface Water	Not adequately addressed.	Suggest further analysis. The analysis is not adequate to determine if there would be impacts on the human environment.	

WAQ 18

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					Quality, Mine Site, Closure); as well as in Section 3.6, Groundwater Hydrology, for both Alternatives 2 and 5A.			
USFWS	3.7.3.5.1	86	Preliminary modeling of the effects of pumping the dry stack tailings water to the pit using PitMod suggests that lake stratification would likely occur at an approximately 40 percent shallower depth, and surface water concentrations of metals would likely be higher than for Alternative 2.	The logic is not evident, it seems like tailings de-watering would be a continuous process concurrent with mining operations, yet it is discussed here as if all water will be stored for 27 years, then discharged into the pit. Please clarify the temporal dynamics of the plan for dry stack tailings dewatering. What is the predicted water quantity and quality and what are options for re-use and treatment?	The tailings water would be recycled and used as process water. The site has a positive water balance, so that water will continue to collect in the operating pond over the mine life, eventually reaching about 125,300 acre-feet by the end of operations (BGC 2014a). At the end of operations, the water from the operating pond would be pumped to the	Accepted		

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					pit.			
USFWS	3.7.3.5.1	87	At mine site closure, a cover system of stripped overburden would be placed over the tailings and the dams would be flattened to 3H:1V.	Please describe the potential for reclamation of dry stack tailings during operations. Is there a design in which dry tailings could be reclaimed during operations instead of waiting until closure?	Under Alternative 5A, the dry stack tailings material would be progressively reclaimed during the operations phase and completed at closure. Progressive reclamation would be essential to reduce dust generation and resulting impacts to surface water quality.	No, the comment has not been addressed adequately.	We recommend more specific information be provided in other sections confirming that dry stack tailings material would be progressively reclaimed during the operations phase and completed at closure.	
USFWS	3.7.3.5.1	87	An additional SRS would be constructed downstream from the upper dam to collect underdrain seepage from the dry stack to be pumped to the pit, which is expected to continue in perpetuity.	Please describe projected seepage volumes from try stack versus slurry tailings from year 27 (mine closure) through year 99. Describe designs that may be employed to reduce infiltration into the tailings after reclamation.	Please refer to Section 3.6, Groundwater Hydrology, for a discussion of seepage volumes under the dry stack tailings alternative (Alternative 5A).	Accepted		
USFWS	3.7.3.5.1	88	Under Alternative 5A, the volumes of water	Please quantify the relative amounts of	A tailings dam failure spill	No, the comment has not been	Recommend more specific information be	

PAA 40

DAM 4

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DAM 4			and slurry stored behind the tailings main dam during the operational period would be lower relative to Alternative 2, and progressive reclamation of the TSF would be conducted during the operational period	material and how likely it is to flow from the TSF to Crooked Creek and downstream to the Kuskokwim River. Please compare Alternatives 5A and 2 in terms of their potential for a catastrophic dam failure and release of impounded tailings and water in a catastrophic event. This comparison should be made in the spill response section.	scenario is under development and will be presented in Section 3.24, Spill Risk, of the Draft EIS.	addressed adequately.	provided. This scenario should be modeled for a realistic volume of tailings (i.e., more than 0.5% of the total TSF volume at closure) both alternatives and the discussion about the relative risk of failure be made transparent in the spill risk section. 52.6% of the mercury would be deposited in the TSF. Approximately 19.5 tons/year of mercury are expected to be deposited TSF. What would be its fate if there were a dam failure?	
DAM 3 USFWS	3.7.3.5.1	88	While water and tailings slurry volumes would be reduced under Alternative 5A and the dry stack progressively reclaimed, impacts to downgradient surface water resources in the Crooked Creek watershed in operations would be the same as Alternative	Although they are comparable under normal operational scenarios, the risk of catastrophic impoundment failure should be considered when comparing these alternatives.	A tailings dam failure spill scenario is under development and will be presented in Section 3.24 of the Draft EIS.	No, the comment is not adequately addressed. The risk of catastrophic impoundment failure should be considered when comparing Alternatives 2 and 5A for risk of catastrophic TSF failure, which could affect the Kuskokwim River in	Recommend more specific information be provided. The analysis is not adequate to determine if there would be unacceptable impacts on the human environment.	

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DAM 3				2, because water captured by the TSF dams and SRS would be recycled through the process plant under either alternative.			perpetuity.		
WAQ 26	USFWS	3.7.3.5.1	88	The composition of fugitive dust generated from the tailings stack would be similar to that of the tailings solids of Alternative 2, described in Section 3.2.3.2.5 (Soil Quality) and shown in Table 3.2-2 (Soils). The tailings would have relatively high concentrations of arsenic, antimony, and mercury (Donlin Gold 2014).	Please describe how the surface areas of wind-erodible tailings materials differ between these two alternatives, and describe this over time for the course of operations.	Under Alternative 2, the surface area of wind-erodible tailings would be negligible because the tailings would be deposited as a wet slurry (about 64% moisture content) and would be mostly underwater during the operational period. Under Alternative 5A, the tailings would be deposited as relatively dry filter cake (about 19% moisture content), and	No, the comment is not adequately addressed. The USFWS is concerned that this is not the case because the tailings beach seems to have a fairly large surface area and it is unclear whether reclamation of the dry stack during operations for Alternative 5A was factored into the modeling for Hg emissions and fugitive dust	Suggest clarifying this information to ensure the analysis is devoted substantially to each alternative.	

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WAQ 26						would be stacked in lifts, greatly increasing potential for wind erosion of the tailings material. See Table 3.7-42 for additional comparisons across alternatives.			
AIQ 9	USFWS	3.7.3.5.1	89	Changes to equipment at the mine site under Alternative 5A relative to Alternative 2 include the addition of a pressure filter system to dewater the tailings prior to placement within the tailings disposal area. The operation of the pressure filter system is not expected to result in any	Please compare the two alternatives in terms of power requirements and carbon footprint and differences in impacts to surface water quality relative to Alternative 2.	Differences in emissions between the alternatives for Air Quality are described in Section 3.8, Air Quality. The discussion of greenhouse gas emissions is now a part of Chapter 4, Cumulative Effects. The differences in greenhouse gas emissions (carbon footprint) are not expected to	Change could be accepted, however the referenced section, cumulative effects Chapter 4 remains unclear: "Direct and indirect impacts to air quality would be of low magnitude (<u>below permit thresholds and/or meeting regulatory standards</u>) for the construction, operations, and closure phases. The duration of impacts would be temporary during the construction phase,	Suggest further analysis of direct, indirect, and of interrelated effects. The summery level approach has resulted in analysis that leads to a category of minor, moderate or major instead of disclosing effects. This type of analysis does not address quantifiable effects nor does it allow for the combination of multiple minor, moderate, or major stressors that often result in cascading	

AIQ 9

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					influence surface water quality.	but would be considered long-term (through the life of the project) during operations and for post-reclamation activities. As a result, the overall effects of Alternative 2 on the air quality resource would be minor. There would be emissions above permit thresholds for the mine site during the operations phase, but the impact would not exceed ambient standards or increments" (Donlin DEIS Chapter 4.3.1.8, Air Quality).	effects on resources.	
USFWS	3.7.3.5.1	89	It is further assumed that after Year 10 of closure, this water will be of suitable quality for discharge, and runoff from the pond will be permitted to drain to Crevice Creek from Year 11 of closure	Please describe the relative volumes of water projected as runoff from tailings versus base flow of Crevice Creek.	These discussions can be found in Section 3.5, Surface Water Hydrology, and Section 3.6, Groundwater Hydrology.	Accepted.		

Donlin Gold Mine DEIS

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USFWS Comment Response Matrix

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				onwards via a spillway that will be excavated in the ridge dividing Anaconda and Crevice Creeks					
PAA 29	USFWS	3.7.3.5.1	90	Total seepage underflow reporting to the SRS in post-closure is expected to be roughly 50 percent higher than Alternative 2, due to less reversed surface flow going to Crevice Creek, and would be pumped to the open pit in perpetuity because the unlined dry stack could continue to leach metals (as compared to the lined TSF in Alternative 2).	How would lining the TSF for alternative 5A change this seepage volume? Why is surface flow to Crevice Creek "less reversed" in this Alternative. The process driving this volume increase is unclear. Please clarify. Can water be routed differently above the dry stack tailings to divert it away from the stack? How would lining the dry stack tailings pile change this outcome?	Additional detail has been added. Please see Section 3.5, Surface Water Hydrology, and 3.6 , Groundwater Hydrology.	Accepted.	Recommend Option 1 for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	
DAM 4	USFWS	3.7.3.5.1	90	In addition to the past, present, and reasonably foreseeable future actions discussed under Alternative 2, Alternative 5A would result in additive, incremental, cumulative impacts. The reduction in volumes of stored	Please describe how the two alternatives compare in terms of the risk of catastrophic dam failure and release of mine waste into the environment, downstream relative to Alternative 2.	A tailings dam failure scenario is under development and will be presented in the Draft EIS.	The USFWS requests that this scenario be modeled for a realistic volume of tailings (i.e., more than 0.5% of the total TSF volume at closure) both alternatives and the discussion about the relative risk of failure be made transparent	The USFWS requests Alternative 2 and 5A are compared for risk to the environment from dam failure.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
DAM 4				water and slurry and progressive reclamation of the TSF would generally be offset by increased SRS volume in closure, and result in similar impact levels to Crooked Creek and locations			in the spill risk section. **52.6% of the mercury from the mine would be deposited in the TSF. Approximately 19.5 tons/year of mercury are expected to be deposited TSF.** What would be its fate if there were a dam failure?		
DAM 4	USFWS	3.7.3.5.1	91	Construction of the dry stack would occur from the valley bottom up. The storage area would not have a lining, as improved drainage within the unlined dry stack is needed to improve the geotechnical stability of the dry stack during operation and closure	Why is the “geotechnical stability” of a lined dry stack TSF not feasible and what are the implications of this for lined slurry tailings in Alternative 2? Does this statement imply that Alternative 2 contains a tailings pile that lacks inherent geotechnical stability? Could measures designed to achieve geotechnical stability in Alternative 2 be transferred to Alternative 5?	A lined dry stack would potentially reduce drainage, and raise the water table within the stack, promoting instability, which is a potential issue when the stack extends above the crest of the upper dam. Under Alternative 2, the tailings would be deposited as a	The analysis is not adequate to determine if there would be impacts on the human environment.	Request that this scenario be modeled for a realistic volume of tailings (i.e., more than 0.5% of the total TSF volume at closure) both alternatives and the discussion about the relative risk of failure be made transparent in the spill risk section.	

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DAM 4						wet slurry fully contained behind and below the crest of the TSF dam, where internal instability or liquefaction of the tailings would not cause any environmental effects. Additional information on a possible lined dry stack requested in follow-up questions to RFAI #55; section to be revised following review of additional information.			
WAQ 26	USFWS	3.7.3.5.1	93	Increased deposition of mercury to sediments and the potential for increased rates of mercury methylation would be the sediment quality impacts of greatest concern in	Please provide maps of projected mercury deposition under each of Alternatives 2 and 5A.	A map of projected mercury (total) deposition due to stacks and fugitives is provided as Figure 3.8-5 in	Issue of increased deposition of mercury to sediments and the potential for increased rates of mercury methylation has not yet been	Recommend Donlin Gold develop a Mercury Management Plan.	

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USFWS Comment Response Matrix

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WAQ 26				relation to fugitive dust from the dry stack tailings facility proposed under Alternative 5A.		the Air Quality section.	resolved with sufficient certainty. Please see USFWS comments on the mercury modeling above.		
WAQ 26	USFWS	3.7.3.5.1	93	Due to the quantity and nature of exposed tailings surfaces under this alternative, a greater potential for fugitive dust generation and dispersion is anticipated than under Alternative 2.	Please provide quantitative estimates and maps to support this statement.	Text added to cross-reference estimates of fugitive dust described in Sections 3.2 (Soils), and maps provided in Section 3.8 (Air Quality). Additional information has been requested in RFAI #61 regarding fugitive dust estimates for Alternative 5A; this section to be revisited following receipt of additional information.	Issue was not resolved prior to release of the DEIS. Please see USFWS comments on the dust modeling above.		
WAQ 26	USFWS	3.7.3.5.1	93	Due to the lack of PM modeling under Alternative 5A, it is unknown whether dust deposition could	This should be modeled so that predictions may be compared to Alternative 2.	Text replaced with comparative analysis in Section 3.2.3.5.1	Issue was not resolved prior to release of the DEIS.	Please see our comments on the mercury modeling above.	

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WAQ 26				impact soils outside property boundaries.		(Alternative 5A, Soil Quality) based on proportion of TSF emissions compared to overall mine dust. Text will be further revised following receipt of additional fugitive dust estimates requested in RFAI #61.			
FSR 14	USFWS	3.7.3.5.2	97	Detailed descriptions of potential project related spills are addressed in Section 3.24, Spill Risk. Descriptions include probable spill frequencies and associated volumes, fate and behavior of spilled materials, and various spill scenarios applicable to each alternative.	Section 3.24 on Spill Risk does not include these descriptions. Please add this analysis per recommendations made for that section. The spill section should include a “Cumulative Effects” section that analyzes cumulative spill events over time.	The Spill Risk section (3.24) has been substantially revised.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.5.2	98	Under the proposed action, the following spill scenarios are applicable and are analyzed in this section	The analysis in the Water Quality section are much more quantitative and thorough than those	The Spill Risk section (3.24) has been substantially revised.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14				based on particular areas of emphasis.	currently in Ch. 3.24.				
FSR 14	USFWS	3.7.3.5.2	98	A large volume (up to 735,000 gallons) spill of diesel fuel from an ocean-going tank barge at sea during the summer shipping season would result in high-intensity impacts to marine surface water quality over a relatively large area	Where did this number come from? Please specify, is it the barge capacity?	Detailed descriptions of potential project related spills are addressed in Section 3.24, Spill Risk. Descriptions include probable spill frequencies and associated volumes, fate and behavior of spilled materials, and various spill scenarios applicable to each alternative.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
WAQ 27	USFWS	3.7.3.5.2	98	water (specific gravity of diesel is between 0.83 and 0.88, compared to 1.03 for seawater),	This section is cited using current and relevant literature sources. Recommend this type of quantitative analysis for Section 3.24 Spill Risk.	The Spill Risk section (3.24) has been substantially revised.	The spill risk section remains inadequate for comparison of Alternatives.	Please see USFWS comments on this section.	
FSR 14	USFWS	3.7.3.5.2	98	Concentrations of total aqueous hydrocarbons in the water column would likely exceed the 15 µg/L threshold specified by the most stringent Alaska Water	Please provide a range of sizes using the projected spill volume and a range of environmental conditions. Alternative, gather and summarize	Please refer to Section 3.24, Spill Risk.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14				Quality Standard over a relatively large area for a period of several days	information from similarly sized diesel spills that have occurred in these environments. Please describe the environmental consequences of these spills and costs and level of effort for cleanup and spill response. Please use existing statistics to calculate an annual probability of occurrence of a diesel spill, given the number of barges proposed.				
FSR 14	USFWS	3.7.3.5.2	98	The duration of impacts to surface water quality would be limited primarily by the rapid evaporation of diesel fuel, and natural dispersion processes where wave action leads to the formation of micron-sized droplets that are diluted to concentrations below the threshold values	Would dispersants be used? Please describe the cleanup and restoration activities likely to be required under this scenario using similar situations that have occurred elsewhere.	Please refer to Section 3.24, Spill Risk.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.5.2	98	Dispersal and evaporation would likely take approximately 3 to 5	Please substantiate the number of days with data or literature. Relative to the	Citations have been added to Section 3.24, Spill Risk. Please	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14				days;	Selendang Ayu spill, which was approximately half this size (granted, of a heavier fuel type), this estimate seems unlikely http://en.wikipedia.org/wiki/MV_Selendang_Ayu	refer to NOAA 2014 and Zervopoulou et al. 2011			
WAQ 27	USFWS	3.7.3.7.2	99	In summary, a large spill of diesel would affect water quality by increasing the concentrations of hydrocarbons in the upper layers of the water column in a large area to levels that greatly exceed background concentrations.	Please clarify the term “large”.	Please refer to Section 3.24, Spill Risk.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.7.2	99	The duration of the impacts to surface water quality would be limited to several days due to evaporation and natural dispersion processes, and impacts would be considered temporary.	Please describe examples of the environmental consequences when similar amounts of diesel have been spilled. Describe effects on fish and wildlife in the area, quantifying mortality using available literature. Describe the duration of impacts in the context of studies of	Please refer to Section 3.24, Spill Risk.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14					similar situations, the cleanup response required, and the costs of these activities. Examples may found at: http://www.whoi.edu/oil/				
FSR 14	USFWS	3.7.3.7.2	99	As described in Section, the density of diesel fuel is much lower than that of water, and it is not possible for diesel to sink and accumulate on the seafloor unless adsorption occurs with sediment suspended in the water column (	What will the transport barges themselves use for fuel, e.g. bunker C fuel is thicker and more viscous and more persistent than diesel. If these vessels will be using fuels other than diesel, please describe the environmental consequences of spills of fuels of these other types. For example, this spill was not dissipated within 3-5 days http://en.wikipedia.org/wiki/MV_Selendang_Ayu	Please see Section 3.24, Spill Risk. Barges are propelled by diesel powered tug boats.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.7.2	100	Response efforts would focus on excluding the spilled fuel from river mouths and other sensitive areas; provided these response efforts are effective, the intensity of impacts to sediment	Please use existing spill information to model the predicted spatial extents of such a large spill in the ocean and use available sources to describe the environmental consequences of such a	There are too many variables to predict spatial extents of hypothetical scenarios for an EIS. Probability determination is not required for	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14				quality would be low and the impacted resources would be considered common in context.	large spill. Use existing data to model the increased likelihood of such a spill occurring as a result of the amount of vessel traffic due to this project.	NEPA documents.			
FSR 14	USFWS	3.7.3.7.2	100	The release of 37,817 gallons of diesel fuel to the Kuskokwim River	Please describe how this number was estimated and how much fuel this is relative to the capacity of the 4 barges proposed to travel the river together during operations.	This information is presented in the spill scenario description in 3.24, Spill Risk.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.7.2	100	Concentrations of total aqueous hydrocarbons in the water column would likely exceed the 15 µg/L threshold specified by the most stringent AWQC over a relatively large area	Please use existing spill information in rivers to model the outcome of such a large fuel spill in the Kuskokwim.	Modeling is not feasible given the large number of variables.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FSR 14	USFWS	3.7.3.7.2	100	Release over time would result in a long narrow sheen, which would extend downstream for distances of up to several miles. The rate of spreading and the area of the sheen would depend upon the viscosity and	Please model this to provide more quantitative estimates.	Modeling is not feasible given the large number of variables.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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FSR 14				composition of the spilled fuel, the rate of release, the ambient temperature, and the environmental conditions					
FSR 14	USFWS	3.7.3.7.2	100	It is important to note that the physical and chemical properties of diesel fuel are substantially different than those of crude oil insofar as diesel evaporates and disperses faster and more completely compared to heavier petroleum products such as crude oil.	What fuel type do the barges use to fuel themselves? If not diesel, please model the probability and environmental consequences of such a spill.	Barges are propelled by diesel powered tug boats.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
WAQ 27	USFWS	3.7.3.7.2	100	The duration of effects would be temporary because impacts would be limited to a period of several days due to naturally occurring evaporation and dissolution processes.	Please provide support for this statement.	See NOAA 2014, cited in Section 3.24, Spill Risk. Diesel fuel is most often a light, refined petroleum product. Small diesel spills to water will usually evaporate and disperse naturally within	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

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WAQ 27						a day or less. Thus, seldom is there any oil on the surface for responders to recover.			
FISH 10	USFWS	3.7.3.7.2	101	It is worth noting that if a spill were to occur during the salmon fishing season, then the perception of water quality impacts by salmon fishers and other resource users could potentially extend far beyond the area affected by actual water quality impacts resulting from spilled diesel	Please map the geographical are of potential effects on the fishery due to lethal effects on sensitive life stages, such as eggs and fry.	The Spill Section (3.24) has been substantially revised and includes a discussion of impacts to fish.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
WAQ 27	USFWS	3.7.3.7.2	101	The vast majority of the spilled fuel would either flow downstream with the river water or evaporate to the atmosphere.	Please provide more quantitative estimates of this, using available information.	There are too many variables for a quantitative analysis.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	
FISH 10	USFWS	3.7.3.7.2	102	High intensity impacts would diminish during the lifespan of the project, but detectable levels of diesel range organics could persist in sediments beyond	Please describe the environmental consequences of this outcome using known toxicological information about sensitive life stages of	The Spill Section (3.24) has been substantially revised and includes a discussion of impacts to fish.	The spill risk section remains inadequate for comparison of Alternatives.	Please see our comments on this section.	

FISH 10

WAQ 27

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			completion of the project and therefore the duration of impacts would be considered long-term	salmon. Please estimate the predicted loss to the Kuskokwim salmon fishery.				
USFWS	3.7.3.7.2	102	There are several potential modes for the unplanned release of diesel from tank farms or transfer operations at Angyaruaq (Jungjuk) or the mine site.	Please describe the environmental consequences of a spill like this using existing information. There was a spill of thousands of gallons in 2014 in the Ohio River. Would there be consequences similar to this type of spill http://www.epa.gov/region5/newsevents/duke-energy-spill/pdfs/dukeenergyspill-polrep-01-20140819.pdf Please describe potential modes planned by the project to enable response of the magnitude of this Ohio River event. What spill equipment and personnel resources would be needed to clean up the fuel and reduce shoreline impacts?	Please see Section 3.24, Spill Risk, and the vessel operations Oil Discharge Prevention and Contingency Plan prepared by Donlin for the exploration phase. The ODPCP would be updated for construction and operations.	Accepted.		
USFWS	3.7.3.7.3	106	Scenario 7: Cyanide	Please add a section on	A tailings dam	Issue was not		

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WAQ 27				Release	tailings dam failure and compare Alternatives 2 and 5A in this section in terms of their probability of occurrence with the different tailings compositions and the environmental consequences including their spatial extents to these sections.	failure scenario is under development and will be presented in the Draft EIS.	resolved prior to release of the DEIS.		
WAQ 2	USFWS DEIS New Comment	3.7	2	However, there are points along the Kuskokwim, usually at confluences with tributaries that drain mineralized areas, where concentrations of mercury and other minerals are elevated.			New Comment DEIS	Clarify whether or not the mineralized areas (or areas refer to) are areas with previous mining related contamination.	
WAQ 21	USFWS DEIS New Comment	3.7	2	Mine Site - Impacts to water quality at the mine site could result from geochemical alteration of mined rock and its interaction with air and water, as well as mercury deposition from stacks and fugitive dust.			New Comment DEIS Well stated and the USFWS agrees: Impacts to water quality at the mine site could result from geochemical alteration of mined rock and its interaction with air and water, as well as mercury deposition	In addition to Hg, however, the analysis should include aerial stack emissions of As and acid producing sulfur and emissions of sulfur and nitrogen oxides from power generation and how they will influence nutrient content and acidity of local soils; and analyze how that	

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WAQ 21							from stacks and fugitive dust. Given that this is true it is unclear why the soils chapter only includes an analysis of contamination from fugitive dust and not from the stack emissions.	in turn may influence mercury methylation, since the argument (in the DEIS) is that mercury methylation rates will be low due to lack of nutrients and sulfur in the soils and sediments.	
PAA 16	USFWS DEIS New Comment	3.7	3	Alternative 5A (Dry Stack Tailings)			New Comment DEIS	Include a discussion of the way in which Alternative 5A virtually eliminates the risk of a TSF dam failure and resultant release of tailings that would contaminate the Kuskokwim river in perpetuity as in Alternative 2. To ignore this aspect of the discussion of risk here does not provide the reader enough context to compare the alternatives in terms of their potential to impact (or reduce impacts) water quality in ways that are regional and permanent.	
PAA 29	USFWS DEIS	3.7	4	would be unlined			New Comment DEIS	Recommend Option 1	

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PAA 29	New Comment			under Alternative 5A-Option 1, and would include a liner with pumped overdrain beneath the tailings under Option 2.			Under the Alternative 5A, it appears the unlined option is being lumped in with the lined option during some of the effects analyses.	for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	
PAA 29	USFWS DEIS New Comment	3.7	4	The main difference between the mine site alternatives and options with respect to surface water quality is the time it takes for the SRS water to clean up to the point that it can be decommissioned; that is, roughly 200 years under Option 1, and about 10 to 50 years under Option 2 and Alternative 2.			New Comment DEIS	Recommend Option 1 for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	
WAQ 4	USFWS DEIS New Comment	3.7.1.2.1	6				New Comment DEIS	Include the State WQS for Hg and Se, so the reader can compare them to the existing standards.	
WAQ 29	USFWS DEIS New Comment		11	Table 3.7-1: Description of Surface Water Sampling			New Comment DEIS	Suggest clarifying this information. Please provide a map to show	

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WAQ 29				Locations in Mine Area, Donlin Gold Baseline Water Quality Monitoring Program				surface water sampling locations in mine area information.	
WAQ 20	USFWS DEIS New Comment	3.7.2.4	76				New Comment DEIS	Suggest clarifying this information. Describe if rocks also have the potential to leach selenium.	
WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	79	If the carbonate content in a particular block was more than sufficient to neutralize any acid generating potential, the block was generally characterized as NAG.			New Comment DEIS	Provide clarification: Given that the NAG waste rock is so fundamental to the design of a lot of the engineered structures onsite (e.g., TSF and dams), is the block the appropriate scale at which to do this analysis? How will Donlin Gold ensure that rock that used for construction is indeed NAG, given the high variation in AP and NP in this ore deposit?	
WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	79	Based on integrating the block model with the geochemical and mineralogical studies, the tonnage-weighted average NP*/AP ratio of the waste rock			New Comment DEIS “This means that the waste rock as a whole has the capacity to neutralize 5.5 times more acid than those same	Suggest clarifying this information. Describe the variations of assumptions.	

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WAQ 12				expected to be mined during the lifetime of the mine is estimated to be 5.5 (Enos 2013c). This means that the waste rock as a whole has the capacity to neutralize 5.5 times more acid than those same rocks can generate.			rocks can generate." This is a scenario where the variation is far more important than the average, in particular due to the assumptions about the use of waste rock during construction		
WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	79	The red line in Figure 3.7-15 shows how the ratio varies from year to year as different rocks are expected to be mined, with the lowest average ratio in the first and last years of operation.			New Comment	Suggest clarifying this information. Please describe why this ratio is the lowest during the first and last years of operation. Please clarify assumptions that drive this result because it seems like an odd coincidence.	
WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	79	However, in all cases the annual average NP/AP is greater than 2.6. Different states and countries have set different criteria for considering rocks to be non-acid generating.			New Comment DEIS	Suggest revising this information. Substantiate why the annual average NP/AP is the appropriate scale for this calculation - it seems more appropriate to use the scale of the individual sample, given the amount of real variation in the ore body itself and plans to	

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WAQ 12								use waste rock for construction.	
WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	82	The NAG 1-4 rocks constitute about 92.5 percent of the total waste rock.			New Comment DEIS	Clarify how this statistic calculated that resulted in 92.5% beng NAG 1-4; and how does it relate to the annual block averages, as discussed above?	
CLA 31	USFWS DEIS New Comment	3.7.2.4.1	82	The most reactive PAG 7 rocks constitute less than 0.09 percent of the total waste rock			New Comment DEIS	Please clarify whether this is percent by weight or is somehow factored into the annual block averages?	
WAQ 14	USFWS DEIS New Comment		82	The waste rock facility (WRF) and water treatment plant were designed based on the conclusions of the waste characterization reports regarding the percentage of waste rock that is PAG, as well as the leachability of metals and metalloids such as arsenic (BGC 2011b).			New Comment DEIS	Clarify, given the variation within the ore and waste rock body, how well correlated is AP with Arsenic content.	
CLA 31	USFWS DEIS New Comment	3.7.2.4.1	82	Table 3.7-16: Preliminary and Revised Waste Rock Management Categories for Proposed Donlin Gold Project			New Comment DEIS	Table 3.7-16 is not clear. Suggest clarifying what "All" and "Not Used.”	

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WAQ 12	USFWS DEIS New Comment	3.7.2.4.1	83	For the proposed project, kinetic tests included 40 laboratory humidity cell tests (HCTs) and 10 on-site barrel tests.			New Comment DEIS	Provide clarification and citations, where are these studies described. Is there a clear explanation of where each sample came from for these tests? There have been quite a few samples from the ore body. How and why were these few samples chosen? How was variation within the ore body taken into account during sampling design?	
WAQ 12	USFWS DEIS New Comment		83				New Comment DEIS	Please add a description of how the samples are treated prior to weathering? Are they crushed? If so, how fine? How would this grain size relate to tailings materials and how would grain size influence weathering?	
CLA 31	USFWS DEIS New Comment	3.7.2.4.1	92	Antimony and mercury concentrations are strongly correlated with arsenic (Figure 3.7-20) (SRK 2007); this geochemical coherence allows arsenic			New Comment DEIS	Suggest clarifying this information. It's unclear why all 3 metals aren't shown in the tables? Presumably concentrations of all 3 metals are available?	

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CLA 31				distributions to be used as a proxy for the distribution of these two constituents as well				Due to differences in molar mass for these metals, it would be informative to see concentrations in mg/kg for all of them in the tables above for the leaching experiments. Was Hg or Sb measured in leachate from the weathering studies? If so, please include data.	
WAQ 20	USFWS DEIS New Comment	3.7.3.2.1	123	SRS water chemistry (Table 3.7-34) is predicted to be neutral pH. Sulfate, ammonia, TDS, WAD cyanide, antimony, arsenic, iron, manganese, molybdenum, selenium, and mercury concentrations are expected to exceed AWQC (Hatch 2015).			New Comment DEIS	Suggest clarifying this information. Concentrations are expected to exceed AWQC standards in the SRS. Please clarify whether this is before or after water treatment and the capacity of the water treatment plant.	
WAQ 13	USFWS DEIS New Comment	3.7.3.2.1	128	Table 3.7-35: Surface Water Quality Estimates for Pit Lake at Closure Year 99 â€“ Sensitivity Analysis (assuming Exhausted PAG Pit-Wall Runoff and No-Discharge Water Management)			New Comment DEIS	Suggest clarifying this information. Mercury is predicted to be high in pit lake surface waters. Has volatilization modeling been conducted and analyzed as a local or regional impact?	

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WAQ 11	USFWS DEIS New Comment	3.7.3.2.1	131				New Comment DEIS	Suggest further analysis, these are some very high levels of metals including Hg.	
WAQ 9	USFWS DEIS New Comment	3.7.3.2.1	132	In the post-closure period, these drainages would be pumped to deeper layers of the pit lake, where they would be isolated from the surface for more than 100 years.			New Comment DEIS	Clarify, this implies that after 100 years, the pit will no longer be stratified and highly contaminated water will be at the pit surface.	
WAQ 9	USFWS DEIS New Comment	3.7.3.2.1	135	The concentrations of several constituents in surface waters would exceed the most stringent AWQC throughout the 100-year modeling period and (2) the pycnocline is predicted to move upward toward the surface and become less intense over time, eventually reaching the surface and allowing complete mixing at some point beyond the modeling period. For these reasons, additional monitoring and adaptive management measures that would help			New Comment DEIS	Suggest clarifying this information. This is a potential problem. This pit lake stratification is a key feature of this design and these modeling results imply it will not hold in perpetuity which has implications for increasing water treatment costs once the stratification ceases.	

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WAQ 9				maintain lake stratification as long as possible, manage surface water quality, and assure appropriate water treatment during post-closure are provided in Chapter 5, Impact Avoidance, Minimization, and Mitigation.					
WAQ 5	USFWS DEIS New Comment	3.7.3.2.2	141	The RO plant is expected to produce an estimated brine of 25 percent during operations, but only about 2.5 percent during construction.			New Comment DEIS The RO plant is expected to produce an estimated brine of 25 percent during operations.	Suggest clarifying this information. Are these percentages by volume or mass? What is the plan for brine disposal?	
WAQ 5	USFWS DEIS New Comment	3.7.3.2.2	143	The main source of water that would be treated and discharged to Crooked Creek during construction would be from pit dewatering (up to about 1,700 gpm) (SRK 2012b). Concentrations of dissolved antimony, arsenic, iron, and manganese, and total concentrations of aluminum, antimony, arsenic, copper, iron, lead, and manganese in			New Comment DEIS Concentrations of dissolved antimony, arsenic, iron, and manganese, and total concentrations of aluminum, antimony, arsenic, copper, iron, lead, and manganese in the pit dewatering water would be expected to be greater than the concentrations	Clarify, would water released to Crooked Creek be treated to meet AWQC prior to discharge. How would requests for variations from permit standard be handled? Analyze how water even though treated to standards may affect resources in the aquatic system.	

WAQ 9 WAQ 9 WAQ 9 WAQ 9

WAQ 5

WAQ 21

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			the pit dewatering water would be expected to be greater than the concentrations specified in the most stringent AWQC (BGC 2014b).			specified in the most stringent AWQC.		
USFWS DEIS New Comment	3.7.3.2.2	149	Sulfate concentrations in soils were very low in all of the samples. At relatively low sulfate concentrations (approximately 50 mg/kg and lower), mercury methylation is limited by the rate of sulfate reduction, while at high sulfate concentrations (greater than 100 mg/kg) sulfide buildup from sulfate reduction results in decreased methylation of mercury (Fitzgerald and Lamborg 2014). Sulfate levels in the wetland systems in the study area are insufficient to support high activity of sulfate reducing bacteria (SRB), the microorganisms			New Comment DEIS The USFWS is available to work with the USACE as the project proponent develops their mercury management plan.	Please describe how deposition of sulfate pollution from dust, ore processing, and power generation activities will influence mercury methylation at the mine site and in the surrounding watersheds. If the argument is that mercury methylation is currently limited by low sulfate, and the project is expected to emit sulfur into the environment from all of these sources, please include the higher future levels of sulfate in these mercury methylation models. The current models do not address this adequately.	

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WAQ 21				predominantly responsible for mercury methylation (ARCADIS 2014).					
WAQ 21	USFWS DEIS New Comment	3.7.3.2.2	150	These results suggest that current rates of mercury methylation in wetlands and uplands in the vicinity of the proposed mine facilities are low			New Comment DEIS	Please describe predicted levels of sulfate deposition under alternative 2. Adding sulfate to the system would be predicted to increase populations of sulfate reducing bacteria and it's unclear where the bulk of sulfate in the ore and from the power plant will go.	
WAQ 21	USFWS DEIS New Comment	3.7.3.2.2	150	Mercury methylation rates in project area wetlands are not expected to increase as a result of the activities proposed under Alternative 2, and the amounts of mercury converted to methylmercury in these systems would not be expected to increase in proportion to increases in mercury deposition. Mercury methylation rates in project area wetlands			New Comment DEIS	Suggest revising this information. The validity of this statement depends on the amounts of sulfate added to the system due to project activities. Please quantity amounts of sulfate in this section to justify these statements.	

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WAQ 21				are currently limited by low levels of nutrients and low activity of sulfate reducing bacteria in the anoxic environments requisite for mercury methylation.					
WAQ 21	USFWS DEIS New Comment	3.7.3.2.2	151	Because the rates of mercury transformation and transport in upland/wetland systems and aquatic sediments are not expected to change as a result of the project activities, a linear response between atmospheric deposition rates and mercury concentration in surface water is assumed (ARCADIS 2014).			New Comment DEIS	Provide more detail, this seems like a big assumption which depends on the sulfate concentration, but how can we be sure that sulfate concentrations do not increase as a result of project activities, including ore processing, dust deposition, and diesel-based power generation. There is an additional problem of averaging this deposition across the HUC 12 watershed, which is a large area.	
WAQ 22	USFWS DEIS New Comment	3.7.3.2.2	151	Following this model and associated assumptions, the activities proposed under Alternative 2 could cause an increase in the average			New Comment DEIS	Please describe the justification for an assumption of linearity in these models. Describe a plausible biogeochemical mechanism that would	

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WAQ 22				concentration of total mercury in surface water to 11.6 ng/L (ARCADIS 2014), which is at or below EPA approved aquatic life criteria of 2,400 ng/L (acute) and 12 ng/L (chronic) (EPA 2013k), and the Alaska water quality standard of 50 ng/L for total recoverable mercury				generate a linear relationship and provide references from the published scientific literature to support this assumed mechanism.	
WAQ 21	USFWS DEIS New Comment	3.7.3.2.2	152	More realistic constraints on the environmental transport and fate of mercury deposited from atmospheric sources within the project area would enable more precise predictions of impacts to surface water quality.			New Comment DEIS The USFWS agrees with this statement.	Given the toxicity and the deleterious effects of mercury on food webs. Please perform modeling to quantify the amounts of mercury from all sources using more realistic constraints on fate and transport to enable more precise predictions of impacts to surface water quality and subsistence resources (fish and fish eating animals) that inhabit affected watersheds.	
WAQ 22	USFWS DEIS New Comment	3.7.3.2.2	152	The duration of such impacts to mercury concentrations in			New Comment DEIS	Clarify what the mechanism would be for mercury	

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WAQ 22				surface water would be long-term, as concentrations would be expected to return to pre-activity levels at some time after the completion of the project.				concentrations to return to baseline conditions.	
WAQ 21	USFWS DEIS New Comment	3.7.3.2.2	153	Based upon the similarity between measured and predicted concentrations of mercury using this model, the existing methylmercury concentration was estimated to be 0.280 ng/L within the Crooked Creek and Donlin Creek watersheds (ARCADIS 2014)			New Comment DEIS	This is key baseline information. Please clarify, why MeHg was modeled, not measured.	
WAQ 12	USFWS DEIS New Comment	3.7.3.2.2	155	Subsequent use of the CWD water in the process circuit would decrease the volumes of water stored behind the CWDs, allowing the waste rock to dry. Intermittent drying and inundation of the waste rock could result in increased rates of			New Comment DEIS	Clarify, given that inundation will increase weathering rates, why the plan is to store the waste rock in the CWD area.	

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WAQ 12				oxidation and dissolution of sulfide minerals, leading to ARD and potential for leaching of metals and metalloids (e.g., arsenic) and salts (e.g., sulfate), which could degrade the quality of water stored behind the CWDs.					
MIT 19	USFWS DEIS New Comment	3.7.3.2.2	161	Materials that could act as sources of contamination would not be used for road construction, and other material sources would be identified (URS 2013a).			New Comment DEIS	Clarify how will materials that could act as sources of contamination will be verified during construction, is there a sampling and analysis plan for the construction materials.	
WAQ 22	USFWS DEIS New Comment	3.7.3.2.4	170	Table 3.7-44: Estimated Changes in Sediment Concentrations as a Result of Changes in Mercury Deposition Rates			New Comment DEIS	Suggest clarifying this information. Cooked Creek is the area of highest projected deposition of mercury. Provide concentrations or explain why they not available for Crooked Creek HUC12?	
NEP 7	USFWS DEIS New Comment	3.7.3.2.6	178	Low (e.g., treated water discharge to Crooked Creek meets AWQC) and High (mercury deposition			New Comment DEIS	Consider, that impacts are both "low" and "high," they should default to "high" so that mitigation to avoid	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7				could cause AWQC exceedance)				or reduce potential effects may be analyzed and applied.	
PAA 9	USFWS DEIS New Comment	3.7.3.6.1	192	Any tailings that cannot be filtered to the specified moisture content would also be stored in the pond.			New Comment DEIS	Clarify why some tailings would not be filtered to the specified moisture content.	
PAA 29	USFWS DEIS New Comment	3.7.3.6.1	193	Option 2 - Lined Dry Stack with Pumped Overdrain:			New Comment DEIS	Recommend Option 1 for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	
WAQ 9	USFWS DEIS New Comment	3.7.3.6.1	194	Once the pit lake reaches its maximum allowable elevation at or about Year 43 post-closure, the surficial water is to be treated to meet AWQC and then discharged.			New Comment DEIS	Suggest clarifying this information. Given present day technologies, will it be possible to meet AWQC if the pit lake is not stratified?	
PAA 9	USFWS DEIS New Comment	3.7.3.6.2	194	Under Alternative 5A, the volumes of water and slurry stored behind the tailings			New Comment DEIS The USFWS would support Alternative 5A because under	Suggest revising this information. Add progressive reclamation analysis in	

PAA 9

PAA 63

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			main dam during the operational period would be lower relative to Alternative 2, and <u>progressive reclamation of the TSF would be conducted during the operational period</u>.			Alternative 5A, the volumes of water and slurry stored behind the tailings main dam during the operational period would be lower relative to Alternative 2, and progressive reclamation of the TSF would be conducted during the operational period.	the Soils section, and clarify assumptions of the Hg air models.	
USFWS DEIS New Comment	3.7.3.6.2	195	Under both Alternative 2 and Alternative 5A, some mercury from the TSF would enter the air as a result of volatilization, and it is likely that the rate of volatilization from tailings would be greater from the dry stack (Alternative 5A) relative to wet slurry tailings			New Comment DEIS	As previously mentioned, 52.6% of the mercury would go to the tailings. Provide comparative analysis of Alternative 2 and 5A to quantify the potential risks and impacts on the ecosystem. Identify methods to reduce risks (mitigation), compare with interrelated and cumulative effects on all resources considered so that overall impacts can be quantified and the two	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 63								alternatives may be compared on equal merits.	
PAA 9	USFWS DEIS New Comment	3.7.3.6.2	196	The impacts would be considered long-term and regional, because water quality would potentially be reduced throughout the life of the project and return to background ranges sometime after the end of mine life, and effects could be felt throughout the mine site and potentially outside the project footprint			New Comment DEIS	Please describe and provide support for the biogeochemical mechanism whereby metals released into the environment would "return to background ranges" once they are released. They should not really be going much of anywhere (other than Hg methylation), justify the continued use of this assertion in the analysis.	
	CHAPTER 3.8: AIR QUALITY								
	USFWS	3.8		and HAPs from	Define this term the first time it is used in the section.	The term is defined in Section 3.8.1.1.	Accepted		
AIQ 3	USFWS 12	3.8.3.3.1		and assumes 90 percent emissions control efficiency through water and chemical dust suppressants; and Table 3.8-30: Annual Pipeline Construction Phase Emissions an <u>Unpaved roads</u>	What is the basis for this assumption? How does this number compare to other operational mines? Please provide literature to support this assumption.	This is the control efficiency assumed by Donlin in their emission calculations (Air Sciences 2014b and 2014c) for the ambient air quality analysis	No, this is not adequate to analyze effects of the action	This may be an acceptable explanation, but there should be additional information provided about cause and effect of (fugitive dust) that could lead to mitigation to avoid or minimize adverse effects on fish, wildlife,	

AIQ 3

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			assumed to have 90 percent control efficiency from water/chemical application (SRK 2012f).		(Air Sciences 2014a). The assumption is based on achievable control efficiencies attained through water application and chemical dust suppressants provided in EPA's *Compilation of Air Pollutant Emission factors (AP-42)* – Figures 13.2.2-2 and 13.2.2-5 (EPA 2006.) Added a specification to achieve 90 percent control efficiency to the mitigation measures (Chapter 5).		and habitat. Please describe the environmental effects if this control efficiency is not attained and even if efficiencies are attained, what are the potential environmental consequences. Recommend the analysis provide a clear depiction of cause and effect, and mitigation to avoid or minimize adverse effects on fish, wildlife, and habitat. The analysis should disclose direct, indirect, and cumulative effects and the interrelated consequences of project related activities on resources, as well as practical methods to avoid or minimize adverse impacts. The amount and type of resources impacted and their interrelated functions in the ecosystem guides effective avoidance	

AIQ 3

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							mitigation and compensatory mitigation. Therefore, effects on resources need to be quantitative (where possible) so that multiple stressors and the interaction of resource response in the ecosystem may be fully analyzed and mitigated.	
USFWS 16	3.8.3.3.1		Emissions from open burning are not included in emissions estimates for construction of the mine site because Donlin Gold would only conduct open burning in isolated areas	Please clarify locations and source materials for the burning.	Clearing will occur only during the construction phase. Exact locations, types and quantities of vegetation, and schedules for clearing and burning are not yet known. Areas cleared will be held to a minimum, and all clearing and burning will be in accordance with ADNR requirements.	Accepted		
USFWS 17	3.8.3.3.1		Table **Error! No text of specified style in**	Please break HAPs down by element and show	To reduce document	No, this is not adequate to analyze	Suggest clarifying this information.	

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AIQ 8			**document.**-1: Mine Site Construction Phase Emissions	tons of As, Hg, CN, etc. Provide maps with the total deposition of these chemicals onto the surrounding environment at year 27 of mine life.	length, the decision was made by the subject author to present the total HAP emissions, evaluate the HAP of greatest concern for each component, and present these emissions in the main body of the document. Regarding deposition maps: this level of detail is not typically provided in an EIS. However, reader may refer to *Modeling of Local Impact of Mercury Air Emissions from Stacks and Fugitive Sources: Donlin Gold Mine, Alaska* (Environ 2014a).	effects of the action	Recommend this section break HAPs down by element and show tons of As, Hg, CN, etc. as has been done in the water quality section. Suggest further analysis. Provide maps with the total deposition of these chemicals onto the surrounding environment at year 27 of mine life. It is difficult to mitigate for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective.	
AIQ 8 USFWS 20	3.8.3.3.1		Table 3.8-2: Maximum	Please break down the	To reduce	No, this is not	It is difficult to mitigate	

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AIQ 8			Annual Mine Site Operation and Maintenance Phase Emissions	HAPs by chemical constituent of concern. Please describe how these HAP emissions compare to other operating mine sites. Please model the air transport of EACH HAP, not just Hg, to estimate total deposition and its spatial location at the end of mine life.	document length, the decision was made to present the total HAP emissions and pull out the HAP of greatest concern for each component and present these emissions in the main body of the document. See response to comment 17 USFWS. Modeling impacts are not typically included in an EIS unless there is a permit or other state requirement. See response to 19 BLM. There is no state requirement to model each HAP individually. For this project,	adequate to analyze effects of the action.	for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective. They should be enumerated separately as has been done in the water quality section.	

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					Donlin opted to conduct local mercury modeling for the mine site operating phase. This is the component and phase with the greatest mercury emissions. The results are presented in *Table 3.8-22: Mercury Ambient Modeling Results*.			
USFWS 21			Mercury abatement would occur at each major thermal source, including the autoclave, carbon kiln, gold furnaces, and retort	Please quantify Hg production by source so that mitigation measures may be evaluated in the context of source-level production.	The mercury abatement systems described in the Plan of Operations – Volume I (SRK 2012a) collect and remove the mercury generated in the kiln feed and discharge, POX vent gas, electrowinning	Please see our comments in the soils and water quality section regarding mercury and mercury models.		

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					cell fume hoods and gold refinery area. The amount generated and removed by the various processes is not relevant to air quality impacts because this mercury will not be emitted into the air, rather it would be transported off site in containers, for storage as liquid elemental mercury. Mercury emissions into the air are presented in the main body of the document in terms of tons per year for the entire mine site. Detailed calculations for mercury			

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					emission at the mine site broken down by source (including autoclaves and carbon process with retort) are shown in emissions tables referenced as Air Sciences 2014c, and revised by Cardno (2014a).			
USFWS 22	3.8.3.3.1		Main power plant generation engines emissions are based on heat input assuming 99 percent natural gas and 1 percent diesel, with selective catalytic reduction to control oxides of nitrogen and an oxidation catalyst to control carbon monoxide; and emissions limitations in 40 CFR 60 Subpart IIII. Emissions for all other dual fuel-fired equipment are calculated assuming 100 percent natural gas; For the purpose of	Please justify the choice of use of 1% diesel. Please perform a sensitivity analysis using 25, 50, and 100% diesel, so that these possibilities may be viewed in terms of their different potential for air quality effects. This analysis was not but should also be provided under Alternative 3B, page 32.	The emissions shown in *Table 3.8-17: Maximum Annual Mine Site Operations Phase Emissions* were calculated assuming the typical fuel is used in combustion sources. The typical fuel for each combustion unit is shown in *Table 3.8-16: Mine Site Stationary Emission Units during*	Accepted		

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			analyzing alternatives for this EIS, the emission calculations for the entire stationary source in Table 3.8-2 are based on natural gas usage to the extent possible, as that is the fuel expected to be used for Alternative 2.		*Operations Phase*. It is appropriate to assume typical fuel for the comparison because under Alternative 2, Donlin would use natural gas to the extent possible in combustion units. It would not make fiscal sense to combust any more diesel than necessary because it would be more expensive than natural gas. For this reason, calculations of emissions assuming 25 and 50 percent diesel in the generators would not be helpful for decision makers reviewing the			

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					EIS (i.e. would be cost prohibitive). In addition, the EIS provides emission estimates used for permit applicability. EPA and ADEC have very specific requirements for how an applicant must estimate emissions for permit applicability. This includes assuming the “worst case” conditions, such as “worst case” fuel, allowed by the permit. These “worst case” emissions are shown in *Table 3.8-18: Mine Site Stationary Operations Phase Emissions for Permit*			

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					Applicability. This table reflects 100 percent diesel for the 12 power plant generators in calculating criteria pollutant emissions. The same "worst case" assumption used for stationary sources for permit applicability must also be used to conduct the ambient impacts analyses to estimate the effects of a project on ambient air in support of the permit application. The ambient impact analysis also includes fugitive and mobile emissions as shown in *Table*			

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					3.8-19: Mine Site Operations Phase Modeled Emissions.			
USFWS 25	3.8.3.3.1		In addition to the PSD process that would require compliance with air quality standards and increments, Donlin Gold prepared an air quality impact analysis to support the EIS. The analysis covers all PSD pollutants, as well as sulfur dioxide.	Does this analysis cover all the HAPs? We request that this analysis be performed for each HAP individually, due to their high toxicity and potential to enter natural food webs.	Please see responses to 17 and 20 USFWS, and 19 BLM.	No, this is not adequate to analyze effects of the action.	It is difficult to mitigate for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective. They should be enumerated separately as has been done in the water quality section.	
USFWS 26	3.8.3.3.1		AAAQS modeling results are shown in 3.8-6**Error! Reference ource not found.**.	What percent diesel do these results assume?	AAAQS dispersion modeling results are shown in Table 3.8-21. See also *Table 3.8-19: Mine Site Operations Phase Modeled Emissions*. The modeling was conducted using	Accepted		

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					the same "worst case" fuel assumptions that were used in the permit applicability analysis. Also see 22 USFWS.			
USFWS 31	3.8.3.3.1		Table **Error! No text of specified style in document.**-3: PSD Increment Dispersion Modeling Results	How would these results change with a higher use of diesel relative to natural gas? See prior comments on pages 6-7.	The impacts presented in *Table 3.8-20: PSD Increment Modeling Results* and *Table 3.8-21: AAAQS Dispersion Modeling Results* are based on "worst case" fuel. The impacts would not increase.	Accepted		
USFWS 36	3.8.3.3.1		The model provides predictions of ambient concentrations (and wet and dry deposition) to show impacts of stationary and fugitive sources in the project area	Please provide maps of these results in terms of annual deposition and total deposition year 27.	See response to 17 USFWS.	No, this is not adequate to analyze effects of the action	Suggest revising this information. It is difficult to mitigate for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what	

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							they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective. Therefore, we recommend they be enumerated separately as has been done in the water quality section.	
USFWS 39	3.8.3.3.1		Table 3.8-4: Mercury Ambient Modeling Results	At what point were these model estimates taken? The top of the stack, adjacent to the TSF? At the point of compliance at the edge of the site? Please provide an estimate of model variation for these estimates.	Refers to *Table 3.8-22: Mercury Ambient Modeling Results*. These values are the maximum estimated ambient concentrations anywhere in the modeled domain that could occur due to emissions from all mine sources of mercury (i.e. from process stacks and fugitive dust). The model predicts	Please see our comments in the soils and water quality section regarding mercury and mercury models.		

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					concentrations at receptors located on a grid within a 560 km^2 area with the Donlin project near the center (with the exception of the Donlin lease area). The modeled domain is shown in Figure 2-1 of ENVIRON 2014c. Impacts were also modeled at discrete receptors at the meteorological/ air monitoring stations at Crooked Creek Village and Aniak. The exact location of the maximum estimated values shown in *Table 3.8-22: Mercury Ambient Modeling Results* are not provided in the ENVIRON			

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AIQ 8					June 2014 report (Modeling of Local Impacts of Mercury Air Emissions from Stacks and Fugitive Sources: Donlin Gold Mine, Alaska) that is cited as a reference for the figure (ENVIRON 2014c). However, Figure 4-2 of the report shows the general locations of the highest concentration of annual average Hg^0 to be just outside the southeast corner of the Donlin Gold Lease Area. Figure 4-3 shows concentrations of 1-hour peak Hg^0. These figures have been added to the EIS as Figures 3.8-3 and 3.8-4,			

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					respectively. An estimate of model variation is not provided in the ENVIRON 2014c report.			
USFWS 40	3.8.3.3.1		The maximum total mercury deposition increased by 57 percent (Donlin Gold 2014b).	Is this meant to match the Percent of Guideline column above? If so, then it's not consistent with the tabular results, which show a percent increase of 0.57%, two orders of magnitude lower than this text. Please clarify.	Donlin Gold 2014b predicted that Hg **deposition** would increase by 57 percent due to stacks Deposition is shown in *Table 3.8-23: Annual Maximum Mercury Deposition Modeling Results*. Additional clarifying text has been added. This is unrelated to the modeled resultant **ambient** impacts estimated to be 0.0017 $\mu g/m^3$(baseline of 0.0014 $\mu g/m^3$	Accepted.		

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					+ modeled of 0.0003 µg/m^3), calculated to be 0.57 percent of the EPA chronic inhalation exposure guideline of 0.3 µg/m^3. Mercury ambient impacts are shown in *Table 3.8-22: Mercury Ambient Modeling Result*.			
USFWS 41	3.8.3.3.1		Table 3.8-5: Annual Maximum Mercury Deposition Modeling Results	This is the larger proportion of the Hg emissions from the project. 1. Please describe variation around this estimate. Is this the maximum modeled output in geographic space or time? If modeled geographically, where does it occur? What is the variation around these estimates? 2. A large fraction of this comes from fugitive emissions. Please specify the locations of the specific sources	*Table 3.8-23: Annual Maximum Mercury Deposition Modeling Results* provides modeled deposition. An estimate of model variation is not provided in the ENVIRON 2014c report. These are maximum values geographically	Accepted.	Please see our comments in the soils and water quality section regarding mercury and mercury models.	

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				considered so that more effective mitigation may be considered.	on an annual basis. The highest values are expected in the Eta-Crooked Creek HUC12 watershed (ENVIRON 2014c). Deposition rates are also shown in Figure 4-4 of ENVIRON 2014c (added to the EIS as Figure 3.8-4). Descriptions of the stack emission emissions sources are shown in Table 3-2 of ENVIRON 2014c. Fugitive emissions sources are described in detail in Section 3.3 of ENVIRON 2014c. The location of all fugitive emission sources			

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					is shown in Figure 3.11 and 3.12 of ENVIRON 2014c.			
USFWS 42	3.8.3.3.1		EPA (2014a) indicates that natural gas power plants have negligible mercury emissions;	How do emissions change with a diesel use scenario such as under Alternative 3A.	Alternative 3B is the diesel pipeline alternative. Engines do not emit mercury, so mercury emissions from the power plant itself would also be negligible under this alterative. Mercury emissions from process and fugitive dust would be unchanged under Alternative 3B. The only difference from Alternative 2 would be that the dual-fuel-fired boilers and heaters would be fired on diesel rather	Accepted		

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					than natural gas. The mercury emissions for all the dual fuel-fired boilers using natural gas is 5.50E-4 tpy vs. diesel at 2.09E-03 tpy (Cardno 2014b), so mercury emissions would be expected to increase under Alternative 3B. Alternative 3B discussion has been edited for clarification.			
AIQ 8 USFWS 50	3.8.3.3.1		Table 3.8-6: Maximum Annual Mine Site Closure Phase Emissions	Please describe these sources in more detail and describe whether and how the source varies by individual HAP constituent.	Refers to *Table 3.8-24: Maximum Annual Mine Site Closure Phase Emissions*. The emissions sources are listed in the table notes and are described in more detail in Donlin Gold 2014h, Donlin Gold 2014i, and		Suggest revising this information. It is difficult to mitigate for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological	

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Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					Cardno 2014b. Also see response to 20 USFWS regarding HAP breakdown.		perspective. They should be enumerated separately as has been done in the water quality section.	
USFWS 51	3.8.3.3.2		The transportation facilities would also include a 5,000-foot by 150-foot gravel airstrip located approximately 9 miles west of the mine site.	Please specify how many flights would be needed annually to transport these materials by plane. As an alternative to barging hazardous materials on the Kuskokwim, please specify the size of cargo aircraft that could land here and their ability to transport Hg and CN as an alternative to barging.	Table notes in *Table 3.8-25: Land and Air Transportation Construction Phase Emissions* and *Table 3.8-26: Maximum Annual Land and Air Transportation Operations Phase Emissions* provide information on flights for different types of aircraft for the construction, and operation and maintenance phase, respectively. Air transport of cyanide and		Suggest revising this information. Recommend more in-depth explanation in the DEIS on why the air transport alternative was not provided further consideration.	

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					mercury is not practicable and it is not demonstrated how air transport would have an environmental advantage (i.e., safer) over barge transport.			
USFWS 52	3.8.3.3.2		Electricity would be provided by two 600-kW diesel generators (one primary and one standby).	Please describe the environmental consequences of running these generators by quantifying the predicted air pollution from them.	The emissions from the Angyruaq (Jungjuk) generators are included in *Table 3.8-26: Maximum Annual Land and Air Transportation Operations Phase Emissions* stationary sources row. As shown in Cardno 2014c, the emissions from the Angyaruaq (Jungjuk) generators are 40.56 tpy of CO, 4.64 tpy of NOx,	Accepted		

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					0.23 tpy of PM2.5, 0.23 tpy of PM10 (all PM assumed to be PM 2.5), 0.08 tpy of SO_2, 2.2 tpy of VOC, 8,072.48 of CO_2e, and 0.19 tpy of HAPs.			
USFWS 63			Table 3.9-7: Land and Air Transportation Construction Phase Emissions	It's difficult to interpret these data, when they are not specified by individual constituents of concern, due to differing molecular weights. Please present the data by individual constituent.	See *Table 3.8-25: Land and Air Transportation Construction Phase Emissions*. This comment appears to be referring to HAP constituents. See response to 17 USFWS.	See our response to this comment above.		
USFWS 64	3.8.3.3.2		[NOTE TO REVIEWERS: Fixed wing aircraft emissions calculations assume two engines per aircraft, jet fuel density is 6.7 lb/gal; for helicopters, assumed two engine per aircraft, and avgas (6.0 lb/gal) and two flights per day.	Of which aircraft type? What are projected fixed wing aircraft types?	As shown in note b to *Table 3.8-25: Land and Air Transportation Construction Phase Emissions*, the fixed wing aircraft are Dash 8 Q300 (27 flights per week), Twin Otter Series 400 (3 flights per	Accepted		

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					day), and Cargo Plane (3 flights per 2 weeks).			
USFWS 66	3.8.3.3.2		Air quality impacts due to fugitive dust and tailpipe emissions from use of the roads would be considered local in extent.	When barge emissions are also considered, shouldn't this be considered regional to statewide?	(Comment is referring to the Land and Air Transportation section, under Operations.) Barge emissions are discussed under Water Transportation. These impacts are considered local to regional in geographic extent, as defined in *Table 3.8-14: Air Quality Impact Assessment Criteria*.	The impact criteria are not appropriate to define impacts.	Please see our cover letter with overall comments on the summary impact ratings.	
USFWS 77	3.8.3.3.2		Neither facility would not be reclaimed after mine operations cease	Please clarify the meaning of this statement.	Text has been revised for clarification.	Accepted		
USFWS 78	3.8.3.3.2		Table 3.8-8: Maximum Annual Ocean and River Traffic Construction Phase Emissions	Please clarify why these were not calculated.	See response to comment 56 DG.	Accepted		
USFWS 91	3.8.3.3.3		Table 3.8-9: Maximum Annual Pipeline Construction Phase	See prior comments about description/quantificati	Table has been renumbered as *Table 3.8-29:*	No	Suggest revising this information. It is difficult to mitigate for	

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AIQ 8				Emissions (tpy)	on of individual HAPs	*Maximum Annual Pipeline Construction Phase Emissions*. See responses to 20 and 25 USFWS.		pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective. They should be enumerated separately as has been done in the water quality section.	
AIQ 8	USFWS 95	3.8.3.3.3		Under Alternative 2, Donlin Gold would mitigate air quality impacts as follows:	More information is needed on the HAPs to suggest additional mitigation measures.	See response to comment 21 USFWS.	No	Suggest revising this information. It is difficult to mitigate for pollution by chemicals of uncertain type and volume, given the behavior of these chemicals in the environment varies substantially by what they are. Summing them makes the information nearly impossible to interpret from a toxicological perspective. They should be enumerated	

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							separately as has been done in the water quality section.	
USFWS 96	3.8.3.4.1		3.13.1.1.5 ALTERNATIVE 3A – LNG-POWERED ROCK TRUCKS	Additional analysis could lead to a preferred alternative due to the reduction of power generated by diesel that may result in significantly smaller carbon footprint. Suggest creating a comprehensive table that compares environmental consequences by alternative.	Comparative impact tables are a useful way to clarify contrasts in effects among the alternatives. For Air Quality impacts, see Table 3.8-32, which has been added.	The impact criteria are not appropriate to define impacts.	Please see our cover letter with overall comments on the summary impact ratings.	
USFWS 97	3.8.3.4.1		These large trucks would account for approximately 75 percent of the total annual diesel consumption under Alternative 2.	State what the remaining diesel consumption would be if only 1% of generator fuel is proposed to be diesel? Are there other transportation needs?	Under Alternative 2, the 12 main power plant generators will use 1% diesel and 99% natural gas. This statement merely indicates that the 12 main generators would never operate purely on natural gas; they would	Accepted		

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					always use a small amount of diesel. Under Alternative 3B, the 12 main power plant generators would use 100% diesel. This is a different comparison than the percentage of **total** diesel used at the entire mine site that would be used by the diesel trucks. This statement is indicating that the trucks will use 75% of the total diesel at the mine site under Alternative 2. The remaining 25% would be used by the diesel-fired equipment at the mine: black			

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					start generators, emergency generators, fire pumps, auxiliary SO_2 burner, and air handlers. Thus, Alternative 3A would have a large impact on the total diesel used at the mine site, if the haul trucks were all converted to LNG.			
USFWS 100	3.8.3.4.1		The effect on HAPs (a subset of volatile organic compounds) and mercury (a subset of HAPs) would be negligible.	Please describe by individual HAP and quantify emissions. Natural gas tends to burn cleaner than diesel, so this is a surprising result that needs to be supported with data.	(*Alternative 3A*) No specific emissions data for HAPs is available for mobile sources. DOE (2001) indicates that VOC emissions are reduced by an average of 64% using LNG trucks vs. diesel trucks. For diesel firing, we assumed HAP emissions	Accepted		

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					are similar to large diesel engines. For the energy output needed for the trucks at the mine site, this results in 3.1 tons per year of HAPs. A reduction of 64% is 2 tpy. Note that the LNG alternative would also result in in additional VOC reductions (and thus HAPs) by reducing diesel barging. Because **total** vessel VOC emissions under Alternative 2 are so small (8 tpy), the HAPs reduction would be almost non-existent and so was not calculated. There are no			

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						mercury emissions from engines; therefore no related impacts are discussed.			
NEP 7	USFWS 101	3.8.3.4.1		For the transportation facilities component under Alternative 3A, there would be fewer ocean and river barge trips and less tanker truck traffic compared to Alternative 2. No additional fuel storage capacity would be required at the Dutch Harbor Port and the fuel storage capacity required at Bethel and Angyaruaq (Jungjuk) ports would be reduced or eliminated.	Suggest creating a comprehensive table that compares environmental consequences by alternative. This side-by-side analysis could lead to an environmentally preferred alternative due to reduction of impacts on fish and aquatic resources.	Agree. A comprehensive table comparing impacts by alternatives has been developed (see Table 3.8-32).	The impact criteria are not appropriate to define impacts.	Please see our cover letter with overall comments on the summary impact ratings.	
PAA 10	USFWS 102	3.8.3.4.2		Alternative 3B – Diesel Pipeline	Barging fuel on the Kuskokwim may have low probability but high risk. This alternative would almost eliminate barging fuel on the Kuskokwim during operations. In addition, please evaluate the	Under Alternative 3B, a diesel pipeline would be constructed instead of the proposed natural gas pipeline. Because natural gas would not be	We requests the Alternative to collocate both a natural gas line and a diesel line in one corridor be analyzed.		

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PAA 10

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				environmental consequences combing BOTH Alternatives 3A and 3B and comparing implementation of two concurrent pipelines to Alternative 2.	available onsite, it would not be possible to provide LNG at the mine site. An alternative to install two concurrent pipelines (natural gas and diesel) was evaluated and dismissed from detailed analysis because it was infeasible primarily due to cost.			
USFWS 103	3.8.3.3.2		Emissions of NOx, CO, PM, SOx, and GHGs would increase, and emissions of VOCs would decrease. This would not affect the magnitude of emissions (emissions are above permit thresholds, and compliance with the ambient standards was demonstrated assuming worst case fuel).	Please revise this statement as appropriate when Alternatives 3A and 3B are implemented concurrently.	Alternative 3A would require LNG for the haul trucks, while Alternative 3B would supply only diesel fuel to the mine site through a diesel pipeline. It is not feasible to combine Alternatives 3A and 3B. See response to comment 102	Please see our response to comment 102 USFWS.		

PAA 10

PAA 10

PAA 10

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					USFWS.			
USFWS 104	3.8.3.3.2		During the construction phase, temporary emissions of criteria pollutants and GHGs are estimated to increase by about 6 percent due to construction of the additional 18-mile diesel pipeline.	Does this estimate consider economies of scale if both pipelines were constructed concurrently?	An alternative for two concurrent pipelines (natural gas and diesel) was evaluated and dismissed from detailed analysis because it was infeasible primarily due to cost. This is true even if both pipelines were constructed concurrently. See response to comment 102 USFWS.	Please see our response to comment 102 USFWS.		
USFWS 108	3.8.3.3.2		The filter cake would be transported by heated bed haul trucks to the TSF.	Please clarify the purpose of this heating. Must these be heated year round?	(*Alternative 5A.)* During the winter (five months of the year), tailings have the potential to freeze to whatever means of conveyance is used. Donlin chose trucks (over conveyors)	Accepted		

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					because the truck beds can be heated with exhaust gas (Donlin Gold 2014b). Clarification added to the text.			
USFWS 109	3.8.3.3.2		The additional use of mobile machinery for transport and dewatering at the filter plant would increase mobile emissions, exposure of the dry stack surface would increase fugitive emissions, and the increase in power consumption would cause an increase in stationary emissions from the power plant. The increase in fugitive emissions due to the dry stack would be offset by the elimination of fugitive dust emissions from the TSF beach area under Alternative 2.	Please quantify by how much these emissions would change so that Alternative 2 may be compared to Alternative 5A. Please show an alternative that includes Alternatives 3A and 3B and Alternative 5A and compare that with Alternative 2.	Additional clarifying text has been added. In addition, an Alternatives Comparison Table (Table 3.8-32) has been added to show air quality impacts by alternative and project component.	Accepted		
USFWS 110	3.8.3.3.9 .2		The direct, indirect, and cumulative effects	Suggest creating a comprehensive table	For comparative impacts by	Accepted. Please see our comments on		

NEP 7

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NEP 7				of Alternative 5A would be minor, similar to Alternative 2.	that compares environmental consequences by alternative. It would aid in the analysis to see the air quality and emission impacts compared side by side.	alternative for Air Quality, see Table 3.8.-32, which has been added.	Table 3.8-32 above.		
	USFWS 114	3.8.3.9.3		ALTERNATIVE 3A– LNG-POWERED ROCK TRUCKS When LNG is released, it transitions to a gaseous state upon contact with warmer air or water. Air emissions would consist primarily of methane, which is a potent GHG.	Suggest creating a comprehensive table that compares environmental consequences by alternative. It would aid in the analysis to see the GHG emissions compared side by side.	See response to comment 96 USFWS.	Accepted		
AIQ 7	USFWS DEIS New Comment	3.8		The removal efficiency cited applies only to the process facility. Mercury emissions from point sources at the process facility are controlled to the extent that 99.6 percent of the mercury is captured (Hatch 2014). The resulting amount released to the air from the stacks at the process facility is			New Comment DEIS	Describe the Hg capture statistics further. How was this 99.6% removal efficiency calculated? It appears misleading to the public who may not understand the context for this figure. Make this as clear and simple as possible.	

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AIQ 7				estimated at 128 pounds per year. Note that mercury may also be releases to the air or water from the open pit, waste rock facility, or tailings storage facility (SRK 2014a).					
AIQ 7 AIQ 9	USFWS DEIS New Comment	3.8		Understanding that in the U.S., long-range airborne transport of toxins is addressed through MACT standards the air quality impacts are considered to be localized.			New Comment DEIS .	Suggest clarifying this information. Please describe the maximum achievable control technology. It is unclear how the effects of Hg are considered localized when the bulk of Hg emissions are described as elemental mercury, with the concomitant argument that the elemental Hg will not be deposited locally. Doesn't this make the effects at least regional to perhaps even global, as it will be necessary to deposit the mercury somewhere?	
AIQ 8	USFWS DEIS New Comment	3.8		Suggest revising text as follows: It would require a 6 percent increase in barge traffic, and			New Comment DEIS	Suggested revision, below: It would require a 6 percent increase in barge traffic, and	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
AIQ 8				would create more fugitive dust than Alternative 2.				would create more fugitive dust than Alternative 2. The dust increase is negligible at 1% Concurrent reclamation, as well as dust suppressants, would implemented to control fugitive dust.	
AIQ 7	USFWS DEIS New Comment	3.8.2.1.2		At the Donlin Gold mine site, it is estimated that the contribution of North American anthropogenic Hg emissions are less than 5 percent of total Hg deposition			New Comment DEIS Clarify.	Suggest clarifying this information. Does this mean that 95% of emissions come from outside North America?	
WAQ 21	USFWS DEIS New Comment	3.8.3.3.1		Table 3.8-19: Annual Mine Site Stationary Operations Phase Emissions for Permit Applicability			New Comment DEIS	Suggest clarifying this information. Describe how 23 tons per year of sulfur dioxide from stationary sources and the project would not increase sulfate concentrations in a local environment that will serve to enhance populations of Hg-methylating bacteria. Ensure that this interaction has been considered	

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AIQ 7	USFWS DEIS New Comment	3.8.3.3.1		Table 3.8-21: PSD Increment Dispersion Modeling Results			New Comment DEIS	Suggest clarifying this information. The map should show projected mean or range of air monitoring concentrations, not just the location of the maxima at the project boundary.	
AIQ 7	USFWS DEIS New Comment	3.8.3.3.1		FIGURE 3.8-4			New Comment DEIS	Suggest clarifying this information. Given the predominant wind direction runs toward the southeast, it seems strange that the highest predicted boundary concentrations are on the northwest boundary. A modeled plume would be far more informative way to portray this information.	
AIQ 8	USFWS DEIS New Comment	3.8.3.3.4		Use best management practices to minimize fugitive dust during construction and operations as necessary: limit traffic and disturbance of soil, where possible;			New Comment DEIS	Suggest clarifying this information. Clarify the following unanswered questions, which may lead to reducing potential impacts: Have sensitivity analyses been performed to test	

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AIQ 8				stabilize and maintain stability of disturbed soil by spraying water, spreading snow, or applying another approved dust suppressant to attain 90 percent control				outcomes for HAPs if this control level is not achieved? It is very difficult to determine how to best mitigate for different HAPs when they are lumped into a single category. Given their chemistry and fate and transport behavior is different, how can we determine effective mitigation strategies for them, if they are combined in this way?	
NEP 7	USFWS DEIS New Comment	3.8.3.3.6		Impacts to air quality would be of low magnitude (below permit thresholds and meeting regulatory standards) for the construction and closure phases, and medium magnitude at the mine site during operations phase (above permit thresholds but meeting regulatory standards) (Table 3.8-32).			New Comment DEIS	Suggest clarifying this information. The impact criteria are not appropriate to define impacts. Please see our cover letter with overall comments on the summary impact ratings	
AIQ 8	USFWS DEIS New	3.8.3.7		The increase in HAPs over Alternative 2			New Comment DEIS	Suggest clarifying this information. Describe	

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AIQ 8	Comment			would be 0.0749 tpy, and the increase in mercury would be 0.0001 tpy (Cardno 2015b).				HAPs by their individual constituents so that mitigation strategies for pollutants may be developed.	
PAA 10	USFWS DEIS New Comment	3.8.3.7		This alternative would also affect the transportation facilities component during the operations phase, as there would be a six percent increase in barge traffic compared to Alternative 2 (BGC 2014a).			New Comment DEIS	Request the Alternative to collocate both a natural gas line and a diesel line in one corridor be analyzed.	
	CHAPTER 3.9: NOISE								
NOI 2	USFWS DEIS New Comment	3.9	3.9-1	The ambient sound levels of the region are described in this section with regard to the regulatory framework and noise ordinances of the affected communities.			New Comment DEIS	Suggest clarifying this information. Provide references to resources sections at the beginning of the Chapters so that readers are aware that noise effects are being evaluated for those resources as well. Suggested language: The ambient sound levels of the region are described in this section with regard to	

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NOI 2								the regulatory framework and noise ordinances of the affected communities. Potential noise and vibration impacts resulting from the project on resources, such as wildlife or threatened and endangered species, and are described further in Section 3.12, Wildlife, and Section 3.14, Threatened and Endangered Species.	
	CHAPTER 3.10: VEGETATION								
INV 3	USFWS DEIS New Comment		3.10-1	In July 2014, a project-related reconnaissance survey for invasive plants was performed on 160 acres of the mine site and 5 miles of existing roads in or near the Project Area. Eleven invasive plant species were recorded within a total of 123.6 acres (Moody 2015).			New Comment DEIS	Suggest clarifying this information. This could be interpreted as of the 160 miles surveyed 123.6 acres had invasive plants.	
VEG 1	USFWS DEIS New Comment	3.10.21		Almost two-thirds of the EIS Analysis Area is located in the Kuskokwim Mountains			New Comment DEIS	Suggest revising. Since two thirds of the mine and all of the mine site and associated road	

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VEG 1				ecoregion. All of the mine site and associated road and port sites are contained within this ecoregion.				and port sites are contained within this ecoregion, provide a description of the baseline conditions in the Kuskokwim Mountains ecoregion.	
	USFWS 25	3.10.2		The areas of potential effects include the entire project footprint as well as local to regional pathways for seed dispersal and contamination (wind, water, animal/human).	This statement is good; it implies the EIS will analyze impacts that will be determined by specific resource function and species.	Comment noted.	Change in text is acceptable.		
VEG 1	USFWS 26	3.10.2		The area covered by the wetland/vegetation survey included the mine site, potential port locations and their associated mine access roads (Birch Tree Crossing and Jungjuk), and the pipeline route.	This statement implies there were no surveys conducted for stream segments along the. *Recommend the actual footprint of disturbance be standardized with an agreed upon disturbance buffer for the Kuskokwim River Transportation corridor. Furthermore, to analyze disturbance by species, mapped habitats should be clipped (in GIS) to illustrate habitat within the projected	Wording adjusted to be inclusive of applicable surveys. The Affected Environment section provides the baseline for the range of impacts to be discussed in the Environmental Consequences section. Disturbances are not introduced in the Affected	Comment was not adequately addressed.	Suggest revising this information. The Project Area footprint (area of anticipated disturbance) should be mapped. The reason to put this in the Affected Environment section is because it provides the baseline for the range of impacts to be discussed in the Environmental Consequences section. Disturbances introduced in the Affected Environment section should be expressed as a	

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				disturbance buffer.	Environment section. When the two sections are in their final locations next to one another, it should be clear to the reader.		measure change by acreages impacted.	
USFWS 27	3.10.2.1		A small portion of the project (20.2 acres) lies in a fifth ecoregion, the Yukon-Kuskokwim Delta. This area is located in the Kuskokwim Mountains north of the Kuskokwim River and, for simplicity, will be <u>treated and addressed with the adjacent Kuskokwim Mountains</u> ecoregion in discussion and tables.	Recommend recalculating disturbance areas of the project within ecoregions; the majority of the Kuskokwim River Transportation corridor is within the Yukon-Kuskokwim Delta ecoregion, see Figure 3.10-2. In addition, the Yukon-Kuskokwim Delta eco-region is a unique ecosystem; it should not "be treated and addressed with the adjacent Kuskokwim Mountains".	Wording changed for clarification.	Comment was not adequately addressed.	Suggest revising. The majority of the Kuskokwim River Transportation corridor (barging and port) are on the on the Kuskokwim River which is within the Yukon-Kuskokwim Delta ecoregion, see Figure 3.10-2. The Yukon-Kuskokwim Delta eco-region is a unique ecosystem; it needs separate baseline analysis and should not "be treated and addressed with the adjacent Kuskokwim Mountains".	
USFWS 28	3.10.2.2		Between 1996 through 2011, Three Parameters Plus, Inc. (3PPI) mapped approximately 277,976 acres of vegetation and	Are these two documents with references the same documents? If so, the reference style is confusing.	Reference style fixed. References are the same – correct citation is 3PPI et al.	Comment was adequately addressed.		

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			wetlands across the entire project area and prepared the Preliminary Jurisdictional Wetland Determination (PJD) (3PPI 2012). Three Parameters Plus (3PPI). 2012. Preliminary Jurisdictional Wetland Determination - Donlin Gold Project Southwest Alaska June 2012. (Revision 0.0). 3PPI (Three Parameters Plus, Inc.), Barrick Gold Corporation, Resource Data, Inc., Naiad Aquatic consultants, Coshow Environmental Inc. 2012. Preliminary Jurisdictional Wetland Determination Donlin Gold Project Southwest Alaska. Revision 0.0. Prepared by Three Parameters Plus, Inc. for Donlin Gold LLC, Anchorage, Alaska.		2012 and correct reference is the second reference.			
USFWS 29	3.10.2.2		General comment	*Vegetative information should be field verified and surveys should be conducted for non-	Additional field surveys were not feasible during the preparation	Comment was not adequately addressed.	Suggest revising this information. Vegetative information should be field verified	

INV 3

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INV 3					native species within the disturbance area along the Kuskokwim River Transportation corridor including port sites.	of the EIS.		and surveys should be conducted for non-native species within the disturbance area along the Kuskokwim River Transportation corridor including port sites.	
CLA 18	USFWS 30	3.10.2.2		• Between 1996 through 2011, Three Parameters Plus, Inc. (3PPI) mapped approximately 277,976 acres of vegetation and wetlands across the entire project area and prepared the Preliminary Jurisdictional Wetland Determination (PJD) (3PPI 2012).	Suggest the Wetlands section be revised to clarify the project area in terms of the main project components. It appears the term "project area" has a different meaning and definition in 3PPI's report. For example, the Kuskokwim River Transportation Corridor was not mapped by 3PPI. Therefore they do not consider it part of the "project area" in their 2012 report. As suggested above in Section 3.10.2, it may be more practical to define the "project area" once and refer to it by Section, Table, or Figure number in subsequent	Wording changed and section updated.	Not sure if the comment was addressed completely.	Suggest clarifying this information. What it the difference between project area and entire EIS Analysis Area? Both terms are used in this section. In addition, it is not clear if the Kuskokwim River Transportation Corridor was mapped by 3PPI.	

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CLA 18					sections.				
	USFWS 31	Table 3.10-5		Known Occurrences of Non-native Plants in Water Transportation Corridor	*The Yukon Delta NWR has noted some invasive plant surveys have been conducted this summer, including in Bethel. If this table was generated before September 2013, then please check the database for any updates.	Section updated.	Comment was adequately addressed.		
INV 3	USFWS DEIS New Comment	3.10.2.6	3.10-1	Within the mine site, 12 invasive plant species have been recorded, all Moderately Invasive or less. In July 2014 a project-related <u>reconnaissance survey for invasive plant species covered 160 acres</u> of the mine site and 5 miles of existing roads in or near the Project Area. Eleven invasive plant species <u>were calculated to occupy</u> a total of 123.6 acre…			New Comment DEIS	Suggest clarifying this information. It could be interpreted as - out of the 160 miles surveyed 123.6 acres had invasive plants. Provide some description of distance of invasive plants to existing disturbed sites (landing strip, roads, old mine sites, etc.).	
INV 3	USFWS 32	3.10.2.5 3.10.2.7.1		While none of the vegetation surveys specifically targeted non-native species,	* Consider conducting targeted surveys for non-native species during habitat field	Targeted surveys were not feasible during the EIS	The purpose of comment was not addressed. If pre-project surveys are		

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INV 3				these species were recorded incidentally if observed. No populations of tracked species of concern have been documented within 20 miles of the proposed mine site and transportation facilities in the Kuskokwim Mountains Ecoregion (AKNHP 2013).	verifications, pay special attention to areas of previous human disturbance around the mine site, ports and the disturbance corridor along the Kuskokwim River.	preparation. Most areas of disturbance have had some recent targeted surveys reported to AKEPIC.	not conducted there is not an adequate measure of baseline conditions for non-native species.		
NEP 7	USFWS New Comment	3.10.3	3.10-38-39	3.10.3 ENVIRONMENTAL CONSEQUENCES … Impact criteria levels for vegetation were assessed by consideration of broad ecoregion system types..			New Comment DEIS	Suggest revising this information. Comparing project specific impacts to the broad ecoregion provides results that are so inadequate they preclude meaningful analysis. Revise this section to identify project specific impacts. Examples of comparable measures associated with each component of the project: - area that would be	

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							disturbed. - area that would be e reclaimed /restored - area that would be allowed to naturally revegetate. - area that would be replaced by roads, buildings, the pit lake, and others) are not expected to be reclaimed. - impacts that have a connected resource impact such as temporary or permanent decrease in the quantity or volume of resources remaining. For example, certain vegetation, community types, or wetlands, may not return to prior conditions and will continue to negatively impact other resources. - increases in invasive species due to project activities. - decrease in habitat complexity	
USFWS DEIS	3.10.3.2.	3.10-	For each type of			New Comment DEIS	Suggest adding	

NEP 7

VEG 3

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VEG 3	New Comment	1	42	impact, the proposed design features that would mitigate or reduce the impact are also described. The impact levels assessed under each alternative are those that remain following implementation of the design features detailed in Chapter 2. Specific mitigation measures that would further reduce impacts are also discussed in Chapter 5, along with an evaluation of their expected effectiveness.				language from page 3.10-52 to introduce the discussion of potential effects; Vegetation at the mine site would be affected by removal and reclamation, and increased risk of accidental damage, increased invasive species introduction and spread risk, fugitive dust, increased risk environmental contamination, and changes in water availability.	
MIT 16	USFWS DEIS New Comment	3.10.3.2.1	3.10-43	Fertilizer would be applied in consultation with BLM and ADNR. Implementation of standard practices and planning as identified in the Stabilization, Rehabilitation and Reclamation Plan would ensure that the adequate volume, type, and quality of			New Comment DEIS	If topsoil is salvaged and re-spread , it could illuminate the need for fertilizer.	

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MIT 16				fertilizer would be used when and where needed.					
VEG 2	USFWS DEIS New Comment	3.10.3.2.1	3.10-43	Reclamation Impacts Summary			New Comment DEIS	Describe how many acres would be reclaimed.	
INV 3	USFWS DEIS New Comment	3.10.3.2.1	3.10-44	Invasive Species Introduction or Spread			New Comment DEIS	Move the section on "Invasion Vectors" from page 3.10-47 to the Invasive Species section on page 3.10-44. Then discuss design features and other mitigation to prevent invasion from the vectors listed.	
INV 3	USFWS DEIS New Comment	3.10.3.2.1	3.10-44	Invasive Species Management Plan Elements			New Comment DEIS	Instead of listing the plans, recommend listing the management actions that would avoid or reduce impacts. If this analysis is not conducted there is no way to determine residual effects.	
INV 3	USFWS DEIS New Comment	3.10.3.2.1	3.10-45	Invasion Design Features and BMPs. • Incorporation of invasive species prevention into road work layout, design, and decisions, including			New Comment DEIS	A listing of the guidelines does not provide the detail necessary to analyze effects. Suggest management actions (such as those listed in bullets on page 3.10-46) be listed before the	

INV 3

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			using known infested areas for staging, parking, and cleaning equipment. This also involves avoiding or minimizing all types of travel through known infested areas, or restricting travel to those periods when spread of seed or propagules is least likely; and • Minimizing soil disturbance and retaining desirable vegetation in and around construction sites to the maximum extent possible; and avoiding soil removal from any infested areas to prevent spread off-site. When it is necessary to conduct soil work in infested areas, schedule activity when seeds or				list of guidelines.	

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INV 3				propagules are least likely to be viable and to spread.					
VEG 4	USFWS DEIS New Comment	3.10.3.2.1	3.10-50	The deposition of dust has been analyzed in Section 3.2, Soils.			New Comment DEIS	The analysis should estimate acres of vegetation impacted by dust. The Soils section states, "Fugitive dust effects … could be measurable as far as 10 miles from the mine." Use this 10 mile buffer to determine how many acres may be impacted near the mine. Research fugitive dust effects from the pipeline to create another buffer to determine how many acres would be impacted from the pipeline.	
VEG 4	USFWS DEIS New Comment	3.10.3.2.1	3.10-50	Fugitive Dust and Environmental Contamination			New Comment DEIS	Provide analysis of dust from the tailings beach. List the chemicals that would be in the tailings. How much mercury will be going to the TSF?	
VEG 4	USFWS DEIS New Comment	3.10.3.2.1	3.10-50	Fugitive Dust and Environmental Contamination			New Comment DEIS	Describe the role of vegetation as filtration of contaminants for	

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VEG 4								water bodies and direct reduction of fugitive dust. Analyze revegetation as a dust control measure.	
NEP 7	USFWS DEIS New Comment	3.10.3.2.1	3.10-50	The conclusions for terrestrial plants, invertebrates, birds, and mammals is that the deposition of particulates on surface soil surrounding mine operations is not expected to pose a risk to terrestrial organisms different from the risk from baseline concentrations.			New Comment DEIS	The conclusions presented in the in DEIS need to be revised. Please see our comment on effects of mercury from the proposed project on the environment.	
VEG 1	USFWS DEIS New Comment	3.10.3.2.2	3.10-52	This table also illustrates the small proportion affected of each vegetation community type within the greater watershed; under one percent of the greater watershed (the Lower Kuskokwim watershed) is impacted for any vegetation type.			New Comment DEIS	Recommend analysis be conducted for relevant a hydrologic unit codes (HUCs) that would be effected. Comparing local impacts to such a large HUC (the entire Lower Kuskokwim watershed) is not effective in determining percentages of watershed impacts. For example, the Anaconda Creek watershed should be used to	

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VEG 1								determine impacts to vegetation in that watershed; the same analysis should be conducted for American Creek and the other watersheds directly impacted by mine. The acres impacted in the smaller sized watersheds should be added into the next sized HUC, Crooked Creek.	
VEG 5	USFWS DEIS New Comment	3.10.3.2.2	3.10-57	Pipeline – Construction; Operations and Maintenance; and Closure, Reclamation, and Monitoring The pipeline differs from the other project components in that a <u>much larger area would be affected</u> temporarily during construction than would be affected long-term by operations.			New Comment DEIS	Suggest removing this sentence. Additional analysis is necessary. Describe vegetation impacts from pipeline operations and maintenance. Vegetation would be limited to small brush and grass; trees would not be allowed to grow on the pipeline. Describe how trees would be removed, how equipment would has risk of introducing invasive plants for life of the pipeline.	
VEG 1	USFWS DEIS New	3.10.3.2.2	3.10-58	Table 3.10-10			New Comment DEIS	HUCs are too great of a scale to provide any	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
VEG 1	Comment							meaningful analysis. Recommend using a boundary of disturbance such as a set width from centerline of the pipeline.	
MIT 7	USFWS DEIS New Comment	3.10.3.2.3	3.10-59	The Corps is considering additional mitigation (Table 5.5-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) to reduce the effects presented above. · Restore flat-to-gently sloping wetlands by removal of fill at project closure where feasible. Removed fill would be moved to approved upland areas. Details would be developed as Donlin Gold's Conceptual Compensatory Mitigation Plan is developed and as design and permitting progress. Those details do not exist at the DEIS stage.			New Comment DEIS	Clarify if the listed mitigation measures would be implemented. If so, why are they listed in a compensatory mitigation plan?	
VEG 3	USFWS DEIS	3.10.3.2.	3.10-	Table 3.10-11			New Comment DEIS	Recommend reducing	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
VEG 3	New Comment	3	60-61					the number of tables that do not provide useful information for analysis. Recommend removing Table 3.10-11. This table breaks the analysis down into the components of mine site, pipeline and transportation corridor. CEQ Regulations, advise federal agencies that when considering intensity, "significance cannot be avoided by terming an action temporary or by breaking it down into small component parts."	
VEG 3	USFWS DEIS New Comment	3.10.3.2.3 to 3.10.3.2.6	3.10-60-61	Table 3.10-11 Table 3.10-12 Table 3.10-13 Table 3.10-14 Table 3.10-15 Table 3.10-16 Table 3.10-17			New Comment DEIS	Recommend Table 3.10-11 be replaced with a table that illustrates direct and indirect effects with acres of vegetation disturbed in the project area for: facilities, roads, pipelines, overhead power, temporary access, surrounding vegetation, etc. The	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
VEG 3								new table should have columns to illustrate acres with interim reclamation, final reclamation, and acres of permanent disturbance listed. These columns should be summarized for total acres. This type of table should replace Tables 3.10-11, 12, 13, 14, 15, 16 and 17 so that acres disturbed may be compared by Alternative. This type of table would eliminate the extraneous background data in Tables 3.10-11, 12, 13, 14, 15, 16 and 17 and provide a full and fair discussion of environmental impacts to inform decision makers and the public of reasonable alternatives which avoid or minimize adverse impacts.	
CLA 17	USFWS DEIS New Comment	3.10.3.2.8	3.10-62	Alternative 3A differs from Alternative 2 in that it would involve <u>75 percent</u> fewer ocean			New Comment DEIS	Clarify, other sections of the DEIS have a lower percentage of reduced ocean barges.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLA 17				fuel barge trips and 67 percent fewer river fuel barge trips because of the decreased use of diesel fuel.				For example, page 3.14-3 states, "Alternative 3A during operations, the number of ocean fuel barge trips would be approximately 67 percent lower than under Alternative 2 (5 rather than 14 fuel barge trips)."	
VEG 3	USFWS DEIS New Comment	3.10.3.2.8	3.10-71	Table 3.10-18			New Comment DEIS	Recommend Table 3.10-18 be replaced with a table that illustrates direct and indirect effects with acres of vegetation disturbed in the project area, as suggested in our above comment. To compare acres of vegetation disturbed by Alternative, this Summary Table should compare direct and indirect effects with interim reclamation, final reclamation, and acres of permanent disturbance.	
	CHAPTER 3.11: WETLANDS								
MIT 7	USFWS DEIS New Comment	3.11		Wetlands General Comment			New Comment DEIS	Analysis is insufficient for determination of compensatory	

MIT 7

WET 6

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							mitigation. Recommend including additional analysis so that appropriate compensatory mitigation can be determined.	
USFWS DEIS New Comment	3.11		General			New Comment DEIS	This Chapter is very difficult to follow. Suggest re-ordering so that wetland acre and stream mile impacts for each alternative are clearly stated at the beginning of the chapter. Recommend removing reference to wetland impacts as minor, moderate, or high. Recommend removing reference to wetland impacts as a percentage of the larger ecosystem. This percentage is irrelevant in terms of the actual acres and a mile impacted, and has the appearance of minimizing the wetland impacts that can be	

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WET 6							expected for each alternative.	
WET 4 USFWS DEIS New Comment	3.11		General			New Comment DEIS	Given that gold mining is not an inherently water dependent activity, please provide a detailed analysis of “practicable alternatives” that would have less impact on the aquatic ecosystem. Recommend that this analysis include both onsite and offsite upland alternatives, per Section 404(b)(1) guidelines. Please note that per the guidelines, not owning a piece of property does not eliminate it from consideration, zoning is not considered, and compensatory mitigation cannot be used as a method to reduce environmental impacts in the selection of the least environmentally damaging practicable alternative.	
MIT 7 USFWS DEIS	3.11	3.11-7	The Corps has			New Comment DEIS	It appears there is not	

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MIT 7	New Comment			determined that the Corps will complete a functional assessment for the proposed project at or after the FEIS stage or the NEPA process.				have enough information to determine effects, avoidance measures or potential compensatory mitigation. Recommend including additional analysis so that appropriate compensatory mitigation can be determined.	
MIT 7	USFWS DEIS New Comment	3.11	3.11-7	For the DEIS analysis, all wetland/upland mosaic polygons were treated as 100 percent wetlands, and polygon quantities are reported in acres. Waters, including intermittent and perennial streams, too small to be mapped as polygons were mapped as polylines; these are reported in miles (3PPI et al. 2014). Both quantities are provided in summary tables.			New Comment DEIS	We do not have enough information for determination of compensatory mitigation. Recommend including additional analysis so that appropriate compensatory mitigation can be determined.	
WET 2	USFWS 33	3.11.2	13	Wetlands Analysis Methodology	Suggest use of the best technical practices when	Donlin Gold was grandfathered	Defer to the USACE.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 2					analyzing wetlands in the project area. The mapping consultant, 3PPI, made wetland determinations based on the Corps' 1987 wetland determination handbook; how will this impact future compensatory mitigation sites and functional assessments that will be based on the newest technological practices including the 2008 Mitigation Rule?	under the Corps' 1987 manual. This section reports methods as presented in the PJD. Definition for wetlands remains unchanged; regional supplements (USACE 2006, 2007) may lead to fewer acres of wetlands overall based on soil characteristics. Basis for wetland delineations in the PJD is not changed for compensatory mitigation and functional assessments.			
WET 1	USFWS 34	3.11.2	13	(4) hydrogeomorphic (HGM) classification (Brinson 1993, Smith et al. 1995).	Suggest use of more updated information. There is more current HGM information available, see USDA NRCS Technical Note No. 190-8-76, February	Section 3.11.2 reports the methods used in developing the PJD. The technical note cited by FWS is	Defer to the USACE.		

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WET 1					2008. See comment below under Table 3.11-2.	based on Brinson 1993 and Smith et al. 1995 and does not add anything new or more current about HGM classification; it presents an overview and discusses subclasses and modifiers.			
WET 7	USFWS 35	3.11.2	14	Descriptions of wetlands for project components use subsets of the spatial wetland data to quantify areas of potential effects surrounding the proposed mine site, transportation facilities, and the pipeline. Mine Site Transportation Route. Mapped wetlands were evaluated within 0.5 mile around the proposed mine site airstrip, borrow sites, and Jungjuk Port site	Recommend the use of consistent disturbance buffers.	The Affected Environment section provides a description of the existing environment within the range of impact areas that will be discussed in the Environmental Consequences section. Disturbances are not introduced in the Affected Environment section. When the two sections are in their final	The issue of using disturbance buffers was not addressed.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 7				and mine access road. Most of the transportation route to the mine site (99 percent) has been mapped for wetlands by 3PPI; no additional mapping will be completed in this area		locations next to one another, it should be clear to the reader. The cited text describes the spatial basis for the "study areas" that were developed to describe the affected environment for the mine site, transportation, and pipeline wetland study areas in Section 3.11.2. This section was expanded and clarified.			
WET 2	USFWS DEIS New Comment	3.11.2		<u>Descriptions of the wetland affected environment</u> for the three project components – mine site, mine transportation, and pipeline – <u>use subsets of the wetland mapping</u> (3PPI et al. 2014) to quantify the			New Comment	Suggest revising this section. The area that was studied does not provide an adequate boundary for the area of analysis. All of the tables in this section should be revised using analysis of a (HUC 12) watershed approach with a connection to	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 2				affected environment <u>within defined wetland study areas</u> surrounding the proposed mine site, mine transportation facilities, and the pipeline.				the larger (HUC) watershed analyze impacts on the larger connected landscape.	
WET 2	USFWS 36	3.11.2	14	Mine Site. The mine site area includes all mapped wetlands within Crooked Creek drainage subbasins that contain either mine infrastructure or Crooked Creek. These subbasins were combined and then buffered by 1,000 feet to capture the ridges surrounding the combined subbasins. Most of the mine study area (74 percent) has been mapped for wetlands by 3PPI; no additional mine site study area mapping will be completed.	The description of how 3PPI mapped wetlands is causing some confusion; recommend eliminating the confusion by removing the description that is based on 3PPI and simply providing a reference to the material (3PPI et al. 2012). It appears watersheds were mapped based on subbasins, and calculations were made by percentages of wetlands in those subbasins.	3PPI et al. 2012 mapped a large area of wetlands outside of the defined study areas – some of which are no longer applicable to the affected environment. The descriptions of study areas in the PJD are inconsistent with the project component breakdown in the EIS based on mine site, transportation, and pipeline components. The cited text describes the spatial basis for	Defer to the USACE.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 2						the study area that was developed to describe the affected environment for the mine site. Last sentence revised to "Most of this mine site study area (74 percent), including areas for all proposed project footprints, has been delineated for wetlands (3PPI et al. 2014)."			
WET 7	USFWS 37	3.11.2	14	• Kuskokwim River Area. Wetlands were not mapped by 3PPI and because NWI mapping has not been completed for the barge route along the Kuskokwim River, land cover data (Homer et al. 2004) were used to describe wetlands	Calculations of wetlands should be specific to the disturbance buffer established for the project component. What is the width of the buffer that was used on the Kuskokwim River to calculate wetlands affected by the Transportation corridor, was it up to the mean high water mark, did it include a disturbance	The Kuskokwim River wetland study area was based on the approximated floodplain as described, for the purpose of describing the affected environment. This area is not equivalent to a "disturbance	Defer to the USACE.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 7			within an approximated Kuskokwim River floodplain. Figure 3-11.6 appears to NOT be buffered at all for this project.	buffer based on habitat, or did it include the potential area of a plume in case of a catastrophic event? Recommend the map in Figure 3-11.6 be revised; clip the Homer et al land cover data to the projected buffer of disturbance along the Kuskokwim River Transportation corridor.	buffer". In addition, NWI data for segments of the Kuskokwim River study area were used to evaluate potential shoreline erosion. The Affected Environment section provides a description of the existing environment within the range of impact areas that will be discussed in the Environmental Consequences section.			
USFWS 38 WET 2	3.11.2	14	Pipeline. Wetlands were mapped within 1,000 feet on either side of the proposed alignment; and 500 feet around proposed camp locations, airstrips, temporary work spaces, and mine access roads. Much of	Recommend the use of consistent descriptions of what is included with each of the project components. For example, camp locations, airstrips, temporary work spaces, and mine access roads have been previously	Each project component has multiple sub-components as described in Chapter 2. The areas of disturbance as footprint or as indirect effects	Defer to the USACE.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 2				the pipeline corridor (66 percent) has been mapped for wetlands; some of the unmapped areas are beyond the 1,000-foot mapping corridor and wetland mapping is not expected to be completed for these areas.	described as part of the mine site component in the EIS. In the text the camp locations, airstrips, temporary work spaces, and mine access roads are described under the pipeline. The wetland mapping corridor of 1000-ft and 500-ft appears to consider what has been mapped but does directly delineate the disturbance corridor.	are identified in the consequences. This is a description of the study area used for the “affected environment” to establish the context (proportions) for the consequences. The Affected Environment section provides a description of the existing environment within the range of impact areas that will be discussed in the Environmental Consequences section.			
WET 7	USWS 39	3.11.2.1	14	Footprints are used to quantify the area directly and indirectly lost or altered by the Donlin Gold Project. Where linear features	The paragraph on Assessment Boundaries is the start to an effective description of the project footprint and boundaries of	Section 3.11.2.4, Impact Assessment Boundaries, was revised and expanded.	Defer to the USACE.		

WET 7

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			did not contain footprint information, assumptions were made that include: 100-foot construction ROW for the pipeline, 50- or 51-foot permanent ROW for the pipeline, 30-foot transmission line construction and permanent ROW, and 24-foot wide access roads.	disturbance but it only describes the disturbance buffer for the pipeline. As recommended above, a standard project footprint, standard construction disturbance buffer, and logical disturbance area for specific resources are effective tools for analyzing effects and determining effective mitigation.	Clarified that footprints were used for mine and mine transportation facilities. Specific distances were only used for linear features that did not contain a "footprint" to create a footprint for analysis. A description of areas used for indirect impacts was added – maximum draw down surface, permafrost areas, and potential dust and interrupted surface flow.			
USFWS 40	3.11.2.1	15	Indirect effects evaluated include areas of altered hydrology due to the excavated and dewatered pit, areas where wetland restoration may be unsuccessful due to	The text should be revised: Indirect effects evaluated may include…	Revised sentence to: "Potential indirect effects on wetlands that were analyzed in the consequences			

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			permafrost degradation, and areas of indirect wetland vegetation impacts along the Jungjuk mine access road from air-borne dust and potential interruption of surface sheet flow.		include:”			
USFWS 41	Table 3.11-2	15		The HGM classes in the table do not correlate with HGMs listed in the USDA NRCS Technical Note No. 190-8-76, February 2008. For example the table is missing Estuarine Fringe (important to consider for the Kuskokwim River Transportation route). Ensuring current technological practices are utilized may become more significant as off-site compensatory mitigation and future functional assessments attempt to synchronize new information with this information.	There is no estuarine fringe wetland mapped in the study areas. The NLCD does not include HGM categories. The HGM categories are as identified in the PJD. See response to FWS 34 concerning technological practices. Current Table 3.11-2 includes descriptions and depictions of HGM Classes mapped by 3PPI in the project region. Table 3.11-2 is	Defer to the USACE.		

WET 3

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 3						currently Table 3.11-3 and only includes wetlands (waters [river channel, lacustrine] not analyzed for function).			
WET 1	USFWS 42	3.11.3.1	17	Drill roads and pads and placer mining account for 82 percent of the existing disturbances to wetlands in the mine study area (3PPI et al. 2012).	This information may be illustrated more effectively in a chart. Disturbance acreage associated with pre-project planning for the Donlin project should be clearly illustrated.	Previously disturbed wetlands by wetland category are illustrated in Figure 3.11-45 – Mine Site Study Area Wetland composition – Disturbed and All Wetlands. An additional figure was added with pie charts showing previous disturbances on wetlands, and uplands by disturbance type: Figure 3.11-4 – Wetland and Upland	Defer to the USACE.		

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WET 1						Disturbance Types in the Mine Site Wetland Study Area.			
WET 2	USFWS	3.11	Table 3-11-1 (3.11-13 in PDEIS)	Geographic Extent Extended: Affects extensive wetland systems across many watersheds.	Are the Hydrologic Unit Codes (HUC) listed? Knowing the size of the watershed would be helpful during the analysis.	In general HUC 10 was the level considered. The National Hydrography Database defines HUC in the 10-digit Watershed Boundary Data as a “watershed”. Geographic extents are more fully described in the respective conclusions. Added watershed definition to Table 3.11-13.	Defer to the USACE.		
WET 1	USFWS	3.11.4.2.1	2	Primary direct and indirect construction-related effects on wetlands would include:	Suggest adding the following bullet: • Permanent loss of wetlands	The bullets are intended to identify specific actions that result in effects on wetlands. Revised sentence	Defer to the USACE.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WET 1						preceding second set of bullets: "Most-project-related direct and indirect effects on wetlands would be initiated during construction and may result in temporary or permanent loss of wetlands or alteration in wetland functions."			
	USFWS	3.11.4.2.1	5	Clearing, filling, and excavation of wetlands and waters in the American Creek, Snow Gulch, Omega Gulch, Anaconda Creek, and Crooked Creek watersheds would alter or remove their capacity to provide hydrologic, biogeochemical, and biological functions…	The 20-mile total radius of the drawdown area (from the Groundwater Hydrology, section 3.6.2.2.1) may be important to repeat in this section along with the number of square miles that are wetlands. Is the percent of each watershed that will be disturbed listed as well?	An analysis of potential drawdown impacts (dewatering) and wetland functions is presented in Table 3.11-16, and on Figures 3.11-16, 3.11-17, and 3.11-18.			
WET 1	USFWS	3.11.4.2.1	Table 3.11-8 Pg. 15	Table 3.11-6 (3.11-18 in PDEIS) Alt 2 Mine Site Wetland Impact Areas Identified for	Where in Table 3.11-8 are the creeks accounted for: American Creek, Snow Gulch,	Table 3.11-8 was mine site wetland reclamation	Could not find comment in revised document.		

WET 1

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			Reclamation, Conversion or Restoration Table 3.11-8 is on pg 17?	Omega Gulch, Anaconda Creek, and Crooked Creek?	areas on permafrost. Unclear which table is in question? Added linear water arcs to Table 3.11-18. Because of the scale of the permafrost modeling, the water arc analysis was not completed for Table 3.11-21. The length of stream features directly impacted by mine site construction is listed in Table 3.11-22. This information was also added to Table 3.11-14.			
USFWS	3.11.4.7.3		Scenario 1: Ocean Barge Rupture at Sea Diesel fuel reaching shoreline marshes and intertidal wetlands	This analysis should be included in ALL of the Alternatives.	Spill analysis is now combined into a separate section 3.24.	Accepted		

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			would likely kill vegetation and associated micro and macro fauna, and it could overwhelm or eliminate most wetland functions. The severity of potential impacts to estuarine and marine wetlands would depend on the amount of diesel reaching the wetlands and the sensitivity of the affected shoreline wetlands.					
CHAPTER 3.12: WILDLIFE								
USFWS 43	3.12		Wildlife General Comment	Recommend the use of a consistent description of the project footprint with logical buffers for project components and resource. The habitat within a disturbance buffer is a logical description of affected environment for wildlife, as long as it is further refined by the range and life function of the species.	Revisions have tried to make the description of the project footprint as consistent as possible. However, the impacts and the potentially affected environment differ from one species to the next, dependent on their use of the habitats in	Acceptable		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					different life stages and seasons. Therefore, we have not tried to impose an arbitrary disturbance buffer.			
USFWS 44	3.12.2.1.2		Brown bears eat berries, leaves, and roots of many plants and prey on a variety of small and large mammals (Eide et al. 2008).	*Recommend a more thorough literature review on this subject. This sentence doesn't mention salmon and it should. The citation list includes citations that are from the ADF&G wildlife notebook series. The notebook series is written for popular consumption and is not necessary a complete source of information or may even be oversimplified for its non-scientific audience. It would be more credible to use citations from the published scientific literature when it's available. It should be available for a subject such as the diet of a brown bear.	Discussion has been expanded.	Acceptable		

WILD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS 45	3.12.2.1.2		Brown bears in GMU 18 are concentrated in the Kilbuck Mountains southeast of Bethel and in uplands along the Yukon River. There are high densities in these high quality habitat areas but few brown bears live in other areas of GMU 18 (Perry 2011).	Recommend extending the range of high density habitat to the foothills of Kilbucks or to the uplands adjacent to Kilbucks. Bear sign has been noted by Refuge Biologists along the Kwethluk River between Three Step and Elbow Mountain, this area is not classified as the Kilbuck Mountains.	Wording changed.	See our comments on density below.		
USFWS 46	3.12.2.1.2		Hunting is managed through hunting seasons, sex/size limits, bag limits, and closure areas and limited permit hunts.	Due to the subsistence lifestyle it may be more respectful to use the term “harvest” in place “kill” or “bag” when speaking in reference to meat used for human consumption.	Agree with comment and section was adjusted accordingly.	Acceptable		
USFWS 47	3.12.2.2		…occasionally occur within the vicinity of the marine portions of the proposed… transportation corridor	Suggest the text be revised, remove the term “occasionally”: …occur within the vicinity of the marine portions of the proposed transportation corridor	Agree with comment and section was adjusted accordingly.	Acceptable		
USFWS 48	3.12.2.2		Pacific walrus (*Odobenus rosmarus*)	Proposed revision: Pacific walruses (*Odobenus rosmarus divergens*)	Agree with comment and section was adjusted accordingly.	Acceptable		

BIRD 6

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USFWS 49	3.12.2.2.2		The USFWS has jurisdiction over Pacific walrus and northern sea otters	Proposed revision: add polar bears.	Since polar bears are not relevant to this project, they were not added.	Acceptable		
USFWS 50	3.12.2.2		Threatened and endangered marine mammal species are further discussed in Section 3.14.1.1, ESA Protected and Candidate Species.	Consider discussing threatened and endangered marine mammals here. Anyone interested in only marine mammals may find it easy to read if it is here.	The organization of the EIS, with all species listed under the ESA discussed in one section, is maintained for other reasons. Therefore, the suggested change was not made.	Acceptable		
USFWS 59	3.12.2.3		General Comment	Suggest organizing information on the surveys conducted. For example, it is difficult to determine what surveys they were referring to for the Kuskokwim River due to the disorganization of the information.	Agree with the comment. A table showing surveys, the level of effort, and results was added.	Acceptable, see our comments about avian surveys below.		
USFWS 51	3.12.2.3		This section addresses all bird species, including those listed as species of concern. There are two bird species listed as threatened that may	The section on birds starts out with a description of the two major laws pertaining to Migratory Birds that are pertinent to this project: the Migratory Bird	Mention of the treaties and subsistence harvest was added.	Acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			be affected by the project: Steller's eider (Polysticta stelleri) and spectacled eider (Somateria fischeri). These two species are addressed in Section 3.14. Another listed bird species, the short-tailed albatross (Phoebastria albatrus), may occur along the marine portion of the proposed transportation corridor, but is not expected to be affected by the project-related barge traffic.	Treaty Act and the Bald and the Golden Eagle Protection Act. Are there any other laws (ESA covered in separate sections) concerning migratory birds that could be included here? The USFWS has migratory bird treaties with Japan, Canada, Russia, and Mexico. Also the Migratory Bird Subsistence Harvest is an important part of the management of migratory birds in Alaska and factors into the affected environment of this proposed project.				
USFWS 52	3.12.2.3		The affected environment for birds includes the entire proposed project footprint plus all bird populations and habitat in the vicinity (within 5 to 10 miles) of all components of the proposed project due to their mobility.	* Although a logical description of affected environment for wildlife may be habitat within a disturbance buffer, the range and life function of specific avian species needs to be further described. The document describes the affected environment for birds as the entire proposed project footprint plus all bird	Agree with comment and section was adjusted accordingly.	Acceptable.		

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				populations and habitat within 5 to 10 miles of all project components. This implies the potential effects of the project on birds and their habitats are limited to within 10 miles of the project. Disturbance buffers vary dependent on the temporal and spatial disturbance of individual project components on the landscape, and are also uniquely dependent on the habitat, specific species, life function, project area population and range.				
USFWS 53	3.12.2.3		The area of potential effect also includes migration corridors in the vicinity and downgradient areas of habitat.	The effects of the project on migratory birds could be far-reaching if they occur to birds during migration where the birds carry the effects to other places, i.e. contaminated food, oiling, or population reductions. The term downgradient should be	Agree with comment and section was adjusted accordingly.	Acceptable, consequences section should be expanded see our comments below.		

BIRD 10

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 10					defined, revised or removed.				
BIRD 10	USFWS 54	3.12.2.3		General Comment	**Important Bird Areas* (IBA)—There needs to be a better summary of IBAs that overlap the area potentially affected by the project (http://netapp.audubon.org/IBA/State/US-AK). Both the Y-K Delta and the Bering Sea including many globally or regionally important areas for birds and these areas should be highlighted for the species they support.	Agree with comment; added a figure and revised text.	Acceptable, consequences section should be expanded see our comments below.		
BIRD 6	USFWS 55	3.12.2.3		General Comment	**Seabirds*.—More information should be provided on seabirds. There is no assessment of potentially impacted seabird populations even though there are numerous areas from Dutch Harbor to Kuskokwim Bay harboring globally important nesting colonies or off-shore feeding areas for seabirds. Information can be found with IBAs	Agree with comment and section was adjusted accordingly.	Acceptable, see our comments below.		

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BIRD 6				or on the Seabird Information Network (http://www.seabirds.net/seabirdinfonetwork.html).				
BIRD 2 USFWS 56	3.12.2.3		General Comment	The section on birds has incomplete information. The document too often includes partial lists of species encountered from surveys, nearly always with little information on numbers of birds detected per unit of survey effort. Thus, we only have an incomplete picture of the avifauna associated with the project area (species and numbers). When specific numbers are not available, qualitative measure of abundance would be useful (e.g., abundant, common, uncommon, rare, not detected). This would facilitate comparisons to other studies which are lacking but would help determine whether the mine site supports particularly high	Agree with comment and section was adjusted accordingly.	Text acceptable, see our comments below.		

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				numbers of any species of concern. If the full information is not provided then the following should be included: 1. A reference where the full information is available. 2. Number of species encountered by species group, and any noteworthy concentrations. 3. Number of priority species, and whether they occur at regionally to globally important concentrations.				
USFWS 57	3.12.2.3		General Comment	**Species of concern*.— There should be more effort to highlight the species of concern encountered during the surveys, how abundant they were, and whether there is evidence that the project areas support particularly high numbers of these species.	Agree with comment and section was adjusted accordingly.	Text acceptable.		
USFWS 58	3.12.2.3		General Comment	** Birds relative to habitat*.—There is little	Densities were calculated and	See our comments on density below.		

BIRD 2

BIRD 6

BIRD 6

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				information on the abundance of birds relative to habitats. This information would make it easier to assess the impacts of the various activities around the mine (mine, pipeline, and transportation routes) and to identify sites for mitigation. For example, Figs. 3.10-3, 3.10-4, 3.11-1 show different habitats types within the project footprint. However, we don't have estimates of abundance for birds in each of these habitat types (deciduous forest, mixed forest, herbaceous). If we know that species of concern are concentrated in a particular habitat, then efforts could be made to avoid certain types of activities in this habitat or to focus mitigation targeting this habitat.	the section was adjusted.			
USFWS 60	3.12.2.3		Bird section	The Bird section is missing from the navigation menu on left side of page.	Agree with comment and section was adjusted	Acceptable.		

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					accordingly.			
USFWS 61	3.12.2.3		The Yukon-Kuskokwim Delta has long been known for its abundance of waterbirds and was named as a National Wildlife Refuge in 1909.	The history of Yukon Delta NWR is complex and it wasn't called a national wildlife refuge until ANILCA in 1980. Recommend revising the text: The Yukon-Kuskokwim Delta has long been known for its abundance of waterbirds and first established as a preserve and breeding ground for native birds in 1909 by President Theodore Roosevelt.	The text was revised.	Acceptable.		
USFWS 62	3.12.2.3		Millions more arrive during fall migration to feed on the Refuge.	Recommend revising the text: Millions more stage on the refuge during late summer and fall to fatten on the abundant food resources before beginning their fall migration.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 63	3.12.2.3. 1, 4, last sentence		…thousands of migrant songbirds.	Recommend revising the text: …millions of migrant songbirds.	Agree with comment and section was adjusted accordingly.			
USFWS 64	3.12.2.3. 1 2, first		The section states that habitat-based surveys were "designed to	* Recommend habitat-based surveys be conducted and designed	Bird densities were calculated and used to	See our comments on density below.		

BIRD 6

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Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
	sentence		calculate relative abundance, species richness and diversity".	to calculate species density. The section states that habitat-based surveys were "designed to calculate relative abundance, species richness and diversity". However there is rarely information provided on abundance relative to habitat, nor species richness and diversity. This information is needed throughout.	revise the section. No new surveys were feasible.			
USFWS 65	3.12.2.3.2		Table 3.12-3	The information on proportion of total observations for the most common species is not very useful. This table would be improved by: 1. Including bird numbers relative the habitat types described in the description of the mine site. If habitat types are combined this should be explained and clearly justified. 2. Full list of species detected and their	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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				abundance (numbers of birds per point) or occupancy (proportion of sites detected). The species of concern should be noted. 3. Also include the total number of points surveyed by habitat type. 4. This could also include waterfowl and shorebirds to be complete (from Table 3.12-6).				
USFWS 66	3.12.2.3.2		Bald Eagle versus Golden Eagle occurrence around mine site	It is unexpected that more Golden Eagles were not encountered.	The identification and notes were checked and the section adjusted as needed.	The proposed change would be acceptable.		
USFWS 67	3.12			Regarding raptor nests, it is hard to evaluate the potential impact without seeing where the nests are located in relation to the project footprint and disturbance buffers. *All eagle nests (bald and golden) will need to	Figures have been modified to better show the nests in relation to the project, and wording about the Eagle Take permit has been added.	The proposed change would be acceptable.		

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				be evaluated for an Eagle Take permit. Recommend providing the USFWS with a list of all of the bald and golden eagle nests include coordinates for latitude and longitude, year(s) of survey, species, and next occupancy.				
USFWS 68	3.12.2.3.3		Table 3.12-6	Species in Table 3-.12-6 do not appear to be listed in any particular order; recommend they be listed alphabetically, or better yet, phylogenetically. If they are listed in order of decreasing abundance, then numbers should be included in the table.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 69	3.12.2.3.2		Table 3.12-6	*Recommend updates and review for species accuracy throughout document. Please revise specific examples in the following comments: Wigeon is the correct spelling in American wigeon (no “d”). American Wigeon = Anas americana (Penelope = Eurasian	The names have been checked and updated.	The proposed change would be acceptable.		

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				species). Also, Canada and cackling goose are now both species, cackling goose is not mentioned on the Table or in text.				
USFWS 70	3.12.2.3.2		Table 3.12-6	Common snipe should be changed to Wilson's snipe; Widgeon to Wigeon. It would be useful to include the numbers of detections of each species or the average number per year, as concerns for curlews will be quite different if there was 1 compared to 100 detected.	The names have been checked and updated.	The proposed change would be acceptable.		
USFWS 71	3.12.2.3.2		Certainty of Greater Scaup given location?	Given the mention of lesser scaup in the text but not in the table, and the mention of trumpeter swan on pg. 59; the certainty of identification in greater versus lesser scaup seems questionable, and has very different implications.	The identification and notes were checked and the section adjusted as needed.	The proposed change would be acceptable.		
USFWS 72	3.12.2.3.2		Table 3.12-6; blue-winged teal	Sighting of blue-winged teal is possible, though very unlikely given the scarcity of records in the	The identification and notes were checked and the	The proposed change would be acceptable.		

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				past 30+ years of aerial surveys, if sighted it needs rare bird documentation.	section adjusted as needed.			
USFWS 73	3.12.2.3.2		Table 3.12-6; Wilson's snipe	Common Snipe is old naming convention. New name is Wilson's snipe. Update and review for consistency throughout document.	The names have been checked and updated.	The proposed change would be acceptable.		
USFWS 74	3.12.2.3.2		Ptarmigan were not observed in the mine site region?	*Recommend researching and accounting for migration periods at the mine site, as a suite of different species would be expected to pass through and utilize this region during migration that might not be there during the breeding season.	A new report on migratory birds at the mine site was completed in 2014, and the text has been updated.	The proposed change would be acceptable.		
USFWS 75	3.12.2.3.2			*Additional surveys may be needed as timing of existing survey may have been inappropriate to encounter major migration movements. The focus at the mine site seemed to be on breeding habitat. Has there been any effort to account for migration periods at the mine site,	A new report on migratory birds at the mine site was completed in 2014, and the text has been updated.	The proposed change would be acceptable.		

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				as a suite of different species would be expected to pass through and utilize this region at that time. Displacement during post-breeding season may have impacts on more individuals than just those that nesting the region. How are migrating birds being accounted for?				
USFWS 76	3.12.2.3.2; 3.12.2.3.5		Table 3.12-6 and top of page 73	The Bristle-thighed Curlew is a rare shorebird of very high conservation concern (see Alaska Shorebird Conservation Plan). Therefore, it is very important that anomalous sightings are reported accurately. The mine site is approximately 190 km southeast of the curlew's breeding range and even further inland from its typical migration pathways. It has never been documented inland of the coastal zone except at the breeding grounds.	The identification and notes were checked and the section adjusted as needed.	The proposed change would be acceptable.		

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				The mine site, however, is within whimbrel breeding habitat, a species very similar in size and appearance to the Bristle-thighed Curlew. So without documentation, it is difficult to evaluate the credibility of the Bristle-thighed Curlew sighting. Documentation for rare birds includes notes on field marks, behavior, vocalizations, habitat, viewing conditions (distance, visibility, vegetation), experience level of the observer, and, if possible, photos. This documentation does not exist in the point count reports. Considering this would be a first ever observation for a curlew so far inland, documentation in support of this sighting needs to be included either in the EIS or in a supporting document.				
USFWS 77	3.12.2.3.2		Trumpeter Swan mentioned, given this	Recommend the review of this section. Tundra	The identification	The proposed change would be		

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			reference what is the certainty of the Tundra Swan identifications?	swan listed in table, trumpeter swan cited as observed in text; these have very different implications.	and notes were checked and the section adjusted as needed.	acceptable.		
USFWS 78	3.12.2.3.3		Mine site / Songbirds	*Evidence is needed to show that the habitat types are similar and at roughly the same proportions between Road and Mine Site. This is needed to support the conclusion that bird use should be expected to be the same between road and mine site. If the habitat proportions are different, then you should explain how the bird communities are also likely to differ in terms of relative abundance, numbers of species, and numbers of species of concern.	Densities were calculated and checked against the literature. Habitat proportions were checked, and the section was adjusted.	See our comments on density below.		
USFWS 79	3.12			Eagle nests will need to be evaluated for an Eagle Take permit with the USFWS, see recommendation for page 56 above.	Wording about the Eagle Take permit has been added. (Also see FWS 67.)	The proposed change would be acceptable.		
USFWS 80	3.12.2.3.3		The survey also determined that the following drainages are	The EIS needs to expand this paragraph to explain what is	Explanation has been added.	The proposed change would be acceptable.		

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			too small to serve as waterfowl breeding habitat: American Creek, Anaconda Creek, Crevice Creek, Quartz Gulch, Snow Gulch, Queen Gulch, Lewis Gulch, and Omega Gulch.	considered too small for waterfowl breeding habitat and why. For example, what does it mean that the drainages were too small for waterfowl breeding habitat? How was this assessment made?				
USFWS 81	3.12.2.3.3		Stream-nesting waterbird surveys	This paragraph only talks about waterfowl; it does not mention other species, like shorebirds, that could be nesting along streams. If it was strictly a waterfowl survey, then the title of the section should be changed to stream-nesting waterfowl survey. If other species were surveyed, then they need to be discussed in this section, including the fact that none were observed.	Original sources were checked and the section updated.	The proposed change would be acceptable.		
USFWS 82	3.12.2.3.3		Waterbirds The habitats along the proposed road are similar to those found at the proposed Mine Site…	There should be evidence that habitat types and proportions are the same between mine and roads. As stated above this is needed to support the conclusion that bird use	Densities were calculated and checked against the literature. Habitat proportions were checked, and the section	See our comments on density below.		

BIRD 6

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				should be expected to be the same between road and mine site. If the habitat proportions are different, then you should explain how the bird communities are also likely to differ in terms of relative abundance, numbers of species, and numbers of species of concern.	was adjusted.			
USFWS 83	3.12.2.3.3		The route runs through the Yukon-Kuskokwim Delta, an area that has been documented by the ADF&G and the USFWS as an important waterfowl and shorebird habitat.	Recommend revising and including the following text: The Yukon Delta NWR is a Western Hemisphere Shorebird Reserve network site of hemispheric importance. Such a site provides staging, nesting, or breeding grounds for at least 500,000 shorebirds annually or at least 30% of the biogeographic population of any species. The Yukon Delta NWR is also an East Asian Australasian Flyway Partnership Network Site for migratory waterbirds.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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				Such a site supports at least 20,000 migratory waterbirds annually or appreciable numbers of an endangered or vulnerable population. Relevant Important bird areas include Qunihagak-Cape Newenham (http://netapp.audubon.org/iba/site/1074) and Kuskokwim River Delta (http://netapp.audubon.org/iba/site/1071) And Nunivak Island (http://netapp.audubon.org/iba/site/1073) plus several others on Togiak NWR.				
USFWS 84	3.12.2.3.3		The following information on the Refuge is summarized from the USFWS (2003 and 2013).	Update and add appropriate references .These citations are not in the literature cited section and confuse how statements made are being supported.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 85	3.12.2.3.3		"The proposed shipping route from Dutch Harbor through Bristol Bay to the Jungjuk port site is used by many species of migratory birds"	Comment: This is a very underwhelming description of the reality and importance of this region. Compared to the river and tributaries habitats on the refuge,	Additional information has been added to the section.	The proposed change would be acceptable.		

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				the route from Dutch Harbor to Bristol Bay has an entirely different suite of species.				
USFWS 86	3.12.2.3.3		Birch Tree Crossing Port Road	No information is provided on the birds along the BTC corridor; recommend providing information.	Information added.	The proposed change would be acceptable.		
USFWS 87	3.12.2.3.3		Waterway Transportation Routes	No information is provided on the birds from Kuskokwim Bay to Dutch Harbor; recommend providing information.	A figure and additional information has been added.	The proposed change would be acceptable.		
USFWS 88	3.12.2.3.3		The refuge hosts approximately 80% of the continental breeding population of black brant and nearly all emperor geese. Cackling Canada and Pacific greater white-fronted geese number over 175,000 and 420,000, respectively. Principal species of ducks that occur on the refuge include northern pintail, greater scaup, and wigeon.	Numbers and naming conventions for avian species need to be reviewed and updated.	The names have been checked and updated.	The proposed change would be acceptable.		
USFWS 89	3.12.2.3.3		Kuskokwim River Wildlife Surveys	It would be useful to illustrate survey data in	Agree; table added.	The proposed change would be		

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				a table format with the numbers. For example, the Lower Kuskokwim River bird surveys are summarized by seasonal timing but no summary of the numbers counted is shown.		acceptable.		
USFWS 90	3.12.2.3.3			*There should be more specific information on the species of concern mentioned, and the ones that occur in regionally or globally high numbers should be noted.	Information added.	The proposed change would be acceptable.		
USFWS 91	3.12.2.3.3		Table 3.12-9	Comment: Normally a table is for data; the information in Table 3-12-9 is better inserted as text in a paragraph. Table 3-12-9 does not summarize methods. It includes survey platform, distance covered, and dates, but it is not clear about survey methods. Conversely, the paragraph that follows Table 3.12-9 includes data in the text that would be better presented in a table.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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USFWS 92	3.12.2.3.3			It is concerning that there was only 1 survey of 2-days duration from Crooked Creek to Bethel to characterize the bird use of that portion of the river. It does not seem logical that a single survey can be very representative. It seems unusual that different portions of the river were surveyed using different techniques, i.e. a boat survey upstream of Bethel, but there were stationary observations downstream. Were any GPS locations of bird sightings taken during the boat survey to provide spatial distribution data that could be used for future reference?	A full range of studies was not feasible during the preparation of the EIS. All available information is being used.	The proposed change would be acceptable.		
USFWS 93	3.12.2.3.3		Comparison (at least qualitatively) of species counts of 110 versus 101.	Yes, 110 is greater than 101 species, but is that difference significant or meaningful or is it the result of seasonal	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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				chance? This statement needs revision. Perhaps the differences in species presence a "greater diversity"; i.e. how many species were seen at both versus each individual site?				
USFWS 94	3.12.2.3.3		Table 3.12-9: while spotted sandpipers and black turnstones were the most common shorebirds	Black Turnstone is a coastal species. It is extremely unlikely to be one of the most common shorebirds observed on the river between Crooked Creek and Bethel. This is either an error in the text or an error in the field identification.	The identification and notes were checked and the section adjusted as needed.	The proposed change would be acceptable.		
USFWS 95	3.12.2.3.3		Table 3.12-10; *Dendroica petechia*	The genus name for yellow warbler has changed to Stephaga. Common and species names need to be reviewed to **American Ornithologists' Union** (AOU) current species list and revised. Please check the website (checklist.aou.org/) to make sure all the bird names are current throughout the report.	The names have been checked and updated.	The proposed change would be acceptable.		

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USFWS 96	3.12.2.3.3		Songbirds	*The section on songbirds needs to clearly identify which surveys are being referred to as there appears to be more than one. More information is needed from the Harwood surveys, which provide the best information on birds along the Kuskokwim River. Information on number of species, number of species of concern, and noteworthy concentrations is needed for songbirds and shorebirds.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 97	3.12.2.3.3		Table 3.12-11 and 3.12-12	Correct the alphabetical order of the species.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 98	3.12.2.3.3		Seventeen species of waterfowl were recorded on the Kuskokwim River including loons, grebes, swans, geese, and ducks (RWJ Consulting Inc. 2009).	Recommend revising the text: Seventeen species of waterbirds were recorded on the Kuskokwim River including loons, grebes, swans, geese, and ducks (RWJ Consulting Inc.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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				2009).				
USFWS 99	3.12.2.3.3			While herring gull is certainly possible to encounter further upstream on the Kuskokwim, the resulting similarity in numbers to numbers of glaucous gull is perceived as unexpected.	The identification and notes were checked and the section adjusted as needed.	The proposed change would be acceptable.		
USFWS 100	3.12.2.3.3		Waterbirds	Clarify what surveys are summarized here (BBS, 2-day float trip, other)?	Clarifications added.	The proposed change would be acceptable.		
USFWS 101	3.12			Recommend inserting a table with all of the eagles identified to species within an agreed upon buffer for each component of the project.	Table added.	Proposed change is acceptable		
USFWS 102	3.12.2.3.3		Table 13.12-12 – Arctic Loon	Arctic Loon is an Asian species that is restricted to the Seward Peninsula and Kotzebue Sound during the breeding season. It would be very unusual to see it on the Kuskokwim River whereas it is not unusual to see the very similar Pacific Loon. Any sightings of Arctic loons need documentation.	The identification and notes were checked and the section adjusted as needed.	Proposed change is acceptable		

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				Documentation for rare birds includes notes on field marks, behavior, vocalizations, habitat, viewing conditions (distance, visibility, vegetation), experience level of the observer, and, if possible, photos. Checking the 2009 survey report, it was noted that one of the Arctic Loons was seen at a very far distance (Table B-1, page B-8). These two species cannot be distinguished at a very far distance. On page B-69, both Arctic and Pacific Loons were seen at the same date and time. Is this a case of two different observers calling the same thing by two different names (Arctic Loon is the old name and Pacific Loon is the new name).				
USFWS 103	3.12.2.3.3		Table 13.12-12 – Black brant	Black Brant is a subspecies and should be given the subspecies name as part of its scientific name.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		

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				However, for the purposes of this document, consider it with Brant.				
USFWS 104	3.12.2.3.3		Table 13.12-12 – Canada goose	Canada goose was split into two different species (Canada and cackling), both of which occur here. The problem is that they are very difficult to distinguish by sight. Suggest the EIS broaden this category to include both species.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		
USFWS 105	3.12.2.3.3		Kuskokwim Bay, Marine Waters	*It would be useful to include a table with the species that have noteworthy concentrations in these areas and for each component of the project (mine site, transportation corridor, and pipeline). The summary leaves out too many of the details on which birds are potentially affected. In particular, information is lacking on seabirds.	A figure with a species table was added.	Proposed change is acceptable		
USFWS 106	3.12.2.3.3		The coastal area from the mouth of the Kuskokwim River to the	Needs citation.	Agree with comment and section was	Proposed change is acceptable		

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			south side of Nelson Island is the most important area for fall staging shorebirds on the west coast of North America.		adjusted accordingly.			
USFWS 107	3.12.2.3.3		Kuskokwim Shoals description needs to be reviewed and revised.	*In the Kuskokwim Bay section, Kuskokwim Shoals is mentioned, but its importance as a molting area for seaduck species, as a migration funneling point for emperor goose, location of one of the largest northern eelgrass beds and the fact it is designated critical habitat for spectacled and Steller's eider is not mentioned or acknowledged.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		
USFWS 108	3.12.2.3.3		It supports hundreds of thousands, if not millions, of shorebirds, including virtually the entire North American-breeding population of bar-tailed godwits that stage there before flying non-stop to New Zealand and Australia.	Needs citation.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		
USFWS 109	3.12.2.3.3		Gill and Handel (1978) documented marine	*Suggest more information be	Additional information	Proposed change is acceptable		

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			migration routes for several species of waterfowl and seabirds within the marine portion of the proposed transportation route.	provided. What are the most abundant species? What are the species of concern? Are there other relevant papers.	added.			
USFWS 110	3.12.2.3.3		Marine Waters (Kuskokwim Bay to Dutch Harbor)	*This section need more research. The section on Marine Waters (Kuskokwim Bay to Dutch Harbor) discusses the 460 mile shipping corridor to be used by this project. This section is very brief and no information about the bird resources in this area except for one citation. It seems likely that there would be additional information available from at-sea surveys.	Additional information added.	Proposed change is acceptable		
USFWS 111	3.12.2.3.4			It seems there are some parts of this section that would benefit from citations. For example, section 3.12.2.3.4 describes bird resources in the Cook Inlet area but lists only one source, Audubon 2013. It is unclear if all the	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		

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				information in this section comes from that one source or if additional sources were used.				
USFWS 112	3.12.2.3.4		Gill and Handel (1978)	This reference may need revision. The Gill and Handel (1978) article about shorebirds, should be: Gill, R.E., Jr., C. Handel, and M. Petersen. The Migration of Birds in Alaska Marine Environments, 1978, OCSEAP article was not provided so we cannot ensure this is the case.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		
USFWS 113	3.12.2.3.4		The refuge [Susitna Flats] also hosts several thousand lesser sandhill cranes and upwards of 8,000 swans.	Needs citation.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		
USFWS 114	3.12.2.3.4		Spring migration of ducks, geese and swans number well in excess of 100,000 birds. Total daily counts of waterfowl can exceed 36,000 birds during spring migration. Total high counts for all shorebird taxa using the site exceed 30,000	Needs citations.	Agree with comment and section was adjusted accordingly.	Proposed change is acceptable		

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			birds. The diversity of species is among the highest at any site in Cook Inlet, but overall numbers of any one species, except for rock sandpipers and Hudsonian godwits, was relatively low. The site's principal importance is to the dominant race of the rock sandpiper (Calidris ptilocnemis ptilocnemis), of which virtually the entire population resides on the area between early October and late April.					
BIRD 6 USFWS 115				*The report states that results of bird surveys in one part of the project can be applied to another part with no surveys based on the assumption that the habitats are similar. However, this may not be plausible due to the very large scale of the project.	Densities were calculated and checked against the literature. Habitat proportions were checked, and the section was adjusted.	See our comments on density below.		
BIRD 6 USFWS 116	3.12.2.3.4		Songbirds	* A more convincing argument is needed	Densities were calculated and	See our comments on density below.		

BIRD 6

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				support the statement that the pipeline corridor includes the same bird species, abundances, and communities as the mine site. For example, information is available from Ruthrauff et al. (2007) to compare the numbers but no attempts are made to do so. No attempt is made to show that the habitat types occur in similar proportions between mine and corridor.	checked against the literature. Habitat proportions were checked, and the section was adjusted.			
USFWS 117	3.12.2.3.4		Ruthrauff (et al 2007)	This reference is missing from the citation list.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 118	3.12.2.3.4		Table 3.12-14	Restructure the format in Table 3.12-14, suggest providing columns for years, subcolumns for occupied vs unoccupied, and providing species listed in the rows. It would make this table much easier to understand.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 119	3.12.2.3.		Raptor species	Suggest revising the	Agree with	The proposed		

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	4		generally select nesting sites that are in close proximity to water.	text: Raptor species generally select nesting sites that are relatively inaccessible and close to areas with a sufficient prey base to feed their young.	comment and section was adjusted accordingly.	change would be acceptable.		
USFWS 120	3.12.2.3.4		Table 3.12-14	Comment: the number of territories increases each consecutive year. Were the surveys all done the same way, did the experience of observer change, for example the count of 62 vs. 39 is a large difference in number of nests. Probability need to discuss possible differences in detectability among years.	Densities were calculated and checked against the literature. Habitat proportions were checked, and the section was adjusted.	See our comments on density below.		
USFWS 121	3.12			It would be very helpful if coordinates for all raptor nests are provided to the USFWS.	Recommendation given to Donlin Gold.	The proposed change would be acceptable.		
USFWS 122	3.12.2.3.4		The Susitna Flats State Game Refuge, which encompasses the first 5 miles of the pipeline route, contains habitat that is used by as many as 100,000 waterfowl	Needs citation.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

BIRD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			during peak times of the year (Figure 3.12-10).					
USFWS 123	3.12.2.3.4		tule white-fronted geese (Anser albifrons),	This is the only species in this list that has a scientific name. If you are specifying a subspecies, you need to include the subspecies name in the scientific name.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 124	3.12.2.3.4		Northern phalaropes, dowitchers, godwits, whimbrels, snipes, yellowlegs, sandpipers, plovers, and dunlins are among the most abundant of shorebirds in the Refuge (Clausen et al. 1988).	If this paper specifies species names for the shorebirds, these should be included here (e.g., lesser yellowlegs). Northern phalarope is an old name; the current name is Red-necked Phalarope. Naming conventions need to be reviewed through the entire document and made consistent and current. Several name references are severely out of date to the point of causing confusion with current naming schemes.	The names have been checked and updated.	The proposed change would be acceptable.		
USFWS 125	3.12.2.3.4		Waterbirds	There is no species called Northern phalarope in Alaska.	The names have been checked and updated.	The proposed change would be acceptable.		
USFWS 126	3.12.2.3.			No waterfowl species on	The names have			

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
	5			the species of concern list (Emperor goose, Spectacled Eider, Steller's Eider, King Eider, Pacific Common Eider, Black Scoter, Harlequin Duck, Black Brant)?	been checked and updated.			
USFWS 127	3.12.2.3.5		Species of Concern	*The section about species of concern discusses the number of times a particular species was detected in 2012 but should include information about the search effort so the reader can place the frequency into perspective.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 128	3.12.2.3.5		Table 3.12-15	Need to include whether there are concentrations of these species relative to the different project areas (regional or globally significant concentrations). Also, McKay's Bunting occurs at Bethel (above Napaskiak).	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 129	3.12.2.3.5		Table 3.12-15 - Bristle-thighed Curlew	Reasons for concern include: A rare species with a global population	Agree with comment and section was	The proposed change would be acceptable.		

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				estimate of only 10,000 birds. Breeding grounds restricted to two relatively small areas in western Alaska.	adjusted accordingly. Identification and notes checked.			
USFWS 130	3.12.2.3.5		Table 3.12-15 – Black Turnstone	Breeds only on the coast of western Alaska, 85% on the central Yukon-Kuskokwim Delta.	Agree with comment and section was adjusted accordingly. Identification and notes checked.	The proposed change would be acceptable.		
USFWS 131	3.12.2.3.5		Table 3.12-15 – Western Sandpiper	Conservation concerns include: tendency to concentrate in a limited number of locations during migration and winter; significant habitat loss/degradation on wintering grounds.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 132	3.12.2.3.5		Table 3.12-15 – Bald Eagle	Suggest not listing bald eagle in this table. The reason for concern does not adequately explain why it is here.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 133	3.12.2.3.5		Species of Concern	Suggest revising text to be more concise and to the point, particularly in the raptor section.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 134	3.12.2.3.5		Table 3.12-15 – McKay's bunting	McKay's bunting is endemic to Alaska.	Agree with comment and section was	The proposed change would be acceptable.		

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					adjusted accordingly.			
USFWS 135	3.12.2.3. 5			This page needs to be supported, especially with information from the Harwood reports. Right now it is choppy and not very useful.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 136	3.12.2.3. 5			Need more information on the other species of concern. Not clear why the curlew, warbler, flycatcher, and blackbird are singled out.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable..		
USFWS 137	3.12.2.3. 5		Table 3.12-16	Need to specify the species that occur at regionally high concentrations.	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		
USFWS 138	3.12.2.3. 5		Weir et al. (1982) recorded this species at Kagati Lake, Goodnews Bay, and Togiak River during breeding season,	This reference is not listed in citations, therefore it is unclear what this reference is exactly, but the USFWS did check Birds of the Kilbuck Mountains by Petersen, Weir, and Dick (1991). The bristle-thighed curlews at Kagati Lake, Goodnews Bay, Platinum Spit, and Togiak River were all seen mid-July to early August. This is during	Agree with comment and section was adjusted accordingly.	The proposed change would be acceptable.		

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				the post-breeding season, not during the breeding season.				
USFWS	3.12		Due to the scale of industrial activity in the facilities associated with the mine, power plant, and mill, most avian species would likely avoid the area around the mine infrastructure, thus reducing structure collision mortality.	Birds will NOT avoid an area just because it has industrial levels activity. In fact, the area will have lights, birds are attracted to light especially during bad weather conditions and poor visibility. Suggest modifying this statement and adding mitigation measures such as down-shield lights and use motion detectors for lights.	Wording was revised. Mitigation is discussed in Chapter 5.	The proposed change would be acceptable.		
USFWS	3.12		However, if there was nothing to eat, birds would not likely stay very long.	Water is a major attractant to birds of all species for bathing purposes. Birds bathe frequently to keep their feathers in prime condition. If water sources are limited, they will concentrate at whatever water is available and will visit this area on multiple occasions. Bathing is followed by intensive preening which could include ingestion of	We acknowledge that birds are attracted to water for bathing and wording has been modified to include it. However, the exposure analysis considers total exposure, and it is unlikely that birds will get more than 10	Suggest mitigation methods to keep birds from using contact water.	The USFWS recommends an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	

BIRD 1

BIRD 1

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				water and contaminants present on the feathers. Since birds are willing to bathe in puddles on streets in urban areas, I think it unlikely that mine site water bodies will be unattractive to birds. Especially if this is the only water available during early spring. Landbirds, however, bathe in shallow water so one way to deter them from bathing is to keep the water depth too deep for them to stand in.	percent of their water from one of these sources, and even less of their food.			
USFWS	3.12.2.2.2		Project related disturbance along the Kuskokwim River would be seasonal so impacts on habitat use would primarily occur in the open water months.	Is use of the Kuskokwim River ice road analyzed in the document?	Donlin is not proposing to use a Kuskokwim ice road.	The proposed change would be acceptable.		
USFWS	3.12.2.2.2		Clearing of vegetation for all aspects of the project would likely take place outside of the nesting season (late-May to mid-July) to minimize impacts on birds.	Migratory birds begin arriving in mid to late April and some birds are already sitting on eggs by mid-May. Please refer to Service's Land Clearing Timing Guidance for Alaska	Wording was modified.	The proposed change would be acceptable.		

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				which provides specific guidance by region and habitat type: http://www.fws.gov/alaska/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf				
USFWS	3.12.2.2.2		The increased demand for wildlife resources could lead to changes in wildlife management policies to address this demand, including expanded predator control programs that could affect the populations of wolves and both species of bears.	Wildlife management actions taken would depend on land ownership and the situation. Predator control is a state policy, not a federal policy. Suggest changing the language of this sentence to be more neutral as it is not a given that predator control would be used if human demand increases. A more likely scenario is that hunting would be restricted. "The increased demand for wildlife resources could lead to changes in wildlife management policies to address this demand."	Wording was modified.	The proposed change would be acceptable.		
USFWS	3.12.2.2.2		Streamlined Ecological Risk Assessment for the	Please describe whether HQ is a standard	The use of HQs in Ecological Risk	This comment was not completely	Suggest clarifying this information.	

BIRD 3

BIRD 3

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			Tailings Storage Facility. Hazard quotient (HQ)	measurement used for assessing exposures to contaminants, and over what time scale (numbers of days) it is relevant. As currently written, it is difficult to interpret the meaning of HQ, a matter made worse when HQ values are discounted by an order of magnitude correction factor. The number of days over which HQ applies is particularly important to clarify as the equation measures the daily exposure to contaminants relative to the lower adverse effect level. An HQ value of 1 could apply to a bird with single day of exposure or a bird exposed all 365 days of the year, two vastly different cumulative exposures. Thus, it would be useful to state over how many days HQ must equal or exceed a value of 1	Assessment is a standard approach based on USEPA and other guidance for assessing exposure of ecological receptors to chemicals. HQs are unitless. HQs for wildlife (e.g., birds and mammals) exposed to chemicals are calculated as the ratio of Exposure Dose (milligrams of chemical per kilogram of body weight per day [mg/kg-bw/day]) to Toxicity Reference Value (TRV) Dose (mg/kg-bw/day). That is, for a given chemical, the HQ = Exposure Dose / TRV. A new part will	addressed and information provided may need revision,. Consider pit lake water quality after the lake overturns. This would not be the same as the original pit infilling water, because the waste rock facility will have been draining to the pit and contributing for 100 years.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 3					before it is problematic to a species. This will help the reader understand: a) whether an HQ of 1 over 10 days might still be a problem for mallards stopping over on contaminated ponds and b) whether the correction factor is indeed valid. Right now the argument that the HQ should be lowered by an order of magnitude (0.1 correction factor) is not very convincing and seems rather arbitrary. For example, if a correction of 0.25 was used instead you would find the adjusted HQ still exceeded 1 for the dipper and vole.	be added to discuss the period of time over which chronic exposure might lead to mortality. The discrepancies in exposure are being worked out.			
BIRD 6	USFWS	3.12.2.2.2		If open water sources were available earlier in the spring at this facility than in surrounding water bodies, it might be attractive as a rest stop for migratory water birds. However, if there	Waterfowl and shorebirds may stay longer if there is no open water elsewhere in the spring. In these instances, all water and food will come from the contaminated	Once the length of exposure needed for mortality is explained, the relative risks will be clearer.		Suggest clarifying this information.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 6				was nothing to eat, birds would not likely stay very long	impoundments and the daily exposure measured through HQ should apply.				
WILD 8	USFWS	3.12.2.2.3		Barge traffic would contribute incrementally to erosion of river bank habitats through their associated wakes but such losses would be very small relative to the abundance of similar riparian habitat along the Kuskokwim River.	Have there been studies to indicate that the loss of habitat to riverbank erosion would be very small? A number of the cooperating agencies have noted loss of riverbanks due to erosion. Changes in hydrology, timing of freeze-up and breakup, and a warming climate contributes to enhanced erosion. Cumulative impacts of erosion should be discussed.	Revised to refer to the Wetland section for discussion of bank erosion.		Suggest clarifying this information to ensure analysis of wildlife includes direct, indirect, and cumulative effects and the interrelated consequences of project related activities on these resources.	
WILD 8	USFWS	3.12.2.2.3		Given the slow speeds that Donlin Gold proposes to enforce on the mine access road (35 mph or less), collisions with terrestrial mammals are likely to be rare events	Does DOT have any statistics on moose collisions that correlate frequency of moose collisions with traffic frequency and vehicle speed?	ADOT has statistics on frequency of moose collisions with time of year, time of day, and different types of roads but there apparently is no data or scientific study correlating	The proposed change would be acceptable.	Suggest clarifying this information to ensure analysis of wildlife includes direct, indirect, and cumulative effects and the interrelated consequences of project related activities on these resources, as well as practical methods to avoid or minimize	

WILD 8

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					collisions with vehicle speed.		adverse impacts.	
USFWS	3.12.2.2.3		The trucks would pass a given point about every 5 to 10 minutes over a 14hour period each day through the shipping season. The risk of vehicle collisions would also be about double that of Alternative 2. Given the slow speeds of mine-related vehicles and the relatively small number of vehicle transits per day, collisions with large mammals would likely be rare.	Is the 14-hour day going to be a single shift or will it include more than one shift of drivers? The risk of collisions between vehicles or with wildlife would increase if drivers are working shifts longer than 8 hours. Tired drivers will have slower reaction times or have a greater likelihood of not being as alert.	The duration of shifts and required number of drivers would be determined during operational planning. The number of drivers, shifts, and other considerations would be determined in accordance with all applicable state and federal requirements. Extra tired drivers would not be expected.	The proposed change would be acceptable.	Suggest clarifying this information to ensure analysis of wildlife includes direct, indirect, and cumulative effects and the interrelated consequences of project related activities on these resources, as well as practical methods to avoid or minimize adverse impacts.	
USFWS	3.12.4.2.2		Habitat loss/alteration Because it is unlikely that nest trees are a limiting factor in raptor populations in the proposed project area, loss of a few nests would not cause a high impact on more than a local basis because of the larger home ranges	Please include data to support the statement that nesting trees are not a limiting factor. For example: How abundant (rare, common, abundant) are trees that are large enough to support nests of bald eagles, osprey, or red-tailed hawks?	Additional information and discussion was added.	The proposed change would be acceptable.		

WILD 8

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			of these species.	1. Are nest trees also abundant outside the impacted areas? 2. Are most nests occupied by nesting raptors? If so, then nest sites might limit the number of birds in the area.				
USFWS	3.12.4.2.2		Because it is unlikely that nest trees are a limiting factor in raptor populations in the proposed project area, loss of a few nests would not cause a high impact on more than a local basis because of the larger home ranges of these species. The magnitude of the impact loss would be high only on a local basis (moderate overall), however, because the habitat types affected are common in the proposed project area and vicinity.	How were nest trees as limiting factors evaluated? Any loss of eagle nest trees will need to be permitted through the Service's Eagle Permit Program. At the time of application of permit, the application will be evaluated on how loss of nests will affect the local area population and thus whether that is a permitable loss.	Figures show inventoried nests, many unoccupied.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		Habitat loss/alteration. "In order to estimate the number of birds potentially affected by	The referenced information in section 3.12.3.1 could not be found. Similarly, this	Citations have been corrected.	See our comments on density below.		

BIRD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 6			habitat loss or alteration, the species- and habitat-specific density estimates described in **Error! eference source not found.**, Affected Environment, were multiplied by the amount of habitat that would be lost or altered under each alternative."	section was referenced in several other locations in 3.12.4 (see p. 58, p. 85), but we could not find the information on birds that was being referenced.				
USFWS	3.12.4.2.2		"While impacts to birds during construction would be short-term, operation of the mine and transportation facilities would increase noise levels long-term."	Are there sources that can be cited about the effects of noise on birds?	The discussion was expanded and a reference added.			
BIRD 9 USFWS	3.12.4.2.2		Blasting/Noise	Project activities have potential to result in loss of territories for eagles (i.e. abandonment), not just short-term disturbance. This would require a permit under Eagle Permit Program with subsequent analysis of impact to local area population.	Additional discussion has been included. Also note that preconstruction surveys will determine if any territories are at risk and need an eagle permit.	See our comment on surveys below.		
USFWS	3.12.4.2.2		Attraction to Tailings Ponds or Other Water	Concern for eagles (specifically bald eagles)	No carcasses are expected. The	The proposed change would be		

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			Bodies with Potentially Toxic Contaminants	would be eagle scavenging on carcasses of waterfowl that could die due to contamination in ponds. Carcasses should be removed and destroyed immediately so no feeding occurs by scavengers, causes secondary mortality.	levels of toxic materials in any of the water bodies are expected to be low enough that chronic toxicity is the issue, not acute toxicity. Monitoring and adaptive management are expected to be part of the management plan.	acceptable.		
USFWS	3.12.4.2.2		Vehicle collision mortality would be minimized along project roads through enforcement of low speed limits. Mortality rates for avian species may be expected to decline over time due to a postulated 'learning effect,' whereby birds acclimate to the presence of the road and develop behaviors to avoid collisions (e.g., flying higher when crossing the road to	Is there information available that discusses whether learned behavior may be dependent on frequent and predictable rates of vehicle traffic rather than slower speeds of the vehicles?	Wording was modified and the reference Legagneux and Ducatez 2009 was added.	The proposed change would be acceptable.		

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			avoid vehicles) (Havlin 1987).					
USFWS	3.12.4.2.2		Number of strikes annually reported has increased almost 6-fold…	Have frequencies of flights increased as well? Number of strikes has increased but so also has the number of flights.	Reworded to clarify.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		Direct Injury/Mortality from Collisions. "killdeer, ring-billed gull,"	These species are unlikely to occur in the project area. It would be more effective to look at bird strike data that is specific to Alaska. If that is not available, then just consider species in the national database that occur in Alaska. Ring-billed gulls do not normally occur within Alaska – their breeding range is in southern Canada and northern US. Killdeer, normally breed in east central and southeast Alaska, therefore are expected to be rare in the project area. Since most of the data from a national bird strike database will include species that do	Changed to species from Alaska bird strike data from FAA website.	The proposed change would be acceptable.		

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				not occur in Alaska or are rare in Alaska (and few species that could be common in Alaska), is there really value in looking at species with high numbers of strikes for the whole U.S?				
USFWS	3.12.4.2.2		Direct Injury/Mortality from Collisions. "flights/day/spread"	Please define what is meant by the term "spread"	Different sections of the pipeline will be constructed by separate contractors/crews working independently. Each can be referred to as a spread.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		All the planned above-ground power lines would pose a collision threat primarily to raptors and waterfowl, but could cause deaths among other species.	Ptarmigan also have a high risk of collision with power lines. <u>Can mitigation measures be incorporated such as burying power, collocating lines, and using bird deterrents on lines?</u>	Added ptarmigan.	The proposed change would be acceptable.	Recommend mitigation measures to reduce impacts on migratory birds and raptors where possible power lines should be collocated, buried, and if there is overhead power it should incorporate bird deterrents.	
USFWS	3.12.4.2.2		If the power lines are designed in compliance with the Raptor Safe standards described in	The latest Avian Power Line Interaction Committee (APLIC) standards for minimizing	Citation was updated.	Acceptable.		

BIRD 1

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			"Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996" (APLIC et al 1996), the risk of injury to raptors would be substantially reduced.	/ reducing avian collisions with power lines should be used. Citation: Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.				
USFWS	3.12.4.2.2		Reseeding disturbed areas with native seeds	Assuming there are mosses and lichens, and perhaps other types of plants originally on the site, will these plants be restored and if so, how?	The Rehabilitation and Revegetation Plan is now referenced.	Acceptable.		
USFWS	3.12.4.2.2		Therefore; the loss of nests and nesting habitat in the immediate project vicinity is not likely to impact birds on more than a local basis.	Loss of trees suitable to support large stick structures for raptors (e.g., bald eagles) may be affect local population.	Wording was modified.	Acceptable.		
USFWS	3.12.4.2.2		Mitigation Measures	Additional mitigation measures could be incorporated to minimize collisions, such as choice of lighting, motion detectors, shades to down-shield lights, and placement of	Discussions of mitigation measures are consolidated in Chapter 5.	The only mitigation measure found was for construction to use down-shielded lights.	Recommend mitigation measures be incorporated to minimize avian collisions, such as choice of lighting, motion detectors, shades to down-shield	

BIRD 1

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 1					structures away from important habitats or flight pathways?			lights, and placement of structures away from important habitats or flight pathways	
BIRD 1	USFWS	3.12.4.2.2		Mitigation Measures. “If occupied nests are found close to areas of proposed activity, the activity would be scheduled to occur outside the nesting season if feasible.”	Please include what mitigation measures will be implemented if a raptor nest is found and it is not feasible to conduct the activity outside of the nesting period?	Discussions of mitigation measures are consolidated in Chapter 5.	Acceptable	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
BIRD 1	USFWS	3.12.4.2.2		The noise and movement of the barges may disturb birds foraging or nesting along the shores.	Some birds actually forage in the waters of the Kuskokwim River, including gulls, terns, and ducks. This section needs analysis of effects on foraging birds in the waters of the Kuskokwim River.	Added discussion.	Acceptable	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
BIRD 5	USFWS	3.12.4.2.2		Waterbirds in the Kuskokwim River may be habituated to vessel traffic, and an additional one or two tug and barge passings per day may not have a	Isn’t the project going to more than double daily barge traffic? If that were the case, then it would be a proportionately large increase in frequency.	Barges are not the only vessels that cause wakes and other disturbance. Additional discussion was	Suggest clarifying this information.	If barges are not the only vessels that cause wakes and other disturbance than those should be considered interrelated or and cumulative effects.	

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			notable impact.		added.			
USFWS	3.12.4.2.2		All wastes would be managed to avoid attracting scavengers, therefore no impact on birds are expected as a result of the production of organic waste.	Since, unfortunately, few waste management plans are 100% effective, there likely will be some impact of organic waste. Mitigation measures may include educating workers on how to dispose of organic waste, and why what humans term as waste is food to wildlife (birds or mammals).	Clarifications were added to indicate that such education will be part of the plan. Discussion of mitigation measures is consolidated in Chapter 5.	Acceptable		
USFWS	3.12.4.2.2		Species of concern. The project could impact the 26 bird species listed as “species of concern” that were observed in the proposed project area through the mechanisms discussed above.	Please clarify what is meant by “through the mechanisms discussed above”. In Table 3.12-4, McKay’s Bunting should be moved the second section “Species of Concern with regionally to globally significant portions of their population occurring in the region”	Wording was modified. McKay’s bunting was deleted based on a BLM comment.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		Species of concern. “proposed project area”	None of the figures provided an overview of the proposed project area for the various subcomponents (marine	Reference to the appropriate figures was inserted.			

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				barge, river barge, road and mine site, gas pipeline). This was needed to better assess the project impacts.				
USFWS	3.12.4.2.2		Species of concern. "While none of the bird species are depleted or protected by legislation."	Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act; most other non-game birds and raptors (including eagles) are protected by the Migratory Bird Treaty Act.	Wording was modified.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		Table 3.12-4	This table contains 29 bird species. Only 26 are discussed as "species of concern". Why the discrepancy?	Corrected to make consistent.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2		Table 3.12-4	Table 3.12-4 includes 26 species of concern, but impacts are assessed for only 5 species; table 3.12-7 and similar tables are of estimated breeding pairs lost. Impacts need to be assessed for these species as well. Also, what is the Context for assessing impacts on the many other species of birds that occur in the project	Revised section to discuss the four species that have both a significant portion of their populations in the project area, and known to occur there in high numbers. The impacts to the breeding pairs lost are described under	There are many gaps in this analysis because appropriate data for waterfowl and landbirds were never collected in the pipeline corridor.	Suggest further analysis to provide quantitative assessments for species of concern.	

BIRD 7

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BIRD 7					planning area, most of which are protected by the Migratory Bird Treaty Act?	the heading Nest Site Loss or Disturbance – a reference to this section has been added where appropriate. Clarified context in Impact Criteria for Birds table at start of section.			
BIRD 6	USFWS	3.12.4.2.2		Direct and indirect effects (applies to all aspects of the development).	In general, this section provides an assessment of impacts of development on 18 common songbirds in a limited range of habitats, what about the other species and habitats that occur in the project area that were reported in the Environmental Evaluation Document (Donlin Gold 2012)? This includes: • Other landbirds, shorebirds, waterfowl, and raptors • Wetlands • Numbers of raptor nests (by species)	We have used all the quantitative information available and have developed density information where possible. Raptor nests in the affected areas have been shown on maps.	The maps in the DEIS only show the nests from 2012. In reference to raptors: All known 'list' nests should be displayed as this would more accurately show what is known about raptors in the study area: the distribution and relative density of active and alternate nest sites per species. Due to issues with aerial detection rates, all known 'list' nests should be revisited in future surveys. This would greatly improve detection	Suggest revising this information with updated maps.	

BIRD 6

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				that will be lost or significantly disturbed by the mine and related developments Proper effects analysis requires a more thorough evaluation of numbers of individual birds by species expected to be impacted by the development. When actual numbers of individual birds cannot be estimated, then it would be useful to draw upon qualitative measure of abundance. This is important because it is important to know whether the mine development will likely displace or disturb small numbers of species (rare or uncommon), or large numbers of species (common or abundant).		rates and future data quality.		
USFWS	3.12.4.2.2		Direct and Indirect Effects	As stated above, the discussion is rather generic and in accompanying tables (3.12-5), only certain	Additional discussion has been included.	The proposed change would be acceptable.		

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				songbirds are mentioned. What about nesting raptors in the area? At the very least, the number of eagle nests that may be affected by all these different facets of the project should be enumerated here. Eagles and their nests are protected under the Bald and Golden Eagle Protection Act so should be specifically addressed.				
USFWS	3.12.4.2.2		Even though species that migrate beyond the region might be attracted to the water features, they would not stay long enough to have exposure of consequence.	How long would species need to stay to have exposures of consequence?	An analysis of the length of time needed for the chronic exposures to result in mortalities is being conducted.	The proposed change would be acceptable.		

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BIRD 1	USFWS	3.12.4.2.2		Impact of habitat loss would be moderate because there is so much similar surrounding habitat	This assumes that the surrounding habitat is unoccupied or sparsely occupied such that displaced birds would not have to compete with residents for habitat. Are there mitigation measures currently being employed for loss of habitat for migratory birds?	The percentage of habitats in the watersheds that will be lost is very small. It has been quantified in the vegetation section. Because there will be competition in surrounding habitats for the displaced birds, some loss is expected, and thus the impact is determined to be moderate.	This assumes that the surrounding habitat is unoccupied or sparsely occupied such that displaced birds would not have to compete with residents for habitat. Are there mitigation measures currently being employed for loss of habitat for migratory birds?	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
BIRD 7	USFWS	3.12.4.2.2		Discussion of pipeline effects on birds	This discussion does not include potential effects on waterbirds. Table 3.12-7 does not include any wetland habitat category. Does this mean the pipeline avoids all wetland habitat? If so please address this in the text. If not, include discussion of potential effect on wetland species.	Discussion was added.	The discussion lacks data to adequately quantify the effects. No waterfowl surveys were completed in the proposed pipeline corridor.	Recommend surveys be conducted for birds including waterfowl along the proposed pipeline corridor.	
BIRD 1	USFWS	3.12.4.2.2		In 1996 the Avian Power Line Interaction Committee published	The newest Avian Power Line Interaction Committee (APLIC)	Updated.	Acceptable.	The USFWS recommends an Avian Protection Plan be	

BIRD 1

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			"Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996."	standards for minimizing and reducing avian collisions with power lines should be used. While the recommendations may be similar, the latest standards should be cited and utilized. Citation: Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.			developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
USFWS MBM BOB	3.12.4.2.2		Alternative 3B Diesel pipeline. Mine Site. "The difference in fuel is not expected to change the type or level of effects on birds at the mine site".	Doesn't large-scale use of diesel have the potential to significantly affect air quality through emissions as compared to natural gas with potentially adverse effects on birds? Are there emission reducing mitigation measures that could be analyzed?	See the Air Quality section for this discussion.	The proposed change would be acceptable.		
USFWS	3.12.4.2.2	Table 3.12 3	Semi-palmated plover	There is no hyphen in this name, Semipalmated plover.	Corrected.	The proposed change would be acceptable.		
USFWS	3.12.4.2.		Construction and	Will the transportation	Almost certainly	No, this has not been	Recommend the	

BIRD 5

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BIRD 5		3		operation of the proposed project would require the transport of fuel and supplies by barge on the Kuskokwim River during the short summer barge season.	plan take advantage of early breakup and late freeze to ship on the Kuskokwim River? Will spring and fall shipments overlap with spring and fall bird migrations?	the barging will take advantage of early breakup. It may or may not be as certain that barging will extend later in the season if freeze-up is delayed. Discussions have taken into account the interactions during migration.	addressed adequately in the DEIS. There are tens of thousands of migratory birds (regional in scale) including sensitive and listed species overlapping with seasonal pulses in barging activity. The impact rating of minor to moderate when Intensity to medium, duration is long-term, geographical extent regional, context including important does not seem adequate.	summary level approach be removed and replaced quantitative impacts.	
BIRD 1	USFWS	3.12.4.2.3		Transportation Facilities	There is virtually no information on species or numbers of individual birds that are potentially affected. For example, are there any significant concentrations of birds, such as bank swallow, that might be sensitive to development or operation of the	Surveys have not found unusual concentrations at the proposed port sites.	Additional information would help to inform the analysis.	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	

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BIRD 1

BIRD 8

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				transportation facilities?				
USFWS	3.12.4.2.3		Natural Gas Pipeline, Table 3.12-7	Do these data come from surveys conducted along the gas pipeline, or do the density estimates come from elsewhere and then applied to the habitats along the pipeline corridor? If the latter is the case, then the limitations of this should be clearly stated. For example, the pipeline covers a wider range of elevations, and types of wetlands and other habitats than were covered at the mine site. Thus, Table 3.12-7and other similar tables (e.g., Table 3.12-10), are likely not representative of the numbers of species and individuals affected by the pipeline (gas or diesel). Also, some of the figures of the pipeline alternative show wetlands. Wetlands are important for many species, why aren't	Data sources were added and applicability clarified.	No, this has not been addressed adequately in the DEIS.	Recommend surveys be conducted for birds along the proposed pipeline corridor. Suggest revising Table 3.12-40. It is not valid to make inferences about bird densities in the proposed pipeline corridor based on the results of Hinkes and Engels (1989). The pipeline corridor crosses four ecoregions: 1) Kuskokwim Mtns. 2) Tanana-Kuskokwim lowlands, 3) Alaska Range and, 4) Cook Inlet Basin (Nowacki et al. 2001). The data that are presented do not apply to the vegetation types in each of these ecoregions.	

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BIRD 8					wetlands included as a habitat type?				
	USFWS	3.12.4.2.3		Natural Gas Pipeline. "Figure 3.12-8"	This figure was not provided on the CD nor was it on the SharePoint for cooperating agencies.	The figure is now included.	The proposed change would be acceptable.		
BIRD 1	USFWS	3.12.4.2.3		Natural Gas Pipeline. "Mitigation measures necessary to reduce…"	Mitigation measures to reduce electrocutions should be applied to all aspects of the project that have power lines (e.g., mine site).	Donlin will follow all regulations at the mine site, too. Mitigation measures are discussed in Chapter 5.	Acceptable.	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure	
	USFWS	3.12.4.2.4		Transportation Facilities. "A total of 23 raptor nests."	Please include numbers by species.	Done.	The proposed change would be acceptable.		
BIRD 10	USFWS	3.12.4.2.6		Table 3.12-14	Please include number of bird species and number of bird species of concern that may be impacted on table 3.12-14.	The information is available in the tables.	No, this has not been addressed adequately in the DEIS.	Suggest revising this information. The effect of habitat loss/alteration would result in fewer birds nesting in the area. It is false to assume that displaced individuals would simply disperse to other areas. This assumes that the adjacent habitat is not already at or near	

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BIRD 10								carrying capacity. This was not established, and if it is untrue, any loss of nesting habitat would result in a long-term decrease in numbers, as well as a reduction in long-term productivity potential.	
BIRD 6	USFWS	3.12.4.2.7		The types of birds most affected by an oil spill at sea are those that spend a majority of their time on the surface of the water such as gulls, ducks, auks, grebes, terns, and loons.	Add geese to this list	Added geese.	The proposed change would be acceptable but did not confirm the specific change in the text.		
BIRD 11	USFWS	3.12.4.2.7		The impacts of an ocean barge rupture on birds could be moderate to high intensity as it could affect large numbers of birds and the effects would be noticeable. The duration would be temporary to long-term, depending on what proportion of the population is affected. The extent of effects would generally be local – limited to the	The marine area is a well-known concentration area for a large number of species, many of which have a majority of their global populations using the area for feeding. Thus, a spill of this magnitude will effect flyway level populations (Regional to Statewide). There is virtually no species information here. Therefore, it may be important to more	Adjusted wording as appropriate. More seabird information has been added to the AE section. T&E species are addressed in the T&E section 3.14. The spill discussion is now all in Section 3.24.	No, this has not been addressed adequately in the DEIS.	Suggest clarifying this information. Recommend these potential regional impacts be reflected in Table 3.12-38.	

BIRD 11

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			immediate area of the spill – but if migratory bird populations were affected, the extent would be much broader. The context for effects is common (ESA-listed species are addressed in Section 3.14.2). The summary impact level of an ocean barge rupture and large diesel release on birds would be major.	specifically identify the species that are most at risk in the event of a spill (Table 3.12-4). Also, seabirds are identified as being at risk to spills but there are no species are included. Depending on where marine spills were to occur, the endangered species could be affected.				
USFWS	3.12.4.2.7		Scenario 2. “In particular, species such as rusty blackbird, solitary sandpiper, dunlin, and short-tailed dowitcher are known to nest near water in the area.”	These species also feed in shallow water, further exposing them to spills.	Added clarification.	The proposed change would be acceptable.		
USFWS	3.12.4.2.7		The extent of effects would generally be local – limited to the immediate area of the spill	Many birds are known to migrate along riparian areas. Thus, spill impacts could be regional.	Wording was modified.	Additional analysis is necessary.	Suggest clarifying this information. Recommend these potential regional impacts be reflected in Table 3.12-38. Recommend the summary level approach be removed and replaced	

BIRD 11

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BIRD 11								quantitative impacts.	
	USFWS	3.12.4.2.7		The types of impacts would be the same, but the birds vulnerable to effects would be different. Fewer concentrations of staging and molting birds occur than in the Kuskokwim Bay area.	It would be useful to include the species likely to be impacted by spills in Cook Inlet.	Added information and reference to Important Bird Areas figure.	The proposed change would be acceptable.		
WILD 6	USFWS DEIS New Comment	3.12.2	6	3.12.2 KEY ISSUES · Increased access for hunters and trappers · Habitat Loss · Behavioral disturbance · Increased risk of accidental environmental damage · Exposure to contaminated water · Exposure to contaminated dust **<u>· Injury and mortality</u>** General comment for all subsections.			New Comment DEIS	The key issues listed here appear to be potential effects. This is a good example providing a logical path from potential impacts to discussion of the existing environment and environmental effects. It would provide greater clarity if key issues, in this same fashion, were listed for each resource section. Recommend this logical flow be utilized in other resource sections. In addition, recommend adding one more "Key Issue": · Injury and mortality	

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WILD 6									
BIRD 3	USFWS DEIS New Comment	3.12.2.1.1	9	The streamlined ERA relied on the methodology (assumptions and inputs) of the first ERA (ARCADIS 2013b) to apply the TSF and two CWD ponds.			New Comment DEIS	Assumptions about the TSF and the two CWDs were based on the pit lake modeling. Recommend an ERA be conducted specially for the TSF and CWDs, differences would be expected in the water quality. Ingested doses should consider preening for avian species.	
WILD 6	USFWS DEIS New Comment	3.12.2.1.2	31 to 49	ALTERNATIVES Potential Impacts			New Comment DEIS	. Recommend all the “key issues” be addressed (from page 3.12-6). It would improve the logical flow if all key issues, not just a few, were provided headings The issue bolded below (from page3.12-6) should be analyzed. · Increased access for hunters and trappers · Habitat Loss · Behavioral disturbance **· Increased risk of accidental environmental**	

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WILD 6								**damage** · Exposure to contaminated water · Exposure to contaminated dust	
WILD 6	USFWS DEIS New Comment	3.12.2.1.2	31 to 49	Summary Conclusion – Alternative 2			New Comment DEIS	Suggest the summary analysis include interrelated impacts of the key issues identified for each resource.	
MIT 31	USFWS DEIS New Comment	3.12.2.1.2	47	Standard Permit Conditions and BMPs most important for reducing impacts to terrestrial mammals and amphibians include: · <u>Monitoring of water withdrawals to ensure permitted limits are not exceeded</u>			New Comment DEIS	Recommend minimum in-stream flows be established.	
WILD 6	USFWS DEIS New Comment	3.12.2.1.3	49	No terrestrial mammals are likely to experience a reduction in their ability to survive or reproduce due to the potential for this minimal modification of habitat.			New Comment DEIS	Recommend supporting or removing this statement.	
WILD 6	USFWS DEIS New Comment	3.12.2.1.3	49	Of course, the truck traffic will occur throughout the life of the mine, and			New Comment DEIS	Clarify; the truck traffic would be reduced.	

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			the frequency could be as often as every 5 to 10 minutes during the barging season. Many species have adapted to vehicle traffic in other parts of the state, and disturbance effects					
USFWS DEIS New Comment	3.12.2.1.6	57	Summary Conclusion – Alternative 5A The overall effects of the mine site development, operations, and closure under Alternative 5A would be similar to Alternative 2 and would be considered moderate from a regional perspective, based primarily on long-term but localized habitat loss, high magnitude disturbance from the noise of machines and presence of people in the mine area, and a small <u>potential for contamination of local water sources with toxic minerals.</u>			New Comment DEIS	Recommend checking Alternative 2 for a similar conclusion, "potential for contamination of local water sources with toxic minerals."	
USFWS DEIS	3.12.5.1.	95				New Comment DEIS	Suggest revising.	

WILD 6

WILD 6

BIRD 6

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BIRD 6	New Comment	1						Clarify, why the 2007 point-count data were included in the DEIS data summary and analysis when it was determined that the data were “anomalous” and should be removed from further analysis (ARCADIS 2010 Avian Survey Comprehensive Data Analysis pg. 1-2). Detection rates were far lower, as only 3.97 birds recorded per point.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.1	102				New Comment DEIS	Recommend revising the bird density information. Many of these density estimates must be considered minimums as they are based data with a known negative bias. Surveys completed at the Donlin Mine were not well timed, since they were conducted well after sunrise during a 12-hour period that potentially extended into late afternoon and early	

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BIRD 6							evening (ARCADIS 2012). This probably increased variability and biased the results by creating a time-of-day effect. Analysis of the 2008-2010 data (ARCADIS 2010) indicated that differences in start time had a significant effect ($p<0.05$) on some richness and the total number of detections, especially for ruby-crowned kinglet, blackpoll warbler, varied thrush, and whimbrel. From 2007-2011, differences in start time significantly influenced ($p<0.05$) the detection rate of blackpoll warbler, boreal chickadee, and the golden-crowned kinglet; all three species were recorded more frequently before noon (ARCADIS 2011). In 2012, it was determined that the detection rate for	

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BIRD 6								boreal chickadee, cliff swallow, northern waterthrush, and Wilson's *w*arbler was significantly affected by the start time (ARCADIS 2012).	
BIRD 9	USFWS DEIS New Comment	3.12.5.1.1	104				New Comment DEIS .	Recommend clarification. The aerial surveys that were completed appear to provide a good baseline on the distribution and relative abundance of raptors in the area; however, information on the number of active versus inactive nests may be misleading. Aerial detection probabilities vary by species. Aerial surveys were not very effective at detecting forest-dwelling and cavity-nesting raptors. Also, surveys were completed late in the nesting season, after nest failures would likely have occurred. More intensive surveys would be required	

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BIRD 9								beginning earlier in the season to accurately quantify active vs. inactive nests	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.1	107				New Comment DEIS	Suggest revising this information. Cavity-nesting and forest-nesting raptors were recorded opportunistically. As the ARCADIS survey reports state: “aerial surveys are generally less effective for detecting forest-dwelling raptor nests, (e.g., goshawk, cavity-nesting owls and boreal owls).”	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.1	107				New Comment DEIS	Suggest revising this information. Please list the raptor nests that were recorded from 2007-2011 as well. Should define adjacent and why that distance was selected.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.2	111				New Comment DEIS	Suggest revising this information. Spatially-explicit data recorded during replicate surveys on Crooked Creek in 2013 (raft & foot/aerial) show	

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BIRD 6								differences in species composition and abundance per location, suggesting waterfowl numbers are likely higher than reported. Snow geese were recorded on Crooked Creek in another survey that is not reported here (ARCADIS 2012).	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.2	113				New Comment DEIS	Suggest revising this information. Data on relative abundance contained in Table 3.12-22 may not be reliable because most surveys were completed outside of the recommended survey period (Handel and Cady 2004), resulting in variable detection rates due to changes in the start date and start time (ARCADIS Avian Point-Count and Raptor Survey 2011).	
EDIT 5	USFWS DEIS New Comment	3.12.5.1.2	124	Kuskokwim Shoals is an important staging and feeding area for waterfowl during			New Comment DEIS	Label the location of the Kuskokwim Shoals area on Figure 3.12-9.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
EDIT 5				spring and fall migration.					
BIRD 10	USFWS DEIS New Comment	3.12.5.1.3	127	The Susitna Flats area, an expansive coastal lowland on the northwest side of Cook Inlet that extends from Threemile Creek (north of the village of Tyonek) east to Pt. McKenzie, has been designated as an Important Bird Area by the National Audubon Society…. The site's principal importance is to the dominant race of the rock sandpiper (*Calidris ptilocnemis ptilocnemis*), of which virtually the entire population resides on the area between early October and late April.			New Comment DEIS	Label the location of the Susitna Flats area, area on Figure 3.12-9. In addition recommend analyzing impacts on the rock sandpiper and its habitat.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.3	127				New Comment DEIS	Suggest revising this information. Based on habitat classes in the Alaska Center for Conservation Science (ACCS) Alaska Vegetation Map, there are significant habitat differences between the Bear Creek /	

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BIRD 6								Farewell Burn area and the rest of pipeline corridor. This is especially true south of the Alaska Range, where there are more low-elevation wetland and riparian habitats. Because of these differences, it is inappropriate to make inference about bird densities in the proposed pipeline corridor based on the results of (Hinkes and Engels 1989, at: http://accs.uaa.alaska.edu/vegetation-ecology/vegetation-map-northern-western-and-interior-alaska/).	
BIRD 9	USFWS DEIS New Comment	3.12.5.1.3	130				New Comment DEIS	Suggest revising. The information contained in Table 3.12-29 is most likely biased low. Raptor surveys completed in the proposed project area and pipeline corridor were completed too late to accurately document all nest	

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BIRD 9								locations. Surveys should have been completed early to mid-May, not early to mid-June. Likewise, because of incomplete detection rates, surveys should have been conducted more intensively at spaced intervals within the full pipeline corridor, (e.g., at the proposed mine site that were completed at 0.25 mile intervals). Take as a whole, this information is useful for identifying regional hot spots (i.e. the Skweenta River) that have a relatively high diversity and abundance of nests. Identifying the majority of raptor nests within the pipeline corridor would require more sampling intensity during the appropriate period of time in May.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.4	131				New Comment DEIS	Suggest revising. Please show the survey data for all years (2010-2012). This is only a	

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BIRD 6								single year's worth of data collected during a low-intensity survey that was completed several weeks too late. This survey was conducted 9-18 June after most nest failures would likely have occurred (surveys should begin about the first week of May). Also, this map does not show the golden eagle and peregrine falcon nests that were previously recorded.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.4	Page 3.12-133 Fig. 3.12-12				New Comment DEIS	Suggest revising. What data source was used to generate this map? A maximum density of 0.65 bird sightings/km2 = 0.0026 bird sightings/acre. How does this relate to the data contained in Table 3.12-28 and the other bird density estimates reported here?	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.4	Page 3.12-134 Fig 3.12-				New Comment DEIS	Suggest revising. The swan locations shown on the map do not represent a full census. Much of the area	

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BIRD 6			13					between the Kuskokwim River and the mine footprint was not surveyed in 2005. Swan numbers have increased throughout the area since 2005.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.4	Page 3.12-136 Table 3.12-30				New Comment DEIS	Suggest revising. Steller's eiders use the habitat on the transportation route. Harlequin duck and whimbrel likely occur in the pipeline corridor but may not have been recorded due to the lack of appropriate surveys.	
WILD 6	USFWS DEIS New Comment	3.12.5.2.2	143	ALTERNATIVES <u>Potential Impacts</u>			New Comment DEIS	. Recommend all the "key issues" from page 3.12-6 (plus the those identified specifically for avian species) be analyzed. It would improve the logical flow if all the key issues, not just a few, were listed with headings. The issues bolded below (from page3.12-6) were not analyzed. · **Increased access for**	

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WILD 6								**hunters and trappers** · Habitat Loss · Behavioral disturbance **· Increased risk of accidental environmental damage** **· Exposure to contaminated water** **· Exposure to contaminated dust**	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.2	143				New Comment DEIS	Suggest revising. Habitat loss would destroy or degrade the viability of some raptor territories. Many raptor species (including eagles) maintain multiple nest sites within a territory. As some nests collapse, are abandoned or destroyed, alternate nests are often improved or built over time. Six years of raptor surveys were completed. Please provide the known nest sites per species that occur in the project area footprint and buffer	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 9	USFWS DEIS New Comment	3.12.5.2.2	143				New Comment DEIS	Suggest revising. USFWS provides the following recommendation for the next round a raptor surveys. Raptor surveys were completed about a month too late. Aerial surveys should be initiated during the early nesting period (~first week in May) prior to leaf-out. Surveys completed during the month of June would have been biased low due lower detection rates after leaf-out with a higher percentage of failed nests (most nest failures occur early). Future surveys would need to be completed using all known stick-nest locations during the first two weeks of May.	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.2	152 Table 3.12-35				New Comment DEIS	Suggest revising. Suggest, the estimated number of bird pairs affected in the proposed mine site are viewed to be unreliable	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 6								(biased low), as they are based on point-count survey data that was often collected during periods of the days when most species have low detection rates.	
BIRD 3	USFWS DEIS New Comment	3.12.5.2.2	154	The magnitude of impact of environmental contamination from birds coming into contact with the tailings ponds, CWD Ponds, and pit lake is low because the exposure is expected to be low.			New Comment DEIS	Assumptions about the TSF and the two CWDs were based on the pit lake modeling. Recommend an ERA be conducted specially for the TSF and CWDs, differences would be expected in the water quality. Ingested doses should consider preening for avian species.	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.2	157 Table 3.12-37				New Comment DEIS	Suggest revising. Suggest the estimated number of bird pairs affected in Table 3.12-37 are based on faulty inferences. Based on habitat classes in the Alaska Center for Conservation Science (ACCS) Alaska Vegetation Map there are significant habitat differences between	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 6								the Bear Creek/Farewell Burn area and the rest of pipeline corridor. This is especially true south of the Alaska Range, where there are more low-elevation wetland and riparian habitats. Because of these differences, it is inappropriate to make inference about bird densities in the proposed pipeline corridor based on the results of Hinkes and Engels (1989).	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.2	161				New Comment DEIS	Suggest revising to provide additional clarification. What is presented in Table 3.12-38 seems somewhat subjective and is not tied back to any of the actual estimates, or the predicted effects in terms of acres of habitat lost by type, estimated number of birds affected, effects on species of concern, etc. All this should be	

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BIRD 6								better quantified because the details presented above are getting lost. Table 3.12-7 (summary of effects on terrestrial mammals) provides a better (but not perfect) example.	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.2	161 & 162				New Comment DEIS	Suggest revising to provide clarification. Because the text is based on Table 3.12-38, there are inconsistencies In what is presented. As an example, the geographic extent of various impacts is primarily as 'local,' but the text reads: "the geographic extent of impacts would generally be within the project area, but could be expanded or extensive if migrating birds were affected, as those impacts could affect bird populations outside the proposed project area." The scale of this project makes it regional in scope and	

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BIRD 6								the proposed project also would directly impact a designated State Game Refuge. This section and Table 3.12-7 need to be revised and updated based on the criteria presented in Table 3.12-6.	
BIRD 6	USFWS DEIS New Comment	3.12.5.2.4	165				New Comment DEIS	Suggest revising. Please clarify Table 3.12-40. It is not valid to make inferences about bird densities in the proposed pipeline corridor based on the results of Hinkes and Engels (1989). The pipeline corridor crosses four ecoregions: 1) Kuskokwim Mountains. 2) Tanana-Kuskokwim lowlands, 3) Alaska Range and, 4) Cook Inlet Basin (Nowacki et al. 2001). The data that are presented do not apply to the vegetation types in each of these ecoregions.	
BIRD 6	USFWS DEIS New	3.12.5.2.5	168				New Comment DEIS	Correction requested. The information	

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BIRD 6	Comment							contained in Tables 3.12-41 & 3.12-42 were calculated from data that violated the basic assumptions of point-count survey protocol. These estimates are not reliable.	
WILD 6	USFWS DEIS New Comment	3.12.2.2	12				New DEIS Comment	Suggest revising. The argument that both dust generated by the mine and baseline soil concentrations are similar, and therefore the risk is similar, is circular. There would be no dust, i.e., no liberation of concentrations from soil, without the project.	
WILD 7	USFWS DEIS New Comment	3.12.3.2	Page 3.12-29 Table 3.12-7				New DEIS Comment .	Suggest revising. Disagree with DEIS that contamination due to dust at the mine site will be low, particularly to caribou, ptarmigan, grouse, and other animals who eat terrestrial vegetation that may be coated with dust. The DEIS actually discusses this on page 3.12-36	

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WILD 6	USFWS DEIS New Comment	3.12.3.2.2	36				New DEIS comment	Suggest revising. Not discussed are the risks of small spills of industrial fluids, such as glycol, which are attractive and toxic to bears.	
WILD 5	USFWS DEIS New Comment	3.12.3.2.2	36				New DEIS comment	Suggest revising. There is inadequate information in the DEIS to evaluate the HQ presented as a conclusion of the ERA.	
BIRD 3	USFWS DEIS New Comment	3.12.5.1.2	115				New DEIS comment	Suggest revising. Disagree with the conclusion that MeHg is not likely to increase is not supported by current science. Even trace amount of elemental mercury released into a system with methylation potential can drastically increase the amount of MeHg in the ecosystem. By "system" we mean higher trophic organisms, including fish, piscivorous birds such as bald eagles and osprey, and humans, which are trophically	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 3								elevated (i.e., eat high on the food chain). The toxic impacts of methyl mercury generation must be calculated and measured in biota, not in water or even sediments.	
BIRD 6	USFWS DEIS New Comment	3.12.5.1.4	Page 3.2-135 Table 3.12-30				New DEIS comment	Suggest revising. This table, and supporting text, should specifically address Steller's eider Critical Habitat in Kuskokwim Bay. A significant portion of the threatened population molts there. Martin, Philip D., et al. "Distribution and movements of Alaska-breeding Steller's Eiders in the nonbreeding period." *The Condor* 117.3 (2015): 341-353.	
	CHAPTER 3.13: FISH AND AQUATIC RESOURCES								
FISH 9	USFWS DEIS New Comment	3.13	General				New Comment DEIS	Suggest revising. The DEIS inadequately addresses, and the contributing analyses may substantially underestimate, the amount of mercury	

FISH 9

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							that would be liberated into the local and regional environment from the Donlin project. The mid-Kuskokwim region already has elevated mercury in fish (Matz 2012, BLM/FWS unpubl. data), resulting in consumption guidance due to mercury from the State of Alaska. We are concerned about all upper trophic level fish consumers, including migratory birds and raptors that occur in the project area and impacts to subsistence users. Even trace amounts of mercury released into the environment can be converted into methyl mercury (Eckley et al. 2015) given the right conditions (which are present in the project area); the concern is that mercury and methyl-mercury will be liberated into a local	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 9								and regional environment with significant impacts.	
FISH 9	USFWS DEIS New Comment	3.13.2.1	7				New Comment DEIS	Suggest revising. A high silt load can create anaerobic conditions necessary for mercury methylation. Please address.	
FISH 9	USFWS DEIS New Comment	3.13.2.1.1	16				New Comment DEIS	Suggest revising. A methylation potential study is needed for the Crooked Creek drainage, which will be the most impacted and which also is the conduit to the Kuskokwim River.	
FISH 9	USFWS DEIS New Comment	3.13	All				New Comment DEIS	Suggest revising. Salmon are relatively sensitive to metal contamination, so if EFH remains and salmon are expected to spawn, this should be discussed.	
FISH 1	USFWS DEIS New Comment	3.13.2.1.4	28				New Comment DEIS	Suggest revising. The DEIS states that macroinvertebrate communities already appear stressed, but normal invertebrate communities in Alaska can appear this way.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 1								Please add justification for this statement and indicate that Alaska-specific diversity indices were used for comparison.	
FISH 7	USFWS DEIS New Comment	3.13.2.2.2	42				New Comment DEIS	Suggest revising. Arctic grayling are not a whitefish. Arctic Grayling are in the family Salmonidae, subfamily Thymallinae. Whitefishes, salmon, trout, and char are also in the family Salmonidae but in different subfamilies. Whitefishes are subfamily Coregoninae, and salmon, trout, and char are subfamily Salmoninae.	
FISH 9	USFWS DEIS New Comment	3.13.2.2.2	47				New Comment DEIS	Suggest revising. Please use more current subsistence information which reflects the greater reliance on pike and burbot in mid-Kusko region, especially in light of declining salmon runs. Important because pike	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 9								and burbot are the species with elevated mercury concentrations in this region.	
FISH 9	USFWS DEIS New Comment	3.13.2.2.4	67				New Comment DEIS	Suggest revising Preliminary data from radio-telemetry now indicate that northern pike tend to stay associated with large drainages and have higher mercury concentrations in mineralized drainages. These drainages are also mined, so it is difficult to separate the impacts of mineralization versus mining (BLM/FWS/ADFG unpubl. data).	
FISH 9	USFWS DEIS New Comment	3.13.3.2.1	123				New Comment DEIS	Suggest revising. The predicted 42% increase in MeHg is unacceptable in a region that already faces fish consumption advisories due to mercury. It is also not clear why MeHg would be expected to return to baseline after mine	

FISH 9

FISH 7

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
							closure given that permanent water treatment would be required. Bioaccumulation factors need to be developed for the project area and data are available to do so from the mid-Kuskokwim region. This would give the public and management agencies a much clearer picture of the mercury impacts of the proposed projects, which have been minimized in this analysis. We disagree that the mercury impacts will be minor; they will be regional in scale and permanent.	
USFWS 139	3.13		This river segment is characterized by low gradient, interconnected meandering channels and sloughs, and is subject to tidal fluctuations extending up to about 28 miles upriver (Coffing et al.	Revise text, this should read 128 miles.	Agreed with comment, and section was adjusted accordingly.	Could not find this text, did a search of the document using “128 and for “Coffing et al. 1999 as parameter, yielded no results.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 7				1999)					
FISH 3	USFWS DEIS New Comment	3.13.2.2.2	3.13-39	Numerous clear-water tributaries of the Kuskokwim River provide important rearing and overwintering habitat for juvenile coho salmon.			New Comment DEIS	Suggest revising this information. Determine if the Ottertail studies account for non-detection of Coho Salmon in turbid rivers of Crooked Creek. Clear-water tributaries may be the preferred rearing habitat for Coho Salmon; they are by no means the only habitat selected for by juvenile Coho Salmon for rearing.	
FISH 3	USFWS DEIS New Comment	3.13.2.2.2	3.13-39	Young emerge from redds the following April to June and typically spend 1 or 2 years in fresh water lakes before migrating to the ocean in late spring/early summer.			New Comment DEIS	Suggest revising this information. Determine if there are Sockeye Salmon rearing within the Crooked Creek drainage.	
	USWFS 140	3.13		To address such concerns and provide a basis for future decisions affecting Chinook salmon stocks and subsistence fisheries, a panel of	The group outlined studies but have not undertaken them as an entity; revise text: To address such concerns and provide a basis for future	Agreed with comment, and section was adjusted accordingly.	Adequate.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			experts is undertaking a series of studies described in the Arctic-Yukon-Kuskokwim Chinook Salmon Research Action Plan (Schindler et al. 2013).	decisions affecting Chinook salmon stocks and subsistence fisheries, a panel of experts outlined a series of studies described in the Arctic-Yukon-Kuskokwim Chinook Salmon Research Action Plan (Schindler et al. 2013).				
USFWS 141	3.13		Although some species of whitefish may remain in freshwater their entire lives, others overwinter in brackish waters in the lower Kuskokwim River migrating upstream in early June through late September where peak spawning occurs in late September to November (Harper et al. 2009).	Add the 2012 published reference in two instances: Harper et al. 2009, 2012.	Agreed with comment, and section was adjusted accordingly.	Adequate.		
USWFS 142	3.13		Kuskokwim River Subsistence and Commercial Fisheries The Kuskokwim River subsistence fishery is one of the largest in Alaska (Carroll and Patton 2010; Merritt	Add suggested text after the heading. Subsistence fishing has occurred on the Kuskokwim River for 1000's of years. The commercial fishery dates back to the late	Agreed with comment, and section was adjusted accordingly.	Adequate.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			2001)	1800's, when harvested fish were primarily sold locally to dog mushers (Oswalt 1990). The first recorded commercial harvest for export occurred in 1913 (Pennoyer et al. 1965). Management was under federal control from the early 1900's through 1959 with fluctuating harvest limits and commercial closures. Beginning in 1960, the State of Alaska assumed management responsibility for the fisheries, and the Alaska Department of Fish and Game (ADF&G) began regulating commercial and subsistence harvest by imposing restrictions on gear, fishing areas, and fishing time, but did not restrict the allowable harvest for subsistence. The largest commercial harvests of Chinook salmon occurred in the late 1970's and early 1980's (Table 3.13-13). With				

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				the growth of the subsistence fishery the directed commercial fishery for Chinook salmon was eliminated in 1987 (Ward et al. 2003, Brazil et al. 2013).				
USWFS 143	3.13		The Kuskokwim River subsistence fishery is one of the largest in Alaska (Carroll and Patton 2010; Merritt 2001)	Add following text to express importance of fish as a subsistence resource: In some communities fish contribute as much as 85% and salmon 53% of the total pounds of the annual fish and wildlife harvested (Brazil et al 2011).	Agreed with comment, and section was adjusted accordingly.	Adequate.		
USWFS 144	3.13		Information on the customary uses of subsistence fisheries harvests, including salmon and non-salmon subsistence harvest surveys, are developed at the community level by the Division of Subsistence of the Division of Commercial Fisheries with cooperation and approval from local Village Councils. In addition, local and	Include some of the information from this paper Include some of this data from Simon et al. 2012: " In 2001, the most significant non-salmon fish harvested by Bethel residents was whitefish species (9,815 fish or 32,900 usable pounds of whitefish and sheefish), representing 34% of the total 2001 Bethel nonsalmon harvest,	Section will be adjusted accordingly in next draft.	No this comment was not addressed prior to the release of the DEIS.		

SUB 4

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			traditional ecological knowledge (TEK) research is periodically conducted and published in Division of Subsistence Technical Papers in order to document and share knowledge and observations of the local people across multiple generations (ADF&G 2014b).	followed by northern pike (5,510 fish or 24,795 usable pounds), representing 26% of the total 2001 non-salmon harvest” “Bethel Non-Salmon Harvests, 2003” Bethel residents harvested an estimated 17,693 number of non-salmon fish of various species and 635 gallons of blackfish and 743 gallons of smelt, or an estimated total of 78,615 usable pounds of non-salmon fish in 2003, as summarized in Table 10 and Figure 4. In 2003, the most significant non-salmon fish harvested by Bethel residents was northern pike (9,730 fish or 43,785 usable pounds), representing 56% of the total 2003 Bethel non-salmon harvest, followed by whitefish species (3,838 fish or 12,725 usable pounds of whitefish and sheefish),				

SUB 4

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				representing 16% of the total 2003 Bethel non-salmon harvest, and burbot (2,520 fish or 11,340 usable pounds), representing 14% of the total non-salmon harvest. Smelt harvested by Bethel residents in 2003 represented 6% of the total 2003 Bethel non-salmon harvest (743 gallons or 4,458 usable pounds). In 2003, Alaska blackfish harvest (635 gallons or 3,810 usable pounds) represented 5% of the total Bethel non-salmon harvest. Bethel residents' harvests of Arctic grayling (1,088 fish or an estimated 1,632 usable pounds) represented 2% of the total 2003 Bethel non-salmon harvests. Dolly Varden (326 fish), rainbow trout (185 fish), and lake trout (6 fish) in 2003 each represent less than 1% of the total non-salmon harvest (Table 10)."				

SUB 4

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
SUB 4					Simon, J., T. Krauthoefer, D. Koster, M. Coffing, and D. Caylor. 2007. Bethel subsistence fishing harvest monitoring report, Kuskokwim Fisheries management area, Alaska, 2001-2003. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 330, Juneau.				
FISH 7	USWFS 145	3.13		In 2007, a study was published that documents local and TEK associated with the life histories, migration, spawning, distribution, past and present subsistence activities, and long-term trends involving local anadromous and freshwater resident subsistence fish populations of the lower Kuskokwim Bay area from 1916 to 2004 (LaVine et al. 2007). Based on the research, the most important fish species for local	This section seems out of place; suggest moving it below Table 3.13-17 and add a heading: Kuskokwim Bay Fisheries	Section will be adjusted accordingly in next draft.	No this comment was not addressed prior to the release of the DEIS.		

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			subsistence harvest over the past decades, and still widely consumed today, involved Chinook, sockeye, chum, and coho salmon, Dolly Varden, and rainbow smelt. Chinook salmon were reported to be harvested in greater quantities in more recent decades, compared to years ago, due to more efficient harvest technologies (eg., stronger nets and better boats). Rainbow smelt were reported to be consistently widespread in the area, abundant, and accessible in large quantities from fall to late spring. Other species of importance harvested intermittently or for special purposes included spawned out sockeye salmon, Arctic grayling, round whitefish, rainbow trout, and Bering cisco.					

FISH 7

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 7				Alaska blackfish was once a very important species for subsistence use but its use has declined in recent years due to other preferred species. Over the years, Arctic char, lake trout, burbot, and northern pike were reported to be seldom available due to their distance from the Kuskokwim Bay area or were taken incidental to harvests of other preferred species.					
FISH 7	USWFS 146	3.13		The 1997 to 2006 10-year average for subsistence salmon harvest includes 72,277 Chinook, 52,439 chum, 37,077 sockeye, and 30,427 coho salmon (Carroll and Patton 2010), with an annual average of 70,000 Chinook being harvested over the past decade (Linderman and Bergstrom 2009).	Clarify the statement in the text before Table 3.13-12. The annual average of 70,000 does not match the 10-year average of 83,254 from Table 3.13-13: Chinook Salmon Utilization, Kuskokwim River, Kuskokwim Management Area, 1960–2011. And verify the subscript (b). Estimated subsistence harvest expanded from villages surveyed and estimates are	Section will be adjusted accordingly in next draft.	No this comment was not addressed prior to the release of the DEIS.		

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Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				reconstructed from 1990 to 2009 (Hamazaki 2011).				
USWFS 147	3.13		Several species of whitefish (Coregonus spp.) comprise an abundant and increasingly important segment of the Kuskokwim River subsistence fishery while having lesser importance to the sport and commercial fisheries of the area.	Suggest expanding this information, after this sentence, add the following text: "The harvest of whitefish comprises a large portion of the subsistence harvest in the Kuskokwim Region. They comprised up to 10% of the total harvested weight equal to Sockeye chum and northern pike in the village of Kwethluk, and 9% in Akiak, and (Brown et al 2012)."	Agreed with comment, and section was adjusted accordingly.	Comment adequate		
USWFS 148	3.13		The harvest of whitefish was largely unregulated until the 1970s when the abundance and size of these fish declined and when commercial harvests in Whitefish Lake and Johnson River were eliminated (Harper et al. 2009). Regulations on the whitefish subsistence were enacted in 1992	Please revise this paragraph; the regulation applied only to Whitefish Lake. The harvest of whitefish was largely unregulated until the 1970s when the abundance and size of these fish declined and when commercial harvests in Whitefish Lake and Johnson River were eliminated (Harper	Agreed with comment, and section was adjusted accordingly.	Adequate		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				due to concerns of smaller fish size and abundance observed in the Whitefish Lake fishery.	et al. 2009). Regulations on the whitefish subsistence fishery in Whitefish Lake were enacted in 1992 due to concerns of smaller fish size and abundance.				
FISH 7	USWFS 149	3.13		The Kuskokwim River commercial fishery, which has existed since 1913, is important to local economies…	Suggest moving this text with Table 3.13-18 to the top of the section titled “Kuskokwim River Subsistence and Commercial Fisheries”?	Agreed with comment, and section was adjusted accordingly.	No, could not verify this comment was addressed. Table 3.13.-18 does not appear at the beginning of the section Suggested language could not be found.		
	USWFS 150	3.13.2.2.4		Section begins “From 2010 to 2011, the BLM investigated mercury…” and ends “The mean concentration of antimony was two orders of magnitude higher in Red Devil Creek insects than in insects collected from other tributaries.”	Text is missing the reference from Matz.	Section will be adjusted accordingly in next draft.	Adequate		
FISH 7	USFWS DEIS New Comment	3.13.2.3.2	3.13-73	Not all sampling sites were located at a crossing.			New Comment DEIS	Suggest revising this information. Specify the spatial relationship between the sampling sites to the crossing. Fish species may be	

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							over/under represented in a given stream. For example, if a sampling site occurred upstream of a crossing, and there are landscape filters (e.g. movement barrier) located between the crossing and the sampling site, then fish species occurring at the crossing will not be sampled at the sample site. Conversely, if an area of the stream was sampled below the stream crossing, it may be that certain landscape filters (e.g. higher gradient) are acting against the species from occurring at the sample site. Resource partitioning and longitudinal distribution within a stream is well documented within the literature as describing the occurrence (or non-detection) of fish species.	

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USFWS DEIS New Comment	3.13.2.3.2	3.13-73	Of 163 crossings with fish, 38 crossings occur within reaches previously documented as containing anadromous fish by ADF&G's Anadromous Waters Catalog (Johnson and Daigneault 2013) and were not sampled.			New Comment DEIS	Suggest revising this information. List dates the streams "not sampled" were last sampled based upon their most recent nomination within the AWC. Previous sampling efforts of these streams for their inclusion into the AWC may have been performed with more/less effort than current sampling methods or more likely, species may have colonized the stream since the most recent sampling effort (as indicated in the AWC) necessitating an update to the catalogue.	
USFWS DEIS New Comment	3.13.2.3.2	3.13-73	Captures of juvenile chum and sockeye salmon were rare (OtterTail 2012a).			New Comment DEIS	Clarify times that fish were sampled. Depending on sampling gear type and time of sampling, juvenile chum and sockeye salmon may not have been captured and are under estimated due to gear and timing of	

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Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
							sampling efforts.	
USFWS DEIS New Comment	3.13.2.3.2	3.13-73	Fish species collected in the Cook Inlet drainages included coho salmon, Dolly Varden, rainbow trout, nine-spine stickleback, three-spine stickleback, slimy sculpin, and lamprey.			New Comment DEIS	Suggest revising this information. Specify the other 'lamprey Sp." that are present. In the description of the Skwentna drainage, Alaskan brook lamprey are mentioned specifically within the body of the text but are referenced in Table 3.13-22 as "lamprey Sp.".	
USFWS DEIS New Comment	3.13.2.3.2	3.13-78	Essential Fish Habitat (EFH)" as contained in the DEIS. The Original language in the text reads as: "Table 3.13-22 lists the rivers and tributaries documented as supporting EFH-protected species that the proposed pipeline route would cross (OtterTail 2012a, 2014b)			New Comment DEIS Clarification requested: EFH does not protect individual species but rather the habitat(s) specific to support the life functions of species throughout their various life stages. Individual species, at multiple life stages, have and Essential Fish Habitat (EFH) description.	Suggest revising text as follows: Table 3.13-22 lists the rivers and tributaries documented as supporting EFH that the proposed pipeline route would cross (OtterTail 2012a, 2014b).	
USFWS DEIS New Comment	3.13.2.3.2	3.13-74 to 3.13-				New Comment DEIS	Suggest adding a table. A table showing the	

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		80					range, standard deviations, means, and medians of aquatic habitat conditions sampled is needed to provide an understanding and context for interpreting electrofishing results. It is important to understand the range of environmental conditions that were sampled with electrofishing equipment. The electrical field will easily be avoided in a larger portion of the stream where only one or two technicians are working. As such, fish estimates will be underestimated because of the ineffectiveness of the sampling techniques for the conditions. We need to see conditions of the stream reaches sampled.	
USWFS 151			The proposed mine access road corridor crosses several streams	Expand on this information, need to specify that fish were	Agreed with comment and section will be	No the comment was not adequately addressed.	Suggest clarifying this information. The reviewer asked if fish	

FISH 7

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FISH 7			in the Jungjuk Creek drainage (Figure 3.13-1). Fish species observed at sampling site JJ1, located just upstream from the mouth of Jungjuk Creek, include coho salmon, Dolly Varden, Arctic grayling, round whitefish, longnose sucker, and slimy sculpin. Dolly Varden were also documented at two proposed road crossings farther upstream (culvert 61 and bridge 63). An annual average of 4.8 adult coho salmon were observed in the mainstem Jungjuk Creek (reach JJR1) during fall aerial flights in 2007, 2008, 2010, and 2011. No fish were observed during instream surveys conducted at proposed culverts 59 and 60 (OtterTail Environmental, Inc. 2012a).	not seen during survey taken at X month. Could fish have been observed at other times? Revise Figure 3.13-1; could not locate culverts 59 and 60 on the figure. Provide the time of the survey. It was not specified.	adjusted accordingly in next draft.	(OtterTail 2012b)."	were NOT seen during surveys and this was not addressed. Page 3.13-64 P4. Revised text reads as "Starting in 2007, fish surveys were intermittently conducted during the spring and summer in streams that would be crossed by the proposed mine access road corridor via bridges or culverts..." Please clarify what is meant by "intermittently" as it may refer to one or several months within a single year since 2007, or all of them. Crossings do not appear on the map as stated. Neither Figure 3.13-1 nor Figure 2.3-12 identifies the location of crossings 59 or 60. However language was added to the text to describe these locations.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 7							"Crossing 60 would be situated on an unnamed tributary just upstream from its confluence with Jungjuk Creek and monitoring site JJ1. Crossing 59 would be located about a half-mile down the road corridor on an unnamed tributary about a mile upstream from its confluence with the Kuskokwim River	
FISH 16 USWFS 152	3.13.2.3.2 FISH		Streams along the pipeline route also provide habitat to native fish (e.g., slimy sculpin, longnose sucker, stickleback (spp.), and rainbow smelt).	*Provide more information on rainbow smelt; it does not show up in table. Where were rainbow smelt sampled? *Provide more information on Bering Cisco. The only known spawning area for Bering Cisco occurs in the South Fork of the Kuskokwim River below	Agreed with comment and section will be adjusted accordingly in next draft.	No, the comment was not adequately addressed. Tables cited (3.13.-22 and 3.13-23) do NOT include mention of Rainbow Smelt. There is no mention of Bering Cisco in the revised text. There is no Broad Whitefish mentioned	Revise with more specific information.	

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				the pipeline crossing. * Provide more information on Broad whitefish. The major spawning area for broad whitefish occurs in the main Kuskokwim River between McGrath and Medfra (Harper et al 2012).		in the revised text, only Whitefish. "Whitefish" is a generic term, please specify		
USWFS 153	3.13-21 Table			*Provide more information on Bering Cisco. Bering Cisco spawn in the South Fork of the Kuskokwim River. There are only three spawning populations known statewide. The distance from the spawning location to the pipeline crossing is not known at this time.	Agreed with comment and section will be adjusted accordingly in next draft.	No, the comment was not adequately addressed.	Revise with more specific information. This is not table 3.13-21 (page 3.13-76 of the DEIS) as indicated by the Section number heading in this comment matrix. It must be referring to table 3.13-22. However, table 3.13-21 (page 3.13-76) as indicated by the Section number heading in this comment matrix makes no mention of Bering Cisco in the revision. Also, there is no mention of Bering Cisco in table 3.13.22 either.	

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USWFS 154	3.13-21		Species present	Provide more information on species present: Spawning Humpback whitefish are present in Big River in September Early October (Harper et al. 2012) Bering Cisco are present in the South fork Kuskokwim and the entire Kuskokwim River (Brown et al. 2011) Sheefish are present in the MF Kuskokwim (Anadromous catalog mapper), Sheefish are present in Wendy Fork of the Kuskokwim River (Anadromous catalog mapper, or Stuby Reports) Round whitefish are present in the Tatlawiksuk River	Agreed with comment and section will be adjusted accordingly in next draft.	No, the comment was not adequately addressed.	Revise with more specific information. All of the species mentioned in the previous comment are found within Table 3.13-22 with the exception Bering Cisco. There is no indication in the table that Humpback Whitefish occur in the Big River as pointed out in our initial comment. Sheefish are known to occur within the Big River and are documented within ADFG Anadromous Waters Catalog. Humpback Whitefish, Sheefish and Round Whitefish appear in the table without any “x” in their column. It is unknown if the original reviewer noted the absence of these species in the original table and that authors comments indicate inclusion of these species within the new draft.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
VEG 3	USWFS 155	FIGURE 3.10-5A		Northfork Kuskokwim River	Revise the map in the attachment, Figure 3.10-5A. Map appears to be mislabeling the George River as the Northfork.	Agreed with comment and section will be adjusted accordingly in next draft.	No, the comment was not adequately addressed.	The map remains mislabeled; should read North Fork Georges River, not North Fork Kuskokwim River.	
FISH 13	USWFS 156	Table 3.13-22: Summary of Fish Species Composition along the Pipeline Route (2010 and 2011)			*Some whitefish species will not be found unless the survey is conducted during the latter part of September when mature fish move from feeding grounds in the lower Kuskokwim River to spawning areas located in the headwaters.	Agreed with comment and section will be adjusted accordingly in next draft.	No, the comment was not adequately addressed.	Suggest clarifying this information. It is unclear how this comment was addressed as it is not evident from the table.	
FISH 2	USFWS DEIS New Comment	3.13.3	3.13-82 to 84	Table 3.13-24: Impact Criteria Used for Evaluating Fish and Aquatic Resources			New Comment DEIS	Recommend the “summary level of impact” and Impact Criteria approach be removed in the revised DEIS. Quantify the impacts. These values of low, medium or high magnitude or intensity categories are misleading.	
NEP 7	USFWS DEIS New Comment	3.13	3.13-82 to 84				New Comment DEIS	Recommend the “summary level of impact” and Impact	

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	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7			Table 3.13-24: Impact Criteria Used for Evaluating Fish and Aquatic Resources and Table 3.13-25: Impact Criteria					Criteria approach be removed in the revised DEIS.	
FISH 1	USFWS DEIS New Comment	3.13.3	3.13-84	The anticipated level of impact to American Creek would be moderate based on the high intensity and permanent loss of local fish and aquatic habitat, a half-mile of which is considered important since it is classified as EFH.			New Comment DEIS The classification system of describing impacts to the habitat is subjective and misleading. The total loss of 10.5 miles of stream does not seem "moderate". It is written 0.5 miles of	Use clear language to describe environmental consequence of the action. Quantify the impacts. For example, what is the relative contribution of nutrient inputs from the 6 miles of stream?	

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FISH 1							anadromous stream habitat, 4 miles of stream, and 6 miles of relatively small (non-fish) perennial tributaries.		
NEP 7	USFWS DEIS New Comment	3.13.3	3.13-86	Construction and operation of the open pit would permanently eliminate 2.3 miles of perennial aquatic habitat in Lewis Gulch. A medium intensity of impacts on aquatic resources in this drainage is expected since an acute or obvious loss of aquatic habitat would occur that is common in the area.			New Comment DEIS Example of why summary impacts criteria is not appropriate. Judging from the maps it appears that the ACMA and Lewis Pits and the overburden stockpile occupies the overwhelming majority of the aquatic habitat in Lewis Gulch. If 2.3 miles of Lewis Gulch is being permanently eliminated, what is the overall length of aquatic habitat within Lewis Gulch that will remain? If none then this would clearly constitute a high intensity of impact. If the aquatic resources	Use clear language to describe environmental consequence of the action and quantify impacts.	

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NEP 7							within Lewis Gulch are eliminated as a result of the action, the intensity of the action would seem irrelevant.		
FISH 7	USFWS DEIS New Comment	3.13.3	3.13-86	Construction and operation of the TSF in the Anaconda Creek watershed would result in instream habitat impacts of a high intensity involving a permanent fish loss of a local population of about 90 Dolly Varden.			New Comment. DEIS These fish move quite a bit and even though Ottertail has done surveys over a number of years, and that these estimates are likely based off of the multi-year data	Clarify that variation in 'local' populations are worked into these numbers.	
FISH 7	USFWS DEIS New Comment	3.13.2.1	3.13-88	Table 3.13-26. Otter Tail's electrofishing population estimates are based on single pass electrofishing results.			New Comment DEIS Single pass backpack electrofishing underestimates derived population estimates unless sampling validation is performed.		
FISH 7	USFWS DEIS New Comment	3.13.2.1	3.13-89	During the operations and maintenance phase of Alternative 2, groundwater from the pit-perimeter and in-pit dewatering wells would be routed to the			New Comment DEIS	Clarify. Ottertail flow studies indicated that water released would occur at Queen Gulch.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			water treatment plant prior to discharge in Crooked Creek at the selected discharge point in Crooked Creek below Omega Gulch (BGC 2015c).					
USFWS DEIS New Comment	3.13.2	3.13-98	Potential changes in water depth in Crooked Creek during proposed project operations would vary seasonally with the particular phase of mining operations and with the distance downstream from the MSA.			New Comment DEIS	Use clear language to describe environmental consequence of the action Quantify the impacts. What are the post-project changes in water depth (not water-surface elevation) for stream reaches within Crooked Creek under 10-year and 20-year predictions for summer and winter base flows? Provide discussion on how water depth within reaches nearest the mine site will change. Provide quantitative summary statistics for the range of aquatic habitat conditions within the mainstem Crooked Creek.	

FISH 1

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FISH 1

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USWFS	3.13.3.2.1		Such conditions may result in temporary isolation of off-channel habitats from the main channel for rearing or spawning life phases of fish or fish stranding and mortalities. Furthermore, a reduction in off-channel (or in-channel) winter habitat may adversely affect the survival of overwintering fish or incubating eggs if flows are reduced to the point where the water column becomes too shallow and freezes completely.	Describe predicted baseflow reductions above American Creek, from the Queen Gulch to American Creek.	Text has been added/revised to address this.	No , the comment was not adequately addressed	Predicted baseflow conditions within the areas specified are not addressed in the narrative here. It is unknown if they are adequately represented in other sections of the DEIS.	
USFWS DEIS New Comment	3.13.3.2.1	3.13-99	This also would contribute to a slight reduction in the maximum depth of over-wintering habitat throughout this and other affected reaches of Crooked Creek.			New Comment DEIS	Suggest clarifying this information. Please clarify what is meant by “the slight reduction to maximum depth of overwintering habitats.” A table of summary statistics for aquatic habitat types showing average depths of habitat types throughout the project	

FISH 1

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							area is needed to help understand the affect upon wintering habitats within these areas. Place these measurements in terms of depth, and not water surface elevation.	
USFWS DEIS New Comment	3.13.3.2.1	3.13-99	Historic undisturbed pre-project flow conditions in this reach reflect winter (March) baseflows that have varied from a monthly average of 39.1 cfs to a 10-year low of 12.5 cfs, a reduction of about 68 percent. Corresponding water surface elevations for these flows have varied from 13.4 inches to 6.7 inches, respectively or a reduction of about 50 percent.			New Comment DEIS	This is for pre-project conditions, what are the post-project depth changes based on the projected flows for all reaches within Crooked Creek?	
USFWS DEIS New Comment	3.13.3.2.1	3.13-99	Corresponding water surface elevations for these flows have varied from 13.4 inches to 6.3 inches, respectively, or a reduction of about 53 percent.			New Comment DEIS	Suggest clarifying this information. These are for pre-project flows and do not reflect changes in depth within Crooked Creek post-project. Provide post-project flow	

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FISH 1
FISH 1

FISH 1

FISH 7

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							estimates.	
USFWS DEIS New Comment	13.3.2.1	3.13-101	Estimated habitat losses from flow reductions can generally result in adverse impacts to both the availability of suitable spawning areas and the viability of eggs incubating in salmon redds1			New Comment DEIS	Suggest clarifying this information. One of the big questions with the manner the results are presented here is that they do not identify the species of salmon that made the redd and refer to the redds collectively as Salmon redds. For example - we are told that we have spawning Coho and Chum salmon in the upper reaches, and that some number of redds were observed in these areas, but we do not know how many of them belong to Coho or Chum. This becomes difficult to assess if any one area is preferentially selected for, or more important to, an individual species. If for example 20 salmon redds are counted in a reach and 18 of them are Coho Salmon redds, the data may suggest that this	

FISH 7

FISH 7

FISH 7

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							reach is important for Coho Salmon.	
USFWS DEIS New Comment	13.3.2.1	3.13-107	Overall, the 21 redds that the flow depletion model predicted would be outside the wetted channel during winter low flow conditions during mining operations represents 4 percent (21 of 519) of the redds observed in 2009 in Crooked Creek below American Creek (OtterTail 2012e).			New Comment DEIS	Provide clarification for what salmon species made these redds and such that we can determine the relative contribution of these areas to the overall number of these species spawning within the system.	
USFWS DEIS New Comment		3.13-107	In the summer of 2009, water depth measurements collected at 532 salmon redds in Crooked Creek during baseflow conditions showed that 68 percent were located in areas where water depths ranged from 1 foot (0.3 m) to greater than 1.6 feet (0.5 m) with minimum depths of redds measured at 4 inches (0.23 m) (OtterTail 2012e; Ottertail 2014a).			New Comment DEIS	The references cited (included below) do not provide detailed measurements as suggested. Table 5, "Summary of Attributes Measured at Redds and Pool Tails Surveyed Along Crooked Creek (2009)" (Ottertail 2012e) provides a measure of “Depth (mm) at redds” within Table 5. However, there is no indication within the methods stating how or where the depth	

FISH 7

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							was measured in relation to the redd itself. For example; were measurements taken from water's surface to center of redd, from substrate surface to center redd depression, or from water's surface to substrate adjacent to redd. Within table 5, the ranges of depths are shown as 0.9 ft to 1.4 ft. This conflicts with what is mentioned in the text. Clarify. OtterTail. 2012e. 2009 Instream Habitat Analysis of Crooked Creek for the Donlin Gold Project. Prepared for Donlin Gold, LLC. December 31. OtterTail. 2014a. Instream Habitat Analysis of Crooked Creek, 2014 Update.	
FISH 1 USFWS	3.13.3.2.1	3.13-101	Of the 532 salmon redds observed in Crooked Creek in 2009,	Please clarify potential consequences from these impacts. It is not		No, the comment was not adequately addressed. The	The DEIS should address consequences of the impacts (i.e.	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 1			more than 92 percent were located downstream of Crevice Creek and over 65 percent were located downstream of Getmuna Creek. A total of 13 redds were located between Flat Creek and American Creek, 19 redds between American Creek and Anaconda Creek, nine redds between Anaconda Creek and Crevice Creek, 144 redds between Crevice Creek and Getmuna Creek, and 347 redds downstream of Getmuna Creek (Figure 3.13 1).	clear, for example, if there is potential for loss of up to 35 percent of the observed salmon redds in Crooked Creek or if there is risk of loss of the 41 redds between Flat Creek and Crevice Creek.		revised text re-states what impacts will occur (i.e. reduced flows) but does not address the consequences of those impacts to the redds occurring within reaches near the project area. The original comment was asking the author to address consequences of the impacts (i.e. reduced flows) to the redds occurring in the project area. For example, eggs buried in the gravel could desiccate as a result of reduced water flows. As such, the revised text does not provide clarification on the consequences of the impacts of reduced flows on redds potentially occurring within reaches near the project area.	reduced flows) to the redds occurring in the project area	
FISH 7 USFWS	3.13.3.2.2		During the 4-year construction phase and	Please clarify; this increase in barge traffic	Text was revised for consistency.	Change acceptable. Barge configuration		

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FISH 7			subsequent 27.5-year operations phase, commercial vessel shipments between Bethel and the proposed Angyaruaq (Jungjuk) Port site would range from approximately 122 to 190 cargo and fuel barge tows (round trips) per season. This would represent an increase in barge traffic of up to 280 percent over existing levels.	is almost triple the numbers of tows, other sections have mentioned doubling the number of tows. In addition, the tows consist of four barges (two barges wide), are the current tows a single barge wide, and therefore would this project double the width of exiting barge operations? How would doubling the width affect erosion, propeller scour, standing, etc.?	The configuration of all existing barge traffic is uncertain. The double wide configuration of the proposed barge fleet was considered in the analysis.	revised text as "During the 4-year construction phase and subsequent 27.5-year operations phase, commercial barge traffic would travel from the Port of Bethel upriver approximately 168 miles to the Angyaruaq (Jungjuk) Port site averaging about 122 cargo and fuel barge tows (round trips) per season. This would represent a 180 percent increase in barge traffic over existing levels.		
FISH 13 USFWS	3.13.3.2.2		Some of these would be equipment and supplies for pipeline construction delivered to the staging areas on each side of the Kuskokwim River at the pipeline crossing roughly 100 miles upriver from Angyaruaq (Jungjuk) Port	This is the first time information about shipping up river past Jungjuk has been mentioned. If it is not already stated in the description of the proposed project, it should be expanded upon here and discussed further.	Outstanding: Confirm the impact discussion is consistently supplemented among disciplines to address this comment.	No this comment was not addressed prior to the release of the DEIS.		

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SOL 11	USFWS	3.13.3.2.2		Hydraulic forces generated from vessel waves and propulsion systems in confined and shallow channels can potentially affect the shore zone to a considerable extent when vessels pass at relatively high speeds. In addition, a vessel that occupies a larger proportion of the channel cross-section will cause wave heights to increase markedly. Frequent, short-term exposure to vessel waves in such areas can result in shore zone erosion and bed scouring, resuspension and transport of sediments, and failure of bluffs and riverbanks (USACE 2000a).	This analysis is done well; it should be included in other sections such as section 3.2 Soil.	Sections cross reference.	Could not find in Soils section		
BARG 11	USFWS	3.13.3.2.2		In comparison, downriver traffic would travel at speeds approaching nearly 10 knots generating waves of nearly 1 foot depending on the geometry and	This section needs to analyze how much waste is being shipped downstream, and how the extra speed and weight may influence wave heights of barges going down stream.	Additional coordination with analysis of barge wake forces found in Section 3.5 will be implemented in the next draft.	No this comment was not addressed prior to the release of the DEIS.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BARG 11				character of the navigation channel. To evaluate how this would affect select shorelines along the Kuskokwim River, BGC Engineering (2007b) conducted a study that predicted the level of vessel-generated forces that could result from downriver fuel barge traffic and corresponding wave heights					
FISH 2	USFWS	3.13.3.2.2		Potential impacts, therefore, would be minor involving local populations of fish and aquatic species common to the Kuskokwim River drainage.	Please include analysis that considers that even though species are common and involve local populations, mortality extrapolated over time may lead to cumulative effects especially since the entire Kuskokwim River from the mouth to the pipeline are considered.	Text has been modified to address this.	No, could not locate this language in this section of the DEIS 3.13		
FISH 7	USFWS	3.13.3.2.2		Young-of-year fish species potentially affected would be common to the Kuskokwim River system. As a result, potential impacts of	See comment for page 35 above, effects would occur over multiple years along the entire Kuskokwim River and therefore would be cumulative over	Repeated comment, previously addressed.	No could not track previous comment to page 35 to make the determination if this was adequately addressed. Clarify how this comment		

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FISH 7				fish displacement and/or stranding from barge traffic would be minor.	geospatial and temporal impacts.		was addressed.		
FISH 6	USFWS	3.13.3.2.2		Since existing barge traffic is expected to already be scouring the riverbed within the navigation channel, displacement of aquatic biota in previously disturbed substrates would be negligible and would involve fish and aquatic life common to the Kuskokwim River basin. Therefore, impacts from bed scour on fish and aquatic life as a result of barge traffic would be moderate depending on tug operations, water depth, channel geometry, and character of riverbed substrates.	Suggest impacts from the transportation corridor from bed scour may be moderate to major. The new corridor is two cargo barges wide. This would result in doubling the width of disturbance and almost tripling the number of tows, which is new disturbance. New disturbance along with existing disturbance would result in cumulative impacts and therefore impacts from bed scour on fish and aquatic life because of barge traffic could be moderate to major.	This has been revised accordingly	No, could not locate this language in this section of the DEIS 3.13		
CLA 19	USFWS	3.13.3.2.2		Daily traffic would typically consist of 20 trucks making 54 trips (half each for fuel and cargo) with a one-way trip requiring about 1.6	This sentence is very clear and to the point; suggest it be included in other sections of the EIS, such as 3.2 Soil, 3.10 Vegetation, 3.11	Recommend to other authors. No further changes required.	No, could not locate this language in this section of the DEIS 3.13		

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CLA 19				hours.	Wetlands, and 3.24 Spill Risk.				
FSR 15	USFWS	3.13.3.2.2		An impact of high magnitude and extent only would be anticipated in the event of a catastrophic accident such as the release of fuel or chemicals from a truck having an accident near a major fish-bearing tributary, especially if it were to involve Getmuna or Crooked creek.	This sentence is very clear and to the point, suggest it be included in the 3.24 Spill Risk section.	No further changes required.	No, could not locate this language in this section of the DEIS 3.13		
FISH 2	USFWS	3.13.3.3.1		The cumulative effects of the proposed project in combination with those of other past, ongoing, and reasonably foreseeable future projects, are expected to be moderate.	Suggest conducting cumulative effects analysis that includes the entire transportation corridor and other project components along with other existing and reasonably foreseeable impacts would be major. Suggest this section be modified to include the cumulative effects described on page 57: "In summary, potential impacts to fish and aquatic resources in the mainstem Kuskokwim	Determine how URS will address.	No this comment was not addressed prior to the release of the DEIS.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 2					River would be moderate to major subject to the timing and location of a potential fuel spill.”				
	USFWS	3.13.3.3.2		During operation, the delivery of diesel fuel to the mine site via the diesel fuel pipeline, instead of by barge on the Kuskokwim River, would reduce the peak annual barge traffic on the Kuskokwim as described under Alternative 2 by 47.5 percent or equivalent to about 0.6 round trips per day instead of 1.1 trips per day. This would still represent a measureable increase in barge traffic of about 147 percent over existing levels of 68 barge tows per year.	This analysis is well done, easy to follow the logic, suggest including these facts in other pertinent sections of the EIS.	Acknowledged.	Accepted.		
EDIT 5	USFWS	3.13.3.5.1		NATURAL GAS PIPELINE Under Alternative 4, direct and indirect effects to fish and aquatic resources from construction, operation, and	LNG would reduce the number of shipments of diesel. Therefore, consequences would be similar to those described for Alternative 3A.	Revised to 3A.	Revisions made. However, this appears as 3.13.5.3, not 5.1 as indicated here.		

EDIT 5

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			abandonment/closure of the natural gas pipeline would be the same as described for Alternative 2.					
USFWS	3.13.3.5.1		This would be offset, however, from proportionately greater erosion, runoff, and sedimentation generated from construction and operation of a roadway that would be 43 miles longer than Alternative 2.	Include comparison with Alternative 2, that there would be 10 fewer stream crossings for Alternative 4.	Text has been revised to incorporate this.	Adequate.		
USFWS	3.13.3.5.1		Under Alternative 5A Dry Stack -Tailings Mine Site Under Alternative 5A, direct and indirect effects to fish and aquatic resources from construction, operation, and closure of the mine site based on the use of a dry stack tailings method would be similar to what has been described for Alternative 2 where the subaqueous tailings storage method would	Under Alternative 5A Dry Stack, suggest including analysis that there would be reduction of risk associated with dam failure and potential release of slurry.	Text has been revised to incorporate this.	Comment was addressed.		

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			be used.					
MIT 24 USFWS	3.13.3.5.2		Under Alternative 5D, direct and indirect effects to fish and aquatic resources based on the treatment and discharge of some excess water from the CWDs, open pit drainage, and seepage recovery systems would be similar to what has been described for Alternative 2.	A potential mitigation measure may be to place the discharge points higher in the drainage such as at Queen Gulch, Lewis Gulch, or American Creek. Suggest analysis be conducted to determine whether impacts on aquatic species (i.e. reduction in flow and potential freeze over)could be reduced due by additional discharge of water into Crooked Creek. It would informative if this section were to discuss where discharge points may be located in the drainage, the quantity of additional water that could be discharged, and the potential impacts from additional water at warmer temperatures.	An optional mitigation measure of moving the discharge point upstream.	No, could not locate this language in this section of the DEIS 3.13		
FISH 10 USFWS	3.13.3.6.1		Under the proposed action, the Liquefied Natural Gas Release and the Diesel Pipeline	An LNG pipeline is still proposed under Alternative 2; therefore, the LNG spill scenario		No, could not locate this language in this section of the DEIS 3.13		

FISH 10

FISH 10

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			spill scenarios do not apply and are not analyzed in this section.	should be analyzed here as well.				
USFWS	3.13.3.6.1		The diesel would move downstream with the currents, so the speed of movement would vary with the level of flow in the river. ERM (2014) calculated that downstream movement could be as much as 60 miles in 2 days.	It would be helpful to include this sentence in the Spill Risk chapter of the EIS and refer to the reader to this section for additional information on impacts to fish.	Cross reference to the Spill Risk chapter has been mentioned.	No, could not locate this language in this section of the DEIS 3.13		
USFWS	3.13.3.7.2		Depending on the location and extent of the spill, actively migrating fish occupying such waters could be exposed and adversely affected. If an accidental grounding resulting in a spill occurs, fish residing in the shallow margins of the river downstream would be particularly vulnerable since these areas have low currents and water volumes where fuel can concentrate and maintain a longer	Analysis in this paragraph is good.	Noted.	Adequate response.		

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			residence time. Similarly, off-channel habitats and blind sloughs can have little to no current and can potentially accumulate diesel fuel and trap fish in areas that become isolated from the main channel as water levels recede. During the same time, sampling within two large tributaries (Aniak and Holokuk Rivers) found numerous juvenile salmon suggesting that the bulk of salmon rearing occurs outside of the mainstem during the ice-free period (Owl Ridge 2014b). Species such as longnose sucker, Arctic grayling, slimy sculpin, and several whitefish species were highly to moderately abundant in the mainstem during the summer months, and, therefore, likely would be vulnerable to fuel spills.					

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 10	USFWS	3.13.3.7.2		Depending upon the location and magnitude, river spills would likely represent a low to moderate risk to adult salmon. Most of these fish could avoid a spill by swimming around it or back downstream, allowing it to attenuate, unless the volume of the spill was substantial enough (or in a narrow area of stream) such that toxic concentrations occurred from bank to bank at a time when adult salmon were in the immediate vicinity and could not avoid it.	Is there scientific data to support the statement that adult salmon avoid diesel spills?	Reference to be added.	No this comment was not addressed prior to release of the DEIS.		
MIT 24	USFWS	3.13.3.7.4		If a rupture of the pipeline occurred just upslope from a block valve near a river, the spill could be large and the effects might be more like Scenario 2, River Barge Release.	What are some of the methods that could be utilized to reduce risk of a large spill?	This comment is addressed in more detail in the Section 3.24, Spill Risk, and related controls.	No this comment was not addressed	Suggest further analysis. Analyze methods that could be utilized to reduce risk of impacts to fish and aquatic habitat from a large spill.	
FISH 10	USFWS	3.13.3.7.4		Under Alternative 4, a tank farm release would occur at the BTC Port site instead of the	Does this include the port in Bethel?	It should.	Comment was made on text that has been modified, could not locate in 3.13.		

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FISH 10				Angyaruaq (Jungjuk) Port site and at the Dutch Harbor tank farm					
	CHAPTER 3.14: THREATENED AND ENDANGERED SPECIES								
ESA 1	USFWS 12	3.14	General		Suggest analysis of the ultimate fate and the potential environmental effects of an accidental spill of a tanktainer of cyanide or cargo load of mercury. Describe the effects and model the geographic area of the Kuskokwim River, Kuskokwim Sholes, coastal and marine environments. How long would contaminants persist and how would they impact listed species?	Based on discussions with the Corps, no additional spill analysis will be done for DEIS.	The issue has not been adequately addressed. The analysis is not adequate to determine if there are environmentally sensitive areas in the action area. The likelihood and severity of possible effects to federally-listed species are being evaluated, and any measures necessary to avoid adverse effects are being determined through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.		
BIRD 5	USFWS DEIS New Comment	3.14	3.14-1	Alternative 2: Alternative 2 could have direct and indirect effects on threatened			New Comment DEIS	Recommend removing the summary term, “minor” and the following sentence,	

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BIRD 5			or endangered birds through the increase in ocean barge traffic. The barges could cause ~~minor~~ impacts to spectacled and Steller's eiders from behavioral disturbance and injury or mortality from collision with vessels. ~~The potential direct and indirect effects of Alternative 2 on threatened or endangered birds would be minor.~~				"The potential direct and indirect effects of Alternative 2 on threatened or endangered birds would be minor."	
USFWS 1	3.14		Affected Species: There are two ESA-listed bird species that could be affected by the Project; Steller's eider (Polysticta stelleri); and spectacled eider (Somateria fischeri). Both are listed as threatened, and may be present at the mouth of the Kuskokwim River, in Kuskokwim Bay, and in the Bering Sea, but are ~~not likely to be found in inland areas.~~	Replace the not likely to be found in inland areas with analysis provided further in this section on page 3.14-5.	Reworded.	Text is acceptable.		

WILD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS 2	3.14	3.14. REGULATORY FRAMEWORK 1	Section 7 of the ESA requires all federal agencies to consult with the FWS ….	Please see the following website to correct this section, http://www.fws.gov/endangered/laws-policies/section-7.html	Reworded. Section 7 of the ESA requires all federal agencies to consult with the FWS and/or NMFS when any action undertaken, funded, or permitted through the agency may affect an ESA-listed species or critical habitat. If the proposed action may affect listed species, the agency may prepare a Biological Assessment. ~~, or accept an applicant-prepared one, to aid in determining the project's effects on listed species. Concurrent with the development of~~	Text is acceptable. This paragraph needs to be refined.	Suggest shortening the paragraph, revising text as follows: Section 7 of the ESA requires all federal agencies to consult with the FWS and/or NMFS when any action undertaken, funded, or permitted through the agency may affect an ESA-listed species or critical habitat. If the proposed action may affect listed species, the agency may prepare a Biological Assessment	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WILD 6					~~the Draft EIS, informal or formal consultation can be initiated by the Corps submitting draft Biological Assessments to the FWS and NMFS (e.g., Owl Ridge 2014d, 2014e)~~. ~~If the federal agency determines, through review of the Biological Assessment or other review, that the action is likely to adversely affect ESA-listed species or designated critical habitat, then FWS and/or NMFS may request a formal consultation, prepare a Biological Opinion, and determine~~			

WILD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
					~~whether the action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat.f there is an anticipated take of an ESA-listed species related to an activity that has been approved to proceed, the FWS and/or NMFS must issue an Incidental Take Statement that includes terms and conditions and reasonable and prudent measures which must be followed.~~.			
USFWS 3	3.14	Table 3.14-1 Effects Summ	Due to the migratory nature of eiders, the geographic extent would be considered the highest possible on	The Service suggests removing the comparative Table 3.14 altogether. The ESA makes it clear that all	For consistency within the DEIS, no changes are recommended.	The issue has not been adequately addressed.	Tables 3.14-1 and 3.14-7, Impact Criteria should be removed.	

NEP 7

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7			ary	this chart because it could have effects beyond the project area or region.	Federal agencies should participate in the conservation and recovery of threatened and endangered species.				
HZM 17	USFWS 4	3.14.2.1.2			The Service is concerned chemical spills may impact eiders and their habitat. The Service requests a spill fate assessment be conducted to model cyanide, mercury, and large (and smaller cumulative) diesel fuel and other hydrocarbon releases on eiders and critical habitat to determine how a spill could affect species and habitat, the expected duration of impacts, and what would the long-term fate of contaminates may be considering currents, tides, and flows.	Based on discussions with the Corps, no additional spill analysis will be done for DEIS.	The issue has not been adequately addressed		
	USFWS 5	3.14		Both the critical habitat and known concentration areas are several miles outside the barge corridor.	Please state the number of miles/ distance from barge corridor to concentration areas and critical habitat.	Distances added.	Accepted		

WILD 6

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
USFWS 6	3.14	3.14-15	Nesting spectacled eiders may be as close to the barges, but they would be shielded from effects by the intervening tundra on which they nest .	Please correct - Nesting eiders also feed and stage off shore.	Reworded.	The issue has not been adequately addressed. Suggest using the analysis from the marine mammal section page 3.14-35: Suggest revising text as follows: <u>Spectacled eiders, their food source, and other habitat features c</u>ould potentially be exposed to discharges and varying sized spills. This could occur from vessels transporting fuel and cargo, as well as to fuel spilled at any of several transfer points, including barge to storage tank transfer, or ocean barge to river barge transfer at the Bethel Port or in the event of a stranded barge that requires lightering of fuel. Section 3.24, Spill Risk, provides	In addition, suggest restating the potential impacts listed on page 3.14-33 for marine mammal, to the Summary of Impacts for eiders under Alternative 2, page 3.14-15, and revise to capture impacts to both species. Suggested language: <u>Spectacled and Steller's eiders,</u> their food source, and other habitat features could potentially be exposed to discharges and varying sized spills. This could occur from vessels transporting fuel and cargo, as well as to fuel spilled at any of several transfer points, including barge to storage tank transfer, or ocean barge to river barge transfer at the Bethel Port or in the event of a stranded barge that requires lightering of	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WILD 6							analysis of risks and potential impacts of spills from fuel barges and storage tanks along the marine and riverine transportation corridors.	fuel.	
WILD 6	USFWS 7	3.14		While the additional barge traffic would increase the risk of effects, the increase would be small compared to the level of existing traffic.	This language sounds like justification for the proposed alternative instead of an unbiased analysis. The increase of additional barge traffic should be considered a cumulative effect under NEPA.	Reworded.	The language about existing barge traffic has been removed.	Suggest using information that was provided earlier in the chapter: During the early spring, it is thought that the entire Alaska overwintering population of Steller's Eiders spend anywhere from days to a few weeks in northern Kuskokwim Bay before leaving for northern nesting areas (Larned 2007). In the very unlikely event that a large or very large spill were to occur, it could result in major to catastrophic impacts to water bodies, wetlands and vegetation, birds, fish, and marine mammals, depending on the location.	

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NEP 7	USFWS 8	3.14		Steller’s or spectacled eiders can be killed or injured by colliding with vessels. Although the probability of injury or death of an eider due to collision with a barge would increase with the additional project-related barge traffic, it is expected to be so small as to be **discountable** because of the relatively slow speed of the barges. Therefore, **no direct effect**s are expected to occur from collisions with barges.	There is a mixing of ESA terms (discountable) with NEPA terms (no direct effect). Suggest using NEPA terminology while being mindful of not preempting the section 7 consultation process.	Reworded to NEPA terms.	Tables 3.14-1 and 3.14-7 should be removed. The two sentences below table 3.14-1 should also be removed. The second sentence, “Impacts are described below in NEPA terms appropriate for ESA impact discussions”.	Suggest removing Tables 3.14-1 and 3.14-7, Impact Criteria, replace with language such as: The likelihood and severity of possible effects to Federally-listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined, through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
NEP 7	USFWS 9	3.14		Table 3.14-4: Impact Levels of Alternative 2 by Impact Type and Project Component	Remove Table 3.14-4	For consistency within the DEIS, no changes are recommended.	Tables 3.14-1 and 3.14-7 should be removed.	Suggest removing Tables 3.14-1 and 3.14-7, Impact Criteria, replace with language such as: The likelihood and severity of possible effects to Federally-listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined,	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7								through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
ESA 1	USFWS 10	3.14		Alternative 3A differs from Alternative 2 in that it requires substantially fewer ocean fuel barge trips because of the decreased use of diesel fuel. Under Alternative 3A the number of ocean fuel barge trips would be approximately 67 percent lower than under Alternative 2 (5 rather than 14 fuel barge trips). Alternative 3A could have direct and indirect effects on threatened or endangered birds **through the increase in ocean barge traffic.**	Please correct the analysis. How much do Alt 3A and 3B reduce the risk of impacts on eiders from fuel spills? What are risks from the other contaminants cyanide, mercury, and other hydrocarbon releases? This analysis should be based on a spill fate analysis models.	Based on discussions with the Corps, no additional spill analysis will be done for DEIS.	Tables 3.14-1 and 3.14-7 should be removed.	Suggest removing summary language and replacing with language such as: The likelihood and severity of possible effects to Federally-listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined, through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
ESA 2	USFWS DEIS New Comment	3.14	3.14-1	The barges could cause **minor** impacts to spectacled and Steller's eiders			New Comment DEIS Remove summary impact language.	Suggest removing summary language and replacing with language such as:	

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ESA 2				from behavioral disturbance and injury or mortality from collision with vessels. The potential direct and indirect effects of Alternative 2 on threatened or endangered birds would be **minor**. … Reducing the number of barge trips reduces, but does not eliminate, the potential for adverse impacts to spectacled and Steller's eiders. The chance of barges affecting eiders through behavioral disturbance or injury or mortality from collision with vessels would be reduced toward **negligible**.				The likelihood and severity of possible effects to Federally-listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined, through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
ESA 2	USFWS DEIS New Comment	**Table 3.14-6: Comparison of Impact-Causing Project**	3.14-20	**Conclusion** **Minor** impacts from increased ocean barge traffic			New Comment DEIS Remove summary impact terms.	Suggest removing summary language and replacing with language such as: The likelihood and severity of possible effects to Federally-	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
ESA 2		**Components by Alternative***		Reduced chance of **minor** impacts from increased ocean barge traffic due to 9 fewer ocean trips /year. Least chance of **minor** impacts from increased ocean barge traffic because fuel barges and their potential impacts would be greatly reduced from Kuskokwim Bay and River.				listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined, through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
WILD 6	USFWS 157	3.14.2.1		Short-tailed albatross	*More research is needed. Short-tailed albatross feed along the Aleutian Islands, check for their presence in the vicinity of Dutch Harbor.	Wording and information have been added.	Could not find this information in the DEIS.		
BIRD 1	USFWS 158				Suggest clarification in the description of Steller's Eiders molting in Kuskokwim Shoals. While it takes 3 weeks for molt to occur, all Steller's Eiders do not molt synchronously. So there may be birds arriving there in late July	The range of potential molt timing is shown in Table 3.14-2.	Comment not adequately addressed.	Molting areas and timing should be analyzed in the consultation in order to identify environmental sensitive areas analyze potential avoidance and response activities. A potential conservation measure	

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BIRD 1				to molt for 3 weeks and so on into the fall.			may be to develop a spill response plan to include environmentally sensitive areas. These areas should be mapped along with spill fate models to identify where spills would likely go and where environmentally sensitive areas overlap so that emergency response equipment and responders are prepared and ready to arrive on the scene.	
USFWS 159	3.14.3.1		…occasionally occur within the proposed water-based transportation corridor,…	Remove the term “occasionally”: occur within the proposed water-based transportation corridor,	Agree with comment and section was adjusted accordingly.	Text is adequate.		
WILD 6 USFWS 160	3.14.3.1		Species or stocks that also commonly occur in the eastern Bering Sea that may be encountered along the barge corridor between Dutch Harbor and Bethel are listed in Table 3.14-1	Suggest a revision of Table 3.14-1. Only listed or candidate species are identified in Table 3.14-1. Non ESA listed marine mammals are protected under the MMPA. There is no valid reason to limit the discussion to ESA listed species. In addition, the discussions are rather	Agree with comment and section was adjusted accordingly.	Could not find this information in the DEIS.		

WILD 6

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				cursory and don't seem to have a purpose. For most species, any discussion in relation to the proposed transportation corridor(s) is lacking. A more comprehensive table might suffice for this section if the species accounts aren't more comprehensive.				
USFWS 161	3.14.3.1		Abundance estimates are based on extrapolations from non-pup and pup surveys.	Recommend the text explain the difference between non-pup and pup survey methods.	Agree with comment and section was adjusted accordingly.	Text adequate.		
USFWS 162	3.14.3.1		(MacDonald and Winfree 2008)	Recommend utilization of the most current in information: Winfree, M. 2010. Marine Mammal Haulout Use in Bristol Bay and Southern Kuskokwim Bay, Alaska, 2009. U.S. Fish and Wildlife Service, Togiak National Wildlife Refuge, Dillingham, AK.	Agree with comment and section was adjusted accordingly.	Text adequate.		
USFWS 163	Table 3.14-1			Provide more information on sea otters; the table of marine mammals in the action area indicates sea	Agree with comment and section was adjusted accordingly.	Change adequate.		

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				otters are there, but there is no section on it.				
WILD 6 USFWS 164	3.14.3.1		Total population size is unknown.	Comment: While it is true the population size is unknown, the 2006 estimate should be presented as an underestimate or minimum population estimate.	Agree with comment and section was adjusted accordingly.	Could not verify the change, due to changes in location of text in DEIS.		
USFWS 165	3.14.3.1		Speckman et al. 2010	Speckman et al. 2011 – update citation to Mar. Mammal Sci. 27:514-553.	Agree with comment and section was adjusted accordingly.	Could not verify the change.		
WILD 6 USFWS 166	3.14.3.1		using a combination of thermal imaging and <u>satellite transmitters</u>	Suggest revising the text: using a combination of thermal imaging and <u>aerial photography</u>	Agree with comment and section was adjusted accordingly.	Could not verify the change.		
USFWS 167	3.14.3.1		Adult males remain in the Bering Sea	Suggest revising the text: Most <u>adult males</u> remain in the Bering Sea	Agree with comment and section was adjusted accordingly.	Text acceptable.		
USFWS 168	3.14.3.1		…primarily Cape Peirce and Round Island… nearest to Kuskokwim Bay.	Recommend a correction: Cape Newenham is closest and the Hagemeister Island haulout is close as well but Round Island is furthest away.	Agree with comment and section was adjusted accordingly.	Text acceptable.		
USFWS	3.14.2.2.		Both eider species are	Both eider species are	Adopted the	Change acceptable.		

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	2		marine birds	sea ducks that nest in coastal tundra areas and spend the nonbreeding season at sea.	recommended wording.			
USFWS	3.14.2.2.2		Barges…to and from Bethel.	Do the barges go past Bethel upriver to the port site? If so, it should be stated in this section.	Wording was modified to clarify the relevant barges being discussed.	Change acceptable.		
USFWS	3.14.2.2.2		They are diving ducks…	They are sea ducks that feed by diving in relatively shallow water (diving ducks refers to the Tribe Aythyini whereas eiders are in the Tribe Mergini)	Adopted the recommended wording.	Change acceptable.		
USFWS	3.14.2.2.2		Table 3.14-1	Suggest editing the dates in Table 3.14-1, and adding River barges to the table. This table shows Ocean barge presence but it does not show when River barges would be present, yet impacts from river barges are discussed further on in section, page 14. The river may freeze over later than the dates listed in the table and may thaw earlier. Didn't the transportation plan	The table was modified.	Table numbers changed due to change of location in DEIS. The change made to Table 3.14-2 is acceptable.		

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				state that they would use the Kuskokwim River from thaw to freeze, and shouldn't that information be analyzed in the EIS? The latest occurrence of a tagged Steller's eider molting in Kuskokwim Shoals was Nov. 18, although it is not likely molting bird there in December.				
USFWS	3.14.2.2.2		Eiders from different situations….	"Situations" is an unusual term, what is meant by this term? Perhaps change it to "males, failed breeders, and nesting females molt at different times"….	Wording was changed.	Change acceptable.		
USFWS	3.14.2.2.2		Barge route is approximately 5 miles from spectacled eider breeding habitat	Where does this 5-mile value come from, is there a reference that can be sited?	Referred to Figure 3.14-2.	Change acceptable.		
USFWS	3.14.2.2.3		Shipping of diesel to this new location, would not affect either eider species as they are not known to occur there.	Steller's eiders occur in Lower Cook Inlet during the winter and could be affected by a diesel spill during this time. Please clarify where Steller's	The text was updated to clarify.	Text change in 3.14.2.1.6 acceptable.		

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
				eider may be in Cook Inlet.				
ESA 1 USFWS	3.14.2.2.3		Alternative 3A – LNG-Powered Rock Trucks…Therefore, the potential direct, indirect, and cumulative effects of Alternative 3A on threatened or endangered birds would be minor or negligible. Alternative 3B – Diesel Pipeline …Therefore, the direct, indirect, and cumulative effects of Alternative 3B on threatened and endangered birds would be minor.	Please provided more information or clarify the differences in the analysis that leads to two slightly difference conclusions.	The conclusions were made the same by deleting negligible for Alternative 3A. Alternative 3A is expected to have less chance of impacts than Alternative 3B.	Suggest removing summary language	Suggest removing summary language and replacing with language such as: The likelihood and severity of possible effects to Federally-listed species are being evaluated, and any measures necessary to reduce adverse effects are being determined, through consultation with the USFWS and NMFS in compliance with Section 7 requirements of the Endangered Species Act.	
USFWS	3.14.2.2.7		The spill, if it occurred in Kuskokwim Bay and was not uncontained…	Was not contained	Changed the word.	Acceptable		
WILD 6 USFWS	3.14.2.2.7		Scenario 3: Tank Farm Release Neither eider species occurs in the vicinity of the tank farms located at the Angyaruaq (Jungjuk) Port, or the mine site. Therefore a release of diesel fuel at	Where is the analysis for tank farms at Bethel and Dutch Harbor?	Clarified that the effect would be the same, since all the spill is contained in the scenario.	Could not find change in text.		

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WILD 6				any of these tank farms would not have any effect on either Steller's eiders or spectacled eiders. The spill would be contained within the facility and cleaned up before it could spread to adjacent habitat.					
ESA 1	USFWS DEIS New Comment	3.14.2.1.4	3.14-15	Summary of Impacts for Alternative 2 Alternative 2 could have direct and indirect effects on threatened or endangered birds through the increase in ocean barge traffic. The barges could cause ~~minor~~ impacts to spectacled and Steller's eiders from behavioral disturbance and injury or mortality from collision with vessels. ~~Therefore, the potential direct and indirect effects of Alternative 2 on threatened or endangered birds would be minor (summarized in Table~~			New Comment DEIS	Recommend removing the lined-out text and removing all of information presented on page 3.14-16.	

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ESA 1				~~3.14-4). This would be in keeping with an ESA effects determination of May Affect, Not Likely to Adversely Affect for Steller's eiders and No Effect for spectacled eiders (Draft Biological Assessment for FWS Species, Appendix O).~~ Effects determinations will be made in the ESA Consultation, which is a parallel process to NEPA.					
BIRD 5	USFWS DEIS New Comment	3.14.2.1.5 to 3.14.2.1.10	3.14-17 and 3.14-18	~~Therefore, the potential direct and indirect effects of Alternative 3A on threatened or endangered birds would be minor.~~			New Comment DEIS	Recommend removing summary of impact terms for pages 3.14-17 and 3.14-18. For example, remove the entire sentence, "Therefore, the potential direct and indirect effects of Alternative 3A on threatened or endangered birds would be minor." The same recommendation is applicable for sections 3.14.2.1.6 and 3.14.2.1.10.	

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	Chapter 3.21 SUBSISTENCE								
SUB 17	USFWS	3.21			The USFWS remains concerned about the potential effects of a large amount of barging on the Kuskokwim River. Even with double-hulled fuel barges headed up-river and care being taken to haul mining concentrate down-river, we have concerns about risks that hauling of toxic materials pose to subsistence users in all the communities along the Kuskokwim River.		This comment was not adequately addressed in the DEIS.	Barge traffic impacts still not adequately addressed. Summary impact for transportation listed as "minor" but the impacts were not fully evaluated. It was noted that would pass approximately every 8 hours during the open water season. See additional ore notes under other sections.	
SER 27	USFWS 172	3.21		<u>In riverine villages for example,</u> commercial fishing and subsistence fishing occur at the same time and they complement each other, both money and fish are vital to the mixed economy of the village.	Suggest edit of text: <u>In villages with a history of commercial fishing for example…</u>	Version Problem: Proposed revision accepted, but change not reflected in PDEIS version. Section was revised as proposed.	This comment was not adequately addressed in the DEIS.	Impacts to commercial fishing should be assessed under socioeconomics.	
	USFWS 171			Subsistence	There is a lot of good information in the Subsistence section although there are a number of inconsistencies that	The values shown in the indicated tables were adjusted to match the references cited.	Suggested text would be acceptable.		

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				need to be addressed. For example: Moose and beaver entries on table 3.21-7, page 122, and vegetation amount entries on pages 136 (Napakiak) and 150 (Emmo.) appear to be in error. These bring into question the other numbers on all of the other tables. Recommend that the author double check all the other numbers in the tables. The second paragraph on page 132 refers to "Table 3.21.5.16". Is this is a mistake? Page 144 wording concerning edible plants in the second paragraph from the bottom refers to "wild elery"; this should be corrected to "wild celery".	Adjusted Table reference number and spelling of "wild celery".			
USFWS 173	3.21		At a recent meeting…	Suggest adding a citation along with a meeting name/date.	Citation was added. Please double check my	Suggested text would be acceptable.		

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					citation is in the correct format. Quote is from TEK Workshop in Aniak.			
USFWS 174	3.21		There are particular rules regarding the sharing of the harvest. For example, after a young person makes their first kill it is customary for the animal or fish	Suggest edit of text: There are particular rules regarding the sharing of the harvest. For example, after a young person makes their harvest it is customary for the animal or fish	Version Problem. Intended change not made in PDEIS. Will be made in DEIS.	Suggested text would be acceptable.		
USFWS 175	3.21		… but Congress expressed the intent that the Secretary of the Interior would work with the State of Alaska to protect modern Alaska Native hunting and fishing.	Suggest edit of text: … but Congress expressed the intent that the Secretary of the Interior would work with the governor of the State of Alaska to protect modern Alaska Native hunting and fishing.	Declined change. Conference Committee report says: "The Conference Committee expects both the Secretary and the State of Alaska to take any action necessary to protect the subsistence needs of the Natives." Case, 2002. Alaska Natives and American Laws. Second Edition.			

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					Pg. 284.			
USFWS 176	3.21		Under current Alaska subsistence regulations, if a resource is open to a subsistence hunt, all Alaska residents must have an opportunity to take that resource. If the resource abundance is not sufficient to accommodate all Alaska residents, then under state management, all residents may apply for one of the restricted permits under the conditions of scarcity in the "Tier II" process.	Suggest the text be revised; it is missing the Tier I step – when there is a lack of resource abundance the first step to reduce or if needed eliminate non-Alaskan resident harvest before going to a Tier II situation where resource abundance cannot provide for all subsistence needs.	Version Problem. Intended change to describe Tier I step of subsistence hunt permits was not made in the PDEIS. Will be made in the DEIS.	Suggested text would be acceptable.		
USFWS 177	3.21		The Division of Subsistence, which was created under the 1978 subsistence law, has the responsibility of providing the boards with information about subsistence activities.	Suggest edit of text: The Division of Subsistence, which was created under the 1978 subsistence law, has the responsibility of providing the boards with information <u>and harvest data</u> about subsistence activities.	Version Problem. Intended change to make suggested revision not made in PDEIS. Will be made in DEIS.	Suggested text would be acceptable.		
USFWS 178	3.21		General Comment	*Further research on local areas traditional subsistence beliefs and	The ethnographic information	Suggested text would be acceptable.		

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				practices closer to the mine should be considered. The ethnographic information appears to focus on the lower river Yupik villages and little on the upriver Athabascan villages closer to the mine location (Crooked Creek, Red Devil, Sleetmute, etc.).	currently provided within the text is sufficient for the purposes of this EIS. Ethnographic quotes are pulled from both Yupik and Athabascan villages. Red Devil Mine will also be included in a separate section of the EIS. Discussions of Aniak and Chuathbaluk will be added later to the Affected Environment for subsistence when these community studies are available. Technical papers for community harvest patterns in the Upper Kuskokwim subregion and the Yukon River			

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					subregions were completed in Spring of 2014, and will be incorporated into the Affected Environment for subsistence as appropriate. No change was made.			
USFWS 179	3.21		The federal management system has largely adopted the geographically based GMUs and fisheries management areas. Most of the proposed project area is within GMUs 18, 19, 21, and 22 and the Kuskokwim management area.	*Suggest further review of information. GMU 22 is distant from the drainages and area relating to the Donlin mine location. It should not be listed.	Version Problem. Intended change not made in PDEIS. Will be made in DEIS. Reevaluated GMUs listed. Agree that GMU 22 is not pertinent to the project area, but that GMU 16 should be noted. Text was adjusted accordingly.	Suggested text would be acceptable.		
USFWS 180	3.21		The USFWS, NPS, BLM, BIA, and the USDA Forest Service manage the federal public lands where subsistence	Suggest removing the BIA. The USFWS, NPS, BLM, and the USDA Forest Service manage the federal public lands	Section revised to clarify composition of the Board.	Suggested text would be acceptable.		

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			activities take place.	where subsistence activities take place.				
USFWS 181	3.21		The Federal Subsistence Board is required to consider the recommendations of Regional Advisory Councils and can reject a recommendation only if it is damaging to subsistence, damaging to the resource, or not supported by evidence.	Suggest edit of text: The Federal Subsistence Board is required to give deference to the recommendations of the Regional Advisory Councils and can reject a recommendation only if it is detrimental to the satisfaction of subsistence needs, violates recognized principle of fish and wildlife conservation, or is not supported by substantial evidence.	Version Problem. Intended change to adopt the suggestion not made in PDEIS. Will be made in DEIS.	Suggested text would be acceptable.		
USFWS 182	3.21		However, a major challenge to researchers and decision-makers is how to integrate the two sources of knowledge (TEK and scientific measurement) in a meaningful and productive way (Huntington 1998).	Suggest edit of text: Replace "scientific measurement" with "Western science"	Declined. The statement is an accurate characterization of the cited source document.	Suggested text was not changed.		
USFWS 183	3.21		These subregions share a common ecology, a common language, and some common harvest patterns.	Suggest the sentence explain what subregions it is referencing. Even within the listed Kuskokwim River	Declined. In context, the characterization of commonalities is	Suggested text was not changed.		

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SUB 19					subregions there are a range of ecosystems from boreal forest to tundra to coastal. They share a river. There is a variety of first languages across the drainages so a common language is questionable.	reasonable.			
SUB 19	USFWS 184	3.21		66 affected communities	Suggest providing a list of the 66 communities, or refer to it, if it is provided elsewhere.	Removed reference to the "66 communities" and revised language to be more general "all potentially affected communities." As a separate matter, however, Appendix P notes the 66 tribes identified by the Corps as potentially affected.	Recommendation was not addressed.	We expanded on EPA's comment below.	
SUB 16	USFWS DEIS New Comment Previous	3.21.5		Selection of communities was also based on the fact that detailed harvest data is not available equally	While there may not be equal data, I recommend including whatever data is available. Additionally, it	It is practical to provide extensive descriptions for all potential	USFWS has expanded on EPA's original comment	Communities downriver of Bethel are not included in the impacts assessment and yet drift and set	

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Comment EPA 90			for all 66 potentially affected communities.	is recommended that the selection of representative communities be discussed through government to government consultation and by consulting the TEK experts.	affected communities. We used judgment in selecting the communities for more detailed description, with greater emphasis on those in the area of mine site, where effects might be greater.		net subsistence fishing are already impacted by barge traffic (comments made by Kuskokwim Salmon Working Group member from Tuntutuliak). All downriver communities including Oscarville, Napskiak, Napakiak,Tuntutuliak, Eek may be impacted by barge traffic and all communities including Kwinahagak, as well as Jonson River communities and Kusko Delta communities would be affected by in river spill scenario impacts to resident subsistence fish and salmon and marine mammals and fish for outflow and marine spill.	
USFWS DEIS New Comment Previous Comment EPA 91	3.21.5			Recommend a summary table of data availability and limitations for each of the 66 communities be included.	A summary table has been added to each subregion, noting the availability of data. See Table	USFWS has expanded on EPA's original comment.	Communities downriver of Bethel are not included in the impacts assessment and yet drift and set net subsistence fishing are already impacted	

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SUB 16					3.21-1 for example.		by barge traffic (comments made by Kuskokwim Salmon Working Group member from Tuntutuliak). All downriver communities including Oscarville, Napskiak, Napakiak,Tuntutuliak, Eek may be impacted by barge traffic and all communities including Kwinahagak, as well as Jonson River communities and Kusko Delta communities would be affected by in river spill scenario impacts to resident subsistence fish and salmon and marine mammals and fish for outflow and marine spill.	
SUB 16 USFWS DEIS New Comment Previous Comment EPA 92	Table 3.21-1		Table includes zero for when there is no data available. (Telida)	When there is no data available please include “no data or data not available” instead of zero as this will be misinterpreted by some and will likely offend the communities as we heard in the TEK	Agree. Tables for this section were adjusted accordingly.	USFWS has expanded on EPA’s original comment for table.	Communities downriver of Bethel are not included in the impacts assessment and yet drift and set net subsistence fishing are already impacted by barge traffic (comments made by	

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SUB 16					workshop #2.			Kuskokwim Salmon Working Group member from Tuntutuliak). All downriver communities including Oscarville, Napskiak, Napakiak,Tuntutuliak, Eek may be impacted by barge traffic and all communities including Kwinahagak, as well as Jonson River communities and Kusko Delta communities would be affected by in river spill scenario impacts to resident subsistence fish and salmon and marine mammals and fish for outflow and marine spill	
SUB 19	USFWS 185	3.21		People also said they harvested caribou, black bear, and a variety of small land mammals, primarily beaver and porcupine.	Suggested edit, drop “caribou” because it is noted in the previous sentence.	Section extensively rewritten. Sentence in question no longer appears.	Could not find text.		
SUB 19	USFWS 186	3.21		However, severe winters in 1971 and 1972, along with predation, combined to reduce moose	Suggest the word “harvest” be substituted for “bag”. The term bag connotes or relates to recreational hunting.	Section extensively rewritten. Sentence in question no	Could not find text.		

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SUB 19			populations, so bag limits and hunting times were subsequently reduced.	Traditional Native subsistence harvesters prefer the word harvest and this more closely aligns with ADF&G Subsistence Division reports.	longer appears.			
SUB 19 USFWS 187	3.21		They agreed with the closure in GMU 19A and but were conflicted about illegal hunts (the community needs and desires moose meat), and the criminalization of those hunts.	Suggest edit of text: They agreed with the necessary conservation closure of moose hunting in GMU 19A but were conflicted on harvests to meet the community's need for moose meat and the criminalization of those hunts.	Declined. Meaning is the same.	Suggested text was not changed.		
SUB 19 USFWS 188	3.21		The most widely used animal resources were Chinook salmon (95 percent), berries (88 percent), caribou (87 percent), moose and ducks (84 percent), and whitefish (80 percent).	Suggest breaking down the percentage per salmon species, for all communities, because of the high subsistence importance of Chinook salmon and the current conservation concerns with the Chinook salmon.	Section extensively rewritten. When available, data on individual salmon species were presented to highlight the importance of each species to the community.	Could not find text.		
USFWS 189	3.21		The study found that 44 percent of the total wild food production on Quinhagak was made up of salmon,	Request the sentence be rewritten: The study found that 44 percent of the total wild food production for	Version Problem. Intended change to adopt the suggestion not	Suggested text would be acceptable.		

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			and that salmon was the core resource of the economy (Wolfe et al. 1984).	Quinhagak was made up of salmon, and that salmon was the core resource of the economy (Wolfe et al. 1984).	made in PDEIS. Will be made in DEIS.			
USFWS 191	3.21		A part of this decline could be attributed to a lesser need for dog food.	Request the sentence be rewritten: A part of this chum decline could be attributed to a lesser need for dog food.	Declined. Preceding sentence is specifically about the decline in chum harvest levels.	Suggested text was not changed.		
USFWS 190	3.21		Relevance of 1984 and earlier data for Quinhagak	Recommend providing additional information. Since Quinhagak is a scoping community consideration should be given to collect current subsistence use and harvest data. The subsistence use data is over 30 years old for many of the communities listed. *Consideration should be given to obtain more current subsistence user data for communities near the mine site in the middle Kuskokwim River.	The Quinhagak data is sufficient for the EIS, in relation to the risks of project impacts in that area. The extensive community studies prepared for this EIS, particularly the eight communities nearest the mine site, represent very current information for the purposes of an EIS. Where	Suggested text was not changed.		

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SUB 4						longitudinal data is available, i.e., for substance salmon and moose harvests, these are discussed in Sections 3.21.5.5 and 3.21.5.6.			
SUB 19	USFWS	3.21.6.1.2	1	"Section 810 of ANILCA …requires a review of the potential for federal land management activities to significantly restrict subsistence uses and needs."	ANILCA (Sec. 801 findings) provides for "…rural residents of Alaska, including both Native and non-Native…" Recommend adding "of rural residents" after the word "needs" in this sentence.	Declined. The language from Section 810 refers to subsistence uses and needs, without further qualification. The regulatory environment discussion at the beginning of the Affected Environment section already clarifies the priority for rural residents.	Suggested text was not changed.		
SUB 15	USFWS	3.21.6.1.2	2	"Further insights into potential socio-cultural impacts were gained through two Subsistence and Traditional Ecological Knowledge workshops	Comment: An Office of Subsistence Management staff person from the USFWS listened in on the Aniak meeting conference call and attended the	Thank you for the comment on the importance of the successful TEK workshops. No changes made to text.	This comment was not adequately addressed in the DEIS.	3.21.6 page 126 notes that throughout the scoping meetings Alaska Native residents of the EIS area emphasized their desire to protect and	

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			with local residents in Aniak in November 2013 and in Anchorage in March 2014. Representatives	Anchorage meeting. These workshops were very well done. It is very important to hear and address the input and questions from subsistence users.			maintain their cultural traditions and subsistence way of life; however the subsistence impacts analysis does not adequately describe or quantify potential impacts to subsistence. Full disclosure of potential impacts especially from Spill Risk to Kuskokwim River and Bay potential for severe impact to subsistence fisheries, marine mammals and other aquatic resources downstream of spill site (be it diesel fuel, mercury, cyanide or other potential spill hazards identified in the draft EIS.	
USFWS	3.21.6.1.2	6&7	"In Alaska, the industrial enclave policies typically prohibit workers from hunting from the site, minimizing concerns about competition for fish and game resources."	Given the context, "fish and" should be taken out of the end of this statement.	Decline specific edit, but edited text to note that the prohibition extends to both hunting and fishing. The enclave policy also applies to fishing, and	Text was changed.		

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					avoiding competition with subsistence fishing is also important.			
USFWS	3.21.6.1.2	4	"Changes in Cultural Composition of Community" (whole section)	Increasing the population of the region or the flow of population from outlying village into Bethel could affect the rural status of Bethel under Federal Subsistence rural determination regulations.	Decline proposed change. Estimated rates of project-related population influx and intra-village migration are modest, over existing levels already underway. FSB policy on rural status is under review and may not continue in its current form (i.e. with population thresholds). It is highly speculative to estimate a resulting change in rural status of Bethel, attributable to the Donlin	This comment was not adequately addressed in the DEIS.	Population thresholds have only been removed from regulation. They could still be considered a factor in a future proposal to change Bethel's (or any other community's) rural status. Additionally, the industrial nature of the activity could also result in a non-rural determination (i.e., Prudhoe Bay). Repeatedly in public meetings held by the Federal Subsistence Board, in conjunction with changing its rural determination criteria, hub villages have specifically cited the development of mines as a threat to their rural status. This is why the comment was originally inserted. It is	

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					project in decades to come.		the obligation of the lead agency to consider all direct, indirect and cumulative impacts. The nature of estimating these impacts involves speculation. As this is a concern both of the public and a cooperating agency, it should be addressed.	
USFWS	3.21.6.1.2	4	"Employment at the proposed Donlin Gold mine may reverse the trend of out-migration in the Upper and Central Kuskokwim Subregions leading to stable or increased community populations, and stable or increased subsistence harvests. On the other hand, employment at the mine may increase out migration resulting in even greater population decline, and in the extreme case the possible disappearance of unique subsistence patterns and cultural	Please ensure further details are included in Section 3.18. Are there estimates as to how many people from outside the region (or State) are expected to come into the region to work at Donlin during operations, and how many of them are expected to reside in the region sufficiently to qualify as rural residents? Is it true that up to 60% of the workers would be from outside the region (State)? In-migration from outside the region (or State) could adversely affect the	Section 3.18 does provide an estimate of in-region hire, Alaska hire, and non-Alaskan hire for construction and operations. Enclave policies and commuting policies would further limit the numbers of in-migrants who might establish households in the region. No change made to text. Estimate of 60%	Adequate response		

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			traditions based in particular communities."	Kuskokwim River subsistence practices. It appears that the strongest and most astute subsistence users are the same people that would likely get the jobs at the mine. A Subsistence Impact Assessment should be done.	from outside region and outside Alaska is inaccurate, see Section 3.18 Socioeconomics. Agree with general point that employment practices could result in change in subsistence. Also agree that highly productive subsistence users may also be people taking employment. The current analysis discusses these dynamics. Text later in Section 3.21 expands upon - migration during the project: "Section 3.18, Socioeconomics, estimates that			

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					50-60 percent of the construction workforce of 3,200 workers plus an additional 1,000 workers that are needed during operations, would come from the Yukon Kuskokwim region. Particularly during the 3-4 year construction period, the temporary, non-local workers are likely to commute from their homes outside of the region, and it would be unlikely that the construction phase would result in an influx of new residents to the local communities of			

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					the project area. During the operations phase, most non-local employees are likely to continue to commute to the worksite. A small number of non-local employees may find the region to be attractive, and they may establish households in the project area – most likely in Aniak or Bethel."			
USFWS	3.21.6.1.2	6	"Since non-local workers can commute to the worksite, there is less of a tendency for non-local workers to move to the region of the mine."	This contradicts the assumption that outside workers will move into the region as was discussed under "Changes in Cultural Composition."	The discussion in the section entitled Changes in Cultural Composition was to identify potential impacts, from the cited literature. The subsequent analysis is intended to	No change made to text.		

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					estimate the likely impacts under the particular circumstances of the Donlin Gold project. This analysis concludes there is less likelihood for outside workers to move to the region due to their employment. The sentence states that commuting policies would likely limit the numbers of relocating workers, not that there would not be any relocating workers. No change made to text.			
USFWS	3.21.6.1.2	5-6	Discussion of, "The relationship between higher incomes and increased subsistence	This is not entirely supported by Wolfe. Please check Wolfe and Walker (1987) and	This information is already part of the analysis. Wolfe and	Adequate response.		

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			production…”	Wolfe (2007).	Walker 1987 and Wolfe et al. 2011 are discussed two paragraphs prior: “Other statistical analyses found that communities with higher average incomes had lower rates of subsistence food production (Wolf and Walker 1987; Wolfe et al. 2011)”. Added citation for workshop meetings and interviews since the sentence states that support for the relationship between higher incomes and increased subsistence production was supported by these research activities.			

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USFWS	3.21.6.1.2	6	"…the mine workforce does not generally create new demands on local or regional housing, education, and health care infrastructure."	While it is expected that there would be a small clinic for workers while they are at Donlin, isn't it to be expected that many mine workers from the area will avail themselves of local or regional housing and health care infrastructure when they are away from Donlin?	No. In-migration effects are estimated to be minimal, resulting in minimal increased demands of local infrastructure; would not be expected due to enclave policies. No change made to text.	Adequate response		
USFWS	3.21.6.2.2	8	"If the Donlin Gold Project is not authorized, then the local employment associated with exploration and environmental studies of recent years would not continue."	Please ensure more information on employment is provided in Section 3.18. Are there only 4-6 employees on site at Donlin now?	Section 3.18 contains more information on employment during the baseline studies period. Section 3.21 already cites that information, i.e., 134 of 198 employees are noted to be Calista Corporation shareholders (3.21.6.3.1). It is true that caretaker status during	Adequate response		

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					permitting involved very few employees at the camp. No change made to text.			
USFWS DEIS New Comment Previous Comment DG	3.21.6.3.1	20	Taking the subsistence impact categories together (effects from changes in resources, access, competition, and socio-cultural aspects), the summary effect would include both positive and adverse minor to moderate impacts on subsistence practices throughout the project area.	Although one overarching summary conclusion can be reached for some other resources (e.g., WQS are exceeded or they are not) , we do not recommend doing this for subsistence. As evidenced by this sentence on page 20, boiling down the many key factors into summary impact levels and one conclusion results in confusing sentences that are not very informative and could be misinterpreted. In addition, there is no need or regulatory requirement to do this. Instead we recommend summarizing potential changes for each key species per our general comments.	Based on discussions with the Corps and Donlin, the methodological approach, including summary statements, is retained. Agree that clearer rationale statement was needed for summary impact. In addition, summary impact statements will be offered for each project component, rather than combining all three into a single summary	This comment was not adequately addressed in the DEIS. We expanded on Donlin Gold's original comment	Remains an issue throughout the document and potential impacts to specific subsistence resources not identified - still need summarization of potential changes for each key subsistence species and tie into subsequent impacts to subsistence access, harvest, and safety of consumption.	

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					impact for the alternative as a whole.			
USFWS DEIS New Comment Previous Comment DG	3.21.6.3.1	10	Considering all impact factors, direct and indirect effects of the mine site on fish and aquatic resources would be minor to moderate. The impacts due to changes in subsistence resources at the mine site would be of low to medium intensity as changes in plant and waterfowl resources should not be noticeable, while changes in wildlife resources have been and would continue to be noticeable. The impacts to bears, fur-bearing animals, and berries would be local in extent. Impacts to waterfowl, in contrast, would be regional in extent because subsistence…	There is no justification for these conclusions. Recommend providing the amount of predicted habitat loss compared to the traditional use areas for each resource as a basis for extent of impact. Rather than using terms “local” and “regional”, specify the actual areas and communities that would be affected. Readers may have very different ideas about what is meant by local vs regional. Also if impacts are not noticeable (waterfowl), then it is not clear why it is important to even mention extent (regional). This is just one example of where the summary impact criteria and definitions result in conclusions that are not	After discussion with the Corps, the analytic framework is retained and quantitative measures are employed where possible. Regarding potential impacts to waterfowl, we believe that “perceived” contamination of waterfowl from the mine water features is very likely, not below the threshold of being noticed. At the same time, the Birds section concluded that actual contamination is unlikely.	This comment was not adequately addressed in the DEIS. We expanded on Donlin Gold’s original comment	Still needs clarifying detail or justification for these conclusions. Again many critical factors not considered in the impacts to subsistence such as the many Spill Risk scenarios. Also the risk for long term bioaccumulation of contaminants in long lived resident fish important to subsistence such as Whitefish spp., sheefish, pike, and burbot. Whitefish are migratory in and out of rivers and feeding lakes and to upriver spawning locations – yet not identified as potential risk of increased exposure to toxins (mining activity /barge spills, leaks, fugitive dust deposition in lakes and streams) Specific impacts of diesel, cyanide,	

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				clear.			mercury, arsenic, and other potential contaminants identified in the EIS are not evaluated for potential risk to subsistence resources and subsequently to impacts to subsistence harvest and safety of consumption.	
USFWS	3.21.6.3.1	24	"Barging could potentially affect subsistence fishing by generating propeller wash and wakes that could interfere with fish nets, fish cutting rafts or fish wheels, and processing rafts, or erode river banks so that people either have to abandon or move fish camps."	Bank erosion around fish camps is already a problem in many places along the Kuskokwim and would increase greatly with proposed barge traffic. Many fish camps are located on allotments; relocation may not be an option. There are concerns about boat navigation hazards and hazard to boats parked on the banks, with large wakes from barges. Fish set nets are common for salmon and whitefish (more so with Chinook conservation management tools allowing only use of whitefish set nets for	Text revised. Referenced section discussed possible impacts, as basis for subsequent assessment of likely levels of impact. This is a complex analysis. Estimated wave heights for up-river and down-river bound barges are drawn from Section 3.5, Surface Water Hydrology.	This comment was not adequately addressed in the DEIS.	Revised text better addresses the issue of barge impacts; however more research into important set net locations (set nets are increasing in use due to recent Chinook declines and conservation management strategies that restrict subsistence fishing to small mesh size set nets for extended periods of time – river bank sites ideal for setnets are limited) is needed. Barge wake impacts are not only limited to	

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				extended periods) disturbance of set net by barges is a concern/problem currently and would be much more so with the proposed 280% increase in barge traffic. Barge disturbance of subsistence drift fishing activity during very limited harvest opportunity under Chinook conservation management measures is also a concern and likely to continue into the future. Are there mitigation measures that could be developed to reduce impacts to fish camps?	Wave forces dissipate with distance, so impacts are more likely in narrow portions of the river – i.e. above Aniak, than in wider sections below. Changes in fish camp use are complex. Some families have changed to hanging fish in smoke houses in the village. Some may be limited by availability of land for a fish camp. But analysis to date identified only a few instances in which displacement of fish camps is likely (near Angyaruaq port. Displacement of		narrow corridors of the river – wakes expand and roll across wider sections also disrupting boats and drift fishing activity. Residents of the Kukskokwim River typically use relatively small/shallow skiffs for subsistence fishing and some have recently described being nearly swamped by large wake (and rebound off river cut banks) created by barges in the middle river headed up to the upriver port site. 3.21 page 159 cites concern by Bethel Native Corporation on “choke point” on the Kuskokwim River with important subsistence fish camp sites and scouring negatively impacting BNC lands and Indian trust lands in the area yet the evaluation to impacts to subsistence is “medium in intensity causing them to relocate their fish	

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					drift net fishing is universal during the barge season. Discrete spatial (i.e., most commercial fishing is below Bethel, narrow reaches of the river more vulnerable) and temporal (estimate 8+ hour periods between barge passage) overlaps are considered, leading to conclusion of limited displacement. Mitigation measures must addresses estimated impacts, not possible impacts. Described in Mitigation Measures, Chapter 5.		camp, but alternative locations are available at moderate cost and effort – need verification from BNC and Bethel residents – ideal fish camp locations on BNC or private lands that can be leased or purchased are limited.	

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USFWS	3.21.6.3.1	10	"The pit lake would fill over an estimated 50 years, and then a water treatment plant would treat pit lake water in perpetuity to regulatory water quality standards for discharge into Crooked Creek."	Commitment to "…in perpetuity…" is of question based on past history of mining practices in the U.S. A more accurate statement would be, "The reclamation plan calls for the perpetual operation of a water treatment plant to treat pit water to meet water quality standards for discharge into Crooked Creek." Based on what has happened after a number of other U.S. mine were closed. This section should include discussion of the impacts of a potential abandonment of the wastewater treatment obligations by the permit applicant. The geospatial and temporal impacts of the abandonment of a mine of this size with this chemical composition, and with transportation facilities directly on the Kuskokwim River should be fully analyzed.	Agree with specific wording change in the highlighted sentence. However, NEPA does not require a worst case scenario analysis. Regulatory oversight and bonding requirements mean that complete abandonment of the water quality plant is a worst case scenario, not required to be analyzed.	This comment was not adequately addressed in the DEIS.	Further analysis and clarification recommended. Abandonment of a mine or waste water treatment obligations is not a "worst case scenario." It has been routinely documented in hard rock mining activities in the United States, and even in Alaska. Additionally, there are several examples in Alaska of mining operations being permitted to operate in violation of their NPDES permits through execution of a Consent Decree with the applicable agency. This pattern does not constitute a "worst case scenario" but a routine or anticipated scenario.	

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SUB 24

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USFWS	3.21.6.3.1	12	"While Crooked Creek residents have already redirected their subsistence use area, construction and operation of the proposed mine site would intensify this pattern and extend it..."	Given that there will be an industrial presence "in perpetuity", this discussion needs to include not just "construction and operation", but also reclamation and closure operation!	Following closure and reclamation, the pit lake is the only large-scale remnant of the mine operation. While this would exist in perpetuity, it is not an industrial presence on the scale of the operations period. As described in Chapter 2, The tailings storage facility and the waste rock facility will be closed, recontoured, and revegetated. The processing facility and the other facilities will be removed. This paragraph in question describes the 30-year pattern during mine operation and	This comment was not adequately addressed in the DEIS.	The perpetual management of a massive pit of toxic materials is still, by definition, an industrial presence. While there may be varying degrees, it is still industrial in nature. Original comment restated.	

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SUB 24					construction. Note that the subsequent paragraph addresses the reductions in limits on access at the mine site during the closure period.			
SUB 15 USFWS	3.21.6.3.1	19	"Donlin Gold plans to work with communities on a Closure Social Impact Assessment during the 3 years prior to closure, to identify alternatives to make use of the skills and infrastructure from the mine project..."	Has an HIA (Health Impact Assessment) been done? A Socio-cultural assessments/Subsistence assessment should be considered as well.	An HIA is being prepared, by DHSS and contractors. It will be used in preparing Section 3.19, Environmental Justice and Section 3.22, Human Health. The current analysis addresses socio-cultural impacts to subsistence. A separate study is not recommended.	The subject of socio-cultural assessments and Subsistence assessments has not been adequately addressed.	Suggest further analysis of direct and indirect effects. Mercury is a toxic heavy metal with no known biological function. The Donlin area has large amounts of cinnabar (mercury sulfide), and the gold extraction process will release an estimated 128 lbs/year to the atmosphere, some of which will be deposited in SW Alaska. Even though the estimated capture rate is 99.8%, this is still a doubling of Alaska's mercury emissions, and a significant contribution to an area where fish,	

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SUB 15								including those used for subsistence, already have elevated mercury concentrations and human health advisories for fish consumption based on mercury. The EIS also states that a negligible amount of mercury would be released to the Crooked Creek watershed but based on the volumes of material to be moved and stockpiled, the actual release potential may have been underestimated.	
SUB 13	USFWS	3.21.6.3.1	21	"As described in Section 3.10.3, fugitive dust emissions are a by-product of the construction and operation of the mine access road. Dust created by road traffic during construction and operations has the potential to collect on vegetation in the vicinity of the dust sources, and windblown dust could	How far does fugitive dust from mining excavation, operations, and transportation have the potential to be blown? What is the potential geographical area of deposit from contaminants, which streams and lakes could potentially be affected? With river flow and fish migration, the area of concern is much larger than the area directly	Estimates of dust shadows draw on Section 3.8, Air Quality, as do estimates of dispersal of air-borne contaminants. Will reexamine details of that section, for a more robust summary in the subsistence	Issues have not been adequately addressed.	Other than noting fugitive dust around the mine site and potential impacts to the harvest of berries near Crooked Creek – analysis of dispersal of air-borne contaminants from Chapters on Air Quality, Vegetation, and Fish and Aquatic Resources have not been tied back into impacts to subsistence resources. Again as	

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			affect vegetation in the vicinity of the source."	around the mine. Dust is a problem; should look at a dust study done by ADOT in Bethel. See page 9 comments above: "Potential impacts to fish could result from actual or perceived contamination of long lived subsistence fish such as broad whitefish, humpback whitefish, pike, and burbot that are harvested in tributaries, feeding lakes, and the main channel of the Kuskokwim that may be affected either by direct leaching, spills, or fugitive dust from the mining operations that can carry and deposit naturally occurring mercury and other contaminants that may accumulate over a broad area far beyond the mine site".	section. Will acquire the dust study performed by ADOT in Bethel and provide for additional analysis in Section 3.8, Air Quality. Section 3.10, Vegetation, and Section 3.13, Fish and Aquatic Resources, will be revised as necessary. For fish, it is important to say that as designed, there is no direct leeching from the mine site into freshwater fish habitat. Spills are analyzed separately in Section 3.24. Airborne transport and deposition of		noted elsewhere, Spills analyzed in Section 3.24 are not followed through to the potential resulting impacts on subsistence resources. Integration of the assessment of potential impacts to all subsistence related environmental resources is an important step for full disclosure and public review process for communities within the affected region to understand what the potential impacts to subsistence resources may be.	

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SUB 13						mercury and other contaminants examined in detail in Section 3.8, Air Quality, and Section 3.9, Water Quality. Impacts of contaminants on fish habitat and fish stocks are addressed in Section 3.13, Fish and Aquatic Resources. The details of these analyses would not be repeated in Section 3.21, Subsistence, but summary results are reported.			
SUB 15	USFWS	3.21.6.3.1	9	"Potential impacts to waterfowl could result from actual or perceived contamination of waterfowl" and "Potential impacts to subsistence fish resources, including	In addition, please add the following: "Potential impacts to fish could result from actual or perceived contamination of long lived subsistence fish such as broad whitefish, humpback whitefish,	Fish physiology is affected by actual contamination, but not by perceived contamination. Subsistence users'	This comment was not adequately addressed in the DEIS.	Anaerobic bacteria, such as those found in wetlands, turn mercury into the toxic form, methyl mercury, and fish, wildlife, and humans accumulate methyl mercury through their diet.	

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			both salmon and non-salmon species, could result from habitat removal (in-stream, and wetland and riparian buffers) and fish losses, as well as changes in stream flow, stream temperature, and stream sedimentation."	pike, and burbot that are harvested in tributaries, feeding lakes, and the main channel of the Kuskokwim that may be affected either by direct leaching, spills, or fugitive dust from the mining operations that can carry and deposit naturally occurring mercury and other contaminants that may accumulate over a broad area far beyond the mine site. High levels of naturally occurring mercury in populations of Kuskokwim freshwater fish (pike and burbot for example) are already a concern". Questions to consider: What additional impacts will result because of Donlin? How will barging to up-river sites work at time of low water levels? What will the Jungjuk/Birch Tree crossing barge impacts	preferences for fish may be affected by perceived contamination. More detailed discussion of existing levels of mercury in waters and sediments is found in Section 3.8, Water Quality. For remainder of points about spatial dimension of dispersal, see previous comment response. Unclear what additional impacts are referred to. Barge load planning is described in the summary of the		Methyl mercury and effects are greatest in top predators like bald eagles and humans, because it concentrates (biomagnifies) in food webs. The Donlin project conclusion of "methylation potential" used "minor" methyl mercury differences between wetland and upland soil, emphasized stream and river water flow rather than tailing storage facility and wetlands, and ratios of total mercury to methyl mercury in soils to justify a conclusion of "low methylation potential," yet still predicted a 42% increase in methyl mercury in the region. This conclusion is at odds with other evidence - fish in the region do have	

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SUB 15					be? What are the impacts/challenges of barging going to be at times of low-water in the Kuskokwim River?	Donlin Project in Chapter 2. For Birch Tree crossing impacts on fish, see Section 3.13, Fish and Aquatic Resources. See Chapter 2 project description. Alternatively, more detailed information was reviewed in the Barge TWG meeting of April 15, 2014. Copies previously provided to USFWS primary contact.		elevated mercury concentrations, indicating that the methylation potential is sufficient to cause impact, particularly in mineralized and mined drainages (BLM/FWS unpubl. data), and the increased in methyl mercury is unacceptable in a region that already has impacts (elevated levels in fish used for subsistence) from mercury. A more thorough analysis of methylation potential is required, including a food web analysis using BioAccumuation Factors (BAFs).	
SUB 16	USFWS	3.21.6.3.1	21	"As described in Section 3.13.3, Fish and Aquatic Resources, potential impacts include: Effects on feeding efficiency and localized alteration of fish food resources such as invertebrate	Is there discussion of potential for dredging to be associated with the proposed barge traffic? Look at history of gravel extraction and dredging on the Kuskokwim for comparison. Look at the history of shallow water below Tuluksak, above	Please note that the quoted passage came from a discussion of "potential impacts" in the beginning of the section. Later sections	This comment was not adequately addressed in the DEIS.	To suggest that no dredging will be required in connection with mine operations reflects a frightening unfamiliarity with the nature of the Kuskokwim River and Delta. A 20-foot Lund can get grounded on	

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			communities due to vessel wave energy resulting in increased erosion, suspended sediments and turbidity; Fish displacement, stranding, and behavioral disturbance; and Fish injury and mortality due to propeller shear forces and strikes. Etc.	Akiak and numerous places upstream. Look at the history of gravel extraction and dredging in the Kuskokwim for comparison. Many shallow water areas, in particular shallow gravel bars in the Kuskokwim, may pose barging hazards and if dredging is proposed could have substantial impacts to subsistence fish habitat, potential smelt spawning areas (near Kalskag) and fish passage during dredging activities. Barges will alter subsistence harvest strategies; look at the history of impacts from barges to the Kuskokwim River commercial fishery.	estimate the likely levels of impact in the specific circumstances of the Donlin project. There will be no discussion of dredging in the EIS. Based on detailed discussions in Barging TWG meeting of April 15, 2014, the Corps determined that dredging is not an action associated with the Donlin project, as Donlin had stated. Comparisons for gravel extraction, or barge grounding at shallow places are not appropriate.		the river. Dredging will be necessary, and therefore the USACE is obligated to consider that potentiality under NEPA.	

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					Dredging as a response to barge ground is not a part of the project. Since it is not requested, it will not be analyzed, nor authorized if a permit is authorized. Donlin strategies for load management to avoid grounding and for responding to temporary barge grounding are detailed in documents distributed at the TWG meeting. These do not involve dredging. We are aware of no documentation on the history of changes in			

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SUB 16						commercial fishing strategies due to barges. Please provide.			
SUB 20	USFWS	3.21.6.3.1		"By 2014, the king salmon decline on the Kuskokwim River led to the first ever closure for all subsistence fishing for this highly valued resource."	Not all subsistence fishing of Chinook salmon was closed in 2014; limited permits were issued for Federally qualified subsistence users on a village-basis following the initial closure. There have been restrictions to the Kuskokwim River subsistence fishery over the past 15 years. The most intensive conservation efforts were undertaken in 2014. Recommend that this sentence should be amended to say, "By 2014, the king salmon decline on the Kuskokwim River led to the most conservative subsistence fishing management approach for this highly valued resource."	Change adopted. See also extensive new information added to Kuskokwim River Salmon fisheries section regarding trends and dynamics in salmon harvest. This includes a detailed account of pre-season and in-season measures implemented in 2014.	Suggested revision.	See comments on Chinook above.	
	USFWS	3.21.6.3.		"When the moose population declined precipitously, a	There was also a hunting moratorium in place for moose on the lower	Decline suggestion. The paragraph in	Comment was declined.		

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			moratorium on moose hunting in Unit 19A was adopted in the last decade. Lower Kuskokwim River communities generally redirected their moose hunting to the Lower Kuskokwim or Lower Yukon rivers.”	Kuskokwim in Unit 18 that was only recently lifted for a limited hunt by registration permit - quota set annually by ADF&G and the Yukon Delta National Wildlife Refuge.	question addresses potential for increases to in-region competition. The historic case was for lower river hunters coming up to unit 19A. The moratorium in Unit 18 was to grow moose populations, not a response to an increased level of hunters from upriver coming down to Unit 18 to hunt. Looking forward, there is little likelihood that as the Unit 18 hunt expands, the Unit 19A hunters would travel down river to compete for limited moose resources in Unit			

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					18.			
USFWS	3.21.6.3.1		"In addition to the comments from the interviews, there is the experience of the Red Dog Mine, in which up to 50 percent of NANA shareholders employed at the mine moved out of the region (Section 3.18.2.2.1, Socioeconomics). Etc.	This is not an analogous comparison. The Red Dog example relates to an operational mine, not an exploration phase, such as at Donlin. The only appropriate comparison would be between the exploration period of Red Dog with the exploration period for Donlin. Another aspect of this comparison is wages: what was the median wage for Red Dog employees during operation compared to Donlin exploration employees, and could that also be a factor?	Clarifying language added stating that outmigration during the operations period will likely occur, though not at the same rate as at Red Dog.		See comments on Chinook above.	
USFWS	3.21.6.3.1		"Given estimated local and shareholder hiring during the construction period, 25 to 29 percent of households could be affected; while during operations, mine employment could affect 8 to 9 percent of households."	What is the scope of the area considered for total households? Is it a particular census area, or a group of census areas? For example, there were 5,912 households in the Bethel census area in 2010, for a total population of 17,013. Under these estimates, that means	Footnote added: This estimate is based upon estimate of 1,600 to 1,900 construction jobs held by members of an estimated 6,500 households in the project area. For the	No further comment.		

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					that 1,478-1,714 households could be affected during construction in that census area.	operations period, an estimated 500 to 600 jobs would be held by an estimated 6,500 households in the project area.			
NEP 7	USFWS	3.21.6.3.2		The impacts would be localized in extent, affecting a small portion of the Crooked Creek subsistence use area, and affect resources that are common in context, except for king salmon which are important.	Comment: During both the TEK workshops in Aniak and Anchorage, I heard that moose populations were low throughout the region and that opportunities to catch moose were not abundant. Moose is valued as an important subsistence resource. The way people talked about the lack of moose seemed that they are also important (not “common in context”). I’d say that both moose and king salmon are both important.	Agree. Both resources are under conservation stress, with strong public concern. Both can reasonably be considered ‘important” in context. At the mine site, there is no finding of adverse impacts to moose.	The summery level approach has resulted in analysis that leads to a category of minor, moderate or major instead of disclosing effects. This type of analysis does not address quantifiable effects nor does it allow for the combination of multiple minor, moderate, or major stressors that often result in cascading effects on resources.	Summary level of impacts should be removed.	
SUB 16	USFWS DEIS New Comment Previous Comment	3.21.6.3.2	22	Local residents have expressed differing opinions about the effect of increased barge traffic associated with the proposed	There is already substantial boat traffic, including barges, on the Kuskokwim. Beyond TEK, is there any population or harvest	Data for this level of analysis are not available. No change.	This comment was not adequately addressed in the DEIS. We expanded on	As noted elsewhere relating to barge activity and potential impacts to subsistence fishing activity, it may be helpful to evaluate	

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DG			project on terrestrial mammals (particularly moose); for some, the effects would be minor because animals would likely adapt to the presence of barges, Etc.	data to suggest that this traffic is impacting subsistence activities?	Moose population surveys provide general estimates of population abundance over time. The methods are not fine-grained enough to document whether moose are displaced from the river bank temporarily or for longer durations. Harvest data in the ADF&G Subsistence studies do not include harvest locations, so it is not possible to document a trend of reduced success over time near the river bank, due to existing levels of boat traffic.	Donlin Gold's original comment.	what the increased barge traffic projected under Alternative 2 would entail (180% increase in barge activity) in terms of total number of barges per day during ice free navigable days and average size and duration of the wake projected by the barge types planned to be use for the mine operation. Additionally, given that the development and operation of this mine will likely increase boat traffic, this data gap needs to be filled and analyzed.	

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USFWS DEIS New Comment Previous Comment DG	3.21.6.3.2	21-22	Transportation Facilities; Effects from Changes in Subsistence Resources	This section primarily summarizes impacts to animals, fish, marine mammals based on results of the other resource sections. However, it does not effectively describe how these impacts could affect subsistence use of these resources. We recommend that the section be revised to briefly list relevant conclusions of the other resource sections and more fully explain how this could impact subsistence use. Resource-specific impacts are not necessarily directly connected to subsistence if a resource is plentiful and/or has an extended geographic range.	Agree that the discussion should more clearly focus on impacts to subsistence harvest activities, if any, as a result of the biological analysis drawn from other sections. Disagree with final sentence. Reduced resources in the places that people are accustomed to harvesting them, would result in impacts. It may require more distant or more frequent trips to achieve the same harvest goals. Those outcomes would constitute an impact.	This comment was not adequately addressed in the DEIS. We expanded on Donlin Gold's original comment	Discussion still lacks connection to potential impacts to subsistence from sections where results of biological analysis indicate an impact to the resource itself.	
USFWS	3.21.6.3.	23	"For some individuals,	How many individuals,	Precise,		See previous comment.	

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	2		the effect would be high in intensity causing them to relocate their camp."	and how much would the loss of traditional fish camp location affect subsistence uses? Fish camp patterns have been and will be altered from those commonly used.	comprehensive information on fish camps and numbers of families using them is not available. An opportunity sample at the TEK meeting resulted in data shown for the vicinity of Angyaruaq. As the comment notes, subsistence families are adaptive and may meet harvest goals at other locations. Thus, it is not possible to quantitatively predict a specific reduction in harvest amounts.			
USFWS	3.21.6.3.2	21	"Barge operations under Alternative 2 would represent a large increase over the estimated baseline of	The potential for negative effects from the sizable increase in barge traffic on Kuskokwim River	Agree that barge traffic will increase and that dangerous substances are	This comment was not adequately addressed in the DEIS.	Effects of Spill risk Section 3.24, Table 27 – Summary of Spill Scenario Impacts is the only direct reference to	

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SUB 15			68 barge trips above Bethel per year. During construction, an additional 65 barge tows (round trips) would carry equipment, building materials, and fuel each year. During the operations period, the proposed mine would require 58 fuel barge round trips and 64 equipment and supplies round trips, for a total of 122 per year, a 280 percent increase over the baseline."	subsistence is a "grave" concern. Barges carrying diesel, cyanide, mercury, and arsenic are a huge concern for subsistence if there is any potential for discharge of these toxic substances into the Kuskokwim River. With the already high levels of naturally occurring mercury for example, a number of species of long-lived resident fish (pike and burbot for example) already have mercury levels that are too high. The propeller and vessel wash from all of this additional barge traffic will change the river bed and may very well affect subsistence resources that subsistence users depend on. The Jungjuk and Birch Tree Crossing areas are of particular concerns at low-water levels. These low-water areas are the very same places that are important for fish over-	being transported. However, effects of spills are analyzed separately from routine operations. See Section 3.24, Spills for consolidated analysis. For impacts of prop wash on fish see Section 3.13, Fish and Aquatic Resources. The subsistence impact analysis builds on conclusions drawn in the biological impact sections. Concern about lasting stream bed impacts from propeller wash during low water at Birch Tree Crossing		spill impacts to subsistence activities or resources. Headings do not describe what potential impacts would be other than to rank as possible or potential impacts with general qualifiers such as little or high impact. This is insufficient for subsistence communities within the potentially impacted area to evaluate what the result of the type and substance of spill would actually be (explain in specific terms of impact to resource and duration of impact).	

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SUB 15				wintering and spawning. It will be important to minimize barge traffic and the potential negative impacts from barge traffic to the extent possible (recommend strong consideration for alternatives 3A&B and 4).	and Angyaruaq will be forwarded for consideration in Section 3.13, Fish and Aquatic Resources. Barge reducing alternatives will receive full consideration in the EIS.			
SUB 13 USFWS	3.21.6.3.3	27	"However, given the short period of disruption from construction, it is unlikely that this would directly reduce the subsistence resource populations."	This statement is not supported with details as to the location, timing, and duration of the construction activities.	Location, timing, and duration of construction activities are given in Chapter 2, Alternatives. See Section 3.12, Wildlife, for biological analysis of impacts from the construction activities. Only a summary of this analysis is required in the subsistence section. Text revised to note that details are	This comment was not adequately addressed in the DEIS.	See previous comments.	

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					available in Sections 2.3.2.3.4 and 2.3.2.3.5.			
USFWS	3.21.6.6.2	37	Under normal operating conditions, BMPs and other permit requirements to limit discharges of potentially toxic compounds outside of the mine site would be sufficient to minimize the risk of adverse exposures to subsistence resources.	This assertion does not appear to take into account the high occurrence of hard rock mines operating out of compliance with their issued permits and allowed to continue operating out of compliance in accordance with a consent decree (see Red Dog Mine operational history). Such a common practice allows mines to operate with discharge that does not meet "levels safe for discharge". The proposed plan for the Donlin Mine should incorporate design features that ensure operations remain in compliance at the mine and on the Kuskokwim River.	This section addresses impacts of the mine operating as it is designed and permitted. Probabilities of spills (uncontrolled releases) due to breakdown in environmental management and/or permit compliance are addressed in Section 3.24, Spills. Agree regarding value of design features to remain in compliance. See list of design features in Chapter 5, Mitigation.	This comment was not adequately addressed in the DEIS.	See previous comment	
CHAPTER 3.23: TRANSPORTATION								

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FWS 192	3.23.1.1.2		During the winter, the frozen river serves as a transportation corridor for snowmachines, off-highway vehicles, dogsleds, and light-duty passenger vehicles (cars and pickup trucks).	Suggest revising the text and incorporating some of the following information: The ice often supports huge trucks for on average a month out of each winter but sometimes longer depending on ice thickness. It can support heavy equipment and trucks up to 25,000 lbs (not including cargo). Apparently, Upper Kalskag has houses that were transported upriver on the ice road.	Additional text was added to indicate the ice road's capacity to hold large trucks and equipment for part of the winter.	Changes are adequate.		
FWS 193	3.23.1.3.2		Both the main channel of the Kuskokwim River and its tributaries are used by subsistence users for fishing and for fish camps. Set nets, subsistence drift net fishing, commercial fishing-related activities, rod and reel fishing, dip netting, fish camps, and fish wheels are used along the Kuskokwim River channel and tributaries	Suggest revising the text and incorporating some of the following information: More than local users – several outfits provide commercially guided fishing trips for non-local fishermen on the Kisaralik, Eek, Kasigluk, Little Kasigluk, and Kwethluk Rivers (tributaries of the Kuskokwim).	Added text to indicate non-local boating, and for readers to refer to Recreation (Section 3.16) for further discussion on commercially guided trips.			

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				each fishing season by local users.					
TRAN 5	USFWS DEIS New Comment	3.23 Synopsis	3.2-3	This would eliminate barging effects on three communities: Aniak, Chuathbaluk, and Napaimute.			New Comment DEIS	Suggest clarifying this information. Provide a link to the map of the Birch Tree Crossing Alternative (Figure 2.3-42) in this section on Transportation.	
TRAN 5	USFWS DEIS New Comment	3.23.1.3.2	3.23-10 and 3.23-11	The following partial excerpts (numbered sections in italics) from the United States Coast Pilot 9 (NOAA 2013b) describe the difficulty in navigating the Kuskokwim Bay and Kuskokwim River. (290)… *Navigation is recommended only at low water, when the mudflats are visible, enabling the channels between them to be followed. Because of the inequality of the tides, a vessel grounding at high water may not be refloated for several days.* …*(295… about 20 ocean*			New Comment DEIS	Suggest clarifying this information. Describe how the transportation plan accounts for the difficulty in navigating the Kuskokwim Bay and Kuskokwim River as described in the report provided on page 3.23-10 and 3.23-11 (NOAA 2013b). The transportation section should include a map of environmentally sensitive areas. We propose the following mitigation measure: A spill response plan should be developed to include	

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TRAN 5				*shipping containers were washed into the Kuskokwim River from the riverbank at the village of Napaskiak, about 12 miles SW of Bethel. Reports indicate that several of the containers sank in the river near the village, and the remainder of the containers were carried downriver and sank. Mariners are advised to exercise caution in navigating Kuskokwim Bay and River.)*				environmentally sensitive areas in and near Kuskokwim River and Kuskokwim Bay. These areas should be mapped along with spill fate models to identify where spills would likely go and where environmentally sensitive areas overlap so that emergency response equipment and responders are prepared and ready to arrive on the scene.	
TRAN 3	USFWS DEIS New Comment	3.23.2.2.2	Table 3.23-10				New Comment DEIS	Suggest revising. Add a column in Table 3.23-10 for GHG.	
BARG 12	USFWS DEIS New Comment	3.23.2.2.2 Water Transportation	3.23-24	Adding baseline trips to new barging trips together generates a total barge traffic that is 280 percent of baseline (122 new round trips added to the 68 round trip baseline is equal to 290 total round trips which is			New Comment DEIS	Suggest further analysis. Describe what may occur at pinch points or during low water years and how this increase would increase the number of tows and congestion on the Kuskokwim River.	

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BARG 12				280 percent of the 68 baseline round trips).				Suggested revised text: The existing barge trips are typically tows of one or two barges, whereas the Donlin Gold Project barge traffic would be tows of four barges. These tows may be spit to tows of one or two barges in areas with pinch points or at times of low water.	
BARG 17	USFWS DEIS New Comment	3.23	Page 3.23-40 Table 3.23-16 Comparison of Impacts by Alternative (Impact Summaries)				New Comment DEIS	Suggest revising this information. The results of the analysis on pages 3.23-24 to 3.23-40 do not logically lead to the conclusions presented in the (Impact Summaries) in the Comparison of Impacts by Alternative Table 3.23-16. Suggested revised text, column Alternative 2 – Proposed Action: In comparison to the current levels of barge traffic, baseline trips to new barging trips	

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BARG 17			Alternative 2 – Proposed Action					together generates a total barge traffic increase of 280 percent of baseline. These elevated barge traffic levels could increase congestion and disturbance of the commercial and noncommercial vessel traffic at narrow channel segments along the Kuskokwim River. This would represent 2.2 barge passings per day, and an average interval between barge passings of 10.8 hours.	
TRAN 5	USFWS DEIS New Comment	3.23	Page 3.23-40				New Comment DEIS	Suggest revising this information. The results of the analysis on pages 3.23-32 to 3.23-40 do not logically lead to the conclusions presented in the (Impact Summaries) in the Comparison of Impacts by Alternative Table 3.23-16. Suggested revised text,	

TRAN 5

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							column Alt. 3A – LNG-Powered Haul Trucks: Under Alternative 3A, there would be a reduction in diesel storage requirements in Dutch Harbor, Bethel Fuel Terminal, and Angyaruaq (Jungjuk) Port from approximately 40 Mgal to 13.3 Mgal per year relative to Alternative 2 and a 32 percent reduction in total barging activity during operations. This would represent a daily average of 1.5 barge passings, and an average interval of 16 hours between barges passing.	
USFWS DEIS New Comment	3.23	Page 3.23-40 Table 3.23-16 Comparison				New Comment DEIS	Suggest revising this information. The results of the analysis on pages 3.23-32 to 3.23-40 do not logically lead to the conclusions presented in the (Impact Summaries) in the Comparison of Impacts	

TRAN 5

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
TRAN 5		of Impacts by Alternative (Impact Summaries) Alt. 3B – Diesel Pipeline					by Alternative Table 3.23-16. Suggested revised text, column Alt. 3B – Diesel Pipeline: Alternative 3B would substitute a diesel pipeline for the natural gas pipeline, reducing barging on the Kuskokwim River by 48 percent and requiring an additional 19-mile pipeline segment to access a new diesel fuel dock on the west side of Cook Inlet. Diesel storage requirements in Dutch Harbor, Bethel Fuel Terminal, and Angyaruaq (Jungjuk) Port would be substantially decreased relative to Alternative 2, a reduction of approximately 27.5 Mgal annually; 10 Mgal of onsite diesel storage. This would represent a daily average of 1.2 barge passings and an	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
TRAN 5								average interval of 21 hours between barge passings.	
BARG 18	USFWS DEIS New Comment		Page 3.23-40				New Comment DEIS	Suggest revising this information. Repeated disruption of salmon migration and salmon harvest activities from increased and constant barge traffic on the Kuskokwim River will have adverse effects, likely increasing over time (cumulative effects), on salmon populations and on the subsistence users who utilize salmon as an important subsistence food resource.	
BARG 18	USFWS DEIS New Comment						New Comment DEIS	Suggest revising this information. Effects analysis should include effects of the transportation corridor on fish, habitat, and subsistence users. (See attachment, Barge Effects on Kuskokwim River Chinook Salmon Subsistence Fishery)	

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BARG 18								Revised text suggested: Repeated disruption of salmon migration and salmon harvest activities from increased and constant barge traffic on the Kuskokwim River will have adverse effects, likely increasing over time (cumulative effects), on salmon populations and on the subsistence users who utilize salmon as an important subsistence food resource.	
	CHAPTER 3.24: SPILL RISK								
FSR 14	USFWS DEIS New Comment	3.24		General Comment on the entire Chapter			New Comment DEIS	USFWS recommends the entire Chapter on Spill Risk be revised. Recommend the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter.	
HZM 16	USFWS 2	3.24			This comment applies to the spill risk for cyanide. Breach of a tanktainer containing NaCN is	The use of a tank-tainer as a design feature is discussed in Chapter 5.		We request additional spill fate analysis; see the cover letter to DEIS comments. The spill modeling for cyanide is	

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HZM 16					currently not considered, however, we suggest that it should be considered to show how containment in a tanktainer is a mitigation strategy that improves project safety. We recommend that a cyanide spill into the Kuskokwim River be described and compared with the environmental effects of loss of a water resistant tanktainer, so that the effectiveness of the tanktainer as a mitigation measure may be evaluated.	The impacts from a rupture of a tank-tainer and NaCN are analyzed in Section 3.24.6.7 (Water Quality), 3.24.6.8 (Air Quality), 3.24.6.10 (Vegetation), and others where appropriate.		currently inadequate because the analysis needs to be more quantitative to describe the environmental impacts of a cyanide spill from a tanktainer rupture into the Kuskokwim – the volume of water that would be contaminated and the spatial and temporal extent of the spill, and it's consequence to river biota should be described. This is important to compare impacts of alternatives, and to develop spill response to environmentally sensitive areas first.	
FSR 18	USFWS 3	3.24	Table 3.24 3:	Table 3.24-3: Spill Scenarios and Alternatives	This table is a good start, however, we suggest it would be more useful to assign a relative risk to each of the boxes instead of an X. The risk for some alternatives is clearly higher than for others, so the table would be more useful if it	The intent of this table is to simply show what alternatives are relevant to each scenario. An introduction was added to Section 3.24.3 that explains that relative risk and	This comment was not adequately addressed.		

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FSR 18					conveyed this relative risk information.	frequency was used, and not quantitatively calculated. Relative frequency, such as is presented, is adequate under NEPA. This method has been used for other Alaska EISs, including Point Thomson, Pogo, and Red Dog.			
CLA 8	USFWS				We recommended that this chapter would be clearer if it were reorganized so that each spill scenario covered all resources affected—and how the alternatives being considered alter those impacts—before moving to the next scenario. It's currently organized by resource type instead of spill type, which doesn't flow as well and is difficult to navigate as a reader. We recommend that each scenario be written as		This comment was not addressed.	Suggest a spreadsheet or table to illustrate multiple effects by resource and Alternative. The document would be easier to follow if it were organized by spill type rather than resources affected. Under the current structure the reader is required to search for all of the projected environmental consequences in different sections, which reduces	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLA 8					the example on p. 2 of this chapter.			transparency in the description of environmental consequences.	
FSR 18	USFWS	3.24	1	Table 3.24-1	Are these the results of a probabilistic modeling effort? If so, please quantify the estimates instead of categorizing them. If this is not possible, and model these probabilities using data.	Probabilistic modeling is not a typical requirement for an EIS. The existing scenarios allow disclosure of the relative difference in spill potential among the alternatives.	This comment was not addressed.	See our comments on Spill Risk below.	
FSR 18	USFWS	3.24.3.1	2	Most potential spills are likely to be small or very small.	One big picture problem with the analysis is that there is consideration of frequency of occurrence (e.g. small spills are more likely) but not consequences of occurrence of low probability, high consequence events, which are much more important drivers of ultimate environmental risk, should they occur.	Low probability, high consequence scenarios are described in the Spill Scenarios section, and are being evaluated by each individual resource.	This comment was not addressed.	See our comments on Spill Risk below.	
FSR 17	USFWS	3.24.3.1	2	It is possible, although very unlikely, that a large or even a very large spill could result if	Include more data, NTSB or the USCG tracks the frequency of groundings, or collisions	For the purpose of this analysis, probabilistic modeling is	This comment was not addressed.	See our comments on Spill Risk below.	

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FSR 17			a vessel carrying a large amount of diesel grounds,	with these vessel types. These data should be used to calculate a “baseline” probability of an accident (per vessel, per day, times the number of vessels running the Kuskokwim), from there revise this estimate of risk upward to account for the very high amount of vessel traffic and the risks of connecting four barges together on a shallow river. Or perhaps there is data where some measure of river size and vessel traffic could be used as predictive correlates. This is could be hazardous situation with many barges carrying hazardous cargo. The consequences of a large spill could have a huge negative impact on fish and aquatic resources which are important to subsistence users.	beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to happen.			
BARG 14 USFWS	3.24.3.1	2	maximum draft of the barges during the	Present the range of acceptable vessel drafts	The subject text is not related to	This comment was not fully addressed.	Suggest the text direct the reader to portion	

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BARG 14			highest river flows; the draft will be determined individually for each transit upriver,	for these scenarios including minimum under keel clearance.	scenarios; it is a description of how much fuel could be transported in each barge load. It is not necessary to repeat detailed information such as under keel clearance in this section that is merely stating the capacity of the fuel barges if the river stage was adequate for a full load.		of the document that addresses Transportation risks. Under keel clearance is an important factor that may influence the risk of barge grounding and consequent spills or loss of containers of hazardous materials overboard.	
WILD 8 USFWS	3.24.3.1	3	There would be an average of 2,963 round trips per year (during the shipping season).	Provide an estimate of number of trips per day, and then use this to predict the number of collisions in this scenario versus the diesel pipeline alternative. There is likely existing literature available with statistics that allow one to estimate a baseline frequency of accidents and how these might relate to vehicle traffic. In a 30-day season, this	Estimated the number of trips per day. For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to	Text acceptable however the wildlife section requires further	Recommend providing justification and literature citations for the wildlife section.	

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WILD 8					is 33 round trips per day. Estimate the frequency of wildlife collisions at this level of truck traffic. Estimate the potential for spills due to collisions.	happen. Estimating wildlife collisions is beyond the scope and intension of this analysis.			
	USFWS	3.24.3.1	4	diesel deliveries would only be 13.3 Mgal. This would result in a reduced number of barge trips annually.	Restate the number of gallons under the preferred alternative here. Quantify the number of truck trips per season under this alternative. Please quantify how many fewer barge trips.	Added the number of gallons and specified barge and tuck trips under this alternative.	Text acceptable.		
FSR 18	USFWS	3.24.3.1	5	The potential spill risk for a spill of any size by a river fuel barge would be reduced, but not substantially.	Please support this statement with probability modelling.	Probability modelling would extend beyond the scope of this Draft EIS. Wording in the text was revised for clarity.	Acceptable. See USFWS comments on Spill Risk below.		
	USFWS	3.24.3.1	5	However, lengthening the trucking season would increase the likelihood of weather-related risks, which would increase the chances of truck	Good! Similar data should be used to provide similar quantitative estimates of probability of diesel truck collisions/accidents!	Added an estimated number of trips per day. For the purpose of this analysis, probabilistic	Accepted		

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			accidents.	This assessment should not be so data limited. In this estimate please provide the data for total number of truck trips per day, so that a rate of collision may be reviewed (#collisions/truck mile or per truck day). Without an estimate of total traffic, the information on number of occurrences is very hard to contextualize. Estimate the length of the trucking season.	modeling is beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to happen. The trucking season is the same as the shipping season, 110 days.			
USFWS	3.24.3.2	6	A chronological summary of LNG tanker truck incidents compiled by CH-IV International through February 2012 shows that since the year 2000, two tanker truck accidents have occurred within the U.S.;	This is good analysis; similar data should be used to provide similar quantitative estimates of probability of diesel truck collisions/accidents. This assessment should not be so data limited. In this estimate, please provide the data for total number of truck trips per day, so that a rate of collision may be reviewed (number of collisions/truck mile or per truck day). Without	For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to happen.	Acceptable. See our comments on Spill Risk below.		

FSR 17

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FSR 17					an estimate of total traffic, the information on number of occurrences is very hard to contextualize.				
	USFWS	3.24.3.2	6	two tanker truck accidents have occurred within the U.S.; only one of which resulted in an LNG release and subsequent vapor ignition (CH-IV International 2012).	This provides a 50% probability of LNG explosion, given a collision. This underscores why providing an estimate on the rate of collisions per truck mile or truck day is critical.	This section has been re-worded.	Accepted		
MIT 27	USFWS	3.24.3.2	6	Based on this prediction, approximately 108 containers would be required per annum.	Specify how many barges would contain cyanide and what is the probability (from requested modeling) of one of these containers sinking and releasing CN into the river.	It is unknown at this time how many barges would contain cyanide. Probabilistic modeling for this scenario is out of scope for the purposes of this spill analysis.	This comment was not addressed. See our comments on Spill Risk below.		
MIT 27	USFWS	3.24.3.3	6	The likelihood of a very large cyanide spill is very low,	Provide an estimate of a spill through probabilistic modeling. Given the environmental consequences of a NaCN spill, this analysis is inadequate. Please model the probabilities	For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This section is intended to	Given the environmental consequences of a NaCN spill, this analysis is inadequate. See USFWS comments on Spill Risk below.	Suggest revising this information.	

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MIT 27					and provide quantitative estimates of probability of occurrence.	analyze the impacts if a release were to happen.			
FSR 18	USFWS	3.24.3.3	9	The spill risk during truck transportation is minimal due to the safeguards unique to the Donlin Gold access road (design for industrial traffic, dedicated use and low speed limits),	Provide a quantitative estimate of collision/accident related spill probability. Existing data are likely available for similar road types.	For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to happen.	Acceptable. See our comments on Spill Risk below.		
HZM 10	USFWS	3.24.3.3	10	Sulfur dioxide would be added at a rate sufficient to reduce the weak acid dissociable (WAD) cyanide levels to <10 ppm.	What is the predicted concentration of CN in the tailings pond? Will this slurry be mixed with other waste materials to dilute this further? Why is CN concentration in tailings not predicted in the soils section relating to wind transport of tailings materials offsite? What will be the pH of the tailings and the water above them?	See Section 2.3.2.1.3, Alternative 2, Mine Site, Ore Processing for these details.	Acceptable. See our comments on Spill Risk below.		
	USFWS	3.24.3.4	11	Mercury would be a byproduct recovered in the abatement systems	Is this a distillation/ condensation process or are there solid filters	See Section 2.3.2.1.4, Alternative 2,	Acceptable.		

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				in the autoclave circuits, hot cure tanks, electrowinning process, refinery furnace, and carbon regeneration process.	that would be contaminated with Hg?	Mine Site, Mercury Abatement for these details.			
MIT 28	USFWS	3.24.3.4	12	During the process mercury would be removed from the gases primarily using condensers and through adsorption on activated carbon. All drums containing mercury-loaded spent carbon would be secured on a pallet, and then contained inside of an intermodal shipping container (a Conex) for transport via truck and barge. The Conex would be secured as necessary to the deck of the barge during transport.	Please estimate how many drums per year will be filled with this material? What is its ultimate disposition?	See Section 2.3.2.1.4, Alternative 2, Mine Site, Mercury Abatement for these details.	Acceptable, according to, Section 2.3.2.1.4, "Donlin Gold estimates the mine would remove approximately 34,600 pounds of mercury per year from the gaseous waste streams."		
MIT 28	USFWS	3.24.3.4	12	carbon drums would be shipped offsite as hazardous materials for long-term storage by a federally-approved storage facility in accordance with the	Where is this disposal facility?	These details would be outlined in management plans. Also, it is out of the project area, and	Transportation distance, means, and ultimate disposition of mercury has a large influence on spill risk.	Please provide more details. Recommend a mercury management plan be developed for the entire project.	

MIT 28

FSR 13

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			Mercury Export Ban Act (MEBA).		therefore out of scope for this EIS to discuss.			
USFWS	3.24.4.1	14	Diesel evaporates very quickly	How quickly, please quantify and contextualize how quickly it evaporates relative to water? How does temperature relate to the evaporation rate? What is Koc (partitioning coefficient to organic carbon), and what is the effect of that number on the propensity of diesel to sorb to organic matter? This section needs a fair amount of work to show how the literature describing the chemistry of diesel and the known spill literature support the assertions made in this section. Diesel is not one chemical, but many, and the heavier molecular weight compounds can be fairly persistent, especially in cold environments, when the diesel has attached itself to porous	Added speed of evaporation. Added temperature to dispersion. Adsorption is discussed to appropriate detail. For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This section is intended to analyze the impacts if a release were to happen.	Suggest further analysis.	Suggest more detailed analysis in the form of quantitative fate and transport modeling. There is too much uncertainty and general statements appear inconsistent with the science of this topic.	

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FSR 13					materials and organic matter. Some constituents of diesel are quite toxic. This section should use the available literature to perform a risk assessment from a diesel spill to the Kuskokwim river during the salmon breeding season.				
FSR 13	USFWS	3.24.4.1	14	For example, almost all (more than 90 percent) of the diesel in a small spill incident from a barge in marine waters would evaporate or naturally disperse into the water column in a matter of hours or days	Please describe how this was calculated. Please describe how temperature influences this relationship.	This number was calculated by NOAA (see http://archive.orr.noaa.gov/book_shelf/974_diesel.pdf). However, the level of detail given is appropriate for this EIS.	Acceptable. See our comments on Spill Risk below.		
FSR 13	USFWS	3.24.4.1	14	Biodegradation and photo oxidation are longer-term processes that would slowly degrade any remaining diesel in the environment over one to two months	This estimate is perhaps overly optimistic for the climate in which this mine is proposed. The analysis to support this statement needs to be more formally conducted and transparent.	Added temperature to text.	Suggest further analysis.	Suggest more detailed analysis in the form of quantitative fate and transport modeling. There is too much uncertainty and general statements appear inconsistent with the science of this topic	

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HZM 10	USFWS	3.24.4.3	16	lethal to all terrestrial life.	Is it lethal to only terrestrial life? Please discuss the environmental consequences of a CN spill, and the likelihood than an event similar to this one will happen on the Kuskokwim: http://en.wikipedia.org/wiki/2000_Baia_Mare_cyanide_spill	The environmental impacts of a cyanide spill are addressed by each resource individually.	This comment was not addressed.	Suggest revising this information. The document may be easier to follow if it were organized by spill type rather than resources affected. The current structure forces the reader to search for all of the projected environmental consequences in different sections, which reduces transparency in the description of environmental consequences.	
HZM 17	USFWS	3.24.4.3	16	A hydrogen cyanide concentration of 2,000 parts/million is fatal within one minute to humans.	Provide an estimate of the gaseous HCN concentration in air and water if one brick of NaCN falls into the water. Describe the time sequence of the chemical reaction, whether it will proceed without additional catalysts, and whether it produces heat or requires it, and if so how much. If a brick of NaCN falls into the water,	Text regarding toxic gas has been deleted, due to the fact that it would have to come into contact with an acid—an event that has nearly zero percent chance of happening.	Suggest further analysis.	Recommend more quantitative analysis to describe the environmental impacts of a cyanide spill.	

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HZM 17					what is the likelihood that CN concentrations in air or water exceed lethal limits and over what area?				
HZM 14	USFWS	3.24.4.4	17	However, due to the volatility of the liquid elemental mercury it partitions strongly to atmosphere in the environment.	Quantify the partitioning in terms of time (rate) and preference for different materials. Please provide coefficients. Please describe how bacterial methylation affects these kinetics and in what environments it occurs. This section needs addition analysis. Here is a place to start to summarize Hg behavior in the environment. http://www.usgs.gov/themes/factsheet/146-00/	Please see Section 3.7 for additional discussion of mercury in the environment.	Suggest further analysis.	We are concerned that the assumptions and methods for the mercury analysis have underestimated the amount of mercury that will be released into the environment due to volatilization and fugitive dust from Alternative 2. Suggest further analysis.	
DAM 4	USFWS	3.24.5	17	This section summarizes the potential spill or release causes, estimates, behavior, and potential impacts that might result directly or indirectly from the transportation and storage of diesel, LNG,	This should not be the first mention of tailings. There should be formal sections to describe the basic physical and chemical composition of the tailings in the TSF and what the environmental consequences would be of a Tailings dam	A tailings spill scenario is being developed and will be available in the Draft EIS.	The tailings spill scenario was informative. But it was modeled for tailings release scenarios of 1,620 acre-feet. The tailings storage facility can hold up to 335,000 acre-feet of tailings. This is less	Request that the release of a realistic volume of tailings be modeled in a revised tailings dam breach scenario. A more realistic (e.g., larger) tailings release scenario would be 20% of total wet TSF volume, in 5-year	

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DAM 4				cyanide, mercury, and tailings	breach.		than 0.5% of the tailings volume that it can hold. The amount of tailings that could be lost due to dam failure needs a more realistic (e.g., more than 0.5%) volume modeled.	increments up to 30 years. This risk of release becomes necessary to inform comparative decisions about alternatives. Risk of dam failure release in Alternative 5A, which includes a dry stack tailings storage facility and a contact water operating pond, should be compared to the risk of the proposed Alternative 2.	
FSR 6	USFWS	3.24.5.2	18	(While most fuel shipments would be comprised of a tow of four barges, this scenario assumes only one of the barges would be damaged.)	Why does the scenario assume only one of the barges would be damaged? Alternatively, could two such barge-rafts of 4 barges might collide with each other? The choice of this scenario as the “worst case” for the alternative may make the EIS appear biased toward a chosen alternative.	Added clarity to why only one barge would be damaged.	Accepted clarification. See our comments on Spill Risk below.		
FSR 6	USFWS	3.24.5.2	18	As a result, it is likely that response efforts would succeed in recovery of at least half of the released diesel,	This is a great section, it states the assumptions clearly and numerically. However, since this is meant to be a “worst	Text added to previous paragraph to explain why only one barge would	Accepted clarification. See our comments on Spill Risk below.		

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FSR 6				approximately 18,908 gallons.	case scenario" type section and due to the fact that 4 barges will be connected together, it should model the potential for a much greater release of fuel.	be damaged.			
FSR 18	USFWS	3.24.5.2	20	Rough weather could limit response activities; however, it would also speed up dispersion of the diesel by wave action. Within 3 days there would be no or very little visible diesel sheen remaining.	Please provide support for this estimate using models as described above.	For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. Added citation for reference.	This comment was not addressed. See our comments on Spill Risk below.		
FSR 2	USFWS	3.24.5.2	20	Impacts include minimal environmental impact to the river shoreline, but possible contamination to fish or other animals due to ingestion. The spill also has the potential to affect the fisheries in Kuskokwim Bay, which may have immediate economic and subsistence consequences, as well as potential longer term economic consequences based on loss of fishery	Please support this statement, describe the environmental partitioning of diesel to organic materials, the proportion of fish estimated to be killed, and the projected length of the plume. Will dispersants be used? What are their projected toxicological effects? Analyze sensitive life stages (e.g. salmon eggs or fry). Could a spill of this size (which is an extremely conservative	This text is from the river barge release scenario. Because it is a hypothetical scenarios, support is not appropriate. Dispersants would not be used and a statement has been added to the text. This scenario has been evaluated	Accepted clarification. See our comments on Spill Risk below.		

FSR 2

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			reputation.	estimate relative to the potential magnitude of a spill given the proposed project) have long-term effects on the salmon fishery by having large effects on juvenile recruitment?	in the fish section (and all of the other resources as well) and more detailed information is presented there.			
USFWS	3.24.5.3	21	A very low probability, large volume (possibly 1 million gallons or more), potential spill scenario is a catastrophic tank failure at a tank farm; this scenario could occur anytime during the year. The entire volume of the tank's contents would be released to secondary containment; recovery would be 100 percent minus any lost to evaporation.	What are the contingency plans for such a large spill? Given that this is supposed to describe a low probability worst-case scenario, please consider the potential that secondary containment fails; due to an earthquake or tsunami causing the tank damage in the first place (e.g. Fukushima).	Contingency plans would be provided in an ODPCP to be prepared post-NEPA. The failure of a tank and the secondary containment would require two simultaneous very low probability events. This would be a "worst case" scenario under NEPA and is not required by CEQ. The location of the mine site roughly200 miles inland and its elevation	Accepted.		

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						eliminate the potential for tsunamis. Earthquakes are evaluated in the physical environment environmental consequences section.			
FSR 2	USFWS	3.24.5.3	21	Diesel would be released to secondary containment, both on the dock and on the water (barges will be boomed off prior to any transfer operation).	Diesel dissolves into the water and can move under/around booms when it is released onto the water surface. Is the boom like a raft? Could the diesel spill into the water, what if the boom only partially contains it from spreading?	Scenario has been modified to show that some diesel could escape the boom.	Accepted clarification. See our comments on Spill Risk below.		
FSR 5	USFWS	3.24.5.4	22	Response efforts may include (depending on location and receiving environment) sorbent booming, trenching, on-water recovery by boat or shore-based skimmers, snow and ice removal, and in situ burning.	Would contaminated soils also be removed? What is the plan for remediation of soils contaminated by a spill?	Response and remediation would be written into the appropriate agency-approved spill plans, and out of scope for NEPA.	Accepted clarification. See our comments on Spill Risk below.		
	USFWS	3.24.5.4	22	and all diesel would be recovered minus any lost to evaporation.	Analyze past spills, what percent recovery is likely on a gravel road? Will the road be paved?	The referenced text is a scenario and is appropriate for	Accepted.		

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				A 100% recovery on a paved road is also unlikely.	an EIS. 100% recovery of small spills to gravel roads is typical for responsible operators and is a reasonable assumption for a scenario.			
DAM 4 USFWS	NA	NA	Missing sections	Please add tailings to the list of potential spills considered, as tailings dam failures have occurred previously and recently. The recent Mount Polly Mine in Canada provides a good example. Consider the probability of a tailings dam failure, given the unique geologic and climate conditions at the proposed mine site, and analyze the environmental consequences. How far down river would tailings go? For example, what would be the volume of tailings released at year 27 of mine operations in the event of a failure at the	A tailings spill scenario is being developed and will be available in the Draft EIS.	The tailings spill scenario was informative. But it was modeled for tailings release scenarios of 1,620 acre-feet. The tailings storage facility can hold up to 335,000 acre-feet of tailings. This is less than 0.5% of tailings that it can hold. The amount of tailings that could be lost due to dam failure needs a more realistic (e.g., more than 0.5%) volume modeled.	Request that the release of a realistic volume of tailings be modeled in a revised tailings dam breach scenario. A more realistic (e.g., larger) tailings release scenario would be 20% of total wet TSF volume, in 5-year increments up to 30 years. This risk of release becomes necessary to inform comparative decisions about alternatives. Risk of dam failure release in Alternative 5A, which includes a dry stack tailings storage facility and a contact water operating pond, should be compared to the	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
DAM 4					toe of the TSF? What are the chemical constituents of concern in the TSF and what are their average concentrations? How far would they travel prior to reaching the Kuskokwim River and what would be the predicted concentrations of each constituent given the predicted dilution from the river? How would this scenario change under the dry stack alternative?			risk of the proposed Alternative 2.	
FSR 1	USFWS	3.24.5.5	23	As stated previously, detection of diesel from pinhole leaks would most likely occur through visual or olfactory identification, either during regular pipeline aerial inspections, ambulatory patrols, or landowner or citizen observation.	Is the diesel pipeline aboveground or buried? It seems to be straightforward to track the volume of flow through different metering stations – there should be some measurable volume of loss that would trigger pipeline shutdown until the pinhole leak could be identified and repaired. There should not be a reliance on “citizen observation” to	Section 3.24.3.1.4 (Spill Frequency and Volume, Diesel Fuel, Alternative 3B) states that “Although leak detection systems would be in place that would automatically shut down the pumps on loss of pressure, some leaks might not	This comment has not yet been adequately addressed.		

FSR 1

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				monitor the integrity of the diesel pipeline.	be detected by the system for an extended period of time. For example, a pinhole leak could potentially be undetectable for days or weeks, especially if the release volume rate was small.”			
USFWS	3.24.5.5	23	Depending on the nature of the topography, this could potentially result in a spill contingency volume of 422,000 gallons or more.	Great job on providing quantitative estimates in this section, all sections should be written in this clear, numerical fashion. However, it is unclear why there has been an estimate made of the full possible extent of the spill in this section but only 10% of the total volume of the potential spill under the preferred alternative section (barging). These estimates may appear biased to preference of a chosen alternative, and may skew the perception of risk from	This section presents the volume of 422,000 gallons or more as the amount of oil that would be in a diesel pipeline between valves (i.e., the valves would create “compartments” within the pipeline). For the diesel barge scenario, the explanation for the volume of the release is detailed under that scenario	Accepted.		

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				the two different scenarios.	description. The agencies are encouraged to review that explanation and provide more specific comments on the PDEIS if concerns persist.			
USFWS	3.24.5.5	23	Locations, activation methods, and activation delay times for valves;	It seems like installing more monitoring and shut down valves is a relative inexpensive method to insure against a large volume spill such as described in this section.	USFWS should add this potential mitigation measure to a list to be considered during the mitigation workshop following review of the PDEIS.	In agreement, this should be a potential mitigation measure.	Recommended mitigation measure: Consider installing more monitoring and shut down valves as a method to insure against a large volume spill such as described in this section.	
USFWS	3.24.5.5	24	high to very high volume (greater than 100,000 gallons),	Please clarify the volume of diesel spilled (average and some measure of variation) when an underground fuel tank at a gas station leaks. The state contaminated sites program (ADEC) likely has this data available. This will provide perspective on the severity of these leaks	Gas stations are not proposed so the requested text is not relevant.	Accepted.		

MIT 14

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				relative to a pervasive source of diesel contamination in the environment.				
USFWS	3.24.5.6	24	Scenario 6 summarizes the potential spill or release causes, behavior, and potential impacts that might result directly or indirectly from the transportation and storage of LNG.	What are the environmental consequences of an LNG leak? What is the chance of an explosion and how large would it be? What does LNG do to the environment when released? Does is contain greenhouse gases such as methane?	The impacts of an LNG leak into the environment are being analyzed be each resource.	Accepted.		
USFWS	3.24.5.5	24	In the very unlikely event that a large or very large spill were to occur, it could result in major to catastrophic impacts to water bodies, wetlands and vegetation, birds, fisheries, and marine mammals, depending on the location. Other resources could be impacted to lesser degrees, and subsistence and economic impacts could be magnified by perception.	This is a good point; however it is unclear why it is only in this section and not in the proposed alternative section, where arguably the environmental harm from a large diesel spill on the Kuskokwim river during the salmon breeding season would have similar catastrophic effects with larger social and economic ramifications. This makes the EIS seem biased towards a preferred alternative.	Added text to impacts associated with the proposed alternative. For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS	Accepted clarification. See our comments on Spill Risk below		

FSR 18

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FSR 18					This idea needs to be captured in the proposed alternative section, then the risk of this event under the proposed alternative needs to be modeled/quantified using NTSB or USCG statistics for barge collisions on similar rivers, under similar traffic and shipping scenarios (e.g. 4 barges linked together, as proposed). The likelihood the diesel would be gone in 3 days is very low, given what we know about oil spills in riverine systems, and this statement must be grounded in better science.	document. This section is intended to analyze the impacts if a release were to happen.			
HZM 16	USFWS	3.24.5.7	24	Sodium cyanide must come in contact with water to pose immediate toxic and acute health dangers. Cyanide should be prevented from reaching surface water or ground water.	How often is the ground in these areas not wet, 50% of the time? What happens if NaCN falls on snow? Is HCN gas produced?	The referenced text provides the reader general context for understanding the potential risks of sodium cyanide. Adding assumptions to	See our comments on Spill Risk below.		

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HZM 16						this general introductory text about percent of time the ground or work pads would be dry would be guessing and is not helpful.			
MIT 27	USFWS	3.24.5.7	24	A very low probability potential scenario could result if the container was lost overboard from a barge.	Please support this statement. Why is this considered very low probability?	Added text to Section 3.24.5.8 to reinforce that containers would be secured to barges.	Suggest further analysis.	Suggested mitigation measure: Consider placing GPS tracking devices on mercury transport containers. Losing a mercury container overboard could be a high consequence event. They could be located if containers had some sort of GPS devices.	
MIT 27	USFWS	3.24.5.7	25	A very low probability potential spill scenario may result from the tank-tainers while being transported within the marine storage or mine site locations. In the unlikely event that the tank-tainer ruptures, the sodium cyanide briquettes could be spilled on dry ground.	Please restate in this section, how much NaCN will be carried in each tank-tainer, and how much per barge? Describe the environmental consequences, what are the consequences if one tank-tainer were to rupture and release NaCN into the Kuskokwim river during	The impacts of a release into the environment are being discussed by each resource. Text regarding toxic gas has	Additional information requested.	See comments on Spill Risk below. The tanktainer volume is important context for the magnitude of a potential cyanide spill on the Kuskokwim river and influences the hazard component of spill risk.	

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MIT 27					the salmon breeding season? Please quantify the amounts of HCN production and the volume of this HCN plume in water or cloud in air. Please analyze the chemistry to model partitioning to each media type, timing, and volumes produced under a realistic temperature scenario.	been deleted, due to the fact that it would have to come into contact with an acid—an event that has nearly zero percent chance of happening.			
HZM 4	USFWS	3.24.5.7	25	The resultant spill would be contained as the tank-tainer would be located in an area that includes secondary containment.	Will all of the CN- partition into water or will gaseous HCN be produced? Will this CN be contained within secondary containment?	Text regarding toxic gas has been deleted, due to the fact that it would have to come into contact with an acid—an event that has nearly zero percent chance of happening.	See our comments on Spill Risk below.		
FISH 9	USFWS	3.24.5.8	26	An incident or release could occur from a container rupture, transfer operations, or losing cargo overboard from an ocean or river barge.	Please describe the environmental consequences of one container of mercury that spilled its entire contents into the Kuskokwim river during	The environmental impacts of mercury escaping into the environment are being discussed	See our comments on Spill Risk below.		

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FISH 9				transport. Please discuss methylation and food web accumulation, possible cleanup methods for mercury in this riverine system, and subsequent amounts of mercury remaining, and the projected accumulation into a coho salmon smolt after 2 years rearing in this system. Use available literature to describe the toxicological effects on the fish at these predicted tissue concentrations. Please model mercury concentrations in a 10-year old resident fish species.	by each resource in turn.			
HZM 11 USFWS	3.24.5.8	26	A container leak is unlikely as the sealed flasks, metric ton containers, and drums would provide a very high level of integrity and it is unlikely that these containers could be damaged enough to cause a leak.	How will the metric ton containers be loaded onto barges and trucks and moved? Is it possible a forklift could puncture one of these containers? Please describe the environmental consequences of such a	Section 3.24.3.4 explains the process. To repeat, the metric ton containers would be strapped to a spill containment	Acceptable. See our comments on Spill Risk below.	Request additional spill fate analysis; see the cover letter to DEIS comments.	

HZM 11

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				spill and contingencies for cleanup.	pallet and placed in a Connex type shipping container that is secured to the deck of the barge. It would require extreme carelessness or other nearly impossible or intentional act for a forklift to puncture these containers that are constructed of 3/8-inch carbon steel. The specifics of spill response would be written into the appropriate agency-approved spill plans.			
USFWS	3.24.5.8	27	The spill risk during truck transportation is very low due to the safeguards unique to the Donlin Gold access road (design for industrial traffic,	Please use available statistics to quantify the probability of such an accident on similar roads with similar traffic.	For the purpose of this analysis, probabilistic modeling is beyond the scope of an EIS document. This	Accepted.		

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			dedicated use and low speed limits, for example), the relatively limited number of truck trips necessary for mercury transport, and the appropriate containment to prevent a spill if an accident occurred.		section is intended to analyze the impacts if a release were to happen.			
USFWS DEIS New Comment	3.24	1	The impact to each resource from Sections 3.1 to 3.23 is detailed for each scenario.			New Comment DEIS	Recommend a spreadsheet or table to illustrate multiple effects by resource and Alternative. The document would be easier to follow if it were organized by spill type rather than resources affected. Under the current structure the reader is required to search for all of the projected environmental consequences in different sections, which reduces transparency in the description of environmental consequences.	
USFWS DEIS New	3.24	1	The impact of mercury released into the air on			New Comment DEIS	Recommend additional analysis. Mercury	

CLA 8

MIT 28

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MIT 28	Comment			health and the environment is discussed in the Section 3.8, Air Quality.			The analysis does not disclose a clear and transparent depiction of interrelated consequences to assess cumulative effects and practical methods to avoid or minimize adverse impacts on fish, wildlife, and subsistence resources	released into the air is also discussed in the soils section, where Hg deposition modeling is presented. For the analysis to represent the actual projected environmental effects, the contamination from these two sources should be combined. Under cumulative effects Hg deposition from dust and Hg from ore processing should be discussed together instead of separately. The separate discussion reduces the intensity / concentrations presented in each analysis.	
CLA 8	USFWS DEIS New Comment	3.24	2	The fate and behavior of spilled materials do not change as a result of project components; therefore, the information presented is applicable to all action alternatives.			New Comment DEIS	Recommend additional analysis. The text states, “the fate and behavior of spilled materials do not change as a result of project components”. What is missing is the extent to which the different alternatives alter the risk of a spill	

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CLA 8								occurring, for example a dry stack tailings facility presented in Alternative 5 would not fail catastrophically the way that the slurried tailings facility in Alternative 2 could. If diesel is transported by way of pipeline rather than barges, it would not be spilled in the Kuskokwim River the way it might be given the transportation plan in Alternative 2.	
FSR 12	USFWS DEIS New Comment	3.24.1.1	4	For a discharge from a tank vessel or barge carrying non-crude oil in bulk as cargo, be able to contain or control 15 percent of the maximum capacity of the vessel or barge or the realistic maximum oil discharge, whichever is greater, within 48 hours and cleanup the discharge within the shortest possible time consistent with minimizing damage to the environment.			New Comment DEIS	Provide additional information. Given this regulation concerning containment of a spill, confirm that this number (15% or realistic max. spill) correlates with the amount of the theoretical diesel spill of the spill scenarios being modeled.	

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HZM 16	USFWS DEIS New Comment	3.24.1.3	6	The proposed Donlin Gold Project relies on purchased supplies of sodium cyanide rather than producing it, but all other standards apply			New Comment DEIS	Suggest further analysis to describe whether it would be possible to produce sodium cyanide onsite, rather than transporting it over water on the Kuskokwim river, and the tradeoffs of this strategy.	
HZM 16	USFWS DEIS New Comment	3.24.1.3	6	Sodium cyanide would be transported using containers and transporters certified by the USDOT for safe handling.			New Comment DEIS	Recommend the size of the proposed Sodium cyanide container be stated to provide context for the evaluation of risk and potential consequences in this section.	
MIT 28	USFWS DEIS New Comment	3.24.1.4	7	Hazardous wastes would be shipped off site to appropriate recycling/disposal facilities in accordance with the applicable rules and regulations. Specifically, mercury hazardous wastes would be transported in accordance with all applicable laws and regulations, including, but not limited to, the			New Comment DEIS	Recommend a mercury management plan be developed to discuss disposal location and transportation methods of mercury that will minimize risk to the environment. The plan presented here does not have enough detail to evaluate the environmental consequences from	

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MIT 28			following requirements:				mercury releases stemming from the proposed action.	
DAM 6 USFWS DEIS New Comment	3.24.1.5	8	ADNR considers the TSF to be Hazard Class I, which means there is a probable loss of one or more lives if failure were to occur; a potentially significant danger to public health; and probable losses or damage not limited to the owner of the dam. There is also probable loss of or significant damage to waters identified under 11 AAC 195.010(a) as important for spawning, rearing, or migration of anadromous fish.			New Comment DEIS	Suggest further analysis to determine whether or not there would be a change in ADNR Hazard Classification for Alternative 5A with dry-tailings.	
MIT 27 USFWS DEIS New Comment	3.24.2.3	11	Cyanide is not presently used or transported in the Project Area. Therefore, no plan or capacity for response is presently available for this area. New plans and response capacities could be required for the			New Comment DEIS	Due to the acute lethality of cyanide spilled in water to aquatic resources, we are concerned about the potential impact to trust resources. We are available and look forward to participating the proponent and the	

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MIT 27				proposed project.				USACE in the development of a cyanide response plan.	
MIT 27	USFWS DEIS New Comment	3.24.2.4	11	Mercury is not presently used or transported in the Project Area. Therefore, no plan or capacity for response is presently available for this area. New plans and response capacities could be required for the proposed project.			New Comment DEIS	We are available and look forward to participating the proponent and USACE in the development of a mercury transportation and disposal plan.	
MIT 27	USFWS DEIS New Comment	3.24.2.5	11	Donlin Gold would have the necessary equipment, material, labor, and engineering expertise already onsite for mining operations that could be deployed to respond to an emergency immediately.			New Comment DEIS	The tailings would likely be considered hazardous waste. Please describe how staff onsite be trained in spill response and HAZWOPER for this type of cleanup.	
FSR 18	USFWS DEIS New Comment	3.24.3.1.2	13	Spills of more than 10,000 gallons involving a barge transporting petroleum products in Alaska did not occur between January 1995 through July 2013, and because			New Comment DEIS	Recommend a more robust model be used to calculate risk. Due to the lack of development in Alaska that requires the transport of diesel fuel in large volume on	

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			of this a spill of this size is not projected to occur during the life of the Donlin Gold Project (ERM 2014).				remote Alaskan rivers during this time period, Alaska is probably not the best source for data on which to model risk for the proposed project. Please provide risk based on a dataset compiled for the lower 48 states, which would have a much larger dataset to generate an estimate of probability. When calculating risk, the amount of certainty depends on the number of occurrences. Given there were no occurrences in Alaska, you have calculated a zero probability of occurrence, but also have a large amount of uncertainty in this result. For transparency, please report the number of barge tows containing similar amounts of diesel fuel during this period, and how many were towed in groups of 4 as proposed in	

FSR 18

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FSR 18								Alternative 2.	
	USFWS DEIS New Comment	3.24.3.1.2	13	From 1990 to 2011, only 10 instances of a vessel suffering hull failure, grounding, or sinking were recorded on or in the vicinity of the Kuskokwim River.			New Comment DEIS	Recommend a more robust model be used to calculate risk. If the analysis were based on this information then it would be necessary to provide the number of instances AND the number of possibilities for an instance (barge tows) so that the reader could understand the probability in the context of total barge traffic.	
FSR 18	USFWS DEIS New Comment	3.24.3.1.2	13	The projected frequency of large spills is greater than the life of the Donlin Gold Project; between once in 33 years and once in 1,000 years			New Comment DEIS	Recommend a more robust model be used to calculate risk. This is an incredibly large range. Please describe why it is so large, describe how these numbers originated, and the confidence interval.	
FSR 18	USFWS DEIS New Comment	3.24.3.1.4	17	According to PHMSA, the 10-year average for releases from diesel pipelines is as follows in Table 3.24-2:			New Comment DEIS	Please clarify. Describe what part of the country the data is based on, Alaska or the whole U.S.	
FSR 1	USFWS DEIS New	3.24.3.1.4	17	the duration and scope of a release is likely to			New Comment DEIS	Suggest further analysis of direct and	

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FSR 1	Comment			be much more significant than Alternative 2 based on the physical and chemical properties of diesel compared to natural gas				indirect effects. The scope may or may not be greater because a spill into the Kuskokwim river may travel much farther and ultimately affect much more sensitive resources than a spill onto land, due to the flow of the river.	
HZM 16	USFWS DEIS New Comment	3.24.3.3.2	22	For all hazardous materials transported in the years 1990, 2000, 2010, 2011, and 2012, there was only one accident-related incident (in 2010) from water transportation. This shows the unlikelihood of a vessel incident carrying Class 6 hazardous materials for the Donlin Gold Project.			New Comment DEIS	Suggest the analysis provide more background and relevant citations: Why were only these years used? Is this for all of the U.S. or only Alaska? Suggest revising this information. How does 9 metric tonnes relate to the 2,375 tons of CN that would be used each year on this project? Ensure these are in the same units so the reader may assess how the project will increase national scale use and transport of cyanide.	

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HZM 13	USFWS DEIS New Comment	3.24.3.3.2	23	The containers would then be able to be retrieved by salvage divers.			New Comment DEIS	Suggest clarifying this information. Due to the sandy sediments and rapidly changing conditions the retrieval of mercury sounds complex. Describe the process including how the containers would be found and how heavy they would be, the cost of recovery, and where this spill response equipment would be located.	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	26	All drums containing mercury-loaded spent carbon would be secured on a pallet, and then contained inside of an intermodal shipping container (a Conex) for transport via truck and barge. The Conex would be secured as necessary to the deck of the barge during transport.			New Comment DEIS	Suggest clarifying this information. How would a whole Conex of mercury be recovered if it went overboard?	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	26	The condensers would produce liquid elemental mercury, which would be collected in specialized USDOT-approved,			New Comment DEIS	Suggest clarifying this information. 76 lbs is far less than a metric ton. Is this a common term used in the industry, if so, please	

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HZM 11				carbon steel 76-pound flasks or metric ton containers.				define.	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	26	The condensers would produce liquid elemental mercury, which would be collected in specialized USDOT-approved, carbon steel 76-pound flasks or metric ton containers. Although the amount collected annually would vary from year to year, approximately 11 tons of liquid elemental mercury would be collected on an annual basis			New Comment DEIS	Suggested mitigation measure: Please consider placing GPS tracking devices on mercury transport containers. Losing a mercury container overboard could be a high consequence event. They could be located if containers had some sort of GPS devices.	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	27	The liquid elemental mercury flasks and spent carbon drums would be shipped offsite as hazardous materials for long-term storage by a federally-approved storage facility in accordance with the Mercury Export Ban Act (122 STAT. 4341) once constructed or a permitted RCRA			New Comment DEIS	Suggest clarifying this information. Please clarify the destination for the mercury. Also, please define "very high level" of integrity for the 55 gallon drums. If these are typical steel drums they are not known for their integrity in Alaskan weather conditions, or under corrosive exterior	

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HZM 11				facility.				conditions such as a loss overboard into seawater.	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	28	Mercury is a USDOT Class 8 hazard class, of which 94 metric tonnes were shipped nationally in 2007 (			New Comment DEIS	Suggest revising this information. Please use the same units to describe annual project disposition and annual national usage and provide a citation for national use.	
HZM 11	USFWS DEIS New Comment	3.24.3.4.2	28	For all hazardous materials transported in the years 1990, 2000, 2010, 2011, and 2012, there was only one accident-related incident (in 2010) from water transportation.			New Comment DEIS	Suggest the analysis provide more background: Why were only these years used? Is this for all of the US or only Alaska? Provide a citation for this.	
DAM 4	USFWS DEIS New Comment	3.24.3.5.2	30	Based on the results of the Early Stage FMEA Workshop, the following tailings dam release, from workshop Scenarios 1 and 4 (SRK 2015a), was selected to evaluate in the EIS (AECOM 2015c): *An unplanned release of up to two million cubic meters [2.6 million cy] of tailings and contaminated*			New Comment DEIS The tailings storage facility has a capacity to store approximately 335,000 acre-feet of slurry behind the dam. This is equivalent to 540. 5 million cubic yards. This spill scenario analyzed is for a spill of *2.6* million cubic	We request a larger volume of tailings be modeled in a revised tailings dam breach scenario, see the attached cover letter.	

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DAM 4				*water from the TSF from either a partial breach of the dam and resulting downstream failure or a liner rupture leads to a sinkhole and outflow of tailings through the underdrain.*			yards, which is less than 0.5 % of the tailings capacity, environmental consequences of a TSF failure can be high.		
DAM 9	USFWS DEIS New Comment	3.24.3.5.2	30	The tailings dam holds back not just fluids, but a slurry of water and tailings (perhaps a 20 to 50 percent solids content).			New Comment DEIS	Suggest clarifying this information. Please describe why the solids content varies so much.	
DAM 9	USFWS DEIS New Comment	3.24.3.5.2	31	Only about 1 percent of 147 tailings dam failures documented worldwide by Rico et al. (2008) have occurred at large dams greater than 300 feet high.			New Comment DEIS	Suggest illustrating this information in relation to other dams. Please enumerate how many dams worldwide are > 300 feet high? This number should be provided to provide context for this statistic.	
DAM 6	USFWS DEIS New Comment	3.24.3.5.3	31	The operating pond dam was not subject to review during the Early Stage FMEA Workshop and possible releases of process affected water under Alternative 5A were not modelled. For the			New Comment DEIS	Suggest providing further justification for the assumption, in terms of contaminants loads, by comparing the contaminant concentrations for at least As, Se, Hg, Antimony, and CN in	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
DAM 6				purposes of this EIS, it is assumed that a release from the Alternative 5A operating pond would be similar to the water-only release modelled for the TSF dam for Alternative 2 (see Section 3.24.5.9.2).				tailings pore water versus contact water.	
FSR 15	USFWS DEIS New Comment	3.24.4	32 - 34	In general, small and medium-sized spills evaporate and disperse naturally within a day or less, even in cold water (NOAA 2006)….. Spills to water would be subject to spreading by wind and wave action, and tundra vegetation would be most likely to be impacted by a spill…. Weather, Water Level, and Winds Flooding of tundra ponds, lakes, and streams can occur quickly due to snowmelt and/or heavy rains. Increased water levels would result in increased river			New Comment DEIS	Suggest further analysis of direct and indirect effects. The explanations on weathering of diesel appear to be oversimplifying the environmental issues by discussing the fate of the diesel and not discussing the effects on the environment. In order to discuss spill fate as it relates to environmental consequences, clarify the size of these spills and that they are spilled into flowing water. Vet assumptions if diesel were to be spilled into slow flowing areas with sediments containing	

FSR 15

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			flow volumes, which may impede response efforts. The increased water levels can facilitate the dispersal of spilled diesel to adjacent areas that might not normally be impacted during drier times. Wind storms may increase the spread of spills, as well as impeding response efforts; however, they would also assist evaporation. High winds would increase wave action in rivers and seas, providing further spreading and weathering of the spilled diesel. Inclement weather in general can be expected to impede response efforts.				high amounts of organic carbon. Describe how long spills into these different environments may persist. Clarify that this is not the case for land based spills or spills into isolated or smaller wetland environments.	
USFWS DEIS New Comment	3.24.4.3	35	In the interim before it dissipates via the reaction mechanisms noted previously or is diluted, it is dangerous as hydrogen cyanide gas in the air or in water as a cyanide			New Comment DEIS	Suggest clarifying this information. The toxicological mechanism is not just ingestion but also gill absorption by aquatic organisms.	

HZM 10

Donlin Gold Mine DEIS
DEIS – Cooperating Agency Review through April, 2016
USFWS Comment Response Matrix

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 10				solution by ingestion					
HZM 14	USFWS DEIS New Comment	3.24.4.4	36	When spilled, liquid elemental mercury flows and collects in the same way and locations that water would if spilled. However, due to the volatility of the liquid elemental mercury it partitions strongly to atmosphere in the environment.			New Comment DEIS	Suggest revising. As with cyanide, we request that this be quantified rather than described qualitatively. These general statements cannot help inform the comparison of alternatives nor can they inform spill response planning.	
HZM 14	USFWS DEIS New Comment	3.24.4.4	36	Concentrations of mercury in ambient air <u>are usually low and of little direct concern</u>.			New Comment DEIS	Suggest revising. This seems like a strange statement, because the concentrations might vary quite a bit in air and could range from non-toxic to toxic, given the level of local emissions. Suggest deleting.	
MIT 34	USFWS DEIS New Comment	3.24.5.2	42	SCENARIO 2: RIVER BARGE RELEASE Diesel that would not be recovered would travel downstream, and so further response efforts would be expended primarily on the protection of pre-			New Comment DEIS	Additional analysis is necessary. Environmentally sensitive areas seasons should be identified. We can provide examples of analysis Recommend the following mitigation	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 34				identified, environmentally sensitive areas in Kuskokwim Bay.				measure: A spill response plan should be developed to include environmentally sensitive areas. These areas should be mapped along with spill fate models to identify where spills would likely go and where environmentally sensitive areas overlap so that emergency response equipment and responders are prepared and ready to arrive on the scene.	
FSR 12	USFWS DEIS New Comment	3.24.5.2	42	Within 3 days there would be no or very little visible diesel sheen remaining (NOAA 2006).			New Comment DEIS	Suggest revising. The lack of sheen does not mean there is no diesel. We request additional spill fate analysis; see the cover letter to DEIS comments.	
HZM 10	USFWS DEIS New Comment	3.24.5.7.2	46				New Comment DEIS Statements that minimize risk occur throughout this	Suggest further analysis. If it spills on wet ground, what will be the environmental consequence? This is	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 10							section. They make the EIS appear to be biased toward the project. This section should discuss the environmental consequences were a spill to occur. It is possible cyanide will spill on dry ground, but it is also possible it will spill on wet ground.	the type of analysis that should occur to support this section. Please describe whether cleanup activities would be safe for humans. What would be the concentrations of CN in water and in air? Would they be of imminent danger to life and health? If so, for how long? Request additional spill fate analysis; see the cover letter to DEIS comments.	
SOL 10	USFWS DEIS New Comment	3.24.5.7.3	47	To remediate impacted soils, the soil would be tested for WAD cyanide. If the testing indicates a WAD level of less than 10 ppm, the soil would be left in situ. If the WAD level of cyanide is more than 10 ppm, the soil would be excavated.			New Comment DEIS	Suggest clarifying this information. Please explain why this level was chosen and how it compares to toxicity thresholds for plants and animals that inhabit the soil.	
HZM 11	USFWS DEIS New Comment	3.24.5.7.3	47	If sodium cyanide spills into water, the cyanide would be remediated or allowed to dissipate			New Comment DEIS	Suggest further analysis of direct and indirect effects. Please describe how one	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 11				depending on the spill.				would remediate NaCN spilled into water. What chemicals would be used? How would they be applied? How long would it take for spill response equipment to arrive at the spill area, given local response capacity? What would the effect on the aquatic environment and its biota be? We request additional spill fate analysis; see the cover letter to DEIS comments.	
HZM 13	USFWS DEIS New Comment	3.24.5.8.1	47	However, all mercury shipping containers would be secured to the barges to prevent slippage in any direction under the full range of travel conditions, and with appropriate separation from other cargo.			New Comment DEIS	Suggest mitigation measures to consider placing GPS tracking devices on these containers for water transport or finding a different disposal strategy for mercury that does not carry the risk that a mercury container will be lost overboard into the Kuskokwim River. We are concerned about limiting mercury releases into an area in	

HZM 13

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							which concentrations are already elevated.	
USFWS DEIS New Comment	3.24.5.8.3	48	Contaminated soils and water would be remediated.			New Comment DEIS Suggest further analysis. Please describe how contaminated soils and water would be remediated, in most cases when mercury is released into the natural environment, it is extremely difficult and costly to recover. Numerous aquatic systems in California remain contaminated from the gold rush of the mid-1800s. There is a wide variety of scientific literature on mercury contamination, mercury cycling in the environment and especially its environmental persistence.	Recommend a mercury management plan be developed for the entire project.	
USFWS DEIS New Comment	3.24.5.9.1	49	If the release were to occur during the summer, Crooked Creek could be			New Comment DEIS	Suggest further analysis. Please describe the environmental	

HZM 13

DAM 5

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			temporarily blocked by the deposited tailings, and some of the deposited tailings would then be remobilized by Crooked Creek and transported downstream				consequences of a large volume of tailings may have on fish and aquatic resources, and how many decades would it take to recover. Provide examples of where similar spills have been remediated to below background levels for the contaminants of concern, which include mercury, cyanide, arsenic, selenium, and antimony. Illustrate with examples that establish proof of concept that such a cleanup is feasible and cost effective. The USFWS recommends a mercury management plan be developed for the entire project.	
USFWS DEIS New Comment	3.24.5.9.1	53	Remedial actions would include removing the tailings from the primary depositional area at the Crooked Creek confluence to the			New Comment DEIS	Provide further analysis of the environmental effects of remedial actions. What would the effects and remedial actions do to Crooked Creek, the	

DAM 5

DAM 5

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DAM 5				extent practicable.				Kuskokwim River, and how would it affect fish, habitat, and subsistence users? Provide examples that describe the environmental consequences of the type of remedial action that is considered practicable.	
DAM 5	USFWS DEIS New Comment	3.24.5.9.1	53	Recovering released water would be difficult in any season.			New Comment DEIS	Suggest further analysis. Please describe the environmental consequence of not recovering this released water, which is predicted to contain high concentrations of some toxic elements.	
GEO 9	USFWS DEIS New Comment	3.24.6.1	54	Spills of cyanide that get wet on bedrock cannot be excavated; the bedrock would be neutralized (detoxified) in place with calcium hypochlorite. The cyanide already dissolved cannot be recovered and would be left to disperse naturally.			New Comment DEIS	Suggest further analysis. Please describe the environmental consequence of cyanide that gets wet on bedrock.	
GEO 9	USFWS DEIS	3.24.6.1	54	In the event that			New Comment DEIS	Suggest further	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
GEO 9	New Comment			impacts from medium to large releases reach bedrock and are not readily recovered, impact duration could potentially be long-term (e.g., up to several seasons) until remediation objectives (regulatory limits) are achieved. Mercury is volatile, so such remediation may involve vapor recovery.				analysis. Provide additional analysis such as scientific literature citations for mercury cleanup that has occurred in a timespan as short as "several seasons"; or provide examples that show the success of these remedial actions in similar environments. The Mount Polley TSF failure might provide a useful example because it has been several seasons since it happened. Has it been cleaned up? How much did it cost to clean up?	
HZM 10	USFWS DEIS New Comment	3.24.6.2.1	57	If the sodium cyanide came into contact with water it would dissolve; and dissolved cyanide cannot be recovered, and would be left to disperse naturally.			New Comment DEIS	Suggest further analysis. Cyanide is acutely toxic to most organisms. Please describe the environmental consequence of this.	
FSR 5	USFWS DEIS New Comment	3.24.6.2.1	57	In the event that impacts from medium to large releases reach soil depths not readily accessible by heavy			New Comment DEIS	Suggest further analysis. Please provide examples of where regulatory limits were achieved in several	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FSR 5				equipment, impact duration could potentially be long-term (e.g., up to several seasons) until remediation objectives (regulatory limits) are achieved.				seasons. What was the cost of these actions and who paid this cost (the responsible party, the state, the taxpayer)?	
HZM 10	USFWS DEIS New Comment	3.24.6.2.1	57	Spent carbon would be very similar to sodium cyanide discussed under Scenario 7, and the response would be similar.			New Comment DEIS	Suggest clarifying this information. Please clarify what is meant by this statement. The toxicological properties of carbon and cyanide are extremely different.	
FSR 5	USFWS DEIS New Comment	3.24.6.2.1	57	Contaminated soils and water would be remediated.			New Comment DEIS	The plan to clean up contaminated soils needs further analysis that uses examples from past spills, toxicological information, and realistic estimates of costs, technical feasibility and time be used to describe how contaminated soils and water will be remediated for spills of mercury, cyanide, and diesel.	
HZM 16	USFWS DEIS New	3.24.6.2.1	58	Elemental mercury is a liquid, much heavier			New Comment DEIS	Suggest further analysis. Please	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 16 Comment			than water. If spilled on the soil it would be expected to migrate downward.				describe the environmental consequences if mercury spills into the Kuskokwim River during transport.	
HZM 12 USFWS DEIS New Comment	3.24.6.2.1	58	Mercury was included in this review, but would not be present in tailings at levels exceeding soil cleanup guidelines.			New Comment DEIS	Suggest further clarification and analysis. This statement is confusing because it says in Table 3.7-33: Tailings Pond Water and Pore-Water Quality in Buried Tailings on page 3.7-122 of the Water Quality analysis that concentrations of Hg in tailings pore water will exceed AWQC by a large margin (AWQC=12 ng/L whereas predicted concentrations in Tailings pore water are 10,000 ng/L). Please clarify this statement. Moreover, it says in Table 3.7-46: Ore (Tailings) Metals Concentrations that Hg concentration will be 1.6 mg/kg. In other	

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HZM 12								tables it says 0.7 mg/kg for Hg in tailings. Is there an ADEC cleanup guideline for sediments, since most of the tailings are projected to end up in the floodplain of these creeks, this would be a more applicable standard than soils would be given the concern for mercury release is methylation and bioaccumulation into the aquatic food web.	
SOL 2	USFWS DEIS New Comment	3.24.6.2.1	59	Predicted antimony and arsenic concentrations in TSF water will exceed <u>the ADEC groundwater cleanup level</u>.			New Comment DEIS	Suggest further clarification and analysis. Please see comment above for mercury in TSF porewater, which ranges up to 73,000 ng/L in some water treatment scenarios. Please describe why mercury is not considered in this analysis?	
WAQ 27	USFWS DEIS New Comment	3.24.6.2.1	59	solids concentration of 50 percent (sediment) in the scenario used for this evaluation.			New Comment DEIS	Suggest further clarification. Why was 50% used instead of the more specific	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 27								estimates (64%?) described in other sections?	
WAQ 27	USFWS DEIS New Comment	3.24.6.2.1	60	Modeled inputs were based on mean summer flow conditions; a frozen river bed; and roughness value (Manning's n-value) representative of dense brush.			New Comment DEIS	Suggest further clarification. Please clarify that these were not all used in the same model. The combination of conditions provided in the text doesn't make sense.	
HZM 8	USFWS DEIS New Comment	3.24.6.2.1	60	Chemical impairments to soil would be limited to antimony and arsenic concentrations in TSF sediment released under this scenario.			New Comment DEIS	Suggest further clarification. See comment above regarding high concentrations of mercury in tailings pore water and whether sediment rather than a soil guideline should be used.	
FSR 5	USFWS DEIS New Comment	3.24.6.2.1	61	Follow-up restoration work would be performed concurrently with stabilization, recovery and remediation efforts. This would include drainage and channel reconstruction and restoration along Anaconda and Crooked Creek.			New Comment DEIS	Suggest further clarification and analysis. Please address the feasibility and cost of such a cleanup and restoration effort. How much would it cost? How would it be financed? Would restoration be successful, given the	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FSR 5								type and concentration of metals left in soil? An example might be the restoration of Silver Bow Creek downstream of Butte, Montana. Who would finance the remediation and restoration efforts?	
HZM 8	USFWS DEIS New Comment	3.24.6.2.1	61	chemical impairments to soil are largely considered negligible. Reported maximum concentrations of antimony and arsenic in TSF water (porewater) would be below soil cleanup levels evaluated for comparison purposes.			New Comment DEIS	Suggest further clarification and analysis. Please see comments above about mercury in porewater.	
DAM 6	USFWS DEIS New Comment	3.24.6.2.5	64	In addition to the scenarios listed above, under Alternatives 5A spill Scenarios 5 and 9 (diesel pipeline, and water and tailings release) are not applicable and have not been analyzed for impacts to soils.			New Comment DEIS	Recommend comparable analysis of Alternative 5A under the spill scenarios. Alternative 5A greatly reduces the risk of catastrophic tailings dam failure and widespread soil and sediment contamination that would be regional in context. The risk of a	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
DAM 6								TSF failure must be analyzed in a way that allows the reader to compare the reduced risk from Alternative 5A to the increased risk of Alternative 2. We may not reiterate this idea each time it occurs; however it is very important that these differences are clear and transparent.	
FSR 12	USFWS DEIS New Comment	3.24.6.5.1	65	Dispersal and evaporation would take approximately 3 to 5 days; however, the rate of spreading would depend upon the viscosity and composition of the spilled fuel, the ambient temperature, and the environmental conditions (wind, waves, and ocean currents) present at the time and location of the spill.			New Comment DEIS	Suggest further clarification and analysis. Please model this quantitatively and present the results in this section that illustrate environmental consequences of spills of diesel, Cyanide, and Mercury on the Kuskokwim River and the Kuskokwim Bay area. Request additional spill fate analysis; see the cover letter to DEIS comments.	
WAQ 27	USFWS DEIS New	3.24.6.5.1	65	After 4 days, approximately <u>39</u>			New Comment DEIS	Suggest further analysis of direct and	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 27	Comment			<u>percent and 59 percent of diesel fuel would be evaporated</u>, respectively				indirect effects. Please quantify how long it would take until soils and water of the Kuskokwim are no longer toxic to aquatic life and diesel concentrations in sediment, shoreline soils, and river water return to baseline conditions. Use relevant examples from barge accidents on rivers or other diesel spills to support this analysis. Address feasibility of cleanup.	
HZM 10	USFWS DEIS New Comment	3.24.6.5.1	66	<u>Cyanide</u> <u>that</u> has already dissolved <u>cannot be recovered and would be left to disperse naturally</u>, and would likely be completed by the time cleanup could be initiated.			New Comment DEIS	Suggest further analysis of direct and indirect effects. Please describe the environmental consequence of leaving cyanide in disperse in the environment. USFWS has requested additional spill fate analysis; see the cover letter to DEIS comments.	
DAM 6	USFWS DEIS New Comment	3.24.6.5.5	71	Under Alternative 5A, Scenarios 5, 6, and 9 (diesel pipeline, LNG,			New Comment DEIS	Suggest further analysis. The risk of tailings releases is	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
DAM 6				and water and tailings releases) are not applicable and have not been analyzed for impacts to surface water hydrology. Impacts under Scenarios 1 through 4, and 7 through 9 (ocean or river barge, tank farm, tanker truck, cyanide, mercury, and water only tailings releases) for Alternative 5A would be the same as those discussed under Alternative 2.				greatly reduced under Alternative 5A please describe how risk is reduced and why.	
FSR 16	USFWS DEIS New Comment	3.24.6.7.1	77	and it is not possible for diesel to sink and accumulate on the seafloor unless adsorption occurs with sediment (NOAA 2014a			New Comment DEIS	Suggest further analysis. It is possible for diesel to sink if dispersants are used? Will dispersants be used? Request additional spill fate analysis; see the cover letter to DEIS comments.	
WAQ 27	USFWS DEIS New Comment	3.24.6.7.1	77	The duration of the <u>impacts to surface water quality would be limited to several days</u>			New Comment DEIS	Suggest clarifying this information. Please provide further justification for this statement.	

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WAQ 27								Request additional spill fate analysis; see the cover letter to DEIS comments.	
HZM 4	USFWS DEIS New Comment	3.24.6.7.1	80	In the unlikely event that cargo is lost overboard from a barge, the mercury containers would rapidly sink to the bottom of the river and would become embedded in the riverbed. Due to the high density of mercury (~13.5 g/cm3) relative to water (~1.0 g/cm3), mercury-filled containers would be very heavy and unlikely to move very far from the site of the cargo loss, be recovered by salvage specialists, and impacts from mercury to surface water would not occur.			New Comment DEIS Please consider adding GPS to these containers - otherwise how would a flask or pig or drum lost overboard be found?	Suggest mitigation measure: Please consider placing GPS tracking devices on mercury transport containers. Losing a mercury container overboard could be a high consequence event. They could be located if containers had some sort of GPS devices.	
HZM 13	USFWS DEIS New Comment	3.24.6.7.1	80	It should be noted that due to the high density of liquid mercury, containers would be heavy and special protocols would be			New Comment DEIS	Request additional spill fate analysis; see the cover letter to DEIS comments.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 13				needed for retrieving containers dropped in the water.					
CLA 8	USFWS DEIS New Comment	3.24.6.7.1	81	Due to the dependence of impacts to surface water, groundwater, and sediment quality on these common factors, the impacts to these resource types are analyzed together below, in order to preclude redundancy.			New Comment DEIS	Suggest revising this information. See prior comments about structuring this section to follow one spill type through each resource affected before moving on to the next spill type. The document would be easier to read if restructured. Some readers may only be interested in one type of spill, and combining the information by spill will facilitate review.	
HZM 14	USFWS DEIS New Comment	3.24.6.7.13.24.6.7.1	83	However, the high mercury levels would be addressed through process plant design that would include a dosage facility to allow chemical addition to precipitate mercury as a stable mercury sulfide compound that would remain with the tailings solids in the TSF (SRK 2012b)			New Comment DEIS	Suggest further analysis. Further analysis is necessary to identify how this changes mercury volatilization under a dry stack Alternative 5A. Was this chemical addition factored in to the mercury volatilization modeling and if so, why there is still so much mercury predicted to volatilize	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 14								from the TSF? How will this change if mercury is not present in water at the surface? Recommends a mercury management plan be developed for the entire project.	
HZM 8	USFWS DEIS New Comment	3.24.6.7.1	83	Analysis of the TSF tailings reported elevated concentrations of multiple constituents, of which arsenic, antimony, and lead are most notable			New Comment DEIS	Suggest clarifying this information. Why is lead not discussed in the prior section on TSF release?	
WAQ 21	USFWS DEIS New Comment	3.24.6.7.1	84	Table 3.24-13: 2007 Phase 2 Pilot Plant Transitional Tailings Solids MWMP Species Results			New Comment DEIS	Suggest further analysis. Further analysis is necessary to determine if high concentrations of sulfate could facilitate mercury methylation in sediments in the event of a TSF release. This should be analyzed in the cumulative effects section, because the present argument is that mercury methylation will occur only at low rates because it is limited in	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 21								part by low sulfur and thus low populations of sulfur reducing bacteria, which can also reduce mercury for energetic gain.	
HZM 8	USFWS DEIS New Comment	3.24.6.7.1	84	The release of arsenic from 2007 Phase 1 final tailings stabilized in the 0.10 to 0.15 mg/L range after 65 weeks of testing.			New Comment DEIS	Suggest clarifying this information. Please also describe the 2006 tests. Wasn't there a large amount of variation between the two years of tests?	
DAM 9	USFWS DEIS New Comment	3.24.6.7.1	88	For this reason, it is assumed that most of the <u>TSF water would be retained interstitially</u> during tailings deposition.			New Comment DEIS TSF failure with slurried tailings in mostly flow as a liquid.	Suggest further analysis. Please provide evidence to support this assumption that water would be retained interstitially	
	USFWS DEIS New Comment	3.24.6.7.1	89	For this reason the initial tailings recovery would likely span at least one winter season for a summer release scenario.			New Comment DEIS	Suggest further analysis. Provide more details, will success be measured by the functioning condition for resident and anadromous fish that are presently there.	
HZM 10	USFWS DEIS New Comment	3.24.6.7.2	99	In the event that groundwater is impacted by cyanide as a result of tank-tainer rupture or vehicle			New Comment DEIS This sentence contradicts the topic sentence of this	Provide quantifiable estimates so that Alternatives may be reviewed on a comparative basis and	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
HZM 10				accident, the impacts to groundwater resources would potentially be high intensity because concentrations of cyanide in the groundwater could exceed regulatory limits.			paragraph, which implies there will be no effect.	so mitigation measures may be analyzed to reduce impacts.	
WAQ 27	USFWS DEIS New Comment	3.24.6.7.2	100	Impacts to surface water, groundwater, and sediment quality resulting from released solids would potentially persist over decadal time scales, whereas impacts resulting from the water only scenario would likely diminish over timescales of weeks.			New Comment DEIS	Additional analysis is recommended. This section states that even if the CWD under Alternative 5A failed the environmental impact of that spill would be less.	
WAQ 27	USFWS DEIS New Comment	3.24.6.7.2	102	Under Alternative 5A, Scenarios 5, 6, and 9 (diesel pipeline, LNG, and water and tailings releases) are not applicable and have not been analyzed for impacts to groundwater quality. Impacts under Scenarios 1 through 4, and 7 through 9 (ocean			New Comment DEIS	Suggest further analysis. This analysis should be conducted so that the reader may compare Alternatives 2 and 5A. There is a differential risk of impact to groundwater resources between these two alternatives.	

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WAQ 27				or river barge, tank farm, tanker truck, cyanide, mercury, and water only tailings releases) for Alternative 5A would be the same as those discussed under Alternative 2.					
FSR 16	USFWS DEIS New Comment	3.24.6.7.3	102	Impacts to sediment quality resulting from an ocean barge release would depend heavily upon the specific location of the spill. As described in Section 3.24.5.1, the density of diesel fuel is much lower than that of water, and it is not possible for diesel to sink and accumulate on the seafloor unless adsorption occurs with sediment suspended in the water column			New Comment DEIS	Suggest clarifying this information. This is also possible if dispersants are used. Please add discussion of dispersants to this section.	
FSR 12	USFWS DEIS New Comment	3.24.6.7.3	103	The extent of impacts would vary spatially according to the concentrations of diesel and suspended sediment in the water and the contaminated sediments would be			New Comment DEIS	Suggest further analysis. Please expand on this environmental analysis, this could form the framework to quantify and model the environmental impacts across Alternatives.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
FSR 12				deposited in low energy areas of the riverbed and delta, thus impacts to sediment quality could potentially extend beyond the immediate Project Area.				Request additional spill fate analysis; see the cover letter to DEIS comments.	
FSR 12	USFWS DEIS New Comment	3.24.6.7.3	104	The extent of impacts would vary spatially according to the concentrations of diesel and suspended sediment in the water and the contaminated sediments would be deposited in low energy areas of the riverbed and delta, thus impacts to sediment quality could potentially extend beyond the immediate Project Area.			New Comment DEIS	Suggest further analysis. Please expand on this environmental analysis, it could form the framework to quantify and model the environmental impacts across Alternatives. In addition analyze what would happen if cyanide were to spill into flowing water in the Kuskokwim.	
WAQ 21	USFWS DEIS New Comment	3.24.6.7.3	105	An unplanned release of liquid mercury to land or water could adversely affect the quality of sediment in areas near the release. Due to its high density and propensity for complexation with organic material, a			New Comment DEIS	Suggest further analysis. Expand on this analysis to better understand the environmental consequences of this occurring in a system in which mercury is already elevated in subsistence fisheries.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
WAQ 21				substantial fraction of the released mercury would collect in sediments where it could be transformed by abiotic redox reactions as well as biologically-mediated mercury methylation reactions driven by sulfate reducing bacteria.					
HZM 10	USFWS DEIS New Comment	3.24.6.7.3	105	Preliminary screening levels for mercury contamination in sediment have been suggested by the National Oceanic and Atmospheric Administration (NOAA). Although they do not represent sediment quality standards, these guidelines suggest that the Threshold Effects Level for mercury in freshwater sediment is 174 µg/kg (dry weight), the Probable Effects Level is 486 µg/kg (dry weight), and the Upper Effects Threshold is 560 µg/kg (dry weight)			New Comment DEIS	Expand on the level of quantitative comparison and analysis to better understand the environmental consequences of this occurring in a system.	

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HZM 10				(Buchman 2008).					
DAM 4	USFWS DEIS New Comment	3.24.6.7.3	105	The water would naturally drain from the Crooked Creek watershed to the Kuskokwim River, where it would be diluted with river <u>water to the extent that the Kuskokwim River would be compliant with the most stringent applicable water quality criteria</u>.			New Comment DEIS	Suggest clarifying this information. This water quality assumption is based on the spill volume modeled but dilution rates would be different with a much larger spill.	
DAM 6	USFWS DEIS New Comment	3.24.6.7.3	106	sediment quality would be primarily driven by the persistence of the released tailings solids in the environment, the efficacy of response and clean-up efforts, and the volume and spatial distribution of the released tailings solids material considered "nonrecoverable."			New Comment DEIS	Suggest further analysis. If Alternative 5A cannot fail in the same manner as the slurried TSF in Alternative 2 then it is critical that modeling be done for Alternative 5A, so that the environmental effects of both alternatives may be compared in a direct and transparent way.	
FSR 14	USFWS DEIS New Comment	3.24.6.7.3	106	The diesel pipeline associated with Alternative 3B poses substantial risks to water quality due to the potential for			New Comment DEIS	Suggest further analysis. Devote substantial treatment to each alternative considered in detail including the proposed	

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FSR 14				unplanned releases of diesel fuel from the pipeline to water resources.				action so that reviewers may evaluate their comparative merits (CFR 40 1502.1). . This is probably the only section of this chapter that refers to "catastrophic" releases. It is important that this analysis be transparent and objective.	
AIQ 5	USFWS DEIS New Comment	3.24.6.8.1	110	A potential release into the outdoor air could occur as a result of a 76-pound or metric ton container rupture of liquid elemental mercury. <u>Portions of the mercury could volatilize into the atmosphere</u>. Liquid elemental mercury is highly volatile and <u>partitions quickly to the atmosphere</u>.			New Comment DEIS	Suggest further analysis. Please quantify mercury that could volatize, and how quickly would it be expected to occur. What is the partitioning coefficient?	
PAA 9	USFWS DEIS New Comment	3.24.6.8.1	110	In the event of the tailings and water release, the amount of tailings exposed to air would expand by 1,300 acres, as there would still be a tailings beach left in the TSF. This is			New Comment DEIS	Analyze this further: “Tailings exposed to air would expand by 1,300 (with a loss of just 0.5% of the total capacity).” This is a significant volatilization pathway and should be	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 9				roughly double the size of the maximum tailings beach in late operations.				compared to determine if a dry-stack Alternative has the same risk and if this risk should be compared to the risk of dust risk associated in Alternative 5A. Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits (CFR 40 1502.14)	
WAQ 27	USFWS DEIS New Comment	3.24.6.8.3	111	Impacts under Scenarios 1 through 3 (ocean or river barge, tank farm releases) would be shifted relative to Alternative 2; however, the impacts would be the same types as discussed under Alternative 2.			New Comment DEIS	Suggest clarifying this information. Please expand this discussion.	
FSR 15	USFWS DEIS New Comment	3.24.6.8.4	112	The risk of a river barge grounding would be somewhat lower under Alternative 4 because of the 38 percent reduction in river-		New Comment	New Comment DEIS	Suggest clarifying this information. Given this is the case, please expand on the discussion of reduced risk of diesel spill into	

FSR 15

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			barging miles from Alternative 2, and the avoidance of shallow areas between BTC Port and Angyaruaq (Jungjuk) Port that would not be traveled under Alternative 4; and				the Kuskokwim and barge grounding under the Alternative 3 scenarios.	
USFWS DEIS New Comment	3.24.6.1 0.1	117	While some toxic substances in an oil spill evaporate quickly, meaning that exposure to the most toxic substances are reduced with time and limited to the initial spill area, non-lethal toxic effects can be more subtle and often longer lasting. For example, aquatic life on reefs and shorelines would be at risk of being smothered by oil that washes ashore. Vegetation can also be poisoned slowly by long-term exposure to oil trapped in shallow water or on beaches (EPA 1999b). One impact of oil spills on plants lies with its coating effect. In order			New Comment DEIS	This is an excellent discussion and should be brought through the other sections of a revised DEIS.	

WAQ 27

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WAQ 27				to produce food and energy, a plant must be able to carry out gas exchange with the environment. The coating of oil on the leaves of plants prevents the stomata or pores from receiving carbon dioxide from the air. The result would be slow growth and eventual death of plants.					
DAM 4	USFWS DEIS New Comment	3.24.6.1 1.1	128	An estimated 442 acres of wetlands would be covered by tailings, with 52 percent of these wetlands affected by heavy burial with 3 feet or more of tailings			New Comment DEIS	Suggest further analysis. These are some fairly impressive statistics for a release of 0.5% of the total TSF volume at closure.	
WET 6	USFWS DEIS New Comment	3.24.6.1 1.3	131	A diesel pipeline rupture could result in major, long-term impacts to wetlands.			New Comment DEIS	Suggest further analysis. Further details are requested to explain why pipeline rupture, “could result in major, long-term impacts to wetlands,” whereas a diesel spill on the Kuskokwim River is projected to dissipate in 4 days. This appears inconsistent	

WET 6

BIRD 12

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							and it makes the EIS seem biased toward Alternative 2 or against Alternative 3 for energy needs for the project.	
USFWS DEIS New Comment	3.24.6.1 2.1	133	The physiological effects of hydrocarbon ingestion or inhalation by terrestrial mammals is rarely studied, except with laboratory animals intentionally exposed to various compounds, and most research in the field has been conducted on marine mammals.			New Comment DEIS	Suggest further research and analysis. This section requires more literature review and citations to substantiate statements like this. A vast amount of study of marine mammals has occurred as a result of the Deepwater Horizon oil spill. There have been plenty of large oil and diesel spills which have spurred study of affected wildlife. Please see the "Biological Opinion for the Unified Plan on Oil Spill Response". This is a recent biological opinion on for oil spill response which summarizes quite a few papers on the effects of oil and dispersants on wildlife.	

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BIRD 12								http://www.fws.gov/alaska/fisheries/endangered/pdf/2011-0036%20Unified%20Plan%20Consultation_27Feb2014.FINAL.pdf.	
WILD 9	USFWS DEIS New Comment	3.24.6.12.1	134	Terrestrial mammals may be affected by sublethal concentrations of mercury that reduce overall fitness or by reduction of food supply if organisms they feed on are affected by the mercury.			New Comment DEIS	Suggest further research and analysis. There is a large body of literature describing the toxicological effects of Hg in wildlife and its bioaccumulation. It should be summarized in this section.	
WILD 9	USFWS DEIS New Comment	3.24.6.12.1	134	If elemental mercury is spilled, some of it would be emitted as gaseous mercury, which could be highly toxic to animals. However, with all the expected activity at the site of an accident and cleanup, few, if any, terrestrial mammals would be expected to be exposed to it.			New Comment DEIS	Suggest further analysis. Provide quantifiable impacts so that additive effects may be analyzed in the cumulative effects section.	
BIRD 3	USFWS DEIS New Comment	3.24.6.12.1	134	The disturbance processes discussed in the wetland analysis would impact wildlife			New Comment DEIS	Additional analysis is recommended to include a discussion of the toxic effects of	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 3				habitat through:				metals in the tailings material and how these are predicted to affect wildlife. There is a rich body of scientific literature on this topic.	
WILD 6	USFWS DEIS New Comment	3.24.6.1 2.2	137	The frequency of occurrence of pinnipeds in the lower Kuskokwim River (11-68 sightings of harbor/spotted seals per year, 2007-2009) is variable and generally low; occurrence further diminishes upriver.			New Comment DEIS	Provide further detail to describe how these data were collected.	
HZM 10	USFWS DEIS New Comment	3.24.6.1 2.2	138	Scenario 7: Cyanide Release None of the transport scenarios for cyanide would release cyanide into the environment where marine mammals may occur. Therefore, no effects from cyanide would be expected. If a cyanide tank-tainer was lost in the water where marine mammals occur, the activity associated with recovering it would have minor effects on them if they were			New Comment DEIS	Suggest revising this information. These sections on wildlife are presently inadequate to quantify impacts on fish and wildlife, additional analysis is recommended.	

HZM 10

MIT 34

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			present.					
USFWS DEIS New Comment	3.24.6.1 2.3	141	The prevailing winds in summer are NE, E, and SE. The strong blows are from the same directions. That means that the spill, if it occurred in Kuskokwim Bay and if uncontained, could disperse in the direction of Kuskokwim Shoals, an area heavily used by eiders and other sea birds. Depending on the winds, the diesel could reach the area within a few hours to a day or two. The wind and waves would also cause the oil to evaporate and disperse in the water more rapidly, and within 3 to 5 days or less the volume of oil at the surface could be reduced by up to two-thirds.			New Comment DEIS	Suggest further analysis of direct and indirect effects. There are concerns about this outcome for fish and wildlife (including migratory birds) that utilize the Yukon Kuskokwim Delta Refuge as well as ESA-listed species. Recommend the following mitigation measure: A spill response plan should be developed to include environmentally sensitive areas. These areas should be mapped along with spill fate models to identify where spills would likely go and where environmentally sensitive areas overlap so that emergency response equipment and responders are prepared and ready to	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 34								arrive on the scene.	
BIRD 12	USFWS DEIS New Comment	3.24.6.1 2.3	141	The following description of the short- and long-term effects of oil spills on birds is summarized from FWS (2004b)			New Comment DEIS	Recommend more specific information be provided. Please see the "Biological Opinion for the Unified Plan on Oil Spill Response". This is a recent biological opinion on for oil spill response which summarizes quite a few papers on the effects of oil and dispersants on wildlife. http://www.fws.gov/alaska/fisheries/endangered/pdf/2011-0036%20Unified%20Plan%20Consultation_27Feb2014.FINAL.pdf.	
FSR 3	USFWS DEIS New Comment	3.24.6.1 2.3	141	Fish that feed on these organisms can subsequently become contaminated ;and then larger animals in the food chain, including birds, may consume contaminated organisms and be sickened or die.		New Comment		Suggest clarifying this information. Correction requested: Perhaps due to a deletion typo this sentence doesn't flow well.	
BIRD 11	USFWS DEIS New Comment	3.24.6.1 2.3	142	The coastal area from the mouth of the Kuskokwim River to the			New Comment DEIS	Suggest further analysis. Provide additional analysis on	

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BIRD 11				south side of Nelson Island is the most important area for fall staging shorebirds on the west coast of North America. It supports hundreds of thousands, if not millions, of shorebirds, including virtually the entire North American-breeding population of bar-tailed godwits. A spill in one of these areas during the time when large numbers of birds are present could affect a large proportion of certain bird populations.				how Alternatives 3A and 3B may reduce this risk of this occurrence.	
FISH 10	USFWS DEIS New Comment	3.24.6.1 3.1	148	Depending upon the location, a spill that occurs between approximately mid-May and mid- June could have major impacts to the outmigrating juvenile salmon population.			New Comment DEIS	Suggest further analysis. Provide quantifiable impacts so that additive effects may be analyzed in the cumulative effects section.	
FISH 10	USFWS DEIS New Comment	3.24.6.1 3.1	148	Most fish exposed to a spill could avoid it by swimming away from the spill or by moving back downstream, until			New Comment DEIS	Suggest revising this information. Please provide substantiation that fish exposed to a spill would avoid it by	

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FISH 10			concentrations attenuate, unless the volume of the spill was substantial enough (or in a narrow area of stream) such that toxic concentrations occurred from bank to bank at a time when adult salmon were in the immediate vicinity and could not avoid it.				swimming away from the spill or by moving back downstream.	
HZM 10 USFWS DEIS New Comment	3.24.6.1 3.1	150	The concentrations and extent would depend on the quantity of cyanide spilled into the water and the volume of water. Even a spill in a puddle or rain could release toxic Hydrogen Cyanide gas. Initial isolation of the spill site from unprotected people or animals would be 0.1 mile for a small spill or 0.2 mile for a larger spill, and the downwind protection zone would be 0.1 to 0.2 mile for daytime or 0.2 to 0.9 mile for night.			New Comment DEIS	Further analysis is recommended to define concentrations, spill volume, and potential consequences. Modeling spill fate will inform response efforts and help to specify required response capability in the region. Cyanide would be here due to this project; therefore response capacity should be developed. Otherwise how they plan for a spill of unquantified volume and undescribed consequence.	

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HZM 10								Request additional spill fate analysis; see the cover letter to DEIS comments.	
FISH 10	USFWS DEIS New Comment	3.24.6.1 3.1	151	A spill is highly unlikely, as the sealed flasks, pigs and drums provide a very high level of integrity and it is unlikely that these containers could rupture. Without a rupture, there would be no impact on fish or aquatic biota.			New Comment DEIS	Suggest further analysis of direct and indirect effects. Despite a low probability, the hazard of release of this persistent and bioaccumulative substance into the Kuskokwim River warrants further planning attention.	
DAM 5	USFWS DEIS New Comment	3.24.6.1 3.1	151	Winter: At least some of the released tailings could be excavated and transported back to the tailings facility thereby limiting the extent of impacts to fish and aquatic life after the spring thaw. This would reduce erosion and sediment transport in Crooked Creek. A portion of the contaminated fluids may become frozen and recoverable			New Comment DEIS	Additional analysis is recommended. Describe what fraction of tailings would be recovered. Provide examples of other places where such recovery has been technologically feasible and show examples of environmental restoration afterward that supports the abundance of subsistence resources supported by the largely undisturbed natural systems in the	

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DAM 5								project area.	
FISH 10	USFWS DEIS New Comment	3.24.6.1 3.1	156	Depending on the physical and chemical nature of water quality effects from such releases, the intensity of impacts to overall fish production in Crooked Creek could range from medium to high, would be local, and could persist over several years.			New Comment DEIS	Please expand the discussion of toxicology in this section. The long term impacts to fisheries are more likely to result from residual contamination than from the physical disturbance.	
PAA 63	USFWS DEIS New Comment	3.24.6.1 3.2	169	Under Alternative 5A, Scenarios 5, 6, and 9 (diesel pipeline, LNG, and water and tailings releases) are not applicable and have not been analyzed for impacts to land use and management. Impacts under Scenarios 1 through 4, and 7 through 9 (ocean or river barge, tank farm, tanker truck, cyanide, mercury, and water only tailings releases) for Alternative 5A would be the same as those discussed under Alternative 2.			New Comment DEIS	See comments above, Alternative 5A should be compared on all of its merits not just compared by its selected negative impacts. Recommend the analysis devote substantial treatment to each alternative so that reviewers may evaluate them on their comparative merits.	

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EJ 12	USFWS DEIS New Comment	3.24.6.19.1	187	While a large spill has a low probability of occurrence, adverse impacts from a large mercury release would disproportionately impact minority and low-income communities. Subsistence, recreation, and commercial fisheries would be adversely affected, with interrelated subsistence, health, and socioeconomic impacts to the minority and low-income communities along the Kuskokwim River near the release.			New Comment DEIS	Provide further analysis of Alternatives. If there could be effects of mercury on subsistence resources how could those effects be avoided? Recommend a mercury management plan be developed for the entire project.	
DAM 5	USFWS DEIS New Comment	3.24.6.21.1	198	The duration would generally extend through one to three years, and the context includes resources that are important and unique.			New Comment DEIS	Provide further details; describe how this duration was calculated. If tailings are released into the environment in this way, they will not be recovered and the effect will be permanent.	
FSR 14	USFWS DEIS New	3.24.6.21.1	198	Once the diesel pipeline is installed, the			New Comment DEIS	Suggest further analysis and	

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FSR 14	Comment			spill risks associated with ocean barging (Scenario 1) and River Barging (Scenario 2) would be eliminated. Spill risks associated with diesel fuel tank farm storage and tanker trucks would be drastically reduced.				clarification. The text states, “Once the diesel pipeline is installed, the spill risks associated with ocean barging (Scenario 1) and River Barging (Scenario 2) would be eliminated.” This reduction in risk should be described more completely in other sections to enable comparison of alternatives.	
DAM 6	USFWS DEIS New Comment	3.24.6.2 1.5	199	Under Alternative 5A, Scenarios 5, 6, and 9 (diesel pipeline, LNG, and water and tailings releases) are not applicable and have not been analyzed for impacts to subsistence.			New Comment DEIS	Suggest further analysis. The reduction in risk of TSF failure should be described in this section.	
MIT 28	USFWS DEIS New Comment	3.24.7	211	The project design includes special flasks and metric ton containers for mercury transport;			New Comment DEIS	Suggest further analysis. Please describe whether and how mercury will be detoxified prior to being sent to the TSF. Is it possible to oxidize it and combine it with sulfide to generate a "cinnibar" like mineral?	

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GEO 3	USFWS DEIS New Comment	3.24.7	211	The above-ground fault crossing of the pipeline was designed to resist surface fault rupture hazards, and would be designed to withstand the stress that could occur during a seismic event.			New Comment DEIS	Suggest clarifying this information. Please state what size of seismic event here.	
FSR 14	USFWS DEIS New Comment	3.24.7	211	While the Corps is considering additional mitigation and monitoring to reduce the effects of the project to physical, biological and social resources (Tables 5.5-1 and 5.7-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation), <u>no additional mitigation or monitoring measures have been identified for preventing or reducing impacts from potential spills.</u>			New Comment DEIS	Recommend the analysis devote substantial treatment to each alternative. Suggest the analysis in this section show that some Alternatives greatly reduce the risk of spills over Alternative 2. For example, Alternative 5 makes a catastrophic TSF failure that could reach the Kuskokwim impossible and the diesel Pipeline Alternative (3B) drastically reduces the risk of a spill on the Kuskokwim River or during ocean barge transport. This reduction in risk by choosing some alternatives over	

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FSR 14								Alternative 2 should be made more transparent in this section, because really these alternative are change the risk of the project in some of the more substantive ways possible.	
FSR 16	USFWS DEIS New Comment	3.24.7	215	None of the scenarios for cyanide would release cyanide into the environment where listed birds may occur. None of the scenarios for mercury would release mercury into the environment where listed birds may occur. A tailings release would not reach into the environment where listed birds may occur.			New Comment DEIS	We are concerned that the current assessment is not substantiated by enough information.	
	CHAPTER 3.26: CLIMATE CHANGE								
CLIM 9	USFWS DEIS New Comment	3.26		General			New Comment DEIS	Suggest further analysis. Discuss the energy requirements and conservation potential of various alternatives (i.e. jet fuel, diesel, natural gas). Covert this to	

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CLIM 9								GHG emissions for proposed fuels by Alternative. If possible include the energy needs of the city of Anchorage and the Anchorage International Airport for comparisons.	
CLIM 9	USFWS DEIS New Comment	3.26	1	Most of Alaska's GHG emissions are from the petroleum and natural gas industry, and about one percent Alaska's GHG emissions are from the mining industry.			New Comment DEIS	Suggest further analysis. Describe the quantity of GHG emissions from air flights associated with the project versus all other air flight sources in Alaska. Describe how this project will change the percent allocation of GHG emissions across industries and air flights in Alaska.	
	USFWS DEIS New Comment	3.26.3.2.2	13	For the Kuskokwim River area, these include anecdotal observations of <u>recent low snow years, early breakup, thin river ice, and open water in winter,</u> which may be related to climate warming			New Comment DEIS	Recommend the DEIS Include interrelated consequences of project related activities on multiple resources. For example, how would climate change affect mercury volatilization, mercury methlization, aquatic, and subsistence resources?	

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							Suggest revisions to incorporate projected temperatures into the mercury models. The assumptions that currently underpin the mercury volatilization models assume the TSF lake is frozen much of the year. This seems like an unrealistic assumption, given these projected climate scenarios.	
USFWS DEIS New Comment	3.26.3.2.3	15	Other studies in the Cook Inlet basin that focus on climate modeling later in the century (e.g., Prucha et al. 2011) suggest that much of the expected increased precipitation in winter could occur as rain, and that a reduced snowpack could occur with smaller intermittent melting episodes throughout the winter, rather than a large breakup.			New Comment DEIS	Suggest further analysis. Please incorporate these projected climate change conditions into the mercury volatilization modeling.	
USFWS DEIS New	3.26.4.2.1	26	Direct comparisons between Donlin Gold			New Comment DEIS	Please clarify what is meant by the	

CLIM 2

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CLIM 2	Comment			and other mines is difficult, because existing mines are reporting actual emissions while the Donlin Gold estimates represent worst-case scenario emissions.				statement, "If there is uncertainty around this estimate, a better number to present may be the estimated range of emissions from the project."	
CLIM 9	USFWS DEIS New Comment			Transportation Facilities Operations and Maintenance <u>Indirect GHG emissions</u> associated with operations would result from cruise operations of <u>air traffic between Anchorage</u> (or other points of origin) <u>and the mine site airstrip, and ocean traffic.</u>			New Comment DEIS Recommend GHG emissions from air flights to and from the mine and pipelines be considered as direct effects. Transportation Section Page 3.23-2 Air: Air transportation is the primary year-round mode of transportation in the EIS Analysis Area. Frequent Donlin-sponsored flights to the dedicated airstrip near the mine site would move large numbers of personnel and supplies, without routing through regional hubs. Air:	Suggest revising this information to include GHG emissions from air flights to and from the mine and pipelines as quantified effects. Under Alternative 2 - direct effects during construction would be 5,148 flights per year and during operations would be about 1,716 flights per year. How much GHG does this add up to?	

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CLIM 9							Pipeline construction would require nine temporary airstrips that would be reclaimed when construction was complete. Air traffic related to the pipeline component would be greatest during construction, with intermittent monitoring flights throughout operations. Table 3.23-10 estimates the total annual flights at mine airstrip during construction and operations for Alternative 2 - during construction would be 5,148 flights per year and during operations would be about 1,716 flights per year		
CLIM 13	USFWS DEIS New Comment	3.26.4.2.2	32	The results indicated that, prior to development of the advanced water treatment (AWT)			New Comment DEIS	We appreciate the analysis provided in the Climate Change section; however there may be additional	

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CLIM 13				scenario, a 25 percent precipitation increase would result in an average annual water storage requirement in the TSF impoundment roughly three times that of the base case (71,000 acre-feet vs. 24,000 acre-feet, respectively) or as much as 91,000 acre-feet for the 95th percentile probability value.				comparative analysis that could be provided. Given uncertainties in climate change projections, this sensitivity analysis indicates that the less water that is sent to the TSF the better. Please perform this analysis for Alternative 5A. Please describe how time influences this analysis, because problems with overloading the capacity of a slurried TSF are more likely the closer the project is to anticipated closure (i.e., the fuller the TSF is at a base case, the greater the risk). Please present results in a way that allows one to compare Alternative 2 to Alternative 5A.	
CLIM 7	USFWS DEIS New Comment	3.26.4.2.2	33	In addition, a mitigation recommendation is provided in Chapter 5, Impact Avoidance, Minimization, and Mitigation), to			New Comment DEIS	We support this mitigation measure to incorporate a longer-term event into final design of major structures at the mine. This would ensure that	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLIM 7				incorporate a potentially longer-term event (time of concentration) into final design of major structures at the mine. This would ensure that the maximum rainfall event used for the IDF design is adequate, and reduce the likelihood that an extreme event lasting longer than 24 hours could cause overtopping, erosion, and/or and a release of impaired water quality to the environment.				the maximum rainfall event used for the IDF design is adequate, and reduce the likelihood that an extreme event lasting longer than 24 hours could cause overtopping, erosion, and/or and a release of impaired water quality to the environment.	
CLIM 3	USFWS DEIS New Comment	3.26.4.2.5	47	The project design includes the use of natural gas to fuel the power plant and the other dual-fuel fired units at the mine site, which would result in lowering GHG emissions by 9.6031 MMT during the mine life of 27.5 years compared to diesel fuel.			New Comment DEIS	Recommend the analysis devote substantial treatment to each alternative so that reviewers may evaluate them on their comparative merits (CFR 40 1502.14). Describe how Alternatives 2, 3A, and 3B would compare in GHG emissions.	
CLIM 8	USFWS DEIS New Comment	3.26.4.2.5	47	There is flexibility built in to the design of mine site water-containment			New Comment DEIS	Please describe how these flexibilities in water-containment	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
CLIM 8				structures, the WTP, and water management strategies that would accommodate potential precipitation increases or decreases, freshwater requirements, or increased storage or treatment needs caused by climate change.				structures change as the mine progresses through time and the slurried TSF fills. Please compare these flexibilities with how water would be stored in Alternative 5A so that we may compare the designs in terms of their resilience under climate change scenarios that include variable precipitation.	
PAA 10	USFWS DEIS New Comment	3.26.4.2.5	47	The barge plan includes several elements that would allow flexibility in managing shipping requirements in low-water years, such as extension of the barge season into shoulder seasons, collection of daily draft data for forecasting river depth, and storage of sufficient inventory for backup supply.			New Comment DEIS	Suggest further analysis and clarification. Please describe how co-implementation of Alternatives 3A and 3B would alter the need for flexibilities in barging here.	
CLIM 8	USFWS DEIS New Comment	3.26.4.2.5	48	Standard Permit Conditions and BMPs most important for reducing impacts from climate change include:			New Comment DEIS	Please describe how Alternative 5A will change anticipated water withdrawals, due to differences in water management. The	

CLIM 8

PAA 10

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
			· Preparation and implementation of a Stabilization, Rehabilitation, and Reclamation Plan; · Appropriate bonding/financial assurance; and · Monitoring of water withdrawals to ensure permitted limits are not exceeded.				USFWS recommends the DEIS Include interrelated consequences of project related activities on multiple resources. For example, Alternative 5A may change financial risk, due to less risk of catastrophic TSF failure.	
USFWS DEIS New Comment	3.26.4.3.2	50	Because the number of barge trips would be reduced under Alternative 3A by more than half, the effects of climate change on Kuskokwim River flow would cause less impact on the project than Alternative 2. With fewer barge trips, there would be almost no need to operate barges on the Kuskokwim River in low water conditions to meet resupply requirements, and there would be less risk of barge stranding or need for other shipping			New Comment DEIS	Suggest revising this information. This is an important point (fewer barges result in less risk) and should be analyzed more thoroughly in comparative analysis throughout the document.	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 10				contingencies					
CLIM 1	USFWS DEIS New Comment	3.26.4.4.4	53	The elimination of diesel barging on the Kuskokwim River would reduce but not eliminate the risk of introducing aquatic and terrestrial invasive species			New Comment DEIS Recommend the DEIS include interrelated consequences of project related activities on multiple resources. For example, would the change in climate increase the risk of invasive species and would a reduction in barge traffic under Alternative 3A or 3B be more preferable in light of climate induced change?	Suggest revising this information. Please include these risks and how they differ across alternatives in the cumulative effects analysis.	
PAA 9	USFWS DEIS New Comment	3.26.4.6.2	57	Under Alternative 5A, a dry stack tailings pile would be constructed behind an upper dam in the Anaconda Creek drainage, and the main TSF dam would be used to hold an operating pond.			New Comment DEIS	Suggest revising this information. Please explain why the operating pond will be constructed below the TSF. Could it be constructed above the TSF and how would this change the risk of dam failure for the contact water dam?	
CLIM 2	USFWS DEIS New Comment	3.26.4.6.2	58	Overall effects of climate change on hydrology are			New Comment DEIS	Suggest clarifying this information. Please clarify this sentence.	

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CLIM 2				considered mostly minor to moderate, with a low probability of major effects that could be reduced to moderate through additional mitigation.				It's not clear what effects are being discussed.	
CLIM 8	USFWS DEIS New Comment	3.26.4.6.3	59	Soil and permafrost disturbances beneath the dry stack tailings and operating pond under Alternative 5A would be slightly greater than those for Alternative 2, but not significantly different. Permafrost excavation beneath the dam footprints would be higher under Alternative 5A, increasing the amount of this material stored in the TSF overburden stockpile and the amount of permafrost melting in the pile; however, this effect is expected to occur in the absence of climate change.			New Comment DEIS	Suggest further analysis and clarification. Alternative 5A should be compared on all of its merits not just compared by its selected negative impacts. Removing permafrost under the tailings to prevent impacts from subsidence could be an improvement over allowing the a slurried tailings that would be placed on top of permafrost which could melt and possible cause catastrophic impacts of metals such as mercury leaching into Crooked Creek and the Kuskokwim River.	
	CHAPTER 3.27: OTHER IMPACT CONSIDERATIONS								
NEP 6	USFWS DEIS New	3.27	3.27	Entire Chapter			New Comment DEIS	Suggest additional analysis in an entire	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 6 Comment							new section, to summarize effects identified in Chapters 3.1 - 3.26. According to NEPA, "significance cannot be avoided by terming an action temporary or by breaking it down into small component parts" (40 CFR 1508.27). It is critical to the analysis to quantitatively analyze direct and indirect effects. Effects on individual resources need to be quantified in Chapters 3.1-3.26, where possible, so multiple stressors and the interaction of resource response in the ecosystem may be fully analyzed. Suggest this new Chapter analyze interrelated effects on wetlands, air quality, water quality, soils, contaminants, groundwater, fish, wildlife, habitat,	

Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
							watersheds, ecosystems and loss of ecosystem function due to project related activities, human health and subsistence. The new analysis and clarification is necessary to set the stage for information presented in Chapter 4 (cumulative effects) and analysis in Chapter 5 (avoidance and mitigation).	
USFWS DEIS New Comment	3.27.1 – 3.27-3	3.27-1 3.27-2 3.27-3	3.27.1 UNAVOIDABLE ADVERSE EFFECTS 3.27.2 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY 3.27.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES			New Comment DEIS	Suggest relocating all of the current information in Chapter 3.27 toward the end of Chapter 5, after analysis of cumulative effects and mitigation measures. Total impacts from the project have not been determined, avoidance and minimization measures have not been analyzed, nor have residual impacts or compensatory mitigation been analyzed.	

NEP 6

NEP 6

NEP 7

CLA 3

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CHAPTER 4 CUMULATIVE EFFECTS								
USFWS DEIS New Comment	4.0		General Comment on the entire Chapter 4			New Comment DEIS	Recommend the entire Cumulative Effects Chapter be revised. Recommend the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter. Recommend the summary level impacts be removed from the revised DEIS. The summery level approach has resulted in analysis that leads to a category of minor, moderate or major instead of disclosing effects. This type of analysis does not address quantifiable effects nor does it allow for the combination of multiple minor, moderate, or major stressors that often result in cascading effects on resources.	
USFWS DEIS	4.0		General Comment on			New Comment DEIS	Suggest analyzing	

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New Comment			the entire Chapter 4 TEMPORAL AND SPATIAL SCOPE OF ANALYSIS			Chapter 3 compared direct and indirect impact such as vegetation to broad ecoregions, which were too large of a scale to illustrate impacts. The cumulative impacts analysis used scales as small as within a few miles on the project footprint to determine if any other project might overlap. Page 4-38 states, "the geographic area considered in the cumulative effects analysis for vegetation is the close vicinity of the project footprint where direct effects would occur plus the adjacent areas where indirect effects may occur (e.g., within a few miles for indirect impacts such as fires)."	boundaries for each of the individual resources in Chapters 3 and 4. One way the geographic boundaries for impacts can be measured is to determine how far the effects may range. Please consistently use those boundaries for Chapter 3 and Chapter 4 (CEQ 1997).	
USFWS DEIS	4.1	4-1	Introduction			New Comment DEIS	Suggest additional	

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NEP 6

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 6	New Comment			Direct effects are limited to the proposed action and alternatives only, while <u>cumulative effects pertain to the additive or interactive effects that would result from the incremental impact of the proposed action</u>				analysis and an entire new section that pertains to describing additive and interactive effects that would result from the incremental impact of the proposed action on each of the resources. This section should describe the cause-and-effect relationships producing cumulative effects and summarizing the total effect of each alternative. This will likely require development of a cumulative effects analysis methodology, as explained in the CEQ guidance, and described in detail in the handbook *Considering Cumulative Effects* (CEQ 1997).	
NEP 6	USFWS DEIS New Comment	4.1	4-2	Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate			New Comment DEIS The USFWS agrees with this statement, yet, the analysis is missing from the DEIS.	Suggest additional analysis. A critical principle in the CEQ handbook states that "cumulative effects analysis should be	

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NEP 6				additional effect, based on its own time and space parameters.				conducted within the context of resource, ecosystem, and human community thresholds levels of stress beyond which the desired condition degrades. The magnitude and extent of the effect on a resource depends on whether the cumulative effects exceed the capacity of the resource to sustain itself and remain productive" (CEQ 1997).	
NEP 6	USFWS DEIS New Comment	4.2.2	5	Mineral exploration and mining has occurred in several locations in the Kuskokwim River basin, and on the west side of Cook Inlet. Small scale mining continues. Exploration activities are ongoing for potential future mining development.			New Comment DEIS	Given the spatial extent of Donlin leases in the direct vicinity of the Project, we recommend further analysis to determine if these are considered reasonably feasible under NEPA. The proposed project and development resources would make it more feasible to develop these other leases in the future.	
SOL 7	USFWS DEIS New	4.3.1.2.1	4-16	The geographic area considered in the			New Comment DEIS	Suggest revising this information. This	

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SOL 7	Comment			cumulative effects analysis for soil disturbance and erosion is the close vicinity of the project footprint (e.g., within about 1 mile) where soil disturbance, removal, and erosion impacts could cause overlapping effects with other manmade activities or natural processes in the area				geographic area does not consider the direct and indirect impacts of fugitive dust on soils. The Soils Chapter Page 3.2-1 states, "Fugitive dust effects would range from local to regional, in that they could be measurable as far as 10 miles from the mine."	
SOL 4	USFWS DEIS New Comment	4.3.1.2.1	4-16	Project activities would result in a total of up to 20,200 acres of soils that would be altered during construction and operation of the mine, transportation, and pipeline facilities. ... A total of approximately 1,910 acres disturbed area would not be reclaimed following closure activities; these include the ultimate pit, Angyaruaq (Jungjuk) mine access road and airstrip, and			New Comment DEIS	Please clarify. How was this acreage calculated? It is difficult to determine the acres of disturbance. Recommend disturbance be listed quantitatively throughout the analysis. It is important to list acres of disturbance for construction, interim reclamation and final reclamation for each alternative.	

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SOL 4				the WTP and associated infrastructure.					
SOL 5	USFWS DEIS New Comment	4.3.1.2.1	4-17	Human-induced impacts related to soil disturbance and erosion have occurred in the analysis area as a result of industrial activities related to mining operations, localized construction material production, new roads and airport improvements in population centers along the Kuskokwim River, and oil and gas activities in western Cook Inlet. For example, past Crooked Creek placer mining, Bethel port developments, and mining exploration in the Whistler project along the pipeline have or would occur in the close vicinity of the proposed project. Other soil disturbance and erosion in			New Comment DEIS	Suggest revising the organization structure of the Cumulative Effects Chapter to look at impacts from each mine component (mine, pipeline, and transportation corridor) first, then summing up the disturbance at the end of the subsection.	

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SOL 5				the analysis area has resulted, and would continue to occur, from human settlements and subsistence activities, Iditarod and other trail use, and recreation activities.					
SOL 4	USFWS DEIS New Comment	4.3.1.2.1	4-17	These manmade and natural reasonably foreseeable future actions that overlap with the Project Area are relatively localized and would likely <u>induce minor changes to levels of soil disturbance and removal.</u>			New Comment DEIS	Suggest clarifying this information. This appears to be a subjective statement. Revise the analysis to include impact from all the actions that effect Soils. For example, include impacts from section 3.5 on wave induced erosion and prop scour, "a typical twin or triple screw tug" currently operating on the river at 75 percent of maximum power (about 300 hp /propeller), the depth of erosion in shallow water (3 - foot under-keel clearance) would be about 3 feet per propeller, or about ½-foot less than the tug size proposed by	

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SOL 4								Donlin Gold.	
SOL 4	USFWS DEIS New Comment	4.3.1.2.1	4-17	While disturbance and potential erosion impacts to soils resulting from Alternative 2 are additive, the total and <u>incremental amount of disturbed area is small compared to the total resource within southwestern Alaska</u> and the pipeline region.			New Comment DEIS	Suggest further analysis and clarification. The geographical boundaries should be determined by the area of impact such as the watershed for soils. How much of the Anaconda watershed will be impacted, how much of the American Creek watershed, and how much of Snow Gulch watershed will be impacted, how many acres, what percent of each of the sub-watersheds, and how much of the larger Crooked Creek watershed is impacted, in acres and percentages. How is this calculated within the larger Upper Kuskokwim River watershed?	
SOL 5	USFWS DEIS New Comment	4.3.1.2.1	18	Alternative 5A Dry Stack Tailings			New Comment DEIS	Suggest further analysis. The present analysis of cumulative	

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SOL 5								effects on soils comparing Alternative 2 to Alternative 5A is inadequate. This analysis must include discussion of differences in the risk of tailings dam failure and release of tailings and the differences in Mercury effects on soils have not yet been modeled for Alternative 2 and Alternative 5A. Ultimately the results of the mercury modeling and cumulative soils impacts must be compared in a transparent way for this section.	
SOL 8	USFWS DEIS New Comment	4.3.1.2.1	19	The geographic area considered in the cumulative effects analysis for permafrost is the immediate vicinity of the project footprint, where permafrost thaw could cause overlapping effects with other man-made activities or			New Comment DEIS	Suggest readjusting the boundaries. Suggest boundaries be determined by how far impacts can be measured , as described in CEQ's handbook for *Considering Cumulative Effects* (CEQ 1997).	

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SOL 8				natural processes.					
CLIM 8	USFWS DEIS New Comment	4.3.1.2.2	20	Ground temperature increases that would occur in the region in the absence of the project range from 0 to 7°F up to 40 years post-closure, and would extend up to 10 to 30 feet below ground surface			New Comment DEIS	Suggest further analysis Please analyze the cumulative effect of climate change in addition to project activities, specifically the TSF water that comes out of the pipe above freezing and its likelihood of freezing during Winter when warmer temperatures are predicted under climate change scenarios.	
SOL 12	USFWS DEIS New Comment	4.3.1.2.2	21	While there could be a minor increase in the amount of ice-rich overburden excavated at the mine site under Alternative 5A (due to additional dam footprint), the effects would be small compared to the range of effects for the project as a whole.			New Comment DEIS	Suggest further analysis. Please analyze how the thermal properties of dry stack tailings (with much lower water content than slurried tailings) will influence this outcome. Data represented in the DEIS does not support this assertion.	
SOL 7	USFWS DEIS New Comment	4.3.1.2.3	22	The geographic area considered in the cumulative effects analysis for soil quality and contaminated sites is the near vicinity of			New Comment DEIS	Suggest further analysis. Please see our concerns regarding the mercury analysis, and the lack of analysis of arsenic in the soils	

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SOL 7				the project footprint (e.g., within several miles for fugitive dust effects, and within about ¼-mile for effects from contaminated sites) where soil quality could be affected by dust and contaminants from man-made activities.				section. Please conduct further analysis and modeling and incorporate those results into a revision of this section.	
FISH 9	USFWS DEIS New Comment	4.3.1.2.3	22	Environmental impairments associated with the former Red Devil Mine, located on the Kuskokwim River about 30 miles upstream of Crooked Creek, do not affect soil quality within ¼-mile of the project transportation corridor; this site is also discussed in relation to cumulative effects on water and sediment quality in Section 4.3.1.7			New Comment DEIS	Suggest further analysis. We are concerned about the current levels of mercury in subsistence fish resources due to contamination from the Red Devil Mine and the cumulative effect of mercury on subsistence fish resources due to increased levels of mercury projected to be deposited in the project area must be given more thorough treatment than currently provided in this section. Please see our other comments regarding concerns	

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FISH 9								with the current mercury analysis in other sections.	
SOL 7	USFWS DEIS New Comment	4.3.1.2.3	24	Similar To The Proposed Action, Direct Impacts To Soil From Dust Deposition Under Alternative 5A Would Be Of Low Intensity (E.G., Arsenic-Bearing Dust Deposition Resulting In Small Increases In Soil Concentration Exceeding Naturally High Baseline Levels), Although A Slightly Broader Distribution Of Impacts Is Possible Due To A Small Increase In The Amount Of Dust For The Mine Site As A Whole (6.6 Percent More Than Alternative 2).			New Comment DEIS	Suggest further analysis. This section is not yet adequate and should include a discussion of the elimination of spill risk from a TSF failure. In addition please describe where the 6.6 percent came from and whether this increase in dust would occur were the dry stack facility to be incrementally reclaimed. In addition, there is a different reference to a dust increase of just 0.1% in the water quality section. Please clarify what this percentage is relative to and make the percentages consistent across sections of the document.	
NEP 7	USFWS DEIS New Comment	4.3.1.2.3	4-24	General Comment for All Cumulative Effects			New Comment DEIS All of the cumulative effects sections are	Suggest analysis of interrelated effects on these resources. Soils for example, what are	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
NEP 7							missing critical analysis.	the synergistic effects of erosion, permafrost, and contamination from project related activities. Suggest analysis be conducted separately for project component s Mine, Pipeline and Transportation.	
HYD 11	USFWS DEIS New Comment	4.3.1.5	24	SURFACE WATER HYDROLOGY General Comment			New Comment DEIS	Suggest further analysis of interrelated direct and indirect effects on Surface Hydrology. Analysis should be quantitative in order to summarize acres and miles of streams and wetlands that would be impacted. Suggest using some of the information in Chapter 3.5 of the DEIS, which states, “45 to 100 percent of Crooked Creek flow could be reduced in winter near the mine site; affected drainages account for about 8 percent of the Crooked Creek watershed”. How would this effect the	

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HYD 11								functioning of the system? Suggest additional analysis. A critical principle in the CEQ handbook states that "cumulative effects analysis should be conducted within the context of resource, ecosystem, and human community thresholds levels of stress beyond which the desired condition degrades. The magnitude and extent of the effect on a resource depends on whether the cumulative effects exceed the capacity of the resource to sustain itself and remain productive" (CEQ 1997).	
WAQ 28	USFWS DEIS New Comment	4.3.1.5.1	25	to medium intensity (e.g., a faster pit lake filling rate could require changes in water management/treatment strategies in post-closure).			New Comment DEIS	Suggest further analysis. This issue should be treated more rigorously by modeling the pit lake stratification for a longer duration/time window. Provide	

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WAQ 28								analysis on potential surface water contamination. Disclose potential impacts.	
BARG 15	USFWS DEIS New Comment	4.3.1.5.1	25	For example, barge tows that currently serve villages upriver of Bethel would <u>continue to create scour conditions in shallow sections that are similar to those modeled for the proposed Donlin tugs</u> (Section 3.5.3.2.2, Surface Water Hydrology). Fish would continue to utilize stream flow in the same watersheds that would be affected by the proposed project (Section 4.3.2.4).				Provide additional analysis, such as the proposed alternative calls for a 179% increase in barge tows on the Kuskokwim over a no-action baseline conditions. Each tow will pull 4 barges, which is not standard practice for the region. In addition to the physical (e.g. prop scour of up to 3.5 feet and wake induced erosion) effects on the river bank and bottom, the proposed alternative includes barging of hazardous cargo (~42 million gallons of diesel, 18 tons of mercury, and 2,375 tons of cyanide) on the river each year, which could spill effect surface water and sediment XX number of years. While the	

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BARG 15								pipeline alternatives would reduce barge traffic and diesel transport, they would not reduce the risk of mercury or cyanide transport on the river.	
BARG 17	USFWS DEIS New Comment	4.3.1.5.2	26	The reduction in the number of barge trips under Alternatives 3A and 3B would reduce the magnitude of the potential impacts to the Kuskokwim River as there would be a decrease in barge stranding potential, barge-induced bank erosion potential, and scour from propeller wash. However, the range of effects, including those at the mine site, would be the same as Alternative 2.	New Comment		New Comment DEIS	This analysis is not yet adequate. Please describe how much less barging would occur under these alternatives, and how this reduction in barging would influence subsistence resources, groundwater and surface water hydrology, impacts to fisheries resources and spill risk.	
PAA 63	USFWS DEIS New Comment	4.3.1.5.4	26	The implementation of Alternatives 5A and 6A would have minor to moderate impacts on surface water in the proposed Project Area. Cumulative effects for Alternative 5A would	New Comment		New Comment DEIS	Recommend the analysis devote substantial treatment to each alternative so that reviewers may evaluate them on their comparative merits (CFR 40 1502.14).	

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PAA 63				be the same as discussed under Alternative 2.				Please provide a clear comparative analysis of Alternatives 2 and 5A.	
NEP 6	USFWS DEIS New Comment	4.3.1.4	26	General Comment for All Cumulative Effects			New Comment DEIS All of the cumulative effects sections are missing critical analysis.	Suggest analysis of interrelated effects on these resources. Suggest analysis be conducted separately for project components Mine, Pipeline and Transportation. Surface water at the Mine site for example, what are the synergistic effects of dewatering Crooked Creek, dewatering wetlands and uplands in the watershed, treating an discharging water into Crooked Creek (changing flows, temperatures, etc.) in addition to mercury emissions, erosion, changes in permafrost, and contamination from project related activities. What are all of the synergistic effects on surface water on the Kukowkwim River (flow reduction at Crooked	

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NEP 6								Creek, potential contamination, mercury from emissions, diesel from engines, prop scour and wave induced erosion, increased turbidity, and what impacts would that have on the aquatic system and fish?	
PAA 29	USFWS DEIS New Comment	4.3.1.6.3	28	The implementation of Alternatives 5A and 6A would have minor to moderate impacts on surface water in the proposed Project Area. Cumulative effects for Alternative 5A would be the same as discussed under Alternative 2.	New Comment		New Comment DEIS	Recommend Option 1 for an unlined dry stack is eliminated from further consideration. Only the lined (Option 2 of 5A) should be discussed. Discussion of an unlined option for dry-stacked tailings only serves to distract from a clear comparative analysis of Alternatives 2 and 5A.	
WAQ 28	USFWS DEIS New Comment	4.3.1.7.2	29	There is a low risk that high intensity impacts to Anaconda and Crooked creeks could result in the event of SRS pump failure and overflow in post-closure	New Comment		New Comment DEIS	Suggest further analysis. Please include spill risk from TSF failure in this analysis and examine how it interacts with projected changes in climate and	

WAQ 28

NEP 7

WAQ 28

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							precipitation.	
USFWS DEIS New Comment	4.3.1.7.2	29	Impacts to surface water and sediment quality resulting from atmospheric deposition of mercury would be <u>both low and high intensity.</u>	New Comment		New Comment DEIS	Suggest further analysis and clarification. It is unclear how an impact can be of low and high intensity at the same time. It is more logical that the highest summary impact rating be used. In addition, we suggest further analysis that includes the effects of co-deposition of sulfur, arsenic, and mercury, how these increases in sulfur and NOx from the power generation activities will affect nutrient ratios and thus mercury methylation once deposited, and how projected changes in climate (solar radiation, winter temperatures, and precipitation patterns) will influence projected mercury methylation rates. These are the types of cumulative effects that should be analyzed here.	

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WAQ 22	USFWS DEIS New Comment	4.3.1.7.2	29	Project-related mercury deposition would result in an estimated 2.5 percent increase in sediment concentrations closest to the Donlin Camp, and 0.2 percent increase at the Bell Creek watershed (SRK 2014a), levels which would be within the range of natural variation.	New Comment		New Comment DEIS	Please see our other comments in the soils, air quality, and water quality sections for concerns about these results and the way the mercury analysis was conducted.	
PHL 18	USFWS DEIS New Comment	4.3.1.7.2	30	However, because this site is located approximately 30 miles upstream of the Donlin Gold Project Area on the Kuskokwim River, it is not expected to add to surface water or sediment impacts resulting from Alternative 2, and therefore would neither increase nor decrease the net effects to these media considered in the cumulative case.	New Comment		New Comment DEIS	Suggest further analysis. Please consider fish tissue mercury concentrations in this analysis and the potential for impacts to fish suitability for subsistence use.	
WAQ 28	USFWS DEIS New Comment	4.3.1.7.2	31	The additive, incremental cumulative impacts attributable to	New Comment		New Comment DEIS	Suggest further analysis. We are concerned about	

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WAQ 28				Alternative 2 would range from minor to moderate in the mine site vicinity, as the addition of mercury deposition from project sources to global sources could result in water and sediment quality that is likely to be within regulatory limits or natural variation on average, but could exceed water quality criteria for total mercury in some areas.				mercury deposition in an area in which levels are already elevated due to natural and anthropogenic sources.	
BARG 17	USFWS DEIS New Comment	4.3.1.7.2	31	Barge traffic on the Kuskokwim River would be reduced under these alternatives; there could be slightly fewer effects from contaminated sites along the Kuskokwim; and slightly more effects from pipeline construction and contaminated sites along the Tyonek-Beluga section of Alternative 3B. The relatively small scale of	New Comment		New Comment DEIS	Suggest clarifying this information. Please quantify the change in barge traffic if these two alternatives were to be implemented concurrently.	

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BARG 17				these changes would not alter the conclusions that were reached under Alternative 2.					
	CHAPTER 5 IMPACT AVOIDANCE, MINIMIZATION, AND MITIGATION								
MIT 13	USFWS DEIS New Comment	5		General Comment on the entire Chapter			New Comment DEIS	Recommend the entire Chapter on Mitigation be revised. Recommend the DEIS be revised and made available for public review for at least 90 days to address major issues as listed in our cover letter.	
MIT 10	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32	The Corps is considering measures to further avoid, minimize and mitigate project impacts. These draft measures were developed by the Corps based on analysis of project impacts, input from federal, state and Tribal cooperating agencies (see Table 5.5-1).			New Comment DEIS Mitigation did not appear to address all Alternatives equally.	Recommend avoidance, minimization and mitigation measures be analyzed for all Alternatives considered in detail in the DEIS.	
MIT 4	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation measure for Alternative 5A:	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 4								To control dust, the dry stack tailings should be reclaimed incrementally rather than wait until closure.	
MIT 24	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation measure to reduce impacts on fish and aquatic habitat by designing and installing culverts and bridges for fish passage on transportation routes.	
MIT 31	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation measure: Water should be discharged year round to Crooked Creek to reduce effects on system from stream flow reductions. The USACE should work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek Recommend the USACE work with the State, USFWS, and Donlin Gold to establish minimum flows in Crooked Creek.	
MIT 31		Table	5.23 –					Recommend the	

Donlin Gold Mine DEIS
DEIS – Cooperating Agency Review through April, 2016
USFWS Comment Response Matrix

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 31		5.5-1	5.32					following mitigation for minimum flows during low flow years over winter. If the water treatment plant cannot be used to regulate flows back to Crooked Creek during winter, consider the feasibility of creating a flow regulation reservoirs, or use Snow Creek for this purpose.	
MIT 31	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation: To avoid water reduction in Crooked Creek between Snow Gulch and Anaconda Creek, the discharge point for treated water should be relocated higher in the watershed	
MIT 4	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	We support the proposed mitigation measure for a secondary hydraulic containment system depending on performance history of the SRS in operations.	
PAA 14	USFWS DEIS New	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation:	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
PAA 14	Comment							To reduce risk of water contamination toward Crooked Creek the south overburden stockpile should be lined.	
BIRD 1	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend an Avian Protection Plan be developed to reduce impacts on migratory birds and their habitat from the mine, pipeline, transportation corridor, and other associated infrastructure. This should include mitigation methods to keep birds out of contaminated water at the mine site.	
BIRD 1	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend mitigation measures be incorporated to minimize avian collisions, such as choice of lighting, motion detectors, shades to down-shield lights, and placement of structures away from important habitats or flight	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
BIRD 1								pathways	
MIT 4	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation to develop a sampling and analysis plan to ensure PAG rock and other sources of contaminants are not used for construction at the mine or for road surfacing.	
MIT 4	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend describing HAPs by their individual constituents so that mitigation strategies for pollutants may be developed.	
BIRD 1	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend mitigation measures to reduce impacts on migratory birds and raptors where possible power lines should be collocated, buried, and if there is overhead power it should incorporate bird deterrents.	
MIT 34	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation measure: A spill response plan should be developed to	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
MIT 34								include environmentally sensitive areas in and near Kuskokwim River and Kuskokwim Bay.	
MIT 14	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend the following mitigation measure: Consider installing more monitoring and shut down valves as a method to insure against a large volume spill such as described in the spill section 3.24.5.5.	
HZM 4	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Recommend mitigation measure: Please consider placing GPS tracking devices on mercury transport containers. Losing a mercury container overboard could be a high consequence event. They could be located if containers were marked with tracking devices.	
EDIT 7	USFWS DEIS New Comment	Table 5.5-1	5.23 – 5.32				New Comment DEIS	Suggest moving all subsection in section 3.27 to the end of Chapter 5 – 3.27.1 unavoidable adverse	

	Comment	Section Number	Page	Original Language	Proposed Language or Comment	Response	Comment Addressed Adequately for Draft EIS?	Revised Response	Additional Review Comments
EDIT 7								effects 3.27.2 relationship between short-term uses of the environment and maintenance and enhancement of long-term productivity, and 3.27.3 irreversible and irretrievable commitment of resources.	
	APPENDIX M: COMPENSATORY MITIGATION PLAN								
MIT 7	USFWS DEIS New Comment	**APPENDIX M**					New Comment DEIS The analysis for compensatory mitigation was available in the DEIS.	Compensatory mitigation has not been analyzed. Suggest revising this information once the USACE approves the wetland functional assessment.	
	APPENDEX N: SECTION 810 ANALYSIS								
ANIL 9	USFWS DEIS New Comment						New Comment DEIS	Recommend support BLM's 810 Analysis.	
	APPENDEX O: Biological Assessments								
ESA 1	USFWS DEIS New						New Comment DEIS	We will comment on the Biological Opinion	

ESA 1	Comment							through the section 7 consultation process.	

References:

Eckley, C. S., et al. "Influence of reservoir water level fluctuations on sediment methylmercury concentrations downstream of the historical Black Butte mercury mine, OR." *Applied Geochemistry* 61 (2015): 284-293

BLM Comments on the Draft EIS

May 2016

EDIT 3

Section Number	Page	Original Language	Proposed Language or Comment	Disposition (CAs should leave blank)
Chapter 1				
Chapter 1: Purpose and Need Section 1.8.2	1-22	**Vegetation:** Vegetation would be cleared at the mine site, transportation infrastructure corridors, and in the pipeline ROW. Removal of vegetation could result in: soil erosion; loss of topsoil with its native vegetative seed bank; delayed reclamation; and spread of invasive plant species (invasive weeds). In addition, fugitive dust could affect adjacent vegetation and habitats, both tundra and riverine.	**Vegetation:** Vegetation would be cleared at the mine site, transportation infrastructure corridors, and in the pipeline ROW. Disturbance and removal of vegetation could result in: soil erosion; loss of topsoil with its native vegetative seed bank; delayed reclamation; introduction and spread of non-native invasive plant species (invasive weeds). In addition, fugitive dust could affect adjacent vegetation and habitats, both tundra and riverine.	
Chapter 2				

EDIT 4	**Chapter 2 – Alternatives Summary** •Comments coded Mitigation 1 (2 comments):		○ We recommend adding use of remote sensing devices for monitoring the tailings dam to Chapter 5 – Mitigation; it appears to be industry practice.	'It appears to be industry practice" This makes it an assumed practice but no definite answer. A statement that specifically addresses this would be more appropriate. "Remote sensing devices for monitoring tailings dam will be used as an industry standard", Is a more definitive statement with less ambiguity.	
PAA 31			<u>MITIGATION 1:</u> RFAI to ADEC to determine if recycling would be required. Corps direction needed.	The BLM feels that alternatives to burying equipment should be considered. For example: Adjacent or regional communities may be able to utilize excess equipment (during mine operations or after closure, reclamation); Equipment could be taken back to point of origin for recycling, or other locations for recycling/repurposing.	
INV 3	Chapter 2: Alternatives	2-132	Other monitoring activities include cultural resources monitoring. A Non-Native Invasive Species Prevention Plan would be developed and implemented during construction, operations	Please describe what the Non-Native Invasive Species Prevention Plan (NISPP) would look like, what infrastructure/facilities would be incorporated and what kind of treatments and/or mitigations would be employed for each alternative.	

INV 3

		and maintenance, and termination phases of the project and would include annual monitoring and treatment plans to mitigate impacts.	A baseline survey of all affected lands for this project is necessary prior to site occupancy to establish what is known about the current vegetation composition. The database in Alaska Center for Conservation Science is the only database, and does not have much baseline for the Donlin project area. Most of the Donlin proposed area(s) for the various Alternatives, has not been surveyed, thus much data is lacking for effective analysis. Non-native invasive species can be effectively addressed the same as hazardous materials through the Hazard Analysis Critical Control Point (HACCP) framework. This identifies what the hazards are, where, and at identified vector points how they can be mitigated. For example, as with hazardous fuels: 1) Prevention through training, safety awareness and safe handling procedures – equipment cleaning prior to moving to new worksites and best management practices; 2) Monitoring through routine inspections of disturbed ground, education and early detection rapid response; 3) Management through eradication of accidental/incipient infestations and reclaiming the contaminated site to condition prior to contamination.	

INV 3				Without this level of description for each alternative, including the No Action Alternative, it is difficult to assess environmental, social, and economic impacts relative to non-native invasive species.	
PAA 59	Chapter 2: Alternatives			We suggest, for each Alternative, a picture is worth a thousand words. Photos of “before and after” facilities development for the mine site/tailings/waste rock facilities/ports/fuel farms, etc., as an effective method of displaying what the various alternatives would look like. These visual displays would help reviewers better understand and be able to compare amongst the Alternatives what the direct impacts and potential effects would be from the ground-level perspective. While some displays in the DEIS do show the overhead footprint of the proposed development locations for the various alternatives, there are few to no on-the-ground perspectives of these developments for the readers to consider. Photo shop is a suggested tool to accomplish this ground view perspective for each alternative. This type of visual display worked very well with the <u>Greens Creek Tailings Disposal FEIS 2003</u>, for the proposed tailings facility and alternatives.	

PAA 59				The magnitude of the Donlin project and the differences amongst the alternatives warrants such visual display of the direct impacts and effects.	
INV 3	Chapter 2: Alternatives, Section 2.3.2.2.8-9			This section is appropriate for the inclusion of protocols for inspecting all modes of transportation for non-native invasive species, and the appropriate response action if something is found. This integral to the methodology with hazardous analysis critical control point schema used for hazmat/fuels, as it is also an appropriate method for addressing non-native invasive species. As such the process involves: Identification of the risk; prevention measures; containment; and reclamation. This would be part of the proposed invasive species management plan for each alternative.	
INV 3	2.3.2.3.1			This section should address and incorporate the 2014 ROW Best Management Practices (Graziano/CES 2014) for non-native invasive species. These BMPs are recognized state-wide and are recommended, if not required, for all ROW operations such as this proposal. As such, any inspection points,	

INV 3				wash stations, outreach and education media, and other components of an invasive plant prevention plan for the ROW should be noted on maps and described in the text for all Alternatives as an Alternative Design Feature.	
INV 3	2.3.2.3.4			Temporary work areas, construction camps, access roads and routes, material source sites, airstrips, water use and extraction sites and ancillary facilities outside of the ROW also need an invasive species prevention, monitoring and management plan described so we can evaluate potential environmental impacts and effects to the environment.	
INV 3	2.3.2.3.7	2-132		The Non-Native Invasive Species Prevention Plan needs to be described here such that we can evaluate potential environmental impacts and effects. Depending on the detail of the NNISPP, varying levels of potential impacts and effects could result. A description of what, where, when, and how the NNISPP would be conducted for each Alternative – as a design feature - so readers can understand the differences amongst the various Alternatives and conduct analysis of potential environmental effects and impacts.	
MON 5	2.3.2.3.7	2-141	Revegetation progress of reclaimed facilities would be monitored annually for the first 5	Monitoring revegetation progress should include early detection, rapid response for non-native invasive species, and described	

MON 5			years after closure or until observations indicate stabilized conditions. Should vegetative cover not meet criterion established by ADNR, Donlin Gold, and ADF&G, further action could include reseeding the area, additional application of soil amendments, and/or incorporation of additional growth media on a particular site or facility	so the reader can conduct environmental impact and effects analysis for each Alternative.	
	Chapter 3				
INV 3	3.10.3	3.10-38		Environmental Consequences relating to invasive species is not adequately addressed in this section due to not knowing what the NNISPP/ISMP looks like for each Alternative. Without knowing the Alternative design features regarding what will be done, where, when, and how invasive species will be monitored and managed, readers cannot effectively analyze environmental consequences, impacts and effects for each Alternative.	
INV 3	3.10.3.2.1	3.10-48	Intensity would be medium to low in remote areas along the pipeline, and in transportation facilities areas where existing invasions are unknown or minimal.	We disagree with this statement because one cannot make a conclusion of “medium to low” based on “unknown” invasions.	

INV 3

			Overall, the effects and impacts of non-native invasive species for the proposed action and all alternatives is not adequately addressed. The DEIS discussion of low-medium-high impacts is not adequate. Thorough discussion, analysis and disclosure of the direct and indirect effects and impacts of invasive species is lacking for potentially affected resources and human environments: impacts to fisheries habitat, fishing industry, subsistence fishing, berry picking, wildlife habitat, and other ecosystem services. For example: What would it mean to the commercial fishing industry and/or local subsistence users if barges inadvertently introduce zebra or quagga mussels to the freshwaters in the project area? Some non-native invasive species can rapidly and significantly alter the freshwater ecology and may have irreversible impacts, leading to environmental and economic disaster. (California Department of Fish and Game Frequently Asked Questions Quagga/Zebra Mussels). What would it mean to fisheries and people/economies/human environment if elodea or cord grasses were to be inadvertently introduced to water ecosystems in the project area via float planes? What would the potential direct and indirect impacts and effects on the	

INV 3				human environment? This is the kind of discussion/analysis/disclosure of potential impacts that is missing from the analysis. These considerations also should to be carried through into Chapter 4: Cumulative Effects.	
INV 3		3.10-44		This section talks about the elements of an Invasive Species Management Plan, but doesn't go into detail of what the design feature(s) would look like or involve for each alternative. Where would critical control points be? What control practices would take place? Who would conduct the control action? When, where, and who would conduct regular monitoring for invasives? What strategy would be used for controlling known existing invasive plant populations to minimize spread? What would the decision framework for treatment look like? What are the control measures that would be used? How would these design features differ amongst the differing alternatives? What is the infrastructure needed for detecting invasives and preventing the introduction and spread?	
INV 3	Table 3.10-7 Impact Criteria	3.10-40		This table does not discuss the actual impacts of invasive species introduction and spread, while using measures of Low/Medium/High. The actual effects on	

INV 3	for Effects on Vegetati on			the human environment need to be fleshed out for full disclosure to the public as to how the invasive species could alter the ecosystem function and services it provides, economies and subsistence.	
INV 3		3.10-44	Invasive Species Management Plan Elements	While elements of an ISMP are discussed, there is no display of what, where, when, who, and at what frequency any actions will be implemented. What is the detail of the plan? What does the HACCP look like? Without this level of detail, adequate assessment of environmental impacts and effects cannot be accomplished, and full disclosure to the public is not achieved. ISMP design features inherently cannot be the same for all alternatives if the alternatives involve different modes of access, different development areas and associated logistical support impact areas. NEPA requires all alternatives to be rigorously explored and objectively evaluated, and environmental consequences discussed in context of direct and indirect impacts and effects to the human environment. As such, ISMP detail needs to be in the EIS, because if it is not, the level of BMPs, EDRR actions, and ISMP details is not connected to the Record of	

INV 3				Decision and therefore not enforceable. (CEQ 40 Questions 34d.)	
INV 3		3.10-49	Overall, invasive species introduction or spread would have a minor impact with application of EDRR, BMPs, design features, and a detailed ISMP in any action alternative.	We disagree that the conclusion of “Minor” is not scientifically defensible using this methodology of assessment. There is no display of who, what, where, when and how the EDRR, BMPs and ISMP design is, so the conclusion of “Minor” is not substantiated for any of the action alternatives. This is not scientifically defensible.	
NEP 7	3.10.3.2.2	3.10-52	Specific Effects	While the quantitative impacts are displayed in the tables, the qualitative impacts are not fully fleshed out regarding what direct, and indirect effects would be on the human environment. Using terms like Low/Medium/High do not fully explain what the impact means regarding effects on human environment/economies/ecosystem services.	
VEG 2		3.10-43	Specific requirements would be identified in Donlin Gold’s Stabilization, Rehabilitation and Reclamation Plan.	Without knowing what the Stabilization, Rehabilitation and Reclamation Plan looks like, we cannot conduct adequate analyses and make any conclusions on levels of impact or effects on the human environment. And, without the detail of this Plan, there is no connection to the EIS and Record of Decision, thus it is not enforceable.	

INV 3	Chapter 3		Vegetation – Invasive Species	Overall, the environmental analysis regarding invasive species does not meet the intent and purpose of NEPA.	
SUB 19	3.21			AECOM responses to agency comments on the Camera Ready Draft EIS that BLM reviewed in October 2015 (BLM Summary of Key Points Compilation) have not been adequately addressed.	
	Chapter 4				
MIT 2	4.3.2 Natural Gas Pipeline Water Removal and Use	34	Water withdrawal are controlled by requirements specified by ADNR	In addition as a minimum, Best Management Practices as identified in GMT1 Best Management Practice B2, should be applied. Withdrawal from streams or rivers shall not cause a change to flow to sensitive fish (i.e. , any fish except ninespine stickleback or Alaska blackfish) maintaining a hydrologic regimes to maintain adequate habitat for fish, invertebrates, and waterfowl. Impacts to EFH may occur if water is withdrawn in winter during low flow conditions leading to freezing of overwintering habitat by juvenile salmon. Monitoring of flow will be required to assess water level and water quality conditions before, during, and after water use from any fish-bearing water body.	
MIT 2	4.3.2 Spills and Leaks	35	Fuel would be dispensed to the contractor's fuel trucks on the ROW or at camp.	GMT A5 Best Management Practices should be applied to this EIS	
	Chapter 5				

	No comments submitted at this time				
	Chapter 6				
	No comments submitted at this time				
	Chapter 7				
	No comments submitted at this time				
	Chapter 8				
	No comments submitted at this time				
	Chapter 9				
EDIT 8	Chapter 9: References			Please add the following reference: BLM 2010 Instruction Memorandum No. 2010-001, BLM-Alaska Invasive Species Management 2010.	
	Appendix				
FISH 3	Appendi Q Essential Fish Habitat	iii	Moderate impacts are associated with loss of Chinook and coho rearing habitat through direct loss of two creek channels and the effects of reduced flow in Crooked Creek. Rearing stages of these two species are present in low densities in streams that will be affected by Project activities. Coho spawning habitat will likely be reduced in Crooked Creek adjacent to the mine area due to the estimated stream flow reductions.	We Disagree with the classification of this impact.	
FISH 11	Appendix Q	iii	Potential effects of the natural gas	We Disagree.	

FISH 11	Essential Fish Habitat		pipeline on EFH species are judged to be low because most construction will be conducted during winter when salmon are not present.		
FISH 6	Appendix Q Essential Fish Habitat	7	Local tug and barge operators would depart Bethel for Jungjuk Port once Bethel is clear of ice and flow levels provide at least 2 ft (60 cm) of gross under the keel clearance, when factoring stream flow and barge loads (Amec, 2014).	Vessel squat has not been addressed in the DEIS documents and should be addressed for impact analysis and consideration of the effects on the resource. Analysis needs to be addressed because it may address (change the impact to EFH. This would significantly increase impacts to fish and bottom of river (including Increase sediment, increased turbidity, and increased channel cutting leading to increased bank erosion. When a vessel is in motion, even in deep water, the water level in the vicinity of the ship is lowered, along with the ship itself (this is called vessel squat). This effect increases as the vessel's speed increases or as the water depth decreases. When a ship enters restricted water areas, there is a considerable change on the flow pattern about the hull. In shallow water the water passing beneath the hull must pass at a faster rate than in deep water, and as a	

FISH 6				result there is a pressure drop beneath the vessel, increasing vessel squat Vessel passage affects the magnitude of bed load transport, and it also causes significant (but temporary) changes in the direction of sand ripple migration. Saltation transport has often been observed with the passage of large vessels. Please develop and provide a model to demonstrate how vessel squat and at the different draft depths, affects the depth and reach of the vessels on the river environment, and carry this through the impact and effect analysis. The following are a few good references for addressing vessel squat: 1) http://shipsbusiness.com/squat-factors.html 2) Wuebben, Brown, Zabilansky 1984 3) Liou and Herbich (1976, 1977)	
	General Comment				
NEP 6				The BLM feels this DEIS is overall inadequate to support a defensible decision.	

BLM Comments on the Camera Ready Draft EIS

October 2015

	Section Number	Page	Original Language	Proposed Language or Comment	Disposition (CAs should leave blank)
	CH 1 COMMNETS				
EDIT 1		Entire document	Word "granular"	Replace w/ "gravel" or "granular rock" to enable public understanding. See similar BLM comment Dec. 2013.	
CLA 29	1.10.01	1.10-26	This Draft EIS includes analysis of measures to avoid and minimize impacts to fish, wildlife, habitats, and other resources. The Final EIS will address compensatory mitigation for impacts which cannot be avoided or minimized. It must be demonstrated that these factors have been considered by decision makers prior to undertaking actions such as issuing permits.	Needs acknowledgment that BLM has authority to - and likely will - require compensatory mitigation.	
	CH 2 COMMENTS				
MIT 27	2.3.2.1.10	2-38	Cyanide detoxification chemicals would be available.	Available where? This is unclear if is just at Angyaruaq (Jungjuk) Port. Recommend be available where or when ever cyanide is stored or transported.	
PAA 25	2.3.2.1.12	2-41	Mobile equipment and vehicles that cannot be reused would be buried in the WRF at closure.	Recommend salvage of all carbon based material to reduce the overall Donlin carbon foot print as part of this EIS. Even though ADEC monitors waste regulation permitting. Recommend identifying in this EIS that all mobile vehicles would be recycled. Reducing the impact and burial of waste on private lands.	
BARG 16	2.3.2.1.12	2-46	Although the grounding of a barge is unlikely,	We disagree with this statement see information below	

BARG 16

			U.S Coast Guard News release dated June 28, 2010 identifies the opposite. "It is not unusual for barges to ground on the shifting bottom of the Yukon Kuskokwim region's rivers." http://www.uscgnews.com/go/doc/4007/1385339/Imagery-Available-Grounded-barge-on-Kuskokwim-refloated-Coast-Guard-monitors As identified this location is McDonald's Crossing upriver from Bethel and is within Donlin's identified barging corridor. The Coast Guard Captain of the Port for Western Alaska approved a lightering plan allowing for the removal of 30,000 gallons of aviation fuel from the grounded barge Napamute providing for a successful re-float of the barge on the Kuskokwim River Monday morning. Removing of fuel from grounded vessels will likely require Coast Guard approved lightering plan. **Initial Notification**: Crowley Barge 160-1 ran aground near Quinhagak, AK, just south of the mouth of the Kuskokwim River on Sept. 16, 2009 http://incidentnews.noaa.gov/incident/8097 Grounded Fuel Barge Re-Floated and Bound for Bethel, Coast Guard Reports Staff Jun 8, 2015. The Coast Guard responded to the scene on Friday to evaluate the situation, and reported that they had found no hull damage. http://alaska-native-news.com/grounded-fuel-barge-re-floated-and-bound-for-bethel-coast-guard-reports-17713 Coast Guard inspection i and lightering plan	

BARG 16	2.3.2.1.1 2	2-46	The steps that would be taken in the event of a stranding would be:	1. Notifying U.S. Coast Guard of grounding. Should be identified as one of the top priorities.	
FSR 15	2.3.2.1.1 2	2-46	4. In the event that river bed conditions and/or other factors preclude pulling the barge free, or the tug is unable to free the barge, the next step would be to bring an empty fuel barge (equipped with a pump for fuel transfer) or cargo barge (equipped with a crane or other equipment for transferring cargo), as appropriate, alongside the stranded barge and begin lightering fuel or cargo across to the empty barge until the stranded barge is refloated. All appropriate spill containment measures (booms, etc.) would be implemented prior to lightering any fuel.	U.S. Coast Guard lightering plan would be required for the removal of fuel from grounded barges as identified in this example. “The Coast Guard Captain of the Port for Western Alaska approved a lightering plan allowing for the removal of 30,000 gallons of aviation fuel from the grounded barge Napamute providing for a successful re-float of the barge on the Kuskokwim River Monday morning.” http://www.uscgnews.com/go/doc/4007/1385339/Imagery-Available-Grounded-barge-on-Kuskokwim-refloated-Coast-Guard-monitors	
BARG 16	2.3.2.1.1 2	2-46	The steps that would be taken in the event of a stranding would be:	1. Notifying U.S. Coast Guard of grounding. Should be identified as one of the top priorities.	
BARG 16	2.3.2.1.1 2	2-48	5. Once enough cargo had been removed from the barge it would refloat. In extreme cases the empty barge could be pulled free using a tug. As these barges would be designed for storage on the river bank during the winter season when the river is frozen, the barges would be structurally strong enough to withstand being pulled free. Freed barges would	As previously identified in comments. A Coast Guard inspection of the vessel to safely put it back in service should be required for fuel barges as part of this EIS. Identified in this article fuel barge grounded in 2015 was inspected by USCG. “Grounded Fuel Barge Re-Floated and Bound for Bethel, Coast Guard Reports The Coast Guard responded to the scene on Friday to evaluate the situation, and reported that they had found no hull damage. A Coast Guard C-130 Hercules did an overflight of the area and reported no pollution.”	

BARG 16			be inspected by appropriate qualified personnel and repaired, as needed, before being placed back into service.	http://alaska-native-news.com/grounded-fuel-barge-re-floated-and-bound-for-bethel-coast-guard-reports-17713	
CLA 14	2.3.2.2.1	2-59	Donlin Gold has identified a construction planning corridor of 300 feet, within which they would apply for a permanent ROW (50 feet wide on ANCSA and State of Alaska lands and 51 feet, 2 inches on BLM-managed lands). The total nominal construction corridor would be 150 feet to install the pipeline and fiber optic cable. Figure 2.3-16 shows the planned evolution of the ROW. The 300-foot corridor would provide flexibility to adjust the pipeline alignment during construction to avoid sensitive resources, areas with steep slopes, marshes and bogs, river crossings, and permafrost terrain to the extent practicable. Estimated total acreage on federal, state, and ANCSA Corporation lands for the 300-foot planning corridor is 11,457 acres as shown in Table 2.3-14. Ancillary facilities such as airstrips, construction campsites, and storage yards for pipe and equipment would require 2,643 acres.	Disconnect in the description of the construction corridor in Ch 2 and Ch3. In ch.2 the construction corridor is 300 feet, while in ch 3 (3.15.2.1.3) it was identified as a 150 foot ROW. Please clarify.	
NEP 6	2.3.2.2.2	2-48	Donlin Gold does not propose the construction of additional capacity in Dutch Harbor. Donlin Gold has indicated they would likely use a third-party to transport fuel	This seems like project segmentation, which is not allowed under either NEPA or section 106. We cannot avoid analyzing effects by saying that a third party will figure out what is needed and apply for permits themselves. If	

NEP 6			and other supplies to the project site. That party would determine what amount of additional fuel capacity, if any, would be required in Alaska to accommodate demand. That party would also be responsible for applying for and obtaining any permits that may be required for the expansion.	infrastructure is needed for Donlin in Dutch Harbor, we need to figure that out and analyze the potential impacts, here, now, in this document. Otherwise we are not looking at the complete project. If not for the mine, this facility would not be built. Therefore, it is part of the project and needs to be analyzed more thoroughly here.	
NEP 6	2.3.2.2.3	2-48	Donlin Gold has indicated that a third party would construct and operate the Bethel Cargo Terminal. That party would determine what amount of additional storage space and waterfront structures, if any, would be required to accommodate demand. That party would also likely be responsible for applying for and obtaining any permits that may be required for the expansion. Since this work by a third party would be a connected action for the proposed Donlin Gold Project, the environmental effects must be evaluated as indirect effects.	Same comments as above: If not for the mine, this facility would not be built. Therefore, it is part of the project and needs to be analyzed more thoroughly here.	
PAA 38	2.3.2.2.9	2-58	30-mile mine access road and airstrip would be maintained for delivery of WTP	After mine closure will the 30 miles of road from port to mine site be open to public use? Subsistence uses? Either option will have an impact to subsistence users as it will restrict or improve future access.	
PAA 19	2.3.2.3	2-58 to end of chapter	Many specific construction, erosion control, and reclamation details are not included in this chapter and instead are found in specific affected resource descriptions and impact analysis in Ch. 3, resulting in a fragmented or incomplete description of the proposed action.	Provide detailed proposed actions not described in Ch. 2 but later described in Ch. 3.	

PAA 64	2.3.2.3.2	2-64	Fiber Optic Cable section	Describe whether or not the fiber optic cable would be installed within proposed construction and ops ROW, or an additional separate ROW would be needed, and quantify / detail width of additional ROW.	
PAA 64	2.3.2.3.2	2-64	Donlin Gold is currently evaluating options for where the fiber optic cable would originate, including installation of a microwave tower, running a cable along existing power line routes from Anchorage, or from existing infrastructure at Beluga.	Identify which routes would be used.	
NEP 6	2.3.2.3.2	2-64	Details regarding installation of the fiber optic cable would be completed during final design.	This should be discussed as part of the NEPA process.	
PAA 19	2.3.2.3.3	2-67	Figure 2.3-18	This map is incomplete. It shows the Farewell airstrip, and it shows the pig station, but it doesn't show how one will get from A to B – will there be a road between the two? If not, are you using a river or winter overland travel only?	
CLA 30	2.3.2.3.3	2-66	Metering stations would be located at the pipeline tie-in (MP 0) and at the terminus (MP 315). The station at the mine site would include limited above-ground piping and a module that would house the metering equipment as shown in Figure 2.3-20. The pipeline terminus pad would be 100 feet by 100 feet and would have locking man-doors. The tie-in location at MP 0 would be 120 feet by 53 feet, fenced, with a sliding gate and lock.	It would helpful to describe what a metering station is and why it is needed. There are very detailed descriptions relating to operations at the mine site but not as many details for the operation of the proposed natural gas pipeline.	

CLA 30	2.3.2.3.3	2-69	MLVs would be placed at intervals of no more than 20 miles along the length of the pipeline. A total of 20 MLVs would be installed at locations identified in Table 2.3-15. Four of the valves would be located with other facilities: the Beluga Pipeline (BPL) tie-in, the compressor station, the Farewell pig launcher/receiver site, and the pipeline terminus at the mine site. Three of these, located at the Beluga Pipeline (BPL) tie-in, the compressor station, and the pipeline terminus, would function as emergency shutdown (ESD) valves, and would be able to be remotely and/or automatically operated by a Supervisory Control and Data Acquisition (SCADA) system. These ESD valves could also be manually operated by the activation of an ESD switch at any of the three sites by an on-site operator if necessary. Figure 2.3-21 shows a typical MLV assembly.	It would be helpful to include more information about the operation of the mainline valves. The diagram is excellent but does not explain the functionality of the valves.	
NEP 6	2.3.2.3.4	2-70	Donlin Gold would clear temporary extra workspace as required outside of the authorized 150-foot construction corridor. Temporary extra workspaces would be required at: stream and river crossings, and high banks at ravines where earth cuts are required;	Section 2.3.2.3 does include footprint of ancillary facilities and campsites on BLM land but not specific location to determine impact to the site for a sufficient NEPA analysis.	

		• areas where pipe is being installed using HDD methods, to accommodate extra equipment; • sidebends; • the beginning and end of each construction spread for spread mobilization and demobilization; • stringing truck turnaround areas; • other areas where extra space for spoil storage and construction activities are necessary; • areas of sideslopes where grade cuts are required to create a level work surface across the width of the ROW (the extra width needed for the cuts and/or the fills) as shown in Figure 2.3-22; • areas where a high water table would undermine trench walls, creating an extra-wide trench and larger spoil piles (for instance, in a gravel floodplain); • on steep grades or for shoofly (temporary) access roads around such grades; and • pipe laydown areas. During pipeline and transmission line construction, additional areas for construction camps, pipeline and construction material storage yards, material source sites and airstrips would also be required. These facilities requiring upgrading or new construction would be constructed		

NEP 6			before initiation of pipeline construction. Ancillary facilities that are currently being used or planned for use by Donlin Gold and others would require negotiations and leases or use agreements. These facilities are included in the estimates of area to be cleared and the acreage totals shown in Table 2.3-14 above.		
NEP 6	2.3.2.3.4	2-76	Temporary site access and shoofly roads would be required for airstrips, borrow material sites, water withdrawal sites, and other authorized temporary use areas such as pipeline storage yards. A shoofly road is defined as an access road to the pipeline construction ROW or along the ROW to provide continuous access where the ROW is too steep for pipe stringing trucks and personnel carriers. Temporary gravel access roads would be a maximum of 24 feet wide, with culverts installed as necessary to facilitate surface water flow. Road shoulders surrounding culverts would be lined with rip-rap (or equivalent per the erosion and sediment control plan). Table 2.3-20 identifies planned temporary access roads and the corresponding pipeline MP. The temporary roads would total about 156 miles in length and would encompass just under 49 acres. In addition to	BLM requires the location, size, and structure of temporary roads on BLM land for a sufficient NEPA analysis of impacts. Otherwise NEPA does not meet BLM standards.	

NEP 6			these roads, 75 shoofly roads ranging from 0.09 miles to 6.91 miles in length and totaling about 77 miles would be needed. Reclamation of these roads is described in Section 2.3.2.3.6.		
VEG 3		2-74	Clearing along the route chosen would begin in the winter prior to pipeline construction as soon as the ground becomes sufficiently frozen to support the weight of equipment. Clearing would be done such that the ground would not be damaged and erosion or long-term vegetation loss would not occur. Maintenance of the winter access ROW would occur only during the winter months by packing, watering, and grading the snow and ice surface.	Explain how the ground will not be damaged after clearing? Also describe how long term vegetation loss would not occur. What are the methods of clearing?	
CLA 30		Figure 2.3-34		Please use more colors and/or other symbols to display the permafrost distribution. This figure is not clear.	
NEP 6	2.3.2.3.4	2-88	The main campsites would consist of cleared gravel pads with self-contained, soft- or hardsided structures	BLM would need more information about the construction camp layout for a sufficient NEPA analysis of impacts. Otherwise NEPA does not meet BLM standards.	
PAA 61	2.3.2.3.4	2-95	The location and number of material sites that may require a processing plant/crusher would be determined during final design. Material sites would be located during final design and sized to avoid mapped sensitive areas such as wetlands, cultural sites, sensitive	BLM would need to review the analysis on the material sites for impacts. proponent needs to propose specific locations so impacts can be analyzed and available for public review	

EDIT 4 PAA 61			species habitat, and other environmentally sensitive areas.		
	2.3.2.3.4	2-97&98	Table 2.3-27: Potential Mineral Sites	Lists 22 Borrow Mineral Sites on Federal (BLM) Land. Seven of those sites list “gravel” as the material type that will be utilized. This material is a salable Mineral under the Materials Act (1947) and disposal activity requires a BLM permit.	
PAA 61	2.3.2.3.4	Whole section	Whole section	The description of these “ancillary facilities” for the pipeline is inadequate for BLM analysis. It does not provide the same level of detail that is shown in the mine site description, plus it is spread over 300 miles. It says on page 2-70 that these locations are still being negotiated, so we don’t even know where many of them will be yet. There is no way we can do the same level of analysis on the pipeline and ancillary facilities with the level of detail provided here~~. I also think~~ the intro to this section should give some totals: total miles of roads, total number of/acres of materials sites, number of wells, etc.	
PAA 11	2.3.2.3.4	2-74	Winter Access Corridor, also see p. 2-122, para. 5, 2nd and 3rd sentences.	If Southcentral Alaska experiences further low snow, high temperature winters such as experienced in 2013-14 and 2014-15, this proposed action will be infeasible (along with the proposed winter construction techniques describe for the pipeline). What are the alternatives if this is not a feasible option during the years which the proponent intends to construct the pipeline?	
PAA 19	2.3.2.3.4	2-74 and beyond	General	Document should provide tables and specific total mileage of all types of construction ROW surface preparation, such as ‘ice/snow pad, frost packed winter ROW, graded ROW, and summer wetlands’. (Repeat of Dec. 2013 BLM comment.)	
PAA 61	2.3.2.3.4	2-70	Bullet list	Inadequate information for BLM analysis. This bullet list needs to be expanded into a more detailed description. How many locations will	

PAA 61				have these shoofly roads around steep-grade areas? How many pipe laydown areas and truck turnaround areas will there be? How big of a footprint is needed in HDD areas?	
PAA 19	2.3.2.3.4	2-83	Table 2.3-21	Table is underestimating the footprint of all these roads. It ~~think this~~ should include the full disturbance footprint from building the roads, because that is what we will look at in terms of impacts to cultural, vegetation, etc. the full disturbance area may be greater than the final length of the road, with no staging areas, buffer, etc.	
PAA 61	2.3.2.3.4	2-86	The main campsites would be supplemented by fly-in camps without temporary road access along the ROW, to reduce travel time and commute distance.	Inadequate information for BLM analysis. What is a “fly-in camp”? What would the footprint of one be? How many would there be? How long would they exist?	
PAA 19	2.3.2.3.4	2-86	“Construction camps would be moved as construction progresses…”	Identify how they will be moved and what equipment might be needed, such as *“primarily overland by heavy equipment”*	
CLA 15	2.3.2.3.4	2-91	Development of the pipeline storage yards would be initiated during the civil clearing and access season, which would occur generally one year before the pipe-laying season. Most of the pipeline material and equipment would come through the staging yards located at Beluga and Bethel. There would be 31 PSYs (not counting the Donlin Gold Mine site) in Spread 1 (MP 315 to MP 127), and 26 (not counting Beluga) in Spread 2 (MP 0 to MP 127). These sites would receive and store equipment during periods of no construction between seasons. Each PSY would cover about 1.5 acres, and would be cleared and graded before use. A gravel pad	how would the pipe ~~would~~ get from the Beluga and Bethel staging yards to the PSYs. Would it be driven overland? With what equipment? During what season? Would a road be necessary for this? Roads for PSY access are not listed in Table 2.3-20, if transporting them from either end of the pipeline these routes should be considered “temporary shoofly roads.” Transportation of all this pipe is a major undertaking and it needs to be made clear how it’s being done. If it’s driving along the corridor itself, the season, equipment, and number of vehicle trips should be made clear.	

			might be installed if the natural soil proved unsuitable.		
CLA 30 CLA 15	2.3.2.3.4	2-92	Figure 2.3-26	This figure is supposedly showing the PSYs, but they aren't shown. They are blue according to the legend, but the figure does not shoe 57 dots.	
PAA 61	2.3.2.3.4	2-95	Borrow site boundaries would be shaped to blend with surrounding natural land patterns and each site would be reclaimed consistent with approved, site-specific reclamation plans.	In order to assess impacts, we need to know the size of these and to see the reclamation plans in this document. Determining the requirements for borrow sites after the EIS is segmentation, and does not allow for a full analysis of project impacts.	
NEP 6	2.3.2.3.4	2-95	Material sites would be located, based on construction material needs, where appropriate materials can be found, and to minimize haul distances. The 70 potential material sites listed in Table 2.3-27 vary in size from 1 to nearly 50 acres and could provide more than sufficient gravel for the project. The location and number of material sites that may require a processing plant/crusher would be determined during final design. Material sites would be located during final design and sized to avoid mapped sensitive areas such as wetlands, cultural sites, sensitive species habitat, and other environmentally sensitive areas.	This plan does not provide sufficient analysis of impacts. There are a substantial number of these proposed, and unless we analyze the impacts of developing every one of them, with a processing plant/crusher, then we will not be able to fully understand the impacts of the project.	
NEP 6	2.3.2.3.4	2-99	All twelve airstrips would require storage for air operations and staging areas for pipeline construction materials. Actual facilities and area requirements for each airstrip would be determined during final design.	As with my comment above, the BLM cannot analyze impacts when we don't have a description of the "facilities and area requirements for each airstrip." Airstrips in this remote area could potentially have impacts on many resources and uses, and they need to be fully analyzed here. And if this	

NEP 6				statement means that Table 2.3-28 isn't final, that needs to be called out in the table as well.	
CLA 30	2.3.2.3.4	2-100	Figure 2.3-27	Page 2-98 says there will be 12 airstrips, including 9 new ones, but the figure shows 10 new and two existing.	
CLA 30	2.3.2.3.5	2-103	Pipeline – Delivery… section	This information needs to be expanded on in the road and PSY sections in 2.3.2.3.4	
PAA 19	2.3.2.3.5	2-103	General	Section should provide estimate of number by class / type of vehicles for construction segments (winter vs. summer) and provide an estimate of number of daily vehicle passes at selected locations. (Repeat of BLM comment from Dec. 2013).	
PAA 19	2.3.2.3.5	2-103	General	This or previous section should identify the typical or planned width of the travel surface for materials delivery and job site access.	
PAA 19	2.3.2.3.5	2-104	Work pads would be installed to provide a level work surface during construction. Snow/ice, gravel, and/or graded work pads would be installed after clearing and grading.	Inadequate for BLM analysis. What size would the work pads be? How frequently would they be constructed? This needs to be detailed because it will affect potential impacts analysis.	
NEP 6	2.3.2.3.5	2-120	The need for blasting during project construction would be determined during final design. A Blasting Plan would be developed prior to construction for agency review, and would apply in all situations where blasting occurs.	Inadequate for BLM analysis. The amount, location, timing/season, etc of potential blasting along the pipeline route needs to be discussed in adequate detail.	
MIT 20	2.3.2.3.5	2-122	recovered and put back into place on top of the trench (the preferred method of natural revegetation).	Strongly agree with this method and would recommend that this be identified as a BMP.	
MIT 20	2.3.2.3.5	2-122	During winter construction, temporary erosion control measures would not be necessary. At the	Restate, during "typical winters" construction, temporary erosion control measures would be necessary.	

MIT 20			latitudes at which the pipeline is to be laid in winter, the weather would be below freezing from the start of winter until spring breakup.	As ~~we~~ seen last year (2014) this was not the case and erosion from rain and runoff in much of the pipeline corridor may have occurred. Erosion control measures even in winter may be necessary some years depending on temperatures. A BMP that identifies a specific temp and duration where erosion control measures would be required in winter could be applied.	
VEG 3	2.3.2.3.4	2-123	"Revegetation of these disturbed areas would proceed in the same manner as in the ROW.	This statement, lacks specificity, and requires the reader to hunt throughout the document to determine what is being said, and effectively fragments the information. Similar incomplete references are made in a number of other locations. specify the proposed action (e.g., natural revegetation, active re-seeding, transplantings, etc.) such as detailed in p. 2-130.	
INV 3	2.3.2.3.7	2-132	A Non-Native Invasive Species Prevention Plan would be developed and implemented during construction, operations and maintenance, and termination phases of the project and would include annual monitoring and treatment plans to mitigate impacts.	Include an Aquatic Invasive Species Prevention Identification of a trust fund to continue invasive monitoring if not included for monitoring the mine site water quality, dams, airport, road, and port into the future or perpetuity as identified. To fully evaluate this EIS a Non-Native Invasive Species Prevention Plan including Aquatic Species is required and needs to be made available for evaluation before EIS is completed	
INV 3	Alternatives, Chapter 2	2-132	Other monitoring activities include cultural resources monitoring. A Non-Native Invasive Species Prevention Plan would be developed and implemented during construction, operations and maintenance, and termination phases of the project and would include annual monitoring	Describe what the Non-Native Invasive Species Prevention Plan would look like, what infrastructure/facilities would be incorporated, and what kind of treatments would be employed. Without this description for each alternative, including the No Action Alternative it is impossible to address environmental, social, and economic impacts.	

INV 3			and treatment plans to mitigate impacts.		
EDIT 4	2.3.5.2	2-157-58	Table 2.3-37	Can we get a row at the bottom of this table showing total acres and volume in order to compare to the proposed action? Material volume is not included in table 2.3-43, although number of material sites is.	
MON 13	2.3.2.3.7	2-142	Mass stability inspections of the tailings dam would be conducted according to ADEC requirements; annual inspections would likely be required, and more frequent inspections may also be conducted	Monitoring tailings dam with remote sensing devices should be identified as part of the monitoring program. This would help early detection of any movement or disturbance to the dam. In the event of a dam failure all possible prevention methods should be identified and used.	
PAA 36	2.3.7	2-165	Alternative 6A: “This alternative route is carried forward for analysis because it is feasible and would allow comparison of environmental impacts in Alt. 2.”	(Repeat of comments of Feb. 2014) Since the Dalzell segment is not being considered in the POD it should be removed from this document, as it gives a reader the impression that this is an active alternative when it is not. Move the Dalzell alternative to Section 2.4	
CLA 14	2.3.8	2-172-188	Table 2.3-44	Why is this table in Chapter 2? This table is more appropriate either in Chapter 3, where you actually talk about resources and impacts to them.	
INV 3		2-177, 2-178, 2-179	*Terrestrial mammals:* habitat modification impacts intensity would be medium, long-term in duration, local in extent, and common in context. Invasive species impacts would be low in intensity (plants and Norway rat), temporary in duration, local in extent, and common in context.	The conclusion of “impacts would be low in intensity, temporary in duration, and local in extent” is not substantiated. Such conclusions cannot be made without knowledge of what a prevention, monitoring and mitigation plan is.	

CUL 3	2.3.8	2-185	Table 2.3-44	For cultural resources, the impacts from alternative 6A are not the same as Alternative 2. The pipeline route for 6A would have greater impacts on cultural resources, because of its alignment with the Iditarod NHT, its proximity to the Rohn cabin, and the project's use of the Rohn airstrip.	
CUL 3	2.3.8	2-185	Table 2.3-44	For cultural resources, we disagree with this analysis that says there will be no effects to cultural resources for the transportation facilities. This includes barging activities, which have a high likelihood of greatly increasing erosion along the Kuskokwim River, which therefore increases impacts to cultural resources along the River.	
	CH 3 COMMENTS				
PAA 63	3.0.4	Global		The way direct and indirect effects are qualitatively described makes it challenging to compare resource impacts across alternatives.	
INV 4	Environmental Analysis Chapter 3			Invasive species prevention and management is best addressed and practiced across the landscape, not based on land owner/manager jurisdiction. This project is ripe for leading by example, pro-active implementation of best management practices consistently across land management jurisdiction, including all private, federal and state-managed lands. When management objectives are not completely parallel, the most conservative parameters should be instilled to set the standard across all jurisdictions. As in previous comments, the recommendation will again be made to establish a separate section to address all taxa of non-native invasive species prevention, mitigation and management	

INV 4				in order to give this issue of concern due diligence with alternative design features and impact analyses.	
IDIT 5	3.0.4.1	3.0-4	Context section	We disagree that the INHT is considered Important but not Unique. It is “protected by prescriptive legislation” as it says under Unique, and it “fills a unique social or ecological roll within the locality or the region,” as Unique also describes. The INHT is protected by the Trail Systems Act, it is the only winter NHT, and it is the only NHT in Alaska, making it unique nationally, not just regionally.	
NEP 7	3.0.4.2	3.0-5	Negligible: Impacts are generally extremely low in intensity (often they cannot be measured or observed), are temporary, localized, and generally do not affect unique resources. Minor: Impacts tend to be low intensity, of temporary duration, and local extent, although common resources may experience more intense, longer-term impacts.	Negligible;(Merriam-Webster) Not significant or important enough to be worth considering~~;~~ Minor: (Merriam-Webster) inferior in importance, size, or degree: comparatively unimportant. These two meanings are so similar we recommend using one of them. On a continuum of scale there should not be two effects that are either Negligible or Minor and only one Moderate and one Major. This is a disproportional scale creating a Summary Impact that may be a misrepresentation towards the Negligible or Minor side of the scale.	
GEO 1	3.1	all	All Paleontology sections	Inadequate for BLM analysis. So little is known about the paleontology of the area. There is not enough information for agencies or the public to analyze impacts to resources from the proposed project.	
GEO 4	3.1.1.2	3.1-3	Whole section	We recommend Paleontology have its own section in the EIS. See comments in previous drafts – there are specific laws, regulations, and policies that apply to paleontological resources, and they need their own section in the EIS~~.~~	

GEO 1	3.1.2.3.4	3.1-29	Alaska Range paragraph	Inadequate for BLM analysis. This section and Figure 3.1-6 show that there are a lot of known fossil localities in the McGrath quad along the pipeline ROW corridor, but this section doesn't say whether these are vertebrate or invertebrate fossils, their age, etc. More info needed.	
GEO 1	3.1.2.3.4	3.1-31	Table 3.1-2	Inadequate for BLM analysis, several sections need PFYC. If they are federal lands, they need to be assessed for the potential for paleo resources. Also, this table has Xs to mark "data gaps," but also has "N/A" in several rows. Again, all federal lands need to be evaluated.	
GEO 1	3.1.3.2.3	3.1-45	and part of the mine site is rated Class 3b (east and south sides of pit, and areas beneath the WRF and TSF), meaning these rocks have unknown fossil potential and that further reconnaissance and research may be necessary to determine potential impacts. Quaternary vertebrate fossils have also been reported in overlying sediments in the area (Reuther et al. 2014).	Inadequate for BLM analysis. There is a portion of the project area that is considered PFYC 3b, making us unable to properly analyze effects from the proposed action.	
GEO 7	3.1.3.2.3	3.1-45-46	and local in extent, affecting roughly 30 Mt of waste rock covering 80 acres in the pit area, and 480 acres in the process facility area which may require grading of a bedrock ridge (Section 3.1.3.2.1). Potential beneficial effects from exposure of new fossils would be temporary during construction due to planned pit widening and earthworks in operations. New outcrops could be difficult to access, and the stratigraphic horizon from which	We disagree that the impacts are local in extent. Very little has been done regarding paleontology in the area, and the fossils would come from a regional geographic formation. The impacts on paleontological knowledge are regional in extent.	

GEO 7			liberated fossils in loose rock come from may be obscured by material movement during construction.		
GEO 1	3.1.3.2.3	3.1-47	A Cultural Resources Management Plan (CRMP) is being developed as part of the proposed project that will include mitigation for potential paleontological resources as well as cultural resources. The CRMP will identify measures that would help to minimize effects on potential fossils encountered.	See above comments. This says that we will mitigate effects, but we cannot know what the effects may be when there is so little known about the paleo resources in the project area.	
GEO 7	3.1.3.2.3	3.1-47	Potential effects from barge-induced erosion in exposing these fossils in river bluffs are expected to be of low intensity (BGC 2007a), particularly when compared to natural erosion by river flooding and ice during breakup (Section 3.5, Surface Water Hydrology). Two critical sections of the river where barge tows may need to relay during low water conditions (Holokuk and Oskawalik North) are located in this area. Intermittent increased shoreline activities at these locations could contribute to localized bank/bluff erosion and increased access for unauthorized fossil collection. Depending on the presence or absence of vertebrate fossils at these specific locations, effects could range from low to high intensity and could affect common to important paleontological resources. The use of BMPs to prevent soil erosion (Section 3.2, Soils), however, is expected to minimize new exposures of fossils at these locations.	We disagree that the Kuskokwim River erosion will be of low intensity. The increase in river traffic, and ~~it~~ could increase the exposure and erosion of fossil bearing formations.	

GEO 1	3.1.3.2.3	3.1-49	No fossils have been recorded in the widely distributed Quaternary deposits in the Alaska Range foothills and Cook Inlet areas of the pipeline route, partly because they are poorly documented, but it is possible these deposits contain Pleistocene vertebrate remains of scientific interest (Druckenmiller et al. 2013). No PFYC values have been assigned to the Quaternary deposits.	Inadequate for BLM analysis. This is another data gap in this resource section.	
GEO 7	3.1.3.2.3	3.1-50	Impacts would be localized within the Project Area, and at locations having fossil potential: pre- Quaternary and Quaternary deposits along roughly 262 miles of the pipeline ROW, 80 miles of shoofly roads, and material sites covering about 1,000 acres.	We do not agree that effects are “local in extent” when the effects cover 262/315 miles of the pipeline ROW.	
EDIT 4	3.1.3.2.6	3.1-53	Second bullet	Please edit this. Plans for “cultural” resources are inapplicable to plans for paleontological resources.	
CLIM 2	3.4	3.4-6	Topic - Synthetic Database discussion.	A synthetic database was created for precipitation only. There was no explanation or discussion as to how this database was created or if it has been used ~~of~~ to establishing a climate baseline in any other NEPA documents.	
CLA 17	3.4		Tables 3.4-1, 3.4-3, and 3.4-4.	Table 3.4-1 for the Mine Site shows synthetic data used for many of the meteorological data parameters. In Table 3.4-3 for Transportation Facilities, the same values appear as in Table 3.4-1. Table 3.4-4 for the Pipeline appears to contain different values (e.g., generally high maximum and minimum temperature values). Check for consistency.	

CLIM 2	3.4	3.4-6	For the purposes of establishing baseline conditions in this EIS, the synthetic datasets for precipitation, temperature, wind speed, and relative humidity are deemed more characteristic of the overall climate at the proposed mine site than the shorter term data collected on-site.	The narrative presents an analysis that is unsubstantiated because it is impossible to see 30+ years into the future for any meteorological parameter. The details of the synthetic data analysis should be explained in an appendix. If synthetic datasets are to be used, the synopsis should commence with an acknowledgement that the meteorological record is limited. This should be followed up with a discussion of synthetic dataset development (e.g., how was the dataset assembled and compiled), and present a paragraph similar to the one at the top of page 3.4-6 for all meteorological parameters, as applicable.	
EDIT 5	3.8		Response Tom Coulter's comment on table formatting (5th Bullet): Title and column headings for these tables are intended to stay with all parts of tables; including notes [no change was made].	We suggest it would be easier for the reader to comprehend if "Title and Column Headings for these tables are intended to stay with all parts of tables", and then start the table on a new page. In the latest draft, this problem went away for Table 3.8-28, but not start Tables 3.8-17 and 3.8-19	
INV 3	3.10.1		The AKNHP also tracks invasive plant species in the region through its Alaska Exotic Plant Information Clearing house (AKEPIC) database	The AKNHP also tracks **<u>non-native</u>** invasive plant species in the region through its Alaska Exotic Plant Information Clearing house (AKEPIC) database. --- Please make this correction/addition throughout the document. Many native plants in Alaska, including fireweed and other desirable species, are native and invasive, and not of concern here. We need to be completely clear on what plants we are concerned about/addressing and those are the non-native species, both invasive and non-invasive.	
VEG 1	3.10	4	Project Area	What is the geographic scope for the vegetation analysis?	

VEG 1				The definition of the project area seems to be the area only directly impacted by project activities. Subsequent analysis compares direct impacts within a watershed, although ~~(~~this watershed is not specifically defined (pg. 52). we assume you are referring to 6 digit HUCs. Please confirm. Please see the BLM NEPA Handbook (pg. 58) for guidance on geographic scope. That page specifically refers to cumulative impacts, but this is also guidance for direct and indirect effects. My comments on this theme continue in comment 3.10-52.	
EDIT 5	3.10	8	**Error! Reference source not found.**	Please correct link to table.	
NEP 7	3.10	39-40	Paragraphs starting with: “Impact criteria…”, “Southwest Alaska vegetation…”, “Southcentral Alaska vegetation…”, and “Impact assessments were…”	We are assuming these 4 paragraphs are the “Added text and extensive references (surveys and classifications for SCAK and SWAK regions) to further explain impact criteria assessment for vegetation” that was referred to in the disposition from Comment BLM 3, 3.10, pg. 31 (from PDEIS response to comments document). However, these paragraphs only seem to address the “Context” and “Geographic Extent” impact components. They do not describe how the “Magnitude and Intensity” nor how the “Duration” impact components were developed. BLM needs more clarity on how magnitude and duration levels were determined. Magnitude needs to be analyzed completely independent from context, duration, and geographical extent.	
NEP 7	3.10	40	Table 3.10-7	The ‘Intensity and Magnitude’ levels are inconsistent with the general methods for	

NEP 7				determining level of impact described on pages 3.0-3 and 3.0-4. It was noted that the general methods are "…adapted as necessary for each resource" and that "…several resource sections have refined descriptions for the context criteria." However, the inconsistencies between the general methods and the vegetation specific methods are much greater than simply an adaptation or refinement. The general methods describe a low intensity impact as "A change in a resource condition is perceptible, but it does not noticeably alter the resource's function in the ecosystem or cultural context." This contradicts the vegetation specific low intensity impact ~~is~~ described as "Impacts limited to removal of above-ground vegetation Little or no soil disturbance." Removal of above-ground vegetation does alter the resource's function including the alteration of wildlife habitat, biogeochemical cycle, and, successional patterns.	
NEP 7	3.10	40	Table 3.10-7	The "Magnitude" component methods are insufficient for BLM required analyses because they are not independent of the "Duration" component.	
VEG 5	3.10	40	Table 3.10-7	The "Duration" component method for vegetation is also not consistent with the general methods. A temporary impact on vegetation is: "Vegetation would be affected briefly but not longer than the span of 3 years and would be expected to return to pre-activity condition, such as areas cleared for construction only and reclaimed." We are interpreting this to mean that vegetation will be removed and kept in that	

VEG 5			state for 3 years, but full ecosystem function will not be restored until at least 20 years. The component of duration not being addressed.-This analysis is insufficient for BLM in that it doesn't give a rating appropriate for the realistic time period for habitat and other ecosystem function to return to pre-activity condition. Furthermore, the long-term level of duration impact component seems to imply that those areas will become functional again right after completion of the activity. Analysis of other projects, the Vantage Pomona Transmission Line http://www.blm.gov/or/districts/spokane/plans/files/VPH_230kV_Draft_EIS.pdf considers each veg type different (i.e. shrub and grass dominated systems will take a shorter time to return to pre-activity conditions as compared to older growth forest systems).	
INV 3	3.10-46	General BMPs for invasion prevention, for all taxa (listed in Chapter 5, Impact Avoidance, Minimization, and Mitigation);	Please include BMPs, for the prevention, management and monitoring of non-native invasive species. These need to be disclosed, incorporated into each Alternative design, and then adequate environmental analysis can occur. Without knowing what these BMPs are, or what is included in the HACCP, ISMP, we are unable to assess environmental impacts relative to non-native invasive species. While mentioned in this DEIS, it is not clear as to the extent of employing any BMPs, HACCPs, ISMPs, nor what these sub-plans/BMPs are and will involve. This is a recurring deficiency of the DEIS. Non-native invasive species is an important issue that should be proactively addressed	

INV 3				The long term, indirect effects are linked to cultural/traditional lifestyles that rely on such intact ecosystems for subsistence lifestyles.	
EDIT 5		3.10-41	Vegetation Community Composition Change (from accidental damage, dust, changes in water availability	Sentence is cut off. Please provide completed sentence for consideration.	
INV 3		3.10-47	Vehicles - Roads contribute to the spread of invasive species in two ways. Invasive species can grow in disturbed soil within the road corridor itself, usually at the edge. Typically, these species are adapted to disturbed areas and spread readily. In addition, roads are pathways for invasive species to be spread from other locations as people or vehicles incidentally move seeds or plant parts that are deposited along the road or are carried in/on equipment, supplies, or fill material.	In addition, road maintenance activities such as road grading, roadside mowing, and surface treatment/additional surfacing with contaminated gravel are major causes of introduction and spread of non-native invasive species in the transportation corridors.	
VEG 1	3.10	52	Table 3.10-8, Table 3.10-9, Table 3.10-10: Percentage of Vegetation Within Watershed	(please specify HUC level of watershed being used in this analysis (for the table caption) Rationale for this analysis decision is very important since it can either magnify or dilute the perceived impacts. we question the merit of using this geographic extent for vegetation analysis. Analyzing a linear feature at the spatial scale of a very large watershed does not seem appropriate. More effective examples include:	

VEG 1				2.5 miles surrounding the project footprint perimeter (GMT1 SEIS https://eplanning.blm.gov/epl-front-office/projects/nepa/37035/50832/55575/GMT1_Final_SEIS_Volume_1_Oct_2014_(2)_508.pdf. PDF pg. 158) Other BLM projects are using: 10 digit HUCs (Transwest Express (http://www.blm.gov/style/medialib/blm/wy/information/NEPA/hddo/twe/FEIS/2.Par.71332.File.dat/3-05_Vegetation.pdf, pg. 3.5-4) And I noticed that the wetland analysis for this project is using 10 digit HUCs. 1 mile buffer from the linear feature centerline (Vantage Pomona Transmission Line http://www.blm.gov/or/districts/spokane/plans/files/VPH_230kV_Draft_EIS.pdf, pg. 3.5-5. For linear features, this special extent) An analysis of vegetation impacts at the 6 digit HUC level is insufficient to meet BLM permitting needs.	
VEG 3	3.10	55	Table 3.10-10	Does the 5,963.8 acres at the bottom of this table generally represent the 150' ROW? Does it include all areas that will have any form of vegetation remove? (areas cleared for construction and then immediately vegetation, areas that will be periodically "mowed" and areas that will not be reclaimed?)	
NEP 7	3.10	56	While the vegetation disturbance in the construction areas would be Temporary…	The disturbance will only last 3 years, but the impact of that disturbance is not temporary. Even the fastest recovering veg types (shrub, grass, deciduous) will take at least 10-20 years to return to pre-construction conditions. We feel that describing the duration as "a 3 year temporary impact" minimizes the disturbance.	

NEP 7	3.12-27	Table 3.12-6		As commented in the subsistence section, using these 4 “impact components” to address wildlife impacts has the effect of spreading impacts over the four variables and reducing the overall impacts to some lower level. This does not address impacts of the project to wildlife directly, and tends to reduce all impacts to minor.	
WILD 7	3.12-39	Closure reclaimation and monitoring	The mine access road and mine camp airstrip would remain in place during the closure phase to support reclamation and monitoring activities at the mine site. Some supplies and fuel may need to be barged up to the Angyaruaq (Jungjuk) Port periodically but the numbers of barges needed would be much smaller than the operations phase and would be similar to the baseline conditions. The types of effects associated with the road and traffic, including behavioral disturbance, habitat fragmentation, and potential for injury and mortality, would continue but would be greatly reduced in magnitude after closure due to much reduced traffic volume. These potential effects would therefore be permanent but periodic, localized, and very small in magnitude compared to the operations phase effects	The mine access road, airstrip and river port will remain to support monitoring of the site into perpetuity. Compared to the infrastructure and disturbance there now (none), this is high , yet the analysis considers it “very small” That comparison is misleading and is not addressing the impacts of the permanent presence of a port, road airstrip and barge traffic to current conditions and that is not very small or minor.	
NEP 7	3.12-44	Table 3.12-17	Summary of effects on terrestrial mammals from alternative 2 by impact type and project component.	We disagree that All impacts of the mine, pipeline and transportation infrastructure on	

NEP 7				terrestrial wildlife come out to minor or moderate using this impact type tool As before, this analysis tends to reduce impacts by spreading them out over the 4 variables.	
BIRD 5	3.12-162	Table 3.12-38	Table 3.12-38: Impact Levels of Alternative 2 by Impact Type and Project Component	All impacts to birds minor with 2 moderate-comments as above for similar impacts tables.	
NEP 7	3.13	3.13-3	which in the best circumstances would be minor, are characterized conservatively as moderate.	If identifying best circumstances as minor, Then the worst circumstances would be major? Where are they addressed in the document?	
FISH 7	3.13	3.13-129	potential direct and indirect impacts could result from:	In the Kuskokwim River, spawning habitat disruption form dislodging of eggs or sedimentation can result from natural flooding, ice break up, bank erosion, and riverbed scour (from both natural causes and marine traffic).	
FISH 6		3.13-144	To minimize or avoid impacts of prop wash forces on early life stages of fish and in recognition of ever-changing river conditions, a series of operational measures would be implemented that include: Maintaining detailed logs of river conditions, including measurements of depths and current speeds and directions at critical reaches, by tug captains during each trip with information made immediately available to other fleet captains; Restricting passages through shallow and narrow river segments with sharp bends to one-way traffic using radio check control when approaching and after completing such passages; and	These 3 methods seem more directly related to safety impacts. To minimize or avoid impacts of prop wash forces on early life stages of fish (including larva from smelt)the following examples are recommended with the anticipated vessel travel. these may include but are not limited to: 1. Reduce Speed 2. Reduce or restrict number of vessel passages when early life stages of fish are present. The greatest concentrations of seaward migrating salmon in the Kuskokwim River (traveling from tributaries to Kuskokwim Bay) are likely to occur between early May and late June, and possibly during hours of low light and rising water levels (Burril et al. 2009; Hillgruber & Zimmerman 2009). 3. Maintain a 2 to 1 depth ratio from the bottom of river.	

FISH 6			Use of electronic charts, GPS radar overlay, barge speed and location monitoring, continuous crew training, river navigation aides along the travel route, and an ongoing analysis and mapping of areas with potential operational and ecological risks.	4 Reduce the physical effects of the vessel passage on the water column relative to wave forces and drawdown that alter water levels along the margins of the channel. 5. Reduce effect in more confined segments of the channel, a relatively higher level of injury or mortality could occur to eggs, larvae, and possibly young-of-year resident or anadromous fishes that encounter shear forces from tug propellers, especially where these populations are concentrated.	
FISH 5		3.13-148	anticipated fish injuries or mortalities from tug and barge traffic along the navigation channel would range from negligible to moderate depending on the seasonal timing of fish migrations, life stages, time of day, and the concentration of fish encountered by barge traffic relative to confined and shallow channel segments.	We disagree with finding. As identified depending on the seasonal timing of fish migrations, life stages, time of day, and the concentration of fish encountered by barge traffic relative to confined and shallow channel segments.	
NEP 10	3.14	Figure 3.14-1	SPECTACLED AND STELLER'S EIDER CRITICAL HABITAT NEAREST THE PROJECT AREA	If LNG is shipped into Cook Inlet to supply the gas pipeline for the mine, ship traffic will travel through cook inlet and Stellar's eider wintering habitat. For this reason, the source of the gas for the Donlin gold pipeline is within the scope of this EIS.	
WILD 6	3.14	3.14-16 Also 3.14-40 for marine mammal s	Design features most important for reducing impacts to ESA-protected, candidate, and delisted bird species include: The project design includes a natural gas pipeline to decrease the amount of barging to transport diesel fuel. The design decision to use a natural gas pipeline instead of barging	Comparing this alternative with an alternative that is more impacting is not a mitigating design feature. Also see previous comment. There are potential impacts to eiders and marine mammals each time an ocean barge travels past. The decision to use a gas pipeline is not based on potential impacts to eiders and marine mammals, so it is not a design feature, simply because it has fewer impacts.	

WILD 6			110 Mgal of diesel per year was in response to community concern about barge traffic levels.		
WILD 8	3.14	3.14-16	Design features most important for reducing impacts to ESA-protected, candidate, and delisted bird species include: Barges would travel at 10 knots or less; and	We disagree, Stellar's and Spectacles Eiders are known to collide with buildings built along the coast on the north slope, due to their direct, low flight habits. The speed of the barge does not mitigate collisions with eiders, especially at the mouth of the Kuskokwim where eiders concentrate and fly low to the water.	
NEP 10	3.14	3.14-44	Under Alternative 3B, the existing Tyonek North Foreland Barge Facility would be improved to accommodate vessels in excess of 30,000 gross tons and provide fuel unloading facilities capable of accommodating the proposed volume of diesel fuel. The dock would need to be extended an additional 1,500 feet. Dock construction at the port sites would involve pile driving. Dredging would not be required, as the dock would be extended out to the required water depth.	Under alternative 2 – the source of the natural gas is important because it may require LNG to be shipped into Cook inlet to supply the pipeline for the mine. This would require improvements to the Tyonek facility as well, and the additional shipping traffic may impact Cook inlet belugas. An analysis of using LNG shipped into Cook inlet to supply gas for the mine is not included.	
LAND 17	3.15.1.5.2	22	Like R.S. 2477 ROWs, absent other authorizations, section line easements have not been recognized on BLM-managed lands and it is unlikely that any of these assertions on BLM-managed lands would be processed prior to issuance of permits for this project. Section line easements are used primarily for transportation, but also for access for recreation. The proposed Project Area would encompass several section line easements.	BLM has not taken a position as to not recognizing a valid section line easement. Section line easements are a matter of law on a date specific time and when the rectangular survey of a section line occurred (if at all). The width is either 66 feet 100 feet or the width of the road constructed. For reference see 44LD513 &RS 2477 1978 BLM Staff Report. Without an in depth analysis of the date of rectangular surveyed along the route I recommend deleting the Section line easement section as a pipeline ROW would still be necessary even if a Section line easement	

LAND 17				existed. At a minimum delete red language and like comment on previous draft if you state that there are Section line easements, please identify them.	
LAND 15	3.15.1.5.3	23		A Public Easement Plan was submitted to BLM and signed by Donlin, Calista, the Kuskokwim Corporation, and Spencer Lyman. This document proposed specific vacation of various 17b easements and dedication of new easements as well as relocation of the State of Alaska's FAS 231 road. This section should identify the specific actions on the easements proposed by the Public Easement Plan and have maps showing the proposed changes which are available in the Public Easement Plan	
LAND 15	3.15.2.1.1	27		EIN 15 D1 and EIN 11 D1 need to be added. See comment above about adding information on the Public Easement Plan submitted to BLM and signed by Donlin, Calista, the Kuskokwim Corporation, and Spencer Lyman (suggest adding as appendix). Also noted in this section is that RS2477 ROW would need to be "relocated or vacated". It is our understanding that RS2477's cannot be relocated. The State may dedicate a public easement on State lands. Please revise.	
LAND 8	3.15.2.1.3	31		The FAA has a withdrawal (ANS 189) located at the Farewell Airport this should be disclosed in the document as to the effect of the withdrawal and management actions within the withdrawal.	
EDIT 5	3.15.2.1.3	33		Delete any reference to a "Permanent ROW" It is expected that the ROW will exist for the life of the mine and then be decommissioned.	
LAND 15	3.15.3.2.1	38		Although any changes to 17b easement numbers or location will not change management of the easements, BLM must take action on vacating/relocating existing 17b easements because of the Donlin project. The	

LAND 15				actions are management actions and should be identified in this section. Also, the Public Easement Plan submitted to BLM and signed by Donlin, Calista, the Kuskokwim Corporation, and Spencer Lyman has a new dedicated easements in the mine location which would change ownership of the land as TKC would dedicate land and BLM would be acquiring new land.	
LAND 14	3.15.3.2.3	45		BLM believes that future management actions may be necessary due to increased public access, recreational and subsistence use. Reference 3.15-38 and 3.15-2.	
LAND 14	3.15.3.2.5	51		Under pipeline impacts BLM believes that future management may be impacted due to increased access, recreational and subsistence use. Reference 3.15-38 and 3.15-2. The table states no impacts and does address potential future management actions due to increased public access and use. Additionally, are potential spur lines to power villages possible?	
LAND 16	3.15.3.2.6	3.15-52		A potential mitigation from increased access might be for the BLM to entertain closing the ROW to OHV.	
TRAN 5	3.23.2.2.3	3.23-26		We disagree that surface transportation would be limited due to remoteness. There is no basis for this statement. After construction, the new ROW would provide OHV access route from urban to rural AK. As seen in the Iditarod race trail, once a new trail is established use increases over time.	
IDIT 12	3.16	Global		The BLM has continued discussions with cooperating agencies and requested formal engagement from our solicitor's office about the interpretation and possible implications of the “substantial interference” section of the National Trails Act (section 7c) as it relates to project impacts on the INHT.	

IDIT 12				While the proposed pipeline route will have an effect on the INHT, the extent of responsibility under the NTA still needs to be determined and what, if any, revision to the EIS may be necessary to adequately assess impacts to INHT.	
IDIT 9	3.16	All	"Per Corps direction, no change in EIS until BLM and State of Alaska have resolved management decisions." (from "response to agency comments") Adding general recreation impacts to Iditarod NHT impacts for an overall summary of recreation impacts.	Of BLM April 2015 comments 1, 2, 3, 5, 11, 12, 13, 17, 19, 20, 21, 22, 23 and 24, only a couple involved unresolved BLM/SOA issues. The majority involved deficiencies in this chapter. The result of deferring revisions that describe the impacts to recreation on the Iditarod NHT in the camera ready version continue to be deficient. , all listed comments from PDEIS are re-stated. Adding recreation impacts to impacts to the Iditarod NHT has an effect diminishing the findings of overall effects for the Iditarod NHT, while driving up the statement of overall effects for the all other recreation resources. This issue could be prevented by making a separate analysis of impacts for the INHT from each of these separate categories.	
IDIT 5	3.16.1		Synopsis section/pipeline: "historic significance *to Alaska…"*	Revise indicating Iditarod NHT is a resource of national significance. One of the criteria for Congressional designation as a National Trail is *national significance*, so the listing as a National Historic Trail confers national significance to the trail. (Repeat of BLM April 2015 comment).	
NEP 7	3.16.3	3.16.12	Table 3.16.3	Context / Unique heading: National Trail System designation confers unique status upon a resource. As a Congressional designation, it is equivalent to wilderness designation, also a Congressional designation, therefore should be	

NEP 7				listed as ‘unique’. Revise table to show National Trails as ‘unique’.	
IDIT 9	3.16.3.2.3	All	Discussion of impacts to recreation associated with the Iditarod NHT.	Although improved from previous drafts, conclusions continue to underestimated in terms of magnitude, intensity, longevity, and context.	
EDIT 5	3.16.3.2.3	3.16-19	1st para, last sentence: “…segments on or near the INHT would be considered important…”	Replace word ‘important’ with word ‘unique’.	
EDIT 5	same	3.16-20	4th para, last sentence: “…potential impacts would be important in context.”	Replace word ‘important’ with phrase “…to a unique resource.”	
IDIT 6	3.16.3.2.3	3.16-20	The ROW may provide an optional route as attractive to winter recreationists as the INHT, and may increase the use of both the INHT and the proposed pipeline ROW for commercial guided and dispersed recreation off-road travel, sport hunting, and sport fishing where the two are in close proximity. Due to the remoteness, high cost of access at these distances from large population centers, and low population of the area, the increase would likely be minimal. Recreation use would likely remain low in intensity and concentrated around small, rural communities such as Skwentna, Susitna, and Farewell. No new public surface vehicular access would be created by the ROW (SRK 2013b). Although the pipeline would be decommissioned in place as part of project closure, the potential access route could persist beyond the life of the project if there was enough use to prevent vegetation regrowth. If this	We disagree that, the increase in use will be minimal. When going from no access to access, an increase can be anticipated from what it was before the ROW was constructed. it will be concentrated around rural communities, but not at all that increase in use of the ROW and INHT will be minimal.	

IDIT 6			occurred, the impacts could be more permanent in duration. Since the proposed ROW would extend impacts regionally and would affect portions of the INHT, which is designated for recreation purposes, the potential impacts would be important in context.		
EDIT 5	same	3.16-21	2nd para, 2nd last sentence: "…INHT, impacts are expected to be important in context."	Replace 'important in context' with phrase "…to a unique resource."	
EDIT 5	same	3.16-22	2nd para, last sentence: "…pipeline would affect recreation resources of important context when near the INHT…."	Replace 'important context' with "…unique."	
IDIT 9	3.16.3.7	3.16-28-29	Whole section	Inadequate for BLM analysis. This section only addresses the fact that the ROW will affect a larger segment of the INHT, trail itself, but fails to address the resources associated with it, specifically the Rohn airstip and cabin. These are important regional recreation resources, and the Rohn cabin is an important checkpoint along the Iditarod race route. Impacts from the proposed route need to be addressed.	
IDIT 12	3.17	Global		The BLM has continued discussions with cooperating agencies and requested formal engagement from our solicitor's office about the interpretation and possible implications of the "substantial interference" section of the National Trails Act (section 7c) as it relates to project impacts on the INHT. While the proposed pipeline route will have an effect on the INHT, the extent of responsibility under the NTA still needs to be determined and what, if any, revision to the EIS may be necessary to adequately assess impacts to INHT.	

IDIT 7	3.17-1	All	Entire section	Adding descriptions of impacts to landscape resources to the linear resource of the INHT results in a severe understatement of impacts for the INHT.	
IDIT 7	3.17.1	3.17.5	Para. 5	Restatement of BLM May 2015 comment 2, para. 2 and 3. In response to disposition, disagree. Conformance and subsequent use of these distinct viewing zones continues to make this analysis framework insufficient for identifying and detailing impacts to the Iditarod NHT. In conclusions please break out impacts to INHT due to the unique nature of this congressional designated recourse. (General visual then INHT itself).	
VIS 3	same	Same	Para. 2: “No ranking of scenic quality was completed on non-BLM-administered lands as part of this assessment.”	This statement seems to be contradicted by the documents analysis of SQRU’s for the INHT on State lands, although it may be that the intent of this sentence is to communicate that the VRI system was not applied to non-BLM lands. If so please revise accordingly. If not, revise sentence for consistency with later use of SQRU’s.	
VIS 4	3.17.3	3.17-25	Conformance with existing VRM Class III objective(s) based on level of visual contrast expected to result from the proposed action.	The Affected Environment section does not appropriately identify the applicable BLM VRM class(es). The reader first encounters a BLM VRM class designation (III) in the introduction to the Environmental Consequences. This must be first identified in the Affected Environment. Furthermore, the bulleted statement in the Environmental Consequences section is not clear that VRM Class III is, in fact, the VRM class. In the Affected Environment revision, please be direct on what the VRM classes are. In the impacts discussion, please be clear on how many miles of each class are crossed.	

IDIT 11	Section 3.17.3.3.5		Any actual mitigation measures for impacts to the INHT would be agreed to as a part of the Section 106 compliance process and outlined in a Programmatic Agreement.	Disclose the status of this in the EIS. "Actual mitigation measures for impacts to the INHT" should be identified in Chapter 5 and must be coordinated with the BLM.	
IDIT 7	3.17.3	3.17-25	Bullets 2 and 3.	Restatement of BLM May 2015 comment 9. By overly focusing on the middle to far viewing areas, the analysis is built to underestimate the immediate foreground impacts to INHT users.	
VIS 5	3.17.3.1.1	3.17-27	Entire paragraph	Please clarifiy whether the analysis is of the cleared ROW width (150') or the operations ROW (50'). Previous disposition comments (on digital representations, not this issue) state the analysis is based on a 50' operations ROW, not the entire cleared length. If such a width is used, it will result in an underestimation of impacts to visual resources, such as in Figures 3.17-16A thru E.	
IDIT 7	3.17.3.3.3	3.17-40 to 3.17-67.		Restatement of all unaddressed BLM May 2015 comments 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27. At this stage 'Management decisions' between the SOA and should not preclude the description of potential impacts and the above comments.	
VIS 3	3.17.3.3.3	3.17-55	First paragraph in this section.	Breaking down the analysis of temporary visual impacts into vegetation clearing, construction infrastructure, pipeline delivery and pipeline installation is not necessary as it dilutes the effect of the combined impact of each activity, of which will be occurring mostly at the same time (within a one year period). This impedes reader understanding of the actual impacts by focusing on individual parts rather than the overall impact on the entire visual scene.	

VIS 3				The average viewer of construction activities will view most of these activities occurring at the same time, therefore the description of impacts should be limited to “construction” and a detailed description of the combined impacts should be provided between 3.17-57 and 3.17-60.	
IDIT 7	3.17.3.3.3	3.17-55-67	Whole section	We disagree with the conclusion that the visual impacts to the INHT will be temporary and confined only to the construction seasons. Because of the nature of vegetation growth in Alaska, one can see ROW corridors that were cleared of vegetation 100+ years ago. For example the old Fairbanks-Valdez Trail, or the WAMCATS. Clearing vegetation is not reversed quickly or easily, and the visual footprint of construction activity will be there for decades.	
IDIT 5	3.17.3.3.3	3.17.57	2nd para, 1st sentence: “Temporary direct impacts from vegetation removal could affect resources that are important in context.” 2nd sentence:	Impacts of vegetation removal will be very long term (longer than the life of the mine and recovery may be modified by climate change elements); delete word “temporary”. Replace word “important” with “unique” here and in all other references in this section (and the document); the Iditarod received National Historic Trail status due to its unique nature character and therefore should correctly be ranked higher than ‘important’. See BLM May 2015 comment 22 for background to following. This section, even after some changes by the writers, underestimates the visual impacts to the unique users of the Iditarod NHT. “Construction…actions could be seen by the winter recreationists where the trail intersects	

IDIT 5				the proposed construction ROW (MP 50-52 and MP 86-106)”. Note the pipeline crosses the trail, not the other way around as it is currently described. As currently stated this is an insufficient analysis and definition of impacts to visual resources, mainly for the INHT. In conclusions please break out impacts to INHT due to the unique nature of this congressional designated recourse. (General visual then INHT itself).	
EDIT 5	3.17.3.3.3	3-17.61	2nd para, last sentence,	Between words ‘potential’ and ‘change’ add word “negative”.	
CLA 20	same	Same	Physiographic province sequence.	In the section immediately preceding this one, the effects from construction on the pipeline are described from south to north. In this section they are described from north to south. For consistency and reader understandability, select one sequence and use for all descriptions. Additionally, the previous section uses pipeline mileposts as the means to classify construction impacts on each segment, while this section uses physiographic provinces. This makes it hard for the reader to compare and follow impact progression from construction to operations. We recommend one classification system and use throughout.	
IDIT 7	same	3.17.-62	Section: *“Iditarod National Historic Trail”*	The concept of Scenic Quality Rating Units is provided for the first time to the reader without introduction on what it was developed for or how used. a detailed explanation of the concept is provided in Section 3.20.1.4, but no reference is made here about that. Use of the SQRU’s in this document is a misapplication of this concept, as it is designed to rate the macro or large scale view-shed, rather than a narrow trail corridor. As a result,	

IDIT 7				it is inherently biased to understate the visual impacts to the INHT trail corridor.	
IDIT 7	3.17.3.3.3	3.17-64	Para. 2	Restatement of BLM May 2015 comment 22. Additionally, this section misstates the severity of impacts by focusing on overall Scenic Quality, which represents a large acreage, and as a result dilutes the impacts on the immediate trail corridor of the INHT.	
EDIT 5	Same	same	Para. 3, last sentence: "Indirect effects…affect a common resource."	Delete word 'common', replace with 'unique'.	
	same	3.17-66	Natural Gas Pipeline Summary	Restatement of BLM May 2015 comment 25.	
IDIT 7		3.17-69 to 72	Table 3.17-4	Revise currently insufficient finding to be consistent with BLM May 2015 comment 25; provide separate table for INHT.	
IDIT 7	3.17.3.8.2	3.17-80-81	Whole section	Inadequate for BLM analysis. As with the recreation section, this section only addresses the fact that the ROW will affect a larger segment of the INHT, trail itself, but fails to address the resources associated with it, specifically the Rohn airstip and cabin. These are important regional resources, and the Rohn cabin is an important checkpoint along the Iditarod race route. Visual impacts from the proposed route need to be addressed.	
SER 28	3.18	8		Some information listed as NA in Table 3.18-3 is now available from the latest publication of American Community Survey data	
EDIT 5	3.18	13	"but the chum salmon commercial harvest from $1.8 million"	Correct typo	
SER 30	3.18	NA		Please refer to comments made on this section in the preliminary DEIS in April 2015, which appear not to have been addressed. In particular, we suggest the need for socioeconomic monitoring not just using existing regularly collected data. Many assumptions need to be followed through to see	

SER 30				what actually happened, for example, the percent of regional workers employed and the types of jobs they get; the percent of workers who leave the region; the number of people who move to the region for jobs, and social conflict within villages.	
IDIT 3	3.20	Global		The BLM has continued discussions with cooperating agencies and requested formal engagement from our solicitor's office about the interpretation and possible implications of the “substantial interference” section of the National Trails Act (section 7c) as it relates to project impacts on the INHT. While the proposed pipeline route will have an effect on the INHT, the extent of responsibility under the NTA still needs to be determined and what, if any, revision to the EIS may be necessary to adequately assess impacts to INHT.	
CUL 3	3.20	All	Whole section	Many of BLM’s comments were not addressed: “Per Corps direction, no change in EIS until BLM and State of Alaska have resolved management decisions.” There is a discussion going on about ROW grants and the National Trails System Act, but this should not affect the cultural resource analysis. The criteria under which we evaluate the INHT as a cultural resource will not change based on issue being referred to. As a result, many of BLM’s comments in this section have not been addressed.	
CUL 4	3.20	3.20-1	Based on current information, 10 of the 41 identified sites are recommended as eligible for inclusion in the NRHP and one, the Iditarod National Historic Trail (INHT), is considered eligible for listing on the NRHP.	While the EIS looks at all cultural resources, for the purposes of section 106, a significant resource is something eligible for the NRHP, it really doesn’t matter whether it is eligible, nominated, or listed, for analysis this distinction is unnecessary.	

EDIT 5	3.20	3.20-1	The Corps, as the lead federal agency responsible for the development of the EIS	The Corps, as the lead federal agency for NEPA and the NHPA	
CUL 6	3.20	3.20-1	Those impacts that could not be avoided would be high in intensity and permanent in duration; however, data recovery could be implemented to adequately mitigate or resolve adverse effects.	Change second clause to: However, data recovery and other mitigation could be implemented through the PA to adequately offset or resolve adverse effects.	
NEP 7	3.20	3.20-1-2	General synopsis comment	Please be clear when analyzing direct or indirect effects. There are a few places in this synopsis where you say that X site is outside the project footprint and therefore won't be affected. It might not be directly affected, but it could still be adversely affected through indirect effects (visual, noise, etc). Since we haven't formally evaluated these sites yet, we don't know under what criteria they are eligible, and therefore how they might be affected by direct or indirect effects. Otherwise, saying they won't be affected is misleading and might turn out to be incorrect.	
IDIT 3	3.20	3.20-2	The proposed pipeline component would also impact the INHT, during both the construction phase of the pipeline as well as through a change in the setting of the INHT.	See comments in earlier versions. Regardless of the resolution of general INHT management issues related to ROW grants and NTSA, *as a cultural resource*, the INHT will be impacted in specific ways and those impacts need to be detailed in this analysis.	
CUL 5	3.20	3.20-2-3	Expected Effects summary	Again, please revise, considering that sites within the APE might have direct effects, indirect effects, or both, and revise the effects determinations accordingly.	
CUL 3	3.20	3.20-2-3	Expected Effects summary	See comments throughout section 3.20 regarding the analysis and effects determinations. The BLM disagrees with these findings.	

CUL 6	3.20	3.20-3	Alternative 6A summary	Please clarify, If there are 5 impacted sites under Alt 2 but 2 impacted sites under Alt 6A, then the number of known archaeological sites impacted would be reduced by 3, not 2.	
IDIT 3	3.20	3.20-3	Unavoidable impacts along the length of the proposed pipeline corridor, coupled with impacts to the INHT, are expected to result in a moderate summary impact.	See comments in previous versions of the DEIS – the BLM disagrees with the conclusions on the impacts to the INHT	
CUL 6	3.20.1	3.20-5	3rd para, “Guidance provided…not applicable…for this analysis”.	It has never been implied this policy was applicable for this NEPA document, and it has been stated at a few sentences earlier that BLM does not manage the segments of Trail in question. Recommend delete.	
IDIT 3	3.20.1	3.20-5	No federally managed segments of the INHT would be affected under any alternative evaluated in this EIS, as the affected segments of the INHT are on state land.	We disagree the BLM manages about a mile of trail around Rohn, which would be effected (at least indirectly if not directly) by Alt 6A.	
CUL 5	3.20.1.1	3.20-5	Whole section.	See comment from previous version. This section is inadequate for an understanding of how the PA relates to the cultural analysis in the EIS.	
CUL 3	3.20.1.1	3.20-7	Whole section	See comment from previous version. This section only discusses an APE for direct effects –indirect effects still not addressed.	
CUL 6	3.20.1.1.4	3.20-11	Historic Context, 3rd para, last sentence.	Flat and Iditarod were founded and developed at the same time, with Iditarod being the main supply center and transportation hub, and Flat being the center of the gold fields, until WWI. During WWI, mining substantially decreased, and Iditarod was mostly abandoned in the early 1920’s when the river shifted away from the town site. With the introduction of air service, Flat became the population center of the area until after WWII.	

CUL 6	3.20.1.1.5	3.20-13	Red Devil Mine sections	This information, while interesting, is largely not germane to this analysis and reflects an in equal treatment of historic resources in this section.	
	3.20.1.1.6	3.20-15	Whole section	Lots of regional archaeological work on the INHT missing here, including the original survey work done in the early 1980s along the whole INHT corridor. that the work in Iditarod and Flat, being in the same region as the mine, would warrant a mention as well.	
EDIT 5	3.20.1.1	3.20-15	Whole section	This section seems misnumbered (3.20.1.1.6, then 3.20.1.1, then 3.20.1.2). Please review and revise.	
CUL 5	3.20.1.1	3.20-15	None of these sites are located directly within the maximum geographic area of potential effects to cultural resources, i.e. the project's APE (Reuther et al. 2004).	Please change throughout to reflect my above comments – "APE for direct effects."	
CUL 6	3.20.1.2	3.20-16	One significant prehistoric site (SLT-094) was identified during the 2006 field survey(Table 3.20-1).	What about "insignificant" sites? Please make sure the affected environment info is clear and quantified. Say that "X sites were found during the 2006 surveys, Y of which are recommended eligible for inclusion in the NRHP." Or the equivalent. You do this sometimes, but it is inconsistent throughout the document.	
CUL 6	3.20.1.3	3.20-18	Arch background section	Please clarify why some previous arch research is summarized here. For the rest of the project, all previous arch research is summarized above in 3.20.1.1.6, and then the following sections describe research done for the Donlin mine project itself. But for the pipeline, nothing is mentioned in the previous research section, and a little is mentioned here along with work done by Donlin archaeologists. It makes this section confusing.	

CUL 6	3.20.1.4	3.20-19	The APE was found to contain 41 identified cultural resources (Table 3.20-1), inclusive of the INHT.	See comments from previous DEIS version regarding calling the INHT a single cultural resource, when it has several AHRS site numbers, based upon USGS quadrangles.	
EDIT 5	3.20.1.4	3.20-20	The site dates to ca. 44300 BP and is recommended as eligible to the NRHP	Assuming this is a typo?	
CUL 4	3.20.1.4	3.20-21	These have been recommended as ineligible for the NRHP because they lack ability to yield important archaeological or historical data, and because better-preserved water diversion structures are present elsewhere (Hays et al. 2011).	We disagree with this conclusion. During the PA development process these features will be found eligible, due to the relative lack of features like this in the region.	
CUL 6	3.20.1.4	3.20-21	The INHT is Congressionally-designated and the trail system is considered eligible for nomination to the NRHP, but the specific segments that intersect the APE are not reflected in the AHRS and therefore do not have site numbers in Table 3.20-1.	See comments from previous DEIS version regarding assigning the INHT segments AHRS numbers.	
IDIT 11	3.20.1.4	3.20-23	Table 3.20-1	Why are there no eligibility criteria for the INHT?	
IDIT 3	3.20.1.4.1	3.20-24	INHT Nature and Purpose	Other previous comments have more accurately described the 'nature and purpose' of the Iditarod NHT. Restatement of BLM May 2015 Cultural Comment 32. Section is otherwise inadequate as written. Change # of National Historic Trails from 16 to 19.	
CUL 3	3.20.1.4.1	3.20-23-26	Whole INHT section	See comments from previous DEIS version. Viewshed is indeed important to the INHT as a cultural resource. However, the SQRUs and the VRI analysis is already discussed in the Visual resource section of the EIS,. A summary of the findings is appropriate, as it relates to the trail as a cultural resource. How the viewshed impacts	

CUL 3				from the project would impact the NRHP eligibility of the INHT, and how it impacts the characteristics for which it was listed as a NHT, are what needs to be discussed here.	
CUL 5	3.20.1.4.2	3.20-27	Further development of the PA and Section 106 consultations with affected tribes may result in additional documentation of TCPs in the future.	Add something indicating that tribes have already come forward with some potential TCPs, but that further development of the PA….etc will result in the identification of potential TCPs within the project area.	
CUL 5	3.20.3		Whole Environmental Consequences section	This whole analysis will change dramatically between the DEIS and the final EIS it makes review difficult. This whole analysis of impacts is based upon an APE that hasn't been finalized or agreed to amongst consulting parties, and stands upon several premises, including INHT values and the potential for indirect effects to be adverse, that most of the analysis that follows in invalid in my professional opinion. With the section 106 barely begun, the foundation for this analysis is missing.	
CUL 5	3.20.3.1	3.20-27-28	Whole APE section	See above comments about the APE for both direct and indirect effects. This APE as defined is inadequate for BLM analysis and will result in changes in analysis and impacts between the DEIS and the Final. The BLM disagrees with the Corps opinion that only one APE is sufficient. It is extremely difficult to read this chapter as a reasonable analysis when the APE hasn't been agreed upon and the entire section 106 process has barely begun.	
CUL 3	3.20.3.1.1	3.20-28	Whole section	Visual is not the only type of indirect effects. Noise (daily explosive blasting), vibrations (from blasting or heavy equipment), and air pollution including dust have all been found to have significant indirect impacts to cultural resources.	

CUL 5	3.20.3.1.1.	3.20-29	Figure 3.20-1	The BLM disagrees that the APE should not include a buffer around the Kuskokwim River downriver from Jungjuk Port. Concerns have been expressed from potential consulting parties regarding the potential for the project to increase riverbank erosion, and therefore to effect the cultural resources there. To completely remove the lower Kuskokwim from the APE is a serious flaw in this analysis. Again, not enough of the section 106 process has been completed in order to properly analyze impacts.	
IDIT 5	3.20.3.1.1	3.20-30	Table 3.20-3	See previous comments that the INHT is a unique, not an important resource.	
IDIT 5	3.20.3.1.1	3.20-30	Effects: Important (text)	The classification of the INHT as an 'important' rather than a 'unique' resource is incorrect. Designation of a trail resource under the National Trails System Act is equal in stature to the Wilderness Act or Wild and Scenic River Act. Any classification of a National Historic Trail below 'unique' is deficient. Revise accordingly.	
CUL 3	3.20.3.1.2	3.20-31	Effects may be considered not adverse when the property is of value only for its potential contribution to archaeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of research.	This isn't accurate. The effects are still adverse, but they can be reasonably resolved or mitigated through data recovery, if it is determined to be eligible only under criterion D.	
CUL 3	3.20.3.1.3	3.20-31-32	Whole section	We disagree with the basis of this analysis. The analysis of impacts to the INHT as a cultural resource needs to integrate many factors, not all of which are addressed here. The reliance on the SQRUs in the INHT CMP is far too great. This needs to integrate NRHP criteria (ie, the characteristics that make the INHT eligible for the National Register); NTSA criteria (ie, what makes the INHT distinctive and unique, and worthy of listing as a NHT), and as an important	

CUL 3				feature for subsistence and recreation in Alaska. One could argue that segments of the INHT (maybe not within the Donlin project area, but the analysis still needs to be done) could also qualify as a TCP.	
IDIT 10	3.20.3.1.3	3.20-32	The number of crossings (intersections) between the INHT historic route and the proposed pipeline ROW;	using the number of intersections/crossings between the INHT and the pipeline minimizes the impacts to the trail. The pipeline would damage the integrity of a whole segment of the INHT, both directly and indirectly, and to say that it will only directly impact the trail at a small number of discreet points minimizes the impacts to the INHT as a landscape-level resource.	
CUL 3	3.20.3.1.3	3.20-32	Table 3.20-5	Again, see my previous comments on use of SQRUs as the basis for analysis – this table is basing all of the determination of effect on SQRUs, despite the fact that other factors are discussed, and are more important to consider.	
CUL 6	3.20.3.1.4	3.20-33	The PA will provide agencies with a consistent framework for evaluating NRHP significance and project effects as project development proceeds. It will also define treatment protocols and the process by which those protocols would be implemented.	Change to: The PA will provide agencies with a framework for completing the section 106 framework in a phased manner. This will include identification and evaluation of cultural resources, consultation, and mitigation of effects.	
CUL 6	3.20.3.3	3.20-24	The INHT system is listed in the NRHP.	See comments in previous EIS versions – this isn't true. A thematic nomination for the INHT and its resources is working its way through the system, but it is inaccurate to say the INHT system is NRHP listed. Please revise throughout.	
CUL 3	3.20.3.3.1	3.20-35	The extent of effects would be local, affecting a single site within the mine site area.	we disagree that effects on a site are local – the effect extent should be determined based on the cultural resource's *value*, not upon the fact that the project is only impacting one one-acre site in the mine footprint. If the importance of the site is its contribution to Alaska history, world history, lower Kuskokwim history, etc, that is	

CUL 3				how the extent of impact should he determined. If IDT-260 is eligible because of its potential to contribute to the history of mining in Alaska, then the extent of impacts should be regional. Please revise this and following impacts analysis accordingly.	
CUL 3	3.20.3.3. 3	3.20-37	The extent of effects would be local, affecting five sites within the proposed pipeline area. As impacts would occur to cultural resources recommended as eligible for the NRHP that would be significant at the local level, effects would be important in context.	See previous comments; again, the BLM disagrees that the extent of impacts would be local.	
IDIT 10	3.20.3.3. 3	3.20-39	Specifically, the buried natural gas pipeline corridor under Alternative 2 would be collocated with the INHT for 4.0 miles and adjacent (within 1,000 feet) for approximately 10.5 miles.	This seems like it is minimizing impacts to the INHT,. Table 3.20-8 shows that the pipeline would repeatedly intersect/be co-located/adjacent with the INHT every few miles for 64 miles. 64 miles is a lot more than the 14.5 miles stated in the text and used for analysis of impacts.	
IDIT 3	3.20.3.3. 3	3.20-39-40	Whole INHT section	We disagree with the conclusion that impacts to the INHT are temporary. The vegetation changes to the pipeline corridor are permanent – they will last for decades past when maintenance brush-clearing is over.	
IDIT 3	3.20.3.3. 3	3.20-39	Table 3.20-8; Criteria for Eligibility / INHT	It appears the mileage and number of intersections between the pipeline ROW and the Iditarod NHT is incorrect in this table, as compared to mileage identified in other sections. Alternative 2 includes a trail crossing at approx. MP 50.5 (not included here), numerous construction ROW's, shoofly and temporary roads between Happy River and Shirley Lake (MP 86 to 95) and MP 104 to 106. None of these are included in this tally. Additionally, mileage is included that appears to	

IDIT 3				represent the Dalzell alternative (everything beyond MP 106), and the Goodman Pass alternative routes. These should be removed from the table.	
IDIT 5	3.20.3.3.3	3.20-39 and 40		Restatement of BLM Cultural comment 33; otherwise insufficient as written. Change description of impacts to INHT as ‘high’, ‘permanent’, to a ‘unique’ resource, for an extended area. Revise mileages of intersections and co-locations to be consistent with those given in 3.16.3.2.3; currently not consistent as written (see next comment).	
IDIT 3	same	3.20-40	Table 3.20-9	Number of crossings does not include “temporary” roads and shoofly roads (which unless all material is removed, will be long-term or permanent in nature). Table 3.16-5 lists 13 crossings. Length of colocation is listed as 4.0 miles in Table 3.16-5, and ROW proximate to Trail as 10.5 miles, while this table lists them as 3.5 miles and 5.5 miles respectively. Revise this table to be consistent with Table 3.16-5.	
CUL 3	Same	3.20-40 to 43	*Alaska Range Physiographic Province* text	Restatement of BLM May 2015 Cultural comment 33. The analysis should analyze effects against the ‘nature and purpose’ (as described in comment 32) of the Trail; as currently written is overly reliant on SQRU framework and consistently under values the potential impacts to the INHT.	
CUL 3	3.20.3.3.3	3.20-40-44	Whole section	See previous comments on SQRU analysis. Please summarize visual impacts	
IDIT 5	3.20.3.3.5	3.20-44-45	Whole Alt 2 summary section	We disagree with the conclusion that impacts to the INHT segments are moderate. The impacts are high intensity (loss of integrity on criteria other than D), impacts are permanent, extent is extended (affects the integrity of the INHT, which	

IDIT 5				extends far beyond the EIS analysis area), and the trail is unique in context. That all results in a high impact to the INHT.	
IDIT 3	3.20.3.3.5	3.20-44 to 45	Summary – Alternative 2	Restatement of BLM May 2015 Cultural comment 52. Insufficient description of impacts to INHT. Vagueness of proposed avoidance and design mitigation, etc. makes the description of potential impacts equally vague, and therefore insufficient.	
CUL 3	3.20.3.3.5	3.20-46	Table 3.20-13	please clarify how you get to moderate impacts for the pipeline when there are permanent, extended, important impacts, even disregarding my comments above about INHT impacts conclusions, this table would lead me at least to a moderate/high impact, if not a high.	
CUL 6	3.20.3.3.6	3.20-47	First bullet	Why are we talking about paleo here? Is this cut and pasted from somewhere else? Paleo needs to be addressed in its own section of the EIS.	
CUL 5	3.20.3.4	3.20-47	all	If the APE is amended as BLM recommends, this section will have to be revised to show fewer impacts to resources in the river corridor as a result of reduced barging.	
CUL 3	3.20.3.8	3.20-49-50	Whole section	As I've said previously, this alternative analysis leaves out the Rohn CCC cabin in the analysis. Any impacts to that site are a major impact and would change the impact analysis results.	
IDIT 3	3.20.3.8	3.20-50	Last paragraph on this page.	The BLM strongly disagrees with this conclusion. Alternative 6A would have greater impacts to the INHT and its resources, including the Rohn Cabin, which would result in overall far greater impacts to cultural resources as a whole. please clarify in Table 3.20-15 the difference in miles of INHT impacted, and then how you concluded "overall direct and indirect effects would generate the same conclusion" .	

CUL 3	3.20	3.20-53-54	Table 3.20-16	Please revise this table. There are many changes to the impact analysis that need to be done that will change the conclusions summarized in this table.	
SUB 24		3.21-2	Donlin Gold's Proposed Action – The mine site summary impact would be minor, with the exception of a moderately (beneficial) income effect. Crooked Creek residents would see continued low intensity displacement from historic use areas at the mine site, but this displacement would be reduced after closure. Competition for subsistence resources near the mine site would be eliminated during the life of the mine by the implementation of Donlin Gold policies of no hunting and fishing from the mine site.	We disagree with this statement and the analysis used to get there. The mine would permanently change the area, change access for subsistence users and change wildlife population distribution across the area, especially for the residents of Crooked Creek. No hunting by mine workers would be assumed, but that will not change the impacts to subsistence from the mine itself, and the changes it brings to wildlife population distribution and changes in access to the area from non-subsistence users. The displacement of Crooked Creek residents from subsistence use areas will increase over the life of the mine as the pit and tailings expand, and will remain permanent after closure, with a threat of contamination of the entire watershed into perpetuity. The area will be forever changed for local subsistence users, and cannot be fixed or reclaimed to what it was before the mine is developed. This document is not adequately addressing these issues, and underestimating impacts to subsistence, both short and long term.	
SUB 20		3.21.2	The summary impact for transportation facilities would be minor, except moderate for disturbance to subsistence fishing in narrow reaches of the Kuskokwim River. These impacts are generally low in intensity, except for medium intensity effects from barging in	Impacts to subsistence on the Kuskokwim River may not be minor, and may affect the entire length of the River from the ocean to the mine. Barging intensity and frequency is underestimated, as barge rafts of 4 barges per tow may likely not always feasible, as river depth and water flows in summer may not be enough to barge rafts of the proposed weight	

SUB 20		narrow, shallow segments, and medium intensity impacts regarding displacement of access to fish camps near Angyaruaq (Jungjuk) Port site.	and size. More barge trips and lighter loads are likely, making the frequency of barge trips and passings on the river much higher than estimated in the proposed action. Openings for salmon fishing may likely not coincide with barge traffic at times, and prevent subsistence activities when fishing is allowed. Barging may affect the entire length of the river, not just narrow areas, and thereby impact subsistence fishing and travel on the river, affecting subsistence user access on the river and fish populations may have a greater impact this analysis is showing.	
SUB 8	3.21.2	Summary impact for the pipeline would be minor, except moderate for increased competition near Farewell Airstrip. During construction, intensity of effects on subsistence hunting and fishing is low because there is little overlap between subsistence use areas and the pipeline right-of-way and because the disturbance during construction is limited to short periods. During operations, the intensity of effects from the buried pipeline is low, but less than during construction.. However, increased activity at the Farewell Airstrip would constitute a localized moderate intensity increase in competition, affecting the subsistence uses of the communities of McGrath, Nikolai, and Telida.	A new corridor between Cook inlet and the Kuskokwim river will not be minor, and likely will affect subsistence resource distribution and hunter access. The pipeline and improved access from remaining airstrips will cause improved access to the area by both subsistence and non-subsistence users, and would change game population distributions that are important to subsistence. The pipeline corridor will provide new access for fall hunting seasons and winter travel, and will affect access for both sport and subsistence users.. Competition from non-subsistence users may affect subsistence users near Cook Inlet (Tyonek, Beluga) and in the Kuskokwim river watershed.	
SUB 24	3.21-139	The direct impacts due to changes in subsistence resources at the mine site would be of low intensity for Crooked Creek residents, given the very limited impacts to plant, bear, fur bearer and fish subsistence resources in the	The mine will involve regular blasting with explosives; mining truck traffic, cargo and fuel truck traffic on the mine access road, barging of fuel and cargo on the Kuskokwim river, and an expanding area of the mine pit and tailings areas over the life of the mine.	

SUB 24		Crooked Creek use area overlapping or adjacent to the mine site. Adjustments to the seasonal round would be minor and alternative resources are readily available.	Historically activities like these have changed the distribution of wildlife resources important to subsistence and access to them by hunters. We disagree that those activities would be of low intensity to crooked creek residents who live adjacent to the mine. That is not minor, and will impact subsistence resources. please clarify how these activities can be of low intensity and minor crooked creek residents that live closer to the mine	
SUB 24	3.21-139	Closure and reclamation of the mine site would have positive impacts on habitat and wildlife of low to medium intensity, as these would be noticeable. Without the disturbance of the mine operation, and with revegetation of the main features of the mine, wildlife such as bears and furbearers are likely to reoccupy the mine site. After 50 years, when the pit lake fills, the discharge of treated pit water would increase stream flow in Crooked Creek, with negligible seasonal water temperature increases. The pit lake would introduce a new standing water structure, but changes in waterfowl resources would not be noticeable.	We struggle to understand how closure and reclamation of this mine will have positive effects on wildlife and subsistence resources in a reasonable time frame. It is very unlikely the area could sustain a natural balance of wildlife resources for many years after closure.. The pit lake and tailings dams represents a threat to water quality in crooked creek and the Kuskokwim river into perpetuity, and the closed mine would represent an equal water quality threat to fish in the watershed . Water from the pit and tailings dams will create a situation that is physically and financially difficult to prevent contamination of the Kuskokwim watershed. This is a concern and is not adequately addressed.	
SUB 24	3.21-152	Summary – Alternative 2 Mine Site For the mine site, the following discussion takes into account impacts to subsistence due to changes in resources, changes in access, changes in competition, and changes in sociocultural practices. The intensity of impacts would be from none to low intensity for most communities in the EIS Analysis Area.	As mentioned in above comments, we disagree with this analysis and how it can be concluded that impacts to subsistence would be none to minor, and only beneficial for increased employment.	

SUB 24			Since the subsistence practices of Cooked Creek residents have historically relied in small part upon resources from the mine site, the intensity of impact would be low, and small adjustments in the seasonal round would sustain harvest levels. For Bering Sea Coast villages relying on migratory waterfowl that pass through the mine site, low intensity impact would result from perceived contamination of waterfowl at the mine site. Socio-cultural impacts associated with potential mine employment would be low intensity beneficial for most villages in the EIS Analysis Area, and medium beneficial in the Central Kuskokwim subregion due to a concentration of employment in communities nearer the mine site. Low to medium intensity impacts would result from changes in outmigration and rotational work shifts. During closure and reclamation, the intensity of effects would be low, but less than during operations.		
SUB 12	3.21	Table 3.21-23 alternative 2 Impact Levels by Project component		This table concludes that all impacts to subsistence from the mine, transportation facilities and pipeline are minor, or at most moderate in 2 areas. All of the subsistence impacts are based on the analysis in this table, and use magnitude and intensity, duration, geographic extent and context to determine an impact. It does not analyze impacts directly, but spreads them out over these 4 variables. As a result we feel the impacts from such a large, long term project tare understated.	

EDIT 5	3.26	20	Permafrost loss is expected to due thawing from positive feedbacks between warming temperatures, increased woody vegetation, and lower-snow winters.	**Typo**: Permafrost loss is expected **due to** thawing from positive feedbacks between warming temperatures, increased woody vegetation, and lower-snow winters.	
			CH 4 COMMENTS		
NEP 6	4.2	Global		The scope of analysis as written does not objectively describe the cumulative impacts in such a way that residual effects can be determined.	
EDIT 6	4.2.2	4-4	Figure 4.3-1	I don't understand this figure. All I see on it is the Donlin Mine, not any other projects/future actions.	
GEO 5	4.3.1.1.3	4-15	Overall, the contribution of Alternative 2 to cumulative effects to paleontological resources would be minor.	I disagree with this conclusion. This is a dramatically larger project than past and future actions in the region. As the largest Army Corps-led project in the US, this would have a large cumulative impact on fossil formations across central and western Alaska.	
SOL 5	Chapter 4	4.3.1.2.4 Soil Quality/ contaminated sites	The implementation of Alternative 2 would have minor to moderate impacts on soil quality/contaminated sites in the proposed Project Area. Overall, the incremental contribution of Alternative 2 to cumulative effects to soil uality/contaminated sites would be minor due to low intensity of localized impacts after proposed mitigation measures are employed	The mine and tailings will create a pit lake and tailings dam that will contain heavy metals and low pH and may threaten soils and water into perpetuity. We struggle to understand How this results in minor cumulative effects to soil and water.	
HYD 5	Chapter 4 page 4-26	4.3.1.5.1 Surface Water Hydrology	The implementation of Alternative 2 would have minor to moderate impacts on surface water hydrology in the proposed Project Area. Overall, the incremental contribution of Alternative 2 to cumulative effects to surface water would be minor to moderate,	The mine pit, tailings storage and dams, roads and river port will have direct and indirect impacts to the entire Kuskokwim River watershed. The threat of contamination of crooked creek and the Kuskokwim River from the mine pit and tailings will last into perpetuity after closure. We struggle to understand how this results in a minor to moderate cumulative effect.	

HYD 5			considering the localized high intensity changes in resource character during the life of the project, and relatively small area of effects on surface water.		
GRD 9	Chapter 4 page 4-27	4.3.1.6 1 Ground water	The implementation of Alternative 2 is likely to have minor to moderate impacts, and potentially could have high impacts on groundwater in the proposed Project Area during operations. Overall, the incremental contribution of Alternative 2 to cumulative effects to groundwater would be minor, even considering the localized high intensity changes in resource character during the life of the project, because the effects of the proposed project on groundwater are limited to a relatively small area and for the most part are not permanent.	We struggle to understand how this results in a minor or localized impact to crooked creek and the Kuskokwim watershed. This mine is large and will create a permanent pit that may affect ground water after closure.	
HYD 5	Chapter 4	4.3.1.7.2 surface water quality page 4-31	Overall, the implementation of Alternative 2 would have minor to moderate direct and indirect impacts on surface water quality in the proposed Project Area. Impacts would range from low to high intensity, temporary to long-term in duration, localized to regional in extent, and affecting a common to important resource. As a result, the additive incremental cumulative impacts attributable to Alternative 2 would be minor to moderate.	Alternative 2 will alter over 20,000 acres during construction and operations of the mine, pipeline and transportation infrastructure. This is a scale of magnitude more than what is occurring there now. we struggle to understand the cumulative effect as minor to moderate. It is affecting surface water from Cook Inlet to the Kuskokwim river watershed. That is not localized, temporary or minor.	

NOI 2	Chapter 4	4.3.1.9 1 noise and vibration	Alternative 2 would have minor impacts to noise levels in the proposed Project Area. The contribution of Alternative 2 to cumulative effects to noise would also be minor.	Alternative 2 involves blasting, mining trucks hauling, crushing and grinding ore for processing, barges on the river, hauling fuel and cargo from the river to the mine. we struggle to understand why it is not cumulative and how it is considered a minor increase to noise level.	
REC 1	4.3.3.2.1	4-43	The direct and indirect effects to recreation under Alternative 2 would be minor. The contribution to recreation cumulative effects is also considered minor.	We disagree with this conclusion. As the largest Army Corps-led project in the US, this may have a large cumulative impact on recreation across central and western Alaska	
CUL 3	4.3.3.6.1	4-45	The direct and indirect effects to cultural resources under Alternative 2 would be moderate and the contribution to cumulative effects to cultural resources is also considered moderate.	We disagree with this conclusion. As the largest Army Corps-led project in the US, this would have a large cumulative impact on cultural resources across central and western Alaska. It will have direct and indirect impacts on several NHRP-eligible sites, including several miles of the INHT, a unique cultural resource of national importance.	
IDIT 3	4.3.3.6.2	4-45	The pipeline component of Alternative 6A would have greater impacts to the affected portion of the INHT, but the overall impact rating would remain the same as in Alternative 2.	We disagree with this conclusion. Alternative 6A particularly will have more impacts to cultural resources than the proposed action. It will affect a larger portion of the INHT, and it will have direct and indirect effects on the Rohn CCC cabin, a NRHP listed site, and a contributing element to the INHT.	
	CH 5 COMMENTS				
MIT 10	Chapter 5, in general	n/a	General comment	The direct, indirect and cumulative effects analysis relies on the use of generic, qualitative impact conclusion statements (e.g., minor, common, moderate, etc.). Lack of specificity and quantitative conclusions will make precise identification of unavoidable impacts warranting mitigation and mitigation actions suitable for offsetting those impacts very challenging.	
MIT 6	5.1.1	Global		Emphasis on only USACE authority to require compensatory mitigation – needs to be	

MIT 6				expanded to acknowledge that BLM also has authority under SO 3330, FLPMA, and draft MS-1794. Chapter 5 doesn't provide identification of unavoidable impacts to BLM managed resources that might warrant compensatory mitigation, making it deficient for BLM purposes.	
INV 4	General			Again, as recommended in previous comment opportunities, it is recommended that an all-inclusive Chapter is developed to address the prevention, management and monitoring for all taxa non-native invasive species. Otherwise, this important issue and potential impacts gets lost in the add-on to various sections, diminishing the significance.	
MIT 9	Chapter 5	5-2	It is beyond the scope of this EIS to list all BMPs, but they would be included as individual permit conditions.	BMPs for preventing the introduction and spread are not beyond the scope of this EIS. Identify the "industry standard" BMPs relating to preventing introduction and spread of non-native invasive species.	
MIT 6	Chapter 5, in general	n/a	General Comment – In the October 9, 2015 *Response to Agency Comments on the PDEIS* (Chapter 5, specifically), the contractor indicates that BLM was asked to provide language regarding the BLM's compensatory mitigation requirements. (This was originally requested by AECOM Project Manager, Bill Craig via email to Alyssa Sweet on September 22, 2015.) The comment provided in the next column is intended to address that request.	The BLM's authority to require compensatory mitigation is derived from: Secretarial Order 3330, *Improving Mitigation Policies and Practices of the Department of the Interior* (2013). The Secretarial Order states that, "for impacts that cannot be avoided or effectively minimized, the Department should seek ways to offset or compensate for those impacts to ensure the continued resilience and viability of our natural resources over time." *Federal Land Policy and Management Act (FLPMA)* (1976). Under FLPMA, the BLM has the responsibility to manage the public lands for multiple use and sustained yield. FLPMA requires that "Use of the public lands….minimize adverse impacts on the	

MIT 6			natural, environmental scientific, cultural, and other resources and values….of the public lands involved." 43 U.S.C. § 1732(d)(2)(a). *BLM Regional Mitigation Manual MS-1794.* Agency policy allows the BLM to condition land use authorization on the successful performance of compensatory mitigation either on- or off-site from the impacts. (Note, additional authorities apply, however this are most germane to BLM's needs on this EIS.)	
MIT 6 5.1.2	5-2	Mitigation measures recommended for consideration by EIS Team Subject Matter Experts, the lead and cooperating agencies, federally recognized tribal governments, and the public during the NEPA process.	BLM also has responsibility to identify the Conditions including all required mitigation for any Mineral Leasing Act ROW issued pursuant to this Final EIS. BLM takes a regional approach to mitigation and focuses on achieving the highest benefit to help offset the impacts of projects on Federal lands.(ES-1-28).	
MIT 11 Chapter 5	5-4	*Mitigation measures discussed in an EIS must cover the range of impacts of the proposal. The measures must include such things as design alternatives that would decrease Pollution emissions, construction impacts, esthetic intrusion…* *… However, to ensure that environmental effects of a proposed action are fairly assessed, the probability of mitigation measures being implemented must also be discussed.*	Without the comparison of the No Action Alternative, we have no measurable way to discuss the resulting environmental, social, economic impacts of the various Action Alternatives.	
EDIT 7 5.1.1	5-1	Table 5.1-1	Table 5.1-1 needs to acknowledge that the BLM can also require compensatory mitigation; adjust 3rd column accordingly. Supplement fourth row of table to acknowledge Secretarial Order 3330, FLPMA, and BLM policy	

EDIT 7				as the authorities by which the BLM can seek compensation for unavoidable impacts.	
MON 10	5.1.1	5-2	Table 5.1-1	The last row of the table implies that monitoring by Donlin Gold is voluntary (“Monitoring may be proposed…”). Revise to reflect that monitoring is required by 40 CFR 1505.2 (c) for all adopted mitigation measures. See 40 CFR 1505.2 (c): “*(c) State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. <u>A monitoring and enforcement program shall be adopted</u> and summarized where applicable for any mitigation.”*	
EDIT 7	5.1.2	5-2	Monitoring to assess that mitigation measures are achieving the expected results or monitoring for adaptive management may be used as an assessment tool. Any such post-EIS requirements are not considered in this EIS.	Section 5.1.2 second full paragraph, second to last sentence - change “may” to “shall” in reference to monitoring. Refer to 40 CFR 1505.2 (c).	
MIT 6	5.1.2	5-3	First sentence on top of page 5-3 in reference to compensatory mitigation: Compensatory mitigation is only applicable to unavoidable impacts to waters of the U.S. after avoidance and minimization efforts have been made.	This sentence is incorrect as it implies that only the Corps can require Compensatory mitigation. The BLM can require compensatory mitigation as well. Revise accordingly, citing authorities provided in previous comments.	
MIT 12	5.2	5-6	Table 5.2-1: Design Features	**Remove Table 5.2-1.** All design features should have been introduced in Chapter 2, Alternatives descriptions. Repeating these measures in Chapter 5 adds unnecessary length to the document and is confusing to the reader. Chapter 5 should instead focus on measures	

			that are additional to those that have been incorporated into the project design. Additional discussion: The Chapter 3 impacts analysis should have evaluated the impacts of alternatives assuming full implementation of the design features identified in Chapter 2. The Chapter 3 impacts analysis should have disclosed the impacts remaining given incorporation of those design features. The impacts remaining are the impacts ripe for additional mitigation (i.e., **additional** avoidance and minimization measures **not** incorporated into the project's design; repair, restoration, and rehabilitation measures; and true compensatory mitigation measures). Given this, Chapter 5 should summarize the unavoidable adverse impacts - the impacts that remain after all avoidance and minimization options in the project's design have been exhausted; outline the mitigation options for repairing, rehabilitating, restoring, off-setting or otherwise compensating for those impacts; evaluate the anticipated residual impacts (impacts remaining after these mitigation measures are applied); and, finally, identify how mitigation will be monitored or adapted for optimal effectiveness. As written, Chapter 5 reiterates information that should, and largely does, appear in Chapter 2; it does not meet the intent of NEPA related to the identification of measures that rectify or compensate for unavoidable impacts nor does it	

MIT 12				adequately outline required effectiveness monitoring for all resources impacted.	
MIT 26		5-8	The project design includes routing transmission lines in proximity to the road, where possible, to reduce additional vegetation impacts.	Buried transmission lines may be considered to reduce visual impacts and preserve the viewshed of the natural landscape.	
MIT 9		5-19	Non-native Invasive Species Prevention Plans;	This is listed as “more prominent BMPs and standard permit conditions”. What are those BMPs? please provide examples.	
CUL 3	5.3	5-19	Compliance with Section 106 Programmatic Agreement and Cultural Resources Management Plan, including adequate survey prior to ground-breaking activities and protocol for inadvertent discovery of cultural resources;	we disagree that complying with a legally binding document should be considered a BMP or mitigation measure.	
MIT 4		5-29	Mit 28 Install signs that clearly distinguish trails from the pipeline ROW at points where the pipeline crosses trails to guide trail users to stay on the trail and off of the pipeline ROW where the two are not co-located. As practicable, revegetate, or otherwise block access to, a narrow strip of the pipeline ROW where it crosses the trail to help steer and keep trail users on the trail and reduce the visual effect of the pipeline ROW crossing. Effective: Yes Feasible: Yes Practicable: Yes	We disagree with the conclusion that this “BMP” is effective, feasible, and practicable. Trail users will find a way to travel the pipeline corridor regardless of signage and barriers. Signs will become a an firearms target, and berms will easily be overcome.	
MIT 6	5.6	5-31	(entire section on Compensatory Mitigation)	Section 5.6 only speaks to the Corps’ compensatory mitigation authority. Revise to acknowledge DOI and BLM’s compensatory	

MIT 6				mitigation authorities (Secretarial Order 3330, FLPMA, and BLM's Mitigation Policy).	
EDIT 7	5.7	5-32	Table 5.7-1	To allow for cross-walking, the second column of this table ("Mitigation Measure Description") must include the corresponding mitigation measure I.D. provided in the first column of Table 5.5-1.	
			APPENDIX COMMENTS		
MIT 7	Appendix M	Global		No draft/conceptual Compensatory Mitigation Plan has been developed for BLM managed resources.	
INV 5	App. M	219	PRM- 03, Non-native Plant Species Removal Projects	We have concerns that inclusion of an invasive species plant removal compensatory mitigation PRM plan will get confused with permit responsibilities for prevention and removal of invasive plants. Is this project being proposed for existing invasive populations in the region that are not associated with the mine project? some clear separation between what this plan is suggesting and right-of-way permit requirements will be needed.	

From:	Thorpe, Laurie
To:	donlingoldeis, POA
Cc:	BLM_AK Donlin_Admin_Record; Newman, Sheila M POA
Subject:	[EXTERNAL] Donlin Gold DEIS Comments
Date:	Tuesday, May 31, 2016 12:56:07 PM
Attachments:	Donlin Gold Draft EIS - May 27, 2016 NOC Maxwell.docx

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These comments are from the BLM Air Quality, Meteorology/Climate, Climate Change, & Noise subject matter experts, for consideration with the Donlin Gold DEIS.

~ Thanks ~

Laurie Thorpe
BLM Alaska
907-271-4208
907-723-0807 cell

Comments on the Draft Donlin Gold Mine Pipeline EIS for:
Air Quality, Meteorology/Climate, Climate Change, & Noise

	Reviewer Name	Section Number	Page	Subject/Original Language	Proposed Language or Comment	Disposition (CAs should leave blank)
EDIT 1	Dave Maxwell	Appendix	Acronyms & Symbols	µg/m^2 = Micrograms per Square Meter	µg/m^3 = Micrograms per Cubic Meter. This is an important air quality unit of measure.	
EDIT 9	Dave Maxwell	Appendix	Acronyms & Symbols	µm = Micrometer	µm = Micrometer (1x10^{-6} meter). This explains the unit more precisely.	
EDIT 1	Dave Maxwell	Appendix	Acronyms & Symbols	Degrees Celsius not listed. Degrees Fahrenheit was listed.	°C = Degrees Celsius.	
AIQ 7	Dave Maxwell	Section 3.8 Air Quality	Entire Section	A reference to an appendix or location where input and output data for air modeling was not provided.	Identify where the input and output data used for the air modeling analysis is contained. It should be included in an appendix. Appendix I (Air Quality) did not contain this information.	
AIQ 7	Tom Coulter	Section 3.8 Air Quality	Page 3-8.46, Para. 4	CALPUFF modeling was used for determining mercury deposition impacts.	Why was CALPUFF model run to determine mercury deposition impacts? The AERMOD model can also determine wet and dry deposition mercury impacts. The AERMOD model was used everywhere else for air modeling. An explanation would clarify the question.	
CLIM 3	Dave Maxwell	3.26 Climate Change	Table 3.26-2, page 3-26-8	Annual Reported Greenhouse Gas (GHG) Emissions by CO_2 eq (CO_2 equivalent).	The other GHGs should be included in this table such as carbon dioxide (CO_2), Methane (CH_4), and nitrous oxide (N_2O). the sum of these 3 GHGs should add up to the CO_2 eq total.	
AIQ 7	Dave Maxwell	Section 3.8 Air Quality	Page 3.8-14	Regional Haze Rule (RHR)	What is the current status of the RHR in Alaska? The Donlin Gold Project would be subject to RHR requirements. What are these requirements?	
CLIM 3	Dave Maxwell	3.26 Climate Change	Section 3.26.4 - Table 3.26-8	GHG Assessment Criteria for the Donlin Gold Project	Where are the calculations that show that project related emissions are less than 1% of the total annual GHG emissions for the State of Alaska?	

CLIM 3	Dave Maxwell	3.26 Climate Change	Page 3.26-2, Para. 1	Direct GHG emissions from project activities at the mine site would range from 1% to 10% of Alaska annual GHG emissions.	Where is the reference and/or supporting documentation (e.g., calculations) for this statement?	
CLIM 3	Dave Maxwell	3.26 Climate Change	Page 3.26-1, Para. 4	No references provided for quantitative statements made in the last paragraph.	GHG emissions statements are made for three mines without a reference to where these numbers originated. Section 3.26.3.1 (Atmosphere) is generally light on providing information on trends in GHGs in the Donlin Gold Project planning area.	
CLIM 2	Dave Maxwell	3.26 Climate Change	Page 3.26-26, Para. 1	Since the Donlin Gold Project exceeds 25,000 MT (metric tons) of GHGs/year (the CEQ, 2014 threshold), the project warrants a discussion of climate change in the NEPA process.	Where is the discussion of climate change in the NEPA process within the draft EIS? The reader should be directed to where this discussion occurs in the draft EIS.	
AIQ 10	Dave Maxwell	Section 3.8 Air Quality	Entire Section	A trend analysis of the Affected Environment was lacking.	Is the Air Quality trend getting better, worse, or remaining about the same for criteria pollutants, GHGs, hazardous air pollutants (HAPs), and volatile organic compounds (VOCs) within the planning area? See the Checklist I sent in the fall of 2014 (Air Resources Checklist for RMP's/EISs – Affected Environment). This shows where trends analyses are applicable.	

Dave Maxwell

Air Resource Specialist – National Operations Center

May 27, 2016

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Anchorage Fish and Wildlife Field Office
4700 BLM Road
Anchorage, Alaska 99507

In Reply Refer To:
FWS/AFES/AFWFO

February 15, 2017

EMAILED TO:
Mr. Richard Darden
U.S. Army Corps of Engineers
Post Office Box 6898
Joint Base Elmendorf Richardson, Alaska 99506-0898

Subject: Donlin Gold Mine, Technical Working Group Meetings, December 2016

Dear Mr. Darden:

The U.S. Army Corps of Engineers facilitated technical working group meetings, December 12 through December 15, 2016, to discuss analysis presented in the Donlin Gold Mine draft environmental impact statement. The U.S. Fish and Wildlife Service provided technical expertise in subsistence management, contaminants, hydrology, and conservation related to potential impacts on biological resources from the proposed project. We have reviewed the meeting notes from the TWGs and offer the attached comments, Enclosure 1.

Thank you for the opportunity to provide input on this project. If you have any questions, please contact me or our project lead Ms. Jennifer Spegon at 907-271-2768 or at jennifer_j_spegon@fws.gov.

Sincerely,

Douglass M. Cooper
Chief, Ecological Services Branch

Enclosure 1: Donlin Gold Mine, Technical Working Group Meetings, December 2016

The U.S. Fish and Wildlife Service (Service) submits the following comments to the U.S. Army Corps of Engineers (USACE) to clarify issues discussed during the Donlin Gold Mine Project technical working group (TWG) meetings , December 12 through 15, 2016, in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended: 16 U.S.C. 661 et seq.). Species potentially affected by the proposed project, for which the Service has trust responsibility, include migratory birds (Migratory Bird Treaty Act; 16 U.S.C. 703-712), bald and golden eagles (Bald and Golden Eagle Protection Act; 16 U.S.C. 668-668c), anadromous fish (Anadromous Fish Conservation Act; 16 U.S.C. 757a-757g), endangered species (Endangered Species Act; 16 U.S.C. 1531-1544), and resources related to subsistence needs (Alaska National Interest Lands Conservation Act; 16 USC 410hh-3233, 43 USC 1602-1784).

The following comments are provided for additional clarification and are organized by subject as presented at the TWG meetings. We are providing this information to the USACE to assist in their interdisciplinary review of the adequacy of the Donlin Gold Mine Draft Environmental Impact Statement (EIS) as required under the National Environmental Protection Act (NEPA).

Day 1 and 2, December 12 and 13, 2016, Mine Water and the Tailings Storage Facility
During the meeting there was discussion regarding outstanding groundwater-related issues and inadequacies in the current groundwater-related effects analyses, including but not limited to the following.

GRD 2

1. Based on information provided in the DEIS (Section 3.6.1.2.1), 2007, 2011, and 2014 Conceptual Hydrogeologic Model reports, and 2014 Numerical Hydrogeologic Model report, groundwater level / hydraulic head measurements collected to date are limited to the upper 800 feet of the mine site, and largely limited to 400 feet below ground surface (ft bgs). Two co-located groundwater level / head measurements appear to have been made at roughly 800 ft bgs and a maximum of ten measurements during any given period from about 400 to 600 ft bgs. All other reported groundwater level / head observations appear to have been made at 400 ft bgs or less (the upper 30 percent of the planned depth of the pit), with no such critical measurements below about 800 feet – i.e., the lower 40 percent of the planned depth of the pit and portions of the groundwater flow system that underlie the future pit and are relevant to the groundwater effects analyses. As discussed during Day 1 and 2 of the December technical workshops, currently available groundwater level / hydraulic head measurements are insufficient to:

    a. Develop a conceptual model of groundwater flow at the mine site (under pre-project conditions) to depths needed to evaluate the potential effects of the project, that is depths approaching those at which the project is likely, or certain, to have groundwater-related effects (greater than or equal to 1,400 feet, the planned depth of the pit and pit dewatering).

GRD 11

    b. Identify and characterize any regional groundwater flow which may be present at depths at which the project is likely, or certain, to have groundwater-related effects (greater than or equal to 1,400 feet), including potential off-site transport of contaminants of environmental concern from the pit under the current closure plan.

GRD 1

c. Construct and calibrate a defensible numerical groundwater flow model to estimate required pit dewatering rates and perform groundwater-related effects analyses, including estimates of: dewatering-induced drawdown of groundwater levels (areal extent, depth, and magnitude) and recovery following closure; changes in stream flows due to pit dewatering (areal extent and timing) and recovery following closure; the rate of formation of the pit lake; and a range of other project / closure-related effects relevant to NEPA analyses and disclosure. Specifically, the currently available groundwater level and hydraulic head measurements are insufficient to:

GRD 11

i. Identify defensible locations for the lateral model boundaries.

ii. Assign defensible conditions on the lateral model boundaries.

GRD 2

iii. Calibrate aquifer properties (parameters) for bedrock units at field scales (the scale of the required effects analyses) to depths at which the project is likely, or certain, to have groundwater-related effects; including the assessment and verification of any systematic decrease in the hydraulic conductivity of bedrock units (at field scales), which may or may not exist between the land surface and 1,400 plus feet below ground surface, a modest depth. To date, depth decay has been hypothesized and explicitly incorporated in the numerical groundwater model used to perform groundwater-related effects analyses, with significant impacts on both the calibration and predictions of the numerical model, albeit poorly supported by analytical parameter estimates based on hydraulic field tests interpreted without respect for the scale of the tests (largely packer tests influenced by minimal secondary structures).

GRD 4

GRD 2

GRD 3

iv. Investigate the hydraulic significance and/or characterize the hydraulic properties of major fault gouge and damaged (fracture) zones at the scale of the effects analyses (numerical model simulations); e.g., major fault gouge and damaged zones which have been documented in core in the vicinity of the planned pit through the full depth of the future pit and pit dewatering.

GRD 17

v. Calibrate areally-distributed groundwater recharge jointly with aquifer properties; values of the former currently largely based on the output of a water balance spreadsheet, uncertain, and having a significant effect on the calibration of aquifer properties (rock units and fault zones).

GRD 11

2. Instructive groundwater flow nets and simulations published by Toth (1963) and Winter (1976 and 1997) were cited during Day 1 and 2 of the December TWGs to suggest that regional groundwater flow at the depth of the planned pit and potential groundwater-related project effects (1,400 plus ft bgs) is unlikely at the Donlin site given the topography of the land surface (overall area), and/or absent an anomalously high-conductivity zone at depth below the site. Rather, the instructive flow nets and simulations prepared by Toth and Winter for hypothetical vertical cross-sections (through hypothetical groundwater flow systems) incorporated, by design, “no-flow” conditions on the lateral boundaries which precluded the simulation of regional groundwater flow in those examples and constrained all groundwater flow in the hypothetical systems to local flow cells. As such, the work of Toth (1963) and Winter (1976 and 1997), while instructive for the conditions simulated, have no relevance or implications for the presence or lack thereof of regional groundwater flow at the

GRD 11

Donlin site at the depths at which the project is likely or certain to have groundwater-related effects.

GRD 6

3. There are substantial implications under the current closure plan for potential off-site contaminant transport via regional groundwater flow in the vicinity of the pit, in addition to the transport of contaminants to local streams via local topographically-controlled groundwater flow, which has been demonstrated to exist. Based on fundamental considerations related to the configuration of groundwater flow to a partially-penetrating groundwater sink, hydraulic containment through the full depth of the Donlin pit lake will not, in general, exist or persist during either the development of the pit lake (filling of the pit) or once maximum managed stage is established.

NEPA 11

Day 3, December 14, 2016, Barge Transport

To analyze potential impacts on aquatic resources and subsistence users in the Kuskokwim River watershed, we suggest additional information be gathered and/or field data be collected. We have highlighted important issues from the TWG meeting on barge transport below.

1. We recommend resource sections in the EIS be revised to include analysis of interrelated and additive effects (e.g., vegetation and surface removal, habitat disturbance, modification of hydrology, soil modification, soil and/or wave erosion, contaminants, emissions, methylmercury, etc.) on environmental resources (i.e., vegetation, fish, wildlife, wetland habitat, subsistence resources, and subsistence users) from project related actions.

BARG 2

MIT 15

2. Environmentally sensitive areas along the barge transportation route should be identified, and additional analysis of these areas should be included in the revised EIS. Additional mitigation measures should be developed to avoid, reduce, or otherwise mitigate impacts on aquatic resources in the identified environmentally sensitive areas.

BARG 11

BARG 11

3. To more accurately estimate wave heights, and reduce potential impacts from project related activities, we recommend collection of additional field data or use of existing cross-section diagrams, especially along sensitive areas of the river that may be impacted by barge transportation or waved induced erosion. Cross-sections should clearly identify potential shipping routes with measured river depths and actual distance to shoreline to calculate wave heights. Field verified data should replace assumptions used to determine if the river is deep enough for necessary under-keel clearance, without dredging.

MIT 15

4. Although we will provide additional comments at the upcoming meetings on mitigation, the following mitigation opportunities came to light during the barge transportation discussion and should be considered in the revised EIS.
   a. A memorandum of understanding (MOU) should be drafted to formalize an agreement (with adaptive management and potential compensatory mitigation options) between Donlin Gold Mine and Native Villages to manage use of river to avoid, reduce, or compensate for impacts on subsistence users. As discussed during the TWG meeting this agreement could be somewhat analogous to the existing MOU Alaska Eskimo Whaling Commission Conflict Avoidance Agreement on the North Slope. It is important to analyze effects, both with and without this mitigation measure, in the revised EIS.

MIT 15

b. There should be a commitment from the project proponent, or a requirement from the USACE, to restrict project related shipping to use of double-hulled vessels. Otherwise, analysis of spill risk without use of double-hulled barges should be included in the revised EIS.

Day 4, December 15, 2016, Mercury

Below are our comments regarding issues identified during discussions considering mercury.

AIQ 11

1. The presentation on Mercury Deposition Modeling, by Krish Vijayaraghavan from Ramboll Environ, discussed the modeling performed to predict baseline mercury deposition in the project area into the future. We are concerned that the model did not consider the impact of climate change and melting permafrost on increased inputs of mercury to northern rivers in the arctic and subarctic, which is likely to become progressively worse over time as the arctic becomes progressively warmer.

AIQ 11

2. We suggest adjusting the fugitive gas emissions model to account for the percent of time solar radiation is in the high range. Concern was expressed during the TWG meeting that while solar radiation is high 20 percent of the time in the project area, radiation highs were not used to calculate fugitive gas emissions.

WAQ 21

3. Additional analysis of mercury fate and transport models will be necessary.
   a. Only about 1 percent of mercury in area sediments is currently in the methylmercury form, modelers assumed that future sediments would also contain only 1 percent of mercury in the methylmercury form, yet fresh sediments often have a higher percentage of methylated mercury than do historical sediments. Therefore, assumptions, such as linear relationship between atmospheric deposition rates and mercury concentrations in surface water and sediment, may have underestimated future fish mercury concentrations. Recent literature should be used to better predict site-specific methylation rates in the future (and hence better predict fish mercury concentrations).

WAQ 21

   b. Mercury methylation rates measured were biased low, because sites more likely to support methylation were not sampled. It is important to sample areas that are likely to support methylation.

WAQ 21

   c. We suggest a mercury methylation study be conducted, or at least additional mercury methylation data be collected (e.g., sulfate-reducing bacteria and total organic carbon). Modeling based only on limited areal measurements of methyl mercury concentrations alone may not provide accurate estimates of project impacts.

Thank you for considering our recommendations, we look forward to continuing working with the USACE on this project. If you have any questions, please contact Ms. Jennifer Spegon at 907-271-2768 or at jennifer_j_spegon@fws.gov.

Darigo, Nancy

From:	Darigo, Nancy
Sent:	Friday, February 24, 2017 9:27 AM
To:	Craig, Bill; jamunter@arctic.net
Cc:	Gray, Michael D
Subject:	Re: [EXTERNAL] FW: Pit lakes that become "flow-through" vs "terminal sinks"
Attachments:	2013_McCullough et al.pdf; 2012_McCullough et al.pdf

Ok. Forwarding to Jim for his consideration.
Nancy

From: Craig, Bill
Sent: Thursday, February 23, 2017 2:33 PM
To: Darigo, Nancy
Cc: Gray, Michael D
Subject: FW: [EXTERNAL] FW: Pit lakes that become "flow-through" vs "terminal sinks"

Nancy,
I think we just add this to the work we are doing for the FWS letter and address in the same memo.

Bill Craig

AECOM Alaska
D 907-261-6703
C 907-441-7207

-----Original Message-----
From: Darden, Richard L CIV USARMY CEPOA (US) [mailto:Richard.L.Darden@usace.army.mil]
Sent: Thursday, February 23, 2017 1:29 PM
To: Craig, Bill
Cc: Kennedy, Timothy A CIV USARMY USACE (US); DonlinEISAR
Subject: FW: [EXTERNAL] FW: Pit lakes that become "flow-through" vs "terminal sinks"

Hi Bill,

I am forwarding this message as one of two messages received from Sue Braumiller at USFWS regarding the topic of pit lake sink vs. pit lake flow-through facility.

I suggest you will want to distribute to the rest of your team as appropriate for their/our consideration in formulating final responses to comments and issues. No doubt, if there is any information here that would cause us to re-think our position I would take that very seriously. I read the abstracts of each paper and they do appear informative, but certainly from that I cannot tell whether and/or how applicable they may be to the circumstances at Donlin.

Thanks,
Richard

Richard L. Darden, Ph.D.
Regulatory Division

Alaska District
U.S. Army Corps of Engineers
JBER Anchorage, AK 99506

(907) 753-5710

-----Original Message-----
From: Sue Braumiller [mailto:sue_braumiller@fws.gov]
Sent: Thursday, February 23, 2017 10:06 AM
To: Darden, Richard L CIV USARMY CEPOA (US) <Richard.L.Darden@usace.army.mil>
Cc: Jennifer Spegon <jennifer_j_spegon@fws.gov>
Subject: [EXTERNAL] FW: Pit lakes that become "flow-through" vs "terminal sinks"

Hi Richard,

Hope all is well. Jennie suggested this info (this and a subsequent email and attachment/paper) I shared with her and Kendra Zamzow might also be of interest to you. Cheers - Sue

- - - - - - - - - - - - -

Sue Braumiller

Groundwater Hydrologist

Office: 775-861-6332

U.S. Fish & Wildlife Service

1340 Financial Blvd

Reno, NV 89502

From: Sue Braumiller [mailto:sue_braumiller@fws.gov <mailto:sue_braumiller@fws.gov>]
Sent: Tuesday, February 21, 2017 1:01 PM
To: Jennifer Spegon
Cc: 'Kendra Zamzow'; Sue Braumiller
Subject: Pit lakes that become "flow-through" vs "terminal sinks" GRD 6

Hi Jennie (& Kendra),

GRD 6 I was just at a mine water management symposium in Nevada that got me looking for published work on the conditions under which a pit lake may become a "terminal sink" (i.e., be fully hydraulically contained as of its final configuration – notably a less stringent condition than hydraulic containment throughout its filling), versus a "flow-through" pit lake – either type of condition being possible. In general, pit lakes that are terminal sinks may exist under arid conditions (high rates of evaporation at the lake's surface), most of this research from arid portions of Australia.

GRD 6

My comments of Dec and Jan were based on fundamentals related to groundwater sinks (basic principles of which I am confident). However, these two papers (attached) do a pretty nice job of specifically describing conditions under which a pit lake would, or would not, be "flow through" vs a groundwater sink (in all directions), consistent with my earlier comments.

It takes a water balance model, i.e., a reliable numerical groundwater flow model (as opposed to the current "water balance model" which only makes assumptions about water inflows and outflows to the pit/lake to approximate changes in water chemistry), in order to assess whether the conditions exist to render a pit lake a terminal sink or a sink (in all directions) during its formation. In my opinion, the current numerical groundwater flow model has too many issues to reliably perform such an evaluation. Thought these papers might be useful background on pit lake hydraulics (not a whole lot published on the topic). Also, here's a link to the best Pit Lake book I've been able to located (~$154 US):

Blockedhttp://mineclosure2016.com/acg/product/plakes/

Best regards - Sue

- - - - - - - - - - - - -

Sue Braumiller

Groundwater Hydrologist

Office: 775-861-6332

U.S. Fish & Wildlife Service

1340 Financial Blvd

Reno, NV 89502

2012

Pit lakes as evaporative 'terminal' sinks: an approach to best available practice mine closure

Clinton Mccullough
Edith Cowan University

Genevieve Marchant

Jorg Unseld

Michael Robinson

Benjamin O'Grady

2013

Mine closure of pit lakes as terminal sinks: best available practice when options are limited?

Clinton D. Mccullough
Edith Cowan University, c.mccullough@ecu.edu.au

G. Marchand

J Unseld

Darigo, Nancy

From: Darigo, Nancy
Sent: Friday, February 24, 2017 9:28 AM
To: Craig, Bill; jamunter@arctic.net
Cc: Gray, Michael D
Subject: Re: [EXTERNAL] FW: Very simple discussion - flow-trhough vs hydraulic sink pit lakes
Attachments: 2009_Niccoli.pdf

From: Craig, Bill
Sent: Thursday, February 23, 2017 2:33 PM
To: Darigo, Nancy
Cc: Gray, Michael D
Subject: FW: [EXTERNAL] FW: Very simple discussion - flow-trhough vs hydraulic sink pit lakes

Second email.

Bill Craig

AECOM Alaska
D 907-261-6703
C 907-441-7207

-----Original Message-----
From: Darden, Richard L CIV USARMY CEPOA (US) [mailto:Richard.L.Darden@usace.army.mil]
Sent: Thursday, February 23, 2017 1:31 PM
To: Craig, Bill
Cc: Kennedy, Timothy A CIV USARMY USACE (US); DonlinEISAR
Subject: FW: [EXTERNAL] FW: Very simple discussion - flow-trhough vs hydraulic sink pit lakes

This is the second of two messages from Sue Braumiller at USFWS. My statements from the first forwarded message apply to this one as well.

Thanks,
Richard

Richard L. Darden, Ph.D.
Regulatory Division
Alaska District
U.S. Army Corps of Engineers
JBER Anchorage, AK 99506

(907) 753-5710

-----Original Message-----
From: Sue Braumiller [mailto:sue_braumiller@fws.gov]

Sent: Thursday, February 23, 2017 10:07 AM
To: Darden, Richard L CIV USARMY CEPOA (US) <Richard.L.Darden@usace.army.mil>
Cc: Jennifer Spegon <jennifer_j_spegon@fws.gov>
Subject: [EXTERNAL] FW: Very simple discussion - flow-trhough vs hydraulic sink pit lakes

And here's the second email/paper on the topic that I found particularly helpful. Take care! - Sue

- - - - - - - - - - - - -

Sue Braumiller

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From: Sue Braumiller [mailto:sue_braumiller@fws.gov <mailto:sue_braumiller@fws.gov>]
Sent: Tuesday, February 21, 2017 1:26 PM
To: Jennifer Spegon
Cc: 'Kendra Zamzow'; Sue Braumiller
Subject: Very simple discussion - flow-trhough vs hydraulic sink pit lakes

GRD 6

I checked the DEIS real quick and see something like an estimated 19.8 in/yr precipitation at Crooked Creek, and 12.6 in / yr estimated pit lake evaporation.

Although a somewhat oversimplification of the hydraulics, this paper suggested that where precipitation exceeds the rate of pit lake evaporation, pit lakes are often "flow-through". - Sue

- - - - - - - - - - - - -

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CHAPTER 4

Hydrologic Characteristics and Classifications of Pit Lakes

W.L. Niccoli

INTRODUCTION

The mining process—the act of extracting geologic materials from the earth's crust—always ends with a "hole in the ground." The nature of this hole can range from large, cavernous openings, kilometers in length beneath the ground surface, used to extract base and precious metals to a small pit outside of an urban area where gravel was once extracted. The latter technique, open pit mining, is likely the most common material extraction methodology utilized in mining today. Open pit mining techniques are used for extracting commodities such as sand and gravel, base metals (e.g., copper and zinc), and precious metals (e.g., silver and gold). Figures 4.1 and 4.2 provide typical examples of open pit mines. Open pit mining often intersects the groundwater table, such that when the extraction process is complete, the open pit will remain and, in many cases, may form a pit lake. The focus of this chapter is to discuss a handful of aspects related to the hydrology of open pits or pit lakes after mining ceases, such as

- How do "flow-through" pit lakes differ from "terminal" pit lakes?
- What is known about the water quality of these lakes from observations of existing pit lakes?
- What impact will climate change have on hydrology?
- How does artificial flooding of pit lakes with surface water affect groundwater input?
- What can be expected in future pit lakes?
- What are the current data gaps?

Woodhouse (2002) provides a grouping of articles that describe a wide range of topics associated with mine pit lakes.

HYDROLOGIC STATUS OF PIT LAKES

Two types of hydrologic conditions exist in pit lakes:

1. Flow-through conditions—surface and/or groundwater flows into and out of this type of lake (Figures 4.3 and 4.4).
2. Terminal conditions—groundwater flows into the pit and outflow occurs only as evaporation (Figure 4.5).

Flow-through pit lakes are common in areas where rainfall exceeds evaporation, in highly productive aquifers where groundwater inflows exceed evaporation rates (e.g., alluvial aquifers), and any time that the net water balance surrounding the pit is positive. Another type of a flow-through

FIGURE 4.1 Gravel quarry pit lake, Grand Junction, Colorado, United States

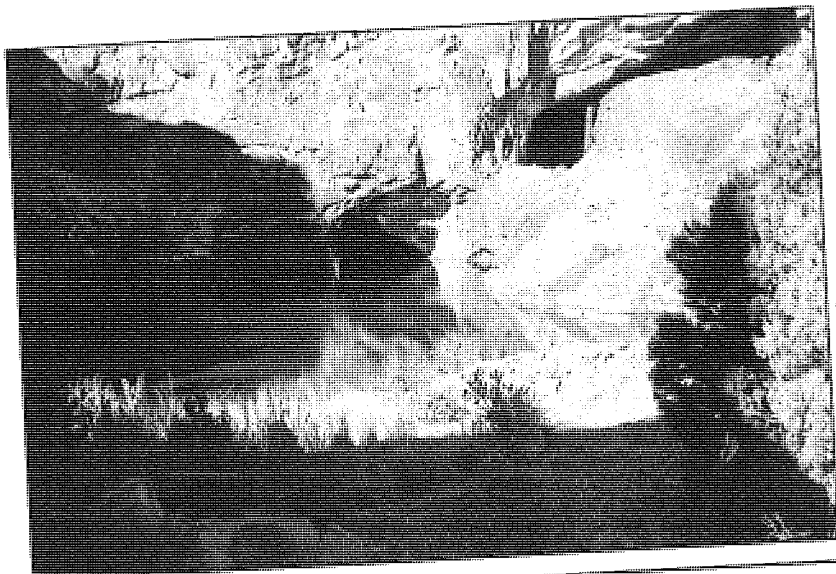

FIGURE 4.2 Small mine pit lake with adits, arid region of southwestern United States

pit lake is one that exists above the water table and is filled by surface water. Outflows consist of vertical leakage and evaporation.

Terminal pit lakes are common in the arid areas of the world where evaporation exceeds rainfall/precipitation or any time that the net water balance surrounding the pit is negative. With seasonal or long-term climatic changes, the hydrologic status of a pit lake may fluctuate between terminal and flow-through. The Martha mine in New Zealand (Ingle 2002) is an example of a uniquely engineered flow-through pit lake. After closure, the plan is to place a drainage pipe below the premining groundwater elevation that will fix the elevation of the postmining pit lake. Whereas all local groundwater will flow into the lake, the discharge of surface water will make the pit lake exhibit flow-through conditions. A terminal pit lake would have evaporation as the only discharge.

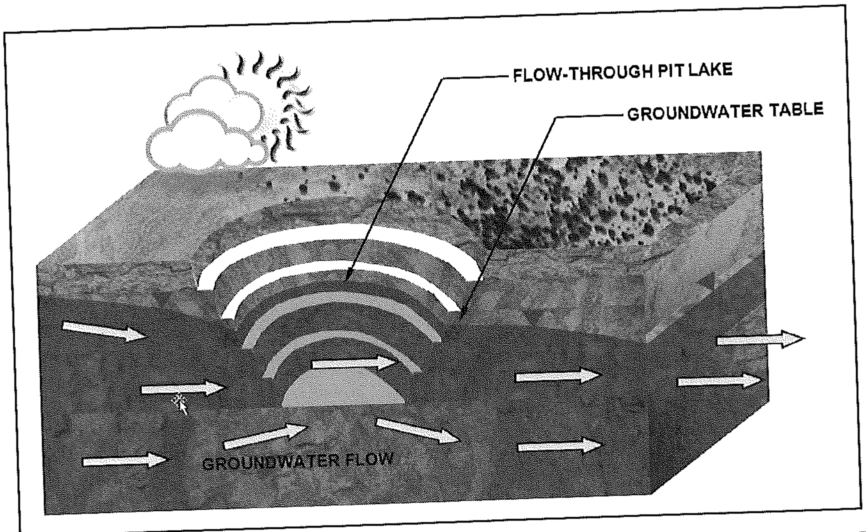

FIGURE 4.3 Flow-through pit lake below the groundwater table

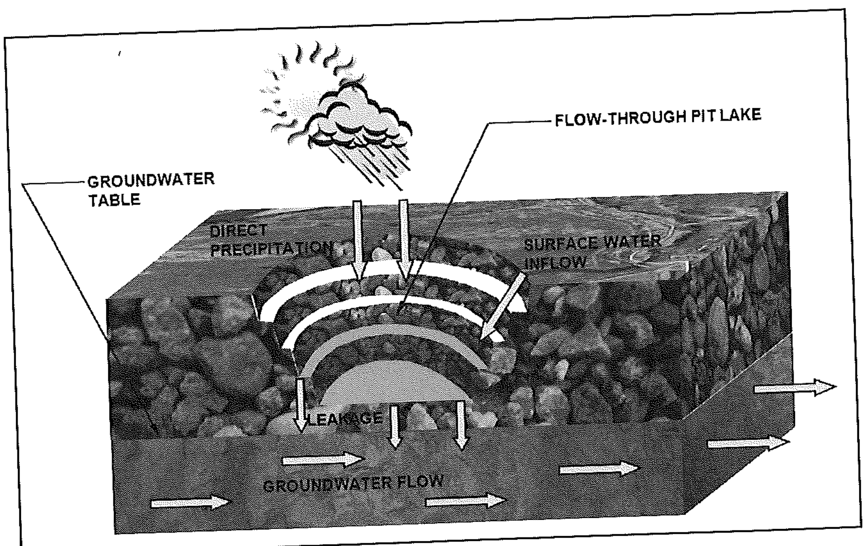

FIGURE 4.4 Flow-through pit lake above the groundwater table

In the United States, the Sweetwater pit in Wyoming is an example of a terminal pit lake, whereas the Berkley pit in Montana, if left unmanaged, is expected to become a flow-through pit lake.

To determine which condition exists for any particular pit lake, measurements and observations of the hydrologic components of the pit lake are key. Groundwater elevation data surrounding the pit lake, pit lake elevations, precipitation, and surface water inflows and outflows are parameters that should be measured. Maps of groundwater heads, expressed as groundwater elevations (i.e., potentiometric maps), and flow nets built from the collected groundwater head data can show the hydrologic status of a pit lake (Figure 4.6). Predicting the hydrologic condition of a pit prior to its filling and reaching steady state is a different endeavor and is covered

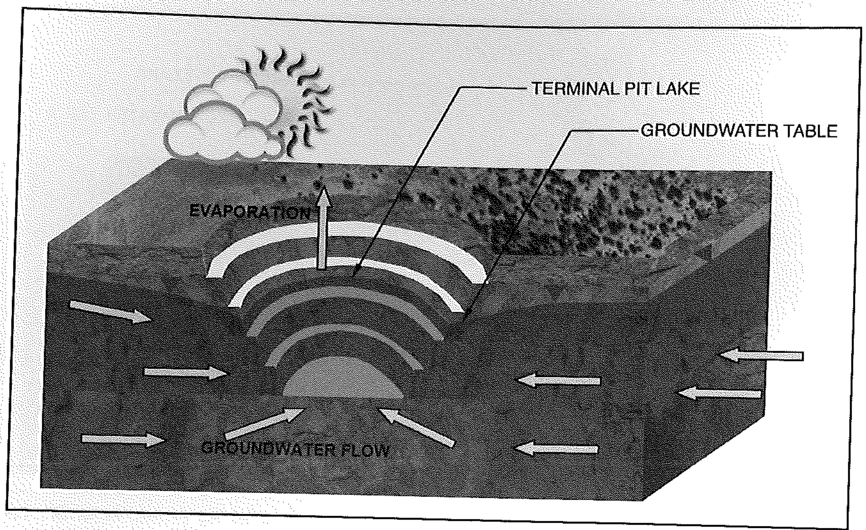

FIGURE 4.5 **Terminal pit lake—all outflow is from evaporation**

in Chapter 8. However, the same measurements required to determine the hydrologic status of a lake after filling are helpful in aiding predictions before filling.

Two possible scenarios are encountered when an evaluation to determine the hydrologic status of a pit lake is undertaken: (1) Information exists for the premining hydrologic conditions at the site and good records of dewatering rates at different mine elevations exist, and (2) little to no historic data are available. Scenario 1 provides the most robust method of evaluating the hydrologic status of a pit lake. Historical information can be used to quantify water balance components (Figure 4.7) and an estimate of the pit lake water balance (i.e., summing the inflows and comparing them to the outflows) completed. By evaluating available groundwater elevation data, comparing them to known pit lake water elevations, and examining the water balance, the hydrologic status of the pit lake can be estimated. For example, if the dewatering rate at a given elevation matches the net evaporation (i.e., the balance of direct precipitation, runoff, and lake evaporation) at the same elevation, the lake is likely at a steady state. If groundwater elevation data surrounding the pit lake are all higher than the lake surface elevation, the lake is terminal.

Scenario 2 presents a more difficult challenge; however, both a water balance and an estimate of the groundwater conditions must be made. Water balances without measurements require that estimates be made from available (or newly collected) data. It is beyond the scope of this chapter to describe all of the methods of estimating the various components of the hydrologic balance associated with a pit lake. The reader is therefore pointed to classic textbooks such as McWhorter and Sunada (1977), Freeze and Cherry (1979), Watson and Burnett (1993), and Schwab et al. (1981) to gain a fundamental understanding of these components. Provided herein is an example of evaluating the hydrologic status of a pit lake using a hypothetical pit lake.

Presuming that the owner of the hypothetical pit lake shown in Figure 4.6 purchased the property recently and that any hydrologic records from the previous owner had burned in a fire and were no longer available. The new owner wanted to estimate the amount of water flowing through the pit for regulatory purposes (e.g., to satisfy water rights regulations or meet discharge permit requirements). Given that there are wells in the area, he sent out a team from his

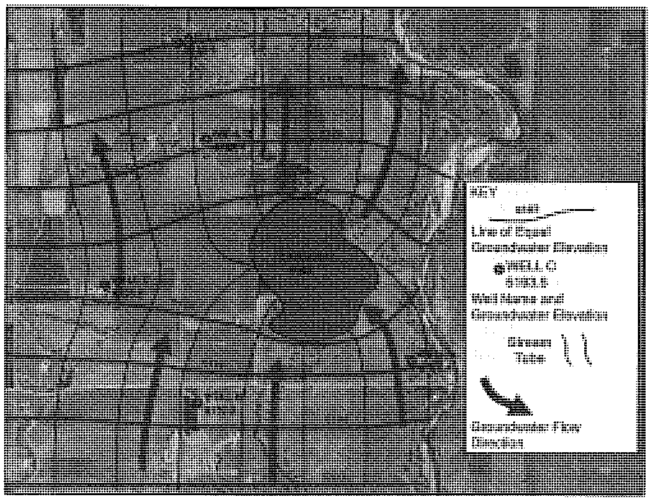

FIGURE 4.6 Potentiometric map and flow net associated with a flow-through pit lake. Water elevations are given in feet (1 foot = 0.3048 meters).

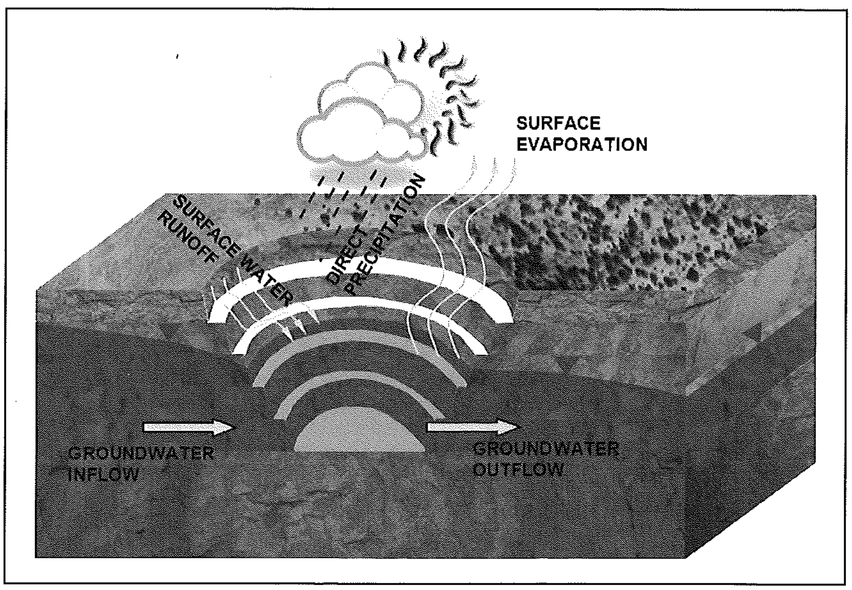

FIGURE 4.7 Hydrologic processes associated with a pit lake

environmental department to measure water elevations in the wells and the pit lake. He also had them perform aquifer tests in all the wells. Concurrently, the team searched the Internet and found the mean annual precipitation and pan evaporation rates from a nearby governmental weather station. Table 4.1 shows the data that were gathered during the investigation.

The team created the groundwater elevation and flow map shown in Figure 4.6, which shows that the pit is likely flow-through. To calculate the groundwater flow to the pit, they used Darcy's law and the flow net shown on Figure 4.6. These calculations are shown in Table 4.2. Table 4.2

TABLE 4.1 Example of field hydrologic investigation results

Well Name	Water Elevation, ft	Water Elevation, m	Hydraulic Conductivity, ft/d	Hydraulic Conductivity, m/d
Well A	5195.5	1583.5	375	114.3
Well B	5197.2	1584.0	700	213.3
Well C	5193.5	1582.9	350	106.7
Well D	5189.8	1581.8	600	182.9
Well E	5185.9	1580.6	150	45.7
Pit	5193.0	1582.7		
Geometric mean	—	—	383	116.7
Geometric mean, wells A–C	—	—	451	137.5
Mean annual precipitation	8 in./yr	20.3 cm/yr	—	—
Mean annual pan evaporation	72 in./yr	182.9 cm/yr	—	—

also shows that the outflow is approximately 85% of the groundwater inflow. This reduction in flow is represented by the narrower width of the stream tubes downgradient of the pit in Figure 4.6.

This straightforward approach is just an example of one method to estimate the hydrologic status of a pit lake, but it can be quite robust and provides a good idea of the magnitude of the flows associated with the pit lake. However, one should exercise diligence when performing any kind of analysis to make sure that other factors are not influencing the water balance associated with the pit. For example, unknown heterogeneity in the aquifer such as fractures, faults, and historic works may not be apparent in the investigation, yet they could have important effects on the actual flow. If these features are suspected to occur, further investigation is warranted.

HYDROLOGIC IMPACTS ON PIT LAKE WATER QUALITY

The water quality of a pit lake is a result of many contributing factors including but not limited to

- Geology and mineralogy of the host formations,
- Influent water quality,
- Concentrating effects of evaporation,
- Geochemical, biological, and limnologic processes within the lake, and
- Anthropogenic impacts.

The hydrology of a pit lake affects the water quality of the pit lake by changing the chemical mass balance associated with the lake.

To make a general statement that one type of hydrologic condition results in better water quality than another would be a misstatement on account of the influence of nonhydrologic processes. The ultimate disposition of pit lake water quality is a balance of all the effective processes. However, general statements regarding the impacts of individual hydrologic processes (Figure 4.7) on water quality can be made:

- Groundwater inflows carry dissolved constituents at background concentrations into the lake. Natural, upgradient groundwater will have a certain water quality and will contribute constituents to the pit lake. Inflowing groundwater can also pick up constituents from

TABLE 4.2 Calculation results

Darcy's Law

$$Q = \text{Area} \times K \times \frac{\Delta H}{L}$$

where
Q = groundwater flow
Area = cross-sectional area of flow
K = hydraulic conductivity
ΔH = change in hydraulic head over the flow length, L

Data	
L = 2,500 ft	Distance between hydraulic head contours on one stream tube (see Figure 4.6).
W = 2,500 ft	Width of an upgradient stream tube (see Figure 4.6).
D = 350 ft	Depth of pit and aquifer
K = 451 ft/d	Geometric mean of measured hydraulic conductivity in the area upgradient and near the pit lake. Note: The geometric mean typically yields that best estimate of the effective hydraulic conductivity that represents the overall aquifer.
ΔH = 2 ft	Change in hydraulic head over the calculation length L
A = 451 acres	Surface area of the pit lake
$\text{evap}_{\text{rate}}$ = 72 in./yr	Pan evaporation rate
$\text{precip}_{\text{rate}}$ = 8 in./yr	Mean annual precipitation
Calculations	
$q_{\text{streamtube}} = W \cdot D \cdot K \cdot \Delta H / L$ $q_{\text{streamtube}}$ = 1,640 gpm	Flow in upgradient stream tube using Darcy's law
$\text{No}_{\text{streamtube}} = 4$	Number of stream tubes flowing to pit lake
$Q_{\text{gw\_In}} = \text{No}_{\text{streamtube}} \cdot q_{\text{streamtube}}$ $Q_{\text{gw\_In}}$ = 6,560 gpm	Groundwater inflow to the pit
Evap = $\text{evap}_{\text{rate}} \cdot A \cdot 0.7$ Evap = 1,173 gpm	Evaporation from the pit lake surface (0.7 is a typical factor to convert pan evaporation to lake evaporation rates)
Precip = $\text{precip}_{\text{rate}} \cdot A$ Precip = 186 gpm	Direct precipitation to the pit lake
$Q_{\text{gw\_out}} = Q_{\text{gw\_In}}$ + Precip − Evap $Q_{\text{gw\_out}}$ = 5,573 gpm	Groundwater outflow from the pit based on a water balance—assuming no surface water run-on
Conversions	
1 gpm = 3.7854 Lpm	U.S. gallons per minute converted to liters per minute
1 acre = 4,047 m^2	Acres converted to cubic meters
1 in. = 2.54 cm	Inches converted to centimeters
1 ft = 0.3048 m	Feet converted to meters

Source: Adapted from Marinelli and Niccoli 2000.

weathered rock immediately surrounding the pit lake or from recharging meteoric water passing through the dewatered zone.

- Surface water runoff from pit walls may transport constituents and sediments that will affect the chemistry of the lake.
- Direct precipitation generally is a diluting factor on pit lake quality.

- Because evaporation takes out the water and leaves behind any dissolved constituents, evaporation tends to have a concentrating effect on pit lake water quality.
- Ground- and surface water outflows from pit lakes typically have the effect of removing constituents from the lake. However, if the lake is stratified, these outflows may remove water of different quality, which may result in either improved or worsened water quality in the pit lake.

Generally, it can also be said that the hydrologic status of a pit lake can affect whether or not the lake water quality will reach a condition of hydrochemical steady state (i.e., dissolved constituent concentrations in the pit lake are relatively constant over time). For example, a flow-through lake has a better chance of reaching a hydrochemical steady-state condition because chemical inflows and outflows from the lake water column can eventually balance if no other processes are active. It is impossible for hydrologic processes alone to keep a terminal pit lake from reaching chemical equilibrium (i.e., chemicals flow into the pit lake water column but none flow out). These statements are by necessity generalities, and the impacts of hydrologic and other chemical processes are unique to each individual pit lake.

CLIMATE CHANGE AND PIT LAKE HYDROLOGY

Climate is the single most important factor on the hydrologic processes associated with a pit lake. Changes in climate (e.g., temperature, rainfall, wind, precipitation amount and distribution) will affect the individual hydrologic components differently. In general, surface hydrologic processes (e.g., direct precipitation, evaporation, surface water runoff) are impacted immediately upon a change in climate. Groundwater inflows are generally and ultimately generated from precipitation recharge. The groundwater system tends to buffer short-term climatic changes, but long-term climatic changes will be reflected in groundwater inflows over the long term.

The Intergovernmental Panel on Climate Change (IPCC 2007) indicated that there is a strong probability that temperatures will continue to increase into the future given that current conditions affecting atmospheric processes remain constant. This increase in temperatures will affect surface hydrologic processes differently in different parts of the world. Some areas will become wetter while other will become drier. For the western United States, Hoerling and Eischeid (2007) used climate models to predict the Palmer Drought Severity Index in the future. Their work indicates that drought conditions will be worse than at any time in the recent past and drier conditions will prevail. Thus, evaporation rates are anticipated to increase, resulting in an increased loss of surface water from rivers and lakes.

For pit lakes, a dryer climate will most certainly result in lower pit lake elevations. Contrarily, a wetter climate will most certainly result in higher pit lake elevations. However, it is difficult to make broad statements about how climate changes will affect the status of a pit lake (i.e., if it will change from a flow-through to a terminal pit lake or vice versa), because climate changes will affect all the components of the hydrologic system. Because each individual pit lake is different, the resulting water balance from climate change must be evaluated on a case-by-case basis to determine climate change effects on pit lake status. Assessing the effects of potential climate changes was described in Chapter 3.

ARTIFICIAL FLOODING EFFECTS ON GROUNDWATER INFLOW

One method for affecting pit lake water quality is to flood the empty pit at the end of mining with surface water, artificially raising the water elevation in the lake to long-term equilibrium levels over a relatively short time period. The idea being that if there are oxidizing conditions in the pit walls that release acidity and other constituents, a quick submersion reduces the time available (i.e., hydrologic steady-state conditions are reached more quickly) for oxidation to take place and thus reduces the ultimate chemical loading to the pit lake. Also, the water quality of waters used for flooding can be of high quality, resulting in an improvement of initial pit lake water chemistry over that which can result from natural inputs.

If a pit is below the water table and it is artificially inundated, then the hydraulic head in the pit lake will be immediately higher than all the surrounding groundwater elevations (Figure 4.8). Because groundwater *always* flows downgradient (not necessarily along geologic formations or features as is sometimes commonly thought), inflow to the pit will cease and flow will be out of the pit lake into the groundwater system, filling the void space in the surrounding wall rock. This process can push constituents released from the wall rock farther into the groundwater aquifer, effectively increasing the zone of impact surrounding the pit. As such, the potential environmental impacts of artificial filling on regional groundwater resources need to be considered prior to adopting this strategy. The size of the draw-down cone surrounding the pit, the time that the pit has been dewatered, the geology and mineralogy of the pit walls, and the ultimate hydrologic status of the pit lake will dictate the magnitude of impacts to the surrounding groundwater system.

Under artificial filling conditions, groundwater inflows to the pit will cease until the heads in the surrounding aquifer increase to elevations higher than the pit lake surface and the pore spaces surrounding the pit are filled. Groundwater inflows will then increase to the pit lake until a near-steady-state flow rate is achieved.

FUTURE OF PIT LAKES

The hydrologic status of future pit lakes will be dependent on a multitude of factors ranging from climate to regulatory policy changes. Short- and long-term climate changes will inevitably affect the hydrologic status of pit lakes. Continuing research in the prediction and monitoring of climate change will be important to understanding the future status of pit lakes, as climate will

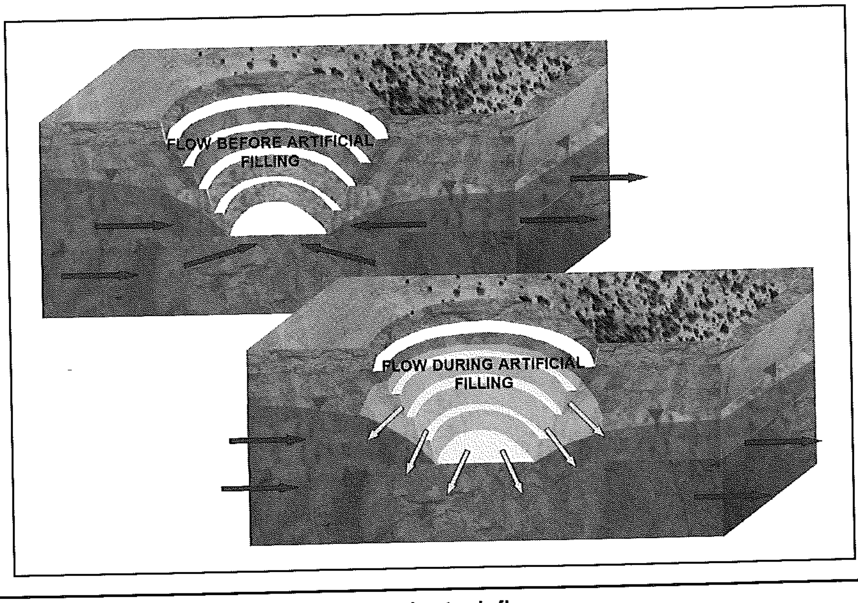

FIGURE 4.8 Artificial filling impacts on groundwater inflow

affect every component of the water balance associated with pit lakes. Future regulatory policies will likely be more protective of the environment. Regardless of climate or policy changes, each pit lake should be evaluated on its own individual merits and as a part of the entire hydrologic system. The advantages and disadvantages of allowing pit lakes to form should be evaluated and objectives developed (e.g., a pit lake may be allowed to form in order to treat water or to be a storage feature in a supply system) prior to pit lake formation. Then, if the lake is allowed to form, a robust monitoring and management program can be implemented to ensure that the pit lake is meeting its objectives.

HYDROLOGIC CHARACTERIZATION DATA GAPS

From a hydrologic standpoint, the inevitable question that is asked regarding an existing pit lake is, "What is the water balance associated with a pit lake?" Ancillary questions are also asked, such as when will it reach a steady water level, will it be terminal or flow-through, and what will its final depth be? By accurately defining the water balance associated with the pit lake, most associated hydrologic questions can be answered.

The most accurate method for determining a water balance would be a direct measure either at the time the question is asked or measurements taken during mining of the pit (e.g., groundwater inflow rates as a function of pit depth). Direct precipitation can be measured with a fair degree of accuracy, and lake surface evaporation can be estimated from pan evaporation measurements taken on-site near the pit lake in question. If complete and accurate dewatering flow rates and groundwater elevation records were taken during mining, groundwater inflow can be robustly estimated. The remaining components (high wall evaporation and groundwater outflow) are typically found through difference. Niccoli et al. (2004) describes a hydrologic balance approach to estimating hydrologic components with a mine pit in Montana. In arid regions, high wall evaporation (i.e., direct evaporation from groundwater exiting the high wall) can be a large component of the water balance, especially if groundwater elevations rebound such that a seepage face develops (Figure 4.9). Continuing research into high wall evaporation would be worthwhile.

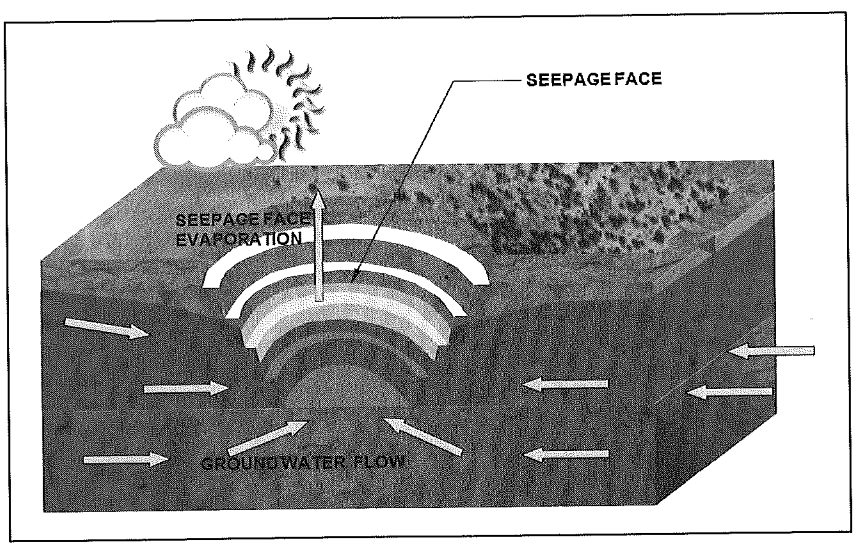

FIGURE 4.9 Seepage face evaporation—groundwater flows to the pit above the pit lake water level

Perhaps direct flux measurements along known seepage faces to verify previous estimates could further understanding of this component. A concerted effort in compiling a database of existing pit lakes and associated hydrologic predictions would be worthwhile. This database could then be used to understand how accurate predictions were, and whether they are close enough to answer the questions asked and to evaluate where weaknesses in predictions occur.

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From:	Jen, Mark
To:	donlingoldeis, POA
Cc:	Newman, Sheila M POA; Brewer, Jason D POA; Gordon, Keith POA; Littleton, Christine
Subject:	[EXTERNAL] Donlin Gold DEIS - EPA Comments
Date:	Tuesday, May 31, 2016 4:25:12 PM
Attachments:	Donlin Gold DEIS - EPA Comments 5_31_2016.pdf

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement for the proposed Donlin Gold project. Our independent review was conducted in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act. We also appreciate serving as a cooperating agency during the NEPA process for this project.

Please find attached EPA's comments on the Donlin Gold Project DEIS. Feel free to contact me if you have any questions.

Thanks

Mark S. Jen
U.S. Environmental Protection Agency, Region 10
Alaska Operations Office
222 W. Seventh Avenue #19
Anchorage, Alaska 99513-7588
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

May 31, 2016

Ms. Sheila Newman, Chief
Specials Actions Branch
Regulatory Division
U.S. Army Corps of Engineers
P.O. Box 6898
Joint Bases Elmendorf Richardson, Alaska 99506-0898

Dear Ms. Newman,

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the proposed Donlin Gold Project. Our independent review was conducted in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act, which specifically directs the EPA to review and comment in writing on the environmental impacts associated with all major federal actions. The EPA is serving as a cooperating agency during the NEPA process for this project.

The Donlin Gold Project consists of three components: the mine site, the transportation facilities, and the natural gas pipeline. The major facilities at the mine site include an open-pit hardrock gold mine, a waste rock facility, a tailings dam and storage facility, and a mine ore processing facility. At mine closure, these facilities would be reclaimed and revegetated. Long-term water quality monitoring would be required in perpetuity. Under the proposed action, a new port facility would be constructed on the Kuskokwim River at Jungjuk. The Jungjuk port would be connected to the mine site by a 30-mile long gravel access road. The existing ports at Bethel and Dutch Harbor would require modifications. An airstrip and mine camp would also be constructed. A 315-mile long and 14-inch diameter buried steel pipeline would transport natural gas from Beluga, Alaska, to the power plant at the mine site.

NEP 6 The EPA's review of the DEIS has identified potentially serious impacts to human health and the environment. Therefore, the EPA has assigned an overall rating of EO-2 (Environmental Objections – Insufficient Information) to the Donlin Gold Project DEIS. Our review criteria for rating the DEIS are available on the EPA's website: https://www.epa.gov/nepa/environmental-impact-statement-rating-system-criteria. We have concerns that the proposed project may increase concentrations of mercury and
PHL 16 arsenic in surface waters and sediments, which are already elevated under baseline conditions, thereby posing a human health risk to the native communities of the Kuskokwim River region. The DEIS failed to provide the Donlin Health Impact Assessment (HIA) for public review and comment. In addition, we noted inconsistencies among the alternatives and the related environmental analyses that we recommend be addressed in the EIS, particularly regarding subsistence resources and users.

WET 2 The current information and analysis in the DEIS is not sufficient to fully evaluate the potential adverse impacts to wetlands and aquatic resources. We further note that the DEIS does not identify a preferred alternative. We recommend that the alternatives analysis provide the information necessary to support an
CWA 4 evaluation of alternatives under the Clean Water Act §404(b)(I) Guidelines, including information to support identification of the least environmentally damaging practicable alternative (LEDPA).

PAA 17 The Kuskokwim River Watershed, including the tributaries of Crooked Creek, American Creek and Anaconda Creek (KRW), is an important aquatic resource of local, state, and national importance. The KRW is a major resource used for drinking water, transportation, and subsistence and commercial fishing for the native communities. Increased barge traffic on the Kuskokwim River may result in adverse impacts to this resource. We recommend that the EIS identify a preferred alternative that incorporates components of Alternatives 3A (LNG Powered Trucks), 3B (Diesel Pipeline), and 5A (Dry Stack Tailings with liner option) into Alternative 2 (Proposed Action) to avoid and minimize potential adverse impacts to the KRW. This may also represent the environmentally preferable alternative.

MIT 7 It is our understanding that the U.S. Army Corps of Engineers plans to make substantive changes to the wetlands functional assessment methodology and estimates of wetland impacts for the EIS. In addition, the compensatory mitigation plan is conceptual, as information needed to support its development, such as the extent of aquatic resources at the site and their functions, has not yet been finalized. We therefore recommend that the Corps provide complete and accurate information when it is available, and release the revised analysis for public review and comment. In addition, we encourage the Corps to withdraw the current Department of Army Public Notice (PN) issued with the DEIS and issue a supplemental, revised, or corrected PN for review comment and make sure that the new information is captured in the EIS. Doing so will provide the public with an opportunity to review and comment on the new information and analysis, and potential project changes prior to the issuance of a Record of Decision and the CWA §404 permit.

PHL 2 The Health Impact Assessment was not included in the DEIS. We have concerns that the health information and analysis in the DEIS may be inconsistent with the findings of the HIA. We recommend that the draft HIA be distributed for review and comment and public outreach be provided to the local communities regarding the results of the HIA. We recommend that the publicly reviewed and, if necessary, revised HIA be incorporated into the EIS.

As noted above, the Donlin Gold Project may contribute to an increase in existing, mercury and arsenic baseline concentrations, which are naturally elevated in surface waters and sediments. The project may also increase exposure of subsistence foods, drinking water, and air to contaminants from stack emissions and fugitive dust sources. We recommend that the EIS include additional risk-based assessments of potential sources, pathways and routes for human exposure to contaminants, including evaluation of acceptable limits for human health. We recommend that the cumulative effects analysis evaluate cumulative impacts to human health from exposure to past, present, and reasonably foreseeable future actions. We encourage the project proponent to partner with the State of Alaska and the local communities to implement long-term biological monitoring programs for human health and subsistence foods throughout the active mine life and post closure.

MIT 24 During mine operations, the dewatering of the open pit mine using groundwater wells would lower the water table resulting in a reduction and/or elimination of surface and groundwater inputs to Crooked Creek and adjacent wetlands. We have concerns regarding impacts to fish rearing, migration, and spawning habitat, as well as to eggs incubating in the gravel. To augment the reduction and/or elimination of surface water flows, we recommend that the EIS evaluate the advanced water treatment of the groundwater and the discharge of the treated water into Crooked Creek further downstream from the influences of the mine pit dewatering wells.

BER 8 We recommend that the FEIS include discussion clarifying whether and how a premature mine closure would affect financial assurance for closure and reclamation and payments to establish the Donlin Gold

Trust Fund for long-term monitoring. It is our understanding that models have been used to evaluate the financial assurance estimates during different timeframes of the active mine life. A figure outlining funding throughout mine life and closure should be included in the EIS.

MIT 29 The continued integrity of the tailings storage facility and dam are dependent on the design, construction, monitoring and maintenance. Adhering to an adaptive management plan based on a Failure Modes Effects Analysis (FMEA) is an effective manner to prevent a breach, and minimize the occurrence of events like the failure at the Mount Polley Mine in central British Columbia, resulting in a catastrophic release of tailings slurry/saturated tailings into the watershed. We note that a FMEA was developed during the DEIS process and we recommend that the FMEA process continue to be used to inform the engineering design and mitigation processes as the project continues through the active mine life and post-closure.

The EPA participated in the DEIS public meetings in Crooked Creek, Akiak, Aniak, Bethel, and Anchorage. We consistently heard concerns regarding potential spill risks, contamination of subsistence foods, and changes to the traditional subsistence way of life as a result of the proposed Donlin Gold Project. We encourage the project proponent to continually engage and actively work with the native

PUB 1 communities of the Kuskokwim River region on developing regional spill response plans, including training and exercises, and monitoring potential contaminants in water and sediments, and subsistence foods, to maintain healthy individuals and strong communities.

BER 8 Finally, we note the valuable inclusion of financial assurance information in the DEIS. This information is an important component of the analysis and public disclosure, consistent with the intent of NEPA.

The EPA's detailed comments regarding our concerns on the Donlin Gold Project DEIS are enclosed (Enclosure 1).

Thank you for the opportunity to review and provide comments on the Donlin Gold Project DEIS. As a cooperating agency, the EPA looks forward to working with the Corps to address the issues and concerns we have identified in this letter. If you have any questions regarding our comments, please do not hesitate to contact me at (206) 553-2581 or feel free to contact Mark Jen of my staff in the Alaska Operations Office in Anchorage at (907) 271-3411. We appreciate your continued coordination and involvement in advancing this important resource development project for Alaska.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Enclosure

ENCLOSURE 1
U.S. ENVIRONMENTAL PROTECTION AGENCY
DETAILED COMMENTS ON THE DONLIN GOLD PROJECT DRAFT EIS
(EPA NO. 12-0057-COE)

ALTERNATIVES ANALYSIS

During the public meetings, we heard comments regarding concerns about impacts from increased barge traffic on the Kuskokwim River, potential spills, contamination of subsistence resources, and changes to the traditional subsistence way of life. We recommend a re-evaluation of the alternatives analysis in order to identify a preferred alternative that will be environmentally protective to support identification of the least environmentally damaging practicable alternative (LEDPA) as required under the Clean Water Act (CWA) §404(b)(1) Guidelines.

<u>Alternative 2 (Proposed Action)</u>

We have concerns that the Waste Rock Facility (WRF) and the contact water ponds may be potential sources of groundwater contamination. We recommend that Alternative 2 include consideration of a synthetic impermeable liner for the WRF and the contact water ponds, particularly the lower contact water pond. For a balanced and consistent alternatives analysis, we recommend that the EIS evaluate two options for the WRF and contact water ponds, one with a liner and one without.

PAA 14

MIT 31 The mine pit dewatering of groundwater would reduce and/or eliminate surface and groundwater flows from Crooked Creek and the adjacent wetlands. In particular, during the winter months, surface water flows within certain reaches of Crooked Creek could be eliminated. We recommend that the EIS evaluate design features, mitigation measures, and best management practices (BMPs) to replenish the water flows in Crooked Creek. For example, the EIS could evaluate the option of advanced water treatment of the groundwater pumped from the mine pit dewatering activities, and discharge of the treated water further downstream in Crooked Creek beyond the influence of the cone of depression.

NEP 10 In the DEIS, the source of natural gas for the proposed pipeline was considered, but eliminated from further analysis. We recommend that the EIS evaluate the types of facilities that would be needed to handle and/or store the natural gas prior to transportation to the mine site and the associated direct, indirect, and cumulative environmental impacts. For example, if the source of natural gas is from Cook Inlet, then the existing natural gas infrastructure in southcentral Alaska could accommodate the natural gas. However, if the source of natural gas is from shipments of liquefied natural gas (LNG) from the Pacific Northwest (United States), Canada, and/or abroad, we recommend the EIS evaluate the proposed facilities that would be needed to accommodate the LNG handling and storage. Port MacKenzie, in the upper Cook Inlet, may be a viable LNG handling and storage facility. An LNG plant is proposed for Port Mackenzie, which is accessible to the existing natural gas pipeline infrastructure. In Alternative 3B, the DEIS identified several sources of diesel fuel for the proposed diesel pipeline, either transported by ocean vessels from the Pacific Northwest to the Tyonek North Foreland Dock, or from the Tesoro Refinery in Nikiski, Alaska. For a balanced and consistent analysis, we recommend that the EIS identify the source of natural gas for the pipeline under Alternative 2 (Proposed Action), and the infrastructure needed for its transportation, handling, and storage. We recommend that the environmental impacts associated with these facilities be evaluated in the EIS.

Alternative 3A (Reduced Diesel Barging: LNG-Powered Haul Trucks)

According to the DEIS, large trucks account for 75 percent of the total annual diesel consumption for the project. Alternative 3A would decrease the peak annual diesel consumption by 69 percent. The total peak barge traffic would be reduced by 32 percent during operations. Instead of diesel fuel, LNG would be used to power the large 300-ton trucks that would transport waste rock and ore from the open pit. An LNG facility would be constructed on site. We understand that LNG-powered haul trucks may not be commercially available at this time, but the technology to use natural gas is proven and companies are developing the technology. We recommend that Alternative 3A evaluate the use of LNG and/or natural gas for all trucks, including the trucks hauling cargo and fuel on the mine access road from the Jungjuk Port. In addition, we recommend that the EIS evaluate the opportunity for other aboveground facilities at the mine site to be powered by LNG and/or natural gas.

Alternative 3B (Reduced Diesel Barging: Diesel Pipeline)

PAA 21 The DEIS indicates that during operations, diesel barge traffic would be reduced by 48 percent, from 122 round trips to 64 round trips per year. Diesel fuel would be delivered to the Tyonek North Foreland Facility on the west side of Cook Inlet, and an additional 19-mile diesel pipeline segment would connect to the pipeline at Beluga. We recommend that Alternative 3B evaluate options for diesel fuel delivery that would eliminate impacts to the Native Village of Tyonek, and modifications to the North Foreland Dock Facility. For example, fuel delivery could include evaluation of Port MacKenzie on the west side of Knik Arm, and connection of a diesel pipeline to Beluga using Horizontal Directional Drilling (HDD) below the Susitna River. In addition, the DEIS indicates that diesel fuel could be obtained from the Tesoro Refinery in Nikiski on the Kenai Peninsula (east side of Cook Inlet). We recommend that Alternative 3B evaluate a subsea pipeline in Cook Inlet from Nikiski to Beluga.

Alternative 5A (Dry Stack Tailings)

PAA 58 The DEIS indicates that dry stack tailings could remove up to 80 percent moisture from the mine tailings to create dry pastes. The Pogo Mine in Alaska incorporates the use of dry stack tailings as part of the operations for mine tailings disposal. We understand that the projected volumes of mine tailings generated at the Donlin Gold Mine is on a larger scale than at the Pogo Mine. We recommend the EIS evaluate options of incorporating both types of mine tailings disposal methods: dry stack tailings and subaqueous tailings (Alternative 2). The dry stack tailings disposal method could be implemented during summer seasons to address concerns about effects of freezing conditions in the winter. The goal of implementing both methods would be to remove the majority of water from entering the tailings storage facility, and to minimize the potential contamination from mine tailings resulting from an accidental breach in the tailing storage facility (TSF) dam and/or rupture of the liner.

Environmentally Preferable Alternative

PAA 17 The DEIS identifies neither a preferred alternative nor an environmentally preferable alternative. We offer our recommendations for an environmentally preferable alternative that would address concerns regarding impacts to the native Alaska traditional subsistence way of life on the Kuskokwim River. Environmental impacts could be avoided and minimized by reducing diesel barging, barge stranding, wakes, bed scour, shoreline erosion, spill risks, and contamination to subsistence resources.

The EPA's recommendation for the environmentally preferable alternative includes a combination of components, sub-components, and options from Alternative 2, 3A, 3B, and 5A. Due to concerns about potential groundwater migration and leaching of contaminants from the WRF and the lower contact water pond, we recommend that the environmentally preferable alternative include a synthetic impermeable liner for the WRF and the contact water ponds at the mine site. From Alternative 3A, the environmentally preferable alternative would use LNG or natural gas, rather than diesel, to power all trucks, vehicles, and certain facilities at the mine site. The environmentally preferable alternative would include both a natural gas pipeline (Alternative 2) and diesel fuel pipeline (Alternative 3B) within the same right-of-way, and identify the sources of natural gas and diesel fuel so that the direct, indirect, and cumulative environmental impacts could be adequately evaluated for the necessary transportation, handling, and storage facilities. The environmentally preferable alternative would manage and store mine waste tailings using both a subaqueous disposal and dry stack tailings method (Alternative 5A). Dry stack tailings could be implemented during the summer months, and the subaqueous disposal method in the colder winter season.

ENVIRONMENTAL ANALYSIS - APPROACH AND METHODOLOGY

NEP 6 The DEIS (Chapter 3) combines the description of the baseline environmental conditions (Affected Environment) and the analysis of environmental effects (Environmental Consequences) for each resource. The direct and indirect effects for each resource or resource use were analyzed on the basis of the factors of intensity (magnitude), duration, extent, and context of the impact (40 CFR 1508.27).

The summary impact rating thresholds are generally qualitative, but quantitative when available. These thresholds include no effect, negligible, minor, moderate, and major. We recommend providing rationale for a given determination to provide further transparency and better inform decision makers and the public as to the importance of practicable mitigation of adverse effects, particularly where they are moderate or minor. We also think there are instances where providing a rationale will sharpen how a threshold is applied. For example, when scientifically established quantitative thresholds are available, such as state water and air quality standards, it may not be appropriate to characterize an impact as "minor to moderate" when the project may exacerbate exceedances of state and/or national standards. For example, arsenic and mercury concentrations in Crooked Creek and the Kuskokwim River both exceed the Alaska Water Quality Standards. The DEIS concludes that the environmental impacts from arsenic and mercury are "minor to moderate." We recommend that the EIS consider revising these rating thresholds and discuss design features, such as advanced water treatment, and other mitigation measures that could reduce impacts from substances such as arsenic and mercury.

As currently written in the DEIS, it is not clear which effects categories will be addressed with measures to reduce impacts or whether design features are already incorporated into the ratings. For example, most of the summary ratings for construction, operations and maintenance, and reclamation and closure of the Donlin Gold Project are "minor to moderate." We recommend that the EIS clarify which levels of summary impact ratings will be addressed with measures to reduce impacts and whether design features, mitigation measures, and BMPs are already factored into the ratings.

SUB 21 The DEIS environmental effects analysis indicates that impacts to subsistence resources and uses are "minor to moderate." These summary ratings are inconsistent with the Bureau of Land Management's (BLM) preliminary findings under the Alaska National Interest Land Conservation Act (ANILCA) Section 810 (Appendix N), which identified significant restrictions to subsistence users and resources affecting native subsistence communities living near the mine site, along the Kuskokwim River, and adjacent to the pipeline right-of-way for all of the action alternatives, including the proposed action. We recommend that the EIS resolve these inconsistencies.

HEALTH IMPACT ASSESSMENT

PHL 19 The Alaska Department of Health and Social Services (ADHSS) is developing a Health Impact Assessment (HIA) for the Donlin Gold Project. According to the DEIS, the HIA is still under development. We have concerns that the health information and analysis in the DEIS may be inconsistent with the findings of the HIA. We recommend that the EIS identify mitigating measures to minimize adverse health impacts and disclose how reporting and evaluation of the HIA will be completed. We recommend that the draft HIA be distributed for review and comment and that public outreach be provided to the local communities regarding the results of the HIA. We recommend that the publicly reviewed and, if necessary, revised HIA be incorporated into the EIS.

Fish Consumption Advisories

For the middle-Kuskokwim River area, the ADHSS has issued fish consumption advisories for mercury in burbot and pike. The DEIS indicates that mercury concentrations in fish tissue could be up to three percent greater than current levels, and would be associated with an increase in mercury from fugitive dust and stack emission sources from the Donlin Gold Project. We have concerns that the actual mercury concentrations in fish tissue may be greater than the modelling results would suggest. We recommend that the EIS include a human health risk assessment for mercury to determine whether the estimated percent increase in fish tissue concentrations is within acceptable limits for human exposure and consumption. We recommend that the EIS disclose the limits for human consumption and exposure to mercury and that screening levels or thresholds be established to determine whether or not further monitoring would be required after adaptive management. Furthermore, we recommend long-term monitoring and fish tissue testing for mercury in the middle-Kuskokwim River area throughout the active mine life. We recommend that the EIS include a commitment for the project proponent to partner with the State of Alaska and the local communities to develop and implement a subsistence fish biological monitoring program and mercury biomonitoring for other sources of subsistence foods (e.g., birds, eggs, berries, and wildlife).

Mercury Biological Monitoring Program

Since 2002, the ADHSS has implemented a statewide hair mercury bio-monitoring program to collect information about mercury exposures among women of childbearing age. We encourage the project proponent to partner with the State of Alaska and the local communities to continue the bio-monitoring program throughout the active mine life. We recommend that the hair mercury bio-monitoring program be expanded to include infants, young children, and the elderly. We also recommend that the EIS include a commitment by the project proponent to support additional mercury bio-monitoring efforts in communities along the middle-Kuskokwim River region with active engagement and involvement from the native communities. We recommend establishing screening levels or thresholds based on the EPA reference dose for mercury in order to determine whether or not further monitoring would be required after adaptive management.

We encourage the project proponent to continue the partnership with the State of Alaska on the Donlin Gold Project HIA. We recommend that the HIA be reevaluated every five to ten years during the active mine life and post closure to include new data, information, research and studies regarding the health of the native communities in the middle-Kuskokwim River region. As part of their corporate responsibility, we recommend that the project proponent actively engage and work with the local communities to monitor, sample, and test subsistence foods for mercury and other contaminants to ensure protection of human health.

SUBSISTENCE RESOURCES AND USERS

SUB 22 The Bureau of Land Management's (BLM's) Preliminary ANILCA §810 Analysis of Subsistence Impacts (Appendix N) indicates significant restrictions to subsistence users and resources for the proposed action and the action alternatives. The native communities of Crooked Creek and Napaimute would be affected due to their close proximity to the mine site. Impacts from increased fuel and cargo barging traffic and potential spill risks from a river barge release of diesel fuel, and spills of cyanide, mercury, and mine tailings would affect all native communities living along the Kuskokwim River. The Farewell airstrip proposed for the pipeline construction and operations would increase access to non-local hunters who may compete with the local subsistence communities of McGrath, Nikolai, and Tokotna.

We have concerns that the DEIS environmental analysis under NEPA and BLM's preliminary subsistence findings under ANILCA §810 are not consistent. According to the BLM, the ANILCA §810 findings were based on the information and analysis in the DEIS. As stated previously, we recommend that the environmental analysis and the summary impact ratings for subsistence be reevaluated in the EIS to ensure consistency with agency findings and the EIS resolve the inconsistencies between the subsistence summary conclusions in DEIS and BLM's ANILCA §810 findings.

To address the issues regarding potential restrictions to subsistence users and resources, we recommend that the EIS evaluate different alternatives, modify the proposed action, and/or incorporate additional design features, mitigation measures, and BMPs. For example, in order to reduce the potential spill risks and impacts from increased river barging on the Kuskokwim River, we recommend incorporating components and subcomponents of Alternatives 3A and 3B into the preferred alternative for the EIS. Both alternatives would reduce the number and frequency of fuel barges on the Kuskokwim River during operations.

In addition, we recommend eliminating the use of the proposed airstrip at Farewell, which may increase access to non-local hunters and result in more competition of subsistence resources to the local community. We recommend that the EIS consider other locations for the airstrip, further away from subsistence communities, to access the pipeline ROW and/or evaluate additional gravel access roads and/or ice roads.

We recommend that the EIS analyze additional mitigation measures to minimize impacts to subsistence resources and users. We recommend that the EIS include a commitment by the project proponent to work actively and engage the local communities on opportunities to improve access to subsistence resources during the active life of the mine. For example, a local subsistence board could serve to advise the project proponent of potential conflicts with access to subsistence uses and recommend improvements to mine operations that would avoid and minimize subsistence conflicts.

We also recommend that the EIS include a commitment to develop a Subsistence Users and Resource Plan, which would include best management practices for the mine operations to improve subsistence activities and avoid potential conflicts. We recommend that the plan also include monitoring of mine activities to ensure that subsistence resources are adequately protected throughout the active mine life and post-closure. We recommend that a Subsistence Report be developed with input from the local subsistence users and that the report includes an adaptive management framework that will use and revise monitoring information and activities as appropriate. We recommend that the report be presented to the subsistence communities for review and comment. Active involvement of the local communities is important to support regional planning and implementation for the prevention, monitoring, and response to accidental spills of fuel, cyanide, mercury, and mine tailings to protect subsistence resources.

THE KUSKOKWIM RIVER WATERSHED

MIT 7 The Kuskokwim River watershed, including Crooked Creek, is an important aquatic resource of local, regional, state, and national importance. The Kuskokwim River originates at the headwaters of the Alaska Range and drains into the Bering Sea. Extending for 724 miles, it is the second largest river in Alaska. It is the ninth largest river in the United States by average discharge and seventeenth largest by basin drainage area.

The Kuskokwim River represents a major lifeline for the Alaska native communities in southwest Alaska who rely on its water for drinking, cooking and cleaning, subsistence fishing and cultural uses, recreation, and transportation. The Kuskokwim River is a significant salmon fishery, which provides essential fish habitat for all five species of Pacific salmon. The Alaska Department of Fish and Game (ADFG) considers the Kuskokwim River one of the largest subsistence fisheries in Alaska with more than 1,500 households currently fishing. Approximately 38 communities live within the Kuskokwim River drainage, which represents 4,600 households. There is also a major commercial salmon fishery on the Kuskokwim River.

During the public meetings, we heard from individuals and communities regarding project impacts to the Kuskokwim River and their traditional subsistence way of life. The increase in diesel and cargo barge traffic during the active mine life would result in additional boat wakes, shoreline erosion, bed scour, impacts to fish habitat, and accidental spills. We recommend that stream bank restoration along the Kuskokwim River and Crooked Creek be evaluated as compensatory mitigation under CWA §404(b)(1) guidelines.

Baseline Conditions

WAQ 21 The Kuskokwim River is approximately ten miles downstream from the proposed mine site at the confluence of Crooked Creek. The DEIS includes baseline concentrations of total mercury in surface water and sediments; however, there is limited information regarding baseline concentrations of methylmercury, a more bioavailable and potentially harmful form of mercury. We recommend the EIS include additional baseline surface water and sediment concentrations for methylmercury in Crooked Creek and the Kuskokwim River. In addition, we recommend that the baseline water and sediment concentrations for Crooked Creek and the Kuskokwim River be compared to baseline concentrations for other major river systems in Alaska, both in mineralized and non-mineralized areas. This information would serve as a baseline comparison for the differences and/or similarities, in addition to the comparison with state and national standards. We recommend that the EIS discuss the implications of the baseline concentrations.

MON 11 We recommend that the EIS include a commitment by the project proponent to actively engage and work directly with the local communities along the Kuskokwim River to develop and implement a long-term water and sediment sampling, testing, and monitoring plan. We recommend that the actual measured concentrations during mine construction, operations, and post closure be compared to baseline concentrations and that screening levels be established to determine whether or not further testing would be required through adaptive management. We recommend that annual reports of the water and sediment concentrations be developed and presented to the communities for review.

Shoreline Erosion

BARG 15 The DEIS indicates that project related barge traffic is estimated to increase the Kuskokwim River shoreline erosion by 0.01 to 0.21 acres per mile per year (upstream to downstream) associated with the increase in wave energy generated by the barge tows. An analysis of wave energy produced by a projected 173 barge trips per year (102 fuel and 71 cargo barge train trips) indicated that barges impart the greatest wave energy on the downstream return trip when they are unloaded and travel at higher speeds. Wake energies generated by fuel barge trains traveling upstream were 150 to 400 percent greater than cargo barge trains and varied with the section of the river.

In order to minimize shoreline erosion of the Kuskokwim River from increased barge traffic during operations, we recommend incorporating Alternatives 3A and 3B into the preferred alternative. Alternative 3A would reduce river fuel barge traffic from 122 to 83 roundtrips, which would reduce erosion rates approximately 1 to 4 percent. Alternative 3B would reduce river fuel barge traffic from 122 to 64 roundtrips, which would reduce erosion rates approximately 1 to 3 percent.

We recommend additional design features and mitigation measures be included in the EIS to minimize shoreline erosion: (1) establish specific barge speed limits on the Kuskokwim River (upstream and downstream), (2) combine different fuel and cargo loads for each barge raft, (3) establish appropriate loads for fuel and/or cargo barges based on water levels and depths to minimize wave energy, and barge grounding.

Barge Grounding

The DEIS evaluates the potential for barges to become grounded in the Kuskokwim River bed during low flow conditions. The Kuskokwim River becomes shallower going further upriver. We have concerns regarding barge stranding on the Kuskokwim River as it would result in increased bed scour, turbidity, wave energy, shoreline erosion, and adversely affect habitat for the fish migration, rearing and spawning. We recommend the EIS include a Barge Grounding and Response Plan for the Kuskokwim River and encourage the project proponent to work with the local communities to establish a monitoring network for potential barge grounding areas during the low water season on the Kuskokwim River.

Maintenance Dredging – Jungjuk Port

FISH 12 The DEIS indicates that maintenance dredging of the Kuskokwim River would be required at the barge landing. We are concerned that maintenance dredging may adversely impact fish spawning areas and incubating eggs in the gravel, as well as alter migration patterns. There is insufficient information in the DEIS regarding the timing, frequency (e.g., annual, winter, summer), location, area, and volume of material to be dredged. We recommend the EIS provide additional details regarding the proposed maintenance dredging on the Kuskokwim River. We also recommend that the EIS analyze the proposed types of river dredging equipment that would be used (e.g., suction, clam shell, etc.) and evaluate the proposed dredge material disposal site(s) and/or beneficial use of the dredged material. Further, we recommend that the environmental analysis of the EIS include an evaluation of the direct, indirect and cumulative impacts associated with maintenance dredging the Kuskokwim River.

Stream Bank Restoration

MIT 7 As part of the CMP to offset losses to wetlands and aquatic resources under CWA Section 404, we recommend the evaluation of stream bank habitat restoration of the Kuskokwim River and Crooked Creek. Using the baseline bank erosion information attributable to these barge operations, we recommend that the project proponent coordinate with local communities to identify, inventory, and map segments of the river where significant bank erosion has occurred. We recommend that monitoring activities focus on river erosion rates and new areas of erosion and that the EIS and CMP further describe the frequency and methods of monitoring. We recommend that a process be in place to prioritize stream bank restoration projects, as described in the CMP.

Premature Mine Closure

BER 8 Due to market fluctuations in gold commodity prices, it is appropriate to evaluate a scenario where the Donlin Gold Mine Project may close unexpectedly, either temporarily or permanently, prior to the planned 27.5 years of active mine life. We recommend the EIS evaluate the environmental and social impacts associated with a low probability, high consequence event of a premature mine closure and that the EIS disclose the basis for a premature mine closure (e.g., higher than anticipated operating costs, low production, or low commodity prices).

We recommend that the EIS describe potential scenarios for premature mine closure and implications for the mine site facilities, such as the open pit, WRF, TSF, and the transportation infrastructure, and the pipeline. We recommend the EIS evaluate different scenarios for premature mine closure during different timelines (e.g., 10, 15, and 20 years) of the mine life and post closure and describe the management measures and procedural controls that would be implemented to reduce erosion and manage containment of surface and groundwater contaminants and ensure a sustainable closure. We recommend implementation of a monitoring plan during a temporary and/or permanent mine closure at different timeline scenarios.

Closure Social Impact Assessment

SER 22 We recommend that the EIS discuss the socioeconomic impacts associate- with a premature mine closure to determine the overall impacts to individuals, communities, and the regional economy. The DEIS indicates that a Closure Social Impact Assessment (CSIA) would be an important component of the proposed project closure plans and would outline measures with potentially affected communities to manage a tapered economic decline. As part of a premature mine closure scenario, we recommend a preliminary CSIA be developed with active and meaningful engagement from the local communities and that the CSIA be included in the EIS. In addition, we recommend that the CSIA be reevaluated at five-year intervals in order to gauge the project benefits and community needs on a more routine basis and make changes to benefit the outcome that would be coincident with project operations. This would also assist the communities in the event of unplanned temporary closure or pre-mature mine closure and/or abandonment.

Financial Assurance

BER 8 Furthermore, we recommend the EIS discuss how a premature mine closure would affect financial assurance for closure and reclamation and payments to establish the Donlin Gold Trust Fund for long-term monitoring (Appendix A). We recommend disclosure of the FA estimates that would be available during the timeframe of the premature mine closure scenario and whether the FA amount would be sufficient to cover the costs of properly containing, reclaiming, and/or closing the mine facilities. It is our understanding that models have been used to evaluate the financial assurance estimates during different timeframes of the active mine life.

MINE SITE FACILITIES

Mine Pit Dewatering

MIT 24 During mine operations, the dewatering of the open pit mine using groundwater wells would result in a cone of depression that would lower the water table approximately 1,500-ft near the center of the pit over a surface area of 16-mi^2. This cone of depression would result in long-term direct, indirect, and cumulative impacts to surface and subsurface groundwater, including wetlands. Approximately 541 acres of wetlands adjacent to Crooked Creek could be affected by mine pit dewatering.

The DEIS indicates that mine pit dewatering would reduce stream flow in Crooked Creek by 24 to 67 percent in the winter, and 9 to 20 percent in the summer. The DEIS indicates that during winter months, there would be no enhancements to augment stream flow in Crooked Creek. The lack of stream flow would probably lead to serious changes in the character of Crooked Creek, potentially resulting in little to no flow, and the complete freeze up of the creek during the low flow period, which may have serious effects on stream life. We have concerns regarding impacts to fish rearing, migration, and spawning habitat, as well as potential incubating eggs in the gravel beds. We recommend that the EIS consider real time flow monitoring with discharge points above and below the influence of the cone of depression. By monitoring flows above and below the cone of depression, water augmentation could be directed to ensure that low flows of Crooked Creek would be mitigated where it is needed. Augmentation could increase flows through the zone to prevent adverse impacts from low flows in Crooked Creek.

We recommend the EIS evaluate advanced water treatment to treat the groundwater from the mine pit dewatering and to discharge the treated water in Crooked Creek further downstream from the influences of the cone of depression to augment the reduction and elimination of groundwater and surface water.

MON 3 We also recommend that the EIS include a Mine Pit Dewatering Monitoring Plan to ensure that flow reductions to Crooked Creek are being monitored in real time as the pit is being developed, and design features, mitigation measures, and advanced water treatment are appropriate and adequately implemented to minimize impacts.

Pit Lake

WET 8 At the end of the active mine life, surface and ground waters that would replenish Crooked Creek and adjacent wetlands would be diverted into the open pit mine to create the pit lake. The DEIS indicates that after the pit lake fills with water, a new equilibrium groundwater level would become established. Because the pit lake level would be below the elevation of Crooked Creek, the section of the creek that runs along the pit lake would lose groundwater to the cone of depression created by the pit lake. This could result in long-term wetland and stream flow effects. Groundwater modelling results show that the pit lake would continue to be a destination for groundwater flow and that Crooked Creek would continue to lose water to the groundwater systems flowing to the pit because of ongoing pumping and treating of the lake water to keep levels below surrounding water levels. We recommend that the long-term impacts to wetlands and Crooked Creek resulting from groundwater migrating toward the pit lake be evaluated in the EIS and that compensatory mitigation be proposed in the CMP and the EIS to offset the indirect impacts and temporal loss of wetlands adjacent to Crooked Creek.

GRD 6 The DEIS suggests that maintaining the pit lake at an elevation 10 meters below the invert level is intended to prevent direct discharge of pit lake water into surface waters (Crooked Creek). Particularly during the winter months and dry periods, groundwater flows out of aquifer storage into Crooked Creek, which constitutes the majority of stream flows. In the worst case scenario, significant groundwater contamination could occur prior to the pit lake start of pumping. The DEIS does not suggest that the pit lake would be maintained as a hydraulic sink. Therefore, discharge from the pit lake via groundwater could occur, resulting in both transport of pit lake contaminants into groundwater, but also in potential leaching and mobilization of contaminants, such as mercury and arsenic, in the surrounding pit wall rock via groundwater, and discharge into surface water via down gradient groundwater discharging into surface water.

We recommend that the EIS discuss the modeling results and the conclusions made regarding groundwater contaminants not migrating away from the pit. The range of hydraulic conductivities (Table 3.6-2) are fairly wide, and indicate that contamination could migrate up to 14-feet per day during the 52-year filling period of the pit lake. Even in the lower aquifer depths, the contaminants could migrate up to 0.2-feet per day. While it is important to assume a uniform conductivity for modelling purposes, using a relatively low geometric mean could potentially underestimate contaminant movement during the pit lake filling period, and potentially during the mine operations period. We recommend additional modelling and analysis of the hydraulic gradient of the pit lake to determine the potential for the transport and migration of contaminants, such as mercury and arsenic, into groundwater discharging into Crooked Creek and adjacent wetlands. In particular, it is important to evaluate the rate and area of groundwater migration during the period when the pit lake is filling. A greater pumping and advanced water treatment rate may be necessary prior to discharging into Crooked Creek. We recommend using a worst-case and projected hydraulic conductivities multiple times during post-closure to determine the maximum contamination of the bedrock aquifers so that mitigation measures can be proposed and implemented in case of groundwater contamination.

MON 3 We recommend a Pit Lake Groundwater Sampling and Monitoring Plan be developed to focus on long-term water quality monitoring, sampling, and testing of the groundwater around the pit for the presence, abundance, and migration of contaminants, such as mercury and arsenic. We recommend that groundwater monitoring be done in real-time with the best available technology. We also recommend that monitoring continue until the model is confirmed that the water is flowing back toward the pit and no further contamination is present in groundwater. If groundwater contamination is found to be migrating away from the pit, we recommend that mitigation measures are implemented to remediate the contaminated groundwater as soon as possible to prevent the spread of contamination. Advanced water treatment of groundwater may be required to ensure that surface water meets water quality standards.

Waste Rock Facility

PAA 14 The DEIS includes information indicating that the groundwater from the WRF is predicted to exceed AWQS, potentially impacting groundwater quality. We recommend lining the WRF and other mine facilities, such as the contact water ponds, which have the potential to contaminate groundwater. In

MON 3 addition, we recommend that the FEIS include a groundwater quality monitoring plan to detect any potential contamination resulting from leachates generated from the WRF and leachates be mitigated and contained.

Tailings Storage Facility and Dam

MIT 29 The TSF and dam have the potential to contribute to environmental and public health concerns if not properly constructed, maintained, and monitored. For example, a catastrophic event at the Mount Polley Mine in central British Columbia resulted in the breach of the mine tailings impoundment causing a release of tailings slurry/saturated tailings into the downslope waterbodies.

Any proposal for a subaqueous tailings storage facility requires a hard look and justification. We appreciate that a Failure Modes and Effects Analysis (FMEA) was developed during the DEIS process. We recommend that the FMEA be included in the EIS and that an adaptive management plan resulting from the FMEA process be included to address contingencies relative to not only tailings dam stability concerns, but other environmental concerns. We recommend that the FMEA process continue to be used by the project proponent and State and Federal regulators to inform the engineering design and mitigation processes as the project continues through the active mine life and post-closure.

MIT 22 We recommend that a Wildlife Management Plan be developed and implemented to prevent birds and/or wildlife from access to the TSF and the pit lake to prevent potential exposure of birds and wildlife to contaminants. Wildlife protection measures could include incorporating an enclosed perimeter fence, netting or other non-intrusive barriers. Hazing may also be considered a wildlife management control technique.

CHEMICALS OF CONCERN

Methyl Mercury

WAQ 21 The DEIS indicates that naturally elevated mercury levels are found sporadically in surface and groundwater and sediments within and surrounding the proposed mine site. Concentrations of mercury in surface and groundwater samples collected from both within and outside of the proposed mine site exceeded the applicable water quality standard. The more harmful form of mercury, methylmercury, is also present in existing sediments. The proposed mining operations could increase methylmercury production and concentrations due to increases in sulfate loading, organic carbon loading, and inorganic mercury loading in area surface waters, including wetlands. Sources of inorganic mercury would be from fugitive dust and stack emissions. We recommend that the EIS discuss the dynamics of mercury (e.g., sources, movement, distribution, transformation, bioaccumulation, etc.) in wetlands, rivers and stream systems, where methylation would be expected to occur mostly in the sediments.

The DEIS does not provide information on baseline measurements of methylmercury in water or any of the key constituents associated with methylmercury production, such as sulfate and organic carbon. Without this baseline information, the environmental and human health impacts from mining activities may be difficult to identify. The model used to estimate baseline methylmercury concentrations in water is driven by unrealistically high organic carbon concentrations, and likely over estimates the current baseline methylmercury concentrations in water. As a result, any measured increases in stream methylmercury concentrations due to mine activity may not be apparent.

Methylmercury is more readily retained by higher trophic-level organisms than other forms of mercury. We have concerns with the potential bioaccumulation of methylmercury in the food chain, particular in regards to traditional subsistence foods. The accumulation of methylmercury in higher trophic level organisms results mainly from the ingestion of methylmercury-containing food rather than direct uptake of methylmercury from drinking water. We recommend that the EIS include additional modelling of mercury bioaccumulation, sources and pathways for uptake and exposure to methylmercury in the food web. In addition, we recommend long-term monitoring of the human health impacts, food consumption and exposure to methylmercury throughout the active mine life and during post-closure. In addition, we recommend developing the plan in coordination and involvement with the local native communities.

Arsenic

The DEIS identifies elevated naturally occurring baseline concentrations of arsenic in soils, sediments and surface waters in the vicinity of the proposed mine site, which is common for gold-bearing areas. Concentrations of arsenic in surface and groundwater samples collected from both within and outside of the proposed mine site exceeded the applicable water quality standard. We recommend that the EIS identify the sources of arsenic from mine operations and discuss how those sources may potentially increase existing baseline arsenic concentrations during the active mine life and post-closure. We recommend that the EIS provide a comparison of baseline arsenic concentration levels in soils, sediments, surface water and groundwater to other mineralized and non-mineralized areas of Alaska.

We recommend developing and implementing an Arsenic Management and Monitoring Plan to ensure that the project does not exacerbate standards exceedances for arsenic in surface and groundwater, and ensure acceptable human health exposure limits during project construction, mine processing operations, mine pit dewatering, pit lake recharging, and prior to discharging into surface waters, such as Crooked Creek. We also recommend the EIS identify the specific water treatment processes to remove arsenic from surface and ground waters on the mine site.

Acid Rock Drainage/Metal Leaching

Geochemical characterization at the mine site was conducted to determine the extent of acid rock drainage/metal leaching (ARD/ML). We have concerns regarding the WRF and potential for ARD/ML during the operations phase, and prior to placement of a final cap. If the non-acid generating (NAG) and

PAA 14 potentially acid generating (PAG) waste rock are not be adequately mixed during placement in the WRF, then it may begin to produce higher-concentrations of acidic seepage by the end of the mine life for year 26. We recommend that a liner be incorporated into the design of the WRF to minimize migration of contaminants into groundwater. We also recommend monitoring the WRF to ensure no ARD/ML migrates into groundwater.

WAQ 14 Water quality predictions indicate arsenic has the potential to be leached from waste rock under both acidic and non-acidic conditions. According to the DEIS, arsenic leaching is a potentially significant concern for almost all waste rock due to widespread elevated concentrations in the rock and its high leachability, as indicated by the samples analyzed. We recommend that the EIS clarify that the purpose of performing waste rock geochemical characterization is to manage potential ARD/ML, and the importance of water treatment, including advanced water treatment of arsenic. We recommend a plan to address ARD/ML from the WRF and to include additional monitoring and testing of the groundwater for potential leaching of contaminants.

MIT 19 We recommend that the EIS include geochemical characterization of potential new and existing gravel material source sites that would be used to construct the mine access road from the Jungjuk Port, air strips, access roads for pipeline construction and facility gravel pads. This characterization is needed to determine the volume of PAG rock material and to identify specific design features, mitigation measures, and BMP to minimize potential ARD/ML to adjacent surface waters, including wetlands. If the gravel source material is found to consist of PAG material and/or have elevated mercury and arsenic concentrations, then the fill material may be considered unsuitable fill material under the CWA Section 404(b)(1) guidelines requirements and not suitable for discharge into wetlands and other surface waters.

FUGITIVE DUST

AIQ 3 Fugitive dust emissions may be caused by vehicle travel on the gravel access roads, and other unpaved areas, as well as activities at the mine site, such as blasting, crushing and grinding of the ore rock, and stack emissions. According to the DEIS, fugitive dust could be measurable as far as ten miles from the mine site, one tenth of a mile from gravel roads. The DEIS includes evaluation of fugitive dust from the mine site and transportation facilities, but no evaluation of fugitive dust associated with pipeline construction, such as the gravel access roads, pipeline trenching and burial, and gravel source sites. We

WET 5 recommend the EIS include analysis of fugitive dust emissions from the construction and operations of the natural gas pipeline.

Fugitive dust has the potential to deposit and collect on vegetation, wetlands, and other surfaces. Soils with the highest organic content have been shown to exhibit the greatest potential for metal accumulation. We recommend that the EIS discuss the potential exposure to contaminants resulting from fugitive dust emissions and evaluate potential pathways for bioaccumulation. In addition, we recommend the EIS evaluate the potential for biotic transfer from dust-affected soils and vegetation to humans and wildlife.

MIT 19 The DEIS indicates that unpaved gravel roads are assumed to be controlled at 90 percent, primarily with periodic chemical application and watering. However, if the gravel source material is tested to contain of high volumes of PAG, then watering to reduce fugitive dust emissions may not be an acceptable management practice as it could result in the generation of ARD/ML to adjacent wetlands, surface and ground waters. We recommend the EIS evaluate other options for minimizing fugitive dust from gravel roads and pads, such as capping the surface of gravel roads and pads with an inert material or applying a non-toxic chemical treatment.

MIT 28 As part of Red Dog Mine operations near Kivalina, Alaska, a Fugitive Dust Management, Testing, and Monitoring Plan has been developed and implemented to evaluate fugitive dust emissions and their impacts. We recommend that a similar plan be developed for the Donlin Gold Project to evaluate fugitive dust emissions and their distribution to soils, air, water, vegetation, and the potential exposure of contaminants, such as mercury, arsenic, ARD/ML, to humans and wildlife. The objectives of the study would be to: compile and summarize information pertinent to the fugitive dust issue, present a preliminary conceptual site model describing sources and transport mechanisms for fugitive dust, potential exposure pathways, and human and ecological receptors; identify where additional data collection is needed (data gaps); and outline a decision-making framework for addressing future fugitive dust issues. We also recommend that the HIA determine acceptable exposure concentrations and limits, and pathways for humans and wildlife to bioaccumulate contaminants from ingesting foods exposed to fugitive dust. We recommend developing a Fugitive Dust Control Plan for the EIS to include design features, mitigation measures, and monitoring of fugitive dust emissions and exposure during the active mine life and post closure.

SPILL SCENARIOS AND RESPONSE PLANNING

FSR 17 The DEIS includes an evaluation of potential spill risks for low probability and high consequence events associated with hazardous substances such as fuel (diesel) transported in ocean and river barges, trucks, and pipelines, and stored in tanks. In addition, the DEIS evaluates releases of LNG, cyanide, and mercury to the environment during transportation on the mine access road. Based on the FMEA, the DEIS considered release of mine tailings associated with a partial breach of the TSF dam and the downslope failure and rupture of the liner.

Spill Frequency and Volume

According to the DEIS, spill frequency and volumes are qualitative assessments based on the rate or frequency of occurrence, which includes factors, such as operating procedures, personnel training and awareness, maintenance, and human error. We recommend that the spill frequencies and volumes evaluated in the DEIS be based on real spill incidents that have occurred at active mine sites and/or other industrial facilities in Alaska, the United States, and abroad. In addition, we recommend discussing the frequency and volume of reported spills at regulated facilities in Alaska in the EIS. For example, in May 2010, a cyanide water spill of over 300,000 gallons occurred at the Fort Knox Mine due to a failure in the automated process control system. We recommend using this example of a real spill scenario in the spill risk analysis for cyanide. In addition, we recommend that the EIS include actual spill frequencies and volumes associated with incidents from ocean vessels, river barges, tank farms, and tank trucks, and other mining and industrial facilities. The Alaska Department of Environmental Conservation (ADEC), Division of Spill Prevention and Response maintains a database of reported spills and spills at regulated facilities. ADEC issues an annual summary of oil and hazardous spills for Alaska.

Spill Response and Planning

In southwest Alaska, there are no industrial operations at the scale of the proposed Donlin gold Project. We have concerns that the area is remote and no infrastructure exists and the capacity for responding to spilled substances is very limited. Due to Federal and State regulations, statewide capacity for oil spill response is well established. However, there are no similar spill response requirements for the response of spills for LNG, cyanide, mercury, and mine tailings. Due to the gaps in response capacity, we recommend that the EIS include a commitment for the project proponent to work with the local communities to develop regional response capabilities and response plans for accidental releases and spills of LNG, cyanide, mercury, and mine tailings. We recommend the spill response planning include: training local responders, engaging in community response exercises, prevention, and monitoring. In addition, we recommend identifying the location and type of pre-deployed response and clean up equipment in the EIS.

WETLANDS AND AQUATIC RESOURCES

WET 3 The DEIS includes environmental analysis that can be used to support the U.S. Army Corps of Engineers' CWA Section 404 and Rivers and Harbor Act Section 10 permit decisions. We recommend the EIS address compliance with the CWA Section 404(b)(1) Guidelines and the Corps public interest review. As written, the analysis in the DEIS creates a fundamental disconnect between the NEPA and the 404 permitting processes. The DEIS indicates that the wetland information may be inadequate to meet the Corps' permit review needs and would be revised later for the EIS or the permitting process.

Preliminary Jurisdictional Determination

The EPA raises concerns regarding the wetland preliminary jurisdictional determination (PJD) for the Donlin Gold Project, which has not been approved at this stage of the environmental review process. The DEIS indicates that the wetland mapping process may have over-estimated the actual project wetland impacts and would be revised during the Corps' permit process to eliminate potential jurisdictional inconsistencies, and to determine adjusted areas of jurisdictional wetland impacts following recent jurisdictional guidelines. We recommend correcting the jurisdictional inconsistencies and including the revised estimates of the wetland acreage impacts in the EIS. Accurate information regarding the acreage of direct and indirect wetland impacts associated with the alternatives is necessary to adequately compare alternatives in the EIS. We recommend the EIS disclose the systematic process for reevaluating the jurisdictional wetland impacts, such as additional ground-truthing and mapping that may be required to verify the wetland/upland mosaics.

Functional Assessment

The DEIS indicates that the functions of wetlands within the study areas were preliminarily assessed using a variation of the Hydrogeomorphic (HGM) rapid functional assessment method. Functional capacity indices (FCIs) for rating the functional performance and value for each of the five HGM classes were evaluated. The variables, assumptions, and calculations used to develop FCIs for each function and HGM class were described in the Donlin Gold Wetland Functional Assessment Report. As indicated in our previous comments on the Report, the EPA generally supports use of the modified HGM functional assessment method for evaluating HGM wetland classes and functions, and use of the FCIs for rating the functional performance and value for each wetland class in the study areas. We recommend that the FCIs be adopted to evaluate debits and credits for compensatory mitigation for the Donlin Gold Project.

The DEIS notes that the Corps plans to complete a functional assessment for the proposed project at or after the EIS stage or the NEPA process. Our understanding is that the Corps' functional assessment would be based on the *Cowardin et al* classification system. We recommend that the EIS disclose to the public the basis and rationale for the Corps not accepting the modified HGM functional assessment method for the Donlin Gold Project. We recommend that the Corps' functional assessment approach include not only wetlands, but the functions of other types of waters that fall under Corps' jurisdiction, such as river channels and stream systems, lakes and ponds. In addition, we recommend that the Corps' functional assessment methodology include a debit and credit evaluation process to determine the options for wetlands, streams, and aquatic resources compensatory mitigation. We recommend incorporating the Corps' functional assessment method, and the revised wetlands and aquatic resources information into the EIS. This revised information is important to evaluate the LEDPA under the CWA Section 404(b)(1) Guidelines.

We would appreciate being involved in the development and/or review of the Corps' functional assessment methodology. The EPA requests a meeting to discuss the Corps' approach to the development of the functional assessment methodology, which may be applied to other projects in the future.

Compensatory Mitigation

MIT 7 In 2008, the Corps and the EPA jointly issued a new rule on *Compensatory Mitigation for Losses of Aquatic Resources* (Mitigation Rule). The mitigation rule establishes performance standards and criteria for the use of mitigation banks, in-lieu fee mitigation programs, and permittee-responsible mitigation (e.g., restoration, enhancement, establishment, and preservation) to improve the quality and success of compensatory mitigation projects. We recommend that the EIS disclose how the Corps plans to evaluate the requirements of the mitigation rule and the compensatory mitigation for the Donlin Gold Project.

EPA notes the inclusion of the Conceptual Compensatory Mitigation Plan (CMP) in the DEIS (Appendix M). We have concerns that the mitigation banks and In-Lieu Fee programs proposed in the DEIS and the CMP either have not been approved by the Corps and/or are not currently active. We recommend that evaluation of additional compensatory mitigation options be included in the CMP and the EIS. We recommend the CMP take a watershed approach to evaluating the temporal loss of wetlands and aquatic resource functions and values, and demonstrate that all direct, indirect, and cumulative impacts to wetlands and aquatic resources functions and values have been adequately replaced. Temporal losses would need to consider that newly restored wetlands would not have similar functional capacity as the original pre-disturbed wetlands for decades.

At this time, Permittee Responsible Mitigation (PRM) may be a viable option for compensatory mitigation. We recommend that PRM plans and activities in the CMP focus on the following: (1) restoration of previously existing wetlands or waters; (2) enhancing or improving functions of existing wetlands or waters; (3) creation of new wetlands or waters; and (4) preservation of existing wetlands or waters. We recommend that the CMP discuss how PRM would be monitored to ensure project success in meeting certain performance standards, and to address any restoration problems through corrective actions. Additional PRM options include evaluation of river bank enhancement and restoration projects for the Kuskokwim River, Crooked Creek, and other impacted surface waterbodies within the project watersheds. We recommend fully restoring mine site facilities, such as the contact water ponds, diversion ditches, ore stockpile berms to functional wetlands and aquatic resources.

A mitigation bank is another viable option to provide compensatory mitigation to offset impacts to wetlands and aquatic resources. We recommend the project proponent develop its own mitigation bank for the Donlin Gold Project. This could be accomplished by developing a mitigation banking prospectus and instrument for an entity to purchase wetland property for preservation and/or restoring, enhancing, and/or creating additional wetlands in the impacted watershed areas. We recommend the mitigation bank include a functional assessment method to determine the level of credits available to offset the project impact debits.

If the CMP is determined not to be acceptable in the Corps' Record of Decision, then we recommend the Corps use their bonding authority as described in Regulatory Guidance Letter (RGL) 05-1. This RGL supports the use of financial assurance and includes suggested language for special permit conditions to establish a funding mechanism to provide compensatory mitigation to offset wetland impacts during the project lifecycle. We recommend the Corps establish a bonding and financial assurance instrument for compensatory mitigation prior to permit issuance. We suggest the EIS clarify whether the Alaska State Implementation Review Team (SIRT) will be responsible for overseeing the bonding instrument and ensuring that compensatory mitigation for the Donlin Gold Project is being implemented.

Corps' Public Notice for the EIS

The current information and analysis in the DEIS is not adequate to fully evaluate the potential adverse impacts to wetlands and aquatic resources under the CWA §404(b)(1) guidelines. In addition, the conceptual compensatory mitigation plan is not adequate since the wetlands jurisdictional determination has not been approved.

The Corps' proposed changes to the wetlands functional assessment methodology and estimates of wetland impacts evaluated in the DEIS would result in the development of substantively new information and analysis in EIS in Chapter 3.11 (Wetlands). It is our understanding that a supplemental, revised, and/or corrected public notice will be issued if changes in the application data would affect the public's review of the proposed action (see 33 CFR 325.2, 325.3). Furthermore, potential project modifications after public review and comment of the DEIS may require the project proponent to submit a revised Section 10 Rivers and Harbors Act/Section 404 Clean Water Act application to the Corps at the EIS stage.

For actions subject to NEPA, where the Corps is the permitting agency, the analysis of alternatives required for NEPA documents, including supplemental Corps NEPA documents, *will in most cases* provide the information for evaluating alternatives under the 404(b)(1) Guidelines. *On occasion*, however these NEPA documents may not have considered the alternatives in sufficient detail to respond to the requirements of the Guidelines. In the latter case, it may be necessary to supplement the NEPA documents with this additional information [40 CFR 230.10(a)(4)].

In sum, the current information and analysis in the DEIS is insufficient to fully evaluate adverse impacts to wetlands and aquatic resources under the CWA §404(b)(1) guidelines. We therefore recommend that the Corps provide complete and accurate information when it is available, and release the revised analysis for public review and comment. In addition, we encourage the Corps to withdraw the current Department of Army Public Notice (PN) issued with the DEIS and issue a supplemental, revised, or corrected PN for review comment and make sure that the new information is captured in the EIS. Doing so will provide the public with an opportunity to review and comment on the new information and analysis, and potential project changes prior to the issuance of a Record of Decision and the CWA §404 permit.

CLIMATE CHANGE AND GHG EMISSIONS

CLIM 3 The EPA notes that the DEIS has disclosed projected quantitative estimates of GHG emissions (as CO_2-equivalent) for the construction, operations, maintenance, and closure phases of the mine site; the construction, operations, and maintenance for the transportation facilities (on land, air and river); and the construction, operations and maintenance phases for the pipeline. Chapters 3.8 (Air Quality) and 3.26 (Climate Change) provide a summary of the quantitative estimates of GHG emissions for Alterative 2, the proposed action. We recommend that the EIS include a description of the tools, methodology, models, and scientific research information used to quantify these emissions.

Throughout the Climate Change section (3.26), the DEIS compares total expected project level GHG emissions with estimated Alaska, U.S. and global GHG emissions. The DEIS also compares the expected project level GHG emissions with major industrial sectors in Alaska. We recommend that the EIS not include the broader comparisons. These comparisons obscure rather than explain how to consider GHG emissions under NEPA. Climate change is a global problem resulting from the emissions of many individual sources whose impacts are cumulative. The environmental impacts are best described by using emissions as a proxy to compare the proposal, alternatives and potential mitigation.

Scope of Analysis

The DEIS includes quantitative GHG emissions for the proposed action but does not include quantitative estimates of GHG emissions for the alternatives (3A, 3B, 4, 5A, and 6A). We recommend that the EIS quantify the direct and indirect GHG emissions for the action alternatives and for each phase of development (e.g., construction, operations, maintenance, closure and reclamation). Also, we recommend that the Comparison of Impacts by Alternatives (Table 3.8-33) summarize the GHG emissions for the proposed action and each alternative. We recommend that the EIS include a detailed inventory of the direct and indirect, emissions of each individual contributing source (e.g., mobile, stationary and fugitive) and the respective quantitative emissions from each project phase.

We recommend that the scope of analysis for the climate change impacts of the proposed action include all emissions sources (fugitive, mobile, and stationary) from river barges and ocean vessels, air and land transportation, heavy equipment, and aboveground facilities that support the construction, operations and maintenance, and closure and reclamation of the Donlin Gold Project (mine site, transportation facilities, and pipeline). In particular, we recommend that the EIS include the GHG emissions from air and ocean barge transportation of fuel and cargo from the lower 48 United States (Seattle, Washington) and Canada (Vancouver, British Columbia) to the mine site. The proposed expansion of the fuel storage and marine ports at Bethel and Dutch Harbor are considered connected actions in the DEIS. We recommend that the EIS include an analysis of GHG emissions from these connected actions. We also recommend that the analysis include the GHG emissions associated with the final purification of the gold doré bars and transportation to the refinery.

Carbon Sources and Storage

The CEQ revised draft guidance definition of "emissions" includes releases of stored GHGs as a result of destruction of natural GHG sinks such as forests and coastal wetlands, as well as future sequestration capability. The biological resources in the project area may represent substantive storage, and/or sinks (sequestration) for GHGs. When biogenic resources are disturbed during project construction and/or operations and maintenance, these carbon storage or sink areas become sources of carbon emissions. Whereas, during closure at the end of mine life, reclamation of disturbed aboveground facilities may result in the conversion of a carbon source to carbon storage or sinks. We recommend that the EIS quantitatively and qualitatively evaluate the carbon storage and sequestration capacity of the biogenic resources for the No Action Alternative. This information would serve as a baseline to compare the carbon storage and sequestration capacity of the No Action Alternative against the proposed action and the action alternatives.

For example, the DEIS indicates that as permafrost soils warm, organic carbon reservoirs trapped in the ice are mobilized, causing carbon dioxide and methane to be released into the atmosphere. The total amount of permafrost soils along the pipeline that are predicted to thaw during operations and closure is 37 million tons with an additional 9 million tons of permafrost soil predicted to thaw during operations and closure (Page 3.26-43). For the proposed action and action alternatives, we recommend that permafrost soils and other biogenic resources, such as vegetation, wetlands and aquatic resources be quantitatively and qualitatively evaluated for the potential GHG emissions (CO_2-equivalent/acre) during project construction, and operations and maintenance.

Emissions from Spill Scenarios

CLIM 11 Chapter 3.24 (Spill Risk) evaluates the impacts associated with low probability, high consequence spill scenarios with an ocean barge rupture at sea, river barge release, tank farm release, tanker truck release, diesel pipeline release, LNG release, cyanide release, mercury release, and a partial tailings dam failure. We recommend that the spill scenarios be qualitatively and quantitatively evaluated in the EIS as they may represent a potential contribution to GHG emissions and climate change impacts, particularly spills of diesel fuel from barges, tank farms, trucks, and pipelines.

Consider Using Emissions Targets

MIT 18 The ability to meaningfully articulate emission reductions would be a valuable component of a mitigation package. One approach we suggest is that the EIS identify reasonable GHG emission reduction targets or goals for some or all project components (e.g., mine, transportation facility, and pipeline) and development phases (e.g., construction, operations, maintenance, closure and reclamation). As the project progresses, periodic reports could show progress toward reaching the targets.

Mitigation Measures

Chapter 5 (Impact Avoidance, Minimization, and Mitigation) includes design features (Table 5.2-1), mitigation measures (Table 5.5-1), and monitoring and adaptive management plans (Table 5.7-1) to mitigate impacts associated with the project. We recommend that the EIS further identify and describe measures for reducing and mitigating GHG emissions and climate change effects such as evaluating enhanced energy efficiency, lower GHG technology, and renewable energy. We recommend that the EIS disclose GHG reductions associated with such measures. EPA further recommends that the Record of Decision commit to implementation of reasonable mitigation measures that would reduce project-related GHG emissions.

Reducing Emissions

CLIM 3 The DEIS evaluates action alternatives that have the potential to minimize impacts to the environment. Alternative 3A (LNG Powered Haul Trucks) was carried forward for analysis because it would reduce the frequency of diesel fuel barging on the Kuskokwim River. This alternative may serve to reduce overall project GHG emissions and climate change impacts.

Alternative 3A evaluates the use of natural gas powered trucks (+300-ton payload) that would move waste rock and ore from the open pits. These large trucks account for 75 percent of the total project diesel consumption. The conversion to natural gas powered trucks would reduce the diesel fuel consumption and increase natural gas usage by 28 percent. The reduction of diesel fuel required for operations could potentially reduce river barge traffic by 32 percent. Furthermore, truck traffic on the gravel road would be reduced by 75 percent, which would also result in a reduction of fugitive dust emissions. Alternative 3A could potentially reduce GHG emissions associated with river barges, trucks and fugitive sources. The DEIS indicates that Alternative 3A would not include using LNG for the trucks hauling cargo and fuel on the mine access road from Jungjuk Port. We recommend that Alternative 3A include the use of LNG for all vehicles and trucks and that the EIS disclose the quantitative estimates of GHG emissions associated with Alternative 3A. We recommend incorporating Alternative 3A into the proposed action as a measure for reducing overall project GHG emissions.

CLIM 7 Reclamation and revegetation of certain disturbed areas, such as the waste rock facility and the tailings storage facility could reduce the overall project climate change impacts and result in the conversion of a carbon emission source to carbon storage or sink. We recommend that the EIS qualitatively and quantitatively evaluate mitigating climate change impacts through the reclamation and revegetation of disturbed areas, including wetland enhancement or restoration, and potential conversions from carbon source to carbon sink.

In July 2015, the EPA launched the Natural Gas STAR Methane Challenge. This is a new voluntary program for reducing methane emissions. Methane, the primary component of natural gas, is a potent greenhouse gas with a global warming impact 25 times that of carbon dioxide. Companies who sign up for the program agree to make commitments for methane emission reductions, with accountability and transparency in progress in achieving those commitments, and with the potential for public recognition for leadership in reducing GHG emissions in the United States.

Climate Change Resilience

CLIM 4 We recommend the Corps consider modifications to the design of the proposal to incorporate resilience to foreseeable climate change. For example, the DEIS states that permafrost is predicted to thaw within the project area. Permafrost stability or anticipated changes to existing permafrost conditions can affect settlement and ground stability characteristics that would in turn significantly influence design and construction of project components such as facilities and infrastructure.

WATER SOURCES AND VOLUMES

HYD 12 The Donlin Gold Project would require substantial volumes of water for the construction of permanent and temporary gravel facility pads, gravel and ice roads, hydrostatic testing of the pipeline, and other mine related activities. We recommend that the EIS evaluate the project water resource requirements for all of the action alternatives, not just the Proposed Action.

We recommend that the EIS evaluate the year round water use resources, locations, and volumes. For each type of water resource (river, stream, lake, pond – permanent, intermittent, ephemeral, perennial), we recommend including a description in a table of the maximum and minimum surface area, depths and width of the water resource, available water volumes, volume of proposed withdrawal, winter and/or summer withdrawal, presence/absence of resident and/or anadromous fish species. Further, we

MIT 24 recommend describing measures, such as screening, that would be implement to minimize impacts to fish. We recommend including the following additional mitigation measures: establishing water withdrawal rates, timing of water withdrawal to avoid fish migration, spawning, and incubating eggs. The location of water resources should be included on a map and/or aerial photograph. This additional information is need to adequately evaluate the direct, indirect and cumulative impacts to the aquatic resources and should not be deferred until the permitting process.

FINANCIAL ASSURANCE

BER 8 The DEIS provides disclosure of the financial assurance (FA) cost estimates associated with implementing the reclamation and closure plan and long-term monitoring (Appendix A). In addition, the

FA includes the costs associated with the removal, abandonment, and reclamation of the natural gas pipeline. The Standardized Reclamation Cost Estimator (SRCE) model was used to calculate the FA costs for mine closure. The FA assumes partial backfilling of the open pit and modification of tailings operations at the end of the mine life. We recommend the EIS disclose whether premature closing of the mine was considers as a possible scenario in addition to a reasonable maximum cost scenario.

CUMULATIVE EFFECTS

TRAN 4 We recommend that the cumulative effects spatial analysis area (Figure 4.2-1) be expanded to include the ocean vessel traffic route and potential direct, indirect, and cumulative impacts from the lower 48 United States (Seattle, WA) and Canada (Vancouver, BC) to/through Dutch Harbor and Bethel, as mentioned in Table 4.2-1. We recommend the analysis area also include the transportation of the gold doré bars for final refinement, which is a reasonably foreseeable future action. Since pipeline supplies would be brought in through Port MacKenzie and/or the Anchorage Port in upper Cook Inlet, the direct, indirect, and cumulative impacts associated with these facilities and activities should be evaluated in the EIS.

Health Impacts

PHL 18 Since the HIA was not included in the DEIS for public review, we are not certain how cumulative effects have been evaluated for human health. We recommend that the cumulative effects of multiple sources, pathways, and exposures from past, present and reasonably foreseeable future actions, including mine operations and accidental chemical spills, to humans be evaluated in the EIS. We recommend conducting a risk based assessment to evaluate all potential sources, pathways, and routes of human exposure to contaminants from air, water, and subsistence foods. We recommend that the EIS describe the acceptable limits for contaminant exposure to subsistence foods and water. In addition, we recommend conducting biological monitoring of human health to evaluate the cumulative impacts during the active mine life and post closure.

GHG Emissions

CLIM 3 The DEIS (Table 4.201) describes the past, present, and reasonably foreseeable future actions considered in the cumulative effects analysis. We recommend that the estimates of GHG emissions for these past, present, and reasonably foreseeable future actions be quantified and disclosed in the EIS, to the reasonable extent possible. This information is necessary to understand the cumulative effects of climate change impacts in the region and the contributions for GHG emissions from the Donlin Gold Project.

ENVIRONMENTAL JUSTICE

Demographics

EJ 8 The demographic profiles are in line with Executive Order 12898 and the CEQ guidance. These are foundational Environmental Justice (EJ) documents, but do not represent all of the possible guidance and methodology available. We recommend identifying and referencing other EJ in the EIS.

The DEIS makes use of and cites references to other EJ guidances, laws and recommended best practices that are relevant to EJ analysis and implementation, such as Children's Environmental Health, Sacred Sites, Tribal Consultation, best public engagement practices for EJ and Permitting and EJ and

NEPA; and other guidances and best practices from other agencies and academic sources. For example, ADEC received an EPA grant to develop a tribal protocol for APDES permitting.

The analysis suggests, for Alternative 1 (No Action), that there is an EJ concern based on the economic impact of discontinuing Donlin Mine work thus far. An EJ determination is based on more than just a single factor—in this case economics. If other factors are considered, they might suggest that the costs of Alternative 1 (No Action) - not going forward with the mine - would not result in environmental justice concerns but actually provide and/or maintain existing overall benefits to the communities. Further, from an environmental justice perspective, the development that results in projected benefits of the kind advanced is *sustainable, community driven development.* We recommend the analysis explain how the project fits the description of and meets commonly understood principles of sustainable, community driven development. In the absence of a description, the position that Alternative 1 would pose an environmental justice related impact of any kind is untenable.

The section on socio-economics characterizes the socio-economic impacts of Alternative 1 to the Yukon Kuskokwim region as "minor" and to regions outside that area as "negligible." We recommend cross walking the sections to minimize inconsistencies and avoid contradictory conclusions. Also, provide an economic analysis that confirms disproportionate economic impact of Alternative 1 (No Action). For example, include an analysis of disposable income and categories of spending in community—how much to subsistence support—which is claimed as a benefit in the document-- and the impact on subsistence harvest; the ability of the community to replace or substitute cash economy with other forms of economic activity to cover needs (i.e. level of economic, social and cultural resilience in community).

Vulnerability and Health Impacts

PHL 19 The EIS makes available in the analysis a discussion of factors that make segments of the population vulnerable or sensitive to a variety of impacts such as children, elderly, those with compromised immune systems, and those along the unique exposure pathways such as those engaged in subsistence activities and exposures to workers. We recommend referencing the Health Impact Assessment in the EIS. We recommend that the EIS include research and analysis that illustrates understanding of the health impacts of stress, diminishment or loss of cultural resources.

Cumulative Impacts

SER 21 The DEIS makes the assumption that a cash based economy is preferable and that it can be compatible with a subsistence and other forms of economic activity. We recommend that the EIS provide a focus of cumulative impact analysis around transitioning a community from a subsistence economy to a cash economy. There is both research and experience to be able to assess the costs and benefits and over all impacts for people making this kind of a transition directed from a place other than their own direct agency. We recommend evaluating the health impacts of transitioning entire traditional communities from a subsistence economy to a cash based economy.

Tribal and public engagement

EJ 3 Tribal and public engagement does not stop with, or is limited to the submission of comments and the one-way transmission of information from any one source to passive audiences. Tribal and public engagement also includes applying the lived and dynamic experiences of people—creating new knowledge and deepening the empowerment of community members-- over the course of time. The end goal of meaningful public involvement, from an environmental justice perspective, is community empowerment. The sense of individual and community agency and empowerment is a social determinant of health. This is consistent with the definition of health ascribed to in the document. We recommend the project aims to strengthen the social determinants of health while accounting for any erosion of them. We also recommend that there be more proactive and collaborative interactions with the communities in areas such as monitoring, creating and sharing data over the course of the active and closed periods ("in perpetuity") of the mine, and the ability to meet the demands of changing conditions with communities as partners.

Mitigation

MIT 8 There are many opportunities for empowering communities. We recommend involving communities in designing and implementing mitigation measures, strategies, and plans. We also recommend involving communities with monitoring of the mitigation to ensure success in reducing project impacts. We recommend that the mitigation strategies and plans include building community capacity and specify the actions taken and to be taken during the project.

Mitigation, Monitoring, and Adaptive Management

The DEIS does not clarify the mitigation measures that would address NEPA and CWA Section 404 permitting requirements. We recommend that the EIS include additional discussion regarding how the proposed mitigation design features under the NEPA requirements will be monitored, tracked, and reported by the project proponent. We recommend a commitment be made in the EIS that a Mitigation Implementation Plan would be developed for the proposed design features, mitigation measures, and BMPs during project construction, operations and maintenance, and closure. We encourage the project proponent to actively engage the local communities in conducting the monitoring activities. We recommend the EIS include a commitment to develop an Annual Mitigation Report that would be presented to the tribes, the public and the agencies for review. We recommend the Mitigation Report tracks and summarizes the successes and problems with each type of mitigation, and includes recommendations for additional design features, mitigation measures, and BMP, as appropriate, to address future project needs and requirements. In addition, we recommend the Mitigation Report outline an adaptive management approach where successful mitigation measures would no longer require monitoring, and that monitoring efforts would shift to those design features, mitigation measures, and BMPs to achieving success.

From:	Isaacs, Jon
To:	DonlinEISAR; Bellion, Tara
Subject:	FW: Donlin Gold DEIS - EPA Comments Table
Date:	Monday, June 13, 2016 9:55:55 AM
Attachments:	EPA Comments Table - Donlin DEIS.docx

-----Original Message-----
From: Gordon, Keith POA [mailto:Keith.Q.Gordon@usace.army.mil]
Sent: Monday, June 13, 2016 6:30 AM
To: Isaacs, Jon
Cc: Brewer, Jason D POA
Subject: FW: Donlin Gold DEIS - EPA Comments Table

-----Original Message-----
From: Jen, Mark [mailto:Jen.Mark@epa.gov]
Sent: Friday, June 03, 2016 2:27 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Cc: Newman, Sheila M POA <Sheila.M.Newman@usace.army.mil>; Brewer, Jason D POA <Jason.D.Brewer@usace.army.mil>; Gordon, Keith POA <Keith.Q.Gordon@usace.army.mil>; Littleton, Christine <Littleton.Christine@epa.gov>
Subject: [EXTERNAL] Donlin Gold DEIS - EPA Comments Table

On May 31, 2016, the U.S. Environmental Protection Agency submitted written comments on the Donlin Gold Project Draft Environmental Impact Statement in accordance with our responsibilities under the National Environmental Policy Act and Section 309 of the Clean Air Act.

In addition, we are providing comments in tabular format, as requested by the Corps for the cooperating agencies.

Please let me know if you have any questions.

Thanks

Mark S. Jen

U.S. Environmental Protection Agency, Region 10

Alaska Operations Office

222 W. Seventh Avenue #19

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	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
	Executive Summary					
EDIT 2	ES 1.3	3	cg	The project would take place in three phases: the construction phase, the operations and maintenance (operations) phase, and the closure, reclamation, and monitoring (closure) phase).	The last parentheses does not have a matching opening one.	
EDIT 2	ES 2.2	7	cg	include a thirdparty to transport	include a third-party to transport	
EDIT 2	ES 2.2	7	cg	third-party), a dedicated new fleet of river barges and tugs, the Angyaruaq (Jungjuk) Port, a 30-mile access road, and a 5,000-foot dedicated airstrip.	There are spacing issues here – a hard return after the) when there shouldn't be one	
EDIT 2	ES 2.2.1	8	cg	During the 4 year construction phase	Should it be "3 – 4 year"	
EDIT 2	ES 2.2.1.1	9	cg	Initial mining operations would use	Would the equipment needed change after the initial start of mining?	
EDIT 4	2.2.1.4	12	LE	"…PAG 6 would be placed in permanent, isolated cells in the WRF…"	Since the WRF is described as unlined, it would be worth adding a sentence or at least a few words describing the construction of the isolated cells at this point. How is the PAG 6 isolated?	
EDIT 4	2.2.1.4	12	LE	"… 5 million tons of PAG 5 waste rock would be used for construction of lined containment portions of the TSF."	Does this refer to the cells discussed above? Would be preferable to describe them as lined in the first mention, if so. Where in the construction do these 5 million tons go? To form the sides of the cell? Above or below the liner? Where does the rest of the PAG 5 go? Dispersed throughout the remainder of the WRF? I understand this is the Exec Summary and not a detailed description of the WRF, but a few well-chosen words to describe the handling of the PAG would be helpful here.	
EDIT 4	2.2.1.6	14	LE	"Runoff and seepage from the reclaimed WRF would be pumped to the pit."	Specify the time period for this pumping	
EDIT 4	2.2.3.1	18	LE	Pig Launcher and Receiver Stations	First mention of pigs and pig launcher/receiver stations should	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
					explain just a bit about what they are and the purpose they serve. It seems unlikely all readers will be familiar with the term.	
EDIT 4	2.2.3.2	19	LE	Shoofly roads	Define this term when it is first used	
EDIT 2	ES 2.3	25	cg	At present, LNG-powered haul trucks are not currently in full commercial production	Delete “currently” – it is redundant to “at present”	
EDIT 2	ES 2.5	26	cg	About 69 river miles below the proposed Angyaruaq (Jungjuk) Port site and 123 river miles upstream from Bethel	BTC is 75 rivers miles below Jungjuk and 124 miles upstream of Bethel (see Page 2-152)	
	ES 2.5	27	cg	An approximately 75-mile, 30-foot wide, allseason gravel access road (about 2.5 times longer than the mine access road proposed in Alternative 2)	The road would be 76 miles long and only about 1.5 times longer (see page 2-152)	
EDIT 2	ES 2.5	27	cg	BTC road would cross 39 waterbodies	40 waterbodies (see page 2-157)	
EDIT 4	2.6	27	LE	“… to avoid the perceived risk of accidental releases”	Delete “perceived.” The term risk already accounts for both likelihood and consequences. Even low-likelihood events can be “risks”.	
EDIT 2	ES 3.2	33	cg	The effects of other action alternatives on surface water hydrology would be similar to those of Alternative 2.	Section 3.2 is about Groundwater not surface water.	
EDIT 2	ES 3.3	34	cg	Alaska Pollution Discharge Elimination System	Alaska Pollutant Discharge Elimination System	
EDIT 2	ES 3.3	35	cg	Alternative 4 (BTC Port) would slightly increase surface water impacts due to stream crossings and runoff along the longer access road,	Chapter 2 says that there are more stream crossings under Alternative 2 (51 see page 2-53) than Alternative 4 (40 see page 2-157)	
SER 25	ES 3.6	41	cg	The net effect on employment would be similar because the increased workforce required to construct a longer road would offset the decreased workforce required to operate barges.	It would seem that the increase in workers (or time for existing workers) to build the road over the 3 – 4 year construction period would not offset the workforce necessary to operate barges over the 27.5 year life of the mine.	
EDIT 2	ES 3.7	43	cg	reduce river barging distance by 39 percent	38 percent (see page 2-152)	
EDIT 2	ES 3.7	43	cg	A longer mine access road (75 miles; 250 percent longer)	A longer mine access road (76 miles; 153 percent longer) see page 2-152	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
EDIT 2	Table ES-13	53	KW	Climate and Meteorology Section 3.4	Provide a summary of impacts (i.e. ranking) for the climate and meteorology section in order to be consistent with all other project components.	
EDIT 2	Table ES-13	ES-60	LE	Section 3.6 is labeled just “groundwater”	Should be “groundwater hydrology” since ground water and surface water quality are in a separate water quality section	
EDIT 2	Table ES-13	82	KW	Environmental Justice Section 3.19	Highlight and bold the summary impacts as in order to be consistent with all other project components.	
	CHAPTER 1. PURPOSE AND NEED					
EDIT 3	1.1.2	4	cg	the PHMSA	The rest of the chapter uses just PHMSA without “the” when referring to the agency itself	
EDIT 3	1.2	8	cg	Which would produce approximately one million	Figure 1.3-1 says production will be greater than 1 million ounces so should “>” be replaced by “~” there or should “approximately” here be replaced by “more than”?	
EDIT 3	1.3.1	8	cg	for Environmental Impact Statements	for EISs – EIS is already used in Section 1.1	
EDIT 3	1.3.2	9	cg	The proposed pipeline is designed as a privately-owned facility	How does the pipeline being a privately owned facility mesh with the discussion of it being a common carrier in Section 2.3.2.3.6?	
EDIT 3	1.3.4	9	cg	guidance also must be followed	Suggested: guidance must also be followed	
EDIT 3	1.3.4.1.1	10	cg/ kw	The Corps may authorize activities (such as the filling of wetlands) that are not water dependent if an applicant can show that alternative upland locations are not available or not practicable	Table 2-4.1 lists alternatives that were not carried forward but does not seem to include any alternative upland locations to avoid the filling of wetlands or other waters of the US nor does it detail alternate configurations of the components within the mine site which might reduce impacts to aquatic resources or consider a reduction in the mine footprint” Specific citation to how this is a requirement of the 404(b)(1) guidelines should also be included.	
EDIT 3	1.3.4.2	10	cg	The BLM	“The” is used with BLM more often than not but not (see top of page 11) always so please be consistent.	
EDIT 3	1.3.5	12	cg	under Title 49, USC Chapter 601 to	Section 1.1.2 provides the format for this type of citation as 49	

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					USC 601 (followed for subsequent citations on page 14)	
CLA 29	1.4.1	13	cg	that dredged or fill material should not be discharged into wetlands and other waters unless it can be demonstrated that the discharge will not have unacceptable adverse impacts on those waters	Should avoidance and minimization be discussed?	
CLA 29	1.4.2	14	cg	for a pipeline ROW permit	Permit is not generally used with ROW. Is Donlin applying for a permit or just the ROW?	
EDIT 3	1.4.3	14	cg	Title 49, USC Chapter 601	49 USC 601 (see other citations on this page)	
EDIT 3	1.4.3	14	cg	It develops safety regulations and	It develops regulations and	
EDIT 3	1.4.3	14	cg	performance standards that set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety	performance standards that set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve these required levels	
CLA 29	1.4.4	15	cg		This section does not mention either CERCLA or EPCRA both of which are mentioned in Section 2.3.2.1.11 as applicable	
EDIT 3	1.5	19	cg		An FRP is required by EPA for tank farms with the capacity to hold more than 42,000 gallons (Figure 2.3-11 says the Jungjuk tank capacity is 2.8 m gallons) and have an over water transfer of fuel (from the barge to the tanks) - see page 5-19 for reference to EPA's authority for FRPs	
EDIT 3	1.8.2	21	cg	in relation to "Essential Fish Habit" consultation responsibilities	Why is Essential Fish Habitat in quotation marks? Also, it was previously short cited on page 14	
EDIT 3	1.8.2	22	cg	Streams, and high value wetlands or wetlands that might be unique or relatively scarce in the Project Area would be analyzed.	Should "would be" be changed to "will be" or "are" since the DEIS is meant to provide this analysis?	
EDIT 3	1.8.2	23	cg	An ANILCA Section 810(a) Evaluation and Finding will be required	An ANILCA Section 810(a) Evaluation and Finding is required	
PAA 33	1.9.3	1-24	MJ	Source and method of production for natural gas by the project.	The source of natural gas for the proposed pipeline was considered, but eliminated from further analysis. We recommend that the EIS evaluate the types of facilities that would be needed to handle and/or store the natural gas prior	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
					to transportation to the mine site and the associated direct, indirect, and cumulative environmental impacts. For example, if the source of natural gas is from Cook Inlet, then the existing natural gas infrastructure in southcentral Alaska could accommodate the natural gas. However, if the source of natural gas is from shipments of liquefied natural gas (LNG) from the Pacific Northwest (United States), Canada, and/or abroad, then the EIS should evaluate the proposed facilities that would be needed to accommodate the LNG handling and storage. Port MacKenzie, in the upper Cook Inlet, may be a viable LNG handling and storage facility. An LNG plant is proposed for Port Mackenzie, which is accessible to the existing natural gas pipeline infrastructure. In Alternative 3B, the DEIS identified several sources of diesel fuel for the proposed diesel pipeline, either transported by ocean vessels from the Pacific Northwest to the Tyonek North Foreland Dock, or from the Tesoro Refinery in Nikiski, Alaska. For a balanced and consistent analysis, we recommend that the EIS identify the source of natural gas for the pipeline under Alternative 2 (Proposed Action), and the infrastructure needed for its transportation, handling, and storage. We recommend that the environmental impacts associated with these facilities be evaluated in the EIS.	
BER 11	1.10.4.1	27	cg	The estimated financial assurance amount associated with the IWMP will be subject to a public review period during the public review of the IWMP. During the review period, any person who disagrees with the decision may request an adjudicatory hearing in accordance with 18 AAC 15.195-340 or an informal review by the ADEC Division Director in accordance with 18 AAC 15.185.	The review period is the time to let the public know about the tentative decision. No adjudicatory hearing could be requested until a final decision was made – after the review period.	
EDIT 3	1.10.4.2	28	cg	grants broad powers to the Alaska Commissioner of Natural Resources	grants broad powers to the Commissioner of the Alaska Department of Natural Resources	
EDIT 3	1.10.6	29	cg	ANSCA..	ANSCA.	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
EDIT 3	1.10.22	32	cg		Shouldn't there be a US Code reference included for RCRA?	
LEG 3	1.10	1-33	MJ		*Presidential Memorandum: Mitigating impacts on Natural Resources from Development and Encouraging Related Private Investment* was issued on November 3, 2015. This memorandum should be included in the EIS to address the "net benefit goal" for mitigating impacts from natural resource use. The Memorandum can be downloaded at: https://www.whitehouse.gov/the-press-office/2015/11/03/mitigating-impacts-natural-resources-development-and-encouraging-related	
LEG 3	1.10	1-33	MJ		*Memorandum for Executive Departments and Agencies on Incorporating Ecosystem Services into Federal Decision Making* was issued on October 7, 2015. The memorandum directs federal agencies to factor the value of natural infrastructure and ecosystem services into federal planning and decision-making by taking an ecosystems service approach. The Memorandum can be downloaded at: https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-01.pdf	
CLA 29	1.10	33	cg		No description of EPCRA is included	
LEG 4	1.10.24	33	cg	The Mine Safety and Health Administration (MSHA) administers the provisions of the *Mine Act* (30 CFR 22)	Since the title of the section is the federal Mine Safety and Health Act of 1977, is this the Mines Act? And shouldn't there be a US Code citation for the Act rather than a regulatory reference?	
HYD 4	1.10.27	1-33	MJ		*E.O. 13690 and New Floodplain Guidelines:* On October 8, 2015, new guidelines were issued by the Water Resources Council to implement E.O. 11988 and E.O. 13690 and calls for "agencies to use a higher vertical flood elevation and corresponding horizontal floodplain than the base flood for federally funded projects to address current and future flood risk and ensure that projects last as long as intended." and continue to emphasize integrating implementation of E.O. 11988 with NEPA. Two other concepts included in the	

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					guidelines are the use of natural systems in floodplain management and the need to consider potential impacts to vulnerable populations. The guidelines can be obtained at: http://energy.gov/sites/prod/files/2015/10/f27/FloodPlainsGuidlines2015.pdf	
EDIT 3	Table 1.10-2	36	cg		EPA can review DEC air permits	
CLA 29	Table 1.10-2	37	cg		Are the second 2 items under USDOT/PHMSA really PHMSA things or does USDOT alone need to be the title? Is FAA part of USDOT or is it an independent agency?	
EDIT 3	Table 1.10-2	38	cg	U.S. Department of the Treasury, Bureau of Alcohol, Tobacco, and Firearms	U.S. Department of the Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives	
EDIT 3	Table 1.10-2	39	cg	ADEC provides approval for treatment and disposal plans for industrial wastewaters	ADEC provides approval for treatment and disposal plans for industrial and domestic wastewaters	
	CHAPTER 2. ALTERNATIVES					
	General Comment					
CWA 4	LEDPA		MJ	The DEIS does not identify a preferred alternative. We recommend that the alternatives analysis provide the information necessary to support an evaluation of alternatives under the CWA Section 404(b)(1) Guidelines, including information to support identification of the least environmentally damaging practicable alternative (LEDPA).		
PAA 17	Preferred Alternative		MJ	We recommend that the EIS identify a preferred alternative that incorporates components of Alternative 3A (LNG Powered Trucks), 3B (Diesel Pipeline), and 5A (Dry Stack Tailings with liner option) into Alternative 2 (Proposed Action) to avoid and minimize potential adverse impact to the Kuskokwim River. This may also represent the environmentally preferred alternative. Due to concerns about potential groundwater migration and leaching of contaminants from the WRF and the lower contact water pond, we recommend that the environmentally preferable alternative include a synthetic impermeable liner for the WRF and the contact water ponds at the mine site. From Alternative 3A, the environmentally preferable alternative would use LNG or natural gas, rather than diesel, to power all trucks, vehicles, and certain facilities at the mine site. The environmentally preferable alternative would include both a natural gas pipeline (Alternative 2) and diesel fuel pipeline (Alternative 3B) within the same right-of-way, and identify the sources of natural gas and diesel fuel so that the direct, indirect, and cumulative environmental impacts could be adequately evaluated for the necessary transportation, handling, and storage facilities. The environmentally preferable alternative would manage and store mine waste tailings using both a subaqueous disposal and dry		

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				stack tailings method (Alternative 5A). Dry stack tailings could be implemented during the summer months, and the subaqueous disposal method in the colder winter season.		
EDIT 4	2.3.1	6	cg	Minerals Leasing Act (MLA) ROW	Minerals Leasing Act (MLA) Right of Way (ROW) – not previously short cited in Chapter 2	
EDIT 4	2.3.1	7	cg	59,000 stpd	59,000 tpd – the previous paragraph just explained that “ton” would have the meaning of “short ton”	
EDIT 4	2.3.1	8	cg	to Angyaruaq (Jungjuk) Port, or be off-loaded for temporary storage. From Angyaruaq (Jungjuk) Port	Does every occurrence of Angyaruaq have to be followed by (Jungjuk)?	
EDIT 4	2.3.2.1	8	cg	a waste rock facility (WRF), ore processing facilities, a tailing storage facility (TSF),	a WRF, ore processing facilities, a TSF – both were previously short cited	
EDIT 4	2.3.2.1	8	cg	422,000 stpd.	422,000 tpd.	
EDIT 4	2.3.2.1.4	17	cg/ LE	Auxiliary fleet vehicles would be used for road maintenance, bench development in the open pit, construction of the WRF, and miscellaneous mine site projects. Graders would maintain the haul roads, including the mine access road. Water trucks would spray roads and working areas to mitigate dust impacts to air quality.	This paragraph is not about Flotation so should be removed or moved to its appropriate location (it is also found in 2.3.2.1.3)	
CLA 30	2.3.2.1.5	21	cg	Table 2.3-2	What do the footnotes refer to?	
EDIT 4	2.3.2.1.6	24	cg	Table 2.3-3	“Short Tons” should be “Tons”	
EDIT 4	2.3.2.1.7	25	cg	Alaska Pollution Discharge Elimination System (APDES) permit	Alaska Pollutant Discharge Elimination System (APDES) permit	
WAQ 5	2.3.2.1.7	25	LE	Contact water definition: final statement is that it does not include pit dewatering wells, but next sentence in main text describes treating that water. On the next page (2.26), there is more explanation, but it still isn’t 100% clear. Water from dewatering wells (regardless of location), although not “legally” defined as contact water, will be treated and discharged as if it were? Is that the bottom line? One source of confusion was having dewatering water and water collecting in the bottom of the pit contained in the same	Clarify the treatment and handling of water from pit dewatering.	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
				bullet on p 2-25.		
WAQ 29	2.3.2.1.7	26	cg	the total volume pumped out during the operation period is estimated to be 56,100 acre-feet.	this paragraph talks of gallons then gives the final total in acre-feet. Is this because the total in gallons is an enormous number?	
PAA 19	2.3.2.1.8	2-30	MJ		Evaporators – Are these structural controls still part of the proposed action? This was not mentioned here. What is the efficiency of evaporators to remove water from the TSF? How much water can be removed? How well do these work in the winter season?	
PAA 14	2.3.2.1.9	2-30	MJ	Waste Rock Facility	We have concerns that the Waste Rock Facility (WRF) and the contact water ponds may be potential sources of groundwater contamination. We believe Alternative 2 should include consideration of a synthetic impermeable liner for the WRF and the contact water ponds, particularly the lower contact water pond. For a balanced and consistent alternatives analysis, we recommend that the EIS evaluate two options for the WRF and contact water ponds, one with a liner and one without. In Alternative 5A, both a liner and no liner was evaluated. Also we recommend additional monitoring and testing of groundwater quality from the WRF.	
EDIT 4	2.3.2.1.9	30	cg	either PAG or NAG	either PAG or non-acid generating (NAG) – NAG not previously short cited in Chapter 2	
EDIT 4	2.3.2.1.10	2-35	MJ	…and Oil Discharge Prevention and Contingency Plan would…	…and Oil Discharge Prevention and Contingency Plan (Appendix R) would…	
MON 7	2.3.2.1.10	2-36	MJ	The landfills at the mine site would be constructed as trenches within the WRF in an area covering approximately 16 acres.	Since the WRF would be unlined, would the 16 acres landfill trench within the WRF be lined to meet ADEC landfill permit requirements at 18 AAC 60? How will the landfill be monitored for leachates?	
FSR 15	2.3.2.1.11	38	cg	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 103; Emergency Planning and Community-Right-to-Know Act of 1986; Title III of the	Neither the CERCLA nor the EPCRA requirements are included in Chapter 1	

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				Superfund Amendments and Reauthorization Act		
BARG 16	2.3.2.2.1	2-46	MJ		The DEIS evaluates the potential for barges to become grounded in the Kuskokwim River bed during low flow conditions. The Kuskokwim River becomes shallower going further upriver. We have concerns regarding barge stranding on the Kuskokwim River as it would result in increased bed scour, turbidity, wave energy, shoreline erosion, and adversely affect habitat for fish migration, rearing and spawning, and eggs incubating in gravel beds. We recommend that the EIS include a Barge Grounding and Response Plan for the Kuskokwim River and encourage the project proponent to work with the local communities to establish a monitoring network for potential barge grounding areas during the low water season on the Kuskokwim River.	
LAND 16	2.3.2.2.6	2-49	MJ	No public use would be allowed.	How will this provision be monitored and enforced? Would the public be allowed to cross the road on ATV, snow machine, etc.? There should be some concessions to allow public access/crossing for recreation, subsistence activities, etc.	
PAA 55	2.3.2.2.6	2-49	MJ	Borrow Material Sites	We recommend that the EIS include geochemical characterization of potential new and existing gravel material source sites that would be used to construct the mine access road from the Jungjuk Port, air strips, access roads for pipeline construction and facility gravel pads. This characterization is needed to determine the volume of PAG rock material and to identify specific design features, mitigation measures, and BMP to minimize potential ARD/ML to adjacent surface waters, including wetlands. If the gravel source material is found to consist of PAG material and/or have elevated mercury and arsenic concentrations, then the fill material may be considered unsuitable fill material under the CWA Section 404(b)(1) guidelines requirements and should not be discharged into wetlands and other surface waters.	
PAA 19	2.3.2.2.6	2-53	MJ	Transportation Facilities – Mine Access Road	Discuss how the mine site access road would be maintained in the winter season. Describe any chemical treatments for the	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
					road.	
EDIT 4	Tab 2.3-9	2-53	MJ	Area (acres) and Volume (m^3)	Units should be consistent - not be in metric – convert to (yds^3) for the volume.	
PAA 62	2.3.2.2.6	2-53	MJ	There would only be two water sources for dust control for the mine access road, listed below: South Fork Getmuna Creek and Kuskokwim River.	In regards to water extraction, recommend including the same level of detail and units of measurements for water extraction sites. Follow the same format as provided on Table 2.3-17 and Table 2.3-18. Also, for dust control for the mine access road, wetting the road may not be a good management practice if the gravel source material is PAG. Additional watering would contribute to ARD/ML and potential contamination of adjacent surface waters. We recommend evaluation of alternative dust suppression methods for the gravel access road, such as an impermeable, inert cap, chip seal, etc.	
EDIT 4	Table 2.3-10	2-53	MJ	Volume (m^3)	Volume should be ($yards^3$). Keep units consistent, such as for Area (acres) for consistent comparison.	
PAA 19	Table 2.3-10	2.53	MJ		For each stream crossing, identify the presence/absence of anadromous fish. Include a column for the length of bridge span (ft) and culvert diameter (in). See Table 2.3-38 for example.2.	
PAA 19	2.3.2.2.7	2-55	MJ		Discuss how the airstrip would be maintained in the winter season. Describe any chemical treatments for the airstrip.	
CLA 30	2.3.2.3.2	64	cg	PIPELINE – FIBER OPTIC CABLE	The text of this section does not explain what the fiber optic cable will be used for	
EDIT 4	2.3.2.3.3	64	cg	associated valves at the 16 remote MLV	Page 2-69 says there are 20 MLV, with 4 being co-located with other facilities. Should those 4 be mentioned in this section, too?	
CLA 30	2.3.2.3.3	69	cg	The remaining 16 block valve locations would consist of valve operators, small-bore piping, and associated valves above-ground. All of these valves would be manually	It appears that the non-remote valves could be operated either manually or automatically but the remote valves could only be operated when someone was present (manually)? Please	

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				operated	clarify. ES19 states: “Mainline valves would close in the event of a pipeline leak to minimize loss of contents.” Which makes it sound like there is some automation to them.	
FISH 15	Tab 2.3-17	2-77	MJ		Identify presence/absence of anadromous fish overwintering. Discuss measures to minimize impacts to fish during water withdrawal.	
FISH 15	Tab 2.3-18	2-78	MJ		Identify presence/absence of anadromous fish overwintering. Discuss measures to minimize impacts to fish during water withdrawal.	
PAA 19	Tab 2.3-19	2-81	MJ		Same information as provided in Table 2.3-32. HDD Estimated Water Us.	
EDIT 4	Tab 2.3-20	2-81	MJ		Depict the location of the access roads on a map	
EDIT 4	Tab 2.3-21	2-83	MJ		Depict the location of the shoofly access roads on a map.	
PAA 19	2.3.2.3.4	89	cg	All camp waste, including sewage and gray water, would be treated as required and disposed of in accordance with ADEC requirements	This is the applicant’s alternative so what disposal method is being proposed?	
MIT 19	2.3.2.3.4	95	MJ	Borrow Material Sites	We recommend that the EIS include geochemical characterization of potential new and existing gravel material source sites that would be used to construct the mine access road from the Jungjuk Port, air strips, access roads for pipeline construction and facility gravel pads. This characterization is needed to determine the volume of PAG rock material and to identify specific design features, mitigation measures, and BMP to minimize potential ARD/ML to adjacent surface waters, including wetlands. If the gravel source material is found to consist of PAG material and/or have elevated mercury and arsenic concentrations, then the fill material may be considered unsuitable fill material under the CWA Section	

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					404(b)(1) guidelines requirements and should not be discharged into wetlands and other surface waters.	
BARG 15	3.5.3.2.2	3.5-103	MJ	Wave Induced Bank Erosion	In order to minimize shoreline erosion of the Kuskokwim River from increased barge traffic during operations, we recommend incorporating Alternatives 3A and 3B into the preferred alternative. Alternative 3A would reduce river fuel barge traffic from 122 to 83 roundtrips, which would reduce erosion rates approximately 1 to 4 percent. Alternative 3B would reduce river fuel barge traffic from 122 to 64 roundtrips, which would reduce erosion rates approximately 1 to 3 percent. We recommend additional design features and mitigation measures that should be included in the EIS to minimize shoreline erosion: (1) establish specific barge speed limits on the Kuskokwim River (upstream and downstream), (2) combine different fuel and cargo loads for each barge raft, (3) establish appropriate loads for fuel and/or cargo barges based on water levels and depths to minimize wave energy, and barge grounding.	
EDIT 4	2.3.2.3.5	108	cg	minimize the amount of time the trench is open. The intent would be to close the trench as soon as practical. The pipeline construction plan calls for minimization of open trenches for construction purposes.	Does this say the same thing 3 times?	
EDIT 4	Tab 2.3-32	2-118	MJ		Same information as provided in Table 2.3-19. HDD Estimated Water Use.	
EDIT 4	2.3.2.3.5	123	cg	Erosion Sediment Control Plan and a SWPPP prior	Erosion Sediment Control Plan and a Storm Water Pollution Prevention Plan (SWPPP) prior – not previously short cited in Chapter 2	
PAA 19	2.3.2.3.5	2-127	MJ	All pressure testing would most likely be done in summer to avoid the need for antifreeze.	The DEIS indicates that 68% of pipeline construction would be conducted in the winter season. Please explain how winter hydrotesting could be avoided.	
HYD 12	2.3.2.3.5	2-127	MJ	Volumes of water required would vary depending on	Provide a table identifying the location of water sources for	

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FISH 15				hydrotest segment length but could be up to 15 Mgal.	hydrostesting, similar to Tables 2.3-17 and 2.3-18, which identifies the location, season of use, waterbody type, years of use, extraction rates and annual volumes. Include information regarding presence/absence of fish. We recommend that the EIS evaluate the project water resource requirements for all of the action alternatives, not just the Proposed Action. We recommend that the EIS evaluate the year round water use resources, locations, and volumes. For each type of water resource (river, stream, lake, pond – permanent, intermittent, ephemeral, perennial), there should be a description in a table of the maximum and minimum surface area, depths and width of the water resource, available water volumes, volume of proposed withdrawal, winter and/or summer withdrawal, presence/absence of resident and/or anadromous fish species.	
					The EIS should describe measures, such as screening, that would be implement to minimize impacts to fish. Additional mitigation measures should include establishing water withdrawal rates, timing of water withdrawal to avoid fish migration, spawning, and incubating eggs. The location of water resources should be included on a map and/or aerial photograph. This additional information is need to adequately evaluate the direct, indirect and cumulative impacts to the aquatic resources and should not be deferred until the permitting process.	
EDIT 4	2.3.2.3.5	127	cg	An APDES permit would be acquired for the discharge of hydrostatic testing water. Once hydrostatic testing has been completed, test water would be discharged back to an approved location through a filtration device. Discharge of the hydrotesting water may require a wastewater discharge permit if any foreign substances are added to the water. Water used for pipeline	The end of one paragraph says a permit would be acquired for discharge but the next paragraph says a permit may be required. If the discharge is to waters of the U.S., an APDES permit would be required.	

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				test purposes would be tested before discharge, as required by project permits.		
PAA 19	2.3.2.3.5	2-127	MJ	Once hydrostatic testing has been completed, test water would be discharged back to an approved location through a filtration device.	Identify the discharge location(s) of hydrostatic test water in rivers, lakes, ponds, streams, wetlands, uplands, etc. Estimate the volume of hydrostatic test water to be discharged.	
CLA 30	2.3.2.3.6	128	cg	The pipeline would have common carrier status	Section 1.3.2 states "The proposed pipeline is designed as a privately-owned facility" Are the two statements contradictory?	
EDIT 4	2.3.2.3.6	128	cg	The pipeline would have common carrier status and therefore may not be decommissioned after mine life. As a condition	if it can't be decommissioned, then why is that Donlin's plan? consider: The pipeline would have common carrier status and therefore decomissioning may not be required after mine life.	
EDIT 4	2.3.2.3.6	129	cg	capping with 0.25-inch steel plant	Should "plant" be "plate"?	
CLA 30	2.3.2.3.7	132	cg	Other monitoring activities include cultural resources monitoring. A Non-Native Invasive Species Prevention Plan would be developed	should include a bit more on cultural resources and put invasive species in its own paragraph	
EDIT 4	2.3.2.3.7	133	cg	Table 2.3-33: **Construction; Operations and Maintenance' and**	The apostrophe should be deleted.	
MON 10	2.3.2.1.7	141	LE	Monitoring frequency "… would range from quarterly to 5-year intervals depending on the number of years after closure."	Is this based on an assumption that variability would decrease over time? If so, that assumption should be verified by including plots of the data in summary reports submitted at the time the monitoring frequency is reduced.	
PAA 20	2.3.3	2-142	MJ	Alternative 3A would use liquefied natural gas (LNG) instead of diesel to power the large (+300-ton payload) trucks that would move waste rock and ore from the open pits.	According to the DEIS, LNG-powered haul trucks may not be commercially available at this time, but the technology to use natural gas is proven and companies are developing the technology. We recommend that Alternative 3A evaluate the use of LNG and/or natural gas for all trucks, including the trucks hauling cargo and fuel on the mine access road from the Jungjuk Port. In addition, we recommend that the EIS evaluate the opportunity for other aboveground facilities at the mine site to be powered by LNG and/or natural gas.	

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EDIT 4	2.3.3	142	cg	Alternative 3A would also reduce the barging of diesel fuel to a peak of 19 fuel barge tow round trips per year, compared to the peak of 58 required under Alternative 2. This would result in a 32 percent reduction in peak total river barge traffic	The reduction is 58 - 19 = 39 so the reduction is 39/58 = .67 or 67%	
CLA 30	2.3.3.1	2-142	MJ	This would reduce the peak annual diesel consumption from 42.3 Mgal to 13.3 Mgal.	Also express this as a percent reduction in diesel fuel consumption = 69% reduction?	
CLA 30	2.3.3.1	2-142	MJ	Natural gas useage would increase from 11.2 bscf/year to 15.5 bscf/year.	Also express this as a percent increase in natural gas useage = 69% increase.	
PAA 21	2.3.4	2-145	MJ	Alternative 3B would require improvements to the existing Tyonek North Foreland Barge Facility and transportation of diesel fuel in Cook Inlet.	We recommend that Alternative 3B evaluate options for diesel fuel delivery that would eliminate impacts to the Native Village of Tyonek, and modifications to the North Foreland Dock Facility. For example, fuel delivery could include evaluation of Port MacKenzie on the west side of Knik Arm, and connection of a diesel pipeline to Beluga using Horizontal Directional Drilling (HDD) below the Susitna River. This would avoid the need for the additional 19-mile pipeline segment from the North Foreland Dock facility to Beluga. In addition, the DEIS indicates that diesel fuel could be obtained from the Tesoro Refinery in Nikiski on the Kenai Peninsula (east side of Cook Inlet). We recommend that Alternative 3B evaluate a subsea pipeline in Cook Inlet from Nikiski to Beluga.	
PAA 21	2.3.4.2	2-146	MJ	The existing dock at the Tyonek North Foreland Facility currently extends 1,500 feet from shore to water depth of approximately 21 feet. The dock would need to be extended an additional 1,500-ft to accommodate vessels in excess of 30,000 gross tons…	Identity the water depth and draft requirements at the TNF facility to accommodate vessels in excess of 30,000 gross tons. Another option to extending the existing dock 1,500-ft would be to consider navigational dredging to meet the desired water depth to accommodate vessels.	
CLA 30	Fig 2.3-39	2-147	MJ		Overlay a bathymetric map to show the water depths from shoreline.	
PAA 65	2.3.4.3	2-148	MJ	Figure 2.3-40 shows the 18 mile segment between Tyonek and the beginning of the natural gas pipeline route..	Additional information should be included regarding this 18-mile segment, including location/description of aboveground facilities (e.g.,, temporary work areas, access	

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					roads, water use and extractions sites, camps, PSYs, etc.), borrow needs and source sites, water needs and source sites, location of HDD crossings, hydrostatic testing water sources and discharge locations, etc.	
PAA 21	2.3.4.3	2-149	MJ	Options for Diesel Pipeline	There are additional options than using the Tyonek North Foreland Dock that may be less damaging and would not require dredging. If the source of diesel fuel is from the Tesoro Refinery in Nikiski, then evaluate an option for a subsea pipeline in Cook inlet to Beluga. Also, if diesel is being shipped in to Alaska, then consider the Port MacKenzie Dock facility and tie a diesel pipeline from the Port to Beluga with HDD under the Susitna River.	
WET 6	2.3.4.3	2-149	MJ		Wetland impacts, areas, are needed for the diesel pipeline, particularly the 18 mile segment from Tyonek to Beluga.	
EDIT 4	2.3.4.3	149	cg	the pipeline right-of-way [ROW]	the pipeline ROW	
CLA 30	2.3.4.3	2-149	MJ	Manual block valves would be installed on each bank at 27 stream crossing locations…	Include a table similar to Table 2.3-15 summarizing the locations of the block valves.	
PAA 65	2.3.4.3	149	cg	Manual block valves	In such remote locations? Shouldn't there be a way of closing valves that don't actually require the physical presence of a human?	
CLA 30	2.3.4.3	2-149	MJ	Of the 237 total drainage crossings for the entire pipeline route…	Specify the number of waterbody crossings requiring HDD? In addition to the six under Alternative 2, will this include the Beluga River? Provide HDD estimated water use similar to Table 2.3-19 or 2.3-32, and specify the length of the HDD crossing.	
	2.3.4.3	149	cg	Hercules C- 130	Hercules C-130	
PAA 61	2.3.4.3	2-149	MJ	The airstrips required for spill response capacities include the nine new airstrips…	For the new proposed airstrips and roads, specify the location of estimated borrow material source needs, borrow sites, and water extraction sites. Refer to Tables 2.3-18, 2.3-26 and 2.3-27 for the level of information needed in the EIS for Alternative 3B.	

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EDIT 4	2.3.5	152	cg	an increase of 46 miles and 153 percent	an increase of 46 miles or 153 percent (see earlier language in the same paragraph about the decrease in barge miles 75 miles or 38 percent)	
EDIT 4	2.3.5.2	152	cg	Alternative 4 would move the upriver port site from Angyaruaq (Jungjuk) to BTC.	This just repeats what was said in the first line of 2.3.5	
CLA 30	2.3.5.2	2-152	MJ	Three villages along the Kuskokwim River would experience less barge traffic under this alternative.	Three villages, Aniak, Chuathbaluk, and Napaimute, along the Kuskokwim River would experience less barge traffic under this alternative.	
CLA 30	2.3.5.2	154	cg	because of the longer haul road distance (~2.5 times that from Jungjuk	the road from BTC is 2.5 times as long as from Jungjuk (76/30 = 2.5) but when terms such as "longer" are used, a comparison has to be made to the difference in length - the BTC road is 46 miles longer (46/30 = 153% increase as stated in 2.3.5 above)	
CLA 30	2.3.5.2	154	cg	(~2.5 times that from Jungjuk	Shouldn't Jungjuk be Angyaruaq?	
EDIT 4	2.3.5.2	154	cg	would be about 2.5 times longer than the mine access road	would be about 1.5 times longer than the mine access road (see comment above about using "longer")	
EDIT 4	Tab 2.3-37	2-154	MJ	Area (acres) and Volume (m^3)	Units should be consistent - not be in metric – convert to (yds^3) for the volume.	
PAA 22	2.3.5.2	2-158	MJ	Construction of the BTC road would require installation of a temporary ice road…	For a balanced comparison of impacts between Alternatives, the EIS should include estimates of the water needs, location and quantities of water sources. Refer to Table 2.3-17 for the level of information need in the EIS for Alternative 4	
CLA 30	2.3.6	158	cg	Alternative 5A would evaluate an alternate tailings method	Alternative 5A evaluates an alternate tailings method – isn't this what the EIS is doing?	
PAA 9	2.3.6	158	cg	the conventional subaqueous tailings storage	the subaqueous tailings storage – the word "conventional" seems to bias the conversation by implying that dry stack is unconventional. Recommend removing "conventional."	
CLA 30	2.3.6	2-158	MJ	This alternative would use filter presses and vacuum filters to increase the solid content to more than 80 percent.	This would indicate that 20% moisture would be removed from the tailings stream after filtration. Provide an estimate of how much volume of water (gallons) would be piped to the operating pond and/or reused for the mill processing plant.	

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PAA 58	2.36	2-159	MJ	Alternative 5A – Dry Stack Tailings	The DEIS indicates that dry stack tailings could remove up to 80 percent moisture from the mine tailings to create dry pastes. The Pogo Mine in Alaska incorporates the use of dry stack tailings as part of the operations for mine tailings disposal. We understand that the projected volumes of mine tailings generated at the Donlin Gold Mine is on a larger scale than at the Pogo Mine. We recommend the EIS evaluate options of incorporating both types of mine tailings disposal methods: dry stack tailings and subaqueous tailings (Alternative 2). The dry stack tailings disposal method could be implemented during summer seasons to address concerns about effects of freezing conditions in the winter. The goal of implementing both methods would be to remove the majority of water from entering the tailings storage facility, and to minimize the potential contamination from mine tailings resulting from an accidental breach in the tailing storage facility (TSF) dam and/or rupture of the liner.	
PAA 58	2.3.6.1	2-161	MJ	There is no precedent in current mining operations for using the dry stack tailings method at this production rate.	Would it be more feasible to merge DST (Alternative 5) with the subaqueous tailings storage method (Alternative 2)? The goal is to remove as much moisture from the tailings stream. Given Donlin's high production rate and the arctic conditions, would it be more feasible to use DST in the summer season and conventional tailings storage in the winter season?	
PAA 61	2.3.7.3	2-162	MJ		Include discussion of aboveground facilities, such as camps, airstrips, PSYs, gravel/ice roads, compressor stations, stations, mainline valves, temporary work areas, etc. Also discuss any HDD crossings, Also include water needs and locations and volumes of water sources, discharge locations, etc. for dust suppression, hydrostatic testing, etc.	
CLA 30	Table 2.3-43	2-167	MJ		Column for Alternative 5A – Dry Stack Tailings. Since there is two options – 1 (no liner in DST) and 2, (liner in DST), consider splitting the column into two so that the impacts for each option could be evaluated separately.	

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PAA 16 WET 6	Table 2.3-43	2-167	KW		Note any changes, where applicable, to the amount of stream and wetland impacts under each of the alternatives.	
	Table 2.3-44	2-172	KW	Section 3.5: Surface Water Hydrology	Denote the difference in stream impacts between Alternative 5A and Alternative 2, if any.	
CWA 4	Table 2.3-44	2-175	KW	Similar to Alternative 2. Wetland acres impacted by tailings storage under Option 1 would be 2,359 acres (140 acres less than Alternative 2 at 2,499 acres); under Option 2 would be 2,593 acres (94 acres more than Alternative 2). **Summary impacts would be moderate.**	Provide a discussion in Section 2.3.6 Alternative 5A regarding how this alternative would meet the 404(b)(1) guidelines for the Least Environmentally Damaging Practicable Alternative (LEDPA).	
EDIT 4	Table 2.3-44	184	cg	250% longer	The road is only 153% longer	
	Chapter 3. ENVIRONMENTAL ANALYSIS					
	3.0 Approach					
	General Comments					
NEP 7			MJ	The DEIS (Chapter 3) combines the description of the baseline environmental conditions (Affected Environment) and the analysis of environmental effects (Environmental Consequences) for each resource. The direct and indirect effects for each resource or resource use were analyzed on the basis of the factors of intensity (magnitude), duration, extent, and context of the impact (40 CFR 1508.27). The summary impact rating thresholds are generally qualitative, but quantitative when available. These thresholds include no effect, negligible, minor, moderate, and major. We recommend providing the rationale for a given determination to provide further transparency and better inform the decision makers and the public as to the importance of practicable mitigation of adverse effects, particularly where they are moderate to minor. We also think there are instances where providing a rationale will sharpen how a threshold is applied. For example, when scientifically established quantitative thresholds are available, such as state water and air quality standards, it may not be appropriate to characterize an impact as “minor to moderate” when the project may exacerbate exceedances of state and/or national standards. For example, arsenic and mercury concentrations in Crooked Creek and the Kuskokwim River both exceed the Alaska Water Quality Standards. The DEIS concludes that the environmental impacts from arsenic and mercury are “minor to moderate.” We recommend that the EIS consider revising these rating thresholds and discuss design features, such as advanced water treatment, and other mitigation measures that could reduce impacts from substances such as arsenic and mercury. As currently written in the DEIS, it is not clear which effects categories will be addressed with measures to reduce impacts or whether design features are already incorporated into the ratings. For example, most of the summary ratings for construction,		

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				operations, and maintenance, and reclamation and closure of the Donlin Gold Project are "minor to moderate." We recommend the EIS clarify which levels of summary impact ratings will be addressed with measures to reduce impacts and whether design features, mitigation measures, and BMPs are already factored into the ratings. The DEIS environmental effects analysis indicates that impacts to subsistence resources and uses are "minor to moderate." These summary ratings are inconsistent with the Bureau of Land Management's (BLM) preliminary findings under the Alaska National Interest Land Conservation Act (ANILCA) Section 810 (Appendix N), which identified significant restrictions to subsistence users and resources affecting native subsistence communities living near the mine site, along the Kuskokwim River, and adjacent to the pipeline right-of-way for all of the action alternatives, including the proposed action. We recommend that the EIS resolve these inconsistencies.		
	3.1 Geology					
EDIT 5	3.1.2.1.1	4	cg	the Yukon and Kuskokwim rivers that discharge into Norton Sound and Bristol Bay, respectively	The Kuskokwim River discharges to Kuskokwim Bay north of Bristol Bay (see FIGURE 3.5-14)	
CLA 16	3.1.2.1.1	4	LE	"The primary drainages of the Kuskokwim Mountains physiographic province are the Yukon and Kuskokwim rivers that discharge into Norton Sound and Bristol Bay, respectively."	Doesn't the Kuskokwim discharge to Kuskokwim Bay?	
GEO 13	3.2.2.1.3	3.1-12	MJ	Mine Borrow Sites	Include the location of existing and proposed borrow sites on an aerial map. Include a table that includes information regarding each borrow site, such as area, depth, volume of gravel material, etc. similar to Table 2.3-9, as an example. Also, conduct geological characterization of the quality of the rock material for PAG and potential ARD/ML, Hg, and As.	
EDIT 5	3.1.2.2.1	14	cg	The Kuskokwim River is charged by low-gradient, meandering streams within the Yukon-Kuskokwim Coastal Lowlands; it discharges southward into Kuskokwim Bay and Bristol Bay.	The Kuskokwim River is charged by low-gradient, meandering streams within the Yukon-Kuskokwim Coastal Lowlands; it discharges southward into Kuskokwim Bay.	
EDIT 5	3.1.2.2.1	16	cg	Proposed transportation facilities outside the immediate area include additional facilities at Dutch Harbor, approximately 460 miles south-southwest of the mouth of the Kuskokwim River, across Bristol Bay.	Proposed transportation facilities outside the immediate area include additional facilities at Dutch Harbor, approximately 460 miles south-southwest of the mouth of the Kuskokwim River, across Bristol and Kuskokwim bays.	
EDIT 5	3.1.2.2.3	3.1-18	MJ	Borrow Material Sites for Junkjuk Road and Port	Same comment as above for the Mine Borrow Sites.	

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EDIT 5	3.1.2.2.3	3.1-20	MJ	Borrow Material Sites for BTC Road and Port	Same comment as above for the Mine Borrow Sites.	
				3.2 Soils		
SOL 1	Table 3.2-1	3.2-9	MJ	Mine Site Soil Types and Erosion Hazards	For each soil type, what is the percent occurrence at the mine site?	
SOL 1	Table 3.2-3	3.2-17	MJ	Soil Types and Erosion Hazards for Mine Road Alternatives	Same comment as above	
SOL 1	Table 3.2-4	3.2-22	MJ	Soil Types at Bethel and Kuskokwim River Floodplain and Dutch Harbor	Same comment as above	
SOL 1	Table 3.2-7	3.2-37	MJ	Soil Types and Erosion Hazards Along Eastern Pipeline Segment	Same comment as above	
SOL 1	Table 3.2-8	3.2-43	MJ	Soil Types and Erodibility Data for Central Pipeline Segment	Same comment as above	
MIT 16	3.2.3.2.1 NOB and SOB Stockpile Design	3.2-67	bt	The fine-grained peat/loess mixtures in the NOB stockpile…	Are these soils considered wetland soils? If so they should be segregated and re-used as growth media during wetland mitigation.	
MIT 21	Closure, Reclamation, and Monitoring	3.2-68	bt	It is estimated that approximately 14.7 million cubic yards (cy) of non-organic material (overburden/growth media) and 8.7 million cy of organics (peat/woody debris) would be salvaged and reused for reclamation purposes.	Are the peat soils considered wetland soils? Wetland soils should be segregated and used for wetland mitigation to the maximum amount practicable.	
SOL 6					Is the term “reclamation” being used as a synonym for mitigation in this instance?	
CLA 17	3.2.3.2.1	3.2-70	MJ	Jungjuk Port	Occupy an area of 26 acres. The Executive Summary indicates 21 acres (ES-15). Need consistency with numbers throughout EIS.	
FISH 12	3.2.3.2.1	3.2-72	MJ	Maintenance Dredging at Jungjuk Port	The DEIS indicates that maintenance dredging of the Kuskokwim River would be required at the Jungjuk Port barge landing. We are concerned that maintenance dredging may adversely impact fish spawning areas and incubating eggs in the gravel, as well as alter migration patterns. There is	

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					insufficient information in the DEIS regarding the timing, frequency (e.g., annual, winter, summer), location, area, and volume of material to be dredged. We recommend the EIS provide additional details regarding the proposed maintenance dredging on the Kuskokwim River. The EIS should also analyze the proposed types of river dredging equipment that would be used (e.g., suction, clam shell, etc.) and evaluate the proposed dredge material disposal site(s) and/or beneficial use of the dredged material. These options should be evaluated in Alternative 2 (Proposed Action). The environmental analysis of the EIS should include an evaluation of the direct, indirect and cumulative impacts associated with maintenance dredging the Kuskokwim River.	
PAA 26	3.2.3.2.1	3.2-72	MJ	Maintenance Dredging at Bethel Port	The EIS should include a the dredging plan and discuss what is being proposed, e.g., dredging volumes, disposal area, etc.	
SOL 5		3.2-75	bt	Temporary facilities	Provide an estimate of what constitutes temporary for each of these facilities. Has the temporal impacts to wetlands and other aquatic resources been included in the impacts?	
MON 3	3.2.3.2.3 Pit Dewatering Water Discharge	3.2-93	bt	Energy dissipaters, erosion control measures and methods for seasonal adjustments for seasonal adjustments to prevent icing and scour would be identified and installed as need (sic) to meet storm water and water quality requirements.	We recommend monitoring the streambank downstream of the outfall in order to ensure erosion or other affects are identified and corrected as soon as possible.	
SOL 6 SOL 6	Closure, Reclamation, and Monitoring	3.2-96	Bt	The mine site would be reclaimed to pre-mine erosion conditions to the extent practicable under the Reclamation and Closure Plan and ADNR reclamation requirements. Large scale redistribution of topsoil would result in temporary destabilization of ground surfaces during	We recommend referencing the mitigation plan as well. Mitigation opportunities should be explored on the mine site. --- Has Donlin explored ways to expedite reclamation in order for it to take less than several years beyond closure?	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
				mine site reclamation that would likely last for several years beyond closure.		
MIT 2	WRF	3.2-97	Bt	The Lower CWD would be breached, liner and fill removed, re-graded, and surface reclaimed to a natural state.	Would this site be a good candidate for wetland mitigation? All mine facilities should be investigated as possible mitigation sites rather than reclaiming them only.	
MIT 16	Mine Ste Roads	3.2-98	Bt	Asphalt road surfaces (where present) would be removed and buried in ditches and road depressions prior to grading and final reclamation.	We recommend the removal of road wastes to a licensed solid waste landfill. Although the site will be irreparably damaged from the project, site waste should not be allowed to remain after the project is completed, all solid waste should be removed to ensure the least possible impacts from the project.	
MIT 21	Snow Gulch Reservoi r	3.2-98	Bt	The dam footprint would be recontoured and revegetated.	The dam footprint and Snow Gulch should be mitigated rather than just reclaimed. The aquatic resources should be mitigated to a higher functional value than is currently available.	
SOL 6	Pipeline ROW	3.2-107	bt	Stockpiles would be designed for snow storage, and would incorporate water diversion ditches to control meltwater drainage to well established vegetation or dissipaters.	We recommend the use of settling podes to ensure that sediment is dropped out of the water before discharge.	
SOL 7	Fugitive Dust	3.2-115	MJ	Fugitive dust emissions may be caused by vehicle travel on the gravel access roads, and other unpaved areas, as well as activities at the mine site, such as blasting, crushing and grinding of the ore rock, and stack emissions. According to the DEIS, fugitive dust could be measurable as far as ten miles from the mine site, one tenth of a mile from gravel roads. The DEIS includes evaluation of fugitive dust from the mine site and transportation facilities, but no evaluation of fugitive dust associated with pipeline construction, such as the gravel access roads, pipeline trenching and burial, and gravel source sites. We recommend the EIS include analysis of fugitive dust emissions from the construction and operations of the natural gas pipeline. Fugitive dust has the potential to deposit and collect on vegetation, wetlands, and other surfaces. Soils with the highest organic content have been shown to exhibit the greatest potential for metal accumulation. We recommend that the EIS discuss the potential exposure to contaminants resulting from fugitive dust emissions and evaluate potential pathways for bioaccumulation. The EIS should evaluate the potential for biotic transfer from dust-affected soils and vegetation to humans and wildlife. The DEIS indicates that unpaved gravel roads are assumed to be controlled at 90 percent, primarily with periodic chemical		

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MON 9				application and watering. However, if the gravel source material is tested to contain of high volumes of PAG, then watering to reduce fugitive dust emissions may not be an acceptable management practice as it could result in the generation of ARD/ML to adjacent wetlands, surface and ground waters. We recommend the EIS evaluate other options for minimizing fugitive dust from gravel roads and pads, such as capping the surface of gravel roads and pads with an inert material or applying a non-toxic chemical treatment. As part of Red Dog Mine operations near Kivalina, Alaska, a Fugitive Dust Management, Testing, and Monitoring Plan has been developed and implemented to evaluate fugitive dust emissions and their impacts. We recommend that a similar plan be developed for the Donlin Gold Project to evaluate fugitive dust emissions and their distribution to soils, air, water, vegetation, and the potential exposure of contaminants, such as mercury, arsenic, ARD/ML, to humans and wildlife. The objectives of the study would be to: compile and summarize information pertinent to the fugitive dust issue, present a preliminary conceptual site model describing sources and transport mechanisms for fugitive dust, potential exposure pathways, and human and ecological receptors; identify where additional data collection is needed (data gaps); and outline a decision-making framework for addressing future fugitive dust issues.		
AIQ 2				We also recommend that the HIA determine acceptable exposure concentrations and limits, and pathways for humans and wildlife to bio-accumulate contaminants from ingesting foods exposed to fugitive dust. A Fugitive Dust Control Plan should be completed for the EIS to include design features, mitigation measures, and monitoring of fugitive dust emissions and exposure during the active mine life and post closure.		
	3.3 Geohazards and Seismic Conditions					
EDIT 5	3.3 Synopsis	3	cg	and from slope stability issues along the 3 times longer road, and at 3 times as many material sites, as Alternative 2.	The road is only 1.5 times longer	
GEO 3	3.3.3.2	3.3-37	MJ		What is the range in seismic/earthquake magnitude that the TSF dam is designed and constructed to withstand? Can this be expressed as a Richter Scale magnitude for public understanding?	
GEO 6	Table 3.3-2	3.3-42	MJ		Include the build out dimensions for the Tailings Dam.	
CLA 31	3.3.3.2.3	3.3-62	MJ	Use of evaporators in TSF pond to reduce water volume	Are evaporators effective in the winter season? Please clarify any season restrictions on the use of evaporators.	
	3.4 Climate and Meteorology					
	No Comments					
	3.5 Surface Water Hydrology					

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	General Comments					
HYD 1			LE	This section does a good job of summarizing and illustrating percent flow reductions that result from the project. However, when discussing the magnitude of effects, comparisons are made to historical variation, without reference to its basis.	What is the source of the estimates of historical variation?	
HYD 12 / MIT 24	Water Sources and Volumes		MJ	The Donlin Gold Project would require substantial volumes of water for the construction of permanent and temporary gravel facility pads, gravel and ice roads, hydrostatic testing of the pipeline, and other mine related activities. We recommend that the EIS evaluate the project water resource requirements for all of the action alternatives, not just the Proposed Action. We recommend that the EIS evaluate the year round water use resources, locations, and volumes. For each type of water resource (river, stream, lake, pond – permanent, intermittent, ephemeral, perennial), there should be a description in a table of the maximum and minimum surface area, depths and width of the water resource, available water volumes, volume of proposed withdrawal, winter and/or summer withdrawal, presence/absence of resident and/or anadromous fish species. The EIS should describe measures, such as screening, that would be implement to minimize impacts to fish. Additional mitigation measures should include establishing water withdrawal rates, timing of water withdrawal to avoid fish migration, spawning, and incubating eggs. The location of water resources should be included on a map and/or aerial photograph. This additional information is need to adequately evaluate the direct, indirect and cumulative impacts to the aquatic resources and should not be deferred until the permitting process.		
EDIT 5	3.5 - Synopsis	3	cg	would reduce the distance traveled by barge by 69 river miles,	Alt 2 description on page 2-43 says it is 199 river miles from Bethel to Jungjuk while page 2-152 says it is 124 miles from Bethel to BTC. That difference is 75 miles. Also, section 3.23 says the reduction is 75 miles	
EDIT 5	3.5 - Synopsis	3	cg	crossing 43 streams, as opposed to 40 under Alternative 2.	Chapter 2, page 2-157 says that BTC will have 40 crossings with 8 bridges and 32 culverts while Alt 2 (page 2-53) will have 51 crossings with 6 bridges and 45 culverts Section 3.5.2.2.2 says that BTC would cross 40 while Section 3.5.2.2.1 says Alt 2 would cross 51	
HYD 2	3.5.2.1.2	9	KW	The flow regime of streams in the proposed Project Area includes both ephemeral and perennial systems.	Where in the surface hydrology section are streams classified or functionally assessed? This is a necessary component within this section. Minimally there should be a breakdown of perennial, intermittent, and ephemeral stream systems by linear footage and a discussion on the functions each of those systems provide (i.e. transporting water to the channel,	

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					transporting water in the channel, transporting wood and sediment to create habitat, temp and oxygen regulation, processing organic matter, providing for biodiversity). Minimally, stream dimensions should be measured and recorded considering any stream mitigation would be stream relocation rather than restoration. In fish and aquatic habitat stream flow changes are examined minimally and mostly loss of habitat and effect on fish but nothing that would help in determining appropriate mitigation.	
HYD 4	3.5.2.1.2	10	cg	**Notes:** 1 Streamflow data have continued to be gathered by Donlin Gold at these stations beyond 2011. Source: BGC (2012a).	It's 2016. Couldn't these dates have been updated to at least 2015 (when the draft came out)? And if it's because the source doc came out in 2011, then why is Crevice Creek noted with a 1 but the last date listed is 2010?	
EDIT 5	3.5.2.2.3	41	cg	Storm surge1	Storm surge[1]	
EDIT 5	3.5.2.3.1	54	cg	diesel pipeline would start at the Tyonek Port, located approximately 18 miles southwest of MP 0 of the natural gas pipeline route. From MP 0, the diesel pipeline would follow the same corridor as the natural gas pipeline. Along the 19-mile section between Tyonek and MP 0, the	Section 2.3.4 says 19 miles (page 2-145)	
HYD 2	3.5.3	59	KW	This section describes the temporary and permanent activities associated with construction, and operations and maintenance of the Donlin Gold Project, and the direct and indirect potential impacts of the proposed project on surface water.	Where in the surface hydrology section are streams classified or functionally assessed? This is a necessary component within this section. Minimally there should be a breakdown of perennial, intermittent, and ephemeral stream systems by linear footage and a discussion on the functions each of those systems provide (i.e. transporting water to the channel, transporting water in the channel, transporting wood and sediment to create habitat, temp and oxygen regulation, processing organic matter, providing for biodiversity). Minimally, stream dimensions should be measured and recorded considering any stream mitigation would be stream relocation rather than restoration. In fish and aquatic habitat stream flow changes are examined minimally and mostly loss of habitat and effect on fish but nothing that would help in	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
					determining appropriate mitigation.	
EDIT 5	3.5.3.2.1	62	KW	Water withdrawal would be permitted and would therefore meet the requirements of ADF&G and ADNR for a water withdrawal permit.	Water withdrawal would need to be permitted and would therefore have to meet the requirements…..	
EDIT 5	3.5.3.2.1	64	cg	This figure will be replaced with a higher quality version in the next draft.	Should "next draft" have been "final"? This sentence should be delete in the EIS	
HYD 3	3.5.3.2.1	66	cg	a volume sufficient to store runoff from a 100-year snowmelt event (Table 3.5-25).	If this were a rain on snow event rather than snowmelt alone, would it affect the required volume?	
HYD 1	3.5.3.2.1	67	KW	Surface water diversion and storage, and interception of surface and groundwater by the mine pit and pit dewatering within the American Creek watershed during the construction phase, would result in a reduction in watershed yield and subsequent discharge to Crooked Creek that is likely to exceed historic seasonal variation, and represents a substantial change in the American Creek flow system.	Specify the percent of watershed yield. "would result in a reduction in watershed yield by X%..."	
MON 3, HYD 1	3.5.3.2.1	70	cg	During runoff events equal to or less than the runoff produced by a 10-year 24-hour precipitation event, no water would be released from the detention structures until adequate settling and suitable water quality criteria are met.	Should "suitable" be "applicable"? If not, how are "suitable" criteria determined? Also, will monitoring required to verify this assumption?	
EDIT 5	3.5.3.2.1	73	cg	to Crooked Creek;Contact water	to Crooked Creek; Contact water	
CLA 31	3.5.3.2.1	75	LE	"… cover consisting of a 13.8 inch layer…"	A tenth of an inch is a very precise measure for a layer of material to be placed by heavy equipment. Clarify.	
MIT 31	North and South Diversion Channels	3.5-77	Bt	To minimize erosion of the valley slopes, flow from the north diversion channel would be conveyed through either a High Density Polyethylene pipe, half-pipe, or armored channel.	The diversion channel should be mitigated at project closure into a functioning stream. Please use this channel as an opportunity to mitigate some of the stream impacts to ensure a functioning stream remains after project closure.	
HYD 5	3.5.3.2.1	78	KW	The impact on stream flow will continue throughout mine operation but will be eliminated after reclamation of the mine and natural streamflow in Snow Gulch is restored;	Considering stream re-creation science is still relatively new and evolving and never been done on this scale and in this type of post mining landscape which will undergo extreme	

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				thus, the duration of the impact is expected to be long-term.	hydrologic and geologic structure changes, it would suggest that the duration of the impact is expected to be long-term to permanent. Please revise or provide additional justification for not making the change.	
MIT 31	Effects on Crooked Creek	3.5-83	Bt	If the hydraulic conductivity of the bedrock aquifer is as anticipated…Thus, the magnitude of direct and indirect impacts is anticipated to range from low to medium, but would likely be up to a high magnitude in winter or if a high hydraulic conductivity conditions exist.	What are the mitigation options for a high conductivity scenario? How will the effects be minimized? Please provide a reference to the mitigation scenarios if conditions are not as modelled.	
MIT 24	3.5.3.2.1	85	KW	However, there would be no additional mitigation measures to adjust Crooked Creek to its altered flow regime given that the magnitude of impacts to the channel is anticipated to be low.	~~However~~, there would be no additional mitigation measures to adjust Crooked Creek to its altered flow regime given that the magnitude of impacts to the channel is anticipated to be low; however if monitoring indicates higher stream flow changes and channel dimensions impacts that are outside the natural variability or greater than anticipated, mitigation measures would be employed. While the impacts may be low, the duration will be permanent.	
HYD 7 HYD 5	Effects on Crooked Creek	3.5-85	Bt	The results of the computations are presented in table 3.5-27 and indicate that the maximum likely change in the channel dimensions is as follows:	How will these numbers change in the case of higher conductivity as discussed above? How will greater than anticipated rock characteristics change the modeling results? What mitigation is planned in the case of greater reductions in stream base flows, and how much of a change in the aquifer characteristics would result in medium or high impact?	MIT 24
MIT 31			Bt	Release of treated water from the water treatment plant during the winter months was considered; however it was determined that water would be needed for process water during the low flow winter months. Water management strategies related to the release of treated water take into account the need to avoid buildup of excess water, improved water treatment, and mitigate stream flow reductions.	This statement implies that during the winter months there will be no mitigation of stream flow reductions. The lack of flow mitigation would probably lead to drastic changes in the character of Crooked Creek, potentially resulting in little to no flow, and the potential for the complete freeze-up of the creek during the low flow period. This change would have dramatic effects on stream life. Please describe how flow mitigation will be done during the winter months.	
EDIT 5	3.5.3.2.1	85	cg	as well as changes aquatic and fish habitat	as well as changes to aquatic and fish habitat	

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MIT 2	Closure, Reclamation, and Monitoring	3.5-86	Bt	The lower CWD would be breached, the liner and fill material would be removed, and to the maximum extent practical, the surface would be restored to its pre-mining condition.	Donlin should consider this area as a possible mitigation site.	
MIT 2			Bt	The upper CWD liner would be removed, and the impoundment would be filled with waste rock, graded, and reclaimed as part of the WRF reclamation.	Ensure that no PAG rock is used to fill the CWD. The area should be considered as a potential mitigation site and be mitigated rather than reclaimed.	
MIT 2			Bt	The Ore Stockpile Berm and sump would be regraded and, to the maximum extent possible, restored to its pre-mining condition.	The site should be considered as a mitigation opportunity.	
MON 3		3.5-88	Bt	Put another way, the storage volume available from the PMP 24-hour precipitation, plus the runoff from the 100-year annual wet year plus the runoff from 3 average precipitation years, assuming the pumping is not restored.	Regardless, Donlin should employ the best available monitoring technology available to monitor the pit lake levels. The monitoring technology should be revisited periodically through perpetuity.	
HYD 1 / MON 13			Bt	The TSF would be covered with non-metal leaching/non-potentially acid generating rockfill material to provide a capillary break.	Please provide the design permeability of the cap. How will breaching of the cap by vegetation or animals be prevented and monitored for?	
EDIT 5	3.5.3.2.1	88	cg	Once the discharges from the pit begin, Crooked Creek flows will continue to be reduced from the pre-mining condition, but will be less reduced than during mining	Once the discharges from the pit begin, Crooked Creek flows will continue to be reduced from the pre-mining condition, but the reduction will be less than during mining	
CLA 31	3.5.2.3.1	89	LE	"… surface settlement of the closure cap will have an effect on surface grading and stormwater management, and the overall integrity of the closure cap."	Either explain briefly how those effects of settling will be managed or point to where that explanation can be found.	
EDIT 5	3.5.3.2.1	95	cg	and the AWT would only be operated during the summer months	AWT or just WTP? AWT is not previously used.	
EDIT 5	3.5.3.2.2	96	cg	The road would be approximately 30 miles long and cross 50 streams and drainages requiring structures to convey surface water flow (Table 1, Appendix G). Five stream crossings would require bridges	The description of Alternative 2 in Chapter 2 says there will be 51 stream crossings with 6 bridges (page 2-53)	

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HYD 7	3.5.3.2.2	97	KW	After the pit lake achieves its maximum managed stage, the amount of leakage from Crooked Creek would be a small percentage of the overall flow in the creek, and the magnitude of the effects would be considered low.	What is the maximum managed stage? What is the specific percentage of leakage?	
MON 1		3.5-101	Bt	The bulkhead would alter flow in the river as the current deflects around the structure, potentially resulting in increased erosion and deposition at either end.	Will Donlin be monitoring for erosion at the port? While Donlin is installing BMPs for erosion prevention, they should also actively monitor for erosion in order to do adaptive management if erosion is detected.	
CLA 31	3.5.3.2.2	101	cg	Since the port will be used for the life of the mine and then removed, the duration of the impact is expected to be long-term.	In another part of the document, it states that a barge landing will remain but all other port facilities would be removed. Should this say that too?	
EDIT 5	3.5.3.2.2	102	cg	From Bethel, both cargo and fuel would be transported upriver approximately 168 river miles to Angyaruaq (Jungjuk) Port by river barge . . . River. There are a total of eight critical sections along the river extending for 199 river miles between Bethel and Angyaruaq (Jungjuk)	Alt 2 description on page 2-43 says it is 199 river miles from Bethel to Jungjuk	
EDIT 5	3.5.3.2.2	106	cg	For typical tugs currently operating on the river (twin or triple screw, 375 to 400 hp per propeller (Fernandez 2014d), maximum riverbed velocities would be about 1 to 2 feet/second less than that of the proposed tugs in shallow water depths.	The first parenthesis does not have a corresponding closing one	
EDIT 5	3.5.3.2.2	107	cg	Results are depicted on for a stationary tug after	Results are depicted for a stationary tug after	
EDIT 5	3.5.3.2.2	107	cg	The results in show a	The results show a	
EDIT 5		110	cg	The scour results on also apply to	The scour results also apply to	
MIT 2	Ports	3.5-115	Bt	The area around the barge landing sheet pile wall and the port site would be recontoured and revegetated to restore pre-project functions and values to the maximum extent practicable.	Donlin should consider the site as a potential mitigation site rather than just as a site to restore.	
CLA 31	3.5.3.2.3	116	cg	the 50-foot wide permanent ROW.	Section 2.3.2.3.1 says "50 feet wide on ANCSA and State of Alaska lands and 51 feet, 2 inches on BLM-managed lands" so	

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					will it all be only 50 feet?	
NEP 5		3.5-120	Bt	However, it is reasonable to assume that collection of additional data and contingency planning would take place in final design in support of winter weather water use permitting.	This data should be available to the agencies in order to help assess cumulative impacts from winter water use impacts. This data should be collected and made available prior to issuance of a ROD or permit for this project.	
NEP 5		3.5-122	Bt	It is reasonable to assume that additional winter water extraction data collection would occur in final design, and that the rate and volume of water withdrawals would be monitored at each source to ensure permit requirements are met. Thus, the magnitude of the impacts to water resources is generally expected to be low.	This data should be available to the agencies in order to help assess cumulative impacts from winter water use impacts. This data should be collected and made available prior to issuance of a ROD or permit for this project.	
EDIT 5	3.5.3.2.3	123	cg	pads for pipe storage yards, and other	pads for PSYs, and other	
MIT 31	3.5.3.2.5	128	KW	Additional mitigation measures related to surface water hydrology include the following:	The discussion of mitigation that follows is specific to wetlands. We recommend you include specific language and discussion in this section regarding the mitigation of stream and rivers on site – specific measures to be implemented. Overall, the discussion of mitigation for streams in this section is deficient compared to the level of detail included in the wetlands section in 3.11. Additional detail is needed regarding stream mitigation that is on par with the level of detail included in the wetlands section.	
EDIT 5	3.5.3.2.5	128	cg	Details would be developed as Donlin Gold's Conceptual Compensatory Mitigation Plan is developed	Details will be included in Donlin Gold's Conceptual Compensatory Mitigation Plan	
GRD 12	3.5.3.2.5	128	LE	The Corps "is considering additional monitoring and adaptive management" including the following: "The groundwater flow model should be reexamined 3 years after the commencement of pit dewatering to minimize uncertainty about dewatering effects, with a 5-year review frequency thereafter, or when noteworthy unexpected conditions are encountered. Unexpected conditions should be used to revise projections and adjust management plans as needed. As required by permit	EPA strongly encourages the re-examination and revision of the ground water model as described in this bullet.	

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				conditions, relevant groundwater data (such as production rates and water table levels) should be collected as mining progresses to facilitate model revisions;		
EDIT 5	3.5.3.4.2	134	cg	transmission line corridor for approximately 18 miles from the Tyonek area to MP 0	Section 2.3.4 says 19 miles(page 2-145)	
EDIT 5	3.5.3.4.3	136	cg	traverse an additional 18 miles to reach MP 0	Section 2.3.4 says 19 miles (page 2-145) and the next paragraph says 19 miles	
EDIT 5	3.5.3.5.2	137	cg	would be located at BTC, approximately 69 river miles downstream from the Angyaruaq (Jungjuk) Port	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
EDIT 5	3.5.3.5.2	137	cg	the BTC Road indicates that the road would cross 43 streams; of these, 8 would require bridges and 35 would require culverts (compared to 40 streams, 6 bridges, and 34 culverts under Alternative 2)	Chapter 2, page 2-157 says that BTC will have 40 crossings with 8 bridges and 32 culverts while Alt 2 (page 2-53) will have 51 crossings with 6 bridges and 45 culverts	
MON 3	3.5.3.6.1 Option 1: Unlined Dry Stack	3.5-139	Bt	The following is a summary of the requirements for the unlined dry stack TSF…	Since the dry stack option 1 will be unlined, groundwater monitoring should be included in the requirements.	
MON 3		3.5-141	Bt	It is estimated that it would take roughly 200 years for seepage flow to reach the same rate as that predicted for the TSF under Alternative 2.	Donlin should be required to incorporate long-term monitoring to ensure groundwater contamination is detected as soon as possible. Monitoring should be done in real-time using the best technology available at the time. The technology should be reviewed periodically through perpetuity.	
CLA 31	3.5.3.6.1	141	cg	inflows to the SRS from the rock drain system would average 709 gpm per year,	What does 709 gallons per minute per year mean? Is it the average flow over the year? If so, is it a particular year that it had to be pointed out?	
EDIT 5	3.5.3.7	154	cg	The pipeline route under Alternative 6A would cross a total of 377 streams and drainages, compared to 400 streams and drainages crossed along the Jones River (preferred) route under Alternative 2.	Should "preferred" be "proposed" since Alternative 2 is the applicants proposal and there is no mention in the draft of the Corps preferred alternative or the environmentally preferred alternative	
EDIT 5	3.5.3.7.1	155	cg	for Alternative 2.The effects	for Alternative 2. The effects	

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EDIT 5	Table 3.5-35	157	cg	30-mile mine access road, 40 streams, 6 bridges, and 34 culverts	Chapter 2 (page 2-53) says 51 crossings with 6 bridges and 45 culverts	
EDIT 5	Table 3.5-35	157	cg	76-mile mine access road, 43 streams, 8 bridges, 35 culverts	Chapter 2 (page 2-157) says 40 crossings with 8 bridges and 32 culverts	
	3.6 Ground Water Hydrology					
	General Comments					
FISH 3	Mine Pit Dewatering		MJ	During mine operations, the dewatering of the open pit mine using groundwater wells would result in a cone of depression that would lower the water table approximately 1,500-ft near the center of the pit over a surface area of 16-mi^2. This cone of depression would result in long-term direct, indirect, and cumulative impacts to surface and subsurface groundwater, including wetlands. Approximately 541 acres of wetlands adjacent to Crooked Creek could be affected by mine pit dewatering. The DEIS indicates that mine pit dewatering would reduce stream flow in Crooked Creek by 24 to 67 percent in the winter, and 9 to 20 percent in the summer. The DEIS indicates that during winter months, there would be no enhancements to augment stream flow in Crooked Creek. The lack of stream flow would probably lead to serious changes in the character of Crooked Creek, potentially resulting in little to no flow, and the complete freeze up of the creek during the low flow period, which may have serious effects on stream life. We have concerns regarding impacts to fish rearing, migration, and spawning habitat, as well as potential incubating eggs in the gravel beds.		
MON 3	Monitoring and Replenishing Crooked Creek			We recommend that the EIS consider real time flow monitoring with discharge points above and below the influence of the cone of depression. By monitoring flows above and below the cone of depression, water augmentation could be directed to ensure that low flows of Crooked Creek would be mitigated where it is needed. Augmentation could increase flows through the zone to prevent adverse impacts from low flows in Crooked Creek. We recommend the EIS evaluate advanced water treatment to treat the groundwater from the mine pit dewatering and to discharge the treated water in Crooked Creek further downstream from the influences of the cone of depression to augment the reduction and elimination of groundwater and surface water. The EIS should include a Mine Pit Dewatering Monitoring Plan to ensure that flow reductions to Crooked Creek are being monitored in real time as the pit is being developed, and design features, mitigation measures, and advanced water treatment are appropriate and adequately implemented to minimize impacts.		
WET 8	Pit Lake Wetland Impacts		MJ	At the end of the active mine life, surface and ground waters that would replenish Crooked Creek and adjacent wetlands would be diverted into the open pit mine to create the pit lake. The DEIS indicates that after the pit lake fills with water, a new equilibrium groundwater level would become established. Because the pit lake level would be below the elevation of Crooked Creek, the section of the creek that runs along the pit lake would lose groundwater to the cone of depression created by the pit lake. This could result in long-term wetland and stream flow effects. Groundwater modelling results show that the		

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GRD 6					pit lake would continue to be a destination for groundwater flow and that Crooked Creek would continue to lose water to the groundwater systems flowing to the pit because of ongoing pumping and treating of the lake water to keep levels below surrounding water levels. We recommend that the long-term impacts to wetlands and Crooked Creek resulting from groundwater migrating toward the pit lake be evaluated in the EIS. Compensatory mitigation should be proposed in the CMP and the EIS to offset the indirect impacts and temporal loss of wetlands adjacent to Crooked Creek. The DEIS suggests that maintaining the pit lake at an elevation 10 meters below the invert level is intended to prevent direct discharge of pit lake water into surface waters (Crooked Creek). Particularly during the winter months and dry periods, groundwater flows out of aquifer storage into Crooked Creek, which constitutes the majority of stream flows. In the worst case scenario, significant groundwater contamination could occur prior to the pit lake start of pumping. The DEIS does not suggest that the pit lake would be maintained as a hydraulic sink. Therefore, discharge from the pit lake via groundwater could occur, resulting in both transport of pit lake contaminants into groundwater, but also in potential leaching and mobilization of contaminants, such as mercury and arsenic, in the surrounding pit wall rock via groundwater, and discharge into surface water via down gradient groundwater discharging into surface water.	
GRD 6	Pit Lake Contaminants Modelling				We recommend that the EIS discuss the modeling results and the conclusions made regarding groundwater contaminants not migrating away from the pit. The range of hydraulic conductivities (Table 3.6-2) are fairly wide, and indicate that contamination could migrate up to 14-feet per day during the 52-year filling period of the pit lake. Even in the lower aquifer depths, the contaminants could migrate up to 0.2-feet per day. While it is important to assume a uniform conductivity for modelling purposes, using a relatively low geometric mean could potentially underestimate contaminant movement during the pit lake filling period, and potentially during the mine operations period. We recommend additional modelling and analysis of the hydraulic gradient of the pit lake to determine the potential for the transport and migration of contaminants, such as mercury and arsenic, into groundwater discharging into Crooked Creek and adjacent wetlands. In particular, it is important to evaluate the rate and area of groundwater migration during the period when the pit lake is filling. A greater pumping and advanced water treatment rate may be necessary prior to discharging into Crooked Creek. We recommend using a worst-case and projected hydraulic conductivities multiple times during post-closure to determine the maximum contamination of the bedrock aquifers so that mitigation measures can be proposed and implemented in case of groundwater contamination.	
MON 3	Pit Lake Groundwater Sampling and Monitoring Plan		MJ		A Pit Lake Groundwater Sampling and Monitoring Plan should be developed to focus on long-term water quality monitoring, sampling, and testing of the groundwater around the pit for the presence, abundance, and migration of contaminants, such as mercury and arsenic. Groundwater monitoring should be done in real-time with the best available technology. The best available technology should be reviewed periodically throughout the monitoring period. Monitoring should continue until the model is confirmed that the water is flowing back toward the pit and no further contamination is present in groundwater. If groundwater contamination is found to be migrating away from the pit, then mitigation measures should be in place to	

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				remediate the contaminated groundwater as soon as possible to prevent the spread of contamination. Advanced water treatment of groundwater may be required to ensure that surface water meets water quality standards.		
MON 3	Waste Rock Facility		MJ	The DEIS indicates that the groundwater from the WRF would have concentrations of several constituents that are predicted to exceed the most stringent AWQS, and therefore adverse impacts to groundwater quality would occur in areas underneath and immediately adjacent to the WRF. As a mitigation measure to prevent groundwater contamination in the area, we recommend lining the WRF and other mine facilities, such as the contact water ponds, which have the potential to contaminate groundwater. The groundwater quality should be monitored in real-time for the life of the facility using the best available technology at the time to detect any potential contamination resulting from leachates generated from the WRF. Any potential contamination detected should be mitigated and contained. The technology should be reviewed periodically for the life of the facility (i.e. in perpetuity).		
DAM 2	Tailing Storage Facility		MJ	The TSF and dam has the potential of contributing to environmental and public health concerns if not properly constructed, maintained, and monitored. For example, a catastrophic event at the Mount Polley Mine in central British Columbia resulted in the breach of the mine tailings impoundment, causing a release of tailings slurry/saturated tailings into the downslope waterbodies.		
MIT 29	Tailings Storage Facility Failure Modes Effects Analysis			Any proposal for a subaqueous tailings storage facility requires a hard look and justification. We appreciate that a Failure Modes and Effects Analysis (FMEA) was developed during the DEIS process. We recommend that the FMEA be included in the EIS and that an adaptive management plan resulting from the FMEA process be included to address contingencies relative to not only tailings dam stability concerns, but other environmental concerns. We recommend that the FMEA process continue to be used by the project proponent and State and Federal regulators to inform the engineering design and mitigation processes as the project continues through the active mine life and post-closure.		
MIT 22	Tailings Storage Facility Wildlife Management Plan			The public raised concerns regarding the potential exposure of birds and wildlife to contaminants from the TSF and the pit lake. We recommend that a Wildlife Management Plan be developed and implemented to prevent birds and/or wildlife from access to the TSF and the pit lake. Wildlife protection measures could include incorporating an enclosed perimeter fence, netting or other non-intrusive barriers. Hazing may also be considered a wildlife management control technique.		
CLA 31	3.6	3.6-2 Expected Effects	bt	During operations, this contact water would be captured by pit dewatering; after closure, it would flow to the pit lake.	It should be clarified that modeling shows that the water would be captured by pit dewatering. Continued monitoring of the hydrology and movement of contaminants should be done to confirm the model results.	
PAA 14			bt	After mine closure, modeling shows that the pit lake would continue to be a destination for groundwater flow, and that Crooked Creek would continue to lose water to the groundwater system flowing to the pit because of ongoing pumping and treating of lake water to keep water levels	According to §3.6.2.2.1, the pit will fill for approximately 52 years, and during that time approximately 1,000 gpm of water will be flowing into the surrounding bedrock. Even after the pit lake is filled, pumping will only take place 4-5 months per year. In order to prevent groundwater contamination, the WRF	

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				below surrounding water levels.	should be lined to ensure minimal groundwater contamination from this facility.	
GRD 6	3.6.1.3.3	3.6-12	bt	Detailed examination of the available data has also not revealed any significant correlation between bedrock hydraulic conductivity and rock type or formation.	This issue should be discussed further in regard to the modeling results and the conclusions made regarding groundwater contaminants not migrating away from the pit. The range of hydraulic conductivities provided in table 3.6-2 are fairly large, and indicated that contamination could migrate up to 14 feet per day during the 52-year filling period of the pit lake. Even in the lower aquifer depths the contaminants could migrate up to .2 ft/day. While it is important to assume a uniform conductivity for modelling purposes, using a relatively low geometric mean could potentially drastically underestimate contaminant movement during the pit filling period, and potentially during the mine operations period. We recommend running a worst case scenario to determine the maximum contamination of the bedrock aquifers so that mitigation measures can be proposed in case of significant groundwater contamination.	
GRD 10	Table 3.6-2	3.6-12	LE	(Summary of Hydraulic Conductivity Estimates from Hydraulic Tests Not Influenced by Permafrost)	It is good to see the ranges presented here alongside the mean, but the table would be more informative if it included the number of measurements used to make up the estimate	
MON 3		3.6-12-13	Bt	Locally, both within and surrounding the pit area, zones of hydraulic conductivity higher than regional or local averages (by factors of 10 or more) may be present and could influence local groundwater flow fields and groundwater pumping rates from wells.	Due to the uncertainty regarding hydraulic conductivity, we recommend long-term water quality monitoring to ensure any groundwater contamination is found and mitigated. Water quality monitoring of the groundwater should be done in real-time using the best available technology. The technology should be reviewed and updated periodically for perpetuity.	
GRD 6		3.6-13 Miine Site Ground water Model	Bt	A three-dimensional mathematical model of the groundwater flow system in the vicinity of the proposed mine site and process facilities has been constructed by BGC in order to accomplish the following primary goals.	The model should also be used to estimate the transport of contaminants to the groundwater due to the WRF and pit using worst-case and projected conductivities. This is especially important to do to estimate the spread of groundwater contamination during the period when the pit lake is filling.	

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GRD 10	3.6.1.4.1	3.6-16	LE	"…sensitivity analyses were performed…"	Include reference to where that discussion can be found	
MON 3	3.6.1.4.1	3.6-19	Bt	Simulation of Aquifer Tests and Stream Leakage	In this section it is stated that the aquifer tests show variable quality matches due to the heterogeneity of the aquifer. We believe this argues for additional monitoring of groundwater contamination in order to assure groundwater contamination is detected and mitigated. While the model used the geometric mean of the conductivities, the aquifer tests show this may not be appropriate.	
MON 3	Model Calibration and Simulation of Future Conditions		bt	The amount and uncertainty of inaccuracies of these simulations are difficult to gauge… These assessments are subsequently used to justify possible mitigation conditions such as additional data collection and periodic model revision as dewatering of the pit progresses.	These uncertainties require that water quality parameters also should be monitored in order to ensure any groundwater contamination is detected and mitigated. Monitoring should be done with the best available technology at the time, with periodic reviews of the available technology for perpetuity.	
PAA 14	3.6.2.2.1 Contact Water	3.6-24	Bt	Contact water would be likely to enter the groundwater system as seepage from the WRF beneath the construction –stage footprint of the WRF, the lower contact water pond, or as seepage through the lower contact water dam (CWD). This water would be captured by the ACMA pit dewatering system or by a proposed ore stockpile berm designed to minimize runoff into the ACMA pit.	Wherever possible facilities which could potentially lead to groundwater contamination should be lined to minimize the possibility of contamination. Alternately, the groundwater should be monitored for appropriate parameters to detect groundwater contamination so that the contamination can be mitigated. Monitoring should also be performed to ensure that the groundwater is behaving as modelled.	
MIT 23	Tailings Storage Facility	3.6-31-32	Bt	The purpose of the wells is to 1) monitor the groundwater quality to verify that groundwater does not deteriorate and 2) to create a completely closed flow system to capture any potential leakage from the TSF or SRS pond into the groundwater system if water quality deteriorates.	If groundwater quality begins to deteriorate, Donlin should mitigate the existing contamination and take steps to prevent further contamination of the groundwater.	
MON 3		3.6-33	Bt	Calculations suggest that if the SRS pumping system were to go completely off-line, the SRS would likely fill to overflowing and/or lose hydraulic containment with respect to groundwater in approximately two weeks…	Please ensure that real-time monitoring using the best available technology at the time is used to detect pump failure. The technology should be reviewed periodically for the life of the system.	

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PAA 14	Waste Rock Facility		Bt	However, the location of the WRF in the surface water and groundwater flow systems that drain into the pit lake create a closed system whereby the effects on groundwater are limited to the immediate vicinity of the WRF and the small area between the WRF and the open pit.	In order to prevent, to the maximum extent practicable, groundwater contamination, all site facilities which may have the potential to contaminate groundwater should be lined. Alternatively, groundwater quality monitoring should be done in real-time using the best available technology at the time. The technology should be reviewed and updated periodically in perpetuity.	
PAA 14	South Overburden (SOB) Stockpile	3.6-34	Bt	Water percolating through the SOB also has the potential to enter groundwater and flow towards Crooked Creek.	In order to prevent, to the maximum extent practicable, groundwater contamination, all site facilities which may have the potential to contaminate groundwater should be lined. Alternatively, groundwater quality monitoring should be done in real-time using the best available technology at the time. The technology should be reviewed and updated periodically for the life of the SOB.	
MIT 2			Bt	Following removal of the SOB soils, sediment accumulations in the sediment pond should be removed to eliminate a potential source of groundwater contamination.	This site should be considered a possible mitigation site.	
MON 3		3.6-35	Bt	During the entire 52-year filling period, water would flow from the pit lake into the dewatered bedrock and waste rock backfill in the pit. The rate of this water flow would be greatest during the first 8 years of pit filling, declining from about 2,300 gpm to about 1,000 gpm. After 8 years and up to when the lake pit fills, the rate of water flowing out of the pit into groundwater would gradually decline from about 1,000 gpm to 0 gpm.	According to Table 3.6-2, the highest conductivity is 9 ft/day. At that rate of travel, in 52 years the groundwater contamination could travel a very long distance, and with the maximum flow rate of 2,300 gpm, a lot of contaminated water could enter the groundwater system. During the winter months (§3.6.1.3.2) and dry periods, groundwater flows out of aquifer storage and into Crooked Creek. In the case of a worst case scenario, significant groundwater contamination could occur prior to the pit lake start of pumping. Donlin should monitor the groundwater around the pit lake to ensure that contamination does not leave the area of predicted hydraulic containment. Monitoring should be performed in real time using the best available technology available at the time. The technology should be reviewed periodically and updated for perpetuity.	
MON 13	Tailings Storage	3.6-38	bt	The local diversion of groundwater beneath the TSF through the rock underdrain would continue permanently.	How will this be monitored? If a blockage forms will it cause erosion in the TSF which will eventually undermine the integrity	

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	Facility				of the TSF?	
MON 3	3.6.2.2.6	3.6-44 to 45	LE	Additional mitigation and monitoring for Alternative 2	(EPA) would support that list of monitoring and adaptive management approaches to reduce uncertainties around ground water impacts	
	3.7 Water Quality					
	General Comments					
WAQ 21 PHL 18 MON 9	Baseline Conditions Methyl Mercury		MJ	The DEIS indicates that naturally elevated mercury levels are found sporadically in surface and groundwater and sediments within and surrounding the proposed mine site. Concentrations of mercury in surface and groundwater samples collected from both within and outside of the proposed mine site exceeded the applicable water quality standard. The more harmful form of mercury, methylmercury, is also present in existing sediments. The proposed mining operations could increase methylmercury production and concentrations due to increases in sulfate loading, organic carbon loading, and inorganic mercury loading in area surface waters, including wetlands. Sources of inorganic mercury would be from fugitive dust and stack emissions. We recommend that the EIS discuss the dynamics of mercury (e.g., sources, movement, distribution, transformation, bioaccumulation, etc.) in wetlands, rivers and stream systems, where methylation would be expected to occur mostly in the sediments. The DEIS does not provide information on baseline measurements of methylmercury in water or any of the key constituents associated with methylmercury production, such as sulfate and organic carbon. Without this baseline information, the environmental and human health impacts from mining activities may be difficult to identify. The model used to estimate baseline methylmercury concentrations in water is driven by unrealistically high organic carbon concentrations, and likely over estimates the current baseline methylmercury concentrations in water. As a result, any measured increases in stream methylmercury concentrations due to mine activity may not be apparent. Methylmercury is more readily retained by higher trophic-level organisms than other forms of mercury. We have concerns with the potential bioaccumulation of methylmercury in the food chain, particular in regards to traditional subsistence foods. The accumulation of methylmercury in higher trophic level organisms results mainly from the ingestion of methylmercury-containing food rather than direct uptake of methylmercury from drinking water. We recommend that the EIS include additional modelling of mercury bioaccumulation, sources and pathways for uptake and exposure to methylmercury in the food web. In addition, we recommend long-term monitoring of the human health impacts, food consumption and exposure to methylmercury throughout the active mine life and during post-closure. In addition, we recommend developing this long-term monitoring plan in coordination and involvement with the local native communities.		
WAQ 14	Arsenic Management		MJ	The DEIS identifies elevated naturally occurring baseline concentrations of arsenic in soils, sediments and surface waters in the vicinity of the proposed mine site, which is common for gold-bearing areas. Concentrations of arsenic in surface and		

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				groundwater samples collected from both within and outside of the proposed mine site exceeded the applicable water quality standard. We recommend that the EIS identify the sources of arsenic from mine operations and discuss how those sources may potentially increase existing baseline arsenic concentrations during the active mine life and post-closure. We recommend that the EIS provide a comparison of baseline arsenic concentration levels in soils, sediments, surface water and groundwater to other mineralized and non-mineralized areas of Alaska.		
WAQ 14				An Arsenic Management and Monitoring Plan should be developed and implemented to ensure that the project does not exacerbate standards exceedances for arsenic in surface and groundwater, and ensure acceptable human health exposure limits during project construction, mine processing operations, mine pit dewatering, pit lake recharging, and prior to discharging into surface waters, such as Crooked Creek.		
HZM 8				The EIS should identify the specific water treatment processes to remove arsenic from surface and ground waters on the mine site.		
PAA 14	Acid Rock Drainaing/Metal Leaching		MJ	Geochemical characterization at the mine site was conducted to determine the extent of acid rock drainage/metal leaching (ARD/ML). We have concerns regarding the WRF and potential for ARD/ML during the operations phase, and prior to placement of a final cap. If the non-acid generating (NAG) and potentially acid generating (PAG) waste rock are not be adequately mixed during placement in the WRF, then it may begin to produce higher-concentrations of acidic seepage by the end of the mine life for year 26. We recommend that a liner be incorporated into the design of the WRF to minimize migration of contaminants into groundwater. The WRF should be monitored to ensure no ARD/ML migrates into groundwater.		
WAQ 14				Water quality predictions indicate arsenic has the potential to be leached from waste rock under both acidic and non-acidic conditions. According to the DEIS, arsenic leaching is a potentially significant concern for almost all waste rock due to widespread elevated concentrations in the rock and high leachability, as indicated by the test work. The EIS should clarify that the purpose of performing waste rock geochemical characterization is to manage potential ARD/ML, but it should not eliminate the need for water treatment, including advanced water treatment of arsenic. We recommend a plan to address ARD/ML from the WRF and to include additional monitoring and testing of the groundwater for potential leaching of contaminants.		
MIT 19				We recommend that the EIS include geochemical characterization of potential new and existing gravel material source sites that would be used to construct the mine access road from the Jungjuk Port, air strips, access roads for pipeline construction and facility gravel pads. This characterization is needed to determine the volume of PAG rock material and to identify specific design features, mitigation measures, and BMP to minimize potential ARD/ML to adjacent surface waters, including wetlands. If the gravel source material is found to consist of PAG material and/or have elevated mercury and arsenic concentrations, then the fill material may be considered unsuitable fill material under the CWA Section 404(b)(1) guidelines requirements and not suitable for discharge into wetlands and other surface waters.		
CLA 31	3.7 - Synopsis	1	cg	But the department does not regulate groundwater directly.	Does this mean that the Department does not try to change the quality of the groundwater as it might surface water (through TMDLs) or is it saying it does not regulate the quality of the discharges to groundwater? The latter is not true since permits	

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					under 18 AAC 72 or 18 AAC 83 would be necessary to discharge to groundwater.	
CLA 31	3.7- Synopsis	2	CE	However, there are points along the Kuskokwim, usually at confluences with tributaries that drain mineralized areas, where concentrations of mercury and other minerals are elevated.	The term "elevated" should be defined. The text should indicate if these concentrations were statistically different from other locations.	
EDIT 5	3.7 – Synopsis	2	cg	where iron has sometimes exceeded drinking water standard	Either "where iron has sometimes exceeded the drinking water standard" or "where iron has sometimes exceeded drinking water standards"	
EDIT 5	3.7 – Synopsis	3	cg	would reduce the distance traveled by barge by 69 river miles,	page E16, E498 and Table 3.5-35 say that the difference is 75 miles (199 - 124) not 69	
WAQ 21	3.7 – Synopsis	3	CE	Impacts to sediment quality in Crooked Creek, and increases in mercury and methylmercury concentrations in sediments, would be of low intensity, within the range of natural variation, and would be expected to decline in post-closure.	Potential impacts to methylmercury concentrations in water should be included.	
EDIT 5	3.7.1.1	5	cg	Alaska Pollution Discharge Elimination System permits	Alaska Pollutant Discharge Elimination System permits	
CLA 31	3.7.1.1	5	cg	Under Sections 301 and 502 of the CWA, any discharge of dredged or fill materials into waters of the U.S., including wetlands, is forbidden unless authorized by a permit issued by the Corps pursuant to Section 404.	CWA § 502 is the general definitions section of the Act so doesn't necessarily forbid anything	
CLA 31	3.7.1.2.2	7	cg	But the department does not regulate groundwater directly.	See comment on synopsis above	
CLA 31	3.7.1.2.2	7	cg	It should be noted that the EPA Maximum Contaminant Level (MCLs) for Aluminum, Chloride, Copper, Fluoride, Iron, Manganese, pH, Silver, Sulfate, TDS, and Zinc are Secondary Drinking Water Regulations that set non-mandatory water quality standards.	Copper and Fluoride also have primary MCLs	
WAQ 21	3.7.2.1.1	30	CE	Figure 3.7-2	The figure is representative of mercury dynamics in a stratified lake; however there is no mention of processes occurring in the sediment. The area of interest for the Donlin gold project does not include lakes, but is more dominated by river systems. As	

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					such, The focus should be more on dynamics in riverine systems, where methylation would be expected to occur mostly in the sediment. This would also apply to lakes as well, where methylation is thought to be highest in the sediment.	
EDIT 5	3.7.2.1.1	36	cg	Category 1 and Category 3 waters (Table 3.7-2 through Table 3.7-4.	Category 1 and Category 3 waters (Table 3.7-2 through Table 3.7-4).	
EDIT 5	3.7.2.1.1	40	cg	Dissolved-iron concentrations	Dissolved iron concentrations – here and elsewhere in the paragraph, see Mn below	
CLA 31	3.7.2.1.1	41	cg	Table 3.7-7	There are shaded cells in this table that appear to indicate WQ exceedances but there is nothing in the footnotes or the text that says that is what the shading means	
WAQ 12	3.7.2.4	75	cg	As stated on the Alaska Department of Natural Resources (ADNR) website: “Mining 101 – rock chemistry drives water quality and mine design.”	Is a power point presentation a reliable reference?	
EDIT 5	3.7.2.4	76	cg	In some mineralized deposits, rock type alone can be a good indicator of whether a rock will potentially produce ARD and/or ML. However, gold mineralization at the proposed mine site occurs mainly within the sulfide minerals pyrite	The “However” seems unnecessary	
WAQ 12		3.7-79	Bt	The block model mentioned in Section 3.7.2.4 was used in combination with the geochemical and mineralogical studies to estimate ARD potential during each proposed mining year.	This approach does is misleading since much of the ARD will occur after mining is complete. While many of the studies indicated that ARD would occur after “several decades”, that is a small timeframe when compared to perpetuity. Donlin should discuss ARD development well beyond the closing of the mine.	
MIT 19		3.7-82	Bt	Table 3.7-16, PAG 5, PAG but with very long delays (several decades) to onset of ARD.	This statement is misleading when compared to the timeframe that the PAG waste rock will be in place. The waste rock will remain exposed to the elements in perpetuity, which is the timeframe Donlin should be considering when designing waste rock facilities. Even with the designed cap being considered, in the long time frame the cover will be breached by wildlife and vegetation leading to exposure to the elements and acid drainage. How will Donlin monitor and maintain the cap for	

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					perpetuity?	
WAQ 12		3.7-83	Bt	The pH has started to decrease in another sample (shale sample 683340, PAG 5), but is still neutral.	The sample is showing a trend toward acidity, how long is the projected timeframe to when the leachate becomes acidic? Is that timeframe within the life of the WRF?	
PAA 14			Bt	This correlation allowed estimates of the delay to acid formation for various classes of PAG rock, as given in Table 3.7-16 – from less than a few years for PAG 7 rocks to several decades for PAG 5 rocks.	Since the life of the mine operations is approximately "several decades", all PAG rocks should be disposed of in a lined facility. Since the WRF will remain in perpetuity, any PAG rock should be expected to create ARD during the lifetime of the WRF.	
EDIT 5	3.7.2.4.1	83	cg	began producing acidic leachate after more than 200 weeks.	began producing acidic leachate after 200 weeks. – the inclusion of "more than" is redundant with "after"	
WAQ 12		3.7-88	Bt	However, most barrels show a decrease of pH over time and there appears to be a seasonal pattern with a pH minimum in late summer in all cases (Figure 3.7-18).	Extrapolate the results out to several decades (or longer) to estimate acid generation due to PAG rock.	
EDIT 5		3.7-88	LE	(barrel tests): "… included two composite sediment… samples"	Although it is clarified later, this reads as if sediment samples were included in barrel tests rather than samples of sedimentary lithologies	
EDIT 5		Figure 3.7-18	Bt	Barrel Test Leachate pH	Include best fit lines to show the change in pH over time.	
WAQ 14		3.7-96	Bt	The HCT and barrel test results corroborated the MWMP results and indicated that arsenic has the potential to be leached at both acid and neutral-to-basic pH values, even from NAG rocks (Figure 3.7-21)	How will the arsenic leachate be controlled from being released to the environment in the long-term?	
EDIT 5	3.7.2.4.4	104	cg	Phase 1 (Day 2013).The tails from	Phase 1 (Day 2013). The tails from	
CLA 31	3.7.2.4.4	107	cg	Table 3.7-27	Why is mercury not included in the Table?	
WAQ 29	3.7.2.4.4	107	cg	Selenium µg/L 4.6	If this criterion is to be used for CWA purposed, it should be 5	
WAQ 29	3.7.2.4.4	107	cg	Criteria are expressed in terms of dissolved metal in the water column, except for aluminum and mercury, which are in terms of total recoverable metal	Mercury is not in this table.	
CLA 31	3.7.2.4.4	107	cg	A hardness of 400 mg/L was used for all calculations.	Why? There is no explanation as to why 400 is the proper	

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					value to use	
EDIT 5	3.7.2.4.4	109	cg	AWQC	Applicable Water Quality Criteria (AWQC) – not previously short cited in Chapter 3	
WAQ 29	3.7.2.4.4	109	cg	Criteria are expressed in terms of dissolved metal in the water column, except for aluminum and mercury, which are in terms of total recoverable metal	Neither aluminum nor mercury are in this table.	
EDIT 5	3.7.2.4.4	110	cg	Table 3.7-29 - Lead µg/L 11	Table 3.7-27 lists this criterion as 10.9 – be consistent	
WAQ 29	3.7.2.4.4	111	cg	A hardness of 400 mg/L was used for all calculations	There is no explanation as to why 400 is the proper value to use	
EDIT 5	3.7.3.2.1	113	cg	Applicable Water Quality Criteria (AWQC)	Previously used but not previously short cited	
PAA 14		3.7-114	Bt	However, if the NAG and PAG5 rocks are not well mixed, the NAG WRF will begin to produce higher-concentration, more acidic seepage by the end of the mine life, based on the predictions in SRK 92007) for year 26.	How will Donlin ensure adequate mixing of the NAG and PAG rocks? We recommend that the WRF be lined in order to minimize the potential contamination of the groundwater by acid mine drainage.	
EDIT 5	3.7.3.2.1	114	cg	Peak runoff is limited to the spring and summer months, with negligible runoff volumes between mid-October and the beginning of April. These variable flows are in contrast to the constant fresh water demand . . . be a useful source of fresh water during the fall and winter, when inflows are minimal	Isn't the 2nd highlight phrase just a repeat of the first?	
EDIT 5	3.7.3.2.1	114	cg	2015f).This water	2015f). This water	
EDIT 5	3.7.3.2.1	114	cg	PHREEQC	Does this stand for something?	
PAA 14		3.7-115	Bt	The major difference between the two approaches is that the PHREEQC approach predicted that the water would likely turn acid as the PAG rock oxidized, and the acid would trigger higher concentrations of sulfate, TDS, aluminum, and certain metals. Both approaches predicted that sulfate, TDS, anitmony, aresenic, cadmium, lead (when not adsorbed), manganese, molybdenum, nickel, selenium, zinc, and mercury concentrations would exceed AWQC.	Since models predict not only ARD but also the contamination of the water with these metals, the WRF, and all facilities with the potential to generate contaminated leachate for the life of the facility (i.e. in perpetuity for the WRF), should be lined and the leachate be collected and treated before release.	

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WAQ 29	3.7.3.2.1	120	cg	A hardness of 400 mg/L was used for all calculations.	There is no explanation as to why 400 is the proper value to use	
CLA 31	3.7.3.2.1	122	cg	Aquatic life for fresh water hardness-dependent criteria. A hardness of >400 mg/L was used for all calculations	a hardness of 400 (not greater than) was used but there is no explanation as to why this value is appropriate	
CLA 31	3.7.3.2.1	125	cg	A hardness of 400 mg/L was used for all calculations based on modeled values for hardness.	What was modeled?	
MON 3		3.7-126	Bt	According to the numerical hydrogeologic model developed by BGC (2011d, 2015g), for about 52 years after pit dewatering is stopped, water would flow into the pit from the groundwater at higher elevations and from the pit into pore space of the waste rock placed as backfill and into the localized bedrock outside of and surrounding the pit from which the bedrock water had been removed during mining. Additional description of the temporary localized flow reversal into bedrock as the pit fills is given in Section 3.6, Groundwater Hydrology. The pit outflow may result in an elevated input of sulfate and metals and decreased pH to the bedrock portion of the aquifer during the period that the lake is filling.	We recommend water quality monitoring the groundwater around the pit for the movement of contamination. The monitoring should be done in real-time with the best available technology at the time. The technology should be reviewed periodically during the duration of the monitoring. The monitoring should continue until the model is confirmed that the water is flowing back toward the pit and no further groundwater contamination is present in the groundwater. If groundwater contamination is found to be travelling away from the pit, and plan should be in place to remediate the contaminated groundwater as soon as possible to prevent the spread of contamination.	
GRD 14			bt	Pumping would be required to get TSF and SRS water to the pit rim, where it would be combined with the WRF seepage, then flow via a gravity-fed pipe to the bottom of the pit lake.	How much hydraulic head would need to be generated to ensure the water flows to the bottom of the pit lake? Will additional pumping be required to generate the head to ensure the water flows as anticipated? How will pumping be assured in perpetuity?	
WAQ 4	3.7.3.2.1	128	cg	A value of 65 mg/L as CaCO3 was used for hardness, based on model predictions for calcium and magnesium (not shown).	The model prediction of what? Please explain this and why it is the proper value to use	
WAQ 11	3.7.3.2.1	128	LE	First mention of “exhausted PAG” in the text	Needs a definition/explanation	
WAQ 4	3.7.3.2.1	130	cg	A hardness of 65 mg/L as CaCO3 was used for hardness, based on model predictions for hardness.	The model prediction of what? Please explain this and why it is the proper value to use	

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WAQ 29	3.7.3.2.1	131	cg	A hardness of >400 mg/L was used for all calculations based on modeled values for hardness.	a hardness of 400 (not greater than) was used but there is no explanation as to what was modeled or why this value is appropriate	
WAQ 9		3.7-135	Bt	The results of the various modeling efforts of the predicted pit lake suggest that 1) the concentrations of several constituents in surface waters would exceed the most stringent AWQC throughout the 100-year modeling period and 2) the pyrocline is predicted to move upward toward the surface and become less intense over time, eventually reaching the surface and allowing complete mixing at some point beyond the modeling period.	What are the implications for the AWT? Will the treatment system need to be revisited if the modeled scenario occurs? How will this be monitored? We recommend real-time monitoring to the pit lake stratification using the best available technology at the time. The technology should be reviewed periodically throughout the life of the pit lake, i.e. in perpetuity.	
WAQ 4	3.7.3.2.2	136	cg	The predicted treated water quality is given in Table 3.7-39, along with AWQC	Why is there no explanation of the inputs to determining the WQS specifically hardness?	
WAQ 29	3.7.3.2.2	139	cg	hardness value of 90.18 mg/L as CaCO3.	no explanation as to why this value is appropriate for determining WQS (like: DEC uses the 15th percentile hardness to determine criteria to be used in permits and a statistical analysis on the historic values from Crooked Creek results in this value)	
EDIT 5	3.7.3.2.2	141	cg	A flow diagram of the conceptual WTP is given in Figure 3.7-24. The Water Treatment Plant (WTP) would typically	A flow diagram of the conceptual WTP is given in Figure 3.7-24. The WTP would typically	
EDIT 5	3.7.3.2.2	143	cg	not expected to meet Applicable Water Quality Criteria (AWQC)	not expected to meet AWQC	
WAQ 15	3.7.3.2.2	143	cg	larger contribution of surface water inputs relative to treated groundwater inputs would be expected to attenuate changes to water temperature within Crooked Creek during construction. Existing	depending on the condition of the effluent, this is basically the definition of a mixing zone and the WQS regulations allow no mixing zone in Crooked Creek	
EDIT 5	3.7.3.2.2	143	cg	As a result of the effective water management and treatment processes proposed under Alternative 2, impacts to water quality in Crooked Creek resulting from discharges of treated pit dewatering water would be low in magnitude because the effects would be below, or treated to be below,	This paragraph should reference back to Table 3.7-39 for a comparison of treated water quality with WQS	

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				AWQC.		
EDIT 5	3.7.3.2.2	144	cg	metal leaching in WR samples, rock material	Assume this means Waste Rock but a short cite is not previously provided in Chapter 3	
WAQ 21	3.7.3.2.2	145	CE	Five primary mechanisms would be responsible for potential impacts to surface water quality at the mine site during the operational phase:	The five mechanisms listed are important; however the potential for an increase in methylmercury production should also be included. The impacts of methylmercury production are difficult to predict because methylation is influenced by several variables. Despite the uncertainties surrounding predicted impacts on methylmercury production, acknowledging the potential for this impact is important due to the large increase in toxicity of methylmercury compared to inorganic mercury and methylmercury's propensity to bioaccumulate in fish tissue. The mine operations could increase methylmercury production in several ways: 1) through the increase in sulfate loading to area streams; 2) through the increase organic carbon loading; and 3) through an increase in inorganic mercury loading. All three of which are expected to occur. As such, an increase in methylmercury in response to these variables does not seem unlikely. Methylmercury production may occur within the bed sediment of streams or rivers where anoxic conditions may be present.	
EDIT 5	3.7.3.2.2	146	cg	meet applicable water quality criteria and permit	Meet AWQC and permit	
EDIT 5	3.7.3.2.2	149	cg	an intermediate soil acidity (pH ~5.0) and C/N ratio (~20).	From the text, this C/N ratio is lower not intermediate	
WAQ 21	3.7.3.2.2	149	CE	The 2013 field program samples show that the total mercury concentration in the upland soil (average of 260 µg/kg) is slightly lower than in the wetland soil (average of 320 µg/kg), although the variance in the soil concentration data was high in both cases. The relative differences suggest that the wetlands in the study area presently act as a sink for total mercury relative to upland areas (ARCADIS 2014).	The statement that wetlands are a mercury sink is based on the wetland soil having a higher concentration than the uplands. However, this premise is not sufficiently established. Statements regarding one average being higher or lower than another average value need to be backed up by statistics. Without any measure of variability around the averages or statistical tests, the reader is not able to evaluate whether the concentration in upland and wetland soils are significantly	

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					different. Unless this is established, the validity of statements regarding wetlands acting as a mercury sink cannot be determined. The referenced document ARCADIS 2014 does not provide this statistical information either. Visual assessment of the data in Figure 4-4 in ACRADIS 2014 does not look like there would be a difference in the Hg concentrations between the upland and wetland sites.	
WAQ 21	3.7.3.2.2	149	CE	These ratios of total mercury to methylmercury are typical of boreal wetland and upland soils (ARCADIS 2014). Similar fractions (approximately 1 percent methylmercury) were detected in a similar system evaluated in northern Minnesota (a boreal system dominated by spruce/moss/shrub wetlands), which was characterized as having low methylmercury production (Hines et al. 2004).	1) Hines et al., 2004 measured mercury and methylmercury in lake sediments. Lake sediments in Minnesota should not be considered similar/or a surrogate for upland soils in Alaska. The text indicating these systems are similar is misleading. 2) Overall, Hines et al. 2004 does not characterize the study location as having a particularly low methylmercury production potential relative to other landscapes, which is what is being implied in this sentence. The Hines et al, 2004 paper does mention that the percent methylmercury in sediment cores and pore water was relatively low compared to the water column. But this is a different conclusion than what is implied in the sentence in the DEIS. Obrist et al, 2012 Environ. Sci. Technol. provides a very comprehensive survey of soil mercury, methylmercury and percent methylmercury for soils across the US and globally. The summary data presented in this paper show that the percent methylmercury to total-mercury is typically less than 0.5% and in many ecosystems systems is less than 0.1%. Similarly, as part of the recent Western North American Mercury Synthesis project, Fleck et al, 2016 (Sci. Total. Environ.) showed that the least square mean percent methylmercury in Western stream sediment was ~0.8% and in wetland sediment was ~1%. As such, the characterization of the landscape surrounding the Donlin project as having low methylmercury production because the percent of methyl to total-mercury is around 1% isn't consistent with the breadth of scientific literature on	

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				methylmercury levels in soil and sediment. 3) The Hines et al, 2004 study was conducted in the Marcell Experimental Forest, MN, which has been the subject of numerous studies on mercury cycling. Several of studies from this area have results that are relevant to the assessment of methylmercury production near Donlin. For example, Mitchell et al, 2008 in Applied Geochemistry added sulfate to the peatlands and found that it resulted in a considerable increase in methylmercury production. These results suggest that a similar impact could occur through increased sulfate loading during the mine operations. Another study from the Marcell forest used a sprinkler system to add sulfate to a peatland…with no changes in any other variables. From a press release they found: "Each time the sprinklers ran and extra sulfate rained down on the peatland, methylmercury levels spiked upward. Nothing like that was observed in the half of the peatland not receiving the sulfate addition." The details are available in Coleman-Wasik et al, 2012 Environ. Sci. Technol. In another study from the Marcell Experimental Forest showed that MeHg "hot spots" occurred at discrete point and bands within the landscape (Mitchell eta l, 2008, Environ. Sci. Technol.) The spatial variability in this dataset underscores the difficulties in trying to accurately characterize methylmercury dynamics across a landscape, the pitfalls of focusing on landscape mean values when characterizing an area's potential for methylmercury production, and highlights the uncertainty associated with predicting the impacts of sulfate, carbon, and mercury loadings to a landscape. If the Marcell forest area in northern Minnesota is considered similar to the conditions at the proposed gold mine site (as indicted in the DEIS), then an examination of the numerous studies that have originated from this site clearly indicating the role of increased sulfate addition in stimulating higher	

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					methylmercury production should also be included.	
WAQ 21	3.7.3.2.2	149	CE	In freshwater aquatic ecosystems, shallow sediment catchments and the anoxic bottom waters of stratified lakes are important zones of net methylation. Methylation is less prevalent in environments with higher flow and low hydraulic retention (St. Louis et al. 1994). In-river methylation is typically a negligible component of the methylmercury budget for creeks, and wetlands are frequently the most important contributor of methylmercury to downstream aquatic ecosystems (St. Louis et al. 1994, Berndt and Bavin 2012).	Later in this section, comparisons are made to the Marcell Experimental Forest in northern MN indicating it is a "similar system" to the area of the proposed mine. Research from this ecosystem has shown the importance of MeHg production in peatlands (e.g. Mitchell et al., 2008 Environ. Sci. Technol.); however this source of methylmercury production is not mentioned here.	
WAQ 21	3.7.3.2.2	149	CE	Sulfate concentrations in soils were very low in all of the samples. At relatively low sulfate concentrations (approximately 50 mg/kg and lower), mercury methylation is limited by the rate of sulfate reduction, while at high sulfate concentrations (greater than 100 mg/kg) sulfide buildup from sulfate reduction results in decreased methylation of mercury (Fitzgerald and Lamborg 2014).	In order to understand the impact on methylmercury production, sulfate should not be measured in the solid phase as it was in the ARCADIS 2014 study, but should be measured in the aqueous phase, either as surface water or pore water. It does not appear that any measurements of sulfate in the aqueous phase, even from wetlands, were obtained as part of the assessment of site conditions. Without any data on sulfate concentrations in the aqueous phase (where it would be available to microbial community that methylate mercury), statements should not be made that the sulfate available is limiting methylation.	
WAQ 21	3.7.3.2.2	149	CE	Sulfate levels in the wetland systems in the study area are insufficient to support high activity of sulfate reducing bacteria (SRB), the microorganisms predominantly responsible for mercury methylation (ARCADIS 2014).	This is a bold statement and is not supported by the data collected. Sulfate data in wetland water was not collected in the ACRADIS 2014 study. Solid phase measurements of sulfate may not be representative of aqueous phase values. From the perspective of bacteria, the aqueous phase sulfate concentrations are what matters.	
WAQ 21	3.7.3.2.2	149	CE	Sulfate levels in the wetland systems in the study area are insufficient to support high activity of sulfate reducing bacteria (SRB), the microorganisms predominantly responsible for mercury methylation (ARCADIS 2014). These results suggest that current rates of mercury methylation in wetlands and uplands in the	The methylmercury concentrations measured in the upland and wetland soils were around 1 ug/g. For comparison, in the comprehensive assessment of 344 streams sites in the USGS report (Scudder et al, 2009), the median methylmercury concentration was 0.5 ug/g and the mean was 1. 7 ug/g. Compared to the median value from the USGS report the	

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				vicinity of the proposed mine facilities are low.	concentrations measured near the proposed mine site aren't particularly low. The maximum concentrations in the upland and wetland soils was around 4 ug/g measured near the mine site, which are definitely not low concentrations. As shown in Mitchell et al. 2008 Environ Sci Technol there may be "hot spots" of methylmercury production within the landscape, which depending on their hydrological connectivity to area waters could be disproportionally important in delivering methylmercury to area waterways and biota. As such, the statement that rates of mercury methylation in the wetlands and uplands near the proposed mine are low, is not supported by the dataset.	
WAQ 21	3.7.3.2.2	150	CE	Methylation rates are not expected to increase as a result of the activities proposed under Alternative 2 because low nutrient availability and low levels of sulfate reducing bacteria activity currently limit the mercury methylation potential in project area wetlands, and these drivers would not be altered as a result of the activities proposed under Alternative 2	The variables associated with mercury methylation (organic carbon, sulfate, sulfide, etc) were not measured in wetland waters. As such, there has been insufficient characterization of the methylation potential within area wetlands to make such conclusions.	
WAQ 21	3.7.3.2.2	150	CE	Mercury methylation rates in project area wetlands are not expected to increase as a result of the activities proposed under Alternative 2, and the amounts of mercury converted to methylmercury in these systems would not be expected to increase in proportion to increases in mercury deposition. Mercury methylation rates in project area wetlands are currently limited by low levels of nutrients and low activity of sulfate reducing bacteria in the anoxic environments requisite for mercury methylation.	There is insufficient data to suggest that the rate of methylmercury production is limited by nutrient levels and would be unaffected by changes in inorganic mercury loading.	
WAQ 21	3.7.3.2.2	150	cg	the amounts of mercury converted to methylmercury in these systems would not be expected to increase in proportion to increases in mercury deposition. Mercury	Why not? If the rates stay the same (even if they are low) and additional mercury is deposited into the system, why wouldn't the increase be proportionate? If it isn't, then the rates do not remain the same.	
WAQ 29	3.7.3.2.2	151	cg	EPA approved aquatic life criteria of 2,400 ng/L (acute) and 12 ng/L (chronic) (EPA 2013k), and the Alaska water quality	Since 2400 and 12 ng/L are listed as aquatic life criteria, it seems appropriate that the 50 ng/L should be denoted as the	

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				standard of 50 ng/L for total recoverable mercury	human health criterion for the consumption of water and organisms.	
WAQ 21	3.7.3.2.2	151	CE	New inputs of mercury of atmospheric origin may be more or less bio-available than older or geologic sources of mercury; thus, the new inputs of mercury from the mining activities may be more or less available for mercury methylation processes relative to older mercury within the area (whether of geologic or atmospheric origin).	The text is ambivalent about the bioavailability of new versus old mercury. However, there are several studies that have been conducted on this topic and can be used to help make predictions. The results from several studies have shown that that newer inputs are more bio-available than older mercury (e.g. Harris et al, 2007 PNAS: Orihel et al, 2008 Environ Poll). If there are any studies out there that have shown the opposite to be the case, we are not aware of them, and they should be cited here in the text. If good citations showing that older mercury can be more available than new mercury inputs, then this sentence should be revised to indicate that the new inputs are likely more (not "more or less") available for methylation.	
EDIT 5	3.7.3.2.2	151	CE	Studies of mercury mass balances in forest-dominated catchments have shown that mercury inputs to aquatic systems are more heavily dominated by contribution from wetland runoff (St. Louis et al. 1996; Selvendiran et al. 2008; Berndt and Bavin 2012) than by atmospheric deposition.	Add text: "…however, most of the mercury in the wetlands is also of atmospheric origin."	
WAQ 21	3.7.3.2.2	151	CE	Current estimates indicate that rates of methylmercury production in project area wetlands are low, and are not expected to increase substantially due to the project	This is a very important statement with regard to the potential impacts of the mine. However, this statement is not adequately supported by the data collected. For example, data is not presented in the DEIS on methylmercury concentrations in wetland water. In addition, the data on methylmercury concentrations in sediments are not particularly low when compared to other locations (see Obrsit et al, 2012, Environ. Sci. Technol.).	
WAQ 21	3.7.3.2.2	151	CE	For this reason, methylmercury concentrations in aquatic systems may change very little if mercury inputs to streams are dominated by wetland runoff rather than atmospheric deposition	In order to make statements like this, it needs to be established that wetland runoff is the dominant water source to area streams.	

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				(ARCADIS 2014).		
WAQ 21	3.7.3.2.2	151	CE	Because the rates of mercury transformation and transport in upland/wetland systems and aquatic sediments are not expected to change as a result of the project activities, a linear response between atmospheric deposition rates and mercury concentration in surface water is assumed (ARCADIS 2014). This assumption is conservative because it precludes consideration of the phase partitioning of the mercury deposited from atmospheric sources, and the possibility that a large fraction of the mercury deposited from atmospheric sources would partition into soils and sediments in the project area and would not be present in surface water.	This assumption is not conservative. Several studies have shown that “new” sources of mercury are more available for methylation than “old” sources (see previous comment). Here it is assumed that they are equally bioavailable. This assumption likely under predicts that amount of mercury that could be methylated. It is correct that a large proportion of atmospherically deposited mercury will become bound in the soil/sediment matrix and may not be available for methylation in the near-term or possibly ever. However, this may already be accounted for when predicting how much methylmercury would be generated from a given input of inorganic mercury. The fact that the response between atmospheric deposition and mercury concentrations in water is linear doesn’t tell us much. To properly assess this we need to know the slope of this linear response. For example, you could have atmospheric deposition increase from 10, 20, 30 ug; and water concentrations increase form 1, 2, 3 ug. This would result in a linear response; but is not inherently conservative in terms of the magnitude of the response.	
WAQ 21	3.7.3.2.2	152	CE	The evaluation of the estimated impacts to concentrations of total mercury in surface water shown in Table 3.7-41 above is considered conservative because the majority of mercury potentially deposited as a result of the activities proposed under Alternative 2 would be particulate mercury, which would tend to rapidly settle out of the water and become buried in stream sediments (ARCADIS 2014).	The ARCADIS 2014 makes this same statement; however the report does not provide any details to back up this statement. ARCADIS 2014 does not provide any data on: 1) depositional versus erosive properties of area streams; 2) settling or sedimentation rates for particles in the area streams. Because the ARCADIS 2014 document does not provide any additional analysis on the aqueous fate of mercury associated with particles, this citation should be removed from the EIS text here. Most readers of the EIS may not have time to check the supporting documents, and therefore, by providing a citation for this statement it gives the impression that more detailed analysis has been performed in the cited document. The assertion in the text is the mercury deposition associated	

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					with particles will be quickly removed from active cycling through burial in stream sediments. However, it has not been established that the areas streams have depositional areas, and that the rate of deposition from "clean" geogenic particles is relatively high such that particles of atmospheric origin would be rapidly buried.	
WAQ 21	3.7.3.2.2	153	CE	In addition to total mercury, a model was developed to predict mercury and methylmercury concentrations in surface water based on concentrations of dissolved organic carbon (DOC) in the water, suspended sediments, flow and velocity, and watershed size (ARCADIS 2014). Using a DOC concentration of 20 mg/L, the modeled concentration of total mercury in surface water is 8.6 ng/L, very close (within approximately 5 percent) to the measured average concentration of total mercury in surface water of 8.16 ng/L within the Crooked Creek and Donlin Creek watersheds (ARCADIS 2014).	1) Why was a DOC of 20 mg/L chosen? This seems like an unrealistically high value; with no data presented to support it. From the USGS streams report the average DOC concentration from 349 streams was 5.1 mg/. In Wang et al, 1999 they measured DOC in the Kuskokwim River which ranged from 2.0 to 2.4 mg/L and in tributaries that ranged from 1.8 to 6.8 mg/L. Here a concentration is assumed that is 4X higher than a nationally derived average and even higher than has been measured locally in other studies. This high value of DOC is contradictory to statements elsewhere in the DEIS suggesting that the methylation potential of the area is low, partially due to carbon limitation. In the model equation the largest coefficient is associated with DOC. This means that the output from the model is highly impacted by the DOC concentration used. This underscores the need for a more accurate DOC value to be used and highlights that the resulting inorganic and methylmercury concentrations predicted are highly influenced by the uncertainty in the DOC value used. 2) It appears that the model was solved for DOC using measured mercury concentrations from the site; such that when a value of 20 mg/L is used, it very closely predicts the mercury concentration within 5 percent. This agreement between measured and predicted concentration is used to suggest that the model performs well and can provide a good representation of area conditions; however this is not the case and is particularly deceiving by presenting a false sense of agreement between the modeled and measured values. If	

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					more reasonable concentrations of DOC were used in the model (i.e .2-5 mg/L), then a very different conclusion would emerge--that the predicted inorganic mercury concentrations are not well predicted by the model.	
WAQ 21	3.7.3.2.2	153	CE	Using a DOC concentration of 20 mg/L, the modeled concentration of total mercury in surface water is 8.6 ng/L, very close (within approximately 5 percent) to the measured average concentration of total mercury in surface water of 8.16 ng/L within the Crooked Creek and Donlin Creek watersheds (ARCADIS 2014). Based upon the similarity between measured and predicted concentrations of mercury using this model, the existing methylmercury concentration was estimated to be 0.280 ng/L within the Crooked Creek and Donlin Creek watersheds (ARCADIS 2014).	The model "accuracy" for inorganic mercury is used to suggest that it can be used to accurately predict methylmercury concentrations. This is used to come up with a baseline MeHg estimate for area streams of 0.280 ng/L. This value is presented with 3 significant figures, and no associated measurement of error. How was it determined that the methylmercury concentrations can be predicted with an accuracy of 3 significant figures to the thousandths place? Note: reporting limits for methylmercury using EPA 1630 are 0.05 ng/L; so at minimum the significant figures should not be below the hundredths place when expressed in ng/L. As mentioned in the text the regression equation from which this methylmercury estimate was derived has a low r^2 value of 0.48. This uncertainty in the equation should be propagated through the calculations to provide a measure of the error associated with the 0.280 ng/L value. The value is of 0.280 has a huge amount of uncertainty associated with it, particularly because it heavily relies on an unrealistically high DOC concentrations as one of the most influential parameters in the model.	
WAQ 21	3.7.3.2.2	153	CE	Using the same approach used to estimate the increase in the average concentration of total mercury in the water column based on increases in average highest mercury deposition rates over the confluence of the Crooked Creek and Donlin Creek watersheds (3.55 µg/m2/y), average methylmercury concentrations in surface water are estimated to increase from 0.280 ng/L to 0.398 ng/L, an increase of 42 percent over baseline as a result of the activities proposed under	1) As mentioned above the validity of the 0.280 ng/L value is highly questionable; as such this estimated increase in concentration to 0.398 ng/L is also a highly questionable value. As above, this value should not have 3 significant figures and also should include a measure of uncertainty around the estimate. 2) The estimated new value does not take into account the effect of increased sulfate loading, which could be one the main variables driving changes in methylmercury in area	

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			Alternative 2 (ARCADIS 2014).	waters. 3) From ARCADIS 2014 it states: "Using the same approach to estimate increase in the average concentration of total mercury in the water column based upon an increase in average highest deposition rates over the confluence of the Crooked Creek and Donlin Creek watersheds (3.55 µg/m2/y), the methylmercury concentration in the water column is estimated to increase from 0.000280 µg/L to 0.000398 µg/L." As such, the referenced document doesn't give any additional information on the factors controlling the increase in methylmercury concentrations. However, it does state the same approach for methylmercury was used as for total mercury. This seems like a very inaccurate way to predict changes in methylmercury. The processes involved in increasing total mercury are very different than the processes involved in increasing methylmercury. It is mentioned elsewhere in the DEIS that there are multiple factors that contribute to changes in methylmercury concentrations. However, these factors do not increase total mercury concentrations. As such, the approach taken to estimate an increase in methylmercury is inconsistent with the large body of literature on methylmercury dynamics and is inconsistent with the discussions around the complexity of methylmercury elsewhere in the DEIS. 4) In developing the baseline methylmercury estimate, an equation was used that does take into consideration the total mercury concentrations (see Brigham et al, 2009). This acknowledges the fact that the factors contributing to methylmercury concentrations can be decoupled to a large extent from total mercury concentrations. However, when it comes to estimating the increase in methylmercury concentrations the DEIS relies on an approach that relies only on changes in the total mercury concentrations. As such there is an inconsistent treatment in the processes being used to	

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					predict the methylmercury concentration in this document. 5) On page 3.7-32 it states: "Preliminary results from the June 2013 sampling event (Table 3.7-6) indicate that methylmercury concentrations range from below the detection limit (0.020 ng/L) to 0.058 ng/L." These measured values are quite a bit lower than the 0.280 ng/L concentration predicted in this section of the text. If measured methylmercury concentrations are already available for the site, is it necessary to estimate values using this model? Particularly when the model predicts much higher concentrations than were measured.	
WAQ 21	3.7.3.2.2	153	CE	"Based upon the similarity between measured and predicted concentrations of mercury using this model, the existing methylmercury concentration was estimated to be 0.280 ng/L within the Crooked Creek and Donlin Creek watersheds (ARCADIS 2014). For comparison, the USGS has published a comprehensive study of stream methylmercury concentrations (n=337) throughout the US (Scudder et al. 2009). In this report the average methylmercury in stream sites is 0.19 ng/L,"	The median national MeHg concentration is 0.11 ng/L from the Scudder et al, 2009 document. As such, the baseline predicted methylmercury concentration in water in the Donlin Creek area is above the average predicted in other streams and is more than 2-times higher than a national median value. Such information is inconsistent with the statement in the DEIS that "The potential for mercury methylation in these environments is low". It is already stated that the concentrations are higher than national mean and median values. By what measure then are methylmercury concentrations considered to be low? The theme that the area surrounding the proposed mine site has low methylmercury concentrations and low methylation potential is mentioned numerous times in the DEIS to suggest that there will be limed impacts from the mine. However, this assertion of low methylmercury concentrations is not supported by the estimates of methylmercury for the streams or the high organic carbon content estimates for area streams.	
WAQ 29	3.7.3.2.2	154	cg	mercury (10,00 ng/L),	What is this value supposed to be?	
WAQ 11		3.7-156	bt	Table 3.7-42	Please include a graph showing the trend of contamination beyond year 99 since the pit lake will be present beyond year 99. This will show the potential for water contamination in the timeframe of the existence of the pit lake.	
WAQ 4	3.7.3.2.2	157	cg	Acute and chronic aquatic life numeric criteria for some	What hardness was used and why? Are they dissolved or TR?	

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				metals (Cd, Cr, Cu, Pb, Ni, Zn) are hardness dependent. Values may be slightly different than those in other tables due to differences in the way hardness-dependent standards were calculated.	Looks like 65 for diss Cd, Ni, Pb and Zn. But Cu uses a hardness around 82	
MON 3		3.7-158	Bt	However, the release of SRS water to the environment during the approximately 52-year period during which the covered tailings would drain and consolidate would only occur in the event of a pump failure greater than two weeks in duration, and such an event is considered unlikely under Alternative 2.	We recommend real-time monitoring of the system using the best available technology at the time. The technology should be reviewed and updated periodically. The monitoring should continue as long as the SRS system is required.	
WAQ 29	3.7.3.2.2	159	cg	Criteria are expressed in terms of dissolved metal in the water column.	All of the hardness based metals are total recoverable not dissolved values.	
EDIT 5	3.7.3.2.2	159	cg	calculated using a hardness value of 90.18 mg/L	there is no explanation as to why this value is appropriate	
WAQ 29	3.7.3.2.2	162	cg	The duration of such impacts would be considered long-term because the impacts would be likely to persist for the duration of the project, and water quality would return to baseline levels at some time following the completion of mining activities.	But doesn't the road stay for long term monitoring well past the completion of mining activities?	
EDIT 5	3.7.3.2.2	163	cg	The Erosion and Sedimentation Control Plan	The ESC Plan	
PAA 14	3.7.3.2.3	3.7-165	Bt	The generation of seepage and runoff with elevated metals concentrations derived from metal leaching from the lower CWD construction material could potentially infiltrate shallow (alluvial) groundwater resources in the immediate vicinity of the Lower CWD.	In order to prevent groundwater contamination in the area, we recommend lining all facilities with the potential to contaminate groundwater. The alluvial groundwater quality should be monitored to detect any contamination resulting from leachate in the lower CWD, and the contamination should be mitigated as soon as it is detected.	
PAA 14			Bt	Water from the WRF would have concentrations of several constituents that are predicted to exceed the most stringent AWQC, and therefore adverse impacts to groundwater quality would occur in areas underneath and immediately adjacent to the WRF.	In order to prevent groundwater contamination in the area, we recommend lining all facilities with the potential to contaminate groundwater. The groundwater quality should be monitored in real-time for the life of the facility using the best available technology at the time to detect any contamination resulting from leachate from the WRF, and the contamination should be mitigated as soon as it is detected. The technology	

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					should be reviewed periodically for the life of the facility, i.e. in perpetuity.	
MON 7		3.7-166	Bt	A layer designed to minimize infiltration would be placed over portions of the WRF as the placement of waste rock in those areas is completed, and the surface of this layer would be contoured to direct precipitation to the lower CWD (BGC 2011b).	This is confusing as to if the entire WRF will eventually be covered with a low permeability cover. Regardless, in the lifetime of the facility it can be expected that the cover will be breached by animals and vegetation. How will Donlin monitor the integrity of the cover for the life of the facility?	
MON 3		3.7-167	Bt	When pit dewatering is stopped, water would flow from the pit into the bedrock depressurized by dewatering wells underlying the proposed project area; this would result in inputs of sulfate and metals, and decreased pH, to the deep bedrock portions of the aquifer.	The time period between the cessation of pit dewatering and pumping of the pit lake is approximately 52 years. During this time there is the potential for the contaminated groundwater to migrate away from the pit and outside the cone of depression created by the lake. We recommend monitoring to ensure that the outward migration of contamination does not occur. If groundwater contamination is shown to be leaving the project area, mitigation of the contaminated groundwater should occur. We recommend real-time monitoring using the best available technology at the time. The technology should be reviewed and updated periodically. The monitoring should be done until the cone of depression created by the pit lake has removed all contamination from the area aquifers.	
PAA 14			Bt	The principal mechanisms responsible for effects to groundwater quality at the mine site would be inputs of seepage from the WRF, and the discharge of water from the pit to the surrounding deep bedrock groundwater.	We recommend preventing groundwater contamination wherever possible. This would include lining all facilities with the potential to contaminate groundwater.	
WAQ 4	3.7.3.2.3	168	cg	and the resource is governed by regulation.	Whose regulation because in several places, the DEIS states that the State does not regulate groundwater and if they don't, who does?	
WAQ 3	3.7.3.2.3	169	cg	Groundwater drainage patterns should reestablish after site reclamation has been completed (SRK 2013b).	if the pipeline is abandoned in place, shouldn't drainage patterns either reestablish sooner or find alternate routes long before reclamation?	
WAQ 22	3.7.3.2.4	170	cg	Table 3.7-44	The % increase for Donlin looks right (175-173)/173 = .012 or 1.2%	

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					but the rest don't: Grouse: (238-236)/236 = 0.008 or 0.8% not 0.6 Bell: (206-205)/205 = 0.005 or 0.5% not 0.2 Flat and Village creeks show no increase and yet one of the highest % increase is for Village	
WAQ 21	3.7.3.2.4	171	CE	The potential for mercury methylation in these environments is low and is generally limited by the availability of bioavailable carbon and other nutrients, which are required to sustain heterotrophic microbiological activity that drives the methylation of mercury in anoxic environments (ARCADIS 2014)	Earlier on page 3.7-153 the document, it is assumed that the area streams have a DOC concentration of 20 mg/L. To contextualize this level of DOC, the USGS stream report from 2009 (Scudder et al.) found the average national DOC concentration to be 5.1 mg/L. Therefore, this EIS is stating that the areas stream have 4-times higher carbon concentration than national averages, and yet the area around the mine has a low ability to methylate mercury in part due to low bioavailable carbon. This is theoretically inconsistent. The emphasis in this EIS on “other nutrients” being important and the C:N ratio being a strong indicator of the geochemical potential for mercury methylation is supported from some studies in the literature (notably Tjerngren et al, 2012). However, within the very large body of literature on mercury methylation, the C:N ratio is not frequently mentioned. If there are studies in addition to those of Tjerngren et al, 2012 that have come to same conclusion regarding the importance of C:N ratios in predicting methylation potential, then these should also be cited. This is not to say that the C:N ratio is not important, but that it may not be as a good of a predictor of methylation potential as other variables, such as carbon, inorganic mercury, and sulfate. For example, from the Scudder et al, 2009 USGS stream report they measure: “characteristics thought to affect Hg methylation, such as loss-on-ignition (LOI, a measure of organic matter content) and acid-volatile sulfide in bed sediment, and pH, dissolved organic carbon (DOC), and dissolved sulfate in water.” They do not focus on measures of nitrogen in order to calculate the C:N ratio in order to better understand the	

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					important variables related to methylmercury production. This sentiment is echoed throughout the vast majority of literature on mercury methylation. For example, as part of the Western North American Mercury Synthesis project, Fleck et al., 2016 (Sci. Total. Environ.) found that 76% of the spatial variability in methylmercury concentrations could be explained by variations in the total mercury concentrations and other landscape variables; which did not include the nutrient status of wetlands. The DEIS relies heavily on a study where the C:N ratio is shown to be related to methylmercury; while these findings may be correct, they are much less understood when compared to the much larger body of literature showing the elevated sulfate concentrations can stimulate methylation, regardless of C:N ratio. In general, the streams in this area are predicted to have 1) relatively high inorganic Hg concentrations; 2) relatively high organic carbon concentrations, and 3) very high sulfate concentrations. The combination of these 3 factors would suggest that an area would have high potential for mercury methylation.	
WAQ 21	3.7.3.2.4	171	CE	However, due to the relatively low organic content of soils within the cone of depression, the resulting pulse of bioavailable carbon is likely to be small.	If the organic content of soils is low, how is it reasonable to predict stream DOC concentrations to be 20 mg/L earlier in the DEIS. These two pieces of information should be reconciled when characterizing the landscape.	
WAQ 21	3.7.3.2.4	171	CE	Thus, aquatic systems in the study area have a low rate of methylmercury production, and this rate is not expected to change as a result of the activities proposed under Alternative 2 (ARCADIS 2014).	This statement is inconsistent with: 1) the baseline methylmercury concentrations already predicted to be 2-times higher than a nationally generated median concentration; 2) the high DOC concentrations predicted to occur in the streams; 3) the relatively high inorganic Hg concentrations from mine and existing geogenic sources; and 4) the increases in sulfate releases to area streams. All of these lines of evidence suggest that the study area could have a relatively high rate of methylmercury production currently and could be increased in response to mining	

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					activities.	
EDIT 5	3.7.3.2.4	176	cg	the Erosion and Sedimentation Control Plan	the ESC Plan	
WAQ 3	3.7.3.2.4	176	cg	If the pipe is abandoned in place at project closure, as may be authorized by the Pipeline Abandonment Plan, any new impacts	Since this is a discussion of Alternative 2, Donlin's proposed alternative, why doesn't this include what they propose to do?	
WAQ 29	3.7.3.2.6	180	cg	Implementation of SWPPPs and/or Erosion and Sediment Control Plans;	Implementation of SWPPPs and/or ESC Plans;	
WAQ 29	3.7.3.2.7	185	cg	The most stringent applicable water quality criterion for turbidity in marine waters specifies that turbidity may not exceed 5 NTU above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10 percent increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.	18 AAC 70.020(b)(24) states that for the Water Supply, Aquaculture use, the standard is: May not exceed 25 nephelometric turbidity units (NTU). For marine uses, there are no allowances for natural conditions for turbidity.	
WAQ 29	3.7.3.2.7	186	cg	would result in greater potential for impacts to groundwater quality to result from spills associated with diesel fuel handling	would result in greater potential for impacts to groundwater quality from spills associated with diesel fuel handling	
WAQ 29	3.7.3.5.1	189	cg	Geochemical direct, indirect, and cumulative impacts under Alternative 4	Is there a reason why "cumulative" is in a different font than the rest of the text?	
EDIT 5	3.7.3.5.1	189	cg	applicable water quality standards	Usually referred to as "applicable water quality criteria" or AWQC	
WAQ 29	3.7.3.5.1	189	cg	not to exceed a maximum increase of 25 NTU.	this disagrees with the criterion listed on both pages 3-161 and 163 which reflect the 15 NTU maximum of the freshwater recreational use	
EDIT 5	3.7.3.6.2	194	cg	meet applicable water quality standards and expected	meet AWQC and expected	
EDIT 5	3.7.3.6.2	194	cg	The water would be treated to meet applicable standards prior to discharge to Crooked Creek using a High Density Sludge (HDS)	The water would be treated using a High Density Sludge (HDS) – the deleted portion repeats what was said in the previous sentence	
WAQ 29	3.7.3.6.2	194	cg	and progressive reclamation	Is "progressive" the same as concurrent?	

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MON 3		3.7-198	Bt	If hydraulic containment of the groundwater system is lost, it is likely that contaminated groundwater would enter the flow system towards Crooked Creek, and it would be impractical to retrieve because the water would migrate outside the radius of influence of the SRS pond.	The SRS pumping and the groundwater surrounding the facility should be monitored in real-time using the best available technology at the time. The technology should be reviewed and updated periodically during the lifetime of the facility operations. If contaminate groundwater is found to be migrating outside of containment, then immediate remediation of the groundwater should take place.	
MON 3		3.7-200	Bt	Under Option 1, tailings seepage could potentially reach groundwater beneath the dry stack, although the underdrains would be expected to continue to capture some if not all of the tailings seepage. Seepage reaching groundwater would either 1) flow to the underdrains prior to reaching the SRS, or 2) flow through native material under the operating pond, and be captured by the cone of depression created by pumping the SRS and/or sentinel wells. Following removal of the operating pond and dam in closure, if contaminated groundwater is present in native materials beneath the dry stack or operating pond footprint, it would continue to migrate towards, and be captured by, the SRS and/or wells, and report to the pit lake. Meanwhile, the supply of tailings porewater that could potentially feed the contaminant plume would be reduced by the impermeable cover, and seepage flow through the dry stack would gradually reduce to the same as that predicted under Alternative 2 (and Option 2) after 200 years. In other words, a contaminant plume, if present under Option 1, would eventually improve in quality to that of Option 2 and Alternative 2. Beyond 200 years, the amount of seepage flow under Option 1 is expected to continue its gradual decline as a result of the impermeable cover blocking infiltration of water to the flow system.	Allowing groundwater to be contaminated for 200 years will should not be allowed. If this option is chosen, monitoring of groundwater around the facility should be required for the life of the facility, or until it is shown that no more seepage is being generated. The monitoring should be done in real-time using the best available technology at the time. The technology should be reviewed and updated periodically.	
EDIT 5	3.7.3.6.2	104-105	cg	Applicable water quality standards	AWQC	
WAQ 29	3.7.3.6.2	105	cg	This increase represents about a 0.1 percent increase in fugitive dust emissions for the mine site as a whole, as other	Given the information in the highlighted text, a 0.1% increase	

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EDIT 5				major sources of dust would not change under this alternative (e.g., pit, roads, etc.). The amount of dust generated from the dry stack under Alternative 5A relative to the tailings beach under Alternative 2 may be higher than a simple surface area correlation would suggest, however, due to lower moisture content, increased heavy equipment use, and higher elevation of exposed tailings (greater wind exposure) at the dry stack.	seems low. Including "however" seems unnecessary to the sentence.	
PAA 16	3.7.3.6.2	105	cg	The total increase in PM2.5 and PM10 emissions under Alternative 5A relative to Alternative 2 would be 2.9 percent and 8.3 percent, respectively	Given the difficulties in calculating percent increases in other areas of the DEIS, it would be nice to have the expected PM levels for both alternatives and they are not even provided in Section 3.8.3.7	
EDIT 5	3.7.3.6.2	106	cg	The sample size, n, for each	The sample size, N, for each	
WAQ 25	3.7.3.6.2	107	cg	Risk of SRS Pump Failure	if the risk of this under Option 2 and Alternative 2 are similar, why does Alternative 5 get an entire section on this while the discussion in Alternative 2 is basically the same sentence in 2 different places saying the risk is low?	
WAQ 20	3.7.3.6.2	108	cg	In either option, if the SRS pumping system were to go completely off-line, the SRS would likely fill to overflowing and/or lose hydraulic containment	if this is true of Option 2 couldn't the same be said for Alternative 2	
WAQ 20	3.7.3.6.2	108	cg	Under both Options 1 and 2, an event leading to the release of uncontained SRS water to the surface waters of Anaconda Creek or Crooked Creek would result in high-intensity impacts to	aside from a statement in the synopsis, this is not discussed for Alternative 2	
EDIT 5	3.7.3.6.2	108	cg	would exceed applicable water quality standards	would exceed AWQC	
EDIT 5	3.7.3.6.2	109	cg	protected by the Clean Water Act and	protected by the CWA and	
EDIT 5	3.7.3.6.2	109	cg	Thus, considering the proposed lifespan of the SRS pumping system under Alternative 5A, particularly for Option 2, the possibility	Should "Option 2" be "Option 1" since its lifespan would be longer?	
EDIT 5	3.7.3.7.1	202	cg	Geochemical direct and indirect cumulative impacts under	Geochemical direct, indirect, and cumulative impacts under	

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				Alternative 6A	Alternative 6A	
	3.8 Air Quality					
EDIT 5	3.8.3.6	68	cg	This alternative would reduce the barge distance for freight and diesel out of Bethel bound for the mine site by about 69 river miles.	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
	3.9 Noise and Vibration					
	No Comments					
	3.10 Vegetation					
EDIT 5	3.10.3.5	66	cg	69 miles downriver	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
BARG 17	3.10.3.3.2	62	cg	Alternative 3A differs from Alternative 2 in that it would involve 75 percent fewer ocean fuel barge trips and 67 percent fewer river fuel barge trips because of the decreased use of diesel fuel.	Section 3.23 says the river barge traffic will decrease from 58 to 19 which is a 67% decrease as stated but for ocean going barges, the trips to Dutch Harbor decrease from 7 to 2 (71%) and the number from Dutch to Bethel decrease from 14 to 5 (57%) so what is the basis for saying the ocean going barging will decrease by 75%?	
	3.11 Wetlands					
	General Comments					
CWA 5	Coordinating NEPA and CWA 404 Requirements		MJ	The DEIS environmental analysis should support the U.S. Army Corps of Engineers' CWA Section 404 and Rivers and Harbor Act Section 10 permit decisions. For this reason, the EIS should address compliance with the CWA Section 404(b)(1) Guidelines and the Corps public interest review. The analysis in the DEIS, however, creates a fundamental disconnect between the NEPA and the 404 permitting processes. The DEIS indicates that the wetland information may be inadequate to meet the Corps' permit review needs and would be revised later for the EIS or the permitting process.		
WET 2	Preliminary Jurisdictional Determination			The EPA raises concerns regarding the wetland preliminary jurisdictional determination (PJD) for the Donlin Gold Project, which has not been approved at this stage of the environmental review process. The DEIS indicates that the wetland mapping process may have over-estimated the actual project wetland impacts and would be revised during the Corps' permit process to eliminate potential jurisdictional inconsistencies, and to determine adjusted areas of jurisdictional wetland impacts following recent jurisdictional guidelines. We recommend that the jurisdictional inconsistencies be corrected and the revised estimates of the wetland acreage impacts be included in the EIS. Accurate information regarding the acreage of direct and indirect wetland impacts associated with the alternatives is necessary to adequately compare alternatives in the EIS. The EIS should		

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				disclose the systematic process for reevaluating the jurisdictional wetland impacts, such as additional ground-truthing and mapping that may be required to verify the wetland/upland mosaics.		
WET 3	Functional Assessment		MJ	The DEIS indicates that the functions of wetlands within the study areas were preliminarily assessed using a variation of the Hydrogeomorphic (HGM) rapid functional assessment method. Functional capacity indices (FCIs) for rating the functional performance and value for each of the five HGM classes were evaluated. The variables, assumptions, and calculations used to develop FCIs for each function and HGM class were described in the Donlin Gold Wetland Functional Assessment Report. As indicated in our previous comments on the Report, the EPA generally supports use of the modified HGM functional assessment method for evaluating HGM wetland classes and functions, and use of the FCIs for rating the functional performance and value for each wetland class in the study areas. We recommend that the FCIs be adopted to evaluate debits and credits for compensatory mitigation for the Donlin Gold Project. The DEIS notes that the Corps plans to complete a functional assessment for the proposed project at or after the EIS stage or the NEPA process. Our understanding is that the Corps' functional assessment would be based on the *Cowardin et al* classification system. We recommend that the EIS disclose to the public the basis and rationale for the Corps not accepting the modified HGM functional assessment method for the Donlin Gold Project. We recommend that the Corps' functional assessment approach include not only wetlands, but the functions of other types of waters that fall under Corps' jurisdiction, such as river channels and stream systems, lakes and ponds. In addition, we recommend that the Corps' functional assessment methodology include a debit and credit evaluation process to determine the options for wetlands, streams, and aquatic resources compensatory mitigation. The Corps' functional assessment method, and the revised wetlands and aquatic resources information should be incorporated into the EIS. This revised information is important to evaluate the LEDPA under the CWA Section 404(b)(1) Guidelines. We would appreciate being involved in the development and/or review of the Corps' functional assessment methodology. The EPA requests a meeting to discuss the Corps' approach to the development of the functional assessment methodology, which may be applied to other projects in the future.		
MIT 7	3.11.1	3.11-3	Bt	Donlin Gold has submitted a watershed-based draft Compensatory Mitigation Plan (CMP) in coordination with federal, state, and local governments and landowners. The CMP would consider…	If this document has been submitted, it should be included as part of this EIS in order to better asses the impacts due to the project. At present only a Conceptual Compensatory Mitigation plan is included in the document, and this conceptual plan does not provide enough information to consider it an adequate plan. The next sentence, however, uses the future tense for the CMP suggesting the plan will be submitted in the future.	
WET 3	3.11.2.2	6	KW	The functions of other types of waters that fall under Corps jurisdiction like river channels, lakes, and ponds were not	This is a huge oversight. Without this, reviewing agencies may not be 7able to adequately determine the extent of functions lost due to the proposed project and it makes it difficult to	

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				evaluated.	determine adequate compensatory mitigation.	
WET 3		3.11-7	Bt	The Corps has determined that the Corps will complete a functional assessment for the proposed project at or after the FEIS stage or (sic) the NEPA process.	Not having a functional assessment makes it very difficult to determine the LEDPA for the project. We recommend providing the assessment in a timely manner for cooperating agency review prior to the FEIS.	
WET 3	3.11.2.2	7	KW	The Corps has determined that the Corps will complete a functional assessment for the proposed project at or after the FEIS stage or the NEPA process. (This is stated twice on this page).	Is this correct? If so, the "Corps has determined that they will…" How comprehensive of extensive of an assessment is anticipated? Will it be for streams and wetlands? Is this just a review or enhancement to the existing work based on agency and stakeholder comments? Additional detail is warranted.	
EDIT 5	3.11.2.2	7	KW	Wetland values	Recommend it be changed to "Wetland functions and values" as the section is talking more about the wetland functions and functional assessment as it relates to high valued wetlands. It might be helpful to define wetland value as well.	
MIT 7	3.11.3	12	KW	Permafrost maintained wetlands may be converted to non-wetlands following fires that remove the insulating organic mat that protects permafrost from receding and creating better drainage conditions (Post 1996). Wetland conditions may return over the span of 40 to 60 years or more as the insulating organic mat recovers allowing the permafrost to reestablish to shallower depths (Post 1996).	This potential temporal loss needs to be addressed in the mitigation section (Chapter 5) and within the compensatory mitigation plan (Appendix M). Include citations to these sections and within these sections, discuss temporal loss of resources.	
WET 1	3.11.3	19	KW	Figure 3.11-6A	Modification of Floodwater Storage and Water Quality are 2 functions that were ranked as high for the mine site. Kuskokwim River Wetlands Study Area 3.11.3.2.2 – so what are the deposition and erosion rates from those time periods supposed to tell us about the impacts 3.11-37?	
WET 5	3.11.4	57	KW	A total of 6,967 acres of wetlands would be directly affected by Donlin Gold's proposed mine (Table 3.11-14).	Also need to include the proposed indirect or secondary impacts to wetlands that was estimated through modeling of impacts from dust, change in surface water distributions and groundwater. As depicted in Table 3.11-23.	
WET 3	3.11.4	59	KW	Wetlands affected by mine construction seem to include 10 to 35 percent, depending on the function, of wetlands rated	What about the collective loss of both low, moderate and high functioning wetlands at the site? Considering EPA's comments	

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				as high functioning for hydrologic functions (Table 3.11-15).	on the FA, these results are called into question.	
MIT 21	3.11.4	59	KW	Sediment barriers and erosion control planning would mitigate for loss of this wetland function.	To what extent? Completely mitigate? Please clarify and support this statement with any analyses that were conducted.	
WET 8	3.11.4	61	KW	Dust emissions generated by drilling and blasting, waste rock and ore loading and unloading, traffic on roads, wind erosion of exposed surfaces and ore processing (Environ 2014a) would be deposited primarily downwind from sources on nearby vegetation and wetlands.	Why is groundwater not summarized in this section as well? Please include impacts to wetlands due to changes in groundwater.	
WET 6	3.11.4	65	KW	Although growing season conditions may be drier, near surface groundwater from spring runoff and precipitation may continue to support wetlands such that the overall long-term effect of the drawdown on surrounding wetlands are difficult to accurately predict…….All wetlands within this drawdown area are unlikely to be permanently altered; the primary potential for impact is likely to be alteration of hydrologic functions, although the level of this potential alteration is unclear.	The analysis represents the wetlands and functions that are likely to be affected by dewatering; however, the conclusions drawn in the last paragraph in 3.11-65 is that there are likely no impacts to wetlands despite the fact that it is still unclear. It appears that all uncertainty in indirect impacts were treated as non-impact. So how were these considered in the final ranking?	
WET 8			Bt	Although growing season conditions may be drier, near surface groundwater from spring runoff and precipitation may continue to support wetlands such that the overall long-term effect of the drawdown on surrounding wetlands are difficult to accurately predict…….All wetlands within this drawdown area are unlikely to be permanently altered; the primary potential for impact is likely to be alteration of hydrologic functions, although the level of this potential alteration is unclear.	How was this issue resolved in the mitigation plan? How were the temporal losses due to drawdown addressed?	
WET 1	3.11.4	70		Lowering the subsurface water table within permafrost-based wetlands may have little effect on surface moisture, especially in flat HGM classes where moisture is primarily received as precipitation; unless there is also an associated collapse in the permafrost from thermal degradation.	How was this potential impact accounted for outside of the citation from the Churchill study that states a possible conversion of wetland? It appears all uncertainty in indirect impacts were treated as non-impact. Clarification is needed.	
MIT 21		3.11-71	Bt	During reclamation, flat to gently sloping wetlands would generally be reclaimed by removal of fill and grading to recreate original contours and hydrologic regimes.	This is not wetland restoration or mitigation. Donlin should be required to restore these areas as wetlands with similar functions and values to pre-mining conditions. The word	

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					reclamation seems to be used interchangeably with mitigation in this wetlands section.	
MIT 21			Bt	Material sites constructed in valley bottoms, lowland sites, or in black spruce permafrost wetlands could be reclaimed to create new ponds with emergent wetlands where sufficient water quality and hydrology are available.	This statement indicates that there is no plan in place for mitigation. Without a mitigation plan, or even an acceptable conceptual plan there is no way for the regulatory agencies to determine if impacts to WOUS are adequately mitigated. The project should not be permitted until the applicant can demonstrate a plan to replace the functions and values lost due to the project.	
WET 3	3.11.4	73	KW	Restored wetlands are likely to differ in type and functional capacity from the original wetlands for decades to centuries.	Where are temporal losses to aquatic resources discussed? It should be referenced here. Restored wetlands are likely to differ in type and functional capacity from the original wetlands for decades to centuries. Considering some of these wetlands cannot be restored or re-established, there would be no way to reduce the impact summary rankings regardless of the additional mitigation measures implemented. Discussion on this is warranted.	
WET 8	3.11.4	73	KW	There is insufficient detail for the equilibrium groundwater level to quantify potential long-term impacts to wetlands.	How did this effect the end ranking? Considering this assertion, duration should err on the side of long-term.	
MIT 21			Bt		When equilibrium does occur, Donlin should be required to map the wetlands to determine final mitigation requirements. The document currently does not contain information sufficient to determine if WOUS losses will be replaced.	
MIT 2	3.11.4	76	KW	Mitigation Summary	This information should be included in Section 5.6 in Chapter 5 as well.	
MIT 21		3.11-79	Bt	Table 3.11-22	Many of the projects listed should not be considered, for example 1,000 acres of open water created by the pit lake. The pit lake will have contaminated water which requires treatment in perpetuity which should eliminate it from consideration. Another is removing a natural set of waterfalls in order to allow fish passage. The projects on this list should be carefully considered before even considering them as potential	

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					mitigation. The table, and the corresponding table in the conceptual mitigation plan demonstrate that Donlin has no plan in place, or even ideas in place to adequately mitigate project impacts.	
WET 3	3.11.4	80	KW	Anticipated Alternative 2 mine site direct effects on wetlands would be medium to high in intensity with an observable 21 percent reduction in wetland abundance (Table 3.11-14) and impacts to between 10 and 37 percent of high functioning wetlands (Table 3.11-15)	Why are only high functioning wetlands summarized? Moderate and low functioning wetlands still have importance and provide functions. We request you include them in the summary.	
WET 6	3.11.4	80	KW	The overall impact of the construction, operations, closure, and reclamation of the mine site for Alternative 2 on wetlands would be considered moderate.	Given the total acreage of impacts, the uncertainty of indirect impacts, the loss of functions during mining, the uncertainty in re-establishing wetland during reclamation and the temporal loss of resources, "several decades to centuries", the overall impacts appear to be major. This ranking should be re-visited.	
MIT 21		3.11-95	Bt	Wetland vegetation communities would eventually transition back into a community functionally similar to the wetland prior to construction if preconstruction conditions such as elevation, grade, and sooil structure are fully restored.	Donlin should be required to actively mitigate these communities, and use adaptive management in case any of these factors are not restored to pre-construction condition. All of the wetlands functions and values must be restored as a part of active mitigation.	
WET 4	3.11	98	KW	Effective restoration of floating mat bog and fen areas may not be possible beyond compensation through mitigation banks.	These difficult to restore resources will be difficult to replace through a mitigation bank unless it is preserved. Higher mitigation ratios are warranted. This may be considered a permanent loss of the resource. Clarify this point.	
WET 1		3.11-114	Bt	Closure and Reclamation	In this section, and throughout the document the terms reclamation, restoration and mitigation seem to be used interchangeably. The document should be clear in the use of these terms. Only mitigation should count as mitigation.	
WET 1	3.11.4	119	KW	These effects determinations take into account impact reducing design features (Table 5.2-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) proposed by Donlin Gold…	It should be clarified that these impact reducing design features may not be implemented and it is not a guarantee that it would be implemented if the project moves forward. A statement or footnote indicating that fact should be included or clarification should be provided if there are in fact protocols	

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					in place to ensure the measures are implemented.	
WET 3	3.11.4.4	119	KW	Wetland functional assessment data are available for an additional 123 acres of wetlands impacted by portions of the additional airstrips; no functional assessment data were available for the additional 103 acres of wetlands impacted by the 18-mile extension of the diesel pipeline from the Tyonek dock (3PPI 2014b).	Please provide a brief discussion of how the inclusion of those wetlands may have an impact on the impact criteria for this alternative and why.	
MIT 7	3.11	120	KW	Mark wetland boundaries and vegetation clearing limits with flagging or other markers to prevent crews from damaging more vegetation than needed during construction; Use mats or other appropriate types of ground protection to minimize disturbance to ground vegetative cover during non-winter construction; Use large surface area/low impact tires on or near wetlands to help reduce equipment impacts. Use mats or other appropriate types of ground protection to minimize disturbance to ground vegetative cover during non-winter construction;	These appear to be requirements or BMPs, not necessarily a mitigation measure under 404. While these may be appropriate discussion for mitigation under NEPA, these would not be appropriate compensatory mitigation for the loss of aquatic resources under CWA Section 404. This needs to be clarified.	
EDIT 5	3.11.4.5	129	cg	69 river miles	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
EDIT 5	3.11.4.5.2	134	cg	69 river miles	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
MIT 21		3.11-134	Bt	The port area would be regraded to approximate original contours or acceptable slopes, decompacted, covered with growth media if necessary, and seeded to promote vegetative growth. Most flat to gently sloping wetlands would be reclaimed by removal of fill. Fill would not likely be removed in areas where marginal hydrology of wetlands or upland mosaics with wetland inclusions makes restoration of wetlands not feasible.	We recommend that active mitigation of all wetlands be performed as a condition of any permit. Passive mitigation as described here should not be allowed since in many cases adaptive management of some kind may be needed. All of these wetlands should be mapped, and mitigated for any loss of functions and values.	
WET 7	3.11.4.7.1	141	KW	Wetland mapping has been completed for both routes, although siting for camps, access roads, airstrips, and material sites was not available for evaluation.	Is it anticipated that these would likely be placed in uplands as an avoidance measure or is there a chance that additional wetlands may be impacted? Please provide some context. What is the anticipated area needed for these ancillary features	

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					based on the Alt 2 route?	
EDIT 5	Table 3.11-58	147	cg	69 river miles	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
				3.12 Wildlife		
EDIT 5	3.12.5.1.2	109	cg	The 27-mile long road from the proposed mine to the Angyaruaq (Jungjuk) Port site	The Alternative description in Chapter 2 (page 2-7) says this road is 30 miles long.	
HZM 1	3.12.5.	155	CE	While the mercury methylation process is complex, factors that would increase it, such as increases in wetland area or depletion of oxygen in waters, or increases in populations of large resident fish, are not likely to increase with mining operations.	We concur that the mercury methylation process is complex, however, we do not agree that the factors that could affect methylation would not increase with mining operations. While the factors mentioned may not increase, there is expected to be an increase in new mercury entering the system, which may be more bioavailable than older geogenic mercury, and there will also be an increase in sulfate which could stimulate microbial methylation. Because of the complexity of the methylation process, an increase in these two factors does not guarantee that methylmercury will increase; however as the text current reads it does not acknowledge the factors related to the mining activity that could increase methylmercury production.	
EDIT 5	3.12.5.2.5	167	cg	Under Alternative 4 the upriver port site would be located at BTC, approximately 60 miles downstream from the Angyaruaq (Jungjuk) Port site proposed under Alternative 2.	Unless 60 is not river miles, Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
				3.13 Fish and Aquatic Resources		
FISH 7	3.13	7	KW	OtterTail 2012b	This study is extensively referenced in this Section. The beginning of this Section needs to summarize the study and what it intended to capture and how extensive the study was. Is it only providing habitat suitability indices?	
EDIT 5	3.13.2.2.2	65	cg	As shown in Figure 2.3-42 (Chapter 2, Alternatives), the proposed 73-mile long road that would connect the BTC Port site to the mine would be about 43 miles (2.5 times) longer than the 30- mile long road that would connect the	The BTC Road would be 76 miles long (so 46 miles or 1.5 times longer)	

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				Angyaruaq (Jungjuk) Port site with the mine under Alternative 2		
FISH 2	3.13	120	KW	While sediment transport and deposition are natural stream processes, major disruptions of the stream system and its functions may occur when sediment delivery is substantially changed or when the ability or capacity of the stream to transport sediment is altered.	Further discussion on the extent to which this would affect the impact criteria ranking should be provided.	
FISH 9	3.13.	122	CE	Surface water concentrations in Crooked Creek watershed could increase, but would remain below Alaska water quality criteria	From 3.7-151 the text predicts that increase in deposition would result in water concentration of 11.6 ng/L; which if rounded up, is at the chronic exposure level of 12 ng/L. If standard deviation, or standard error, or 95% confidence levels were applied to the 11.6 ng/L value, it is certain that the concentrations would be above the Alaska water quality fairly frequently.	
FISH 9	3.13.	122	CE	Concentrations of mercury in fish in the Crooked Creek watershed could increase, but the changes would likely be low (up to 3 percent above current levels) and within the range of regional background fish tissue concentrations.	Important to note that this assumes that there would be no increase in methylmercury production due to increases sulfate loading. As such, this is not a very conservative estimate of the amount of increase in methylmercury levels in fish that might occur.	
FISH 9	3.13.	122	CE	It is anticipated that only a small fraction of the inorganic mercury dispersed from the mine site would be available for methylation (Marvin-Dipasquale et al. 2009).	While this is a correct statement; it should also be mentioned that that while only a relatively small percent of inorganic mercury is likely available for methylation; the fresh sources of inorganic mercury released from the mining activities may have a higher bio availability (albeit a low percentage of the total mercury) compared to older geogenic inorganic mercury in the system.	
FISH 9	3.13.	123	CE	Average methylmercury concentrations in surface waters, however, have been predicted to increase at a medium level of intensity, from 0.280 ng/L to 0.398 ng/L (42 percent increase over the baseline concentration), due to mining activities proposed under Alternative 2 (ARCADIS 2014).	Is the 0.280 ng/L value an average? It is important to note that this is an estimated value and was not measured. The main driver of the generating this methylmercury value was the DOC concentration which was also not measured by estimated using an assumed value of 20 g/L. As such, these concentrations are not “averages” obtained from taking a mean of several values,	

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					but estimates obtained from a regression equation.	
FISH 6	3.13	129	LK		With regards to scour, increased draft could increase the impacts of scour. Some consideration should be given to propulsion design of vessels.	
EDIT 5	3.13.3.5.2	173	cg	barge traffic from Bethel would travel about 99 miles upriver to the BTC	BTC is 124 river miles from Bethel (page 2-152)	
EDIT 5	3.13.3.5.2	173	cg	the BTC Port site but would not be required to travel the additional 69 miles to the Angyaruaq (Jungjuk)	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
EDIT 5	3.13.3.5.2	174	cg	This 73-mile long road would be about 43 miles (2.5 times) longer than the 30-mile long road proposed under Alternative 2	Page 2-152 says the BTC road is 76 miles long which would make it 46 miles or about 1.5 time longer than the 30 mile road in Alt 2	
EDIT 5	3.13.3.5.2	174	cg	(Alternative 2 would require 5 bridges and 45 culverts).	Page 2-53 says that there will be 51 crossings under Alternative 2 with 6 bridges.	
EDIT 5	3.13.3.5.4	175	cg	the upriver extent of barge traffic on the Kuskokwim River would be reduced by about 69 miles	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the reduction is 75 miles.	
EDIT 5	3.13.3.5.4	175	cg	Also, compared to Alternative 2 there would be 10 fewer stream crossings	Since Chapter 2 says there are 51 crossings under Alternative 2 and 40 under Alternative 4, the difference is 11	
EDIT 5	3.13.3.5.4	175	cg	a roadway that would be 43 miles longer	The roadway would be 46 miles longer	
	3.14 Threatened and Endangered Species					
	No Comments					
	3.15 Land Ownership, Management, and Use					
EDIT 5	3.15.3.7	55	cg	Table 3.15-11	Rather than calculate the percent difference by dividing the numeric difference by the new value (21/34), it should be divided by the original value: 21/13 = 1.62 or 162% 10.5/4 = 2.63 or 263% 18.9/10.5 = 1.8 or 180%	

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				29.5/14.5 = 2 or 200% See Table 3.16-7 for correct figures	
3.16 Recreation					
No Comments					
3.17 Visual Resources					
No Comments					
3.18 Socioeconomics					
General Comments					
SER 22 Pre-Mature Mine Closure Scenario		MJ	Due to market fluctuations in gold commodity prices, it is appropriate to evaluate a scenario where the Donlin Gold Mine Project may close unexpectedly, either temporarily or permanently, prior to the planned 27.5 years of active mine life. We recommend the EIS evaluate the environmental and social impacts associated with a low probability, high consequence event of a premature mine closure. The EIS should disclose the basis for a premature mine closure (e.g., higher than anticipated operating costs, low production, or low commodity prices). We recommend that the EIS describe potential scenarios for premature mine closure and implications for the mine site facilities, such as the open pit, WRF, TSF, and the transportation infrastructure, and the pipeline. We recommend the EIS evaluate different scenarios for premature mine closure during different timelines (e.g., 10, 15, and 20 years) of the mine life and post closure. The EIS should describe the management measures and procedural controls that would be implemented to reduce erosion and manage containment of surface and groundwater contaminants and ensure a sustainable closure. A monitoring plan should be implemented during a temporary and/or permanent mine closure at different timeline scenarios.		
SER 22 Closure Social Impact Assessment		MJ	We recommend that the EIS discuss the socioeconomic impacts associated with a premature mine closure to determine the overall impacts to individuals, communities, and the regional economy. The DEIS indicates that a Closure Social Impact Assessment (CSIA) would be an important component of the proposed project closure plans and would outline measures with potentially affected communities to manage a tapered economic decline. As part of a premature mine closure scenario, we recommend that a preliminary CSIA be included in the EIS. The CSIA should be developed with active and meaningful engagement from the local communities. In addition, we recommend that the CSIA be reevaluated at five-year intervals in order to gauge the project benefits and community needs on a more routine basis and make changes to benefit the outcome that would be coincident with project operations. This would also assist the communities in the event of unplanned temporary closure or pre-mature mine closure and/or abandonment.		
BER 8 Financial Assurance		MJ	We recommend that the EIS discuss how a premature mine closure would affect financial assurance for closure and reclamation and payments to establish the Donlin Gold Trust Fund for long-term monitoring (Appendix A). We recommend		

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				disclosure of the FA estimates that would be available during the timeframe of the premature mine closure scenario and whether the FA amount would be sufficient to cover the costs of properly containing, reclaiming, and/or closing the mine facilities. It is our understanding that models have been used to evaluate the financial assurance estimates during different timeframes of the active mine life.	
3.19 Environmental Justice					
General Comments Demographics		RG		EJ 8 The demographic profiles are in line with Executive Order 12898 and the CEQ guidance. These are foundational Environmental Justice (EJ) documents, but do not represent all of the possible guidance and methodology available. Other EJ documents should be identified and referenced in the EIS. The DEIS makes use of and cites references to other EJ guidances, laws and recommended best practices that are relevant to EJ analysis and implementation, such as Children's Environmental Health, Sacred Sites, Tribal Consultation, best public engagement practices for EJ and Permitting and EJ and NEPA; and other guidances and best practices from other agencies and academic sources. For example, ADEC received an EPA grant to develop a tribal protocol for APDES permitting. The analysis suggests, for Alternative 1 (No Action), that there is an EJ concern based on the economic impact of discontinuing Donlin Mine work thus far. An EJ determination is based on more than just a single factor—in this case economics. If other factors are considered, they might suggest that the costs of Alternative 1 (No Action) - not going forward with the mine - would not result in environmental justice concerns but actually provide and/or maintain existing overall benefits to the communities. Further, from an environmental justice perspective, the development that results in projected benefits of the kind advanced is *sustainable, community driven development.* The analysis should explain how the project fits the description of and meets commonly understood principles of sustainable, community driven development. In the absence of a description, the position that Alternative 1 would pose an environmental justice related impact of any kind is untenable. SER 27 The section on socio-economics characterizes the socio-economic impacts of Alternative 1 to the Yukon Kuskokwim region as "minor" and to regions outside that area as "negligible." We recommend cross walking the sections to minimize inconsistencies and avoid contradictory conclusions. Also, provide an economic analysis that confirms disproportionate economic impact of Alternative 1 (No Action). For example, include an analysis of disposable income and categories of spending in community—how much to subsistence support—which is claimed as a benefit in the document-- and the impact on subsistence harvest; the ability of the community to replace or substitute cash economy with other forms of economic activity to cover needs (i.e. level of economic, social and cultural resilience in community).	
Vulnerability and Health Impacts		RG		PHL 2 The EIS makes available in the analysis a discussion of factors that make segments of the population vulnerable or sensitive to a variety of impacts such as children, elderly, those with compromised immune systems, and those along the unique exposure pathways such as those engaged in subsistence activities and exposures to workers. We recommend that the Health Impact Assessment be included in the EIS. The EIS should also include research and analysis that illustrates understanding of the	

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				health impacts of stress, diminishment or loss of cultural resources.		
SER 21	Cumulative Impacts		RG	The DEIS makes the assumption that a cash based economy is preferable and that it can be compatible with a subsistence and other forms of economic activity. We recommend that the EIS provide a focus of cumulative impact analysis around transitioning a community from a subsistence economy to a cash economy. There is both research and experience to be able to assess the costs and benefits and over all impacts for people making this kind of a transition directed from a place other than their own direct agency. We recommend evaluating the health impacts of transitioning entire traditional communities from a subsistence economy to a cash based economy.		
PUB 1	Tribal and Public Engagement		RG	Tribal and public engagement does not stop with, or is limited to the submission of comments and the one-way transmission of information from any one source to passive audiences. Tribal and public engagement also includes applying the lived and dynamic experiences of people—creating new knowledge and deepening the empowerment of community members—over the course of time. The end goal of meaningful public involvement, from an environmental justice perspective, is community empowerment. The sense of individual and community agency and empowerment is a social determinant of health. This is consistent with the definition of health ascribed to in the document. A project should aim to strengthen the social determinants of health while accounting for any erosion of them. We recommend that there be more proactive and collaborative interactions with the communities in areas such as monitoring, creating and sharing data over the course of the active and closed periods ("in perpetuity") of the mine, and the ability to meet the demands of changing conditions with communities as partners.		
PUB 1	Mitigation		RG	There are many opportunities for empowering communities. We recommend involving communities in designing and implementing mitigation measures, strategies, and plans. Communities should also be involved with monitoring of the mitigation to ensure success in reducing project impacts. There is also a need to ensure that communities have the capacity to participate in making decisions regarding mitigation that would shape their lives. We recommend that the mitigation strategies and plans include building community capacity and specify the actions taken and to be taken during the project.		
				3.21 Subsistence		
	General Comments					
SUB 21	810 Analysis		MJ	We have concerns that the DEIS environmental analysis under NEPA and BLM's preliminary subsistence findings under ANILCA §810 are not consistent. According to the BLM, the ANILCA §810 findings were based on the information and analysis in the DEIS. As recommended previously, the environmental analysis and the summary impact ratings for subsistence should be reevaluated in the EIS to ensure consistency with agency findings. We recommend that the EIS resolve the inconsistencies between the subsistence summary conclusions in DEIS and BLM's ANILCA §810 findings.		
PAA 38	Alternatives		MJ	To address the issues regarding potential restrictions to subsistence users and resources, we recommend that the EIS evaluate different alternatives, modify the proposed action, and/or incorporate additional design features, mitigation measures, and BMPs. For example, in order to reduce the potential spill risks and impacts from increased river barging on the Kuskokwim		

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				River, we recommend incorporating components and subcomponents of Alternatives 3A and 3B into the preferred alternative for the EIS. Both alternatives would reduce the number and frequency of fuel barges on the Kuskokwim River during operations.		
SUB 8	Farewell Airstrip		MJ	We recommend eliminating the use of the proposed airstrip at Farewell, which may increase access to non-local hunters and result in more competition of subsistence resources to the local community. The EIS should consider other locations for the airstrip, further away from subsistence communities, to access the pipeline ROW and/or evaluate additional gravel access roads and/or ice roads.		
MIT 35	Mitigation Measures		MJ	We recommend that the EIS analyze additional mitigation measures to minimize impacts to subsistence resources and users. We recommend that the EIS include a commitment by the project proponent to work actively and engage the local communities on opportunities to improve access to subsistence resources during the active life of the mine. For example, a local subsistence board could serve to advise the project proponent of potential conflicts with access to subsistence uses and recommend improvements to mine operations that would avoid and minimize subsistence conflicts.		
MON 8	Subsistence Plan and Report		MJ	We recommend that the EIS include a commitment to develop a Subsistence Users and Resource Plan, which would include best management practices for the mine operations to improve subsistence activities and avoid potential conflicts. The plan should also include monitoring of mine activities to ensure that subsistence resources are adequately protected throughout the active mine life and post-closure. We recommend that a Subsistence Report be developed with input from the local subsistence users. The Subsistence Report should include an adaptive management framework where certain monitoring activities may no longer be needed, but additional monitoring may be required based on the results of previous years' activities. This report should be presented to the subsistence communities for review and comment. Finally, the EIS should actively involve the local communities to support regional planning and implementation for the prevention, monitoring, and response to accidental spills of fuel, cyanide, mercury, and mine tailings to protect subsistence resources.		
SUB 18	3.21	2	LK		The EIS should provide a more detailed analysis of how Alaska Natives would receive economic benefits from gold mining activities. What are the requirements of jobs that would be available to ANs? What are the current abilities of ANs to function in those jobs? If there are deficits in the ability of ANs to fill these jobs, what training would be needed? Has there been an effort to determine whether or not ANs would want to take these jobs, including whether changes in lifestyle would be acceptable? Has the amount and dollar value of subsistence resources lost by habitat alteration been evaluated?	

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SUB 8	3.21.5.1	18	LK		How will pipeline construction affect lifecycle aspects (e.g. migration, breeding, etc.) of subsistence food resources (e.g. caribou, moose, etc.). What information is available for specific animal populations? Village harvest areas overlap areas with pipeline construction in several cases (e.g. Nikolai, Figure 3.21-4; Stony River, Figure 3.21-7; Crooked Creek, Figure 3.21-16) Information on harvest areas and impacts of aspects of the proposed Donlin Mine are not available for many villages that could be impacted by the project. These communities should be identified. The reason for selecting the representative communities should also be identified. Ostensibly, those most impacted by Donlin project activities should be selected.	
SUB 19	3.21.6.1.2	127	LK		Need to review assumptions about contaminant concentrations and toxicity to birds as well as bird behavior as a function of water depth.	
SUB 16	3.21.6.3.2	155	LK		More information should be presented on the impacts of barge traffic on large land mammals (e.g. moose). This analysis should specifically discuss displacement of large mammals from river corridors where hunting frequently occurs.	
BARG 15	3.21.6.3.2	156	LK		The impact of bed scouring on fish spawning areas should be discussed in greater detail. In addition to vessel speeds are there other operational changes that might be implemented, for example limiting barging during spawning season.	
SUB 16	3.21.6.3.2	167	LK		The impact of barge traffic on fishing activities involving nets should be discussed to a greater degree.	
SUB 8	3.21.6.3.3	169	LK		The impacts of other pipeline construction projects on large mammal populations should be reviewed and cited here. Specific animal and bird populations with areas of aggregation (e.g. nesting or grazing areas) affected by the pipeline should be identified and impacts on their populations discussed	

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EDIT 5	3.21.6.6	189	cg	Table 3.21-26	This Table is exactly the same as Table 3.23-15 except for the 253% - 153 is correct	
	3.22 Human Health					
	General Comments					
PHL 2			JS	The inclusion of a health section within an EIS that is appropriately scoped to include the range of important health issues related to the project is a commendable endeavor, and a suggested mechanism by the National Research Council to support health (http://www.nap.edu/read/13229/chapter/1). The framework for the analysis is consistent with HIA practice, but does not include all of the typical HIA components. A scoping phase was completed to focus the review on those health outcomes most likely to be impacted and/or topics of concern the potentially impacted communities. Community stakeholder meetings were held to engage and capture concerns. The analysis of the impact and of the identified alternative plans was completed and presented in the EIS. Missing from the EIS, but part of typical HIA frameworks are recommendations for how to mitigate identified negative health impacts or accentuate positive health impacts. Similarly, the EIS does not mention how reporting or evaluation of the HIA will be completed. It is unclear how the completed HIA that could include these additional sections will interact with the EIS. It is conceivable that additional recommendations may come out of the HIA. The health analyses could be strengthened with improvements in identifying evidence (references) to support statements and improvements in defining units within the tables. Additionally, what is included within the health analysis and what is excluded is not always clear. For example, the analysis for cancer, chronic diseases, and cardiovascular disease focused primarily on chemical/pollution exposures when other risk factors for influencing these diseases, e.g. food and recreational physical activity are acknowledged to be modified by the project. Similarly, tobacco use is an important risk factor for these disease; while changes in other substances are analyzed, but tobacco use is not.		
PHL 2	Cumulative Effects		MJ	Since the HIA was not included in the DEIS for public review, we are not certain how cumulative effects have been evaluated for human health. We recommend that the cumulative effects of multiple sources, pathways, and exposures from past, present and reasonably foreseeable future actions, including mine operations and accidental chemical spills, to humans be evaluated in the EIS. We recommend conducting a risk based assessment to evaluate all potential sources, pathways, and routes of human exposure to contaminants from air, water, and subsistence foods. We recommend that the EIS describe the acceptable limits for contaminant exposure to subsistence foods and water. In addition, we recommend conducting biological monitoring of human health to evaluate the cumulative impacts during the active mine life and post closure.		
PHL 2	3.22	3.22-1	MJ	The HIA is still under development…	The Alaska Department of Health and Social Services (ADHSS) is developing a Health Impact Assessment (HIA) for the Donlin Gold Project. We recommend that the draft HIA be distributed for tribal, public and agency review and comment. Public outreach and information should be provided to the local	

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					communities regarding the results of the HIA. We recommend that the publicly reviewed and, if necessary, revised HIA be incorporated into the EIS. The HIA was not included in the DEIS. We have concerns that the health information and analysis in the DEIS may be inconsistent with the findings of the HIA. The EIS should identify mitigating measures to minimize adverse health impacts and disclose how reporting and evaluation of the HIA would be completed. We encourage the project proponent to continue the partnership with the State of Alaska on the Donlin Gold Project HIA. We recommend that the HIA be reevaluated every five to ten years during the active mine life and post closure to include new data, information, research and studies regarding the health of the native communities in the middle-Kuskokwim River region. As part of their corporate responsibility, we encourage the project proponent to actively engage and work with the local communities to monitor, sample, and test subsistence foods for mercury and other contaminants to ensure protection of human health.	
PHL 3	Tables 3.22-2 3.22-4	11	JS		National data should be available for many of these demographic factors, yet are not in the column.	
MON 9	3.22.3.4.3	3.22-19	MJ	ADHSS Mercury Biomonitoring (2002 – 2010)	The ADHSS has implemented a statewide hair mercury bio-monitoring program to collect information about mercury exposures among women of childbearing age. We encourage the project proponent to partner with the State of Alaska and the local communities to continue the bio-monitoring program throughout the active mine life. The hair mercury bio-monitoring program should be expanded to include infants, young children, and the elderly. The EIS should include a	

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					commitment by the project proponent to support additional mercury bio-monitoring efforts in communities along the middle-Kuskokwim River region with active engagement and involvement from the native communities. Screening levels or thresholds, based on the EPA reference dose for mercury, should be established to determine whether or not further monitoring would be required after adaptive management.	
PHL 16	3.22.3.4.3	19	LK		There should be a detailed assessment of existing data on baseline levels of arsenic, antimony, and mercury in soil and water. There should also be an assessment of existing data on baseline levels of mercury and inorganic arsenic in fish. The adequacy of, and need for additional, data on mercury in environmental media should be assessed in relation to needs for modeling of mercury environmental fate, transport and subsequent bioaccumulation. It is very important that adequate baseline data are obtained before mine construction begins.	
PHL 16	3.22.3.4.3	19	LK		Native Alaskan's hair methylmercury (MeHg) concentrations and the hair MeHg concentration associated with the EPA reference dose (RfD), 1 PPM, should be used in this analysis rather than the NOAEL of 15.3 PPM, a follow-up value of 5 PPM, or a hair concentration of 3.4 PPM (obtained by dividing ATSDR's NOAEL by an uncertainty factor of 4.5). The NOAEL does not account for uncertainties and variability associated with MeHg's health impacts. EPA's RfD analysis is more current than ATSDR's and is supported by a review by a research committee of the National Research Council of the National Academy of Science. EPA believes that derivation of a regulatory methylmercury toxicity value using the Faroe Island data set, which showed a dose response relationship, is a better choice than use of the Seyschelles Island data set, which showed no dose response relationship. Further, EPA believes that a benchmark dose approach, utilizing the information in the dose response curve, is superior to utilizing a NOAEL as the	

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				point of departure for RfD development. EPA's Integrated Risk Information System (IRIS), in presenting the derivation of EPA's MeHg reference dose, suggested that the point of departure upon which the MeHg RfD is based, a lower limit on the benchmark dose of 10 ppm, be divided by an uncertainty factor of 10. This uncertainty factor considers inter-individual variation and uncertainty in both MeHg dose response relationships (i.e. toxicodynamics) and transport and fate within the body (i.e. toxicokinetics). The IRIS methylmercury RfD derivation notes that that significant hair methyl mercury dose response relationships were observed using data from Faroe Island residents with hair MeHg levels of less than 10 ppm, supporting use of an uncertainty factor. Public health agencies may consider both adverse health effects and benefits associated with MeHg exposure. Specifically, fish consumption results in adverse health impacts due to MeHg toxicity, but also in the positive health impact of high quality protein and beneficial fish oil intake. Additionally, there are positive psychological and cultural aspects of subsistence fish harvest precluding consumption. In the case of introduction of mercury alone into the environment, there is no offsetting benefit, and a public health approach incorporating benefits is inappropriate. The MeHg RfD should thus be the endpoint of comparison for Native Alaskan hair MeHg levels.	
PHL 16	3.22-20	JS		Page 3.22 –20 ADHSS, Hair Mercury Monitoring (2012) in Potentially Affected Communities. The lowest dose of MeHg that impairs neurodevelopment in the human species is not known, Myers GJ. (1995) Main neurodevelopmental study of Seychellois children following in utero exposure to methyl mercury from maternal fish diet: outcome at six months. *Neurotoxicology*, 653. In the EIS table 3.22-6; Summary of Data Collected by Gender, Donlin Gold, 2012 the age range of the female population tested was 15-74 years. The data analyses are based on this population. What number of the women who	

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					had their hair mercury tested were of childbearing age? What conclusions can we draw from this subset of the women? It should be made clear that women who are not of child bearing age and men are not at risk here and comparing them in any way to the sensitive subset of women of child bearing age has no meaning.	
PHL 16	3.22.3.4.4	3.22-21	MJ	HEC 4: Food, Nutrition, and Subsistence Activity	For the middle-Kuskokwim River area, the ADHSS has issued fish consumption advisories for mercury in burbot and pike. The DEIS indicates that mercury concentrations in fish tissue could be up to three percent greater than current levels, and would be associated with an increase in mercury from fugitive dust and stack emission sources from the Donlin Gold Project. We have concerns that the actual mercury concentrations in fish tissue may be greater than the modelling results would suggest. We recommend that the EIS include a human health risk assessment for mercury to determine whether the estimated percent increase in fish tissue concentrations is within acceptable limits for human exposure and consumption. We recommend that the EIS disclose the limits for human consumption and exposure to mercury and that screening levels or thresholds be established to determine whether or not further monitoring would be required after adaptive management. Furthermore, we recommend long-term monitoring and fish tissue testing for mercury in the middle-Kuskokwim River area throughout the active mine life. We recommend that the EIS include a commitment for the project proponent to partner with the State of Alaska and the local communities to develop and implement a subsistence fish biological monitoring program and mercury biomonitoring for other sources of subsistence foods (e.g., birds, eggs, berries, and wildlife).	
PHL 5		3.22-22	JS		For STIs – page 3.22-22 – having a chlamydia be 89.4% of reported infectious diseases is not reflective of comparable incidence to infectious diseases in general because most infectious diseases are not reportable. This could be better	

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					framed with the comparison only to other reportable STIs.	
PHL 12	Table 3.22-8	3.22-23	JS		Has subsistence activity in the title, but it is not in the table. Definitions for food security levels are needed. Some explanation is needed for Stony River's food basket costs (125% of median income) and how that community works. It could indicate that this type of analysis may have limitations for these communities.	
PHL 21		3.22-24	JS		reports cancer rates. It appropriately identifies the limitation that the rates are unstable with low numbers, but the analysis still includes rates with decimal places, which implies much higher precision than is possible.	
PHL 20		3.22-24	JS		Mental health data is stated to be from the 2008-2010 BRFSS, but the reference used is from 2009. It is unclear how a reference published in 2009 could have included 2010 data. This reference is used in other places within the document, including the following section on diabetes rates.	
PHL 19 PHL 21		3.22-26	JS		Hospitalizations. Inpatient days (reported) are different than the number of hospitalizations. While hospitalization days may be important from a health care services standpoint, the number of hospitalizations from a particular disease would better characterize the relationship between rates of serious illness. Tobacco use – Impact on alcohol and drug use/abuse is discussed, but the impact on tobacco use is not discussed later in the analysis section despite acknowledgement that it occurs more frequently in the impacted communities.	
PHL 21	Figure 3.22-3	3.22-27	JS		is not readily interpretable.	
PHL 12		3.22-34	JS		Climate change section asserts a contribution to declination in moose and salmon. These statements would be better supported with a reference documenting the relationship.	
PHL 21		3.22-35	JS		"Health consequences related to changes in environmental conditions e.g., air quality, water quality, bioaccumulation in foods, are subject to modeling uncertainties. While the concentrations of chemicals under the baseline conditions may	

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					be known, future concentrations (e.g. as related to end-of-mine life, post closure) are estimated by using intentionally conservative modeling approaches. This approach is likely to overestimate the consequences of potential exposure to hazardous substances and is consistent with accepted regulatory approaches to evaluate chemical exposures.” Where in the EIS can the modelling performed and referenced here be found? It should be referenced here.	
SER 28	3.22.4.2.1	38	LK		EIS should provide a more detailed analysis of how Alaska Natives would receive economic benefits from gold mining activities. What are the requirements of jobs that would be available to ANs? What are the current abilities of ANs to function in those jobs? If there are deficits in the ability of ANs to fill these jobs, what training would be needed? Has there been an effort to determine whether or not ANs would want to take these jobs, including whether changes in lifestyle would be acceptable?	
SER 27 PHL 21 EDIT 5		3.22-39	JS		The statement that increases in economic opportunities could result in an increase in the number of individuals investing in education would be better supported with a reference. The statement that economic opportunities will provide better support access to health care could use some additional explanation in light of previous discussion about distance and lack of health care providers being the most significant barriers. The range (20-1900) of households associated with expected employment opportunities is quite large. There may be a typo in the number.	
PHL 10		3.22-39 to 42	JS		Pages 3.22 - 39 – 42, Social Determinants of Health Psychological Stress, Rates of Substance Abuse, Family Stress and Instability. “Based on regional hospital data in Bethel, the leading causes of impatient days were alcohol abuse, psychoses, pneumonia, and child birth,“ page 3.22 – 26. “The Bethel Census Area is designated as a Medically Underserved Area (MUA) and the Health Professional Shortage Area (HPSA)	

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					is 11." page 3.22 – 26. " There is also the potential for increases in psychosocial stress in the potentially affected communities, related to fear of changes in lifestyle and cultural practices, land encroachment, impact to natural resources,…and food security and quality." "The addition of new stressors…could potentially worsen existing metal health conditions…" Also, "in other places where the number of people have been employed at past and present mine sites the disposable income led to noticeable increases in drug and alcohol use…" page 3.22 – 41 In addition, "community interviews for other mine projects suggest long-term fly-in, fly-out work rotations can contribute to stress and instability in families." Page 3.22 -42. And although a benefit "may be noticeable in terms of being able to afford increased and faster access to and utilization of healthcare," the reality is that the existing health care capacity for mental health, substance abuse treatment, and family counselling are currently completely overwhelmed. Any additional stress to the system would have more than a medium health effect as defined as "minor benefit or minor injury that may not require intervention and the intensity of the impact would be low," page 3.22 – 42. The social determinants for health for Health Psychological Stress, Rates of Substance Abuse, Family Stress and Instability need to be re-evaluated taking into account a health system that is completely overwhelmed with current need and likely will be unable to absorb any additional workload.	
PHL 19	3.22.4.2.3	53	LK		There should be evaluation of antimony as well.	
PHL 17	Figure 3.22-4	55	LK		The chapter should specifically present the analysis of air levels of concern and why Donlin doesn't exceed them.	
PHL 16	Figure 3.22-4	55	LK		Results of quantitative analysis must be presented to support findings of insignificance. It is suggested that quantitative risk assessment procedures be employed with documentation of	

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					how exposure is calculated. In particular, there needs to be rigorous analysis of mercury releases to the environment with subsequent bioaccumulation in aquatic organisms.	
PHL 17		3.22-58	JS		The reference or data to the ambient mercury modeling would improve the analysis. CSM analysis. The completed pathways for hunter/forager were not extensively addressed.	
PHL 17	3.22.4.2.3	58	LK		Modeling of air emissions should be reviewed. Missing is a discussion of deposition of mercury and subsequent bioaccumulation.	
MON 9	3.22.42.3	59	LK		Derivation of predicted water concentrations should be reviewed. What type of monitoring will be implemented?	
MON 3	3.22.42.3	60	LK		Procedures for minimization of ground water impacts should be reviewed. What about accidental releases from tailing pond facilities or releases to ground water? What type of monitoring will be implemented?	
PHL 18	3.22.42.3	60	LK		Water treatment processes to attain AWQC should be documented and the feasibility of implementing them should be discussed. A modeling approach to evaluate whether or not the mercury tissue criterion is met should be evaluated. The health protectiveness of the mercury tissue criterion should be evaluated in light of the fish consumption practices of Alaska Natives.	
PHL 17	3.22.42.3	60	LK		What about modeling Hg air deposition and subsequent methylation and bioaccumulation?	
GRD 13		3.22-61	JS		Under Construction states, "There is no consumption of groundwater within the mine site area by local communities. Offsite migration of contaminated groundwater would not occur since the onsite ground water would be captured and treated to AWQC prior to discharge to Crooked Creek."	
PHL 16	3.22.42.3	61	LK		The discussion of ground water movement and conclusions about protectiveness to be critically reviewed.	

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PHL 21		3.22-62	JS		Under Operation and Maintenance says "ground water would be captured and treated on site." And under Closure, Reclamation, and Monitoring, " on-site groundwater that requires storage and treatment would be captured and remain onsite." It would be helpful to reference here where in the EIS is the manner in which groundwater will be collected, treated and discharged (or not) described.	
PHL 16	3.22.42.3	62	LK		Why is it unlikely that shallow groundwater will not be used for drinking?	
PHL 16	3.22.42.3	63	LK		The derivation of the ADEC soil levels should be presented and reviewed relative to EPA risk assessment approaches and site specific conditions.	
PHL 16	3.22.42.3	63	LK		The derivation of the incremental risk posed by arsenic needs to be clearly presented.	
PHL 16	3.22.42.3	64	LK		The non-cancer hazard of arsenic should also be discussed.	
PHL 16	3.22.42.3	64	LK		This section should mention Pike, for which there is already a fish consumption advisory associated with mercury contamination.	
PHL 18	3.22.42.3	64	LK		Arcadis' analysis of fish tissue mercury uptake as a result of mining operations should be critically evaluated.	
PHL 16	3.22.42.3	66	LK		The comparison of mercury hair results should be to the hair mercury concentration associated with the EPA reference dose of approximately 1 ppm, not the ATSDR value.	
PHL 19	3.22.42.3	67	LK		What about contaminant movement from ground water to surface water?	
SER 28	3.22.42.3	73	LK		There should be better documentation of the potential for Alaska Natives to work on the mine.	
PHL 5		3.22-74	JS		Access to Quality of Subsistence Resources states, "The effect of the project on subsistence activities suggests that the net benefits may be realized since increased incomes would make	

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PHL 12 PHL 5 PHL 5					procurement of hunting and fishing equipment more affordable and the actual area of impact related to the project activities is limited to a few square miles within the context of a much larger area of available natural resources." There are a number of assumptions made here. The assumption that the impact on subsistence from the project would be limited to the footprint of the project is unbelievable. Food security analysis. The underlying assumption that economic activity will provide improved access to better nutrition could be better supported, and the support would be best if it drew upon studies specifically in communities with high rates of subsistence food gathering/consumption. Additionally, the outcome of "decrease in region food cost as a percentage of median income" appears less relevant in places where subsistence/traditional food gathering practices account for a substantial proportion of calories/nutrition. STI analysis. It would be better supported if evidence existed that showed that having a mix of rotating workers and local workers in an area that already has higher than state rates of STIs would not result in more STIs. The statement that those affected could adapt to the impact by obtaining medical care is somewhat at odds with previous analyses showing difficulty obtaining medical care. Furthermore, while chlamydia may be treatable, the high prevalence of STIs may indicate behaviors that increase the likelihood of transmission. Other STIs could blossom in this environment. For all of the infectious disease analyses, some discussion about the type of housing and quarters at the mine site and how it facilitates or prevents disease transmission would strengthen the ability to make conclusions about infectious disease rates.	
PHL 21	3.22.42.3	74	LK		Scour damage to fish spawning areas and impacts of barge traffic on nets need better characterization.	

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FISH 9	3.22.4.2.11	97	LK		With regards to monitoring of mercury in fish, it will be important to develop a robust baseline data set.	
WAQ 8	Table 3.22-27	104	LK		Modification of waste such that active measures in perpetuity were no longer needed to contain hazardous chemicals would be highly desirable.	
	3.23 Transportation					
	No Comments					
	3.24 Spill Risk					
FSR 17	3.24.3	3.24-12	MJ	Spill Frequency and Volume	According to the DEIS, spill frequency and volumes are qualitative assessments based on the rate or frequency of occurrence, which includes factors, such as operating procedures, personnel training and awareness, maintenance, and human error. We recommend that the spill frequencies and volumes evaluated in the DEIS be based on real spill incidents that have occurred at active mine sites and/or other industrial facilities in Alaska, the United States, and abroad. The frequency and volume of reported spills and spills at regulated facilities in Alaska should be discussed in the EIS. For example, in May 2010, a cyanide water spill of over 300,000 gallons occurred at the Fort Knox Mine due to a failure in the automated process control system. This example of a real spill scenario should be used in the spill risk analysis for cyanide. In addition, we recommend that the EIS include actual spill frequencies and volumes associated with incidents from ocean vessels, river barges, tank farms, and tank trucks, and other mining and industrial facilities. The Alaska Department of Environmental Conservation (ADEC), Division of Spill Prevention and Response maintains a database of reported spills and spills at regulated facilities. ADEC issues an annual summary of oil and hazardous spills for Alaska.	

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EDIT 5	Table 3.24-3	18	cg		No units are provided for volume	
MIT 27	3.24.5	3.24-38	MJ	Spill Scenarios	In Southwest Alaska, there are no industrial operations at the scale of the proposed Donlin Gold Project. We have concerns that the area is remote and no infrastructure exists and the capacity for responding to spilled substances is very limited. Due to Federal and State regulations, statewide capacity for oil spill response is well established. However, there are no similar spill response requirements for the response of spills for LNG, cyanide, mercury, and mine tailings. Due to the gaps in response capacity, we recommend that the EIS include a commitment for the project proponent to work with the local communities to develop regional response capabilities and response plans for accidental releases and spills of LNG, cyanide, mercury, and mine tailings. Spill response planning should include, training local responders, engaging in community response exercises, prevention, and monitoring. The location and type of pre-deployed response and clean up equipment should be identified in the EIS.	
FSR 15	3.24.5.5.2	44	cg	It is probable that there could be 10-mile or longer stretches without valves.	Are these automated or manual valves	
CLIM 11	3.24.6.4	3.24-64	MJ	Climate and Meteorology	The DEIS evaluates the impacts associated with low probability, high consequence spill scenarios with an ocean barge rupture at sea, river barge release, tank farm release, tanker truck release, diesel pipeline release, LNG release, cyanide release, mercury release, and a partial tailings dam failure. We recommend that the spill scenarios be qualitatively and quantitatively evaluated in the EIS as they may represent a potential contribution to GHG emissions and climate change impacts, particularly spills of diesel fuel from barges, tank farms, trucks, and pipelines.	
EDIT 5	3.24.6.2.4	64	cg	The BTC Road would be approximately 2.5 times longer than	The BTC is only 1.5 times longer than the Jungjuk road.	

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			the mine access road proposed under Alternative 2.		
EDIT 5 3.24.6.6.4	76	cg	The risk of a tanker truck release would be increased because of the increased one-way haul distance of 75 miles, as compared to 30 miles under Alternative 2.	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the road is 76 miles long so the increased haul distance is 46 miles not 75.	
EDIT 5 3.24.6.6.4	76	cg	risks from a tanker truck release under Alternative 4 would be approximately 2.5 times larger than those exposed under Alternative 2 as a result of the longer BTC Road	If the 2.5 times larger risk is predicated on the road being 2.5 times longer, then the risk should be 1.5 times because the road is only 1.5 times longer.	
EDIT 5 3.24.6.8.4	112	cg	The risk of a tanker truck release would be increased because of the increased oneway haul distance of 75 miles, as compared to 30 miles under Alternative 2.	Chapter 2 (Section 2.3.5) and Section 3.23 (Transportation) says the road is 76 miles long so the increased haul distance is 46 miles not 75.	
EDIT 5 3.24.6.9.4	116	cg	The BTC Port road would be approximately 2.5 times longer than the road proposed under Alternative 2.	The BTC is only 1.5 times longer than the Jungjuk road.	
3.25 Pipeline Reliability and Safety					
No Comments					
3.26 Climate Change					
General Comments					
Scope of Analysis		MJ	The DEIS includes quantitative GHG emissions for the proposed action but does not include quantitative estimates of GHG emissions for the alternatives (3A, 3B, 4, 5A, and 6A). We recommend that the EIS quantify the direct and indirect GHG emissions for the action alternatives and for each phase of development (e.g., construction, operations, maintenance, closure and reclamation). Also, we recommend that the Comparison of Impacts by Alternatives (Table 3.8-33) summarize the GHG emissions for the proposed action and each alternative. We recommend that the EIS include a detailed inventory of the direct and indirect, emissions of each individual contributing source (e.g., mobile, stationary and fugitive) and the respective quantitative emissions from each project phase. We recommend that the scope of analysis for the climate change impacts of the proposed action include all emissions sources (fugitive, mobile, and stationary) from river barges and ocean vessels, air and land transportation, heavy equipment, and aboveground facilities that support the construction, operations and maintenance, and closure and reclamation of the Donlin Gold Project (mine site, transportation facilities, and pipeline). In particular, we recommend that the EIS include the GHG emissions from air and ocean barge transportation of fuel and cargo from the lower 48 United States (Seattle, Washington) and Canada (Vancouver, British Columbia) to the mine site. The proposed expansion of the fuel storage and marine ports at Bethel and Dutch Harbor are considered connected actions in the DEIS. We recommend that the EIS include an analysis of	

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			GHG emissions from these connected actions. We also recommend that the analysis include the GHG emissions associated with the final purification of the gold doré bars and transportation to the refinery.		
CLIM 3	Carbon Sources and Storage	MJ	The CEQ revised draft guidance definition of "emissions" includes releases of stored GHGs as a result of destruction of natural GHG sinks such as forests and coastal wetlands, as well as future sequestration capability. The biological resources in the project area may represent substantive storage, and/or sinks (sequestration) for GHGs. When biogenic resources are disturbed during project construction and/or operations and maintenance, these carbon storage or sink areas become sources of carbon emissions. Whereas, during closure at the end of mine life, reclamation of disturbed aboveground facilities may result in the conversion of a carbon source to carbon storage or sinks. We recommend that the EIS quantitatively and qualitatively evaluate the carbon storage and sequestration capacity of the biogenic resources for the No Action Alternative. This information would serve as a baseline to compare the carbon storage and sequestration capacity of the No Action Alternative against the proposed action and the action alternatives. For example, the DEIS indicates that as permafrost soils warm, organic carbon reservoirs trapped in the ice are mobilized, causing carbon dioxide and methane to be released into the atmosphere. The total amount of permafrost soils along the pipeline that are predicted to thaw during operations and closure is 37 million tons with an additional 9 million tons of permafrost soil predicted to thaw during operations and closure (Page 3.26-43). For the proposed action and action alternatives, we recommend that permafrost soils and other biogenic resources, such as vegetation, wetlands and aquatic resources be quantitatively and qualitatively evaluated for the potential GHG emissions (CO_2-equivalent/acre) during project construction, and operations and maintenance.		
CLIM 11	Emissions from Spill Scenarios	MJ	Chapter 3.24 (Spill Risk) evaluates the impacts associated with low probability, high consequence spill scenarios with an ocean barge rupture at sea, river barge release, tank farm release, tanker truck release, diesel pipeline release, LNG release, cyanide release, mercury release, and a partial tailings dam failure. We recommend that the spill scenarios be qualitatively and quantitatively evaluated in the EIS as they may represent a potential contribution to GHG emissions and climate change impacts, particularly spills of diesel fuel from barges, tank farms, trucks, and pipelines.		
CLIM 3	Emissions Targets	MJ	The ability to meaningfully articulate emission reductions would be a valuable component of a mitigation package. One approach we suggest is that the EIS identify reasonable GHG emission reduction targets or goals for some or all project components (e.g., mine, transportation facility, and pipeline) and development phases (e.g., construction, operations, maintenance, closure and reclamation). As the project progresses, periodic reports could show progress toward reaching the targets.		
MIT 18	Mitigation Measures	MJ	Chapter 5 (Impact Avoidance, Minimization, and Mitigation) includes design features (Table 5.2-1), mitigation measures (Table 5.5-1), and monitoring and adaptive management plans (Table 5.7-1) to mitigate impacts associated with the project. We recommend that the EIS further identify and describe measures for reducing and mitigating GHG emissions and climate change effects such as evaluating enhanced energy efficiency, lower GHG technology, and renewable energy. We recommend that the		

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				EIS disclose GHG reductions associated with such measures. EPA further recommends that the Record of Decision commit to implementation of reasonable mitigation measures that would reduce project-related GHG emissions.		
PAA 60	Reducing Emissions		MJ	The DEIS evaluates action alternatives that have the potential to minimize impacts to the environment. Alternative 3A (LNG Powered Haul Trucks) was carried forward for analysis because it would reduce the frequency of diesel fuel barging on the Kuskokwim River. This alternative may serve to reduce overall project GHG emissions and climate change impacts. Alternative 3A evaluates the use of natural gas powered trucks (+300-ton payload) that would move waste rock and ore from the open pits. These large trucks account for 75 percent of the total project diesel consumption. The conversion to natural gas powered trucks would reduce the diesel fuel consumption and increase natural gas usage by 28 percent. The reduction of diesel fuel required for operations could potentially reduce river barge traffic by 32 percent. Furthermore, truck traffic on the gravel road would be reduced by 75 percent, which would also result in a reduction of fugitive dust emissions. Alternative 3A could potentially reduce GHG emissions associated with river barges, trucks and fugitive sources. The DEIS indicates that Alternative 3A would not include using LNG for the trucks hauling cargo and fuel on the mine access road from Jungjuk Port. We recommend that Alternative 3A include the use of LNG for all vehicles and trucks and that the EIS disclose the quantitative estimates of GHG emissions associated with Alternative 3A. We recommend incorporating Alternative 3A into the proposed action as a measure for reducing overall project GHG emissions. Reclamation and revegetation of certain disturbed areas, such as the waste rock facility and the tailings storage facility could reduce the overall project climate change impacts and result in the conversion of a carbon emission source to carbon storage or sink. We recommend that the EIS qualitatively and quantitatively evaluate mitigating climate change impacts through the reclamation and revegetation of disturbed areas, including wetland enhancement or restoration, and potential conversions from carbon source to carbon sink. In July 2015, the EPA launched the Natural Gas STAR Methane Challenge. This is a new voluntary program for reducing methane emissions. Methane, the primary component of natural gas, is a potent greenhouse gas with a global warming impact 25 times that of carbon dioxide. Companies who sign up for the program agree to make commitments for methane emission reductions, with accountability and transparency in progress in achieving those commitments, and with the potential for public recognition for leadership in reducing GHG emissions in the United States.		
CLIM 4	Climate Change Resilience		MJ	We recommend the Corps consider modifications to the design of the proposal to incorporate resilience to foreseeable climate change. For example, the DEIS states that permafrost is predicted to thaw within the project area. Permafrost stability or anticipated changes to existing permafrost conditions can affect settlement and ground stability characteristics that would in turn significantly influence design and construction of project components such as facilities and infrastructure.		
CLIM 6	Table 3.26-1	3.26-7	MJ		Throughout the Climate Change section (3.26), the DEIS compares total expected project level GHG emissions with estimated Alaska, U.S and global GHG emissions. The DEIS also compares the expected project level GHG emission with	

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					major industrial sectors in Alaska. We recommend that the EIS not include the broader comparisons. These comparisons obscure rather than explain how to consider GHG emissions under NEPA. Climate change is a global problem resulting from the emissions of many individual sources whose impacts are cumulative. The environmental impacts are best described by using emissions as a proxy to compare the proposal, alternatives, and potential mitigation.	
CLIM 3	3.26.4.2	3.26-25	MJ	Alternative 2 – Donlin Gold's Proposed Action	DEIS has disclosed projected quantitative estimates of GHG emissions (as CO_2-equivalent) for the construction, operations, maintenance, and closure phases of the mine site; the construction, operations, and maintenance for the transportation facilities (on land, air and river); and the construction, operations and maintenance phases for the pipeline. Chapters 3.8 (Air Quality) and 3.26 (Climate Change) provide a summary of the quantitative estimates of GHG emissions for Alterative 2, the proposed action. We recommend that the EIS include a description of the tools, methodology, models, and scientific research information used to quantify these emissions.	
	3.27 Other Impact Considerations					
	No Comments					
	Chapter 4. CUMULATIVE EFFECTS					
EDIT 6	4.2	1	cg	The purpose of cumulative effects analysis is	The purpose of the cumulative effects analysis is	
NEP 6	4.2.1	4=2	MJ	Temporal and Spatial Scope of Analysis	We recommend that the cumulative effects spatial analysis area (Figure 4.2-1) be expanded to include the ocean vessel traffic route and potential direct, indirect, and cumulative impacts from the lower 48 United States (Seattle, WA) and Canada (Vancouver, BC) to/through Dutch Harbor and Bethel, as mentioned in Table 4.2-1. The analysis area should also	

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					include the transportation of the gold doré bars for final refinement, which is a reasonably foreseeable future action. Since pipeline supplies would be brought in through Port MacKenzie and/or the Anchorage Port in upper Cook Inlet, the direct, indirect, and cumulative impacts associated with these facilities and activities should be evaluated in the EIS.	
NEP 6	Table 4.1-1		MJ		The DEIS describes the past, present and reasonably foreseeable future actions considered in the cumulative effects analysis. We recommend that the estimates of GHG emissions for these past, present, and reasonably foreseeable future actions be quantified and disclosed in the EIS, to the reasonable extent possible. This information is necessary to understand the cumulative effects of climate change impacts in the region and the contributions for GHG emissions from the Donlin Gold Project.	
EDIT 6	4.2.1	4-3	MJ	Text references Figure 4.2-1	On Page 4-4 is the actual figure, but the caption shows Figure 4.3-1.	
EDIT 6	4.3.1.1.1	13	cg	The BTC Road is 43 miles longer than the mine access road	The description of Alternative 4 on page 2-152 says the road is 46 miles longer	
EDIT 6	4.3.1.1.1	13	cg	While the BTC Road would utilize gravel aggregate sourced from 5 material sites compared to only 1 for the mine access road under Alternative 2,	Table 2.3-9 list 14 material sites for the A(J) road while Table 2.3-37 lists 50 for BTC road	
EDIT 6	4.3.1.1.2	15	cg	There are 25 bedrock material sites along the BTC Road	Table 2.3-37 lists 50 material sites for the BTC road, are only half of them bedrock material sites?	
EDIT 6	4.3.1.1.2	15	cg	Alternatives 2 and 5Aat	Alternatives 2 and 5A at	
EDIT 6	4.3.1.2.1	18	cg	the 73-mile long BTC Road would be about 43 miles longer than the mine access road under Alternative 2.	The description of Alternative 4 on page 2-152 says the BTC road is 76 miles long so is 46 miles longer	
EDIT 6	4.3.1.2.1	18	cg	and more major stream crossings requiring bridges under Alternative 4	but Alternative 4 has fewer stream crossings overall so fewer culverts which have some erosion potential	
EDIT 6	4.3.1.2.1	18	cg	A more robust Erosion Sediment and Control Plan and BMPs	ESC previously used for "Erosion Sediment and Control" but not	

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					previously short cited in this chapter	
EDIT 6	4.3.1.2.2	21	cg	The 73-mile long BTC Road would be about 43 miles longer than the mine access road under Alternative 2, or about 2.4 times longer,	The description of Alternative 4 on page 2-152 says the BTC road is 76 miles long so is 46 miles longer and as such is 1.53 times longer	
EDIT 6	4.3.1.5.2	26	cg	effects in the Kuskokwim watershed above the BTC Port under Alternative 3A;	A port is not proposed at BTC in this alternative	
CLA 32	4.3.1.7.2	29	cg	creation of the WRF, TSF, and pit lake; however, due to perpetual management and water treatment, water from these facilities would not leave the onsite watersheds. Effects from mine site waters on the environment would be mostly of low intensity, as all water would be treated to meet water quality standards prior to discharge to Crooked Creek.	did this mean to say 'untreated water' would not leave the onsite watersheds? or is Crooked Creek counted as an "onsite watershed"?	
EDIT 6	4.3.1.7.2	32	cg	The 73-mile long BTC Road would be about 43 miles longer than the mine access road under Alternative 2,	The description of Alternative 4 on page 2-152 says the BTC road is 76 miles long so is 46 miles longer	
WAQ 29	4.3.1.7.3	33	cg	in groundwater are higher in the vicinity of the Donlin ore body than outside this zone; conditions that are expected to be similar at other mines	Should "mines" be "ore bodies" since not every orebody becomes a mine but most ore bodies impact ground water in the vicinity	
WET 1	4.3.2.2.1	38	cg	have removed some wetlands and introduced or spread invasive species.	The highlighted text was also included in the vegetation section, should it be here too?	
EDIT 6	4.3.3.6.2	51	cg	from Alternative 2with	from Alternative 2 with	
PHL 2	4.3.3.8	4-52	MJ	Human Health	Since the HIA was not included in the DEIS for public review, we are not certain how cumulative effects have been evaluated for human health. We recommend that the cumulative effects of multiple sources, pathways, and exposures from past, present and reasonably foreseeable future actions, including mine operations and accidental chemical spills, to humans be evaluated in the EIS. A risk based assessment should be conducted to evaluate all potential sources, pathways, and routes of human exposure to contaminants from air, water,	

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					and subsistence foods. We recommend that the EIS describe the acceptable limits for contaminant exposure to subsistence foods and water. Biological monitoring of human health should be conducted to evaluate the cumulative impacts during the active mine life and post closure.	
CLA 3		52	JS		The statement that the geographic area of analysis for health is the state of Alaska appears different than the analysis section.	
PHL 21		53	JS		It is unclear how a broad statement about the health impact of the reasonably foreseeable actions can be made without analyses done to support that claim. As an example, climate change is noted to be a reasonably foreseeable action, and then a statement is made that reasonably foreseeable actions would likely induce minimal changes to human health in this area. No support is given for this statement.	
EDIT 6	4.3.3.8.1	53	cg	Alternative 2 would have medium direct indirect impacts	Should it be "direct and indirect" or one or the other?	
CLIM 3	4.3.4	55	MJ	Cumulative Effects and Climate Change	The DEIS (Table 4.2-1) describes the past, present, and reasonably foreseeable future actions considered in the cumulative effects analysis. We recommend that the estimates of GHG emissions for these past, present, and reasonably foreseeable future actions be quantified (CO_2-equivalent) and disclosed in the EIS, to the reasonable extent possible. This information is necessary to understand the cumulative effects of climate change impacts in the region and the contributions for GHG emissions from the Donlin Gold Project.	
EDIT 6	4.3.4.2	56	cg	described in above Section 4.2.2, Affected Environment.	described in Section 4.2.2, Affected Environment, above.	
	Chapter 5. Impact AVOIDANCE, MINIMIZATION, AND MITIGATION					
MIT 8	General Comment		MJ	The DEIS should clarify the design features, mitigation measures, monitoring and adaptive management that would address NEPA and CWA Section 404 permitting requirements. We recommend that the EIS include additional discussion regarding how the proposed design features and mitigation measures under the NEPA requirements will be monitored, tracked, and reported by the project proponent and permitting agencies. We recommend a commitment be made in the EIS that a **Mitigation Implementation Plan** would be developed for the		

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				proposed design features, mitigation measures, and BMPs during project construction, operations and maintenance, and closure. We encourage the project proponent to actively engage the local communities in conducting the monitoring activities. The EIS should include a commitment to develop an Annual Mitigation Report that would be presented to the tribes, the public and the agencies for review. The **Mitigation Report** should track and summarize the successes and problems with each type of mitigation, and should include recommendations for additional design features, mitigation measures, and BMP, as appropriate, to address future project needs and requirements. The Mitigation Report should outline an adaptive management approach where successful mitigation measures would no longer require monitoring, and that monitoring efforts would shift to those design features, mitigation measures, and BMPs to achieving success.		
MIT 3	Table 5.2-1	6	cg	Alaska Native shareholders (minority and low income).	What comparison was made to determine that Alaska Native shareholders are a minority population?	
MIT 1	5.2	8 & 9	KW	Table 5.2-1: Design Features; specifically A24, A26	What are the assurances that these design features will be carried out? Elaborate on how the applicant and regulatory agencies will ensure these design features will be carried out as proposed. We suggest a mitigation design feature reporting plan which documents whether or not such measures were carried out and if not why. This is important as these design measures were considered in the ranking of the various alternatives in terms of environmental consequences. Failure to carry out some of these designs may be grounds for additional mitigation requirements post mining. We request there be additional discussion which details how design feature implementation will be monitored and tracked by the applicant.	
MIT 3	5.2	5-9	KW	M1: In final design, site infrastructure, material sites, and roads would avoid ground-disturbing activity in wetland areas whenever practicable. Details would be developed as the mitigation plan is developed and as design and permitting progress. Those details do not exist at the DEIS stage.	We request there be additional discussion which details how design feature implementation will be monitored and tracked by the applicant.	
MIT 3	5.2	5-11	KW	M11:The 404(b)(1) analysis will document the steps taken to minimize wetlands impacts.	Cite where this specific analysis is located in the DEIS and where specifically in the 404 application.	

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EDIT 7	5.3	19	cg	The Alaska Department of Natural Resources' (ADNR's)	ADNR previously used without short citing	
EDIT 7	5.3	19	cg	required by the Alaska Department of Environmental Conservation (ADEC)	ADEC previously used without short citing	
MIT 4	5.5	22-32	KW	Table 5.5-1: Mitigation Measures being Considered by the Corps: The information in these columns is an initial assessment that will be modified and/or further detail added based on agency and public review comments.	Under feasibility/likelihood of effective implementation it would be more informative if information was provided on the potential success of the mitigation or the level of environmental lift an activity might provide. A ranking system would be appropriate and put the proposed measures into prospective.	
MIT 7	5.5	22	KW	Table 5.5-1 Mit 1: Restore flat-to-gently sloping wetlands by removal of fill at project closure where feasible. Removed fill would be moved to approved upland areas. Details would be developed as Donlin Gold's Conceptual Compensatory Mitigation Plan is developed and as design and permitting progress. Those details do not exist at the DEIS stage.	Will this may be a measure that can be legally required through a permit and practicably carried out, we request there be some discussion or ranking of the feasibility in terms of actually restoring wetlands in the post mining landscape and the potential success of that mitigation given the information provided in the Wetlands section on environmental consequences (i.e. the inability in restoring fen and bog wetlands and the difficulty in restoring wetlands in general). This table should provide some indication of the overall uncertainty of implementing the measures proposed and the level of analysis that still needs to occur to determine if a measure is even possible (e.g. propagation and test plot success (variable)).	
MIT 2	5.5	33	KW	As discussed in Section 3.11.1 Wetlands, and Appendix M, Donlin Gold has developed a conceptual Compensatory Mitigation Plan in coordination with federal, state, and local governments and landowners.	Wetlands are not the only resources requiring mitigation. Where is the discussion of stream mitigation? Please reference where and if stream mitigation is discussed in other sections of the mitigation outside of Appendix M. Stream mitigation should be referenced here as well.	
EDIT 7	5.6	33	cg	40 CFR Part 230 (U.S. Environmental Protection Agency [EPA]).	EPA previously short cited on page 5	
	Chapter 6. CONSULTATION AND COORDINATION					
	No Comments					

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Chapter 7. LIST OF PREPARERS					
No Comments					
Chapter 8. DISTRIBUTION					
No Comments					
Chapter 9. REFERENCES					
GLOSSARY OF TERMS					
No Comments					
APPENDICES					
A. FINANCIAL ASSURANCE					
BER 8 General Comment		MJ	The EPA appreciates that the DEIS provides disclosure of the financial assurance (FA) cost estimates associated with implementing the reclamation and closure plan and long-term monitoring (Appendix A). We also note that the FA includes the costs associated with the removal, abandonment, and reclamation of the natural gas pipeline. The Standardized Reclamation Cost Estimator (SRCE) model was used to calculate the FA costs for mine closure. The FA assumes partial backfilling of the open pit and modification of tailings operations at the end of the mine life. If the mine were to close prematurely, the modifications and operations would not have been performed and the actual maximum cost of reclamation might occur under such circumstances, which may also include not having completed planned pit backfilling or final tailings deposition. We recommend the EIS disclose whether this represents a reasonable maximum cost scenario that should be considered by a pre-mature mine closure scenario. Furthermore, the EIS should discuss how a premature mine closure would affect financial assurance for closure and reclamation and payments to establish the Donlin Gold Trust Fund for long-term monitoring (Appendix A). It is our understanding that models have been used to evaluate the financial assurance estimates during different timeframes of the active mine life. A figure outlining funding throughout the active mine life and closure should be included in the EIS.		
BER 10 Appendix A	6	MJ	The indirect costs, which is expressed as a percentage of direct costs and range from 8% to 40%.	Donlin has indicated that the indirect costs applied to the SRCE model calculation is 27 percent. EPA has also been involved with the FA estimates for the Greens Creek Mine in Southeast Alaska, which utilized an indirect cost of 41 percent. Some of the differences are explained by the project scale (larger projects result in less indirect costs as a percent of	

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				direct costs). We recommend that the EIS discuss the reasons for the differences in indirect costs as applied to the two mine sites in Alaska.	
B. SCOPING REPORT					
No Comments					
C. ALTERNATIVES DEVELOPMENT PROCESS					
No Comments					
D. PIPELINE ENGINEERING STRIP MAPS					
No Comments					
E. PHMSA ENCLOSURE B					
No Comments					
F. SOILS					
No Comments					
G. STREAM CROSSINGS DATA TABLES					
No Comments					
H. GEOCHEMISTRY					
No Comments					
I AIR QUALITY					
No Comments					
J. USACE Section10 Rivers and Harbors Act/Section 404 Clean Water Act Permit Application					
General Comments					
CWA 5		MJ	The current information and analysis in the DEIS is not adequate to fully evaluate the potential adverse impacts to wetlands and aquatic resources under the CWA Section 404(b)(1) guidelines. In addition, the conceptual compensatory mitigation plan is not adequate since the wetlands jurisdictional determination has not been approved. The Corps' proposed changes to the wetlands functional assessment methodology and estimates of wetland impacts		

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CWA 5 (con't)				evaluated in the DEIS would result in the development of substantively new information and analysis in the EIS in Chapter 3.11 (Wetlands). It is our understanding that a supplemental, revised and/or corrected public notice will be issued if changes in the application data would affect the public's review of the proposed action (see 33 CFR 325.2, 325.3). Furthermore, potential project modifications after public review and comment of the DEIS may require the project proponent to submit a revised Section 10 Rivers and Harbors Act/Section 404 Clean Water Act application to the Corps at the EIS stage. For actions subject to NEPA, where the Corps is the permitting agency, the analysis of alternatives required for NEPA documents, including supplemental Corps NEPA documents, will in most cases provide the information for evaluating alternatives under the 404(b)(1) Guidelines. On occasion, however, these NEPA documents may not have considered the alternatives in sufficient detail to respond to the requirements of the Guidelines. In the latter case, it may be necessary to supplement the NEPA documents with this additional information [40 CFR 230.10(a)(4)]. In summary, the current information and analysis in the DEIS is insufficient to fully evaluate adverse impacts to wetlands and aquatic resources under the CWA Section 404(b)(1) guidelines. We therefore recommend that the Corps provide complete and accurate information when it is available, and release the revised analysis for public review comment and make sure that the new information is captured in the EIS. Doing so will provide the public with an opportunity to review and comment on the new information and analysis, and potential project changes prior to the issuance of the Record of Decision and the CWA Section 404 permit.		
NEP 5	Withdraw PN		MJ	We recommend that the Department of Army PN issued with the DEIS be withdrawn. We recommend that the Corps issue a supplemental, revised or correct PN for review and comment with new information in the EIS regarding the wetlands functional assessment and accurate estimates of wetland impacts.		
CWA 1			KW	The DEIS does not appear to contain the full ACOE 404 application. For example, the sections referenced in the Blocks on Form ENG 4345 are not included in the DEIS or available on the donlingoldeis.com website (e.g. Section 1.0 & 2.0 supplemental information and Appendix A). The DEIS needs to include the full 404 application rather than the summary of changes made since the 2014 application submission.		
PUB 2	Cover page	Cover page	KW	Updated drawings showing the proposed project plans and footprint overlain on mapped wetlands as well as typicals and cross sections can be accessed at www.DonlinGoldEIS.com.	Be specific as to where these are exactly on the website (i.e. /EISDocuments "Section 10/404 Draft Permit Application Drawings"). Considering the amount of information on the site it was not easy to find.	
CWA 1	5	5	KW	A stand-alone final permit application that includes relevant updates will be submitted following completion of the revised PJD.	Provide a schedule for the anticipated completion of the revised PJD and submission of a final application. The EIS needs to clarify the status of the 404 application throughout *the entire document*. The schedule should reflect and document that the 404 application has been submitted to the Corps and deemed complete enough by the Corps to be put on	

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					public notice.	
	K. WETLANDS ADDITIONAL TABLE					
	No Comments					
	L. Wetlands Pipeline Strip Maps					
	No Comments					
	M. Compensatory Mitigation Plan					
	General Comments					
MIT 7	Mitigation Rule Requirements		MJ	In 2008, the Corps and the EPA jointly issued a new rule on *Compensatory Mitigation for Losses of Aquatic Resources* (Mitigation Rule). The mitigation rule establishes performance standards and criteria for the use of mitigation banks, in-lieu fee mitigation programs, and permittee-responsible mitigation (e.g., restoration, enhancement, establishment, and preservation) to improve the quality and success of compensatory mitigation projects. We recommend that the EIS disclose how the Corps plans to evaluate the requirements of the mitigation rule and the compensatory mitigation for the Donlin Gold Project. EPA notes the inclusion of the Conceptual Compensatory Mitigation Plan (CMP) in the DEIS (Appendix M). We have concerns that the mitigation banks and In-Lieu Fee programs proposed in the DEIS and the CMP either have not been approved by the Corps and/or are not currently active. We recommend that evaluation of additional compensatory mitigation options be included in the CMP and the EIS. The CMP should take a watershed approach to evaluating the temporal loss of wetlands and aquatic resource functions and values, and demonstrate that all direct, indirect, and cumulative impacts to wetlands and aquatic resources functions and values have been adequately replaced. Temporal losses would need to consider that newly restored wetlands would not have similar functional capacity as the original pre-disturbed wetlands for decades.		
MIT 7	Permittee Responsible Mitigation		MJ	At this time, Permittee Responsible Mitigation (PRM) may be a viable option for compensatory mitigation. We recommend that PRM plans and activities in the CMP focus on the following: (1) restoration of previously existing wetlands or waters; (2) enhancing or improving functions of existing wetlands or waters; (3) creation of new wetlands or waters; and (4) preservation of existing wetlands or waters. We recommend that the CMP discuss how PRM would be monitored to ensure project success in meeting certain performance standards, and to address any restoration problems through corrective actions. Additional PRM options include evaluation of river bank enhancement and restoration projects for the Kuskokwim River, Crooked Creek, and other impacted surface waterbodies within the project watersheds. Mine site facilities, such as the contact water ponds, diversion ditches, ore stockpile berms, should be fully restored to functional wetlands and aquatic resources.		
MIT 7	Stream Bank		MJ	As part of the CMP to offset losses to wetlands and aquatic resources under CWA Section 404, we recommend the evaluation of stream bank habitat restoration of the Kuskokwim River and Crooked Creek. Using the baseline bank erosion information		

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	Restoration			attributable to these barge operations, we recommend that the project proponent coordinate with local communities to identify, inventory, and map segments of the river where significant bank erosion has occurred. We recommend that monitoring activities focus on river erosion rates and new areas of erosion and that the EIS and CMP further describe the frequency and methods of monitoring. We recommend that a process be in place to prioritize stream bank restoration projects, as described in the CMP.		
MIT 21	Mitigation Banks		MJ	A mitigation bank is another viable option to provide compensatory mitigation to offset impacts to wetlands and aquatic resources. We recommend the project proponent develop its own mitigation bank for the Donlin Gold Project. This could be accomplished by developing a mitigation banking prospectus and instrument for an entity to purchase wetland property for preservation and/or restoring, enhancing, and/or creating additional wetlands in the impacted watershed areas. The mitigation bank should include a functional assessment method to determine the level of credits available to offset the project impact debits.		
BER 12	Corps' Bonding Authority		MJ	If the CMP is determined not to be acceptable in the Corps' Record of Decision, then we recommend the Corps use their bonding authority as described in Regulatory Guidance Letter (RGL) 05-1. This RGL supports the use of financial assurance and includes suggested language for special permit conditions to establish a funding mechanism to provide compensatory mitigation to offset wetland impacts during the project lifecycle. We recommend the Corps establish a bonding and financial assurance instrument for compensatory mitigation prior to permit issuance. The Alaska State Implementation Review Team (SIRT) should be responsible for overseeing the bonding instrument and ensuring that compensatory mitigation for the Donlin Gold Project is being implemented.		
CWA 1	2.1	4	KW	Avoidance and minimization measures are detailed in the Department of Army Permit Application (Donlin Gold 2014).	Provide a summary of what the 404 application avoidance and minimization measures entail in this section. The 404 permit included in Appendix J does not appear to be complete and does not include a discussion on avoidance and minimization measures nor does the application on the Donlin Gold EIS website.	
CWA 4	2.2	5	KW	Donlin Gold, in a meeting with USACE in May of 2015, agreed to complete and submit a new PJD with the wetlands outlining the project footprint remapped according to the 2007 Alaska Regional Supplement Version 2 (V-2) encompassing the mine facilities and the pipeline footprint for the Final EIS (FEIS), thus the wetland acreages in Table 3-1, Table 3-2, and Table 3-3 will change in the FEIS.	The fact that the Draft EIS does not have the exact wetland acreage impacts will make it difficult to identify the LEDPA under the 404(b)(1) Guidelines. Discussions on the adequacy of mitigation measures are premature when wetland impacts are still undetermined.	
CLA 26	2.2	5	KW	Donlin Gold developed a functional assessment (FA) method	The Cowardin classification and acreage method is not a	

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			using the Magee-Hollands method. The FA was the basis for the CMP. The USACE informed Donlin Gold the Magee-Hollands method is not intended for use in Alaska (USACE 2015). Subsequently the USACE informed Donlin Gold the FA should revert to a Cowardin classification and acreage method (July 30, 2015 meeting note).	functional assessment but merely a classification and quantification of acres of wetland. This point needs to be clarified in the text. The new method imposed fails to assess the wetland functional loss on site and therefore will be less informative to assist in determining adequate mitigation for the project.	
CLA 26 4.1	10	KW	Donlin Gold will follow the FA method prescribed by USACE, and use a Cowardin classification and acreage comparison methodology to determine the debits for the project.	This methodology is not a functional assessment. This section needs to specifically describe the Cowardin classification and acreage comparison methodology. If there is a functional component to this method, a better discussion is needed.	
EDIT 6 CLA 32 4.1.1	10	KW	Donlin Gold can propose to compensate for wetland loss by preserving wetlands of equal value by the restoration or enhancement of wetlands. USACE historically has required a smaller mitigation ratio for projects proposing restoration or enhancement of wetlands when compared to projects preserving wetlands. USACE requires a ratio greater than 1:1 ratio for wetland preservation. USACE makes the final decision on mitigation ratios.	"Donlin Gold can propose to compensate for wetland loss by preserving wetlands of equal functions and value by the restoration or enhancement of wetlands. USACE historically has required a ~~smaller~~ lower mitigation ratio…" For clarity, we recommend you cite the Federal Mitigation Rule. "The district engineer must require a mitigation ratio greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site. The rationale for the required replacement ratio must be documented in the administrative record for the permit action – CFR 230.93(f)(2)" Further, it should be documented that for difficult-to-replace resources like bogs, fens, springs and streams – all of which are proposed to be impacted by the project, the required compensation should be provided through in-kind rehabilitation, enhancement or preservation as this will provide greater certainty that these methods will successfully offset permitted impacts.	

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MIT 7	5.0	12	KW	Compensatory Mitigation Section: General Comment	Provide an estimate of linear feet of potential stream mitigation and wetland mitigation – a summary table of mitigation based on the entire analysis in the CMP based at this point in the process (DEIS/FEIS) and identify any areas where you may be deficient given the comments made regarding the lack of mitigation bank and ILF opportunities in the state. Appendix C Table 8, page 12 provides some summaries but they are by subwatershed for PRM only, and not for the entire project.	
MIT 7	5.2.1	12-13	KW	Mitigation Banks	Recommend providing a summary table of the type and amount of credits currently available (or anticipated to be available) at the federal banks discussed in this section to provide some perspective/content on the extent of mitigation credits these banks might provide (i.e. the percentage of the anticipated mitigation that might come from bank credits).	
MIT 7	5.2	13	KW	Mitigation bank credits will be available for the permanent and temporal impacts in waters of the United States for the pipeline (PSA) in the Matanuska Susitna Borough.	The CMP should contain a separate section and discussion on temporal impacts, the anticipated temporal loss from the proposed projects and how the applicant will address temporal loss outside of the use of mitigation banks and detail the extent of temporal loss the mitigation banks might provide. At this point, the use of mitigation banks, given the small number of approved and pending banks, and PRM sites will likely not provide the mitigation needed for the temporal loss of resources for the 30 to 50 year life of mine and time needed for reclamation on site.	
MIT 7	Appendix C	4	KW	The pond features are considered highly feasible, successful plan attributes that add diversity of aquatic functions and habitat within the overall stream system. Site assessments will need to be conducted to determine physical characteristics for best stream alignment and connectivity, as well as opportunity to extend shoreline and shallowly inundated riverine marsh habitat.	This implies that pond features will be maintained as open water areas rather than converted back into stream systems providing stream functions. Please clarify if this is the case and detail the specific functions that it will provide that would compensate for lost stream functions and what additional mitigation would be provided to compensate for lost functions not provided by open water areas.	
FISH 15	C.1	13	KW	Table 10 – Reported Fish Findings by Mitigation Area	Why is this blank? What is the anticipated post-mitigation fish	

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				Watershed/Sub-watersheds	findings? What is anticipated – detail the goals and objectives? All species? Some?	
WET 3	C.1	25	KW	One of these procedures, as described in *A Rapid Procedure for Assessing Wetland Functional Capacity: Based on Hydrogeomorphic (HGM) Classification* (Magee and Hollands 1998), served as the basis for the wetland FA in the Donlin Gold project area.	Considering the Corps deemed this methodology not appropriate for Alaska, the language needs to be changed or additional language added to reflect this.	
MIT 7	C.1	27	KW	Table 17 describes the individual mitigation components planned for this work area and the construction timing and installation sequence.	The construction and installation sequencing needs to be more detailed and include at which point during the 25 to 30 year life of mine each of the individual mitigation components is anticipated to occur since the applicant seemed to be proposing a sequenced mining with sequenced and phased mitigation. This will help in determining temporal loss of resources and determination of adequate mitigation for such loss. This is further support for a separate section which focuses solely on temporal loss and how the applicant proposes to compensate for temporal loss.	
MIT 7	C.4	5	KW	Donlin will receive an acre to acre restoration and enhancement credit based on the HGM class of wetland acres restored or enhanced.	An acre to acre or 1:1 ratio for restoration and enhancement credit is not a given and may not be consistent with the Federal Mitigation Rule. The language needs to reflect what the Rule requires: “the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratio must be used.” Further “The district engineer must require a mitigation ratio greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the	

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					compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site. The rationale for the required replacement ratio must be documented in the administrative record for the permit" Enhancement does not result in a gain of wetland acres and as such, may not receive as much credit as a full restoration. This needs to be recognized. Change the language to reflect the Rule or provide justification for the determination of a 1:1 ratio for enhancement. (i.e. the functions gained vs. functions lost).	
MIT 1	C.5	2&3	KW	…to educate the local governments on how to run and operate the local landfills and encourage the removal of derelict recyclable goods from the watershed.	While education to the community on environmental stewardship is encouraged it is not appropriate mitigation for direct, cumulative and secondary impacts to aquatic resources under Section 404 of the Clean Water Act. This funding may be better served by preserving or enhancing other resources in the area would be more adequate mitigation for 404 impacts posed by the projects.	
CLA 33	C.6 1.1	1	KW	A rock cover will be installed on the tailings when the moisture content is adequate to support the load.	Specify the acceptable moisture content to support this load. Estimate the amount of time anticipated for the moisture content to reach this level and be able to support the load.	
CLA 33	C.6 1.1	1	KW	The surface drainage would be managed to ensure the vegetation is saturated and the water does not infiltrate the consolidated tailings below the engineered cap.	Provide more detail on how hydrology would be managed or the measures that would be implemented to ensure water does not infiltrate the tailings.	
CLA 33	C.6 2.0	4	KW	Table 1. #7 Hydrology Does the site have sustainable hydrology? Yes, surface water groundwater and rainfall	Is groundwater going to be a source of hydrology? The underlying tailings is directly below the proposed site and it has been previously stated that the mitigation is designed so that there is little interaction between tailings and wetlands. Elaborate on if and how groundwater will feed this system.	
WET 3	C.6 4.0	5	KW	The two types of flats (mineral soil and organic soil) have been combined into a single flat class,	The combination of organic and mineral soil flat wetlands into a single HGM "Flats" class is potentially problematic. These	

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					classes likely do not support the same vegetation cover types, or do not have similar values for many of the measured or observed variables (e.g., pH).	
MIT 7	C.6 5.0	5	KW	A reclamation manual report will be generated that establishes what wetland planting processes were successful and which were failed. The report will become a manual to serve as a tool for other mines and large projects. An additional boost in wetland credits of 10% will be granted for the creation of a manual and the sharing of this information.	This does not provide adequate mitigation for direct, cumulative and secondary impacts to aquatic resources. A 10% credit is not justified.	
MIT 7	C.6 5.0	5	KW	Donlin Gold is considering establishing a greenhouse and onsite cultivation services to provide local wetland plant species. The seedlings will be developed in coordination with the Palmer Plant Materials Lab. Donlin Gold proposes that a Greenhouse will provide additional wetland credits for the site. An additional boost in wetland credits of 15% for the creation of these services to the region is part of this plan	While this does help in the propagation of vegetation needed to establish wetlands on the site. This does not provide adequate mitigation for direct, cumulative and secondary impacts to aquatic resources. A 15% credit is not justified.	
MIT 21	C.6 6.0	6	KW	Predicted near terminal density will be reached approximately 52 years after the end of operations.	Define or clarify "near terminal density". Clarify whether or not it would be prudent to try to establish wetlands on the site at the end of operations or until 52 years after closure? Clarify whether it may take the entire 52 years for this site to establish sustainable wetlands. Indicate at what point after closure of the TSF, the proposed wetland might become successful established and meeting performance standards.	
MIT 21	C.6 4.0	3	KW	The major wetlands to be impacted by the pit lake will be HGM flat wetlands followed by slope wetlands, and riverine wetlands. The projected wetlands loss from the mine pit is approximately 878 acres. This project will replace the wetlands lost by the mining of the pit with fringe wetlands around the lake edge and a 1,007 acre pit lake.	This does not provide adequate mitigation for direct, cumulative and secondary impacts to aquatic resources (rivers, streams and wetlands). Please describe how a pit lake replaces the functions from the loss of 878 acres of HGM flat (organic and mineral) wetlands; especially given the fact that the lake will never meet Alaska State WQS.	
MON 2	C.6 9.0	11	KW	Hydrologic monitoring will be limited to surface water depths associated with wetland delineations.	We recommend additional or more rigorous long-term monitoring over the visual and one time hydrologic	

	Section	Page	EPA	Original Language	Proposed Language, Comment and/or Recommendation	Disposition
					assessments made during a wetland delineation.	
MON 6	C.11 7.0	5	KW	If maintenance becomes necessary, the adaptive management plan will address how each item will be maintained (removal of sediment, planting trees, changing channels, or adding vegetation, etc.).	Considering the majority of the work is the destruction of beaver dams, there needs to be some long term monitoring and maintenance to address the fact that beaver activity will resume long term. Provide additional discussion about that in this section, as well as 9.0 Monitoring, 10.0 Long term monitoring and 11.0 Adaptive management.	
WET 3	C.12	2	KW	In order to provide a quantitative measurement of these effects, this plan uses *A Rapid Procedure for Assessing Wetland Functional Capacity* (Magee and Hollands 1998).	Considering the Corps indicated this method was not acceptable for use in Alaska, this method should be removed and an additional method for determining functional gain for the proposed work should be included or the current methodology being used – as stated previously (i.e. Cowardin and acreage methodology).	
	N. Section 810 Analysis					
	No Comments					
	O. Biological Assessments					
	No Comments					
	P. Corps Initiation of the Government-to-Government Consultation					
	No Comments					
	Q. EFH Assessment					
	No Comments					
	R. Oil Discharge Prevention and Contingency Plans					
	No Comments					
	S. Pit Lake Ecological Risk Assessment					
	No Comments					
	T. Visual Pipeline Engineering Strip Maps					
	No Comments					

April 25, 2016

U.S. Army Corps of Engineers
Alaska District
CEPOA-RD-Gordon
PO Box 6898
JBER, AK 99506-0898

To Whom It May Concern,

I am writing to express my support for Alternative 2, the Donlin Gold Project.

SER 15 Donlin Gold has a proven record of commitment to the people of the Yukon Kuskokwim (YK) Region. The economic potential it has for the local communities is destined to have a grossly positive impact to a region that is currently experiencing one of the highest unemployment rates in the state. With Donlin Golds commitment to local hiring, young and future generations have much to look forward to, including: well-paying jobs in a variety of career fields, educational opportunities, and economic stability that will be broadly felt throughout southwest Alaska.

Donlin Gold has also demonstrated a notable commitment to the environment. Donlin has 16+ years of extensive studies focused on creating an environmentally and socially responsible project; and has purposefully designed its project to reduce the overall footprint of the mine and diminish any social impacts it may have on the YK region. Proposals such as building a natural gas pipeline have been developed in an effort to minimize barge traffic on the Kuskokwim River. IDIT 1 Furthermore, a specific route for the pipeline has been selected to minimize disturbance to known historic landmarks such as the Iditarod Trail. It is worth noting that the Iditarod Trail was originally created and used for the purpose of the Gold Rush in 1910. While we certainly want to preserve the beauty of our Alaska heritage, let us not forget how that history was created.

Lastly, I think it's worth noting that this region of land and its resources belong to the shareholders of Calista and The Kuskokwim Corporation. LAND 1 This area in particular was specifically selected during the Alaska Native Claims Settlement Act (ANCSA) due to its rich mineral content and the economic potential it would provide for its shareholders and descendants. ANCSA understands the importance of heritage and a subsistence lifestyle, but also recognizes the potential for achieving unity and managing the land for both modern and traditional uses.

Again, I am writing to express my support for Alternative 2, the Donlin Gold Project.

Regards,

Victor Vent

Signature

Victor Vent

Print Name

From:	Jeff
To:	donlingoldeis, POA
Subject:	[EXTERNAL] Donlin Gold Draft EIS comment
Date:	Tuesday, May 31, 2016 11:56:02 PM

To Whom it may concern,
My name is Jeffrey Venes, I am 31 years old and from Bethel, Alaska. As you can see I am sending this comment in right before the deadline is up. I am very concerned about the YK Delta and the purposes Dolin Gold Mine. Those concerns are shared and reflected by many of my friends and family. They range from the increased barge traffic on the river to the proposed natural gas pipeline on from Anchorage to the mine. I have a pretty good idea about all the work that was put in to research our concerns but like many people I am still not absolutely clear that everyone knows the impact that all of this could create. I am worried about this phenomenon called Willful Blindness and how it effects people in different groups and regions around the world. I am not necessarily for or against the mine but I do want the people in our region and our beautiful state to be sure that the impact that this mine will have will be worth it for many more individuals than it is proposed. Even if everything goes as planned and the impact is minimal will it be worth it once the miners have closed down and left the area? That is just one question that I don't feel we have a clear answer for. The people of this region need more time to process the tons of info and communicate and understand our concerns and the proposals.

NEP 1

Will there be other opportunities to voice our comments, concerns and questions on such a life changing matter for so many living beings?

Thank you for this opportunity sincerely,
Jeff Venes

Sent from my iPad

Allen Vezey
1216 Range View Road
North Pole, Alaska 99705

U.S. Army Corps of Engineers
Alaska District
CEPOA-RD-Gordon
P.O. Box 6898
JBER, AK 99506-0898

February 15, 2016

Re: Donlin Gold Project DRAFT EIS

Dear Sir or Madam:

NSB 1 Please note my support for the Donlin Gold Project. Alaska needs this project. The United States of America needs this project.

This project will set a new standard for environmental responsibility. It needs to move forward in order to create jobs and new wealth that this state and this country so desperately needs.

Sincerely,

Allen Vezey

From:	donlingoldeis, POA
To:	Craig, Bill
Subject:	FW: Donlin Gold Draft EIS comment
Date:	Thursday, February 25, 2016 6:50:58 AM
Attachments:	Donlin Gold EIS Vezey.pdf

-----Original Message-----
From: Al Vezey [mailto:alvezey@lakloey.com]
Sent: Monday, February 15, 2016 12:19 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

Dear Sir or Madam,

Attached please find my comments to the Donlin Gold Project EIS. Please make note of my support for the project.

Al Vezey

1216 Range View Road

North Pole, Alaska 99705-5389

From:	John Wallace
To:	donlingoldeis, POA
Subject:	[EXTERNAL] Comments - Donlin
Date:	Tuesday, May 31, 2016 10:34:47 PM
Attachments:	CommentsWallace.docx

(Attached in Word format)

After reading and studying the Draft Environmental Impact Statement for the Donlin Gold Project I have the following comments-

To preface my comments, I would like to offer advice for future project documents such as this—I seen no comparatives anywhere in this document. As a project supporter it would be helpful to see other mine comparatives in Alaska in terms of impact. A comparative with, for example, Red Dog Mine, would be able to offer insight and analysis concerning real-world environmental and socio-economic impacts. As an example, the roads supplying the Donlin project could be compared against existing technologies used in an operating mine. Another example would be the economic benefits of an existing mine to a proposed project, in this case Donlin. This data would have been extremely useful and I that disturbing.

SER 28

I am fully in support of the project. I listened in one session while a NovaGold executive compared the cost/benefit of a project to that of an airport in a Village. It made sense to evaluate need and cost, both environmental and economic, to a real world necessity in Rural Alaska. He made the case that all projects have a certain amount of impact, but that the benefit and necessity of such a project, in this case an airport, is often overlooked if that project is one that is fully in public need.

To that end, I would like to state that in my opinion, the Donlin project offers benefits outweigh the cost using a couple of the alternatives that I will list later.

There has been a great deal of talk about the negative impact to subsistence and that way of life that this project might bring. I would like to offer a differing view with regard to that way of life. We brought up our kids living a semi-subsistence lifestyle. I say semi-subsistence, because there are very, very few families and individuals that can sustain themselves in a true subsistence way of life. In this day of very high energy costs, it is virtually impossible to sustain a family through subsistence without some outside income. The cost of fuel, nets, firearms, ammunition, boats, motors, and snowmobiles has risen to a level that is extreme. When we first began our fishcamp, our costs were very manageable. In 1994 I purchased a new snowmobile for $4000 and in 2000 a new boat motor for $4500. Today those items cost at least three times that cost. In those days, a drum of fuel was a manageable expense and it might cost under $100. Today in some places it is nearing four times that amount. The bottom line is that a subsistence lifestyle is very expensive. It has made it such that folks are going to the grocery store instead of fully living from our lands. Couple that with a salmon disaster and it is very tough time.

We taught our kids the values of subsistence though, and each year harvested salmon, moose, birds, and berries from the land. That way of life was passed down from my wife's family and we passed it on to our kids. After graduation, both of our children moved into Anchorage as there were opportunities that are unavailable in Southwest Alaska. The cost to commute to Bethel is high and job requirements often make it so that they cannot participate now in that way of life. My daughter is going to be having a child this summer and we will not be able to pass those values onto the next generation. This is wholly because of the economic times here in Rural Alaska. As I look around I see many families in the same condition. Everyone has a child living away. It is unique to have the whole family stay. THIS is what a project like Donlin brings to our area. The associated economic ripple effect of a wealth

SER 11 GENERATOR will bring the possibility of keeping subsistence alive. We need a project such as this. We just need to do it safely.

As you drive through Bethel, it is uncommon not to see inebriates and other social problems. As you read the newspaper it is a sad state of affairs. It is so important for our people to have self-worth and self-value. A project such as Donlin that promotes, through employment, a healthy lifestyle can only be a good thing for our area and our State.

PAA 10 I do have a few alternatives that I would like to see implemented within the EIS. Granted, these are not the most inexpensive, but I think most prudent:

1) Alternative 3B- Diesel Pipeline

a. Offers easier access to other users of pipeline.

b. Diesel is more common to Villages, Organizations, and other Users for distribution and use.

c. Retransportation More Common

d. Combined Natural Gas/Diesel Line not evaluated.

i. All preliminary work completed, why not build in both with a partner.

e. Cost- Higher Benefit-Higher and remains after Donlin Project ends.

2) Alternative 4- Birch Tree Crossing.

PAA 8

a. Reduces traffic on the upper and swifter section of the river.

b. Reduces mileage and spill or environmental exposure.

c. Offers optional (Non-stated) return route for fuels from pipeline. (Above)

PAA 8

d. Possible Pipeline back to Birch Tree

e. Benefit to Region to have Fuel Point available on River instead of Dutch Harbor.

f. Possible Road to Yukon could be combined centralizing commerce. Partnerships available to that end.

g. Cost- Higher Benefit-Higher and remains after Donlin Project ends.

PAA 9

3) Alternative 5A- (Option 2) Dry Stack Tailings

a. Long-Term Storage is encapsulated and buried.

i. Under Liner, Over Liner, Reclamation.

b. Water quality issues dissipate

c. Not sure why heated trucks are necessary. In winter, tailings could be stockpiled for burial during warmer time periods.

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Alaska. As I look around I see many families in the same condition. Everyone has a child living away. It is unique to have the whole family stay. THIS is what a project like Donlin brings to our area. The associated economic ripple effect of a wealth GENERATOR will bring the possibility of keeping subsistence alive. We need a project such as this. We just need to do it safely.
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I do have a few alternatives that I would like to see implemented within the EIS. Granted, these are not the most inexpensive, but I think most prudent:

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    c. Retransportation More Common
    d. Combined Natural Gas/Diesel Line not evaluated.
        i. All preliminary work completed, why not build in both with a partner.
    e. Cost- Higher Benefit-Higher and remains after Donlin Project ends.
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    a. Reduces traffic on the upper and swifter section of the river.
    b. Reduces mileage and spill or environmental exposure.
    c. Offers optional (Non-stated) return route for fuels from pipeline. (Above)
    d. Possible Pipeline back to Birch Tree
    e. Benefit to Region to have Fuel Point available on River instead of Dutch Harbor.
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        i. Under Liner, Over Liner, Reclamation.
    b. Water quality issues dissipate
    c. Not sure why heated trucks are necessary. In winter, tailings could be stockpiled for burial during warmer time periods.

From: Brennan Walsh
To: donlingoldeis, POA
Subject: [EXTERNAL] Letter of Support- Donlin Draft EIS
Date: Friday, April 29, 2016 1:42:36 PM

To whom this may concern,

SER 5 I'd like to submit this letter of support towards the planning, development, and operations for the proposed Donlin Gold Mine. For many years, Donlin has been properly conducting studies and safely performing operations to evaluate all the decisions needed for development. After personally reviewing Donlin's proposed plan, I'm fully convinced that this mine development and operation will be the single best economic stimulant and resource for the Yukon-Kuskokwim region. There may never be another opportunity of this magnitude that will benefit this region for generations to come. With an estimated $6 Billon dollar mine development, economic ripples will reach throughout the region as well as the state. Residents locally and statewide will have opportunities at direct and indirect jobs and support services. Once the mine is operational, there will still be a need for 600-1200 jobs for the next 28 years!

I look forward to someday contributing my skillsets to the development of this mine within the Calista region.

Thank you,

Brennan Walsh
Director of Operations, STG Inc.

11710 So. Gambell St.
Anchorage, AK 99515
907.348.4231 direct
907.360.3588 mobile
907.644.4664 office
907.644.4666 fax
www.stgincorporated.com

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AK REGULATORY

CLIFFORD WALTERS
P.O. BOX 32341
MTN. VILLAGE, AK
99632

DEAR DONLIN CREEK

NOW DONLIN GOLD, BIN A PLEASSER WORKING FOR YOU, A PLACE WHERE YOU CAN WORK, AND ALSO BE WITH NATURE.

SVE 1

I LOVE ALASKA, AND NEVER LEFT YET, ALASKA IS MY HOME, AND OFCOURSE, WE HAVE TO TAKE CARE OF IT,

DONLIN GOLD HAS ALWAYS TOOK GOOD CARE OF THEIR WORKERS, AND MOST OF ALL, TOOK CARE OF OUR LAND, OUR LAND IS ALWAYS BEEN VERY IMPORTANT TO US, WE TOO, HAVE TO DO THE SAME,

LETS WORK TOGEATHER! TO GET THIS PROJECT ON THE GO, GOT BILLS TO PAY, OUR KIDS TO FEED, CLOTHES ON THEIR BACK, "LETS DO THIS!!"

P.S. I NEED A BOAT

FORMER WORKER
CLIFF W

From: Jason Ward
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Wednesday, January 20, 2016 11:34:47 AM

I would like to take this opportunity to comment on the Donlin Gold project. I have personally witnessed Donlin Gold's commitment to safe and responsible resource development in the state of Alaska. Donlin

SER 15 Gold has repeatedly expressed it's commitment to local hire and this project would provide a much needed economic boost to not only the local communities; but also, to the numerous companies that would support this project as it grows.

I give the Donlin Gold project my full support.

Jason Ward
Senior Vice President
Sales and Marketing

Security Aviation
6121 South Airpark Place
Anchorage, Alaska 99502
Main: (907) 248-2677
Fax: (907) 248-6911
Mobile: (907) 230-4318
Email: jward@securityaviation.biz
Blockedwww.securityaviation.biz

US Army Corps of Engineers

Donlin Gold Project EIS

Comment Form

The Corps welcomes your comments on the Draft Environmental Impact Statement. If you'd like to mail your comments, please feel free to use this form. Write your comments below then fold this page in thirds so the mailing address shows. Additional pages can be inserted. Remember to affix first class postage. You can also email your comments to POA.donlingoldeis@usace.army.mil, or fax them to (907) 753-5567.

Important topics for comments would include:

- *Comments and questions about the accuracy of information in the Draft EIS.*
- *Comments and questions about the adequacy of methods or assumptions used.*
- *New information to be considered in preparing the Final EIS.*
- *New reasonable alternatives or revisions to current alternatives.*
- *Additional measures to reduce impacts (mitigation).*

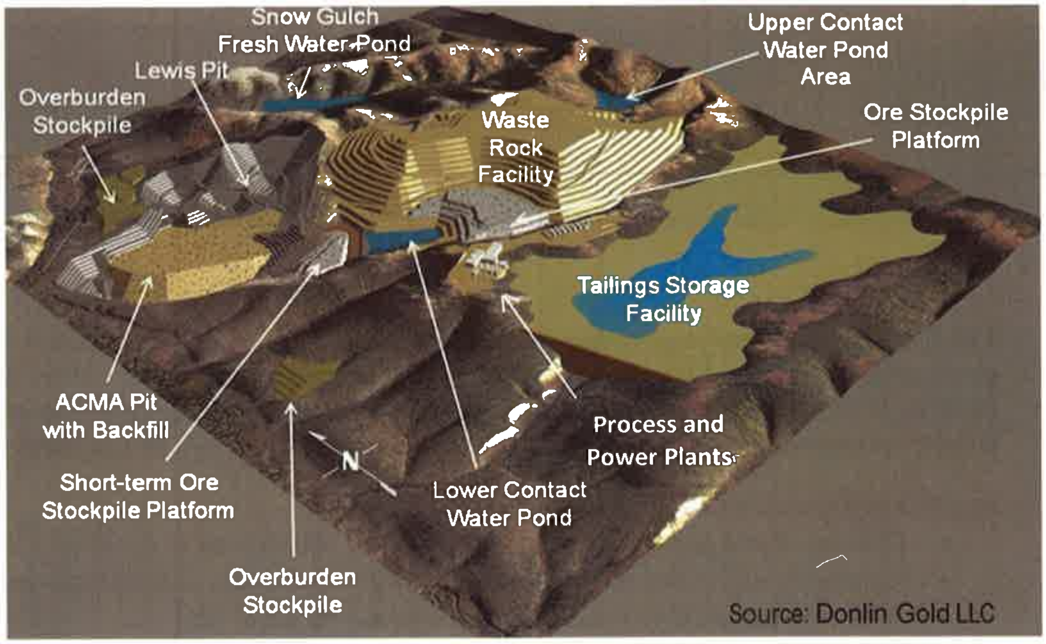
SUB 8 The pipeline will open new areas to hunters on all terrain vehicles causing a user conflict between sports hunters & subsistence hunters in the villages of Tyonek, Skwenta, Telida, Nikolai & McGrath. Every September there are Otters who land and off load sportsmen w/all terrain vehicles at the Farewell Gravel Strip. Now with a right of way all the way to the Kuskokwim River an already economically strapped rural population who depend on healthy moose harvests will now have to contend with sportsmen competing for the same food source that feeds a family all year in Bush Alaska. This area needs a project like Donlin Gold but this pipeline should be rerouted or should end at Farewell and not pose a critical problem on our villages where there are no jobs, no cash

David Warden Anchorage, Alaska

Layout of Proposed Mine Site

The image to the right illustrates the eventual layout of a proposed gold mine, ten miles north of the community of Crooked Creek on the Kuskokwim River in southwestern Alaska, for which the US Army Corps of Engineers is preparing an EIS. The project, proposed by Donlin Gold, LLC, includes a natural gas pipeline and transportation and components. You may use this mail-in form to submit comments.

For more information, please visit:
www.DonlinGoldEIS.com



(fold here)

Please place first-class postage here.

Keith Gordon
Regulatory Division
US Army Corps of Engineers
CEPOA-RD-Gordon, PO Box 6898
Joint Base Elmendorf Richardson, AK
99506-0898

from:
David Warden
Anchorage, Alaska

US Army Corps of Engineers
Donlin · Gold · Project · EIS

From:	Craig, Bill
To:	Bellion, Tara; Evans, Jessica
Subject:	FW: Donlin Gold Draft EIS comment
Date:	Monday, March 21, 2016 1:22:16 PM

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Monday, March 21, 2016 12:51 PM
To: Craig, Bill
Subject: FW: Donlin Gold Draft EIS comment

-----Original Message-----
From: Larry Weihs [mailto:lweihs@ess-worldwide.com]
Sent: Tuesday, March 15, 2016 12:32 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

U.S. Army Corps of Engineers

Alaska District

To Whom This May Concern:

SER 5 I am writing in support of the development of the Donlin Gold Mine Project. The development and operation of this mine will provide much needed economic benefit and support for Alaskan's in the region, as well as the rest of the State.

Large scale mining projects throughout Alaska have proven to be developed and operated in an environmentally safe manner, within all parameters set forth in permitting and planning, and on-going oversight by multiple Federal and State agencies.

SVE 1 We are obligated by State constitution to develop our natural resources for the benefit of all Alaskan's.

Regards,

-Larry Weihs

Larry Weihs

RVP Alaska

ESS Support Services Worldwide

A division of Compass Group

201 Post Road

Anchorage, AK 99501

* Telephone Number: 907-865-9825

* Mobile Number: 907-232-2195

TNT: Think - Navigate - Transform

H Blockedhttp://www.compass-group.com/about-us.htm <Blockedhttp://www.compass-group.com/about-us.htm>

Western Interior Alaska Subsistence Regional Advisory Council
c/o U.S. Fish & Wildlife Service
Office of Subsistence Management
1011 East Tudor Road MS 121
Anchorage, Alaska 99503
Phone: (907) 786-3885, Fax: (907) 786-389

RAC WI15040.MB

08 DEC 2015

Mr. Keith Gordon
EIS Project Manager
Regulatory Division, U.S. Army Corps of Engineers
P.O. Box 6898
Joint Base Elmendorf Richardson, Alaska 99506-0898

Dear Mr. Gordon:

I am writing on behalf of the Western Interior Alaska Subsistence Regional Advisory Council (Council) to express concerns regarding the potential adverse impact to subsistence resources and users as a result of developing the Donlin Mine.

The Council was established by the authority in Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) and chartered under the Federal Advisory Committee Act. Section 805 of ANILCA and the Council's charter recognize the Council's authority to initiate, review and evaluate regulatory proposals, policies, management plans, and other matters related to subsistence uses of fish and wildlife within the region, and provide a forum for the expression of opinions and recommendations regarding subsistence uses of fish and wildlife within the region.

The Council held a public meeting in Galena on November 3-5, 2015, and among the topics discussed at this meeting was the Donlin Gold Draft Environment Impact Statement (DEIS).
SUB 1 The Council is extremely concerned regarding the potential adverse impacts on subsistence resources, users, and the future generations who rely on these irreplaceable resources for their physical, cultural, and traditional well-being.

The Council appreciates the comments and work of Bruce Seppi, Subsistence Coordinator for the Bureau of Land Management (BLM), and echoes the sentiments summarized in his recently written ANILCA Section 810 analysis of the (DEIS), which we understand is quite extensive. There is the potential for irreversible impacts with this project which are not being discussed at this point. The Council is encouraged by the planned BLM ANILCA section 810 meetings to gather information and comments from the villages along the Kuskokwim River which would be directly affected by the proposed mining plans and related activities.

HZM 2 The Council has serious concerns about the mine and associated transportation, storage and handling of materials such as fuel and toxic byproducts. The potential drainage of countless

HZM 2

gallons of toxic water due to natural occurrences such as seismic activities into the Kuskokwim River would destroy subsistence resources along the entire length of the river. Aquifer system contamination would be catastrophic for any residents along the river who depend on this water for drinking. It would also adversely impact anadromous fish populations, including the Chinook Salmon population that is already struggling. The treatment plan as described does not seem workable, as it presumes the mine operator will treat wastewater "in perpetuity", and long-lasting impacts will fall on the future residents and the resources they depend on long after the mine and current staff are gone.

FISH 5

This Council also discussed at length serious concerns about the potential adverse impacts that barge traffic on the Kuskokwim River would have on subsistence users, and on the crucial fisheries present in the river. Proposed barge sizes and associated loads of fuel are of great concern on the Kuskokwim River. The huge continuous wake action alone will cause hardship for set net fisheries, and a spill would wipe out an indeterminate amount of fish – at a time when no fish can afford to be lost. This traffic has the potential to damage fish and wildlife habitat as well as the health of the river and the people who depend on the resources it provides.

SUB 1

We are adamantly opposed to the proposed mining activities due a lack of assurance to protect the resources and the people of the region – the costs, anticipated and unintentional, are far too high. Potential negative consequences far outweigh the few temporary economic benefits offered by the boom-and-bust mining industry. The Council strongly recommends that the proposed activities not be authorized, and that mine development not move forward. It would be detrimental to the resources and people of the Western Interior Region. The potential adverse impacts to subsistence resources and users are far greater than benefits of the project. Future generations of Alaskans, plants, and animals will likely have to pay for these activities.

Thank you for the opportunity to comment regarding this important topic, and this Council will continue to be vocal regarding opposition to these proposed actions. If you have questions about the comments included in this correspondence, please contact me via Carl Johnson, Council Coordination Division Chief, Office of Subsistence Management, at 1-800-478-1456 or (907) 786-3676.

Sincerely

Jack Reakoff, Chair

cc: Federal Subsistence Board
Western Interior Alaska Subsistence Regional Advisory Council
Eugene R. Peltola, Jr., Assistant Regional Director, Office of Subsistence Management
Chuck Ardizzone, Deputy Assistant Regional Director, Office of Subsistence Management
Carl Johnson, Council Coordination Division Chief, Office of Subsistence Management
Bruce Seppi, Bureau of Land Management, Subsistence Coordinator
AECOM

From: Westdahl, Glenn
To: Dawn.collinsworth@ogc.usda.gov; tim_towarak@fws.gov; Anthony "Tony" Christianson; Beth Pendleton; Bud Cribley; Charles (Charlie) Brower; Gene Peltola; Geoff Haskett; Kenneth Lord; Carl Morgan; Darrell Vent Sr.; Don Honea Jr.; Jack Reakoff; Raymond Collins; Timothy Gervais; Chuck Ardizzone; Carl Johnson; Bruce Seppi; POA.donlingoldeis@usace.army.mil; Evans, Jessica; Harris-Fleagle, Donalene
Subject: RAC WI15040.MB
Date: Tuesday, December 08, 2015 1:30:09 PM
Attachments: DONLIN MINE LTR SIGNED DATED.pdf

Good afternoon,

Attached is the Donlin Mine letter, for any questions or concerns please contact Carl Johnson at 907-786-3676

--
V/r,

//SIGNED//

Glenn T. Westdahl / Administrative Assistant
USFWS / Office of Subsistence Management
1011 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199
907-786-3888/3952-desk
907-786-3898-main fax

E-mail: glenn_westdahl@fws.gov

From: Merna Wharton
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Tuesday, May 31, 2016 4:31:59 PM

My name is Merna Lomack Wharton - I am from Akiachak. I live in Fairbanks and I return to
my family fish camp that is located on the Kuskokwim River across from Akiachak and it is a
Restricted Native Allotment obtained by my late father and inherited by my mother which
will be passed down to my sibling and children. My whole family solely relies on all fish
species on the Kuskokwim River. The traffic from barges and dangerous chemical from gold
TWL 3 mining operations will have long term effect on the livelihood of the people of the
Kuskokwim. Dolin Gold mining will cause spiritual, health and social disparities on the
people of the Kuskokwim. There is significant obliviousness by some leaders that disregard
EJ 7 the voices of the minorities in some or all of the communities within the Y-K Delta – most
often misrepresenting their communities for selfish endeavors. The voices of the minorities
and uneducated are often ignored by their leaders in most cases when there is concern for
their communities. There is significant in-equality that is present. The Salmon runs have
TWL 3 gone down dramatically if you look at the numbers. The presence of alcohol sales in Bethel
has brought strain on law enforcements and all of the villages on Kuskokwim delta well-
being. These are people whose lives will be changed forever because of a single community
changing their ordnances to sell alcohol and the same goes for a single village allowing the
mass destruction of a land and water that is a sole source of survival for all of the people of
the Kuskokwim River. Economy changes lives – Donlin Gold mining will be a biggest impact
the Y-K will ever see! Don't ignore the voices of the minorities that are choked by their
leaders.

From:	Kevin Whitworth
To:	donlingoldeis, POA
Subject:	[EXTERNAL] Donlin Gold Project DEIS Comments
Date:	Friday, May 27, 2016 5:00:13 PM
Attachments:	Donlin Gold Project DRAFT EIS Comments.pdf

To Whom It May Concern,

See attached comments, pages 1 through 6.

Thank you,

Kevin & Dara Whitworth
PO Box 251
McGrath, AK 99627
907-524-3344

Donlin Gold Project DRAFT Environmental Impact Statement Comments:

May 25, 2016

Prepared by: Kevin and Dara Whitworth PO Box 251 McGrath, AK 99627
email: okwhitworth@gmail.com

Introduction:

After careful analysis of the alternatives presented in the Draft Environmental Impact Statement (DEIS) document, I have determined that the best alternative is Alternative 1, the no action alternative. Alternative 1 would be, by far, the best action alternative for everyone and everything; especially for the people who use the Kuskokwim River watershed, and the wildlife and wild things that inhabit the same area. Alternative 1, protects the Kuskokwim River watershed with its; astonishing beauty, large biological diversity, clean water, clean air, and the overall enjoyment. Alternative 1, also protects the subsistence way of life, the wilderness characteristic, and the livelihood of the people that live in the Kuskokwim River watershed.

The following are my reasons for not supporting development of the mine and supporting Alternative 1, the no action alternative.

PHL 16

Contamination: Dust, chemical spills, harmful fumes, and heavy metals are several contaminant issues of the proposed mine. These contaminates can poison workers, and/or people that live and use the Kuskokwim River watershed, and can cause life-long health problems, allergic reactions, as well as many other problems. These contaminates are capable of negatively impacting the water, the wildlife, the fish, the environment and, ultimately, the entire Kuskokwim River watershed and the people who live on it.

WAQ 8

The proposed mine will require a vast amount of water to operate and will leave that water contaminated. Surface water and groundwater will remain contaminated for many years, even after the mine has closed, and will contaminate the creatures and people who, live near, drink, or depend on the water.

PHL 16

The proposed mine will expose 3,000,000,000 tons of rock that will be stored at the waste rock facility, this facility would cover an area 2,240 acres in size. Other areas that would be exposed with rock will be the runways, roads, parking lots, camp area, etc. and all will produce hazardous dust that contains, arsenic, which is released into the air by weathering of minerals and ores that would be produced by the proposed mine. Arsenic is very toxic to humans and has been associated with many cancers, including but not limited to; skin, bladder, liver and lung cancers. Other chemicals found in the toxic dust would be, Calcium oxide and copper sulfate, which are also hazardous to human health.

WAQ 22 The large waste rock facility and associated infrastructure, would not only produce toxic dust, but would also produce large amounts of acid in just a few years' time. The acid would leach out of the unlined- rock and pollute water sources. Furthermore, the surface of the exposed rock would produce acid dust and acid rain which in turn will pollute the surrounding area.

PAA 14 All associated construction areas, that use waste rock from the proposed mine, should be lined with an impermeable lining to prevent any seepage of untreated and toxic waste water into the environment. Furthermore, the toxic waste water from these facilities must be treated before being released into the environment. The waste rock also needs to be covered immediately to

MIT 19 stop the formation of dust.

PHL 16 The proposed mine will require a very large amount of chemicals that are detrimental to both the environment and humans. These chemicals include but are not limited to: potassium amyl xanthate (8,378,000 pounds annually used), which is highly toxic to aquatic life and toxic to humans as well; nitric acid (1,322,000 pounds annually used), which is very hazardous to humans; sodium cyanide (5,070,000 pounds annually used), also very hazardous to humans; calcium oxide (42,054,000 pounds annually used), very toxic to humans; copper sulfate (4,850,000 pounds annually used), which is very toxic to aquatic organisms and could cause long-term adverse effects on the environment and also is harmful to humans; and sulfur (2,828,000 pounds annually used), which is toxic to animals and very toxic to humans.

PHL 16 The proposed mine, will increase the amount of mercury entering the Kuskokwim River watershed, which is a system that is already experiencing high levels of mercury. Right now, it is recommended by health corporations and the State of Alaska, to limit the amount of certain Kuskokwim River fish eaten by infants and pregnant women. I do not support a mine that will increase the amount of mercury in an area already experiencing mercury toxicity. Furthermore,

DAM 2 the proposed mine will increase the potential of a harmful cyanide breach to the Kuskokwim River watershed. History demonstrates the unreliability of mine containment systems and it is only a matter of time, before a breach or spill will occur.

PHL 18 The DEIS does a very poor job of identifying contamination issues and how they will affect the people who would work around the proposed mine, the environment, and the people that live within the entire Kuskokwim River watershed. The highest concentration of contaminates will be in the Cooked Creek drainage, but will spill into the mainstream Kuskokwim River and contaminate the anadromous fish, aquatic invertebrates, animals, and people. Long term effects of chemicals on the environment and humans is difficult to study, but is well documented and the chemicals to be used by the proposed mine are some of the worst for both the environment and humans. Alternative 1, the no action alternative, is the only alternative to prevent these long and short term contamination issues.

Barge Traffic: Fish die offs, increased erosion, noise pollution, and oil spills are just a few issues

BARG 1 that increased barge traffic could bring to the Kuskokwim River watershed. Although, the increased barge traffic will be in the lower river, the affects of increased barge traffic are

BARG 1

capable of harming the entire watershed in many ways. The fish, wildlife, and people of the entire watershed will be negatively impacted by the affects of increased barge traffic; and the only way to avoid it is to support Alternative 1, the no action alternative.

FISH 5 All fish species will face negative affects from the increase in barge traffic, but most importantly, the salmon species will be negatively affected. Population numbers of salmon species are already an area of concern, with users of salmon species experiencing restrictions because of low population numbers. The increased barge traffic will not help the issue. It is known during low water periods that the large wake from barges shoves juvenile salmon species up on river beaches and will leave many stranded, where they are venerable to predators or desiccate and die. The decrease in the survival of juvenile salmon species will not only affect the lower river users, where the traffic is found, but will affect all people who harvest salmon on the entire Kuskokwim River; both its commercial users and personal-use users.

BARG 8 Furthermore, during high water periods, barge wakes can significantly increase the amount of river bank erosion. Although the increased barge traffic is located in the lower river, the entire Kuskokwim River system could be impacted. Rivers have a tendency to correct for a change that may happen downstream or upstream. If increased erosion happens in the downstream portion of the river, due to the increased barge traffic, then the upstream areas will begin to erode quicker to correct for that downstream change.

CLIM 10 Although, erosion accrues naturally on the Kuskokwim River, an increase in the speed of erosion will affect many villages, cabins, personal use areas, runways, infrastructure, and may threaten some by increasing pace of river bank erosion. Increased erosion will necessitate some communities having to plan for these changes; where some have to move facilities to save them, some will need to build dikes, and others will have to let the erosion take its course and let facilities go, because costs to move the buildings or cabins are too great. Bonding will not cover this issue.

BARG 8 The DEIS does not link these two issues (increase barge traffic and erosion) to the entire Kuskokwim River watershed, rather the DEIS considers these issues a lower river issue. I believe more time must be spent on these very important issues, and their impacts to the entire watershed.

LAND 3 **Land Management:** Animal poaching, trespass, government taxes, and land degradation; are just a few issues that will come with the proposed mine. The proposed mine will bring more people to the area, not only near the mine site, but to the entire Kuskokwim River watershed; and with an increase in numbers of people, land management issues also increase. Issues of trespass, competition for already limited resources, increase in ATV/snow-machine traffic leading to trail building, and increased user conflicts, are only a few of the potential land management issues the watershed faces.

SER 14 If the proposed mine happens, a borough will likely be established in the lower and middle Kuskokwim River regions. With that, the potential for taxing of private lands could happen, increased regulations to land owners, and increased government oversite would occur. Land owners to the region are some of the poorest in the United States and any increase in taxes will have a negative impact to the people of the region.

The DEIS does a poor job addressing the adverse effects that the proposed mine will bring to the entire Kuskokwim River watershed and the people who use and inhabit it. Alternative 1, the no action alternative, is the only means of ensuring these negative affects do no occur.

Pipeline and Corridor: The proposed pipeline and associated corridor is arguably one of the
REC 6 greatest negative impacts to the upper Kuskokwim River region and the people who use it. Yet, the negative impacts are farther reaching than the upper Kuskokwim River region, and will negatively impact the entire Kuskokwim River watershed and those that inhabit it. The pipeline and corridor will not only leave a scar on the landscape, but negatively impact wildlife, fish species, scenic beauty of the region, and ultimately, the people that utilize the area, not just the people of the upper Kuskokwim River, but people from all over the world that travel to the area to hunt and recreate. The construction of the pipeline and corridor will increase the likelihood
FSR 3 of a potential oil spill from fuel storage facilities; a threat to land, animals, and people. The only way to avoid the negative impacts from the construction and use of the pipeline and corridor is to support Alternative 1, the no action alternative.

IDIT 8 The pipeline and corridor will negatively impact the Iditarod National Historic Trail, and will disturb the cultural and aesthetic values of the trail, resulting in; a decrease in the scenic beauty, decreases in the opportunity to seek solitude, an increase in noise pollution, and a decrease in the desirability by some user groups to use the trail. These effects ultimately, lead to less eco-tourism, fewer wilderness seekers wanting to use the trail and travel to the upper Kuskokwim River region, and a decreased amount of commerce associated with the trail. The
LAND 3 pipeline corridor will increase access opportunities to the region, especially for non-wilderness seekers, resulting in more trespass issues, user group conflicts, and increased competition for wildlife and wild things.

FISH 13 The pipeline and corridor will cross hundreds of streams, rivers and tributaries. Disturbance to these tributaries will change them forever and will have a negative effect on wildlife and fish species. The Big River is one of the rivers the pipeline will cross. Just downstream of the proposed crossing, is a very important Sheefish spawning ground and if the pipeline is constructed it will have the largest negative impact to a single fish species on the whole Kuskokwim River system. Eighty percent of documented Sheefish spawning grounds are located on the Big River of the Kuskokwim River. The Sheefish spawning grounds make up an area 0.136 percent of the entire Kuskokwim River. An impact to this very small area of spawning habitat would have a disproportionately large impact to the entire Sheefish population of the watershed. Declines in Sheefish spawning success and survival caused by pipeline disturbance will negatively impact to both the species and the people who utilize it.

SER 29 The DEIS does a poor job studying the impacts of the pipeline and corridor to the people, in particular. Negative impacts to way of life, fishing success, hunting success, and productivity of trapping grounds are of particular concern. The pipeline and corridor also has the potential to impact cultural and archaeological interests, such as graves and artifacts, but the long term effects harm both current and future generations within the watershed.

CUL 2

WILD 1

Endangered/Threatened Species or Species of Concern: The DEIS does a poor job identifying and addressing the topic of endangered/threatened species or species of concern. Many animal species will be negatively affected by the proposed mine and some of those species cannot take any more negative disturbance, some of those species are, but are not limited to:

The endangered plant species **Smelowskia pyriformis**, found to date only at three sites in the upper Kuskokwim river drainage on foot hills of the western Alaska Range, located where the pipeline and corridor will be constructed, any disturbance to this habitat could bring this species to extinction.

The **Rusty Blackbird**, a species of concern that recently has declined from 13 million birds to 2 million, breeds in the boreal forest of Interior Alaska. A possible cause of this species decline is due to acid rain and mercury accumulation on the breeding grounds. The proposed mine and pipeline will negatively impact breeding success for this bird species, necessitating a endangered or threatened listing.

The **Big River Caribou Herd**, with a population size of about 750 animals, is located where the pipeline and corridor is to be built. Disturbance to the herds habitat and increased pressure of hunting, and herd disturbance from heavy equipment and helicopter use will negatively impact this important herd. The pipeline and corridor will destroy the fragile lichen this species depends on, which cannot be remedied by "reseeding" the disturbed areas. Lichen take hundreds of years to form in the quantities required by large herbivores like the Big River Caribou Herd.

The Kuskokwim River **Chinook Salmon**, a current species of concern, will be negatively impacted by the proposed mine to the point it may be listed as endangered or threatened, necessitating even more stringent fishing regulations. Not only will barge traffic harm the species, but much of the Crooked Creek chinook salmon spawning grounds will be destroyed.

The only way to avoid negative disturbances to these species is to adopt Alternative 1, the no action alternative.

Comment Summary:

VIS 1 The proposed mines visual impacts are far reaching, and affect more than just the surface disturbance at the mine site, but include; the barge landings, access roads, pipeline, pipeline corridor, bethel barge landing, Dutch Harbor barge infrastructure, camps, pits, runways, tailings piles, barge traffic, waste rock facilities, dry stack tailings, dams, plant site, overburden stockpiles, mine site facilities, tank farms, and many other surface disturbances that a person

VIS 1

can see. Yet, it is the impacts that cannot be seen that really concern me, such as; toxic dust, mercury, sodium cyanide, polluted waters, polluted fish and wildlife, increased noise, chemical laden tailings ponds and many other issues associated with a large scale mining operation. Socio-economic issues associated with the proposed mine also scare me because it will change the people who work on the mine, they will have more money for the not so desirable things, like drugs and alcohol. Workers will also be on a work schedule that removes parents, grandparents, children from their communities, and their families. Many things concern me about the proposed mine, and I am not convinced that current mining practices are capable of addressing any of these concerns. Too many mining companies have proven that profit margin is the real driving force behind mine decisions, and not the health and well-being of the people or place where a mine is constructed. That is why I support Alternative 1, the no action alternative, because overall, it is the best decision for the Kuskokwim River watershed and its people.

SVE 4

From: Lisa Wiley
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Tuesday, May 31, 2016 9:19:34 PM

To whom it may concern,

NSB 1 I am against the development of the Donlin Gold Mine, especially in the historic Iditarod Trail region. Please register my disapproval of the project, as a long term Alaska resident and educator.

Sincerely,
Lisa Wiley

From:	Bellion, Tara
To:	Evans, Jessica
Subject:	FW: Donlin Gold Draft EIS comment
Date:	Tuesday, March 08, 2016 9:58:14 AM
Attachments:	Alaska mining.docx

-----Original Message-----
From: Bekky Thompson [mailto:BekkyT@crpipe.net]
Sent: Thursday, February 25, 2016 7:32 AM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

Here is our comment.

Thanks, Bekky

Office Manager

I have been in Alaska for 43 Years and my wife's family has been here from the early 1900's. Mining is an important part of Alaska's economy. Dunlin Gold Mine is environmentally safe, designed to be the safest and most stable. Mining is greatly important to Alaska's future as it is to our children creating future sustainable jobs. Dunlin has a strong history of project planning and is dedicated to researching environmentally safe practices and technology. During construction there will be many jobs available to our

SER 5 local people and for the operation of the mine which is expected to be more than 25 years will create jobs for many Alaskan's. Mining has been part of Alaska since the 1800's and will continue to part of Alaska's economy for many years to come. I urge you to grant approval for this project for Alaska's future.

Dennis Wilfer

USACE
RECEIVED
MAY 1 1 2016
AK REGULATORY

April 25, 2016

U.S. Army Corps of Engineers
Alaska District
CEPOA-RD-Gordon
PO Box 6898
JBER, AK 99506-0898

To Whom It May Concern,

I am writing to express my support for Alternative 2, the Donlin Gold Project.

SER 15 Donlin Gold has a proven record of commitment to the people of the Yukon Kuskokwim (YK) Region. The economic potential it has for the local communities is destined to have a grossly positive impact to a region that is currently experiencing one of the highest unemployment rates in the state. With Donlin Golds commitment to local hiring, young and future generations have much to look forward to, including: well-paying jobs in a variety of career fields, educational opportunities, and economic stability that will be broadly felt throughout southwest Alaska.

Donlin Gold has also demonstrated a notable commitment to the environment. Donlin has 16+ years of extensive studies focused on creating an environmentally and socially responsible project; and has purposefully designed its project to reduce the overall footprint of the mine and diminish any social impacts it may have on the YK region. Proposals such as building a natural gas pipeline have been developed in an effort to minimize barge traffic on the Kuskokwim River. Furthermore, a specific route for the pipeline has been selected to minimize disturbance to
IDIT 1 known historic landmarks such as the Iditarod Trail. It is worth noting that the Iditarod Trail was originally created and used for the purpose of the Gold Rush in 1910. While we certainly want to preserve the beauty of our Alaska heritage, let us not forget how that history was created.

Lastly, I think it's worth noting that this region of land and its resources belong to the shareholders of Calista and The Kuskokwim Corporation. This area in particular was specifically selected during the Alaska Native Claims
LAND 1 Settlement Act (ANCSA) due to its rich mineral content and the economic potential it would provide for its shareholders and descendants. ANCSA understands the importance of heritage and a subsistence lifestyle, but also recognizes the potential for achieving unity and managing the land for both modern and traditional uses.

Again, I am writing to express my support for Alternative 2, the Donlin Gold Project.

Regards,

Stanley W. Wilkinson

Signature

STANLEY W. WILKINSON.

Print Name

From: Clark Williams
To: donlingoldeis, POA
Subject: [EXTERNAL] Mine at Donlin.
Date: Thursday, November 26, 2015 9:24:59 PM

This citizen supports this mine. A hard rock mine is stable and cleaner environmentally. While I am
SER 5 older now, this mine won't help me personally. But the young people need real jobs for their futures and families. To many lives have been stepped on by the incessant commandeering by environmental extremists. I personally remain a concerned conservationist.

C. D. Williams
P. O. box 70322
Fairbanks, AK 99707

Sent from my iPhone

May, 23, 2016

Greetings U.S. Army Corps of Engineers.

This Martin Williams from Kwethluk Alaska 18 miles up river from Bethel Alaska. I Worked up at Donlin back in 2005 - 2007, I enjoyed working up there it was nice Clean and Safe Place to work during my time working up at Donlin. I worked as a Core driller assistance and it helped me with my bills.

SVE 1 I hope in the near future they open the mine I want to work for Donlin again. With the new technology way to mine is safe and if we work as a team and work safe, the mine can make it, we have good workers in our world.

Thanks,
Martin Williams

Williams
Kwethluk, 99621

KWETHLUK AK
23
99621

U.S Army Corps of Engineers
Alaska District
CEPOA-RD Gordon
P.O. Box 6898
JBER, AK 99506-0898

From:	Craig, Bill
To:	Bellion, Tara; Evans, Jessica; Smith, Neal
Subject:	FW: [EXTERNAL] Donlin Gold Draft EIS comment
Date:	Thursday, April 21, 2016 8:08:02 AM

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Thursday, April 21, 2016 7:58 AM
To: Craig, Bill
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment

-----Original Message-----
From: Larry Wilmarth [mailto:larrywilmarth@gci.net]
Sent: Wednesday, April 20, 2016 6:07 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

NSB 1

As a long time business owner in Alaska that supports and is kept in business by construction activity throughout the state, I'd really like to see this project succeed. As a person who has been active in the Kuskokwim region since 1960, I have a good handle on the struggle of the Native people to make a living in that region. The Native people I have met who have worked at Donlin in the past, praise the people running that operation, and are waiting anxiously to get a chance to go back again.

From: Larry Wilmarth
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Project
Date: Friday, November 27, 2015 9:04:37 AM

SVE 5 The Donlin project would help opening up the area to further exploration, with probable economic benefit. However the boon to the Native population will dwarf all other benefits. I have worked in that area off and on since 1960. I do not want to see any upsets that would heavily damage the fish populations but I do want to see the project succeed. I firmly support it. Larry Wilmarth 907 440 2007

From:	Craig, Bill
To:	Bellion, Tara; Evans, Jessica; Smith, Neal
Subject:	FW: [EXTERNAL] Donlin Gold Draft EIS comment
Date:	Thursday, April 21, 2016 8:08:15 AM

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Thursday, April 21, 2016 7:58 AM
To: Craig, Bill
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment

-----Original Message-----
From: John Wood [mailto:jcwood@mtaonline.net]
Sent: Wednesday, April 20, 2016 10:57 AM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

Folks, I am sending you this comment email in support of the Donlin EIS and the development of the Donlin Gold mine.

My name is John Wood and I have been a resident of Alaska since 1958 (58 years and counting!). I have been a registered Mining Engineer in Alaska since 1974 and, while working for the Alaska Industrial Development and Export Authority, managed the state's interest in the DeLong Mountain Regional Transportation System (the road and port serving the Red Dog mine and surrounding mining district) for 15 years, including the system's expansion to handle a doubling in concentrate and mine supply volume.

I also have run the Iditarod Sled Dog Race four times and served as a race judge (over the entire race length) on two other occasions.

Please count me as supporting the entire Donlin project as outlined in the EIS documents. The project
SER 20 will be an economic driver for this region of the state for many years. Additionally, tax revenues to the state (both corporate and personal income tax), will be substantial. Finally, based on my unique experiences as detailed above, I believe that the pipeline can be constructed in the Rainy Pass area
IDIT 2 without detracting from the Iditarod Race "ascetics" that is a concern for some.

Please allow the Donlin project to proceed as detailed in the submitted EIS documents.

Thank you for your time and consideration.

John Wood

From: david wright
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Tuesday, May 31, 2016 10:02:20 AM
Attachments: Donlin Letter.docx

Please consider my comments regarding the Donlin Gold Project.

Thank you,

David Wright

May 30 2016

U.S. Army Corps of Engineers
Alaska District
CEPOA-RD-Gordon
P.O. Box 6898
JBER, AK 99506-0898

Dear Sir/Madam,

I am writing to express my support for the proposed Donlin Gold Project.

LAND 1 The Donlin Gold Project is located in an historic mining district, on lands that were selected by Calista Native Corporation particularly because of the mineral potential which could provide an economic base for the region, currently one of the highest poverty areas of the United States.

The partnership developing the Donlin Project has an outstanding record of respect for the environment and the community and social values of the residents of the region and Alaska.

Both local hire and environmental and work site safety have been core elements of the business plan from the very beginning.

The Donlin Project has maintained open communication with all involved parties since conception, holding frequent public meetings and engaging with stakeholders in at every opportunity.

SER 12 In addition to providing as many as 1,200 long-term, high paying jobs to local residents, Donlin will offer many substantial opportunities for local businesses in supply, logistics, contracting and other areas. These jobs and business opportunities will last for decades. The construction phase will employ roughly 3,000 workers for four years.

SER 2 Through ANCSA revenue sharing provisions, all Alaska Native regional and village corporations and shareholders will receive direct economic benefits.

SER 18 The infrastructure to support the mine will include port facilities, a gas pipeline and a communications system all of which will benefit the region through lower cost energy, goods, and services.

The Donlin Project has invested hundreds of millions of dollars over the last decade to develop an environmentally safe mine focused on mitigating possible negative impacts on the regional environment and social fabric.

IDIT 2 I support Alternative 2, which will minimize impact on the historic Iditarod National Historic Trail and the Iditarod Sled Dog Race.

Thank you,

David Wright
1977 Red Leaf Rd.
Fairbanks, Alaska, 99709

April 25, 2016

Patricia K. Yaska
P.O. Box CHU
Chuathbaluk, AK 99557-8999
patriciayaska@yahoo.com

US Army Corps of Engineers, Alaska District
PO Box 6898
JBER, Alaska 99506-0898
POA.donlingoldeis@usace.army.mil

Re: Comments on Donlin draft Environmental Impact Statement

To Whom It May Concern:

My name is Patricia Yaska and I live in Chuathbaluk, AK. I am commenting on 3 sections of the draft EIS.

BARG 12

Barging and shallow areas

The increase in barge traffic where we will now see double hulled barges pushing four containers is a big concern. We have seen the river change in just the last two years. Just downriver from Chuathbaluk we have seen shallow areas and sandbars develop where there weren't any before. There is one fellow that ran the Kuskokwim River for 50 years and never had a problem between Aniak and Chuathbaluk, and he hit bottom last year because it was so shallow. There will be times in the summer when it will be too shallow for the Donlin barges – which need 7.5 feet of water – to go through some areas. The barges will have to stop. The traffic will increase if barges have to uncouple and push containers through one at a time.

There are lots of shallow areas between Lower Kalskag and Aniak, so both Alternative 2 and Alternative 4 would still mean barges would get stuck.

Will these areas be dredged? Dredging will be a major impact on the fish, due to both removing the river bed and as the sediment settles downstream.

MIT 24

Barging and fishing

Barging will have major impacts on smelt. This is a resource that we cannot replace. I suggest that Donlin Barges should stop going up river when the smelt are spawning (May), until the spawn is over. I understand that barges have been coming up the Kuskokwim as soon as the river ice breaks for years. But that is about one barge a week or possibly every 2 weeks for the upriver villages (Chuathbaluk, Napaimute, Crooked Creek). That would have little effect on the smelt. Donlin is proposing at least 3 barges a day, in the average 110 day barging season. That amount of barging would almost definitely impact the smelt eggs. There are little studies that show where smelt spawn, and how deep the water needs to be. I believe that if the donlin barges do not wait for the smelt to spawn, they could possibly eliminate the entire species from the Kuskokwim River.

Barging and recreation

The draft EIS says that not many people use the river for recreation. That is not true. We use the river all summer for recreation, to go to areas for camping or fishing or berry picking or just to be on the river. The draft EIS says that people can just go to other places to recreate. How can we do that? To go from Chuathbaluk up past Jungjuk where the barges stop is a very long trip (45 miles). There aren't other places we can go. This should not be classified as a low impact; it will be a major impact on our way of life and an impact on the reason we choose to live in this place.

(Chapter 3: Environmental Analysis, 3.16 Recreation, Section 3.16.3.2.2, page 3.16-16)

The maps below are maps of Chuathbaluk, which shows the ways we use the river during the summer, to go swimming and drift net fishing.

REC 3

REC 3

Barging and recreation cont'd.

The uses that aren't shown in the map are: cutting fish on the beach using fish rafts, and rod and reel fishing.

I would like more studies done to show how many people are actually on the river every day during the summer, rain or shine, who would be affected by the 3 barges a day that would pass Chuathbaluk, and other villages on the Kuskokwim.

Airplanes

CLIM 9 There will be airplane flights in and out of the Donlin camp every day when the mine is operating. We know that areas around airports in towns are less desirable because of the noise and emissions. No one has looked at the effects of those airplanes and their fumes and noise on people at the mine or on vegetation or on wildlife. The section on climate change (3.26.4.2) did not consider the increased emissions from the airplanes. NOI 2 The section on noise did not consider the impacts of airplane noise (Table 3.9-14 and 3.9-15 and 3.9-18).

PHL 13 This is a data gap. Studies need to be done to determine the human health and noise effects of the airplanes. CLIM 9 Direct health effects and indirect effects due to putting out emissions that worsen climate change. Studies also need to look at the impacts of airplane emissions and greenhouse gases to vegetation too.

Summary

BARG 1 Barging will have major impacts on our fish, our fishing, and our recreation. FISH 5 The draft EIS says that there will be major impacts to our smelt – and they haven't even studied other fish like lush and whitefish that we require. The draft EIS says that there will be low impacts on recreation, but it will have a major REC 3

REC 3 impact on recreation throughout the Central Kuskokwim. This mine should not go through because of the major impacts that will definitely happen due to barging on the river.

I do not support Alternative 2. I support Alternative 1, the no mine alternative.

Sincerely,

/S/
Patricia K. Yaska

From:	Tiffany Zulkosky
To:	donlingoldeis, POA
Cc:	Dan Winkelman; Natalia Paul-Brannon
Subject:	[EXTERNAL] Donlin Gold Draft EIS comment
Date:	Monday, April 25, 2016 11:27:53 AM
Attachments:	43AF7589-F7C5-4AA8-A81E-617F21DFBB43[6].png Donlin Resolution 16.04.04.pdf

To Whom It May Concern:

The Full Board of Directors for the Yukon-Kuskokwim Health Corporation submit Board Resolution 16-04-04 (attached) in opposition to the Donlin Gold Mine Project for your review and as comment to the Draft Environmental Impact Statement (EIS).

In brief, the Board opposes the development and operation of the Donlin Creek Gold Mine due to the extreme hazards and excessive risks it would pose to the health and welfare of the people of the Yukon-Kuskokwim Delta Region. Again, a copy of the full resolution is attached.

Should you have any questions, or difficulty opening the attachment, please feel free to contact me via email or at the phone number below.

Thank you,

Tiffany Zulkosky
Vice President of Communications

YUKON KUSKOKWIM
HEALTH CORPORATION
ADMINISTRATION

Post Office Box 528, Bethel, Alaska 99559
(P) 907.543.6013
(F) 907.543.6006

YUKON-KUSKOKWIM HEALTH CORPORATION

"Working Together to Achieve Excellent Health"

Resolution No. 16-04-04

A Resolution of the Yukon-Kuskokwim Health Corporation Full Board of Directors in Opposition to the Donlin Gold Mine Project

WHEREAS: The Yukon-Kuskokwim Health Corporation is a tribal organization administering self-governance programs, services, functions and activities under the Indian Self-Determination and Education Assistance Act; and

WHEREAS: The Mission of the Yukon-Kuskokwim Health Corporation is "Working Together to Achieve Excellent Health"; and

WHEREAS: The Yukon-Kuskokwim Health Corporation provides health services to people in an area of Southwest Alaska comparable in size to the State of Oregon; and

WHEREAS: Many people living within the service area of the Yukon-Kuskokwim Health Corporation experience poverty and unemployment rates among the highest in the United States, according to the Labor Department's Alaska's Economic Trends October 2013 report; and

WHEREAS: The proposed Donlin Gold mine is expected to employ 3,000 persons during construction and up to 1,400 persons during operation with a large multimillion dollar annual payroll; and

SER 7

WHEREAS: The Board of Directors recognize that although the mine will add jobs to the region, many locally hired persons that worked for the mine have relocated from their home village to more metropolitan cities with their earnings and Donlin provides transportation from residence to work for each job rotation; and

WHEREAS: The earnings of many present and former employees of the mine have gone to larger cities; and

WHEREAS: The relocation of the families of the mine workers has caused a drain of human resources in small villages in the region and that drain is expected to increase as the workforce of the mine increases; and

WHEREAS: The majority of people living within the service area of the Yukon-Kuskokwim Health Corporation depend upon the Kuskokwim River for their food supply and in many villages, their water supply as well; and

SUB 17

WHEREAS: The proposed Donlin Gold mine is located approximately 150 miles northeast of Bethel, Alaska, about 10 miles from the Kuskokwim River, a large salmon producing river; and

P.O. Box 528 • Bethel, Alaska 99559 • 907-543-6000 • 1-800-478-3321

YUKON-KUSKOKWIM HEALTH CORPORATION

"Working Together to Achieve Excellent Health"

SUB 17

WHEREAS: The reported method of gold retrieval for this mine will involve blasting and crushing rock, then mixing the pulverized rock with cyanide and other chemicals; and

WHEREAS: The rock in the mine area contains mercury which will be released into the air through the mining process and the mercury will fall onto the streams and land and will contaminate fish, animals and ultimately people; and

MON 9

WHEREAS: Studies are being done, but none can predict the effects of mercury, cyanide and other disruptions in the Yukon-Kuskokwim ecosystem in 100 years, when our grandchildren are living here; and

WHEREAS: The proposed project is expected to have the following components:

a. A 315 mile, 14 inch natural gas pipeline coming across the Alaska Range;
b. A new Barge Terminal facility in Bethel;
c. A new 5-acre port on the Kuskokwim River near Angyaruaq or Jungjuk Creek;
d. A new 30-mile road from the upriver port to the mine site;
e. A 5,000 foot airstrip
f. A 40,000,000 gallon diesel fuel tank farm;
g. A Tailings pond for waste chemicals;
h. A 2-mile long and 1-mile wide open pit; and
i. A use of 10,000 acres of land;
j. Increased Barge traffic on the River hauling fuel, chemicals (including cyanide), supplies, and equipment on the Kuskokwim River daily during the ice-free months.

SUB 15

WHEREAS: There have been examples of environmental disasters resulting from similar type large industrial sized mines that experienced unexpected failures of their safety measures; and

WHEREAS: A failure of the safety measures planned for the Donlin Gold Mine could cause catastrophic damage to the ecosystem of the Yukon-Kuskokwim Delta and would obliterate the subsistence way of life for the people served by the Yukon-Kuskokwim Health Corporation; and

WHEREAS: Such failure would devastate the fisheries on the Kuskokwim River and its tributaries, thus negatively impacting the health of the people of the region.

PHL 4

NOW THEREFORE BE IT RESOLVED that Yukon-Kuskokwim Health Corporation Full Board of Directors hereby opposes the development and operation of the Donlin Creek Gold Mine due to the extreme hazards and excessive risks it would pose to the health and welfare of the people of the Yukon-Kuskokwim Delta Region.

YUKON-KUSKOKWIM HEALTH CORPORATION
"Working Together to Achieve Excellent Health"

CERTIFICATION

Adopted at a duly convened meeting of the Board of Directors of the Yukon-Kuskokwim Health Corporation at which a quorum was present on April 22, 2016 by a vote of 19 in favor, 0 opposed, 0 abstaining, and 0 absent.

Attested:

Esai Twitchell, Chairman
YKHC Board of Directors

Patrick Tall, Secretary
YKHC Board of Directors

YUKON-KUSKOKWIM HEALTH CORPORATION

"Working Together to Achieve Excellent Health"

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YUKON-KUSKOKWIM HEALTH CORPORATION

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Adopted at a duly convened meeting of the Board of Directors of the Yukon-Kuskokwim Health Corporation at which a quorum was present on April 22, 2016 by a vote of 19 in favor, 0 opposed, 0 abstaining, and 0 absent.

Attested:

Esai Twitchell, Chairman
YKHC Board of Directors

Patrick Tall, Secretary
YKHC Board of Directors

From:	Vanessa Ray-Hodge
To:	Gordon, Keith POA; donlingoldeis, POA
Cc:	Susan Jones; Cory L. Hitchcock; Lloyd Benton Miller (E-mail); Dan Winkelman; Esai Twitchell Jr.
Subject:	[EXTERNAL] Donlin Mine Draft EIS Comments
Date:	Tuesday, May 31, 2016 3:38:54 PM
Attachments:	L-K Gordon USACE re YKHC Comments to Draft EIS 053116 final.pdf

Dear Mr. Gordon,

On behalf of the Yukon-Kuskokwim Health Corporation, we submit the attached comments regarding the proposed Donlin Mine.

Thank you,

Vanessa Ray-Hodge
Sonosky, Chambers Sachse, Endreson & Perry, LLP
500 Marquette Ave N.W., Suite 660
Albuquerque, NM 87102
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May 31, 2016

VIA E-MAIL

Keith Gordon, Project Manager
U.S. Army Corps of Engineers
Keith.Q.Gordon@usace.army.mil
POA.donlingoldeis@usace.army.mil

Re: Donlin Gold Mine Draft Environmental Impact Statement

Dear Mr. Gordon:

On behalf of the Yukon-Kuskokwim Health Corporation ("YKHC"), we are submitting comments on the Draft Environmental Impact Statement ("Draft EIS") regarding the environmental impacts of the proposed Donlin Gold Mine ("Donlin mine") near Crooked Creek, Alaska in the Yukon-Kuskokwim Delta region. YKHC is a tribal organization that provides health services to people in southwest Alaska through the administration of self-governance programs and activities under the Indian Self-Determination Education and Assistance Act.[1] On
EJ 6 April 22, 2016, the YKHC Board of Directors passed a unanimous resolution opposing the development and operation of the Donlin mine "due to extreme hazards and excessive risks it would pose to the people of the Yukon-Kuskokwim Delta Region."[2] Many people within the YKHC service area experience poverty and unemployment. The majority of YKHC service area residents depend on subsistence hunting, gathering, and fishing for not only their food supply, but as a vital component of their cultural and spiritual identity.[3] There is little to no industrial

[1] 25 U.S.C. § 450 *et seq.*
[2] YKHC Res. 16-04-04 at 4 (Apr. 22, 2016).
[3] YKHC Res. at 1; *see also* discussion *infra* at Section K.

development in the area, though some historic mines are scattered around the region, and the proposed mine will have irreversible impacts to YKHC communities.

The YKHC Board of Directors acknowledges that the mine is expected to employ 3,000 people during construction and up to 1,400 people during operations, which is significant for the region. However, the long-term impacts from the mine will significantly change the people living in the region, potentially devastate the fisheries in the area, and pose an unacceptable risk to the subsistence way of life of the Region's people. In fact, the Donlin mine will be located near the mainstem of the Kuskokwim River, which is heavily relied upon by residents of the Yukon-Kuskokwim ("Y-K") Delta. The Kuskokwim River is already contaminated from historic mines in the area that have seeped contaminants into the river. Additional impacts from the Donlin mine could further devastate the fishery. The Draft EIS unreasonably predicts low to moderate risks of mine impacts by assuming that mitigation and best management practices will prevent environmental hazards or effects. Although similar predictions have failed to anticipate
RME 2 catastrophic mining disasters at other mining sites around the world, the Draft EIS contains very little discussion of the potential for catastrophic accidents or failures due to human error or incorrect scientific predictions and assumptions. Indeed, no one can predict the effects that mercury, cyanide and other contaminants could have on the ecosystem 100 years from now, and studies show that the science involved in such predictions is faulty. Below we further elaborate on these and other weaknesses and failures of the Draft EIS.

A. Background on Donlin Gold Parent Companies

Donlin Gold LLP ("Donlin Gold") is the corporate subsidiary that will be responsible for the mining project. Donlin Gold is owned by Barrick Gold Corp. and Nova Gold Resources Inc. Both companies have failed to protect human health and the environment at their mining projects in the past.

Barrick Gold is a Canadian company, and the world's largest gold extractor. It has a particularly atrocious reputation abroad, due to serious disregard for the rights of local inhabitants, indirect use of violence through local government or law enforcement, exploitation of cheap labor, water depletion, and failure to keep promises to use environmentally protective practices. Examples occurring within the past ten years include projects in Chile, Argentina, Papua New Guinea, Australia, Peru, and the Philippines.[4] Although the United States has a more rigorous environmental protection regime than some of these countries, these examples, at a minimum, illustrate that Barrick Gold will cut corners when it can and that as a result its operations have negative impacts on local communities.

[4] *See generally* CorpWatch, *Barrick's Dirty Secrets: Communities Worldwide Respond to Gold Mining's Impacts* (Terry Allen et al. eds., 2007), *available at* http://s3.amazonaws.com/corpwatch.org/downloads/Barrick_final_sml.pdf; *see also* Philip Mattera, *Barrick Gold: Corporate Rap Sheet*, Corporate Research Project, http://www.corp-research.org/barrick-gold (last accessed May 27, 2016).

That is particularly concerning here. Although Donlin Gold must obtain necessary federal and state permits to operate its mine, there are gaps in the ongoing regulatory oversight of hard rock mines that will exist after a final EIS and Record of Decision are issued and permits are approved.[5] Moreover, as noted above, the environmental impacts discussed in the Draft EIS for the Donlin mine are premised on Donlin Gold following best management practices and mitigation that are in large part voluntary. These gaps will provide Donlin Gold with the opportunity to cut corners once the operation is approved, and prevent regulatory agencies from requiring specific changes in the future.

RME 2

Even in the United States, Barrick Gold and its subsidiaries have not protected the safety and health of miners, the surrounding community, and the environment. In 2005, the New York Times reported that a Barrick Gold subsidiary operating in Nevada was using an excessive amount of water supplies and generating high amounts of toxic mercury waste.[6] Then in 2013, three Barrick American subsidiaries resolved Environmental Protection Agency ("EPA") allegations that they incorrectly reported their toxic waste releases at two mines in Nevada by agreeing to pay $278,000 in fines and spend an additional $340,000 to identify metal compounds formed in one of the mine's oxide mill processes.[7] These chemicals include compounds of cyanide, mercury, and lead, all of which will be used in ore processing at the Donlin mine.

While Barrick Gold had to correct its reports from 2005-2011 and pay the fines, nothing can reverse the releases or their impacts to human health and the environment. And in 2015, Barrick Goldstrike, another Barrick subsidiary, agreed to pay $196,000 to settle EPA and state allegations that it illegally treated and disposed of toxic mercury waste without the required permit.[8] Rather than complying with their environmental obligations, Barrick Gold's domestic subsidiaries apparently often prefer to simply pay a fine if they are caught breaking the law, which will surely be cheaper in the long run than adjusting their practices to be more protective

---

[5] *See* Office of Inspector Gen., U.S. EPA, *EPA Can Do More to Help Minimize Hardrock Mining Liabilities* (1997), *available at* https://www.epa.gov/sites/production/files/2015-10/documents/7100223_0.pdf (finding critical gaps in Federal and state regulation especially for financial assurances, and noting that Federal statutory authority is spread among agencies with no one agency having overall statutory authority and EPA having no specific statutory authority to address potential environmental problems at active hardrock mines); Jane Perlez & Kirk Johnson, *Behind Gold's Glitter: Torn Lands and Pointed Questions*, N.Y. Times (Jun. 14, 2010), http://www.nytimes.com/2005/10/24/world/behind-golds-glitter-torn-lands-and-pointed-questions.html?_r=0 (hereinafter "*Behind Gold's Glitter*") (citing a GAO report that "chastised the [EPA] and said legal loopholes, corporate shells and weak federal oversight had compounded the costs and increased chances that mining companies could walk away without paying for cleanup and pass the bill to taxpayers.").

[6] Kirk Johnson, *Drier, Tainted Nevada May be Legacy of Gold Rush*, N.Y. Times (Dec. 30, 2005), http://www.nytimes.com/2005/12/30/us/drier-tainted-nevada-may-be-legacy-of-gold-rush.html (hereinafter "*Drier, Tainted Nevada*").

[7] News Release, U.S. EPA, EPA Requires Nevada Gold Mines to Correct Reporting Violations, Pay $618,000 (Feb. 6, 2013), *available at* https://yosemite.epa.gov/opa/admpress.nsf/0c0affede4f840bc8525781f00436213/dd69c99732d6b24985257b0a0071bc33!OpenDocument.

[8] *Newmont and Barrick Gold Settle Hazardous Waste Release Allegations with US EPA*, Mining Tech., (Mar. 12, 2015), http://www.mining-technology.com/news/newsnewmont-barrick-gold-settle-hazardous-waste-release-allegations-us-epa-4530892.

RME 2 of the environment. The Draft EIS for the Donlin mine completely fails to consider the risk associated with Barrack Gold and its subsidiaries' record of mining in assessing the potential for environmental impacts.

The other company that owns Donlin Gold is Novagold Resources Inc., a newer Canadian company that also has a history of mishaps in Alaska, including the complete failure of the Rock Creek mine in Nome, Alaska.[9] Rock Creek was a gold mine operated by Novagold's subsidiary, Alaska Gold Company, Inc., and only operated for two months before closing in November 2008. During this short period, the mine was shut down twice for machinery failures, and was repeatedly fined for violation of its permits.[10] After two workers died in an accident at the mine in 2007, the Mine Safety and Health Administration fined one of Novagold's equipment contractors for failing to comply with federal safety regulations.[11] The Alaska Department of Environmental Conservation also cited Alaska Gold Company on two occasions for violations of turbidity limits in stormwater run-off into Rock Creek.[12] "Additionally, Alaska Gold Company did not construct a number of stormwater diversion ditches required by the stormwater pollution and prevention plan. The mine's tailings impoundment system was also flawed. The impoundment dam was nearly overtopped with water because it had been designed to only hold solids."[13] The mine also failed to adequately control dust generated by pit blasting and trucks driving on the road to the mine.[14] Cleanup of the site is estimated at $30 million, but Rock Creek only posted a reclamation bond of $6.8 million, requiring the State of Alaska to make up the missing $23.2 million costs of cleanup.[15] These serious failures leave little confidence that through Donlin Gold, Novagold will actually act in an environmentally conservative and responsible manner even if it receives all state and federal approvals to proceed.

B. Fugitive Dust Concerns

It is not disputed that blasting, loading, and hauling of ore and waste along mine roads needed for the construction and operation of the Donlin mine will create fugitive dust. In addition to the nuisance factor posed by this dust, the chemical composition of the dust is of

[9] *Rock Creek Mine*, Alaskans for Responsible Mining, https://akmininginfo.org/issues/rock-creek-mine/ (last accessed May 27, 2016) (hereinafter "*Rock Creek Mine*") ("The Rock Creek project underwent an abbreviated Environmental Assessment process, instead of a full Environmental Impact Statement process. Outside observers have suggested that many of these issues could have been avoided had the mine undergone a full Environmental Impact Statement process, because the mine would have undergone more thorough planning.").
[10] *Id.*
[11] Press Release, Alaska's Big Vill. Network, No Donlin Gold Mine in Alaska (Jan. 22, 2013), *available at* http://www.centerforwateradvocacy.org/view/news/51cbf9977896bb431f6bb5a8/; *Mine Contractor Fined in Deaths*, Juneau Empire (Aug. 10, 2008), http://juneauempire.com/stories/081008/sta_316886692.shtml#.V0T5WORVX9o.
[12] *Rock Creek Mine*.
[13] *Id.*
[14] *Id.*
[15] *Id.*

concern to residents of the Y-K region because it can contain mined metals.[16] These can include copper, molybdenum, arsenic, mercury, and lead.[17] The Draft EIS does acknowledge that the fugitive dust effect would range from local to regional, but only in that it assumes dust could be measurable as far as ten miles from the Donlin mine.[18] The Draft EIS estimates that fugitive dust effects would be permanent, potentially accumulating and persisting over the life of the Donlin mine, but that overall net effects from the mine site would be minor to moderate.[19] Similarly, it predicts that the net effects from the transportation facilities and pipeline would be minor to
PHL 16 moderate.[20]

The Draft EIS, however, does not adequately discuss the actual impacts that dust could have on Crooked Creek, a small village with little infrastructure and no industrial operations,[21] located ten miles from the Donlin mine site. Even assuming that there will be overall low to moderate impacts from fugitive dust (which is disputed), this will have a greater impact on a community virtually free today from fugitive dust and its negative health impacts than it would in an industrialized area. The Draft EIS also fails to analyze the potential consequences of dust beyond ten miles from the Donlin mine site and, as noted in the YKHC Resolution, the long-term impacts that it will have on the ecosystem in 100 years. Rather than evaluating the full impacts of dust, the Draft EIS applied a ninety percent control efficiency to estimate how much fugitive dust could be generated from unpaved roads (haul roads and access roads), material handling (ore and waste), and maintenance equipment (dozers, graders, water trucks).[22] The Draft EIS also uses an eighty percent control efficiency to estimate how much dust could be generated by flat surfaces exposed to wind erosion, as part of its estimate of land and air transportation
AIQ 3 construction phase emissions.[23] Although no controls were applied to the fugitive emissions resulting from drilling, blasting, or wind erosion of the tailings beach,[24] these optimistic dust control assumptions likely contribute heavily to the Draft EIS's conclusion that dust emissions will only have moderate impacts. As a result, there is no discussion in the Draft EIS addressing
FISH 10 how dust and silt from the road during the life of the project could wash downstream to affect spawning and rearing habitat in the Kuskokwim River.[25]

CLIM 1 The Draft EIS also minimizes the risks of human error in implementing mitigation and abatement practices and provides little discussion of how the existing (or future) climate in the area will affect dust control. The Alaska Department of Environmental Conservation ("ADEC")

AIQ 3

[16] David M. Chambers, Ctr. for Sci. in Pub. Participation, *Pebble Engineering Geology Discussion of Issues*, 3 (2007), *available at* http://www.pebblescience.org/pdfs/Pebble_Engineering_Geology-Chambers_Sep07.pdf.
[17] *Id.*
[18] Draft EIS at 3.2-1, 3.8-36.
[19] *Id.* at 3.2-1.
[20] *Id.* at 3.2-1 to 2-2.
[21] *See Id.* at 3.24-9 ("In the region of the proposed project, there are no industry operations at the scale of the proposed project.").
[22] *Id.* at 3.8-42, tbl.3.8-20, note b.
[23] *Id.* at 3.8-54, tbl.3.8-26, note a.
[24] *Id.* at 3.8-42, tbl.3.8-20, note b.
[25] *See* Section K, *infra*, discussing effects on subsistence.

AIQ 3 "has characterized the Yukon-Kuskokwim Delta region as quite windy, experiencing winds between 15-25 miles per hour throughout the year. These, winds, coupled with fine delta silt, help create dust problems for some southwestern communities."[26] There is no analysis of the impacts of the windy climate at and around the mine on dust control efforts. Thus, it is unclear whether wind could cause dust impacts beyond the estimated ten mile range over the course of the almost thirty years that the Donlin mine will be in operation, not to mention during the construction phase.

AIQ 2 Also absent from the Draft EIS is a robust analysis of cumulative effects of dust production from the mine and the thirty mile access road. The mining activities and road usage will introduce years of continual dust drift onto the surrounding lands and waters. This has been the case at the Red Dog Mine in Alaska, where the off-site drift of toxic mine products has created a serious environmental problem.[27]

WAQ 1 Given the location of the Donlin mine, over time large amounts of fine material could be washed into streams, wetlands, and the Kuskokwim River. The dust from the road and the Donlin mine itself will be ground rock which may contain materials that are toxic or which may become toxic in water.[28] Years of accumulation of fine materials cause stream substrates to become embedded, diminishing food production and fish egg hatching rates.[29]

AIQ 3 In addition, the Draft EIS does not specifically address the dust issue as it relates to the tailings storage facility. And, at least one study has found that one of the unique aspects of tailings facilities is that, even if the containment dam remains very stable, the facility can still cause environmental problems. For example, a tailings facility can generate significant dusting problems impacting air quality.[30]

C. Mercury Hazards

Mercury is a naturally occurring element abundant in southwest Alaska and is found within the Donlin mine deposit as cinnabar.[31] Mercury contamination is also present in the environment from ongoing mercury emissions from abandoned mercury mines in the area. Consequently, understanding and preparing for potential mercury emissions is particularly

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[26] Draft EIS at 3.8-27 (quotation marks and ellipsis omitted).
[27] Resisting Envtl. Destruction on Indigenous Lands & Alaska Cmty. Action on Toxics, *Mining and Community Health* 6 (2013), *available at* http://www.akaction.org/wp-content/uploads/2013/03/Mining_and_Community_Health.pdf.
[28] Draft EIS at 2-30; 2-49. *See also* Section H, *infra*.
[29] William J. Hauser, *Potential Impacts of the Proposed Pebble Mine on Fish Habitat and Fishery Resources of Bristol Bay* 13 (2007), *available at* http://www.pebblescience.org/pdfs/Pebble_Fish_Habitat_Report-Hauser_Sept07.pdf.
[30] *See* T.E. Martin et al., Mining, Minerals & Sustainable Dev., *Stewardship of Tailings Facilities* 10 (2002), *available at* http://pebblescience.org/pdfs/tailings_stewardship-1.pdf.
[31] Draft EIS at 2-21, 3.8-25.

important here because mercury already threatens the health of the local population dependent on fish and wildlife for food and their way of life.[32]

MIT 28 The EIS acknowledges that "[m]ercury emissions would be released into the atmosphere at the mine site during the operation and maintenance phase [25-30 years]" from almost every aspect of mine operations, including operations at the open pit mine, ore and waste rock facility, and tailings storage facility, as well as ore processing[33] and fugitive dust emissions.[34] It is unclear, however, exactly how mercury and mercury containing materials would be managed, because the Draft EIS states that the management plan is currently being developed.[35] Details of mercury management are necessary to a proper evaluation of the risk of mercury exposure, particularly over the long term, as mining emissions often extend beyond the operational period of the Donlin mine.[36]

The Draft EIS fails to adequately discuss or address the potential for human error and accepts, with little discussion, potentially under-scrutinized mitigation and best management practices. For example, in discussing impacts to air quality, the Draft EIS assumes that 99.6 percent of mercury released from the processing facility will be captured,[37] that dust suppression measures will quell ninety percent of dust generated from unpaved roads, and that "additional best practical methods" will suppress "other dust generating sources at the mine site."[38] The effectiveness of mitigation measures is often overstated, however, as they frequently fail to perform as planned,[39] and data on the long-term effectiveness of mitigation measures used in hardrock mines is lacking.[40] A more accurate prediction of the risk of mercury exposure would

[32] *See id.* at 3.2-27, 4-30; *See also* Section K, *infra*.
[33] There are expected to be six control points during the ore processing cycle for mercury to capture liquid elemental mercury and mercury impregnated carbon. Draft EIS at 2-21.
[34] *Id.* at 3.8-38.
[35] *Id.* at 2-38.
[36] *See* Ann S. Maest et al., *Predicting Water Quality at Hardrock Mines: Methods and Models, Uncertainties, and State-of-the-Art* 2 (2005), *available at* http://www.swrcb.ca.gov/academy/courses/acid/supporting_material/predictwaterqualityhardrockmines1.pdf (hereinafter "*Methods and Models*") ("[t]he length of time over which a mine site will deviate from baseline or pre-mining conditions can be on the order of centuries or tens of thousands of years"); James R. Kuipers et al., *Comparison of Predicted and Actual Water Quality at Hardrock Mines: The Reliability of Predictions in Environmental Impact Statements*, at ES-15 (2005), *available at* http://pebblescience.org/pdfs/ComparisonsReportFinal.pdf.
[37] Draft EIS at 3.8-3, n.1.
[38] *Id.* at 3.8-3.
[39] *See* Alan Septoff, Earthworks, *Predicting Water Quality Problems at Hardrock Mines: A Failure of Science, Oversight, and Good Practice* 2, 4 (2006) (hereinafter "*A Failure of Science*"), *available at* https://www.earthworksaction.org/files/publications/PredictionsComparisonsWhitePaperFINAL.pdf (summarizing and analyzing *Comparison of Predicted and Actual Water Quality of Hardrock Mines*, *infra*) ("Mitigation measures predicted to prevent water quality exceedances failed at 64 percent of the mines studied in detail.") (footnotes omitted); *Methods and Models* at 42 ("Another aspect of uncertainty relates to estimating the efficiency of mitigation or remediation measures, which often cannot be completely quantified.").
[40] *See Methods and Models* at 41 ("At mine sites, much of the modeling performed is 'forward' modeling, or modeling of conditions that do not yet exist. . . . The inherent uncertainty in modeling predictions is rarely stated or recognized.").

MIT 28 consider the likelihood and consequences of mitigation failure, and identify potential backup mitigation measures in order to more accurately make predictions.[41] This in turn will inform project design and estimated mitigation costs.[42]

AIQ 1 The Draft EIS also acknowledges that "mercury may also be release[d] to the air or water from the open pit, waste rock facility, or tailings storage facility."[43] These are some of the most common sources of contamination at hardrock mine sites. The open pit alone would measure 2.2 miles long and one mile wide.[44] The tailings storage facility would cover 2351 acres and have the capacity to store 568 million tons of tailings.[45] The waste rock facility would cover 2240 acres and hold an estimated 2.5 billion tons of waste rock.[46] The potential for mercury emissions from such large areas should not be overlooked or minimized, especially when such emissions are difficult to predict and quantify.[47] WAQ 22 There is inherent uncertainty in the science used to make long-term predictions about the geochemical behavior of mined materials and their byproducts.[48] Consequently, one study has shown that impacts to water quality due to mining emissions are frequently worse than predicted in the EIS, despite mitigation measures, in part because of unrealistic estimates.[49] MON 9 This underscores the importance making realistic predictions, and also studying emissions throughout the life of the Donlin mine, to plan for and adjust mitigation or remediation measures accordingly.[50]

MIT 27 The EIS notes that captured mercury would be shipped off site to a permanent federally-approved mercury storage facility.[51] Given the remote location of the Donlin mine, transport of

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[41] *See Comparison of Predicted and Actual Water Quality at Hardrock Mines* at ES-15 ("Mitigation frequently fails to perform according to plan. It is important to consider the likelihood and consequences of mitigation failure in EISs and identify additional mitigation measures that can be installed if failure occurs. Multiple mitigation measures (e.g., installation of liner and leachate collection system or pump-back system) should be required in most cases and planned for in the design phase.").

[42] *Methods and Models* at i (Predictions as to mine waste "are intended to contribute substantially to the fundamental information required to design and cost remediation that will allow compliance . . . in a technically and economically efficient manner.").

[43] Draft EIS at 3.8-3 n.1.

[44] *Id.* at ES-9.

[45] *Id.* at ES-11.

[46] *Id.* at ES-12.

[47] Anna Breithaupt, Alaskans for Responsible Mining, *White Paper: A Case for the Development of Mercury Regulations for Alaska's Existing and Proposed Gold Mines* 11 (2009), *available at* https://www.earthworksaction.org/files/publications/CaseforAKmercuryRegs_ARM.pdf ("Further likely sources of fugitive air emissions of mercury include tailings facilities, waste rock piles, and pregnant solution ponds and tanks used in heap leach operations. Because tailings and waste rock piles may cover hundreds of acres, the potential releases of mercury to air could be significant.") (footnote omitted).

[48] *Methods and Models* at 2 ("[B]ecause natural systems are never closed systems, because inputs to hydrologic and geochemical models are incompletely or only approximately known, and because of scaling problems in natural systems, models used to simulate natural processes cannot be verified.").

[49] *See A Failure of Science* at 4.

[50] *See id.* at 3 ("The inherent uncertainty in water quality predictions and mitigation failures should be conservatively viewed in order to ensure mine permitting decisions that are more protective of human health and the environment.").

[51] Draft EIS at 2-21.

MIT 27 hazardous mercury would be by barge. While the Draft EIS does discuss spill risks, it overstates the availability of immediate response measures, and understates the challenges posed by the remote location of the Donlin mine, and the cold weather conditions. Although the proposal is to have trained responders, and to place spill response equipment at various points along the access road, variable winter conditions may at times prevent responders from accessing a spill site or the spill response equipment. Such variable winter conditions can sometimes last several days. There is limited infrastructure in the communities along the Kuskokwim River, and while the plan is for spill response equipment to be located at the port, mine site, and various points along the access road, the remoteness of the spill site, as well as weather conditions, may also interfere with retrieval of any spilled mercury.[52] The Draft EIS also does not discuss whether and to what extent cold weather conditions would impact the stability or durability of containers transporting the mercury.[53]

D. Cyanide Hazards

HZM 9 Ore from the Donlin mine would be processed using carbon-in-leach cyanide leaching, which would use a sodium cyanide solution to dissolve microscopic gold and separate it from the oxide materials produced during the pressure oxidation process.[54] Sodium cyanide would be transported to the Donlin mine by barge in solid briquettes placed in approved watertight sparge tank-tainers.[55] Approximately 108 containers would be used each year during operations.[56] Although cyanide is not the only option for retrieving microscopic bits of gold, it is widely used despite its environmental risks because it is the most cost effective alternative.[57] Surprisingly, the EIS does not discuss any other possible ways to process the ore.

Some states, like Montana, have totally banned cyanide heap-leach mining. Montana's ban was not simply a response to the general environmental hazards of cyanide. It was also a response to the dismal track record for open-pit cyanide leach mining in Montana and the State's failure to adequately regulate such mines. In other words, the ban was implemented because cyanidation in gold mining is unsafe if not adequately regulated.[58] This raises the question whether adequate regulation is possible, given the shortcomings of the science itself in

[52] *Id.* at 3.24-9 ("Because the area is remote and little infrastructure exists, the capacity for response to spilled substances is limited. While the statewide capacity for oil spill response is well established, there is minimal capacity to handle a spill of [liquid natural gas], cyanide, mercury. [sic] These gaps in response capacity would need to be planned for, and new plans created for the proposed project."); *id.* at 3.24-28.
[53] *See id.* at 3.24-47, 57-58, 66-67, 73, 80-81, 99, 105, 110, 114, 119, 125-126, 134, 151, 160, 167-168, 173, 178, 182, 187, 191, 196-197, 202-203, 208 (discussing impacts of "Scenario 8: Mercury Release").
[54] *Id.* at 2-20.
[55] *Id.* at 2-37, 3.24-22.
[56] *Id.* at 3.24-22.
[57] *Behind Gold's Glitter*.
[58] Mineral Policy Ctr., *Cyanide Leach Mining Packet* 3 (2000), *available at* https://www.earthworksaction.org/files/publications/Cyanide_Leach_Packet.pdf; Jim Jensen, *Ban on Cyanide Mining in Montana with Initiative 137*, Mont. Environmental Information Center, http://meic.org/issues/mining-in-montana/hardrock-and-cyanide-mining-in-montana/ban-on-cyanide-mining-in-montana-with-initiative-137/ (last visited May 29, 2016).

identifying what levels and forms of cyanide are safe for humans and wildlife, as discussed further below.

This is especially troubling given that the Draft EIS analysis of impacts from cyanide is flawed. For example, potential spills or accidents associated with the use of cyanide in ore processing at the Dolin mine are only predicted to be small, based on the assumption that secondary containment measures used throughout the processing of ore will prevent large spills and the use of sulfur dioxide prior to discharging cyanide tailings in the tailings storage facility will neutralize the cyanide.[59] The risk of transporting cyanide is also estimated to be low, based on how it will be transported and because in the years studied there was only one accident related to the shipment of Class 6 hazard shipments.[60] (Cyanide is a class 6 hazardous material.) However, the Draft EIS does note that if sodium cyanide is released into surface waters all aquatic life in the area would be killed and this deadly, toxic contamination would continue downstream until diluted.[61] It predicts that spills of cyanide and their effects on groundwater and soil would be potentially "high intensity" because cyanide concentrations of groundwater would exceed regulatory limits, but are characterized as "local" and "temporary" impacts overall.[62] So
HZM 9 although the Draft EIS recognizes the high levels of harm that cyanide spills undoubtedly pose to aquatic life, it downplays the risk of that harm using unconvincing assumptions about the safety of its processing and transportation methods, and fails to explain how the harm could be mitigated or limited, should a spill occur.

The toxicity of cyanide, and its harmful effects on people and wildlife, is not in dispute. What is disputed, however, is the amount and forms of cyanide that could be released into the environment from mining, and the amount of cyanide in its various forms that actually results in harm to people and wildlife. This is because, despite the lethal nature of cyanide and cyanide compounds, the effects of long-term, low level exposures are not well-known.[63] Thus, it is not clear, nor is it discussed, whether the use of sulfur dioxide will sufficiently dilute cyanide to prevent harms from low level concentrations of cyanide. Nor does the Draft EIS adequately address the harm or impacts from the release of sulfur dioxide from the tailings facility storage to humans and the environment as a result of using sulfur dioxide to neutralize cyanide.[64] The Draft EIS does not discuss the critical gaps in science related to cyanide, nor does it discuss and evaluate the fact that cyanide also tends to react readily with many other chemical elements, and

[59] Draft EIS at 3.24-24 to 25.
[60] *Id.* at 3.24-22.
[61] *Id.* at 3.24-35.
[62] *Id.* at 3.24-99,-104.
[63] Ronald Eisler & Stanley N. Wiemeyer, *Cyanide Hazards to Plants and Animals from Gold Mining and Related Water Issues*, 183 Revs. Envtl. Contamination & Toxiology 21, 39, 48 (2004) *available at* http://www.springer.com/cda/content/document/cda_downloaddocument/9780387208442-c1.pdf?SGWID=0-0-45-114409-p28205819 (hereinafter "*Cyanide Hazards*").
[64] Studies on the short-term exposure to sulfur dioxide show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics. *See, e.g.*, *Health | Sulfur Dioxide*, U.S. EPA, https://www3.epa.gov/airquality/sulfurdioxide/health.html (last visited May 29, 2016).

is known to form, at a minimum, hundreds of different compounds. "Many of these breakdown compounds, while generally less toxic than the original cyanide, are known to be toxic to aquatic organisms."[65] In addition, they may persist in the environment for long periods of time, and there is evidence that some forms of these compounds can accumulate in plant and fish tissues.[66]

HZM 9

The Draft EIS's conclusions are also drawn into question by research discussed in the prior section showing that many projections about mining's potential effects on water quality are understated, or unsupported.[67] Nonetheless, mining and regulatory documents often point out that cyanide is naturally present in the environment, that gold mining is only one of many sources of elevated concentrations,[68] and that cyanide does not biomagnify in food webs or cycle extensively in food webs like mercury.[69] However, due to limitations in the routine analytical techniques for measuring cyanide, and the presence of breakdown cyanide forms in mining waste waters, considerable uncertainty exists regarding the actual toxicity of various forms of cyanide to living organisms.[70] Much of this uncertainty exists because mining-related waters generally contain complex mixtures of potentially-toxic metals along with the cyanide and related compounds.[71] As a result, determining which chemical constituents are actually causing a toxic response can be very difficult.[72] In short, projections in the Draft EIS that a cyanide spill's effects on human health and the environment will be local or limited are questionable at best, if not unreliable.

Moreover, despite the complexity with respect to cyanide contamination, regulators generally require that mine operators monitor for only three categories of cyanide: free cyanide, weak-acid-dissociable cyanide, and total cyanide.[73] The analytical procedures used to determine these categories of cyanide often overlook the presence of many of the other toxic breakdown products of cyanide, such as cyanates and thiocyanates, two significant cyanide breakdown products found at mine sites.[74] There are also no established water quality criteria for most forms of cyanide derivatives found in mining-related waters, leaving another significant gap in research relating to impacts from cyanide.[75]

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[65] Robert Moran, Mineral Policy Ctr., *Cyanide Uncertainties, Observations on the Chemistry, Toxicity, and Analysis of Cyanide in Mining-Related Waters* 3, 7-8 (Susan Brackett ed., 1998) *available at* https://www.earthworksaction.org/files/publications/cyanideuncertainties.pdf (hereinafter "*Cyanide Uncertainties*").
[66] *Id.* at 3, 10.
[67] *See A Failure of Science* at 4; *Comparison of Predicted and Actual Water Quality at Hardrock Mines* at ES-10 ("The constituents that most often exceeded standards or that had increasing concentrations in groundwater or surface water included toxic heavy metals such as…cyanide.")...
[68] *See* Draft EIS at 3.7-36; *Cyanide Hazards* at 28, *Cyanide Uncertainties* at 3.
[69] *See* Draft EIS at 3.24-134; *Cyanide Hazards* at 28.
[70] *Cyanide Uncertainties* at 8.
[71] *Id.*
[72] *Id.*
[73] *Id.* at 4.
[74] *Id.*
[75] *Id.* at 8.

There has been one notable cyanide spill in Fairbanks, Alaska at the Fort Knox Gold Mine in 2010, but the spill was largely contained within one of the buildings, and so response to the spill was apparently successful.[76] However, responding to an incident in an easily accessible site in Fairbanks is far different from responding to an incident in rural Alaska where there are no roads or response infrastructure.[77] Indeed, the Draft EIS points out that "[b]ecause the area is remote and little infrastructure exists, the capacity for response to spilled substances is limited."[78] More accurately, it is largely non-existent.

Studies have shown that cyanide can be released from hardrock mining facilities in a number of ways: "through tears and punctures in pad liners; leaks in liners carrying the cyanide solution; open ponds, piles, and solution ponds that can overflow; nitrogen compounds released during cyanide degradation; and release of lead, cadmium, copper, arsenic, and mercury that can be mobilized during crushing or leaching."[79] Yet the Draft EIS minimizes or ignores these concerns by assuming all best management practices and mitigation efforts will be successful. But if catastrophic failures occur there will be serious environmental impacts. Fish, including salmon, are the most cyanide-sensitive group of aquatic organisms that have been tested for cyanide effects.[80] While some research suggests that fish retrieved from cyanide-poisoned environments can still be safely consumed by humans,[81] given that the Kuskokwim River is already contaminated by historic mining discharges[82] the impacts of additional cyanide could be exacerbated and result in unsafe consumption of fish. Cyanide also poses threats to non-aquatic wildlife. One particular threat of waste ponds containing cyanide is that birds will drink the cyanide-contaminated water.[83] There is, however, no discussion of cyanide ingestion by birds, presumably because the Draft EIS assumes that all cyanide will be neutralized when going into the tailings storage facility, minor spills would be temporary, and major spills unlikely.[84]

[76] Prevention & Emergency Response Program, Alaska Dep't of Envtl. Conservation, *Situation Report Fort Knox Gold Mine Cyanide Water Spill* (2010), *available at* https://dec.alaska.gov/spar/ppr/response/sum_fy10/100504301/100504301_sr_02.pdf. For spills in other places *see Cyanide Uncertainties* at 5; *Cyanide Mining Leach Packet* at 5.
[77] David Coil et al., *Gold Cyanidation,* Ground Truth Trekking (May 27, 2013), http://www.groundtruthtrekking.org/Issues/MetalsMining/GoldCyanidation.html.
[78] Draft EIS at 3.24-9.
[79] *Cyanide Hazards* at 24.
[80] *Id.* at 29-30; *Cyanide Uncertainties* at 8.
[81] *Cyanide Hazards* at 30
[82] *See* discussion at Section K, *infra*.
[83] *Cyanide Hazards* at 32.
[84] Similarly, the Draft EIS discusses the low risk to birds from ingestion of water from the tailings and contacts pond. However, like most conclusions in the Draft EIS, there is significant reliance on mitigation measures that will apparently detract birds from ponds at the mine site. For example, in assessing heavy metal impacts to mallard, dipper and vole from consuming water from the tailings storage facility and contact water ponds the Draft EIS determines that these birds are not at risk because of chronic intense disturbance from mining equipment, a lack of attractive food sources or other habitat features near the ponds, and the availability of other nearby water sources for birds that will minimize the risk of wildlife exposure. *See* Draft EIS at 3.12-10 to 11. This assumption is further flawed because it fails to fully recognize the impacts to water sources that the mine will have and the lack of adequate science in this area. Moreover, these are only predictions and it is far from clear that birds will actually be deterred from the ponds or the tailings storage facility at the mine site.

E. Unknown Impacts to Water Quantity

The proposed Donlin mine site and surrounding area include rounded mountains, occasional oxbow and thaw lakes, and creek drainages leading to the Kuskokwim River. For example, the American, Anaconda, and Crooked Creeks — all tributaries of the Kuskokwim — will be specifically impacted by the Donlin mine's use of water from these creeks. Pit dewatering wells would be used to remove groundwater from the pit where the ore will be mined during pre-construction, construction, operations, and after mine closure.[85] This water will be sent through an on-site water treatment plant and either used in the mill for processing ore or be treated and discharged.[86] Two contact water dams would be constructed in American Creek to capture mine contact water from the waste rock facility, ore stockpiles and water that accumulates in the pit. These ponds would not be lined, and it is expected that any seepage would drain to the pit and be managed with mine drainage.[87] In addition, dust abatement would use water from South Fork Getmuna Creek (80 acre-feet/year) and the Kuskokwim River (637 afy).[88]

HYD 4

After closure of the Donlin mine site, four years of reclamation would occur at the tailings storage facility.[89] Water would be pumped back into the pit, which will become a permanent pit lake, for the first year, and one third of the tailings surface would be progressively reclaimed each year for three years. Pumping from the tailing storage would continue as required to prevent a large pond from developing. From five to forty-three years after mine closure, runoff would be collected in a lined pond at the southeast corner of the reclaimed tailings storage facility. Runoff and seepage from the tailings storage would be tested to ensure it meets water quality standards and if not met would be pumped to the pit lake. The seepage collection pond would not be decommissioned until, at some unknown point in the future, the water meets Alaska water quality standards for Anaconda Creek.

Water modeling was done "based on local precipitation and stream flow data" to optimize water use, reuse, storage and release at the Donlin mine site.[90] While the mine is expected to operate with an annual water surplus, there will be major impacts to streams — and likely groundwater — in and around the mine site. And, as discussed below, assumptions in the Draft EIS relating to water use impacts are flawed and more studies, including independent modeling, analyzing water hydrology and long-term impacts from use of surface water and groundwater pumping, are needed to fully evaluate Donlin mine's impact on water quantity.

Hydrologic characterization failures are most often caused by over-estimation of dilution, failure to recognize hydrologic features, and underestimation of water production quantities.

[85] Draft EIS at 2-26.
[86] *Id.*
[87] *Id.* It should be pointed out here that impacts to groundwater can occur as a result of unlined pits if there is hydrologic connectivity from the groundwater under the pit to tributaries of the Kuskokwim River.
[88] *Id.* at 2-53.
[89] *Id.* at 2-40.
[90] *Id.* at 2-25.

Case studies show that inadequacies in hydrologic characterization methods employed at mine
HYD 4 sites "have resulted in impacts to water resources ranging from on-site contamination and
contamination of headwaters streams, to more extensive off-site contamination of surface water
with the potential need for long-term water treatment in some cases."[91] Hydrological
GRD 6 characterization failures are most often caused by over-estimation of dilution effects, failure to
GRD 1 recognize hydrological features (e.g., springs and shallow or perched groundwater), and
GRD 6 underestimation of water production and stormwater quantities.[92] Requiring adequate
hydrological investigations as well as making conservative assumptions about water quality and
quantity can address hydrological failures, but uncertainties will still exist.

For example, efforts by a Barrack subsidiary at the Goldstrike mine in Nevada have shown that it is not possible to accurately predict impacts to water quantity. Similar to the Donlin Gold's proposal, the Goldstrike mine must continually pump ground water to keep its mine from flooding.[93] And, similar to the predictions for the Donlin mine, Barrack predicted that the effects of its pumping would last, at most, a few decades. However, government scientists have now estimated that it could take 200 years or more to replenish the groundwater that it and neighboring mines have consumed.[94] While the Goldstrike mine may only have ten more years left, it and other nearby mines, will leave behind a deficit in the aquifer equivalent to twenty to twenty-five years of the total flow of Nevada's largest river, the Humboldt River. And Robert Glennon, a law professor at the University of Arizona, has said that "[t]he impact on the Humboldt River will be catastrophic."[95] The pumping could ultimately change both the quantity and quality of the groundwater, and even the shape of the groundwater. Professor Glen Miller from the University of Nevada, Reno, has noted that "it may never be quite the same hydrologic system . . . . There is simply no data to suggest that these changes aren't going to be permanent."[96]

While Barrack's scientists disagree with these conclusions, this example illustrates that the science related to groundwater use at mines is far from certain and there is risk of permanent changes that could have extreme impacts on water availability in the future. Barrick's history, and the uncertainties in predicting long-term impacts, all raise serious concerns regarding water use at the mine and its future impacts.

F. Unknown Impact to Water Quality

WAQ 17 Mines located close to surface and ground water resources are more prone to acid drainage issues, and accordingly, should be subject to greater scrutiny by regulatory agencies.[97] The Donlin mine fits within this category because it is located within ten miles of the

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[91] *Comparison of Predicted and Actual Water Quality at Hardrock Mines* at 193.
[92] *Id.*
[93] *Drier, Tainted Nevada*.
[94] *Id.*
[95] *Id.*
[96] *Id.*
[97] *Comparison of Predicted and Actual Water Quality at Hardrock Mines* at ES-15.

WAQ 17 Kuskokwim River and is located on the Crooked Creek and other water sources that drain into the River. The Draft EIS minimizes water quality impacts from the Donlin mine by assuming the water modeling performed by Donlin Gold is accurate and by assuming all mitigation and best management practices will be fully implemented and successful. These assumptions are flawed and more study, including analyzing the effectiveness of mitigation measures, is needed to fully evaluate the Donlin mine's impact on water quality.

The minerology at hard rock mines is complex and predictions of mining's effect on water quality are frequently wrong. This is partly due to the fact that the industry has failed to evaluate predictions against actual outcomes, to gather data so that scientists can better understand how prediction methods can be improved. To demonstrate this shortcoming, one study examined the water quality predictions made in twenty-five EISs and Environmental Assessments (EAs) for major hard rock mines in the U.S. against the actual water quality conditions during and after mining.[98] In general, the predictions did not reflect reality. Eighty-nine percent of the mines ended up generating acid. Nine of them developed acid drainage on site, despite the fact that nearly all their EISs had either underestimated or ignored the potential for acid drainage.[99] In addition, while EISs for 100 percent of the mines predicted compliance with water quality, seventy-six percent of mines studied actually exceeded water quality standards,[100] and mitigation measures failed in sixty-four percent of the mines.[101] Moreover, eighty-five percent of twenty-five mines studied near surface water and ninety-three percent of mines near groundwater exceeded water quality standards despite predictions.[102] Environmental reviews must predict water quality during and after mine closure, otherwise they would not be approved. Mitigation efforts are taken on "faith" because environmental reviews, including the Draft EIS for the Donlin mine, do not provide adequate information regarding how mitigation will prevent water quality impacts.[103]

There were a number of reasons for the inaccuracies, having in part to do with the biases of the industry, but also having to do with the science itself. For example, regulatory agencies allow a mining company to select and directly pay consultants to predict water quality impacts of a mine, and to review those predictions prior to submission to the agency.[104] Because predicting

[98] *Comparison of Predicted and Actual Water Quality at Hardrock Mines* at ES-7 to 10.
[99] *Id.* at 184.
[100] Toxic heavy metals included lead, mercury, cadmium, copper, nickel, zinc, arsenic, sulfate, and cyanide. *Id.* at ES-9.
[101] *A Failure of Science* at 1.
[102] *Id.* at 3.
[103] *Id.* at 4. Mitigation measures are discussion in chapter 5 of the Draft EIS, but no analysis is provided to demonstrate that mitigation efforts will be successful despite conclusory statements regarding the likelihood of effectiveness. *See* Draft EIS, tbl.5.5-1. And because certain best management practices were determined to be outside the scope of the Draft EIS, *id.* at 5-2, there is not comprehensive analysis of whether best management practices ("BMPs") will be successful mitigation measures. Moreover, once the project is approved the ability to enforce BMPs and mitigation efforts will be limited to only those incorporated into permits or otherwise necessary to minimally comply with applicable regulations. This is a significant shortcoming given research and studies showing that these predications are usually wrong.
[104] *A Failure of Science* at 5.

acceptable water quality is necessary to obtain regulatory approval to proceed with the mine, there is pressure for the individuals making the predictions to make certain conclusions in favor of the mine. In addition, regulators do not adequately review the science of these predictions, and are instead generally accepting of unsupported information and conclusions.[105] This is also true for predictions made regarding the effectiveness of mitigation efforts. Even when mitigation measures are necessary, the impacts of mitigation on water quality tend to be overstated.[106]

Part of the problem is that the science is not well-developed. It is difficult to apply the results of field or laboratory studies to an actual site, as each site involves a complex environmental system with many variables, e.g., geology, climate, mining methods, and waste management. Additionally, there is virtually no field information available describing the effect of a mine's variables over extended periods of time, which is alarming for the numerous mines that involve perpetual water treatment or storage.[107] This is due in part to the fact that predictions are not revisited after they are made.[108] This lack of reliable scientific information makes it particularly important to plan for worst-case scenarios.[109] Relatedly, another frequent problem is that the hydrology and geochemistry of mine sites are incorrectly characterized, so that improper data is used to predict outcomes, and those inaccurate predictions are then used to determine inappropriate mitigation measures.[110]

Inaccurate predictions of a mine's impacts on water quality also result in inadequate financial assurances by mining companies. For example, the Summitville gold mine in Colorado has cost American taxpayers more than $200 million in cleanup costs due to acid drainage and cyanide releases that were never predicted.[111] Adding to the problem, there is also significant uncertainty in estimating the costs of long-term monitoring and maintenance, especially in making adequate repairs, to prevent a serious failure.[112] And, as discussed more below, when a disaster strikes and the funds provided by mining companies are inadequate, the burden falls on taxpayers to make up for the shortfalls in the case of cleanup, which can be significant.[113]

G. Barge Traffic Concerns

The Draft EIS estimates that 115,000 short tons of cargo will be transported by barge annually during the operation of the mine.[114] Cargo would be shipped to Bethel, Alaska from

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[105] *Id.* at 4.
[106] *Id.*
[107] *Id* at 5; *see also* Reclamation Research Grp., LLC, *Acid Mine Drainage and Effects on Fish Health and Ecology: A Review* 8-10, 16-18 (2008), *available at* http://www.pebblescience.org/pdfs/Final_Lit_Review_AMD.pdf (report prepared for U.S. Fish and Wildlife Service, discussing the failings of pre-mine studies).
[108] *A Failure of Science* at 5.
[109] *Id.* at 6.
[110] *Id.* at 5; *Methods and Models* at i.
[111] *A Failure of Science* at 2.
[112] David M. Chambers & Bretwood Higman, *Long Term Risks of Tailings Dam Failure* 12 (2011), *available at* https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=513583.
[113] *A Failure of Science* at 3; *see Long Term Risks of Tailings Dam Failure* at 10.
[114] Draft EIS at 2-43.

Pacific Northwest ports (Seattle, WA and Vancouver, BC) via ocean barges towed by ocean-going tugs. Each ocean barge would be 360 feet long by 100 feet wide and would have a net cargo capacity of 10,200 tons at a maximum draft of sixteen feet.[115] At Bethel, cargo would be stored and transferred to river barges. General cargo would be transported up the Kuskokwim River from Bethel to Angyaruaq (Jungjuk) Port via two river-barge cargo tows comprised of a single hull pusher-tug and four river barges with a combined operating capacity of 3477 short tons.[116] Each cargo barge would be 150 feet long by forty-four feet wide with a maximum loaded draft of 7.5 feet, with a minimum operating draft of three feet.[117] During the shipping season the cargo barge fleet would operate twenty-four hours a day, seven days a week.[118] "Several locations along the Kuskokwim River have been identified as critical sections upstream of Bethel with respect to channel width constrictions and shallow water depth that affect rive barge travel."[119] As a result, any navigational errors could result in barge accidents, including unintentional groundings.[120]

FISH 2

In determining annual river traffic construction phase emissions, the Draft EIS made no evaluation of hazardous air pollutant and lead emissions from barges, because it was assumed that impacts from such emissions would be negligible, "due to low [volatile organic compound] emissions."[121] This ignores the fact that the increased barge traffic will be a significant change from current barge traffic. Moreover, the Kuskokwim River already has issues with pollution and contaminants from abandoned and sunk barges in the Bethel and Kuskokwim area.[122] This has caused not only navigational hazards but pollution and contamination. Many barges are rusting and one sunk right in the middle of Steamboat Slough.[123] Many barges park around Steamboat Slough and residents have observed that "[i]n the spring when they start them up, you could see the thick oil. The water is slimy and black and there is less fish each year. You have to go to the mouth to get fish . . . . There should be something that says you can't put that many barges up there."[124]

Increased barge traffic can also threaten salmon fishery habitat, which is relied on by all communities above and below Bethel for subsistence. The potential impacts on salmon from increased barge traffic and the shipping of toxic materials are illustrated by a biological

[115] *Id.*
[116] *Id.* at 2-45.
[117] *Id.*
[118] *Id.*
[119] *Id.* at 3.5-41.
[120] *Id.* at 2-46.
[121] *Id.* at 3.8-58, tbl.3.8-28, note d; *id.* at 3.8-59, tbl.3.8-29, note d.
[122] *See Officials Say They're Working on Abandoned and Derelict Vessels Issue*, The Delta Discovery (Bethel, AK) (Aug. 13, 2014), http://www.deltadiscovery.com/story/2014/08/13/inside-bethel-news/officials-say-theyre-working-on-abandoned-and-derelict-vessels-issue/2359.html (hereinafter "*Abandoned and Derelict Vessels*"); Lisa Demer, *Abandoned Vessels Litter Alaska's Shorelines While Officials Work on a Fix*, Alaska Dispatch News (July 4, 2015), http://www.adn.com/environment/article/cleanup-dilemma-over-derelict-vessels-litter-alaskas-shorelines/2015/07/05/ (hereinafter "*Abandoned Vessels Litter Alaska's Shoreline*")
[123] *Abandoned and Derelict Vessels*.
[124] *Id.*

assessment that was commissioned by the U.S. Army Corps of Engineers to evaluate the proposed Morrow Pacific Project on the Columbia River.[125] That proposed project – which was described as having "'unavoidable impacts' on protected fish and habitat"[126] – called for the construction of a new inland port on the Columbia River for river-going coal barges, that would then transport coal downriver to a port for ocean-going vessels.[127] The project was anticipated to nearly double barge traffic, using river barges comparable in cargo capacity to those proposed here.[128] The Biological Assessment determined that the Morrow Project would result in adverse effects on salmonid species.

FISH 2

The proposed Columbia River barge activity threatened the migration corridors and juvenile rearing sites for numerous salmonid species, like coho, chinook, chum, and sockeye salmon, that are also found on the Kuskokwim River.[129] The impacts of barge traffic reported in the Biological Assessment are not unique to that project, and can also affect salmon here. Particularly, water turbidity caused by operating tugs and barges could cause damage to fish gill tissue and physiological stress, disrupt fish migration, and drive salmon away.[130] The disruption of sediments by barge traffic can negatively affect the habitats in the River on which salmon rely, affecting foraging behavior.[131] Barges and tug propellers put salmon at risk from direct collisions, pressure changes, turbulence, and shear stress.[132] Wake stranding from heavily laden ships – which is an especial risk in areas with flat or low sloping shorelines, like the Kuskokwim – threatens juvenile fish.[133] The Draft EIS does not adequately assess these risks.

FSR 11

In addition, the Draft EIS does not sufficiently address the consequences from potential barge accidents and spills on the River. The Draft EIS discounts the threat of diesel spills from barges, asserting that the risk of barge sinking, grounding, or hull failure during the life of the mine is low because there have not been many accidents on the Kuskokwim in the last twenty years resulting in large diesel spills.[134] This skims over the safety and environmental threats posed by the numerous wrecked and abandoned vessels along the banks of the Kuskokwim.[135] And it ignores the fact that when the Donlin mine is active, it will greatly increase the amount of barge traffic on the River, including a large number of diesel-bearing barges, which will increase the risk of spills. The Draft EIS also reduces its risk assessment for barge accidents on the basis

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[125] Anderson Perry & Assocs., *Biological Assessment: Morrow Pacific Project* (2012), *available at* https://www.scribd.com/doc/96830239/Boardman-Coal-Terminal-BA-RFS (hereinafter "Morrow BA").
[126] *See* Barbara LaBoe, *Report: Columbia River Coal Transport Likely to Threaten Fish Habitat*, The Daily News (Longview, WA) (June 11, 2012), http://tdn.com/news/local/report-columbia-river-coal-trasnport-likely-to-threaten-fish-habitat/article_b1cfca26-b42d-11e1-85e9-0019bb2963f4.html (quoting Morrow BA at ES-1); *see* Morrow BA 11-1 to 6.
[127] Morrow BA at 1-1.
[128] *Id.* at 3-11 to 12, tbl.3-5 (barges with a capacity of 2727 tons and a maximum draft of 13.6 feet).
[129] *Id.* at 11-1 to 11-6; Draft EIS at 3.21-86 to 87
[130] Borrow BA at 6-1 to 2.
[131] *Id.* at 6-6, 6-8.
[132] *Id.* at 6-8.
[133] *Id.* at 6-8 to 9.
[134] Draft EIS at 3.24-13.
[135] *Abandoned Vessels Litter Alaska's Shorelines*; *Abandoned and Derelict Vessels*.

that Donlin Gold will use double-hulled barges on the River, but does not describe how this will be guaranteed over the life of the mine.[136] Nor does the Draft EIS address how Donlin Gold would handle diesel spills that occur during the on- and off-loading of diesel from the river barges, stating only in general terms that "[o]perators would be trained to respond to spills during transfer operations."[137]

FSR 11 Barge traffic will be required to transport hazardous materials, particularly fuel, cyanide, and explosives, to the mine site, and to take hazardous wastes, particularly mercury, away from the Donlin mine site to permanent storage facilities. The Draft EIS downplays the possibility of the release of toxic contaminants from accidents during shipment or transfer, but does not describe how a release would be handled.[138] It recognizes that there is *no* response capability in the region for cyanide and mercury spills, but addresses this gap by stating only that "[n]ew plans and response capacities *could* be required."[139] As was the case on the Columbia River, salmon and their habitat are at risk from environmental contamination from construction, barge accidents, or cargo falling into the River during on- and off-loading from the river barges.[140] The Draft EIS does nothing to explain how they will be protected in the event that these toxic materials enter the River.

H. **Tailings Dam**

The Donlin mine site would have a tailings dam, constructed in phases over several years and which would need to stand in perpetuity.[141] The tailings dam would be built to contain the waste with an eventual height of 464 feet and be lined with a sixty mil (0.06 inch) linear low-density polyethylene composite liner on the upstream face.[142] The tailing dam would be constructed using non-acid generating rock material as fill, filter media, riprap, and material for the under drains.[143] Donlin Gold has said that only non-acid-generating waste rock will be used

DAM 1 for portions of the tailings facility that would not be within lined containment areas.[144] In addition, approximately five million tons of potentially acid generating waste rock will be used for construction, but will only be placed in portions within the lined containment areas. Potentially acid-generating rock will be segregated from non-acid-generating rock. The non-acid-generating rock will be used for construction of the tailing dam and roads.[145]

There are at least two potential pitfalls with trying to segregate potentially acid-generating ("PAG") and non-acid-generating ("NAG") waste rock for use in mining activities

[136] *See* Draft EIS. at 3.24-14.
[137] *Id.* at 3.24-15.
[138] *Id.* at 3.24-22 to 23, 27-29.
[139] *Id.* at 3.24-2 (emphasis added), 11.
[140] Morrow BA at 6-2, 4, 11-15.
[141] Draft EIS at 2-30.
[142] *Id.*
[143] *Id.* at 2-33.
[144] *Id.*
[145] *Id.*

DAM 1

like the tailings dam.[146] First, predicting whether mine waste will or won't leach metals, either by acid generation or by neutral drainage, is still an evolving science, and literature on acid mine drainage "is replete with examples where initial estimates of acid generating potential were wrong, and material that was thought to be non-acid-generating turned out to be acid-generating, resulting in a significant release of metals."[147] "Second, even if a conservative cut-off value has been correctly established, any waste segregation scheme still depends on testing to accurately characterize the waste being classified, and for mine operators to then put this material in the right place."[148] But only a fraction of the waste to be removed from a given area can actually be tested, so drill holes are sampled on the basis of an average sample along a specified length of the drill hole (usually ten foot averages), and each drill hole is considered to be representative of a much larger volume of material (usually half way to the next drill hole). This inexact process means rock will inevitably be misclassified, which leads to the release of metals in places where it was not anticipated. And most geologists who have walked mine waste dumps have seen rock that should have been taken to the mill as ore.[149]

DAM 2

Another significant concern is that worldwide "[t]ailings dams have failed at a rate that is significantly higher than the rate for water supply dams."[150] In fact, "the number of major incidents continues at an average of more than one a year. During the last 6 years the rate has been two per year."[151] These dam failures are not limited to old technology, and they cannot be ignored. In fact, "*39% of the tailings dam failures worldwide occur in the United States* – significantly more than any other country."[152] The failure rate of tailings dam can be attributed to the way in which they are constructed. Tailings dams, like the proposed dam at Donlin mine, are most often constructed in sequential lifts over several years, which makes quality control more challenging.[153] Long-term failure mechanisms for tailings dams also include cumulative damage (e.g., internal dam erosion and multiple earthquake events), geologic hazards (e.g., landslides), and changing weather patterns.[154]

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[146] *See Pebble Engineering Geology Discussion of Issues* at 12. These same concerns apply to assessments of whether rock is NAG. This is important because Donlin also proposes to place NAG rock around PAG rock in the waste rock facility to neutralize acid runoff from the PAG rock. Draft EIS at 2-33. Even assuming that this process does in fact neutralize acid runoff, such mitigation efforts will not be successful if there was an error in classifying NAG rock.
[147] *Pebble Engineering Geology Discussion of Issues* at 12.
[148] *Id.*
[149] *Id.* at 12-13.
[150] *Long Term Risks of Tailings Dam Failure* at 1.
[151] *Id.* at 4 (quoting Int'l Comm'n on Large Dams, *Tailings Dams, Risk of Dangerous Occurrences, Lessons Learnt from Practical Experiences* (2001)).
[152] *Id.* (emphasis added).
[153] *Id.*
[154] *Pebble Engineering Geology Discussion of Issues* at 13.

DAM 4

Although a high-density polyethylene composite liner will be used to aid in the structural integrity of the dam,[155] the Draft EIS makes little to no in-depth analysis of these long-term impacts on the structural integrity of the proposed tailings dam. Estimates can and should be made in the Draft EIS to analyze the volume of tailings that could be released from the proposed tailings dam and the distance that the waste is expected to move downstream/downgradient from the failure.[156] This is particularly important here, where the mine site is located within ten miles of the Kuskokwim River and the Crooked Creek village,[157] and where the unintended release of waste from a tailings dam will impose real and potentially devastating costs on local and regional communities' subsistence activities, not to mention the costs of cleanup.

GEO 3

In addition, Alaska is the most seismically active state in the United States and in 1964 experienced the second largest earthquake recorded worldwide.[158] There is a risk that a large earthquake in the area of the Donlin mine site might cause a failure of a tailings dam.[159] A catastrophic release of a large amount of tailings could lead to long-term environmental damage with huge cleanup costs. Although the Draft EIS estimates the probability of such a catastrophic failure is very low, the consequences should it occur are very high and must be evaluated.

Moreover, the lack of regulatory guidelines for determining the Maximum Credible Earthquake ("MCE") leaves companies to determine what location is used to determine the MCE and hence the acceptable risk level.[160] In particular, mine sites that use tailings storage facilities do not typically evaluate the risks of storage failure based on worst-case scenarios.[161] Instead, predictions are based on lesser events, minimizing the potential for long-term environmental impacts in order to justify less expensive construction and design options.[162]

Indeed, there are challenges unique to tailings storage facilities that make it difficult to predict failures and their impacts on the environment. Tailings storage facilities must be designed to last forever, and so instead of a single construction, they must be modified, repaired, or added to continuously. However, there is no available data regarding the relative risks and best design practices of tailings storage facilities intended to last forever, or even multiple decades or centuries.[163] We have not been using these structures long enough to have the benefit of that historical knowledge. Instead, the data we currently have is based on assumptions.[164]

[155] *Id.* at 17. The Draft EIS does not consider that the use of high-density polyethylene liners are not meant to prevent seepage for tailings escaping tailings ponds, although they are used in facilities, like the Donlin mine, that impound potentially acid generating material. *Id.*
[156] *Long Term Risks of Tailings Dam Failure* at 6.
[157] Draft EIS at 3.1-6.
[158] *Long Term Risks of Tailings Dam Failure* App. A, § 3.2.1.
[159] "Seismologists know that there are many active faults that have not been mapped or have been mapped inadequately, that some faults believed to be inactive may actually be active, and that there are many inactive faults that may become active again." *Id.* at 11.
[160] *Id.* at 8.
[161] *See Predicting Water Quality Problems* at 6.
[162] *Long Term Risks of Tailings Dam Failure* at 7.
[163] *Id.* at 1, 5.
[164] *Id.* at 5.

And despite reported improvements in facility design and construction, we continue to see significant failures resulting in huge environmental impacts.[165] Even with the best scientists and consultants available, it is impossible to make reliable predictions without scientific data.

I. Post Mining Pit Lake Concerns

WAQ 11

Like the proposed Pebble mine, the open pit at the Donlin mine is projected to have a pit lake after closure of the mine. As noted in a study of the Pebble mine, which is applicable here, pit water can potentially be impacted by the composition of the rock remaining in the pit walls, especially that material which has been further exposed by fracturing and rubbilization due to mining.[166] If the water in the pit is of poor quality from decomposition of sulfide minerals, and the hydrology of the site allows water from the pit to migrate downgradient to ground and surface waters, "there could potentially be long-term impacts to water offsite."[167] This can have serious negative impacts on the Kuskokwim watershed and River, which is already contaminated due to historical mines in the area.[168]

GRD 6

WAQ 11

The long-term environmental impacts of pit lakes are poorly known and long-term predictions are currently made using short-term data. Accordingly, the relation between predicted and actual outcomes needs to be evaluated. Research is needed on the chemistry, hydrology, and biology of pit lakes and their surroundings to minimize the environmental influence of future pit lakes. Pit lakes now filling need to be monitored over time to evaluate lake chemistry changes. Risk assessment of pit lakes is recommended on a case-by-case basis because each pit lake is unique, depending on local hydrogeology, the size of the pit lake, and climatic conditions.[169]

WILD 5

Studies are also needed on the potential development of biological communities in pit lakes and their influence on both aquatic biota and avian and terrestrial wildlife.[170] Additional research is also needed on (1) effects of low-level, long-term, cyanide intoxication in birds and mammals by oral and inhalation routes in the vicinity of high cyanide concentrations; (2) long-term effects of low concentrations of cyanide on aquatic biota; (3) adaptive resistance to cyanide; and (4) usefulness of various biochemical indicators of cyanide poisoning.[171]

J. Donlin's Financial Assurances Are Not Adequate

BER 7

Mines must be designed for closure and the mine's operating plan must anticipate the final configuration of the mine at closure. Alaska reclamation law requires that an adequate financial surety for closure be provided to the bond holding agency. Upon closure, the Donlin

[165] *Id.* at 6.
[166] *Pebble Engineering Geology Discussion of Issues* at 1.
[167] *Id.*
[168] *See* Section K, *infra*.
[169] *Cyanide Hazards* at 46.
[170] *Id.* at 47.
[171] *Id.* at 39, 48.

mine will require surface water and groundwater monitoring of mine facilities for thirty years or more, until each specific facility is physically and chemically stabilized.[172] And after closure, the pits where the ore was mined will become one pit lake that will gradually fill the pits over the next fifty to fifty-five years with groundwater recharge, water from surface runoff, and water pumped from the tailings storage facility.[173] Surface water from the pit will need to be perpetually treated before being discharged into Crooked Creek. Continual pumping will be required to ensure that pit water lake levels do not overtop the banks of the pit lake. A generator will be installed to run the pump and waste treatment facility and fuel will be flown up or barged in. Sludge produced by the waste water treatment plant would be sent to the bottom of the pit lake for final storage. It is contemplated that a perpetual trust fund would be established to cover these costs and that these measures will be sufficient to protect against degradation to water quality and fishery resources.[174]

BER 7

Regulatory agencies, including those in Alaska, have a history of underestimating the closure costs for metal mines.[175] This is because there is a significant amount of uncertainty in estimating the long-term monitoring and maintenance costs required for perpetual monitoring after a mine has ceased operations. At a minimum, tailings dams must be inspected and minor repairs must be made due to storm and stream related erosion. At worst, perpetual water treatment may be required. For example, perpetual water treatment will be required at the Red Dog mine, a sulfide open pit mine in northwest Alaska.[176] Similarly, the Zortman Landusky mine, located near the Ft. Belknap Reservation in Montana, will generate acid mine drainage for thousands of years.[177] The Ft. Belknap Tribes are now faced with a continual threat to important tribal water and natural resources. Perpetual water treatment can easily double the cost of closure (and run tens to hundreds of millions of dollars),[178] so it is in the best interest of both companies, which are obligated to pay for treatment, and the public, who is ultimately responsible either for the closure costs or for the environmental damage that will occur if a treatment is not performed, to avoid the need for perpetual water treatment.

Due to these uncertainties and risks, at least two states (Michigan and New Mexico) have banned perpetual water treatment.[179] The Donlin mine however, will need perpetual water treatment, creating uncertainty for generations to come. This is of particular concern for Donlin, where the mine is located ten miles from the community of Crooked Creek and the mine site sits

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[172] Draft EIS at 2-39.
[173] *Id*. at 2-40.
[174] *Id*.
[175] *Pebble Engineering Geology Discussion of Issues* at 2; *see also A Failure of Science* at 2 ("financial assurances are based on upon expected reclamation costs and expected reclamation costs are based in large part upon water quality predictions").
[176] *Pebble Engineering Geology Discussion of Issues* at 20 & n.23 (also noting that the Illinois Creek mine in Alaska went bankrupt and the bond was not sufficient to close the mine). And a 2005 study on bonding in Alaska concluded that present bonds for Alaska mines are underestimated by approximately forty percent. *Id*.
[177] *A Failure of Science* at 2.
[178] *Id.* (long-term water treatment and management is often the single most significant cost associated with mine cleanup).
[179] *Pebble Engineering Geology Discussion of Issues* at 20.

BER 7 on tributaries of the Kuskokwim River, which is heavily relied upon up and down the River for subsistence.

K. Environmental Justice Concerns

EJ 10 The Draft EIS does discuss environmental justice concerns. However, the Draft's focus on jobs and socio-economic factors distracts from real environmental justice issues.[180] This is part of a historic pattern in extractive industries. Companies usually portray destructive industrial projects as greatly welcomed and an opportunity to improve local economies. The environmental and social costs are, in turn, grossly downplayed. The Draft EIS is no different.

It is striking that the proposed Donlin mine follows a common theme in environmental justice – a foreign entity (Donlin Gold) obtains access to natural resources (mine site in Alaska) and fragile ecosystems (Kuskokwim watershed) and then sells the natural resource (gold) to another country.[181] In this regard, the Donlin mine bears a remarkable similarity to the proposed Pebble mine. Although there is significant opposition to the Pebble mine, which has focused on many of the same concerns and hazards that are posed by the proposed Donlin mine, the resistance to the Donlin mine and its hazards has been more muted. Like the Pebble mine, the Donlin mine will be a massive open pit mine; until the Pebble mine is built, the Donlin mine will be the largest open pit mine in Alaska.[182] If built, both mines will be located in a remote area of Alaska accessible only by air or boat.[183] The major difference between the two mines that appears to be the significant factor in the degree of opposition they have attracted, is that the area around the proposed Pebble mine is a popular area for sport fishing and tourism for non-Natives. In contrast, the area around the Donlin mine is a low-tourism area, comprised of scattered and small Native villages that rely mostly on subsistence for their livelihood.

EJ 11 The Y-K area is large and sparsely populated, and is the most economically challenged region in Alaska.[184] Alaska Natives make up approximately 95.3 percent of the Y-K area population.[185] While unemployment is a major problem in many remote rural Alaskan communities, the unemployment rates in the Y-K area are among the highest in the State and per capita incomes are among the lowest.[186] The average education level of Y-K residents is lower

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[180] Draft EIS at 3.18-34 to 49.
[181] The demand for new gold mines is driven in part by a growing demand for gold in China and India. *See Behind Gold's Glitter* (reporting on "Asia's Insatiable Appetite" for gold and noting that "over the last year, [gold] sales surged 11 percent is China and 47 percent in India.").
[182] *See* Stuart Levit & David Chambers, Ctr. for Sci. in Pub. Participation, *Comparison of the Pebble Mine with Other Alaska Large Hard Rock Mines* 1 (2012), *available at* https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=513582; Tim Bradner, *Pebble Now State's Biggest Gold Mine*, Alaska J. of Com. (Feb. 1, 2004), http://www.alaskajournal.com/community/2004-02-02/pebble-now-states-biggest-gold-mine#.V0TGMeSN1b0.
[183] *See* Residentcynic, *Looming: Another Alaskan Environmental Tragedy*, Daily Kos (Dec. 1, 2007, 4:30 AM), https://www.dailykos.com/story/2007/12/1/415071/- (discussing Pebble mine).
[184] Draft EIS at 3.18-11; 3.19-9.
[185] *Id.* at 3.19-6, tbl.3.19-1.
[186] *Id.* at 3.19-9.

EJ 11 than in the State as a whole.[187] While most employment in the Y-K region comes from government and retail jobs, along with seasonal work, the Draft EIS notes that in recent years the Donlin mine has been a source of part- and full-time jobs in the region.[188] The heavy implication here is that the Donlin mine will benefit otherwise economically depressed communities. However, with the exception of Bethel, most communities have continued to remain subsistence-based economies.

The Donlin mine site would sit on Crooked Creek, a tributary of the mainstem of the Kuskokwim River. The Kuskokwim River is the largest free-flowing river located entirely in the United States and flows into the Bering Sea. The river supports substantial fisheries (e.g., sheefish, northern pike, and salmon) important to both subsistence users and commercial fisherman. The Pacific Salmon Commission has recognized that salmon play an important role in the social and economic fabric of North America's Pacific Coast and have a tremendous impact on quality of life.[189] For Native Alaskans, fish, including salmon, are central for not only ceremonial and occasional commercial uses, but for subsistence. In the words of the Ninth Circuit, "if their right to fish is destroyed, so too is their traditional way of life."[190]

In fact, Native Alaskans throughout the State, including in the Y-K region, have maintained an intricate and vital connection to the land for generations, and this connection is essential to their cultural, spiritual, and economic way of life.[191] Alaska Native cultures have evolved with their surrounding ecosystems since time immemorial and their relationship and connection with the land, water, and resources has remained unbroken.[192] Alaska Natives are taught from a very young age to not waste subsistence resources, especially fish and wildlife, and of the need to share their harvests and resources with those in the community or village in need.[193] "Alaska Natives . . . quite literally live off the land, carrying on subsistence traditions passed down from generation to generation."[194] Everyone in an Alaskan Native family has a role in subsistence, and children will often miss school to participate in subsistence fishing or gathering.[195] These tight knit communities are small, like most of those in the Y-K delta region

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187 *Id.* at 3.18-11.
188 *Id.*
189 The Pacific Salmon Commission is the entity oversees implementation of the Pacific Salmon Treaty between Canada and the United States and manages Pacific salmon. *See About Salmon*, Pac. Salmon Comm'n, http://www.psc.org/about_salmon.htm (last visited May 23, 2016).
190 *United States v. Alexander*, 938 F.2d 942, 945 (9th Cir. 1991) (Kozinski, J.).
191 Hollis Twitchell, Denali Nat'l Park & Pres., *Living Cultures, Subsistence, and the Inhabited Wilderness*, *in* Crossing Boundaries in Park Management: Proceedings of the 11th Conference on Research and Resource Management in Parks and on Public Lands 269, 269 (David Harmon ed. 2001), *available at* http://www.georgewright.org/46twitch.pdf.
192 *Id.*
193 *Id.* at 270. *See also* Draft EIS at 3.21-7; April Brown & Mike Fritz, *In Rural Alaska, Embracing Native Culture During and After the School Bell*, PBS Newshour (Nov. 13, 2014, 3:11 PM), http://www.pbs.org/newshour/updates/balancing-culture-education-rural-alaska/ (explaining that smelt don't go upriver, so families downstream send extra smelt upriver for other communities).
194 *Embracing Native Culture During and After the School Bell*.
195 *Id.*

(with the exception of Bethel) and everyone participates in subsistence activities – and subsistence living is a very important part of the culture.[196]

The Draft EIS looked at subsistence hunting and fishing activities (e.g., salmon, moose, sheefish, beaver) for communities in the Kuskokwim Area. The Kuskokwim Area subsistence fishing is one of the largest in Alaska and includes five species of salmon (Chinook, chum, coho, pink, and sockeye).[197] Household survey data collected between 2010 and 2013 showed that salmon not only provide an important source of nutrition, but are crucial to maintaining cultural identity and cultural values.[198] Moose and caribou were also found to be particularly important and productive subsistence resources.[199] And more specifically, in Crooked Creek, ten miles from the mine site, residents consumed more than 190 pounds of fish per person in 1990.[200] In Aniak, sixty miles downstream from the mine site, residents consumed more than 240 pounds of fish per person.[201] Mercury levels in fish in the river are already elevated due to contamination from historic mining. Further contamination of the Kuskokwim River system would have devastating effects on the health of the people, environment, and economy in the region. An

EJ 12 entire way of life hangs in the balance.

The local impacts of contamination, and the high cost and slow progress of remediation of former mining sites, is illustrated by the former Red Devil mine, which is one of the major sources of contamination on the Kuskokwim River. The Red Devil mine is located 1.5 miles from Red Devil village, on Red Devil Creek, a tributary of the Kuskokwim River upstream from the proposed Donlin mine site.[202] The Bureau of Land Management ("BLM") is currently coordinating environmental response to the Red Devil mine, although the State, the Georgetown village, and the Kuskokwim Corporation have petitioned the EPA to list the site on the Comprehensive Environmental Response, Compensation and Liability Act National Priorities List and to take over remediation of the mine, due to the slow progress in dealing with contamination issues.[203]

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[196] *Id.*
[197] Draft EIS at 3.21-86 to 87.
[198] *Id.* at 3.21-86.
[199] *Id.* at 3.21-88.
[200] Rebecca Siegel, *Gold Mine Planned for Southwest Alaska Threatens Environment and Local Communities*, EcoWatch (Feb. 27, 2013 10:37 AM), http://ecowatch.com/2013/02/27/gold-mine-alaska/.
[201] *Id.*
[202] Contaminated Sites Program, Alaska Dep't of Envtl. Conservation, *Red Devil Mine: Red Devil, Alaska* 1 (2009), *available at* http://dec.alaska.gov/spar/csp/docs/western/red-devil.pdf.
[203] *See* Letter from Maver Carey, President/CEO, Kuskokwim Corp., to Mathy Stanislaus, Assistant Adm'r, Office of Solid Waste & Emergency Response, U.S. EPA (Aug. 22, 2011), *available at* http://dec.alaska.gov/spar/csp/docs/interior/reddevilletters/8-22-11%20letter.pdf; Letter from David Kutch, President, Georgetown Tribal Council, to Lisa Jackson, Adm'r, U.S. EPA (Oct. 9, 2012), *available at* http://dec.alaska.gov/spar/csp/docs/interior/reddevilletters/10-9-12%20letter.pdf; Michael C. Geraghty, Attorney Gen., Alaska, to Lisa Jackson, Adm'r, U.S. EPA (Aug. 3, 2012), *available at* http://dec.alaska.gov/spar/csp/docs/interior/reddevilletters/8-3-12%20letter.pdf; Letter from Michael C. Geraghty, Attorney Gen., Alaska, to Mathy Stanislaus, Assistant Adm'r, Office of Solid Waste & Emergency Response, U.S. EPA (Jan. 23, 2013), *available at* http://dec.alaska.gov/spar/csp/docs/interior/reddevilletters/1-23-13%20letter.pdf.

As described in the BLM's Draft Remedial Investigation Report for the Red Devil mine, Red Devil mine continues to pose significant risks to human health.[204] Carcinogenic and toxic contaminants are present at the site in groundwater, surface water, soils, and probably animal and plant life.[205] BLM's study concluded that the site is so toxic and carcinogenic that, as the site sits now, even periodic subsistence or recreational visitors to the mine site could experience excess lifetime cancer risks and noncarcinogenic health risks that are thousands of times greater than the limits set by federal and state health standards.[206] The risks posed to possible workers or residents at the site are even greater.[207] In light of the risks at the site from "concentrations of mercury, arsenic, and antimony levels that could pose a risk to human health," the BLM issued a public safety advisory in 2011 "recommending that people 'do not enter or use' the mine site for any purpose, including subsistence."[208] Mercury from the Red Devil mine and other mercury mining sites along the Kuskokwim has also entered the River and bioaccumulated in fish. Data on mercury content in fish gathered by the BLM and other researchers caused the State to issue a health advisory in 2011 recommending that women who are or may become pregnant, breastfeeding women, and children, should limit or eliminate their consumption of certain fish caught in the middle Kuskokwim.[209]

In 2015, Red Devil Project Manager Mike McCrum noted that "we still had unanswered question with regard to tailings that have made their way into the Kuskokwim River. We also had unanswered questions for groundwater on the mine site."[210] Approximately a quarter million cubic yards of tailings have been leaking mercury, arsenic, and antimony into the Kuskokwim River for years. This has led to a multi-million dollar project to stop the tailings from releasing hazardous metals.[211] *Id*. In 2016, the BLM will consult with Kuskokwim communities about a proposed cleanup plan, which might include removing contaminated material and barging it to Oregon. The BLM's alternatives for remediation are described in its Final Feasibility Study.[212] Although BLM has not yet chosen its preferred alternative plan for remediating the site, the

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[204] *See* Ecology & Env't, Inc., *Draft Remedial Investigation Report* (2012), *available at* http://www.blm.gov/ak/st/en/fo/ado/hazardous_materials/red_devil_mine/rdm_cercla_remedial/rdm_cercla_administrative/2012-03_FINAL_Draft_RDM_RI_Report.html (hereinafter "Draft RI").
[205] *See* Draft RI, ch. 6 at 6-5, *available at* http://www.blm.gov/style/medialib/blm/ak/afo/hazmat/red_devil_mine_-_media/ri_fs/rdm_admin_record_2_draft_ri_report2012.Par.52546.File.pdf/Draft_RDM_RI_Ch_6_Risk_Assessment.pdf.
[206] *Id.* at 6-46 to 47.
[207] *Id.* at 6-40 to 47.
[208] Kuskokwim Corp. Letter to EPA at 1.
[209] Sec. of Epidemiology, Alaska Dep't of Health & Soc. Servs., *Fact Sheet: Mercury in Burbot (Lush) and Pike from the Middle Kuskokwim River Area – June 2, 2011* (2011), *available at* http://dhss.alaska.gov/dph/Epi/eph/Documents/fish/DHSS%20Mid%20Kusko%20Pike%20Burbot%20Fact%20Sheet%20June%202%202011%20FINAL.pdf.
[210] Ben Matheson, *Summer Work Underway at Red Devil Mine in Advance of Big Cleanup*, Alaska Pub. Media (Aug. 3, 2015), http://www.alaskapublic.org/2015/08/03/summer-work-underway-at-red-devil-mine-in-advance-of-big-cleanup/.
[211] *Id*.
[212] *See* Ecology & Env't, Inc., *Final Feasibility Study Red Devil Mine, Alaska* (2016), *available at* http://www.blm.gov/style/medialib/blm/ak/afo/hazmat/red_devil_mine_-_media/ri_fs/Red_Devil_Mine_Feasibility_Study.Par.27924.File.pdf/Red_Devil_Mine_Final_FS.pdf.

alternatives that were judged to be protective of human health and the environment will cost between $28 million and $188 million over thirty years of remediation activities.[213]

EJ 13

Other, more extreme examples, of mine impacts to subsistence are shown by the operations of Teck Cominco's mines in Canada and Alaska. The Pinchi mine was responsible for serious mercury contamination of Pinchi Lake in British Columbia. First Nations communities who relied on fish populations in the lake are unable to harvest fish from the lake due to contamination.[214] Dust from ore transportation at Teck's Red Dog mine, in northwest Alaska, contaminated local plants with heavy metals.[215] The EPA also determined that noisy activity at the mine and transport site contributed to a decrease in caribou and beluga harvests.[216]

So, while the Draft EIS does discuss subsistence and environmental justice issues, it ignores the realities of degradation that the mine can have on humans and the environment, as illustrated by these examples. As a result, the Draft EIS ignores the larger fact that open pit gold mines do inevitable and irreparable harm to the environment and that these impacts will be felt more in communities that rely on subsistence — and that will likely return to subsistence after the mine is closed. This is because the Draft EIS not only assumes that all management practices and mitigation will be successful, but that all scientific predictions are correct and will remain so throughout the life of the project. As discussed above, this is a seriously flawed approach, especially given the number of mine accidents that occur worldwide. However, as a result of these flawed assumptions, the impacts on subsistence and issues related to environmental justice are significantly downplayed.

EJ 10

The Draft EIS also conflates socio-economic impacts from the mine with environmental justice, in that environmental justice issues seem to be balanced against the assertion that mining will bring jobs and money into the area. This short-term rationalization ignores the long-term reality that accidents at the mine could permanently impact the Kuskokwim watershed and have irreversible effects on subsistence. For example, the Draft EIS focuses on the direct effects mining will have on employment and income while acknowledging that spending by workers would be limited when employees are at the work camps. It also notes that workers drawn from the Y-K region would spend some of their earnings in their home communities.[217] This potential spending in local communities for things like "subsistence tools and transport, such as fuel for snowmachines" is used to help justify a finding of "low to medium intensity" impacts on subsistence.[218] Moreover, the Draft EIS concludes that, other than the community of Crooked Creek, the mine site would have negligible impacts to subsistence on "most of the minority and low income communities in the Y-K region" because they do not have subsistence use areas that overlap the mine site.[219] And the community of Crooked Creek is predicted to only "experience

[213] *Id.* at 3-4 to 21, 4-17 to 92; tbls.4-4, 4-6 4-8, 4-10, 4-12.
[214] *Mining and Community Health* at 3.
[215] *Id.* at 6.
[216] *Id.* at 2.
[217] Draft EIS at 3.18-37.
[218] *Id.* at 3.19-17.
[219] *Id.*

EJ 10 the continuation of low intensity changes to subsistence resource abundance and access over the life of the mine, which would diminish upon closure."[220]

EJ 13 The conclusory statements regarding impacts to Y-K communities and to Crooked Creek are all premised on the underlying assumption that the risk analysis that underlies the Draft EIS is correct. However, as discussed above, mining operations routinely cause unforeseen serious social, health, and environmental impacts. And in most cases, these impacts are disproportionately borne by local subsistence-based communities who depend on the natural resource base for their livelihoods. Human errors alone, or combined with incorrect scientific predictions during construction, operation, or post closure, can have catastrophic impacts on the local and regional Y-K environment.

L. Conclusion

The Donlin mine may bring jobs to the Y-K people for the next 20 years, but it will also permanently destroy the landscape in and around the mine site and, at a minimum, will leave behind a hazardous pit lake, tailings, and waste rock that will have long-lasting negative impacts on surface water, groundwater, wildlife, and plants. These hazards pose excessive risk to the health and welfare of people in the Y-K region. Moreover, given the uncertainties in predicting future impacts of the Donlin mine, it is likely that the long-term impacts of the mine have been grossly understated. Further, just one major catastrophic event has the potential to devastate not only the local community of Crooked Creek, but other subsistence communities throughout the Y-K region. The Draft EIS fails to provide adequate analysis or discussion of these issues. Taking into account the significant gaps in the Draft EIS and the realities of mining's impacts to humans and the environment, the risks associated with the Donlin mine outweigh any perceived economic benefit on the Y-K region. The Donlin mine should not be allowed to move forward and any permits that must be issued based on a final EIS should be denied.

We appreciate the opportunity to provide these comments.

Sincerely,

Lloyd B. Miller
Vanessa L. Ray-Hodge

Attorneys for the Yukon-Kuskokwim Health Corporation

cc: Chairman Esai Twitchell
President Dan Winkelman

[220] *Id.*

Smith, Neal

From: Young, Courtney <CYoung@mtech.edu>
Sent: Monday, April 25, 2016 4:07 PM
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

To whom it may concern:

NEP 4 I have reviewed numerous information about the Donlin Gold project. I find the EIS statement sound and actually perfect for Alaskan needs, doing more than necessary to assure the environment is protected. Mercury and water treatment issues are fully addressed! While there will be those who oppose the mine because it is a mine, such frivolous opinion is just that: frivolous. Donlin's social responsibility also sees to that. I am particularly fond of the fact that they propose using the "downstream" method to construct its tailings dam. Such an approach does not cut corners to save money as other methods do. One might also hike in these areas and come across an "ugly old mine" but one must also remember it not only creates jobs but creates high-paying jobs. Wow, 600-1200 jobs per year for an estimated 27.5 years is a game-changer. I AM HIGHLY IN FAVOR OF THIS!

Courtney Young, PhD, QP
Dept Head and Lewis S. Prater Professor
Metallurgical & Materials Engineering
Montana Tech Butte MT USA

From:	Bellion, Tara
To:	Evans, Jessica
Subject:	FW: [EXTERNAL] Donlin EIS
Date:	Tuesday, June 28, 2016 10:27:41 AM

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Tuesday, June 28, 2016 10:21 AM
To: Bellion, Tara
Cc: Brewer, Jason D POA
Subject: FW: [EXTERNAL] Donlin EIS

Tara,

See below. Just wanted to see if this was forwarded to you. I'll check some others that are in the "forwarded to AECOM" folder to see if I can find them posted to the website.

Jason Brewer
Regulatory Specialist
North Section, Alaska District
U.S. Army Corps of Engineers
jason.d.brewer@usace.army.mil
907-753-2823

-----Original Message-----
From: Monica Zappa [mailto:monicazappa1@gmail.com]
Sent: Thursday, April 28, 2016 11:47 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin EIS

SUB 1 I am very concerned about the level of mercury this mine will produce. It is well know of the toxic impacts mercury has on animals and humans. There is no justification to exploit those folks who live in the region and depend on healthy fish to sustain themselves and their families. HZM 2 With the poor reputation Canadian mining companies have for environmental health and safety, I think the chance is low that Donlin would be able to avoid a high contamination of the region in the long-term. Having to treat the water perpetually after the mine closes is highly impractical and downright irresponsible. No company or cooperation should ever pass the burden of their mess down to other generations to clean up, long after the chance of any economic gain is passed. This mine sets a bad standard for Alaska and those that value the natural resources.

From: Craig, Bill
To: Evans, Jessica; Bellion, Tara
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Thursday, April 07, 2016 8:45:45 AM

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Thursday, April 07, 2016 6:40 AM
To: Craig, Bill
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment

-----Original Message-----
From: Timothy Zaukar [mailto:tzaukar@yahoo.com]
Sent: Wednesday, April 06, 2016 1:45 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Cc: azuakar@gmail.com; crookedcreektraditionalcouncil@gmail.com
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

PHL 16 The Concern I have is If all the best technology in the World is used to capture 98% of the mercury what of the other 2% which would amount to hundreds even thousands of pounds a year in mercury if an estimated 12 to 42 tons will be processed each year and under current EPA guidelines Donlin Gold can possibly allow for hundreds to thousands of pounds of mercury to be emitted in the atmosphere and in the tailings. The tailings will also need to be cleaned of mercury which is not in there plan and off gassing during autoclaving and roasting will potentially account for enormous amounts of mercury to enter the atmosphere and in turn enter the ecosystem therefore enter the food chain which would cause people to be exposed to toxic methyl mercury. The mercury that is captured will also need to be accounted for and stored or removed from the area. Over site in any area could be potentially be devastating even if current guidelines are followed this kind of undertaking so colossal and endless that the effects that are perpetually incurred upon us are not foreseeable in all aspects of EPA guidelines.

Smith, Neal

From: Craig, Bill
Sent: Monday, April 18, 2016 2:20 PM
To: Bellion, Tara; Evans, Jessica; Smith, Neal
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment

-----Original Message-----
From: donlingoldeis, POA [mailto:POA.donlingoldeis@usace.army.mil]
Sent: Monday, April 18, 2016 1:15 PM
To: Craig, Bill
Subject: FW: [EXTERNAL] Donlin Gold Draft EIS comment

-----Original Message-----
From: Timothy Zaukar [mailto:tzaukar@yahoo.com]
Sent: Friday, April 15, 2016 3:09 PM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Cc: azukar@gmail.com
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

PAA 39

I'am tribal member of the native village of Crooked Creek and I think that if Donlin Gold can acquire permits for all aspects of mining including open pit and a gas pipeline that it would be possible to look into a pump storage hydroelectric system as an alternate power source that could also power the region upon it's closure or possibly if surplus power is generated during operation it may be perceivable to apply for grants to run power lines and acquire power from them at cost which would be considerably lower than current and even future prices. This would be a reasonable and favorable proposition to elaborate on 30 years from now how can we say to our children that we were afraid to ask for anything in return for allowing them to sever this resource from us without any reward in return or procurement of any available public service.

Tim Zaukar

From: Timothy Zaukar
To: donlingoldeis, POA
Subject: [EXTERNAL] Donlin Gold Draft EIS comment
Date: Thursday, January 28, 2016 11:35:55 AM

HZM 8 I'am concerned about the inorganic arsenic if it gets into the ground what would be done to cleanup the contaminate? Also if large amounts of arsenic trioxide were released into the the environment how long would it take to clean up? And what would the adverse affects of the contaminates be on the ecosystem?

From:	Timothy Zaukar
To:	donlingoldeis, POA
Subject:	[EXTERNAL] Donlin Gold Draft EIS comment
Date:	Tuesday, January 26, 2016 10:46:08 AM

SUB 5 Hi, I'am contacting you in regards to ANILCA title 810 and 811 our subsistence use to lands will be lost north of donlin site in the Iditarod area,
unless another route is established for subsistence users due to the mine site being on our existing trail.

Total closure to such subsistence opportunities would not benefit our people with bison potentially being on the list in the near future along with traditional caribou and moose hunting and trapping grounds due to the fact that they will be impossible to access.

Thank You
Tim Z.

From:	donlingoldeis, POA
To:	Craig, Bill
Subject:	FW: [EXTERNAL] Donlin Gold Draft EIS comment
Date:	Thursday, February 25, 2016 6:53:17 AM

-----Original Message-----
From: Tom Zimmerman [mailto:tom.zimmerman@universalwelding.net]
Sent: Tuesday, February 16, 2016 4:44 AM
To: donlingoldeis, POA <POA.donlingoldeis@usace.army.mil>
Subject: [EXTERNAL] Donlin Gold Draft EIS comment

To whom it may concern,
With the rigorous environmental controls needed to proceed a project to construction and development in this era I can whole heatedly endorse and support such a project as the Donlin Gold Project.
SER 5 A project such as this with the necessary environmental controls and monitoring would be a welcome economic boost for the both the state and the local area for which it is planned.
Thank you for your consideration of my opinion
Respectfully

Tom V. Zimmerman Jr.

--

Tom V. Zimmerman, Jr.
President
907.490.1155
907.378.9222
<Blockedhttps://docs.google.com/uc?export=download&id=0B2wFAO40MZqveUJxMU9tWWw3S00&revid=0B2wFAO40MZqvVTZlakZJaytRVHZGY1k0REIvNzZDeE16akVRPQ>