



United States Department of Agriculture  
Forest Service

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# Thompson Creek Mine Expansion

## Record of Decision

*Salmon-Challis National Forest*

*Custer County, Idaho*

*August 2016*

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[DR 4300.003 USDA Equal Opportunity Public Notification Policy \(June 2, 2015\)](#)

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## Acronyms and Abbreviations

BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
CFR	Code of Federal Regulations
EIS	environmental impact statement
EO	Executive Order
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
LRMP	Land and Resource Management Plan
MBTA	Migratory Bird Treaty Act
MMPO	modified mining plan of operations
MPO	mining plan of operations
NEPA	National Environmental Policy Act
NFS	National Forest System
NFMA	National Forest Management Act
NHPA	National Historic Preservation Act

NOA	notice of availability
NOI	notice of intent
NPDES	National Pollutant Discharge Elimination System
ROD	record of decision
RMP	resource management plan
SCNF	Salmon-Challis National Forest
TCMC	Thompson Creek Mining Company
TSF	tailings storage facility
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
WRSF	waste rock storage facility
WQS	water quality standard

## **Introduction**

The Salmon-Challis National Forest (SCNF or Forest Service), Bureau of Land Management (BLM; lead agency), and US Army Corps of Engineers (USACE), in cooperation with the US Environmental Protection Agency (USEPA), Idaho Department of Environmental Quality (IDEQ), and Idaho Department of Lands (IDL), prepared an environmental impact statement (EIS) per the National Environmental Policy Act (NEPA) to review the potential environmental effects of a modified mining plan of operations (MMPO) proposed by the Thompson Creek Mining Company (TCMC) that would expand the area and extend the life of the Thompson Creek molybdenum mine (the project). The final environmental impact statement (Final EIS) (BLM 2015a) and a draft record of decision (Draft ROD) for the portions of the project within Forest Service jurisdiction (USFS 2015a) were released to the public on March 27, 2015.

### ***Scope of this Decision***

This record of decision (ROD) is for only the portions of the MMPO under Forest Service jurisdiction, i.e., the portions of the MMPO for surface disturbance on NFS land subject to Forest Service minerals and surface use regulations (36 CFR 228 and 36 CFR 261). This surface disturbance would be 185.5 acres, due primarily to incremental upslope expansion of the Buckskin waste rock storage facility (WRSF) and tailings storage facility (TSF) and the relocation of a powerline. This surface disturbance would be 5.6 percent of the surface disturbance of the mine at the end of Phase 8 (3,318.4 acres). The BLM will issue a separate decision for the portions of the MMPO under BLM jurisdiction and USACE will issue a decision on the 404 Clean Water Act Section 404 permit application required to implement the MMPO.

The EIS also evaluated a land exchange proposed by the TCMC. The land exchange would involve private land owned by the TCMC and BLM-administered land; therefore, the Forest Service has no authority over the proposed land transaction.

### ***Background***

There is a single, currently-approved mining plan of operations (MPO) for the mine. However, the mining operations occur on private land, National Forest System (NFS) land, and BLM-administered land. Consequently, portions of the MPO are under the respective jurisdictions of the IDL (operations on private land), BLM (operations on BLM-administered land), and Forest Service (operations on NFS land). The MPO includes all modifications approved since its original submission in 1979, and includes a variety of separate plans such as a reclamation plan; environmental monitoring plan; interim management plan; spill prevention, control and countermeasures plan; stormwater pollution prevention plan; fugitive dust control plan; etc.

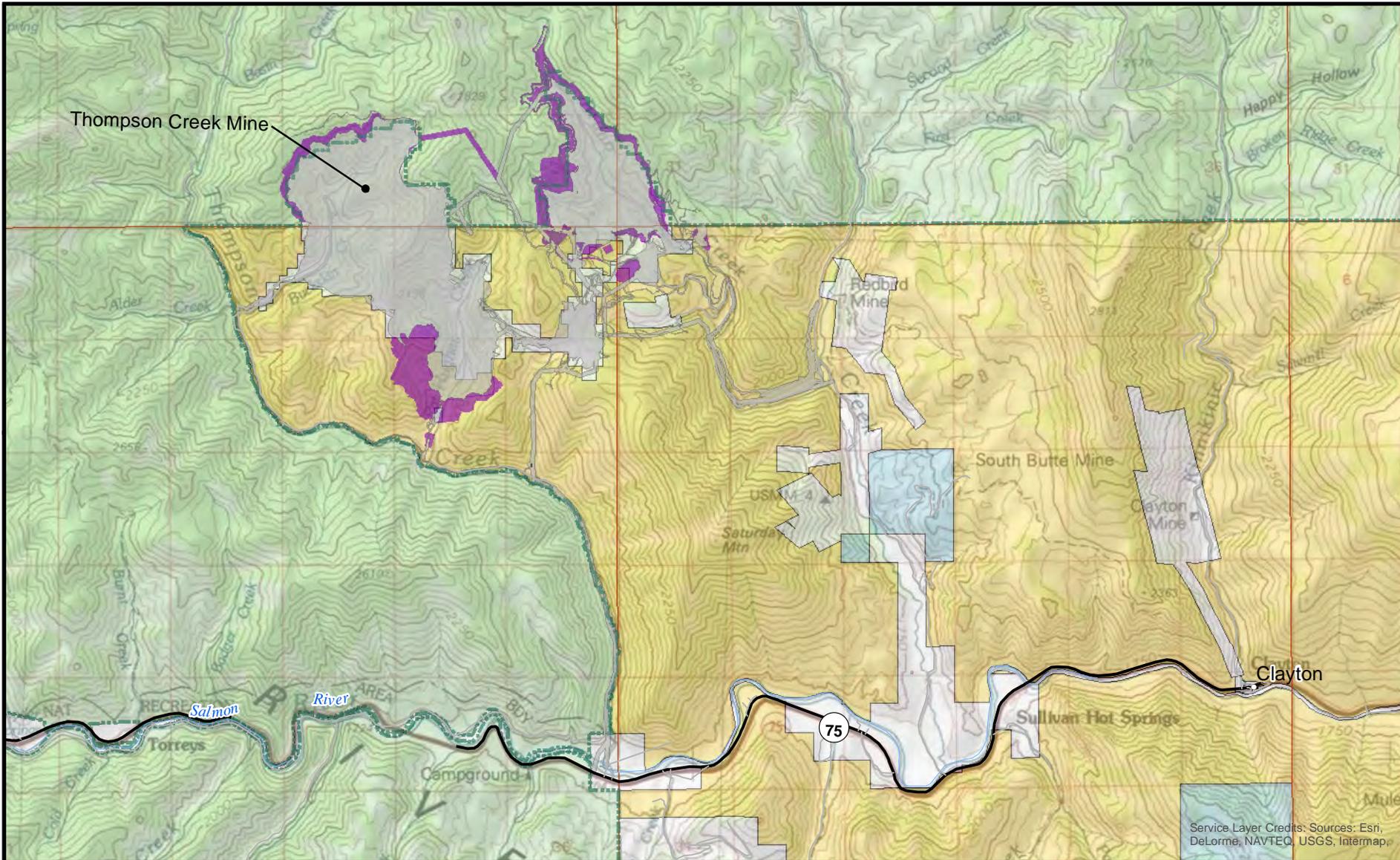
A single MMPO was proposed for the mine in 2008. The MMPO is a description of the proposed Phase 8 operations, and incorporates the MPO by reference. Once the MMPO is approved by the Forest Service, the MPO will be considered modified accordingly and TCMC will be legally bound to conduct operations per the MPO and according to the terms and conditions of the Forest Service approval.

The mine is seven air miles northwest of Clayton and 21 air miles southwest of Challis in Custer County, Idaho (Figure 1). The mine has been owned by a series of public and private companies since 1979. The mine is currently owned and operated by Cyprus Thompson Creek Mining Company, a wholly owned subsidiary of TCMC, a wholly owned subsidiary of Thompson Creek Metals Company USA, a wholly owned subsidiary of Thompson Creek Metals Company Inc., a public company incorporated in British Columbia, Canada and headquartered in Denver, Colorado. Thompson Creek Metals Company Inc. expects to be purchased by Centerra Gold Inc. in Fall 2016 (Centerra Gold 2016). However, no material changes are expected to occur at the mine due to the purchase of Thompson Creek Metals Company Inc. (parent company) by Centerra Gold Inc., e.g., the MPO and financial guarantee will still be in the name of the local holding company/operator (Cyprus Thompson Creek Mining Company).

Cyprus Minerals Corporation, through its exploration subsidiary Tuscarora Mining Company, staked the first mining claims on the Thompson Creek ore deposit in 1967. Exploration work began in earnest (e.g., diamond core drilling) in 1968 and continued throughout the 1970s. During this time an EIS was prepared to provide baseline environmental information and to evaluate mitigation measures for the anticipated effects of the mine (VTN 1975).

Cyprus Minerals Corporation submitted a notice of intent to operate and an MPO to the Forest Service and BLM in 1979 (Cyprus Mines Corporation 1979). In 1980 the Forest Service (lead agency) and BLM (cooperating agency) completed an EIS analyzing the effects of approving the MPO or alternatives (USFS 1980). The Challis National Forest Supervisor and the BLM Challis Field Office Manager selected Alternative 1 (the proposed action), consistent with the applicable Challis National Forest and BLM Challis Field Office land use plans. Construction of the mine began in January 1981, and commercial production of molybdenum concentrate began in November 1983. The mine completed Phase 7 operations in December 2014, which corresponds to the final design limits of the approved MPO.

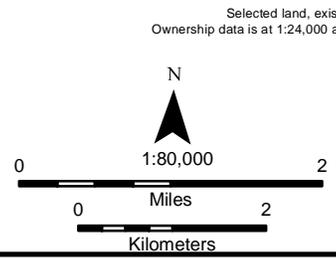
In 1999 the Forest Service (lead agency) and BLM (cooperating agency) completed a Supplemental EIS evaluating a Supplemental MPO submitted by TCMC. The Supplemental MPO describes modifications to the WRSFs and TSF to minimize the potential for acid rock drainage from these facilities. The Supplemental EIS included an analysis of no action (Alternative 1), the proposed action (Alternative 2), and two additional action alternatives (Alternative 3 and Alternative 4) (USFS 1999a). Alternative 2 included modifications to the WRSFs and TSF. The Forest Service and BLM selected Alternative 2 and gave interim approval of the MPO consistent with records of decision (RODs) dated March 1999 (USFS 1999b) and January 2000 (USFS 2000). Additional Federal approval of the Supplemental MPO was not made due to the issuance of mineral patents in September 2000, when the mine operations that were the subject of the Supplemental EIS became private property and the MPO came under the sole jurisdiction of the IDL.



Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap,

**Legend**

- Existing Mining Disturbance
- MMPO Disturbance
- Land Ownership**
- BLM
- Private
- State
- Forest Service



Selected land, existing mining disturbance from Thompson Creek Mine data, polygons created by Ken Gardner. Ownership data is at 1:24,000 and created and maintained by the Bureau of Land Management, Idaho State Office, Geographic Sciences. Topographic background from USGS 7.5' Quadrangles 1:24,000 scale. Coordinate system UTM Zone 11 NAD 83



No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed. The following cannot be made Section 508 compliant. For help with its data or information, please contact the BLM Idaho State Office Webmaster at 208-373-4000.



**Figure 1**  
**Project Area, MMPO**  
**Thompson Creek Mine EIS**

### **Proposed MMPO**

At the end of Phase 7 (December 2014) the cumulative surface disturbance of the mine was 2,191 acres on private land, 451 acres on land administered by the BLM Challis Field Office, and 181 acres on NFS land. Phase 7 operations consisted of an open pit, two cross-valley-fill WRSFs in the Pat Hughes and Buckskin drainages, a TSF in the Bruno drainage, a mill, and a network of roads, pipelines, power lines, conveyor belts, sedimentation ponds, etc. Since December 2014, the mine has operated in a slow-down mode with approximately 50 employees, limited removal of Phase 8 overburden on private property, limited processing of molybdenum concentrate purchased from other mines, and care and maintenance of the equipment and facilities. Phase 8 overburden removal ceased on August 10, 2015.

The MMPO describes the proposed Phase 8 operations: expansion of the open pit, expansion of the WRSFs and TSF, and modifications to long-term water management. The MMPO will allow the operator to produce molybdenum for approximately 10 additional years at a rate of approximately 30,000 short tons per day of ore (15-20 million pounds/year of molybdenum), and the operator will employ up to approximately 400 full-time employees. The additional surface disturbance from Phase 8 will be on approximately 110 acres of private land, 200 acres of BLM-administered land, and 185 acres of NFS land. The surface disturbance on NFS land will be primarily from the incremental upslope expansion of the Buckskin WRSF and TSF, and the relocation of a portion of a 24.9 kilovolt power line due to expansion of the open pit.

## **Purpose and Need**

The purpose of the Forest Service action on the MMPO is to respond to the proposal for mine expansion on NFS land and the subsequent extension of mine life. The Forest Service must determine if changes, including additions, or conditions to the MMPO are necessary prior to approval of the MMPO to meet the requirements of Forest Service regulations (36 CFR 228A). The need for the Forest Service action is the Forest Service's responsibilities under applicable Federal laws and regulations to consider and respond to the MMPO.

## **Decision**

An MPO or MMPO for locatable mining activities on NFS land, such as the Thompson Creek Mine, is subject to review, reasonable modification to minimize disturbance of surface resources, and approval by the Forest Service per the Organic Administration Act of June 4, 1897 and Federal mining laws, as amended (16 USC 478, 551 and 30 USC 22 *et seq.*) and regulations in 36 CFR 228.4(e) and 228.5(a).

Based upon my review of all alternatives and the effects analysis in the Final EIS for the Thompson Creek Mine Expansion Project, and consideration of comments received throughout the project including those from scoping and on the Draft EIS and Final EIS, I have decided to implement Alternative M2 and conditionally approval the portions of the MMPO with surface disturbance on NFS land. Alternative M2 will allow mining-related surface disturbances on up to 185.5 acres on NFS land, subject to the following terms and conditions:

1. The operator shall submit to the Forest Service an MMPO and receive Forest Service administrative approval of an MMPO consistent with Alternative 2 and incorporating/

conforming to these terms and conditions. These documents are hereafter called the ROD MPO.

2. Prior to implementing the ROD MPO, the operator shall receive Forest Service approval of a bond adjusted to conform to the ROD MPO per 36 CFR 228.13.
3. The ROD MPO shall contain the detail necessary for the Forest Service to administer the ROD MPO (e.g., engineering diagrams at appropriate site-level scales). In particular, the ROD MPO shall contain the details of Phase 8 post-closure water treatment; the details of Phase 8 reclamation consistent with that evaluated for Alternative M2; a tailings operating and monitoring plan; an updated consolidated environmental monitoring plan; and an updated interim management plan that details care and maintenance measures for site access, site security, slope stability, management of weeds, sediment and erosion control, water management, etc.
4. The ROD MPO shall include a detailed description of redundancies, backups and capacities (e.g. excess fluid storage, emergency power) that are, and/or will be, in place for specific components of operational, nonoperational, and post-closure water management systems, and the types of failures they would alleviate.
5. The consolidated environmental monitoring program for the mine (TCMC 2013) shall be modified according to the specifications and recommendations of the adaptive groundwater management plan (Lorax 2012a). For example, the Phase 8 southeast pit wall shall be mapped for major faults/fractures that could convey pit lake water to groundwater near the pit. Such data shall be integrated into the groundwater monitoring system to confirm the potential effects of the pit lake on groundwater, e.g., confirm the predicted groundwater gradients during and following the development of the pit lake.
6. The ROD MPO shall include long-term erosion and control maintenance of the TSF, e.g., periodic tree removal.
7. The ROD MPO shall specify the species planned for use in reclamation during Phase 8, in compliance with the Salmon-Challis National Forest integrated weed control program (USFS 2015b, 2016). The Forest Service may subsequently accept changes to the species as requested by the operator as appropriate, or require changes to the species.
8. The operator shall provide the Forest Service with the most current copy of each authorization required for the mine by local, State and other Federal agencies during the operations described in the ROD MPO.
9. The water quality monitoring that currently occurs at Station SQ5 for Redbird Creek and Station TWIN for Twin Apex Creek shall continue until deemed no longer necessary by the Forest Service.
10. The operator shall continue to provide the Forest Service copies of the annual reports specified in the environmental monitoring plan and the annual reports shall be updated to reflect the information from new monitoring sites.
11. The operator shall provide the Forest Service annually (e.g., in the environmental and reclamation activities report) with the elevation of the water level in the open pit and the corresponding estimated number of years to reach the control level so that the reclamation cost estimate may be updated accordingly.
12. Trees planted for reclamation shall include whitebark pine seedlings, if commercially available, in all disturbed areas within 100 vertical feet of ridgetops with an elevation of 7,300 feet or more where stands of whitebark trees would reasonably be expected to develop.
13. Successful revegetation for reclamation will include the establishment of at least 70 percent of the ground cover found on adjacent reference areas for two full growing seasons after cessation of soil amendment or irrigation.

14. Should cultural or paleontological resources be discovered during mining, the operator shall immediately notify the Forest Service authorized officer of the discovery and preserve the discovery until the discovery has been inspected by a Forest Service or Forest Service-approved archaeologist or paleontologist and a mitigation plan developed, if necessary. The operator shall be responsible for the cost of investigating and evaluating the discovery to determine its significance, and the cost of any appropriate mitigation.
15. The operator shall implement the terms and conditions, and shall give full consideration to implementing the Section 7(a)(1) conservation recommendations and essential fish habitat conservation recommendations in the National Marine Fisheries Service biological opinion (NMFS 2016, Appendix A), as applicable to the portion of the ROD MPO administered by the Forest Service and for which the operator may legally implement.
16. The operator shall implement the terms and conditions, and shall give full consideration to implementing the Section 7(a)(1) conservation recommendations in the US Fish and Wildlife Service biological opinion (USFWS 2016, Appendix B), as applicable to the portion of the ROD MPO administered by the Forest Service and for which the operator may legally implement.

## **Rationale for the Decision**

I have selected Alternative M2, as modified by terms and conditions, because this alternative provides the greatest attainment of the project's purpose and need to consider and approve a plan for mining on NFS land while reasonably minimizing negative impacts to surface resources. In making my decision, I have relied on a wide variety of information including scoping input; the input from my staff and interested parties during telephone conversations and meetings; the Final EIS; the project record; visits to the mine; and the applicable laws, regulations and Forest Service policies. In particular, my decision is based on review of the project record, which shows a thorough examination of relevant and best available scientific information, consideration of public comment, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. The project record also demonstrates critical analysis during scoping and the development of alternatives. The issues and alternatives that were fully evaluated in the EIS encompass those that are meaningful to my decision space, and were evaluated commensurate with the magnitude of the potential effects. I am confident that no additional analysis would reasonably be expected to cause me to reach a different decision.

The selected alternative (Alternative M2) and its terms and conditions meet the purpose of the proposed Forest Service action, i.e., Alternative M2 meets the requirements of Forest Service minerals regulations with reasonable measures to minimize the effects of Phase 8 on surface resources within the statutory rights under Federal mining laws of the operator. The selected alternative also fulfills the need for the proposed Forest Service action, i.e., to consider and respond to the MMPO submitted by TCMC. Furthermore, the selected alternative will allow the operator to economically and safely produce molybdenum for approximately 10 additional years to help satisfy national and world demand, while minimizing surface disturbance and protecting air and water quality; and the mine will be fully reclaimed at the end of operations.

I have taken into consideration the degree to which the environmental controls, monitoring, and mitigation measures will reasonably reduce potential effects to the environment, and the predicted effects of the MMPO alternatives on groundwater and surface water quality in the analysis area in comparison to water quality standards (WQSS). All practicable means to minimize adverse environmental effects on National Forest surface resources, while allowing for continued

molybdenum production, are either already incorporated into the existing MPO or would be enhanced by the selected alternative.

I did not select the no action alternative (Alternative M1) because this alternative would not satisfy the purpose need for the proposed Forest Service action; the alternative would not allow approval of continued operation of the mine per the statutory rights of the operator under Federal mining laws. I also considered the negative socioeconomic impacts of Alternative M1 in relation to the environmental effects of the additional surface disturbances of the action alternatives.

I did not select Alternative M3 (No Name WRSF) because the adverse environmental effects of developing a WRSF in a new drainage would be greater than the beneficial environmental effects of the partial reductions in the sizes of the Buckskin and Pat Hughes WRSFs. In addition, although the operator would save substantial money by hauling portions of the Phase 8 waste rock to the nearby and downgradient loaded haul of the proposed No Name WRSF, placing all of waste rock in the existing WRSFs is economically feasible for the operator.

While I considered all of the information in the project record, I highlight the following:

1. The effects of the action alternatives on socio-economics would be hard to overstate; at full operations the mine provides approximately 400 of the highest paying jobs and nearly half of the total wages and salaries paid to all workers in Custer County (Idaho Economics 2008), a county with only some 4,200 people (US Census Bureau 2016).
2. The range of reasonable alternatives for developing a mine is inherently limited due to the fixed location of an extremely rare ore body; the relatively large infrastructure required to operate a mine; the nonrenewable nature/finite life of an ore body; and the worldwide competition that allows only the most economical mines to be developed under extremely capital intensive situations. The range in such alternatives is particularly limited when evaluating the incremental expansion of a mine that has been operating for 35 years. The environmental effects that can be mitigated have largely been mitigated through adaptive management using technology that has evolved over the last four decades. For example, sediment and erosion control measures along the Bruno Creek Access Road have eliminated most of the sediment that the Bruno Creek sedimentation ponds used to capture and the wind fence around the coarse ore stockpile has reduced fugitive dust from even this source. Moreover, very little of the mine is under Forest Service jurisdiction.

The range of alternatives for the EIS considered a variety of alternatives/mitigation for the mine. In addition to the three alternatives that were fully analyzed, ten additional alternatives that were considered are summarized in the Final EIS (BLM 2015a, Section 2.1.7). No additional reasonable alternatives were identified through internal and external/public scoping; the supporting scientific studies; or the public comment period for the Draft EIS and the review period for the Final EIS.

3. The EIS necessarily evaluates the effects of the MMPO alternatives for the entire mine, even though most of the mine is on private land. Consequently, most of the effects of Phase 8 are not subject to Forest Service surface management authority and are outside my relatively limited decision space.

4. Under the selected alternative, the Phase 8 TSF embankment will be almost entirely on private land (Figure 1) and has been permitted by the Idaho Department of Resources (IDWR) Dam Safety Department. Regardless, the NEPA analysis took an extremely hard look at the stability of the TSF. The consensus of four groups of geotechnical experts in the design and operation of TSFs (three of whom made independent reviews) is that the Phase 8 TSF will be stable, both during active mining operations and after reclamation, and under static and dynamic (maximum credible earthquake) conditions, as well as in the case of the probable maximum flood. The Phase 8 designs of the open pit and WRSFs were similarly reviewed by the agencies, whose geotechnical experts accepted that the designs of these facilities would also be stable under static and dynamic conditions (e.g., BLM 2015a, Section 4.2.1).
5. The failure of the Mount Polley TSF in August 2014, between the release of the Draft EIS and the Final EIS, was a unique recent circumstance that represented new but not significant information for the project. The government of British Columbia initiated three separate investigations of the Mount Polley incident, one of which has been completed to date by an Independent Panel under the Ministry of Energy and Mines. The Independent Panel review concluded that construction of the downstream rockfill zone with oversteepened slopes triggered embankment failure along a weak glaciolacustrine layer in the foundation. The affected embankment slumped vertically and a large volume of water present in the facility impoundment at the time flowed over the slumped embankment and eroded the embankment releasing tailings water and solids (Morgenstern et al. 2015).

While the failure incident itself is new information, the types of causal factors leading to the failure (embankment mass stability, foundation conditions, and freeboard), and the geotechnical practices and knowledge regarding these factors are not new significant information, but rather classical elements of geotechnical engineering. The engineers of the Thompson Creek TSF considered these factors (and others) in their design of the facility. The agencies' evaluation of the design and operation of the facility by experienced geotechnical engineers also considered these factors. A well designed, constructed, and operated TSF will behave as intended, especially considering static loading.

Regarding independent tailings review boards, the review panel for the Mount Polley incident states that the boards "...have a role in improving current practice. But they should not be necessary for all tailings undertakings." Should the British Columbia Ministry of Energy and Mines require independent tailings review boards for some or all TSFs, that agency obviously has no jurisdiction in Idaho in which the primary regulating authority is the IDWR Dam Safety Department. Therefore, the relevance of such discussion for the Thompson Creek Mine is that the owner/operator of the TSF should consider the complexity and failure consequence that may warrant the creation of an independent tailings review board. Note that probability of a TSF failure decreases substantially after reclamation when a pool of water is no longer maintained on surface of a TSF, the facility has drained down, and the tailings and any underlying sediments in the foundation consolidate (e.g., ICOLD 2001; Rico et al. 2008).

6. In response to public input during the review period for the Final EIS, the Forest Service has added a term and condition that could reduce light pollution at night.
7. Early in the project there was discussion about also evaluating a Phase 9 scenario at the mine. However, a complete Phase 9 proposal was not possible at that time, and is now definitely not a

reasonably foreseeable action. For example, Phase 9 resources have not been delineated and there are no current plans for exploration for such resources. In addition, the Phase 8 resources will not be mined until the long-term molybdenum price is forecast to be substantially higher than the current price of approximately \$5 to \$8 per pound; any delineated Phase 9 resources would occur at greater depth than the Phase 8 resources and be even more expensive to mine. In any case, the cumulative effects of such a scenario would be essentially the same as those of Phase 8, i.e., operating the mine for an additional decade or so but with a new WRSF and TSF developed in one or more drainages. Regardless, such a scenario is too speculative for any meaningful NEPA analysis.

8. In response to public input during the review period for the Final EIS, the Forest Service has added a term and condition to address long-term erosion and control maintenance of the TSF, e.g., periodic tree removal. The term and condition would apply to only the tiny portion of the TSF on NFS land, but the Forest Service will ask the BLM and IDL to implement a similar term and condition for the portions of the ROD MPO under their jurisdictions.
9. Post-closure water treatment is one of the highest standards of mine reclamation, and eliminates the need and risks for many other potential mitigation measures such as installing liners and/or additional caps, covers and water diversions for the WRSFs and TSF. Such mitigation measures would be appropriate only if they would eliminate the need for water treatment. Furthermore, eliminating the water treatment would greatly increase the consequences of errors in the predictions of future water quality, or problems that would develop in the long term with impermeable liners, additional caps/covers, etc.

The pit needs to fill rapidly to eliminate acid rock drainage from the pit walls and floor, and the treatment method is relatively straight forward (Lorax 2012b, TKT 2012). In addition, the reclamation of the TSF is designed to allow some water to infiltrate to keep the tailings impoundment saturated to minimize the potential for acid-rock drainage from the TSF. Moreover, the treatment technology will undoubtedly improve and become more cost effective in 70 years when the water is to be withdrawn from the pit, treated and discharged. No reasonable alternatives to the water treatment were identified through internal and external/public scoping; the supporting scientific studies conducted by multiple groups of geologists, geochemists, hydrologists and hydrogeologists; or the public comment period for the Draft EIS and the review period for the Final EIS.

## **Public Involvement**

As noted above, public input was used to develop alternatives to the proposed action, and to identify issues to be addressed in the project design. The following sections summarize the public involvement process for the project.

### **Scoping**

The Thompson Creek Mine Expansion project has been listed and updated on the Forest Service Schedule of Proposed Actions (SOPA) since July 1, 2009. A 30-day public scoping period was initiated for the EIS by publication of a notice of intent (NOI) to prepare an EIS in the *Federal Register* on August 3, 2010 (75 FR 45652). A [BLM website](#) for the project was launched concurrently with publication of the NOI, and has remained active and linked to the Forest Service online schedule of proposed actions throughout the project

([http://www.blm.gov/id/st/en/prog/nepa\\_register/TCM-exlx\\_EIS.html](http://www.blm.gov/id/st/en/prog/nepa_register/TCM-exlx_EIS.html)). The NOI and scoping documents were made available on the project website. The BLM also provided a press release for the scoping period to news organizations in Idaho, and published notice of the scoping period in two newspapers. In addition, the BLM provided scoping documents to an extensive list of potentially interested parties. Two public scoping meetings in open house format were held on August 23, 2010 in Boise and on August 24, 2010 in Challis. A total of 218 public responses were received through public scoping. A formal internal scoping meeting was held on November 24, 2009 in Challis to solicit comments from Federal and State agencies with jurisdiction or interest in the project. Informal internal scoping among employees of the BLM, Forest Service, USACE, USEPA, IDEQ, and IDL continued throughout the preparation of the EIS. The project mailing list has been maintained throughout the project by removing parties that have indicated they are not interested in the project and adding new interested parties.

### **Draft EIS**

A 90-day public comment period for the Draft EIS was initiated by publication of the USEPA notice of availability (NOA) of the Draft EIS in the *Federal Register* on March 21, 2014 (79 FR 15741).<sup>1</sup> The BLM also published an NOA in the *Federal Register* on March 21, 2014 (79 FR 15771). In addition, the BLM provided news organizations with a news release for the public comment period for the Draft EIS, published the BLM NOA in local newspapers, and made the NOAs and the Draft EIS and supporting information available on the project website. The Draft EIS and supporting information was provided to all parties on the project mailing list. The Draft EIS identified Alternative M2 (MMPO as submitted by TCMC) as the agency-preferred alternative among the MMPO alternatives. Public meetings were held in Challis and Boise to obtain comments on the Draft EIS and to answer questions about the project. A total of 684 public responses were received during the 90 day public comment period. All of the responses were carefully reviewed by the agencies, responded to in the Final EIS, and the Draft EIS was revised per the responses as appropriate.

### **Final EIS**

A 30-day review period for the Final EIS was initiated by publication of the USEPA NOA of the Final EIS in the *Federal Register* on March 27, 2015 (80 FR 16384). The BLM also published an NOA in the *Federal Register* on March 27, 2015 (80 FR 16420). In addition, the BLM provided news organizations with a news release for the review period for the Final EIS, published the BLM NOA in local newspapers, and made the NOAs and the Final EIS and supporting information available on the project website. The Final EIS and supporting information or notice of the availability of such were provided to all parties on the project mailing list. The Final EIS identified Alternative M2 as the agency-preferred alternative among the MMPO alternatives. A total of four public responses were received during the review period. All of the responses were carefully reviewed by the agencies and written responses were added to the project record. The responses were considered in developing this decision, but no new significant information was identified in the responses that would justify the preparation of a Supplemental EIS. This decision and/or notice of the decision will be provided to all parties on the project mailing list.

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<sup>1</sup> A minor correction to the title of the Draft EIS and ending date for the comment period was published on March 28, 2014 (79 FR 17538).

### ***Native American Consultation and Coordination***

Government-to-Government tribal consultation and coordination has been conducted for the project (e.g., BLM 2015b) and will continue to be conducted as appropriate throughout the life of the mine and reclamation.

#### ***Shoshone-Bannock Tribes***

An offer of formal Government-to-Government consultation with the Shoshone-Bannock Tribes for the project was accepted. The project was discussed during a meeting between the Tribal business council and BLM officials on March 18, 2009. The BLM offered additional formal consultation by letters dated March 22, 2010; September 28, 2010; and December 23, 2014. The BLM provided the Tribes with advance copies of the scoping documents, the Draft EIS, the Final EIS, and this ROD. The Tribes provided written scoping comments to the BLM. The BLM and Forest Service also completed a variety of coordination on the project with Shoshone-Bannock Tribes technical staff. The BLM will continue to consult with the Tribes throughout the project life. The BLM and Forest Service will also continue to consult and hold regular coordination meetings with the Tribes throughout the life of the project.

#### ***Nez Perce Tribe***

The BLM informed Nez Perce Tribal staff about the project in July 2009, and a tribal staff member toured the mine site in August 2009. The BLM offered formal Government-to-Government consultation with the Nez Perce Tribe for the project by letters dated March 22, 2010; September 28, 2010; and December 23, 2014. The offers were accompanied by the Nez Perce Tribe consultation form per tribal policy. A conference call was held on May 12, 2010 among the BLM, Forest Service, and Nez Perce technical staff to discuss the project, and the tribal concerns are documented in the project record (JBR 2011). A Tribal staff member with the Department of Fisheries Resource Management and a member of the Tribal Executive Committee toured the mine site on July 24, 2014. The BLM provided the Tribe with advance copies of the scoping documents, the Draft EIS, the Final EIS, and this ROD. The BLM and Forest Service will continue to consult and/or coordinate with the Tribe about the project life upon request by the Nez Perce Tribe per Tribal policy.

## **Alternatives Considered**

### ***Alternatives Considered in Detail***

The following alternatives, and their effects, were considered in detail in the Final EIS.

#### ***Alternative M1 – No Action***

Alternative M1 is TCMC completing mining operations per the approved MPO; i.e., through Phase 7. The approved plan includes a consolidated reclamation plan and interim operations plan. The water management plan is also considered part of Alternative M1 in the Final EIS, and has been administratively accepted as a modification to the approved MPO by the BLM. The no action alternative does not preclude the agencies from administratively accepting a water management plan within the scope of the currently-approved MPO, approving the associated reclamation costs, or accepting an additional financial guarantee for implementation of the water management plan under Phase 7. Active water treatment is not described in the approved reclamation plan for Alternative M1, but would have to be incorporated into the long-term water management plan even

if the operator were to withdraw the proposed MMPO. This is because discharged water must meet all applicable laws and regulations, and active water treatment would be required to continue to do so. Therefore, active water treatment is implicitly required and therefore reasonably foreseeable under the no action alternative.

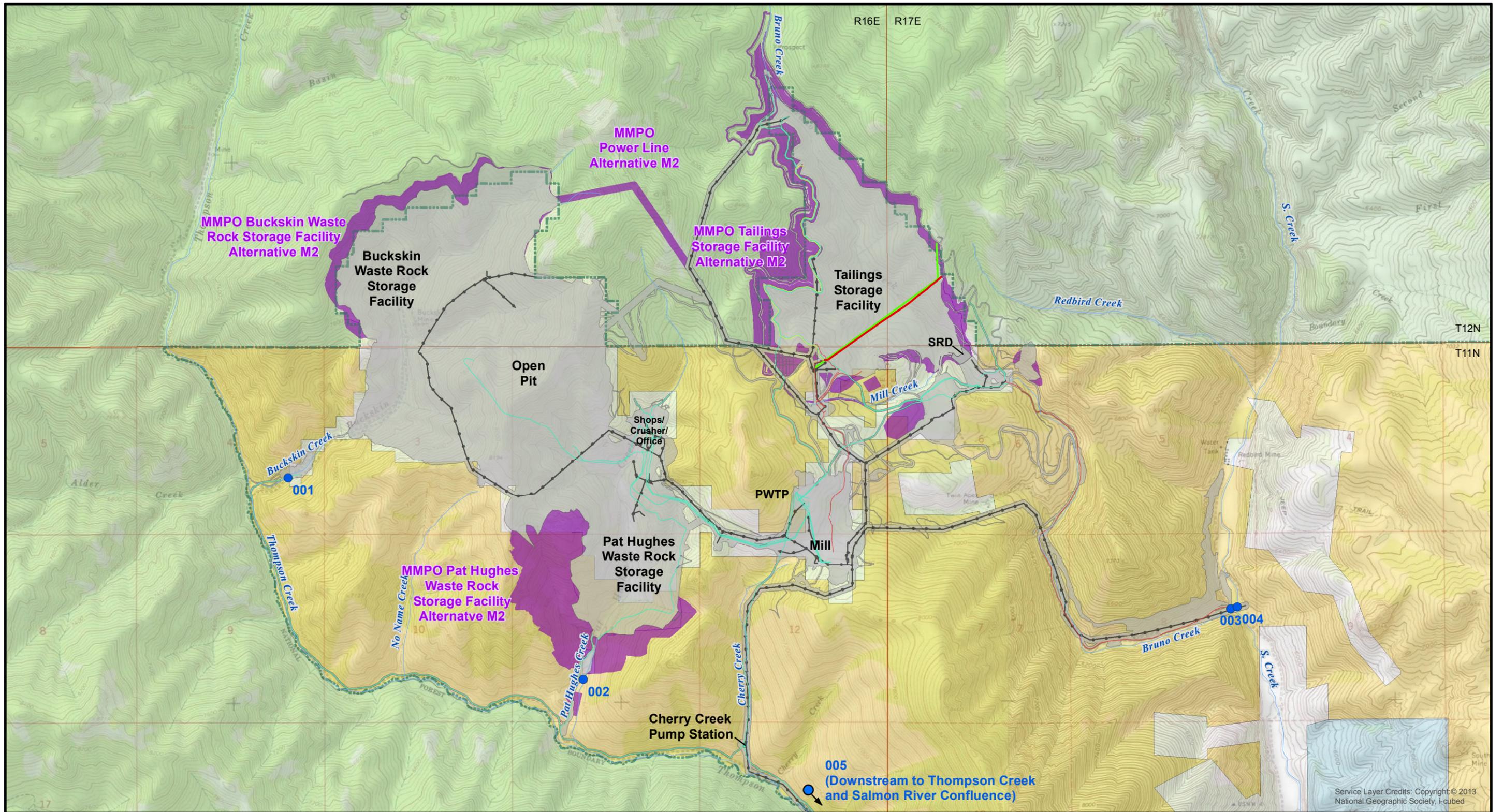
As of September 2014, the cumulative surface disturbance of the mine was 2,191 acres on private land, 451 acres on BLM land, and 181 acres on NFS land. Phase 7 ore production was completed at the end of 2014 with much of the reclamation and post-reclamation monitoring to be completed over a period of 10 to 15 years. The mine is currently operating under the approved MPO (Phase 7 mining is complete, equipment and facilities are being maintained, and the mill is processing third-party concentrates) pending approval of the ROD MPO (Phase 8) and improved market conditions for molybdenum. The Forest Service continues to cooperate with other Federal and State agencies to inspect the mine and administer the existing MPO. The agencies are also cooperating to update the reclamation cost estimate and financial assurances. In particular, costs for long-term water treatment and financial assurance for such are being evaluated per BLM regulations (see Reclamation and Financial Assurances section below).

#### *Alternative M2 – MMPO as Submitted by TCMC*

The MMPO describes Phase 8 mining (Figure 2). In general, the mining operations and facilities would be the same under all alternatives, including the no action alternative (Alternative M1).

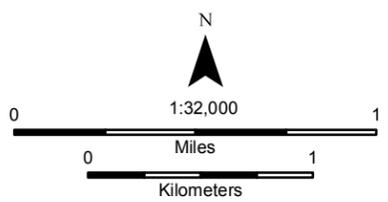
The differences between this alternative (regardless of surface jurisdiction) and Alternative M1 are the following:

- The mine life will be approximately 10 years longer;
- A section of power line will be relocated on NFS land;
- The open pit will be deepened and widened to mine Phase 8 ore;
- The Buckskin and Pat Hughes WRSFs will be expanded and used to store Phase 8 waste rock;
- The TSF embankment will be raised and the TSF impoundment expanded to store the tailings produced from milling Phase 8 ore;
- The long-term water management plan will be modified because of the size and configuration of the Phase 8 facilities and the need for water treatment to ensure WQs are met; and
- Two additional groundwater cutoff walls will be installed in the Pat Hughes drainage.



Selected land, existing mining disturbance from Thompson Creek Mine data, polygons created by Ken Gardner.  
 Ownership data is at 1:24,000 and created and maintained by the Bureau of Land Management, Idaho State Office, Geographic Sciences.  
 Topographic background from USGS 7.5' Quadrangles 1:24,000 scale.  
 Coordinate system UTM Zone 11 NAD 83

- Legend**
- Existing mining disturbance
  - MMPO areas/Alternative M2
  - Existing embankment crest
  - Proposed embankment crest
  - NPDES outfall
  - Existing power line
  - Pyrite pipeline
  - Tailings pipeline
  - Water pipeline
  - BLM
  - Private
  - State
  - Forest Service



No warranty is made by the Bureau of Land Management (BLM).  
 The accuracy, reliability, or completeness of these data  
 for individual use or aggregate use with other data  
 is not guaranteed. The following cannot be made Section 508  
 compliant. For help with its data or information, please  
 contact the BLM Idaho State Office Webmaster at 208-373-4000.



**Figure 2**  
**MMPO Alternative M2 - MMPO as submitted by TCMC**  
**Thompson Creek Mine EIS**

Under Alternative M2 there will be additional surface disturbance on 110.0 acres of TCMC land, 200.1 acres of BLM land, and 185.5 acres of NFS land (Figure 2). Of this disturbance, 3.39 acres of wetlands and 10,641 linear feet of stream channel designated as waters of the US will be subject to a 404 permit from the USACE.

Table 1. Additional surface disturbance, Alternative M2.

<b>Facility</b>	<b>TCMC<sup>1</sup> Additional (acres)</b>	<b>TCMC<sup>1</sup> Total (acres)</b>	<b>BLM Addl. (acres)</b>	<b>BLM Total (acres)</b>	<b>Forest Service Addl. (acres)</b>	<b>Forest Service Total (acres)</b>
Buckskin WRSF	8.0	581.4	0.0	1.4	54.4	96.4
Pat Hughes WRSF	19.0	312.1	170.9	252.3	0.0	0.0
Open pit	0.0	491.2	0.0	0.0	0.0	0.0
TSF (estimated)	68.0	531.6	10.5	13.8	52.7	60.3
Operational area – other	12.1	265.6	16.6	139.2	41.7	42.8
Roads	0.0	38.4	0.0	73.9	0.0	44.3
Power line	0.1	62.6	0.0	138.4	21.9	105.5
Pipeline	2.8	17.3	2.1	31.4	14.8	17.6
Fiber optic cable	0.0	0.3	0.0	0.6	0.0	0.0
<b>TOTAL</b>	<b>110.0</b>	<b>2,300.5</b>	<b>200.1</b>	<b>651.0</b>	<b>185.5</b>	<b>366.9</b>

<sup>1</sup>TCMC areas administered by State of Idaho (IDL) and not subject to NEPA

### Transportation, Access, and Power

Due to expansion of the open pit, 4,900 feet (21.9 acres) of an existing 24.9 kV power line on NFS land (Figure 2) will be relocated to NFS land in the area northeast of the open pit.

### Mining Operations

Molybdenum production will continue for approximately 10 years (originally scheduled for 2016 to 2025), with most reclamation completed 10 to 15 years later. The mine will produce an additional 131 million pounds of molybdenum as compared to Alternative M1.

### Waste Rock Storage Facilities

A total of 263.5 million tons of waste rock will be removed and stored in the Buckskin (upper Buckskin) (107.7 million tons) and Pat Hughes (lower Pat Hughes) (155.8 million tons) WRSFs. The

expansion of the WRSFs will occur on both private and Federal land, including 170.9 acres of BLM land (Pat Hughes WRSF only) (Figure 2).

### Mill and Tailings Operations

Milling the Phase 8 East and Phase 8 West ore will require additional tailings storage capacity, which will be accomplished by raising and partially re-aligning the TSF embankment crest compared to that at the end of Phase 7. This will increase the capacity of the TSF by 100 to 125 million tons, and will provide adequate space for the tailings produced during Phase 8. The TSF is permitted to store approximately 240 million tons of tailings through the end of Phase 7 (Alternative M1), and will hold a total of approximately 335 million tons at the end of Phase 8 (Alternative M2). The TSF embankment will be raised to provide sufficient storage in the upgradient impoundment. The expansion of the TSF will occur on both private and Federal land, including 10.5 acres of BLM land (Figure 2).

### *Alternative M3 – No Name Waste Rock Facility*

This alternative is similar to Alternative M2, except that the No Name WRSF would contain approximately 115 million tons of waste rock on 232.9 acres of currently undisturbed BLM land.

### *Reclamation Common to All Alternatives*

TCMC has reclaimed approximately 660 acres as of June 2011. Concurrent reclamation activities during the last 30 years at the mine have been primarily removing non-native materials, recontouring, revegetation, and aesthetic measures such as boulder scattering. The primary goals of these efforts are to provide slope stability, and to return disturbed areas to a relatively natural function (e.g., vegetation to minimize soil erosion and maximize wildlife habitat) and appearance.

The 1979 reclamation plan (analyzed in the 1980 EIS) was revised and described in more detail in the 1999 consolidated reclamation plan, as amended (EnviroNet 1999) (analyzed in the 1999 Supplemental EIS). Further information specific to reclamation water management for the MMPO is in the water management plan (Lorax 2012b). The consolidated reclamation plan is summarized below and described in further detail in the Final EIS (BLM 2015a, Section 2.1.1.8. and Section 2.1.3.6).

### *Post-Mining Land Use Objectives*

The overall goal of the reclamation plan is to reclaim the mine site to support wildlife habitats similar to those which occur adjacent to the site. Related objectives include hydrologic function, soil productivity, and aesthetics. The open pit will remain as a water-storage facility.

### *Facility Decommissioning*

Towards the end of mining, stocks of materials such as fuels, lubricants, and reagents will be reduced to those necessary to complete mining. Excess materials will be returned to the suppliers or sold for use elsewhere whenever possible. Final stocks of chemicals that cannot be returned or used elsewhere will be properly packaged and disposed of off-site in permitted waste handling facilities. Tanks, pipes, pumps, vessels, sumps and other equipment or facilities using process chemicals will be cleaned and the residues disposed of in accordance with applicable regulatory requirements.

Buildings and structures (including power lines) not required for reclamation and maintenance of water-management facilities will be dismantled and sold or demolished and the structural materials either sold or buried on-site in permitted, solid waste landfills. However, the administration building at the upper security gate will remain as a permanent site feature. There will be one or two solid waste landfills on private land at the mine site used for disposal of concrete, wood, piping material, etc. The landfill(s) will depend on the configuration of the WRSFs at reclamation.

All remaining above-ground materials, equipment, pipelines, culverts, and facilities will be removed to ground level and either sold as scrap or disposed of in the landfill(s). Subgrade facilities, including buried pipes, cable trays, sumps, sewers, etc. will be plugged at their surface openings and decommissioned in place to minimize surface disturbance. Concrete foundations will be broken down to ground level and removed to the landfill(s) or buried in place and covered with earth to form natural-looking landforms.

#### *Open Pit*

Access to the edge of the open pit will be restricted by berms and/or rock piles and/or bar gates at the access roads leading to the pit. Areas accessible for seeding along the top of the pit will be seeded by hand broadcasting. The pit slopes will continue to produce rock falls to the interior of the pit. The rock fall will initially be retained on the remaining pit catch benches, but will ultimately obliterate some of the benches yielding talus slope-like features. Water (groundwater and surface run-off) will naturally accumulate in the bottom of the open pit forming a lake. During reclamation of the TSF, the tailings water removed from the impoundment area will be transported by pipeline to the open pit. During and after reclamation of the WRSFs, water from these facilities will also be piped to the open pit, after being treated with lime to ensure that water in the pit remains slightly alkaline. Once the water in the pit reaches the control level, the water will be treated a second time and discharged to the Salmon River at NPDES Outfall 005. The discharged water will meet all requirements of the NPDES permit, and water quality standards for the Salmon River will be met (BLM 2015a, Section 4.6.1.2).

#### *Waste Rock Storage Facilities*

The WRSFs will be reclaimed in a manner similar to the open pit, except for differences noted in the Final EIS (BLM 2015a, Section 2.1.1.8. and Section 2.1.3.6). The reclaimed WRSFs will each have three levels (benches) varying in elevation. The surface of the facilities (benches and slopes, except the lower bench slope) will be graded to final contours to blend with surrounding topography and to divert run-off towards surface water diversion and collection ditches at the margins of the facilities.

#### *Tailings Storage Facility*

The design plans for the reclamation of the TSF are in the original tailings closure plan (SRK 1982). The plans were updated and are summarized in the consolidated reclamation plan (EnviroNet 1999), and the plans were updated again in 2008 (WMC 2008). However, the reclamation of the TSF is the authority of the IDWR and IDL, and the IDWR does not approve reclamation design plans for TSFs until the time of final reclamation (the IDWR must approve any change to the operating plan for a TSF before the change is implemented).

During the final 2 years of mining, the impoundment area will be covered by a layer of tailings solids with low pyrite content and the tailings water pond will be relocated from the upper end of the impoundment area to the southwest corner of the impoundment. After the final grade is

established for the surface of the impoundment, the water in the TSF pond will be transferred to the open pit. The exposed tailings solids will be allowed to drain and consolidate to produce a dry surface that can support heavy equipment for reclamation and minor additional surface grading. A channel for Bruno Creek will be re-established on the surface of the impoundment area and the existing Bruno Creek diversion structures and pipeline will be removed. The channel is designed to allow for the average annual flow of Bruno Creek (10 cubic feet per second), with a minimum of 1 foot of freeboard and the maximum recorded flow for Bruno Creek (42 cubic feet per second) with 0.5 foot of freeboard. The average baseflow velocity of this channel will be approximately 3 to 4 feet per second. The impoundment area will be covered (capped) with a 2 foot thick layer of inert material capable of supporting the growth of vegetation used for reclamation. The downstream face of the embankment will be benched and covered with inert, durable rock, as required by the IDWR.

The final surface of the impoundment will slope toward the southwest and flow from Bruno Creek will be routed in a channel constructed across the reclaimed TSF to a spillway in the southwest corner of the impoundment. The spillway channel will be excavated through native rock on BLM and private land. Under normal conditions the water in the channel will flow unimpeded across the reclaimed surface of the TSF impoundment, i.e., the spillway will be designed to pass a maximum of 15 cubic feet per second flow with no restrictions. Higher flows would be temporarily impounded to control flows through the spillway. The final configuration of the embankment and impoundment area will have the capacity to store the 96-hour, probable-maximum flood from the upstream Bruno Creek watershed to a maximum stage elevation of 7,742 feet (Phase 8), conservatively assuming no outlet for surface flow from the impoundment, and leaving 10 feet of freeboard on the reclaimed embankment (WMC 2008).

The TSF seepage collection system on private and BLM-administered lands will continue to function following reclamation, but at decreasing flow rates. The reclaimed TSF will allow water to infiltrate through the surface of the facility.

#### *Roads*

Roads or road segments will be reclaimed as soon as they are no longer required for mining, reclamation activities, or general site access.

#### *Revegetation Plan*

The overall goal of the reclamation plan is to reclaim the mine to support a variety of wildlife and aquatic habitats similar to those which occur in areas adjacent to the mine. To this end, target wildlife and aquatic species are used to define four habitat types and their revegetation objectives: sagebrush grasslands/woodlands, rocky slope, wetlands/meadow, and special riparian.

The sagebrush grasslands/woodlands habitat will be established on generally flat to moderately sloping terrain. An understory of grasses and forbs will provide open forage, and shrubs will provide additional browse food. There will be access to streams and springs and conifer forest will be established in dense, irregular patches. The rocky slope habitat will be established on steep, rocky slopes with varying sizes of rock for escape and nesting opportunities. There will be access to grasses and legumes for forage, and access to low shrubs and conifer forest edge for supplemental forage and cover. The wetlands/meadow habitat will be established on flat to moderate slopes in moist areas and at any water management facilities required to operate in perpetuity. There will be

vegetated shorelines for forage and cover; access to upland forage areas such as meadows and woodlands; and open water for waterfowl. The special riparian habitat will be established at areas of the mine with streams. There will be bank stabilization to reduce the potential for bank erosion; vegetated edges with emergent and aquatic vegetation for forage habitat and cover; woody debris for additional cover; access to open stream areas for aquatic species space requirements; and additional pool habitat.

In addition to enhancing wildlife and aquatic habitats, revegetation will stabilize reclaimed surfaces, minimize fugitive dust, and assist in restoring the visual resources of the site; the BLM will be able to administer the site for multiple use instead of essentially only for mining. The successful revegetation will include the establishment of at least 70 percent of the ground cover found on adjacent reference areas for two full growing seasons after cessation of soil amendment or irrigation.

In the 1980s, reclamation specialists from the Forest Service developed a vegetation seed mixture based on drought tolerant species. The mix has been tested on other reclamation projects within central Idaho (e.g., Blackbird Mine) with positive growth rates. The results of these efforts identified appropriate seed mixtures and soil amendments such that revegetation at the mine is now nearly always successful on the first attempt. There are no distinct areas of bare soil or erosion such as rills or gullies, and wildlife regularly forage on reclaimed areas of the mine. The seed mixes consist only of native species or potentially non-invasive/sterile quick-cover crops.

#### *Post-Reclamation Water Management*

TCMC may not discharge any water that would violate any Federal or State water quality laws, and has developed detailed plans for long-term water management (Lorax 2012b). These include long-term capture and treatment of drainage from the WRSFs and the TSF, along with maintenance of the pit lake control level through pumping and treatment prior to discharge at NPDES Outfall 005.

Upon completion of Phase 8, the drainage from the WRSFs and TSF will continue to be captured. However, rather than being used in the mill, the water will undergo primary treatment<sup>2</sup> and be transferred to the open pit (private land), which will also naturally intercept surface runoff and groundwater. The deeper portion of the pit will gradually fill with water, reaching the control elevation of 7,030 feet in approximately 70 years. At that time, water from the pit will undergo secondary treatment and be discharged at Outfall 005 (Salmon River) such that the control elevation of the pit lake is maintained to prevent the water in the pit from entering a historical adit (sealed) at an elevation of 7,040 feet.

The current water management system includes run-off diversions, culverts, WRSF and TSF seepage collection facilities, erosion controls such as sediment traps and run-off collection (sedimentation) ponds, pump stations, pipelines, and associated electric power lines. The water management facilities that are not necessary after Phase 8 mining will be decommissioned in phases as they are no longer needed during final reclamation. The fate of the Buckskin and Pat Hughes sedimentation

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<sup>2</sup> The water will be treated with lime to be slightly alkaline/maintain relatively good water quality in the pit lake. However, for the first 5 years the TSF discharge will be alkaline and will be delivered to the pit without treatment.

ponds will be decided based on water quality monitoring/effectiveness of the groundwater cutoff walls.

Surface pipelines that are no longer required will be removed, and buried pipelines will be closed and left in place. Diversion ditches will be constructed at the margins of the WRSFs, which will be recontoured to drain to their margins and to avoid ponding on their surfaces.

Drainage from the Pat Hughes and Buckskin WRSFs will be collected at their toes and transferred to the Cherry Creek booster pump station via the Thompson Creek pipeline. However, drainage water from the Buckskin WRSF may be discharged from the Buckskin sedimentation pond to Thompson Creek at Outfall 001 under certain conditions described in the NPDES permit. To ensure maximum collection of water, one additional cutoff wall will be constructed in the Pat Hughes drainage. From the pump station, the water will be transferred to the primary water treatment plant near the open pit. The treated water will then be transferred to the pit lake.

*Post-Reclamation Environmental Monitoring*

Post-reclamation monitoring will continue for water quality, geotechnical stability, revegetation success, and achievement of reclamation goals and objectives. Three monitoring periods are planned – initial, interim, and post-reclamation – with the duration of each period being 5 years. However, adaptive management will be utilized to adjust these periods based upon the attainment of post-reclamation land use objectives (BLM 2015a, Section 2.1.1.9).

Table 2. Post-reclamation monitoring, Alternative M2.

<b>Monitoring<sup>1</sup></b>	<b>Years</b>
Sediment sampling	5+
Aquatic biota and habitat	16+
Surface water quality	16+
Groundwater quality	16+
Receiving stream	16+
TSF water	15+
TSF geotechnical	15+
TSF revegetation	10+
Waste rock geotechnical	10+
Waste rock revegetation	10+
Other revegetation	10+

<sup>1</sup>beyond that of Alternative M1

*Environmental Controls, Monitoring, and Mitigation*

Operational (i.e., non-reclamation) environmental controls and monitoring activities at the mine include the following:

- Fugitive dust suppression and point source emission controls;
- Erosion, run-off, and sedimentation controls according to best management practices (BMPs) with discharge of collected water through permitted NPDES outfalls;
- Prevention and control of petroleum and chemical spills;
- Waste rock monitoring, classification, and management;
- Selective management of pyrite in the tailings and potentially acid-generating (Type 2) waste rock;
- Monitoring and reporting for multiple environmental media according to approved plans;
- Compliance with a road maintenance plan, transportation plan, and surface water pollution prevention plan to protect surface water quality; and
- Stability monitoring of the TSF, pit highwalls, and WRSFs.

TCMC follows environmental compliance plans for each of these areas of environmental concern as part of the current MPO, and will continue to do so under the MMPO. The TCMC consolidated environmental monitoring program (TCMC 2013) is a part of the MPO that describes the environmental monitoring program related to biological conditions, air emissions, NPDES permit compliance, structural stability and dam safety, mine waste monitoring, and water quality monitoring. Per this program, TCMC has been providing quarterly and annual summary reports for regulatory agency review since 2007 and was reporting similar monitoring data under an earlier program prior to 2007. These compliance plans and additional environmental protection measures and monitoring are summarized in the Final EIS (BLM 2015a, Section 2.1.17). In addition to the mitigation and monitoring listed above and described below, adaptive management (BLM 2015a, Section 2.1.1.9) will be utilized in conjunction with monitoring to ensure reclamation goals are met.

#### *Geologic Resources and Geotechnical Issues*

The WRSFs, TSF and the open pit are designed to be stable under both static and dynamic (maximum credible earthquake) conditions (BLM 2015a, Section 4.2.1.1). The WRSF and TSF will each have a monitoring program involving a variety of daily, weekly, monthly and annual measurements, observations and reports. The measurements and observations will be made to determine water levels, pore pressures, facility topography, and, ultimately, to ensure the facilities remain stable (TCMC 2013).

The open pit will be monitored during mining by daily visual observations of the pit walls by TCMC employees. The slope of the pit walls varies throughout the pit based on geotechnical studies of the various parameters (e.g., rock type, structure, hydrology) affecting the stability of the pit walls. The geotechnical studies will be periodically updated and the slope of the developing pit walls will be adjusted accordingly. The entire face of the northwest pit wall will be monitored by real-time radar measurements during mining of the face.

#### *Vegetation, Forest Resources, and Invasive and Non-Native Plants*

The trees planted for reclamation could include whitebark pine seedlings in all disturbed areas within 100 vertical feet of ridgetops with an elevation of 7,300 feet or more. These conditions are known to occur on NFS land at the head of the Buckskin Creek drainage.

#### *Water Resources*

The Consolidated Environmental Monitoring Program 2007 to 2012 for the mine contains a water quality monitoring plan and adaptive management plan (TCMC 2013). The program will be modified according to the adaptive groundwater management plan (Lorax 2012a) to better identify potential water quality problems due to either inaccurate predictions or to operations (e.g., cutoff walls) not performing as intended. For example, Lorax (2012a) notes that additional groundwater monitoring in the colluvium and metasedimentary bedrock just downgradient (within 30 feet) of the cutoff wall should provide a better evaluation of the cutoff wall performance and hydraulic gradients between the cutoff wall and the drainage outlet. In addition, water level monitoring just upgradient of the cutoff walls using automated piezometers will allow the determination of the hydraulic gradient across the cutoff wells, which will also provide a better evaluation of the cutoff wall performance. Furthermore, the Phase 8 southeast pit wall will be mapped for major faults/fractures that could convey pit lake water to groundwater near the pit. Such data will be integrated into the groundwater monitoring system to evaluate the potential effects of the pit lake on groundwater relative to the predicted groundwater gradients during and following development of the pit lake.

#### *Wetlands, Floodplains, and Riparian Areas*

The wetland and stream mitigation plan (HDR 2014) will mitigate the effects of the MMPO alternatives on waters of the US. The objective of the wetland and stream mitigation is to protect streambanks along S. Creek from damage caused by livestock and to reestablish a 5.64-acre wetland along S. Creek. Protecting the streambanks will be accomplished by fencing out livestock and the repair or restoration of 100 feet of bank using bio-engineering as described in the wetland and stream mitigation plan. Re-establishing the wetland will involve earthwork and plantings. Contractors will be required to implement a stormwater pollution prevention plan during the construction and vegetation establishment phase of the wetland and stream channel rehabilitation work.

#### *Cultural and Paleontological Resources*

There will not be any adverse effects to sites eligible for the National Register of Historic Places, or any meaningful effects to cultural or paleontological resources. Should cultural or paleontological resources be discovered during mining, the operator will immediately notify the Forest Service authorized officer of the discovery and preserve the discovery until the discovery has been inspected by a Forest Service or Forest Service-approved archaeologist or paleontologist and a mitigation plan developed, if necessary. The operator will be responsible for the cost of investigating and evaluating the discovery to determine its significance, and the cost of any appropriate mitigation.

#### *Reclamation and Financial Guarantees*

TCMC is required to fully reclaim the mine according to the approved MPO per 36 CFR 228, 43 CFR 3809 (BLM), IDAPA 20.03.02 (IDL), and IDAPA 37.03.05 (IDWR). The reclamation includes saving topsoil for final application after reshaping disturbed areas to conform with adjacent landforms; measures to control erosion, landslides and water run-off; measures to isolate, remove or control acid-forming, toxic or deleterious substances; establishment of self-sustaining revegetation of disturbed areas; removal or stabilization of structures or other support facilities; rehabilitation of fisheries and wildlife habitat; providing for post-mining monitoring, maintenance, or treatment, including any necessary water treatment; etc. (36 CFR 228.8(g) and 228.10).

To this end, TCMC periodically submits to the agencies a revised estimate of the costs to complete such reclamation as if the agencies were to hire a third-party contractor to perform the reclamation. Once the amounts are respectively approved by the agencies, TCMC submits financial guarantees to the agencies in these amounts per 36 CFR 228.13, 43 CFR 3809.500 (BLM), IDAPA 20.03.02.120 (IDL), and IDAPA 37.03.05.040 (IDWR). As a conditional approval of the ROD MPO and prior to implementing the selected alternative, TCMC must provide the agencies with a revised reclamation cost estimate sufficient to fully reclaim the mine according to the approved ROD MPO, and receive respective approval of the cost estimate and financial guarantees by the agencies.

The cost estimate and financial guarantees will continue to be periodically reviewed and revised, e.g., as the future reclamation costs change due to inflation or deflation and increased or decreased surface disturbance. The purpose of the financial guarantees is to ensure reclamation of surface disturbance caused by the operations in the event the operator fails to perform the reclamation required by the approved MPO.

The specific amounts of financial guarantees for operations on NFS lands are part of the Forest Service administrative (regulatory) process and are not NEPA issues or mitigation measures. That is, the Forest Service evaluates mining operations according to what is proposed by the operator, and does not assume that an operator will violate the terms and conditions of an MPO. In addition, there is no Forest Service decision space regarding the amounts of the financial guarantees; the amount must be calculated as specified by 36 CFR 228.13. Accordingly, the Forest Service may require revised reclamation cost estimates/financial guarantees at any time deemed appropriate. In addition, the USFS will generally review reclamation cost estimates annually.

The post-closure water treatment that will be part of Alternative M2 (Phase 8) is considered necessary under Alternative M1 (no action/Phase 7). Therefore, the BLM administratively accepted such treatment as a minor modification to the current MPO, and is in the process of revising the reclamation cost estimate for the mine to include the cost of such treatment for the current operations (end of Phase 7). The reclamation cost estimate for the ROD MPO (Phase 8) will include the cost of post-closure water treatment after Phase 8.

### *Exposure to Risk*

The selected alternative relies on engineered systems to safely contain the waste rock and tailings, and to manage the water that contacts the mine in perpetuity. In particular, post-closure water management is required to ensure that water leaving the mine site will meet the applicable WQSS (Lorax 2012b). The WRSFs and TSF will continue to be stable and will safely withstand the maximum credible earthquake under all of the MMPO alternatives (BLM 2015a, Section 4.2.1). However, the water management system consists of a series of collection points, pipelines, pump stations, and treatment plants. While it is reasonably foreseeable the system will overall perform as designed, the system is subject to equipment failures (e.g., pipeline rupture), human error (e.g., a valve improperly opened), or extended power outages (e.g., damages to the regional electricity grid) that might result in the release of untreated water during the operation of the system for 100s of years or more.

It is not possible to predict how such problems would occur or what the consequences would be, as such would depend on a myriad of factors including what water was released, where and how much water was released, and the duration and timing of the release. However, in the worst case, the release of untreated water could cause exceedances of acute WQSS in sections of the Salmon River,

Thompson Creek, Squaw<sup>3</sup> Creek, and Bruno Creek (BLM 2015a, Section 4.6.1.2). There would be no material difference in such risk (probability and consequence) between Alternative M1 and Alternative M2 for which water with similar chemistry would be treated by essentially the same facilities. In the case of Alternative M3, the risk would be slightly greater due to the addition of a new source of water to be treated (a new WRSF) and the additional water collection and transfer facilities to connect the new source to the main facilities. However, the primary effect would be to Thompson Creek, which could also be affected by the release of untreated water under Alternative M1 or Alternative M2. The adaptive groundwater management plan (Lorax 2012a), in addition to monitoring, maintenance, and repair of water management facilities, offers three mitigation contingencies in the event that “specified Performance Metrics” are exceeded: a slurry wall, a permeable reactive barrier, and additional pumping wells within the vicinity of the existing pump-back system.

The Final EIS provides a full disclosure, in detail, of the meaningful environmental consequences of the selected alternative. The suite of complexities and vulnerabilities related to technological failures, human failures, and power failures is vast, highly speculative, and would not provide additional information meaningful to my decision.

#### *Enforcement Authority*

The Forest Service regulates locatable mineral operations such as the Thompson Creek Mine per 36 CFR 228 Subpart A. These regulations give the Forest Service the authority to inspect, monitor, and assess compliance with an MPO. The Forest Service may issue notices of noncompliance and require the forfeiture of all or part of financial guarantees if an operator does not meet the requirements of 36 CFR 228 Subpart A. The mine is also subject to enforcement actions by a variety of Federal and State agencies including the USEPA, BLM, USACE, Mine Safety and Health Administration, IDEQ, IDWR, and IDL.

#### *Alternatives Considered, but Eliminated from Further Analysis*

In addition to the action alternatives (Alternative M2 and Alternative M3) and the no action alternative (Alternative M1), ten alternatives identified through internal and external scoping were considered in the Final EIS. The other ten alternatives and the reasons why they were eliminated from further consideration are discussed in the Final EIS (BLM 2015a, Section 2.1.7). Generally, these other alternatives were found to be technically infeasible, economically unreasonable, and/or would not meet the purpose and need of the action, or the issues raised were better addressed with one of the action alternatives carried forward for in-depth analysis in the EIS.

Much consideration was given to defining the no action alternative, particularly as to whether an analysis of mine closure without long-term water treatment would be informative because the currently approved MPO (Phase 7) does not yet include engineering designs and cost estimate for such. However, the approved MPO states that no water will be discharged that would violate any

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<sup>3</sup> *Squaw Creek* is an official place name in Custer County, and appears in numerous published documents including US Geological Survey topographic maps. The name was established by the US Board of Geographic Names to maintain uniform geographic name usage throughout the Federal Government. However, the word *Squaw* is offensive to some people including the Shoshone-Bannock Tribes. Therefore, *Squaw Creek* is hereafter referred to as *S. Creek*.

Federal or State water quality laws or regulations. In addition, the Forest Service cannot authorize operations that violate such laws or regulations. Furthermore, discharges from the mine are regulated by USEPA to meet standards set under the Clean Water Act. Finally, analysis of such a no action alternative would artificially skew the effects of the action alternatives to the positive. Consequently, I decided not to fully analyze an alternative that does not include long-term and post-closure water treatment.

***Environmentally Preferable Alternative***

Alternative M1 (no action) is the environmentally preferable alternative because under Alternative M1 there would no additional environmental effects due to continued mining. However, it is not within my decision space in this case to take no action on a plan of operations for mining on NFS lands. The environmentally preferable *action* alternative is Alternative M2. All practicable means to avoid or minimize environmental harm on NFS lands from the selected alternative have been adopted and a monitoring program is incorporated into the selected alternative, as described above.

## **Findings Required by Other Laws and Regulations**

This decision be consistent with many laws, regulations, and agency directives. I have determined my decision is consistent with all laws, regulations, and agency policy. My decision is consistent with the following principal authorities.

***The National Environmental Policy Act (NEPA) (PL 91-190)***

The NEPA (42 U.S.C. 4321 *et seq.*) requires Federal agencies to consider the potential environmental effects of, and alternatives to, a proposed Federal action. Accordingly, a Final EIS and Draft ROD for the MMPO were released on March 27, 2015. The BLM and Forest Service responded to comments on the Final EIS and the Forest Service responded to an objection to the Draft ROD. This decision is consistent with the NEPA and procedures for evaluation of environmental effects and alternatives and public involvement outlined in Council on Environmental Quality regulations.

***The National Forest Management Act (NFMA) (PL 94-588)***

The NFMA (16 USC 1600 *et seq.*) governs the administration of NFS lands including the requirement to comply with forest plans (36 CFR 219). This decision is consistent with the NFMA.

***Consistency with the Challis Land and Resource Management Plan (LRMP)***

The Challis LRMP identifies Forest-wide and management area-specific desired condition, goals, objectives, and standards and guidelines. The project would involve two management areas in the Challis National Forest LRMP (USFS 1987): Management Area 8 (Thompson Creek) and Management Area 9 (S. Creek). Management prescriptions for Management Area 8 emphasize enhancement of wildlife habitat, and provide for minerals activities and dispersed recreation opportunities. The prescriptions for Management Area 9 also recognize the high potential for locatable mineral occurrence and probable future mineral development. The LRMP identifies the mine as a current use within each of these management areas; therefore, this decision conforms to the LRMP.

### **INFISH**

The LRMP was amended by PACFISH (1995) and INFISH (Interim Strategies for Managing Anadromous Fish-Producing Watersheds (PACFISH) and the Inland Native Fish Strategy, 1995). The MMPO complies with applicable PACFISH and INFISH standards and meets management objectives and desired future conditions contained in applicable ecosystem-scale watershed assessments (Stantec 2015).

### ***The Organic Administration Act of 1897, as amended, and Federal mining laws, as amended***

The Organic Administration Act (16 USC 471 *et seq.*) directs the Secretary of Agriculture to prevent the unnecessary destruction of forest resources by regulating occupancy and use of NFS land. Federal mining laws (30 USC 22 *et seq.*) authorize the development of locatable minerals on Federal lands (30 USC 22 *et seq.*). This decision complies with implementing regulations (36 CFR 228A) that require the Forest Service to consider, reasonably modify, if necessary to protect surface resources, and approve plans for mining operations on NFS land.

### ***The Endangered Species Act (PL 93-205)***

The Endangered Species Act (16 USC 3001 *et seq.*) provides for the conservation of threatened and endangered species and their habitats. To comply with this law, consultation with the US Fish and Wildlife Service was completed on April 18, 2016 (USFWS 2016), and consultation with the National Marine Fisheries Service was completed on April 19, 2016 (NMFS 2016). The terms and conditions resulting from consultation with these agencies are incorporated into the selected alternative in this decision.

### ***The Clean Water Act, as amended (PL 92-500, PL 95-217, and PL 100-4)***

The Clean Water Act of 1972 (33 USC 1251 *et seq.*) has the primary objective of restoring and maintaining the chemical, physical, and biological integrity of the Nation's surface waters. Section 402 of the law provides for the NPDES, which is administered in Idaho by the USEPA. The selected alternative complies with the current NPDES permit for the mine. Section 319 of the law requires each state to develop a management program, including the development of best management practices (BMPs), to reduce nonpoint sources of pollution to waters of the US. The selected alternative complies with these BMPs. Section 404 of the law provides the authority to the USACE to issue permits for discharge of dredged or fill materials into waters of the US. To implement the ROD MMPO, the operator will obtain the necessary Section 404 permit. The USACE is a cooperating agency for the project to ensure the appropriate completion of the Section 404 permit process, including the necessary NEPA analysis, and to ensure that the selected alternative is the least environmentally damaging practicable alternative (BLM 2015a, Appendix A). Under Section 401 of the law, the IDEQ is responsible for certifying that activities that may result in discharges into waters within Idaho will comply with the applicable provisions of the Clean Water Act and State WQSs. The IDEQ 401 certification was made on January 27, 2015 (IDEQ 2015).

### ***The Clean Air Act, as amended (PL 101-549)***

The Clean Air Act of 1970 (42 USC 7401 *et seq.*) has the primary objective "...to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." Section 309 of the law requires the USEPA to review and

publicly comment on the environmental effects of major Federal actions which are the subject of EISs. The USEPA is a cooperating agency for the project and made a public review of the Draft EIS. The IDEQ administers portions of the law under the control of air pollution regulations (IDAPA 58.01.01), and periodically renews or modifies the air quality permit for the mine. The last permit modification was on May 28, 2014 (IDEQ 2014).

***Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (Executive Order 12898)***

EO 12898 directs each Federal agency to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high, and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. There are no minority or low-income populations near the mine or in Custer or Lemhi counties that would be disproportionately affected by the selected alternative (BLM 2015a, Section 1.14). The operator must provide equal employment opportunity per Federal laws and regulations.

***Consultation and Coordination with Indian Tribal Governments (Executive Order 13175)***

EO 13175 establishes regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications. Notification and consultation was conducted with affected tribal governments for the project (e.g., BLM 2015b). Compliance with EO 13175 is described in the Public Involvement section of this decision.

***The Archaeological Resource Protection Act and National Historic Preservation Act, as amended (PL 89-665)***

The purpose of the Archaeological Resource Protection Act is to secure the protection of archaeological resources and sites on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources. The National Historic Preservation Act requires Federal agencies to consult with state and local groups on Federal undertakings before nonrenewable historic properties, such as archaeological sites and cultural resources, are damaged or destroyed. Section 106 of the NHPA requires that, before approving or carrying out a Federal, Federally-assisted, or Federally-licensed undertaking, Federal agencies must take into consideration the impact that the action may have on historic properties. Consultation with the State Historic Preservation Officer covering the selected alternative was completed on December 13, 2011 (SHPO 2011) and June 2, 2016 (SHPO 2016).

***The Migratory Bird Treaty Act (MBTA) of 1918 and Responsibilities of Federal Agencies to Protect Migratory Birds (Executive Order 13186) and the Bald and Golden Eagle Protection Act (BGEPA) of 1940***

The purpose of the MBTA is to establish an international framework for the protection and conservation of migratory birds. The MBTA implements various treaties and conventions between the U.S, Canada, Japan, Mexico, and the former Soviet Union for protecting migratory birds. Under the MBTA, taking, killing, or possessing migratory birds, including nests and eggs, is unlawful. EO 13186 outlines the responsibilities Federal agencies have to protect migratory birds under the MBTA. Applicable Federal agency responsibilities described in EO 13186 are incorporated into design criteria of the proposed action. The BGEPA provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession,

and commerce of such birds, alive or dead. This decision complies with the MBTA, BGEPA and EO 13186.

***The Federal Noxious Weed Act of 1974***

The Federal Noxious Weed Act provides for the control and management of non-indigenous (non-native) weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. The SCNF currently manages weeds consistent with the Challis National Forest LRMP (USFS 1987) and a BA and biological opinions specific to noxious weed management (USFWS 2004; NMFS 2007). The SCNF is in the process of revising its weeds management plan (USFS 2015b) and TCMC will be required to comply with all aspects of the applicable program and plans in any approved MMPO.

***Executive Order No. 12898 (Environmental Justice)***

EO 12898 directs each Federal agency to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high, and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. There are no minority or low-income populations near the mine or in Custer or Lemhi counties that would be disproportionately affected by the selected alternative (BLM 2015a, Section 1.14). The operator must provide equal employment opportunity per Federal laws and regulations.

***The Idaho Roadless Rule of 2008***

The Idaho Roadless Rule (36 CFR 294 Subpart C) established management direction for designated roadless areas in Idaho in order to protect their important characteristics. The final configuration of the reclaimed TSF could extend into less than 1 acre of the S. Creek Idaho Roadless Area. Approval of the MMPO will be consistent with the Idaho Roadless Rule because the rule does not “affect mining activities conducted pursuant to the General Mining Law of 1872” (36 CFR294.25(b)). However, the Idaho Roadless Commission was notified and an analysis of project impacts (negligible to none) to wilderness attributes and roadless characteristics was completed (USFS 2015c).

***The Idaho Surface Mining Act of 1971, as amended***

This Act and implementing regulations (47 Idaho Statutes 1501 *et seq.*) provides for the protection of the public health, safety and welfare, through measures to reclaim the surface of all the lands within the state disturbed by exploration and surface mining operations and measures to ensure the proper closure of cyanidation facilities and thereby conserve natural resources; aid in the protection of wildlife, domestic animals, and aquatic resources; and reduce soil erosion. The IDL regulates surface mining and reclamation in Idaho under IDAPA 20.03.02 and has the authority to hold financial guarantees for mine reclamation. The IDL will approve the portion of the ROD MMPO on private land in coordination with the BLM and Forest Service. The IDL is a cooperating agency for the project to ensure the selected alternative conforms to the laws and regulations administered by the IDL.

***The Idaho Stream Channel Alteration Protection Act of 1971, as amended***

This Act and implementing regulations (42 Idaho Statutes 3801 *et seq.*) requires that the stream channels of the state and their environment be protected against alteration for the protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, and water quality. The IDWR must approve in advance any work being done within the beds and banks of a continuously flowing

stream. The operator will obtain a permit from the IDWR for any necessary stream channel alteration work per IDAPA 37.03.07 prior to implementation of the ROD MMPO.

***The Idaho Mine Tailings Impoundment Structures Rule***

This Act and implementing regulations (IDAPA 37.03.05) regulates the construction, maintenance, and operation of mine tailings impoundments in Idaho, and has the authority to hold financial guarantees to ensure the impoundments are placed in safe, maintenance-free condition if abandoned by the owner without conforming to the approved abandonment plan (IDAPA 37.03.05.040). The operator obtained the necessary permit for the Phase 8 operations of the TSF from the IDWR on February 20, 2015 (IDWR 2014).

***The Idaho Safety of Dams Rule***

This Act and implementing regulations (IDAPA 37.03.06) regulates the construction and maintenance of certain size dams which impound water in Idaho. Such dams at the mine are the downgradient face of the Pat Hughes sedimentation pond and the seepage return dam below the TSF. Under the selected alternative, these dams would continue to comply and be administered by the IDWR per these regulations.

***Idaho Water Quality Standards and Groundwater Quality Rule***

The IDEQ is responsible for administering the Idaho WQSs (IDAPA 58.01.02), which define the designated beneficial uses of a surface water segment and the water quality criteria necessary to support those uses, and the groundwater quality rule (IDAPA 58.01.11) which states that groundwater must be managed in a manner which maintains or improves existing groundwater quality through the use of BMPs and best practical methods to the maximum extent practical. The project is expected to meet the State WQSs for surface water and groundwater (Section 6.6) through the water management plan (Lorax 2012b), adaptive management strategies (BLM 2015a, Section 2.1.1.9), and the adaptive groundwater management plan (Lorax 2012a).

***Best Available Science***

The conclusions disclosed in the EIS and summarized in this document are based on a review of the project's record that reflects consideration of relevant scientific information and responsible opposing views where raised by internal or external sources, and the acknowledgement of incomplete or unavailable information, scientific uncertainty, and/or risk where pertinent to the decision being made.

## **Implementation**

Per 36 CFR 218.12(b), administrative review requirements and procedures have been completed and implementation can begin once this decision is signed.

## **Administrative Review or Objection Opportunities**

This decision is not subject to administrative review. The Forest Service received and responded to an objection to the Draft ROD (USFS 2015a). The Forest has complied with all instructions from the Objection Reviewing Officer to clarify and support the analysis contained in the Final EIS (USFS

2015d). Accordingly, there will be no further review of this decision by the Forest Service or Department of Agriculture per 36 CFR 218.11(b)(2).

## Contact Person

For additional information concerning this decision, contact Piper Goessel, Team Leader, Challis-Yankee Fork Ranger District, 311 Highway 93 North, Challis ID, 83226; phone (208) 634-0700; or email [kgoessel@fs.fed.us](mailto:kgoessel@fs.fed.us). For questions about the Forest Service administrative review process, contact Jeff Huntteman, phone (208) 756-5246 or email [jhuntteman@fs.fed.us](mailto:jhuntteman@fs.fed.us).

*/s/ Charles A. Mark* \_\_\_\_\_

CHARLES A. MARK  
Forest Supervisor  
Salmon-Challis National Forest

*August 11, 2016* \_\_\_\_\_

[DATE]

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## **Appendix A, Portions of National Marine Fisheries Service Biological Opinion**

Cover letter, front matter, terms and conditions, Section 7(a)(1) conservation recommendations, and essential fish habitat recommendations decision from the National Marine Fisheries Service biological opinion (NMFS 2016).



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
West Coast Region  
7600 Sand Point Way N.E., Bldg. 1  
Seattle, WA 98115

Refer to NMFS No: WCR-2015-1931

April 19, 2016

Karen Rice  
Acting District Manager  
Bureau of Land Management  
Idaho Falls District  
1405 Hollipark Drive  
Idaho Falls, Idaho 83401

Chuck Mark  
Forest Supervisor  
Salmon Challis National Forest  
1206 South Challis Street  
Salmon, Idaho 83457

Lt. Col. Timothy R. Vail  
U.S. Army Corps of Engineers  
Walla Walla District  
201 North Third Avenue  
Walla Walla, Washington 98362-1836

Re: Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Thompson Creek Mine Modified Mining Plan of Operation; Thompson Creek (HUC 170602010803), Squaw Creek (HUC 1706020109), Salmon River-French Creek (HUC 170602010804), and Salmon River-Sullivan Creek (HUC 170602010805), Custer County, Idaho (One Project)

Dear Ms. Rice, Mr. Mark, and Lt. Col. Vail:

Thank you for your letter of December 11, 2014, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531 *et seq.*) for the Thompson Creek Mine Modified Mining Plan of Operation. In this biological opinion (Opinion), NMFS concludes that the action, as proposed, is not likely to jeopardize the continued existence of Snake River Basin steelhead, Snake River spring/summer Chinook salmon, Snake River sockeye salmon, and will not adversely modify designated critical habitat for the three species.

As required by section 7 of the ESA, NMFS provided an incidental take statement with the Opinion. The incidental take statement describes reasonable and prudent measures NMFS considers necessary or appropriate to minimize the impact of incidental take associated with the action. The take statement sets forth nondiscretionary terms and conditions, including reporting



requirements that the Federal action agencies and any person who performs the action must comply with to carry out the reasonable and prudent measures. Incidental take from actions that meet these terms and conditions will be exempt from the ESA take prohibition.

This document also includes the results of our analysis of the action's likely effects on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and includes 5 Conservation Recommendations to avoid, minimize, or otherwise offset potential adverse effects on EFH. These Conservation Recommendations are a non-identical set of the ESA terms and conditions. Section 305(b)(4) of the MSA requires Federal agencies to provide a detailed written response to NMFS within 30 days after receiving these recommendations.

If the response is inconsistent with the EFH Conservation Recommendations, the Federal agencies must explain why the recommendations will not be followed, including the justification for any disagreements over the effects of the action and the recommendations. In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many Conservation Recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, in your statutory reply to the EFH portion of this consultation, we ask that you clearly identify the number of Conservation Recommendations accepted.

Please contact Mr. Chad Fealko, Salmon Field Office, 208-756-5105, chad.fealko@noaa.gov, if you have questions concerning this section 7 consultation, or if you require additional information.

Sincerely,



*for* William W. Stelle, Jr.  
Regional Administrator

Enclosure

cc: T. Kuck – BLM  
G. Martinez – COE  
R. Holder – FWS  
G. Schoby – IDFG  
C. Colter – SBT  
L. Hood – EPA  
E. Robinson – IDL  
J. Falk – IDWR

bcc: SBAO – File Copy; Read File  
SSBO – B. Lind; C. Fealko; J. Sandow (*electronic copies*)

Fealko:Lind:ThompsonCreekMine:am:20160419:WCR-2015-1931

cc Addresses:

Todd Kuck, Field Manager  
Bureau of Land Management  
[tkuck@blm.gov](mailto:tkuck@blm.gov)

Greg Martinez  
U. S. Army Corps of Engineers  
[greg.j.martinez@usace.army.mil](mailto:greg.j.martinez@usace.army.mil)

Russ Holder  
U.S. Fish and Wildlife Service  
[russ\\_holder@fws.gov](mailto:russ_holder@fws.gov)

Greg Schoby  
Idaho Department of Fish and Game  
[greg.schoby@idfg.idaho.gov](mailto:greg.schoby@idfg.idaho.gov)

Eli Robinson  
Idaho Department of Lands  
[elirobinson@idl.idaho.gov](mailto:elirobinson@idl.idaho.gov)

Chad Colter  
Shoshone-Bannock Tribes  
[ccolter@shoshonebannocktribes.com](mailto:ccolter@shoshonebannocktribes.com)

Lynne Hood  
US Environmental Protection Agency,  
[hood.lynne@epa.gov](mailto:hood.lynne@epa.gov)

John Falk  
Idaho Department of Water Resources  
[john.falk@idwr.idaho.gov](mailto:john.falk@idwr.idaho.gov)

**Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens  
Fishery Conservation and Management Act Essential Fish Habitat Consultation**

**Thompson Creek Mine Modified Mining Plan of Operation**

NMFS Consultation Number: WCR-2015-1931

Action Agencies: Bureau of Land Management,  
Salmon Challis National Forest,  
U.S. Army Corps of Engineers

**Affected Species and NMFS' Determinations:**

ESA-Listed Species	Status	Is Action Likely to Adversely Affect Species or Critical Habitat?	Is Action Likely To Jeopardize the Species?	Is Action Likely To Destroy or Adversely Modify Critical Habitat?
Snake River spring/Summer Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> )	Threatened	Yes	No	No
Snake River steelhead ( <i>O. mykiss</i> )	Threatened	Yes	No	No
Snake River sockeye salmon ( <i>O. nerka</i> )	Endangered	Yes	No	No

Fishery Management Plan That Describes EFH in the Project Area	Does Action Have an Adverse Effect on EFH?	Are EFH Conservation Recommendations Provided?
Pacific Coast Salmon	Yes	Yes

**Consultation Conducted By:** National Marine Fisheries Service, West Coast Region

**Issued By:**

  
 for William W. Stelle, Jr.  
 Regional Administrator

**Date:**

April 19, 2016

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## ACRONYMS

µg	microgram
µS/cm	micro Siemens per centimeter
7DADM	7-Day Average Daily Mean
7Q10	7-Day Average Low Flow that Occurs, on Average, Once Every 10 Years
A/P	Abundance/Productivity
AMSL	Above Mean Sea Level
ARD	Acid Rock Drainage
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practices
CaCO <sub>3</sub>	Calcium Carbonate
CCC	Criterion Continuous Concentration
CCU	Cumulative Criterion Unit
CEMP	Consolidated Environmental Monitoring Program
cfs	cubic feet per second
CHART	Critical Habitat Analytical Review Team
COE	Corps of Engineers
CRP	Consolidated Reclamation Plan
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
DL	Detection Limit

DPS	Distinct Population Segment
DQA	Data Quality Act
DSD	Dam Safety Division
dw	dry weight
DWS	Domestic Water Supply
ECA	Equivalent Clearcut Area
EFH	Essential Fish Habitat
EFSR	East Fork Salmon River
EPA	U.S. Environmental Protections Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
ERT	Emergency Response Team
FCRPS	Federal Columbia River Power System
DFDC	Final Documentation for Consultation
FEIS	Final Environmental Impact Statement
FPOM	Fine Particulate Organic Matter
FSEIS	Final Supplemental Environmental Impact Statement
g	grams
GIS	Geographic Information System
gpm	Gallons per Minute
HAPC	Habitat Areas of Particular Concern
HUC	Hydrologic Unit Code
ICBTRT	Interior Columbia Basin Technical Recovery Team
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
ITS	Incidental Take Statement
kg	kilogram
L	liter
LAA	Likely to Adversely Affect
LGD	Lower Granite Dam
LOEC	Lowest Observed Effects Concentration
LWD	Large Woody Debris
MDMT	Maximum Daily Maximum Temperature
mg	milligrams
mm	millimeter
MMPO	Modified Mining Plan of Operations
MP	Mile Post
MPG	Major Population Group

MPO	Mining Plan of Operation
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOEC	No Observed Effects Concentration
NPDES	National Pollution Discharge Elimination System
Opinion	Biological Opinion
PBF	Physical and Biological Features
PCE	Primary Constituent Element
PCTL	Percentile
R1/R4	Region 1/Region 4
RIS	runoff interception system
RM	River Mile
ROW	Rights-of-Way
RPA	Reasonable and Prudent Alternatives
RPM	Reasonable and Prudent Measures
S. CREEK	Squaw Creek
SAR	Smolt-to-Adult Return
SCNF	Salmon-Challis National Forest
SFI	Stream Fish Index
SH	State Highway
SMI	Stream Macroinvertebrate Index
SPCC	Spill Prevention Control and Countermeasure
SPOO	Supplemental Plan of Operation
SPCCP	Spill Prevention Control and Countermeasure Plan
SRD	Seepage Return Dam
SRLM	Salmon River Lower Mainstem
SRUM	Salmon River Upper Mainstem
SS/D	Spatial Structure/Diversity
SWPPP	Stormwater Pollution Prevention Plan
TCM	Thompson Creek Mine
TCMC	Thompson Creek Mining Company
TSF	Tailings Storage Facilities
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WET	Whole Effluent Toxicity
WRSF	Waste Rock Storage Facilities
WUS	Waters of the U.S.
ww	wet weight

2. Minimize the potential for incidental take of ESA-listed species resulting from adverse habitat effects associated with TCM's use of Thompson Creek, S. Creek, and Salmon River water.
3. Minimize the likelihood of unplanned sediment releases from TCM facilities during operation and through closure.
4. Minimize harm, injury, and death of salmonids during proposed biological monitoring.
5. Maximize potential benefits and duration of proposed COE mitigations.
6. Ensure completion of a monitoring and reporting program to confirm that the terms and conditions in this ITS were effective in avoiding and minimizing incidental take from permitted activities and ensuring incidental take is not exceeded.

#### 2.8.4 Terms and Conditions

The terms and conditions described below are non-discretionary, and the BLM, SCNF, and COE (for those measures relevant to the CWA section 404 permit), in addition to the Applicant (i.e., TCMC) must comply with them in order to implement the RPMs (50 CFR 402.14). The terms and conditions will be implemented only if TCMC proceeds with the proposed action considered in this Opinion. The BLM, SCNF, COE, and the Applicant have a continuing duty to monitor the impacts of incidental take as described herein and must report the progress of the action and its impact on the species as specified in this ITS (50 CFR 402.14). If the entity to whom a term and condition is directed does not comply with the following terms and conditions, protective coverage for the proposed action would likely lapse.

1. The following terms and conditions implement RPM 1:
  - a. To ensure that water management features are operating as intended and assumptions that form the basis of the water quality predictions relied upon in this Opinion remain valid, the BLM, COE (for those measures relevant to the CWA section 404 permit), and SCNF shall ensure ongoing physical, chemical, and biological monitoring of surface and ground water resources continue throughout the life of the mine as specified in the CEMP 2013 through 2018 (TCMC 2013), or as described in a monitoring plan that is subsequently developed.
  - b. The BLM, SCNF, COE (for those measures relevant to the CWA section 404 permit), and the Applicant shall request the Interagency Task Force to accept NMFS as a regular member. In the event membership is not

granted to NMFS by the Interagency Task Force, the action agencies and Applicant shall invite NMFS to attend each task force meeting as an observer.

- c. Surface water monitoring shall continue in Thompson Creek for total selenium, dissolved copper, and dissolved aluminum as described in the CEMP 2013 through 2018 (TCMC 2013), or any approved future version of the document<sup>38</sup>. This monitoring shall continue, even if no longer required by the NPDES permit, but will terminate upon agreement with NMFS.
  - d. The surface water monitoring program shall also include collection of input parameters for use in the copper biotic ligand model, or in an alternate model that is adopted by the IDEQ and subsequently approved by the EPA. Either the biotic ligand model or its alternative shall be used to calculate a site-specific prediction of copper toxicity for Thompson Creek.
  - e. Biological monitoring of aquatic communities shall continue in Thompson Creek as described in the CEMP 2013 through 2018 (TCMC 2013) or any approved future version of the document.
  - f. Bioaccumulation monitoring for selenium shall be performed and reported annually until otherwise agreed to by NMFS.
  - g. Groundwater monitoring in the Thompson Creek drainage shall continue as described in the CEMP 2013 through 2018 (TCMC 2013) or any approved future version of the document.
  - h. Revisions (e.g., change in monitoring frequency, monitoring locations, monitored parameters) to any of the aforementioned monitoring programs (i.e., surface water quality, groundwater quality, and biological) require review and approval from NMFS. Reviews shall be coordinated by one of the three action agencies or the Applicant.
2. The following terms and conditions implement RPM 2:
- a. Annually, from July 15 to September 1, the BLM, SCNF, and COE (for those measures relevant to the CWA section 404 permit) shall require the TCMC to pump (if pumping of water is necessary) water from the Salmon River between 8 pm and 8 am.
    - i. Pumping of Salmon River water outside the described time period shall only occur when a separate existing on-site water source

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<sup>38</sup> This refers to the specified sampling locations, sampling frequency, as well as the sampling and analysis methodologies described in the plan.

(e.g., the pit) becomes temporarily unavailable. Pump rates outside the described timing window shall be limited to the quantity otherwise provided by the separate source.

- b. When discharging water at outfall 005, the BLM, SCNF, and/or COE (for those measures relevant to the CWA section 404 permit) and the TCMC shall take reasonable measures to keep treated discharge water as cool as possible (i.e., do not unnecessarily warm the water during treatment) to prevent unnecessary warming of the Salmon River.
3. The BLM, SCNF, and/or the COE shall implement the following terms and conditions to address RPM 3:
  - a. Within 6 months of initiating Phase 8, the BLM, SCNF, and COE (for those measures relevant to the CWA section 404 permit) shall require the TCMC to demonstrate how existing or new plans ensure design capacity of the following facilities will be maintained over time. Design facilities include the sediment retention ponds in Buckskin and Pat Hughes Creeks and the two on-stream sediment retention dams on Bruno Creek. The agencies shall provide the information to NMFS upon receipt.
  - b. The BLM, SCNF, and/or COE (for those measures relevant to the CWA section 404 permit) will condition their approval or permit of the TCM's MMPO to require TCMC to routinely inspect all mine site and road water management and sediment control features. The agencies shall require TCMC to document proposed control and containment BMPs are working as designed for the life of the mine and through reclamation.
4. The BLM, SCNF, and/or the COE (for those measures relevant to the CWA section 404 permit) shall implement the following terms and conditions to address RPM 4 (biological sampling).
  - a. When performing fish sampling with electrofishing equipment the operation will be led by an experienced fisheries biologist and NMFS' electrofishing guidelines (2000) will be followed.
  - b. Only DC or PDC will be used.
    - i. If conductivity is less than 100  $\mu\text{S}/\text{cm}$ , voltage up to 1100 v. will be used. For conductivity ranges between 100 to 300  $\mu\text{S}/\text{cm}$ , voltage up to 800 v will be used. For conductivity greater than 300  $\mu\text{S}/\text{cm}$ , voltage will be less than 400 v.

- c. Electrofishing will begin with a minimum pulse width and recommended voltage and then gradually increase to the point where fish are immobilized.
  - d. The anode will not intentionally contact fish while the current is being emitted.
  - e. Electrofishing will not occur when water temperature is warmer, or is expected to be warmer, than 64°F (17.8°C) during the sample interval.
  - f. If mortality or obvious injury (defined as dark bands on the body, spinal deformations, de-scaling of 25% or more of body, and torpidity or inability to maintain upright attitude after sufficient recovery time) occurs during electrofishing, operations will be immediately discontinued, machine settings, water temperature and conductivity checked, and procedures adjusted or postponed to reduce mortality.
  - g. Fish lethally taken to complete metals analysis will be limited to mountain whitefish, resident cutthroat trout, or trout possessing visible signs of hybridization (i.e., cutthroat/rainbow trout) and are more than 6 inches long.
5. The Corps of Engineers shall implement the following terms and conditions to address RPM 5:
- a. Require the Applicant to construct the proposed livestock exclusion fence adjacent to S. Creek during the first summer that Phase 8 activities begin or prior to livestock being turned into the adjacent pasture. All fence construction will be completed and be operational in one field season.
  - b. The COE shall condition their permit to require the TCMC to regularly monitor the livestock exclusion fences once per month when cattle are present to ensure it remains functional in perpetuity.
  - c. The COE shall condition their permit to require the Applicant to perform any fence maintenance necessary to maintain an effective livestock exclusion from the targeted reach of S. Creek in perpetuity
  - d. Require all proposed bank stabilization activities along S. Creek be implemented between July 14 and August 21 (USBWP 2005).
  - e. In the event the COE considers any future modifications of the proposed Declaration of Restrictions (COE 2015), the COE shall collaborate with the NMFS to determine if consultation reinitiation is necessary prior to any approval.
6. The following terms and conditions implement RPM 6, and ensure the amount of authorized incidental take is not exceeded:

- a. The BLM and SCNF shall prepare an annual aquatic biological monitoring report presenting the data and analysis of periphyton, macroinvertebrate, and fish population, and fish tissue monitoring studies. The annual report currently prepared by the TCMC may be used to fulfill this requirement. If this report is used, it shall be modified to incorporate the additional data collection and analysis required in Term and Condition 1.f (fish tissue sampling), above.
- b. The BLM and SCNF shall prepare annual surface water monitoring reports, presenting the data and analysis of surface water sampling efforts. The annual reports currently prepared by the TCMC (i.e., the water trend analysis report and the annual water report) may be used to fulfill this requirement; however, the annual water report must incorporate any additional requirements included in the ITS. These additional requirements include the copper toxicity modeling (e.g., the biotic ligand model) and results from any follow up monitoring that is required to comply with the incidental take identified in Section 2.8.1 above.
- c. The BLM and SCNF shall prepare an annual groundwater monitoring report presenting the data and analysis of ground water monitoring efforts. The annual water quality trend analysis currently prepared by TCM may be used to fulfill this requirement.
- d. The BLM and SCNF shall prepare an annual water quantity report presenting the TCM's water use data and compliance with this Opinion's amount and extent of take (section 2.8.1). The summary of water diversions currently prepared by TCM in its annual tailings report pursuant to its IDWR dam safety permit may be used to fulfill this requirement, if modified to address the previously described extent of take for water quantity.
- e. The COE shall prepare an annual monitoring report for the S. Creek exclosure area and wetland mitigation area. The report shall document dates of fence evaluations, any completed repairs and their timing, and any other information relevant to unauthorized livestock use of the exclosed area. TCM may include these reporting requirements in its annual report filed under the mitigation plan for the 404 permit.
- f. In the event that the BLM, the current lead action agency, completes a land exchange with TCMC and no longer has discretionary authority over the proposed action, reporting requirements will continue for the other two Federal action agencies (i.e., the COE or SCNF) to the same extent as when BLM was involved.
- g. Reports prepared in accordance with 6.a., 6.b., 6.c., 6.d, and 6.e above shall be submitted to NMFS. All reports may be condensed into one

document and shall include a summary of any adaptive management changes taken during the course of year with potential to affect ESA-listed resources. The summary must also confirm the authorized amount and extent of incidental take (section 2.8.1) exempted by this Opinion was not exceeded. Please submit reports to:

Snake Basin Area Director  
National Marine Fisheries Service  
Attention: WCR-2015-1931  
800 E Park Boulevard  
Plaza IV, Suite 220  
Boise, Idaho 83712

## **2.9 Conservation Recommendations**

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Specifically, conservation recommendations are suggestions regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information (50 CFR 402.02).

The following recommendations are discretionary measures that NMFS believes are consistent with this obligation and therefore should be carried out by the BLM, SCNF, or COE (as specified):

1. To mitigate the effects of climate change on ESA-listed salmonids, the BLM, SCNF, and COE should follow recommendations by the ISAB (2007) to plan now for future climate conditions by implementing protective tributary, mainstem, and estuarine habitat measures; as well as protective hydropower mitigation measures. In particular, implement measures to protect or restore riparian buffers, wetlands, and floodplains; and remove stream barriers.
2. To improve critical habitat conditions in Thompson and S. Creeks, the BLM and SCNF should require the TCMC to improve in-stream flow conditions in both streams to offset impacts of baseline TCMC's water use on the tributaries. Doing so will help address identified recovery plan objectives for both tributaries and will likely contribute to improved survival and recovery of anadromous fish occupying the action area. The agencies and the Applicant should work with the IDWR in an effort to assure saved water is effectively delivered to the tributary's confluence with the Salmon River and not diverted by downstream water users with junior water rights.
3. To improve water temperature in S. Creek, the BLM, SCNF, and COE should evaluate stream shade levels in reaches managed by the Federal agencies or the TCMC and located downstream of Bruno Creek's confluence with S. Creek and elsewhere within the watershed. Inventory protocols should be discussed with NMFS. The agencies and

Applicant should pursue revegetation actions where conditions depart from reference conditions for the area.

4. To reduce potential water quality impacts on critical habitat and ESA-listed fish in Thompson Creek and the Salmon River, the BLM and SCNF should request TCMC to permanently discontinue use of NPDES outfalls 001 and 002. These outfalls are not regularly used now and infrastructure is in place to continue capturing contaminated groundwater seepage for treatment or use in milling.
5. To further improve water quality in Thompson Creek and S. Creek, the BLM and SCNF should investigate other current or historic mines (e.g., Twin Apex, Tungsten Jim Mill, Redbird, etc.) that may have ongoing effects to water quality. Where impacts are occurring, the BLM and SCNF should investigate and prioritize remedial actions that can be taken. If mines are on private land, the BLM and SCNF should notify federal and state partners of potential environmental impacts originating from these areas.

Please notify NMFS if the BLM, SCNF, or COE carries out any of these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects and those that benefit ESA-listed species or their designated critical habitats.

## **2.10 Reinitiation of Consultation**

This concludes formal consultation for the TCMC's MMPO, as proposed by the BLM, SCNF, and the COE. As 50 CFR 402.16 states, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental taking specified in the ITS is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; (4) a new species is listed or critical habitat designated that may be affected by the action; or (5) water quality monitoring indicates concentrations are greater than those predicted and are causing effects not considered in this Opinion.

## **3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT ESSENTIAL FISH HABITAT CONSULTATION**

Section 305(b) of the MSA directs Federal agencies to consult with NMFS on all actions or proposed actions that may adversely affect EFH. Section 3 of the MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Adverse effect means any impact that reduces quality or quantity of EFH, and may include direct or indirect physical, chemical, or biological alteration of the waters or substrate and loss of (or injury to) benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality or quantity of EFH. Adverse effects on EFH may result

Current and projected water removal does not appear to influence fish migration into or out of the affected EFH reaches. Downstream physical barriers (Thompson Creek) and private irrigation withdrawals (S. Creek) are capable of stopping upstream migrating fish in absence of the action.

3. *Sediment* - Approval of the MMPO is not expected to increase sediment levels from current conditions, primarily due to continued effectiveness of sediment control BMPs. There is a small potential for sediment deliveries to adversely affect EFH if sediment ponds are not regularly cleaned or if exposed to flows larger than design capacity. Effects were discussed in Section 2.4.1.5.

### **3.2 Essential Fish Habitat Conservation Recommendations**

1. To minimize the action's effects on water quality, the BLM and SCNF should ensure that water management features are operating as intended and assumptions that form the basis of the water quality predictions relied upon in this analysis remain valid. Specifically, the following measures should be implemented:
  - a. Continue ongoing physical, chemical, and biological monitoring of surface water and ground water resources throughout the life of the mine, as specified in the CEMP 2013 through 2018 (TCMC 2013). Any modifications to the monitoring program should be reviewed and approved by NMFS.
  - b. Continue Thompson Creek surface water monitoring for selenium, copper, and aluminum, as described in the CEMP 2013 through 2018 (TCMC 2013)<sup>39</sup>. This monitoring should continue regardless of whether it is required by the NPDES permit.
  - c. The surface water monitoring program should also include collection of input parameters for use in the copper biotic ligand model. Using this model, a site-specific prediction of copper toxicity should be made for Thompson Creek.
  - d. Continue biological monitoring of aquatic communities in Thompson Creek as described in the CEMP 2013 through 2018 (TCMC 2013).
  - e. Bioaccumulation monitoring for selenium should be performed every other year until fish tissue samples are consistently lower than 7.6 mg/kg ww or selenium concentrations in the water column at sample locations TC3, TC2, and TC1 are either equal to or less than either the geometric mean of background samples (i.e., TC4) or 2 µg/L, whichever is greatest.
  - f. Continue groundwater monitoring in the Thompson Creek drainage as described in the Consolidated Water Management Plan to monitor the effectiveness of the mitigation measures.

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<sup>39</sup> This refers to the specified sampling locations, sampling frequency, as well as the sampling and analysis methodologies described in the plan.

2. To minimize effects of project generated changes to water quantity and related impacts to EFH the BLM and SCNF, should implement the following measures. Doing so will increase the quantity and quality of salmonid habitat in the action area while directly addressing coldwater refugia and spawning habitat HAPCs.
  - a. When Salmon River water temperature immediately upstream of the Thompson Creek confluence exceeds 70°F (21.1°C) (7-day average maximum) the BLM should require the TCMC to manage ore processing such that make-up water pumped from the Salmon River: (1) Does not exceed 2.0 cfs instantaneously; and (2) pumping of Salmon River water will does not occur for more than 4 days per week and never more than 3 consecutive days.
  - b. To partially offset impacts to salmon forage and habitat e) and thus to reduce the action's influence on anadromous fish productivity resulting from TCMC's use of Thompson Creek, S. Creek, and Salmon River water the BLM should require mitigation in the form of:
    - i. Improved water quantity (e.g., purchase or lease of water rights) in the same streams affected by the proposed action. At a minimum, discharge improvements should be commensurate with the degree of impact caused by Phase 8 expansion. Where discharge improvements would not benefit the same length of habitat affected by Phase 8 operations, the quantity of water required to offset the mine's Phase 8 impact should be increased commensurate to the relative proportion of habitat affected by any increase until the appropriate offset quantity is attained. In preferential order, flow improvement contracts shall be permanent, 15-year or longer leases, or shorter duration leases. Improvements to flow should be enacted within 10 years of MMPO approval or ESA consultation may lapse, potentially requiring reinitiation. Offset proposals should be presented to NMFS for review prior to formalizing any third party agreement.
    - ii. Where riparian surveys of action area tributary streams downstream of TCM's Phase 8 water quantity influences indicate a significant departure in available stream shade, compared to suitable reference locations, the BLM and SCNF should improve riparian shading by 50%. Stream shade improvements shall be implemented within 10 years of this document's signature date. In addition to shading water to reduce potential water temperature increases, additional riparian vegetation will likely reduce fine sediment delivery and encourage invertebrate production.
  - c. A minimum of 5 years prior to the TCM discharge of treated pit water via outfall 005, the BLM and TCMC should evaluate opportunities for pumping pit water from the stratified portion of the pit lake to create a small coldwater plume in the Salmon River.

- i. Pumping of deeper, and thus colder, water should be required if independent analysis suggests such pumping would provide a small coldwater refugia for salmonids migrating or rearing in the Salmon River. In addition to evaluating the water quality of the effluent prior to discharge, analysis must consider existing water temperature, modeled water temperature under a changing climate, and any water temperature changes that may occur during the treatment process before injecting water.
    - ii. The Interagency Task Force, which must include NMFS, will approve analysis methods and results when they are available.
    - iii. Injection of colder water should not be required if water chemistry within the plume suggests its injection would result in effects EFH not considered in the NPDES mixing zone evaluation, the permit, or any future EFH consultation on these actions.
  - d. To improve EFH conditions in Thompson and S. Creeks, the BLM and SCNF should require the TCMC to improve in-stream flow conditions in both streams to offset impacts of baseline TCM water use on the tributaries. Doing so will help address identified recovery plan objectives for both tributaries and will likely contribute to improved survival and recovery of anadromous fish occupying the action area. The agencies and the Applicant should work with the IDWR in an effort to assure saved water is effectively delivered to the tributary's confluence with the Salmon River and not diverted by downstream water users with junior water rights.
3. To minimize the action's effects on sediment levels, the BLM and SCNF should implement ESA term and conditions 3.a and 3.b. Doing so will assist with maintenance of spawning habitat and complex channel and floodplain habitat HAPCs. The measures are presented below.
  - a. Within 6 months of BLM's approval of the MMPO, the BLM should require the TCMC to develop and present a formal monitoring and maintenance program to minimize the potential for episodic sediment deliveries to EFH in the action area. The plan will include measures appropriate to reduce potential sediment delivery from sediment retention ponds in Buckskin and Pat Hughes Creeks, the seepage return dam, pump-back dam, and the two on-stream dams in Bruno Creek. The program will be presented to NMFS for review and approval prior to formal adoption.
  - b. The BLM and SCNF should inspect TCM's on-site and access route water management and sediment control features bi-annually. These features are designed to prevent sediment delivery to action area streams. Inspections should document that proposed control and containment BMPs are working as designed.
4. To further improve water quality in Thompson Creek, S. Creek, and the Salmon River, the BLM and SCNF should investigate other current or historic mines (e.g., Twin Apex, Tungsten Jim Mill, Redbird, etc.) that may have ongoing effects to water quality in these

streams. Where impacts are occurring, the BLM and SCNF should investigate and prioritize remedial actions that can be taken. If mines are on private land, the BLM and SCNF should notify federal and state partners of potential environmental impacts originating from these areas.

5. To reduce potential water quality impacts on EFH in Thompson Creek and the Salmon River, the BLM and SCNF should request TCMC to permanently discontinue use NPDES outfalls 001 and 002. These outfalls are not regularly used now and infrastructure is in place to continue capturing contaminated groundwater seepage for treatment or use in milling.

Fully implementing these EFH conservation recommendations would protect, by avoiding or minimizing the adverse effects described in Section 3.2, above, approximately 174.8 acres of designated EFH for Pacific coast salmon.

### **3.3 Statutory Response Requirement**

As required by section 305(b)(4)(B) of the MSA, the BLM, SCNF, and COE must provide a detailed response in writing to NMFS within 30 days after receiving an EFH Conservation Recommendation. Such a response must be provided at least 10 days prior to final approval of the action if the response is inconsistent with any of NMFS' EFH Conservation Recommendations unless NMFS and the Federal agency have agreed to use alternative timeframes for the Federal agency response. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the Conservation Recommendations, the Federal agency must explain its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the action and the measures needed to avoid, minimize, mitigate, or offset such effects (50 CFR 600.920(k)(1)).

In response to increased oversight of overall EFH program effectiveness by the Office of Management and Budget, NMFS established a quarterly reporting requirement to determine how many conservation recommendations are provided as part of each EFH consultation and how many are adopted by the action agency. Therefore, we ask that in your statutory reply to the EFH portion of this consultation, you clearly identify the number of conservation recommendations accepted.

### **3.4 Supplemental Consultation**

The BLM, SCNF, and COE must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conservation Recommendations (50 CFR 600.920(l)).

## **Appendix B, Portions of US Fish and Wildlife Service Biological Opinion**

Cover letter, front matter, terms and conditions, and Section 7(a)(1) conservation recommendations from the US Fish and Wildlife Service biological opinion (USFWS 2016).



United States Department of the Interior  
FISH AND WILDLIFE SERVICE

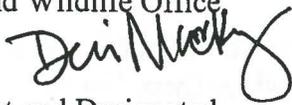
Snake River Fish and Wildlife Office  
1387 S Vinnell Way, Suite 368  
Boise, Idaho 83709  
Telephone (208) 378-5243  
<http://www.fws.gov/idaho>



APR 18 2016

Memorandum

To:  Field Manager, Bureau of Land Management, Challis Field Office, Challis, Idaho

From:  State Supervisor, Fish and Wildlife Service, Idaho Fish and Wildlife Office,  
Boise, Idaho 

Subject: Transmittal of Biological Opinion for Effects to Bull Trout and Designated  
Critical Habitat from the Proposed Thompson Creek Mine Expansion Project, and  
Concurrence for Effects to Canada lynx (01EIFW00-2015-F-0298)

Attached to this memorandum is the Fish and Wildlife Service's (Service) biological opinion (Opinion) on the Bureau of Land Management's (Bureau) proposed Thompson Creek Mine Expansion Project. This Opinion analyzes the potential effects to bull trout (*Salvelinus confluentus*), a fish species listed as threatened under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq. [Act]), and its designated critical habitat.

The Service's Opinion, prepared in accordance with section 7 of the Act, is in response to the Bureau's December 11, 2014 letter and associated biological assessment (Assessment) for wildlife and aquatic species, received by the Service on December 12, 2014, requesting consultation pursuant to requirements under section 7 of the Act. Through the Assessment, the Bureau determined that potential effects from the proposed action were likely to adversely affect bull trout and its designated critical habitat. In the attached Opinion, the Service finds that potential adverse effects from the Bureau's proposal are not likely to jeopardize the continued existence of the coterminous United States population of bull trout, or result in adverse modification of designated critical habitat.

The Bureau determined that the proposed mine expansion would have no effect to yellow-billed cuckoo (*Coccyzus americanus*). The regulations implementing section 7 of the Act do not require the Service to review or concur with no effect determinations, and these will not be addressed further. However, we appreciate being informed of your determination for these species, even if not required to do so under the Act.

The Bureau also determined that the proposed mine expansion may affect, but is not likely to adversely affect Canada lynx (*Lynx canadensis*), a mammal listed as threatened under the Act. The Service concurs with your determination for lynx and our rationale is described below.

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APR 21 2016

Bureau of Land Mgt.  
Challis, Idaho

### Proposed Action

The Proposed Action is authorization of the Modified Mine Plan of Operations (MMPO), submitted by Thompson Creek Mine Company (TCMC) to the Bureau, the Salmon-Challis National Forest (Forest), and other cooperating agencies in 2009. The Bureau proposes to issue a decision regarding expansion of the waste rock storage south of the open pit and modification of long-term water management. The proposed action includes Forest issuance of a decision regarding the storage of waste rock north of the open pit, expansion of the Tailings Storage Facility, and realignment of a section of power line. In addition, the proposed action includes the issuance of the U.S. Army Corps of Engineers 404 permit.

### Species and Habitat Presence in the Project Area

The Forest land is part of “secondary, unoccupied” lynx habitat as defined in the Northern Rockies Lynx Amendment (Assessment, p. 69). Secondary habitat has relatively few and more sporadic current and historical records of lynx compared to primary or “core” habitat, and reproduction in secondary habitat has not been documented (Assessment, p. 69). Adjacent Bureau lands that make up the remainder of the action area are also mapped as secondary habitat. The nearest lynx core habitat is more than 150 miles east and north of the action area (Assessment, p. 69).

Lynx analysis units (LAUs) have been identified by the Forest and are used to analyze a project’s effects to lynx productivity, mortality risk factors, movement, and dispersal. The area of a LAU is the approximate area used by individual lynx, not an actual home range, and includes all seasonal habitats. LAUs are the most relevant predictor of habitat use by lynx at a project scale. The 348 acres of LAUs (mapped by the Forest) within the action area occur in the head waters of the Thompson Creek watershed approximately 5 kilometers from Thompson Creek Mine (Mine) disturbance. No LAUs are present within the areas to be disturbed under the proposed action.

One male lynx was incidentally trapped and released in the Williams Creek drainage, approximately 50 miles northeast of the Mine, approximately 11 miles southwest of Salmon, on January 26, 2012 (Assessment p. 69). This occurrence is the first verified occurrence of lynx in the Upper Salmon River drainage since 1991.

### Potential Impacts and Effects from the Proposed Action

The Mine has been in operation on private land with associated Mine disturbance (e.g. noise, light, vibration) since the 1980s. No disturbance, either existing or from the proposed action, will occur in Forest LAUs. Further, the proposed action (realignment of a power line, expansion of the waste rock storage facility, and expansion of the tailings storage facility) will occur adjacent to existing Mine disturbance (at the beginning of Phase 8 mining). Due to the nature of the proposed action, the proximity to existing disturbance, and location in secondary unoccupied lynx habitat, the potential for lynx use during the placement of waste rock is highly unlikely. Therefore, direct effects to an individual lynx during waste rock placement are discountable. Direct effects to Canada lynx may occur through the loss of secondary unoccupied habitat as a result of the mine expansion. After timber removal (at the beginning of Phase 8), there will be

364 fewer forested acres within secondary lynx habitat. Effects of the proposed action as a result of the habitat removal will consist of expansion of the current Mine disturbance. Because the area of disturbance is adjacent to existing disturbance, there will be no new discontinuities or isolated habitat patches created and thus, no new habitat fragmentation. As a result of the nature of the propose action, the proximity of the expansion to existing Mine disturbance, the lack of historical use by lynx, and the secondary unoccupied nature of the habitat being removed, it is unlikely lynx will use the area of Mine expansion. If lynx were to be displaced by the Mine expansion, the land surrounding the project area contains similar habitat with much lower levels of human disturbance that would provide travel corridors and habitat connectivity to less disturbed habitat. Consequently, any effects from displacement would likely be insignificant.

The decrease and modification of forested habitat in the action area (direct effects described above) will not produce any detectable or measurable change to movement, foraging, or other patterns or potential habitat uses of any lynx individuals that may utilize the action area. Further, LAUs contain the most reasonable occurrence locations for Canada lynx in the action area and these areas will not be disturbed. For these reasons, the Service finds that the effects to lynx from the proposed Thompson Creek Mine Expansion are anticipated to be both discountable and insignificant.

#### Concurrence

Based on the Service's review of the Assessment, we concur with the Bureau's determination that the action outlined in the Assessment, may affect, but is not likely to adversely affect Canada lynx. This concurrence is based on the existing conditions, duration of disturbance, lack of primary Canada lynx habitat, the lack of occurrences of Canada lynx in the action area, and the ability of lynx to move into adjacent habitat.

This concludes informal consultation. Further consultation pursuant to section 7(a)(2) of the Act is not required. Reinitiation of consultation on this action may be necessary if new information reveals effects of the action that may affect a listed species or designated habitat in a manner or to an extent not considered in the Assessment, the action is subsequently modified in a manner that causes an effect to the listed species that was not considered in the analysis, or a new species is listed or critical habitat designated that may be affected by the proposed action.

Thank you for your continued interest in the conservation of endangered, threatened, and proposed species. If you have any questions regarding this consultation, please contact Evan Ohr of our Eastern Idaho Field Office at (208) 237-6975 ext. 115.

#### Attachment

cc:	James Joyner, ACOE (Idaho Falls)	Greg Martinez, ACOE (Boise)
	Charles Mark, SCNF (Salmon)	Lynne Hood, USEPA (Boise)
	Ken Gardner, BLM (Challis)	Chad Fealko, NOAA (Salmon)
	Eric Reiland, BLM (Challis)	Johnna Sandow, NOAA (Boise)
	Piper Goessel, USFS (Challis)	

**BIOLOGICAL OPINION  
FOR THE  
THOMPSON CREEK MINE EXPANSION PROJECT  
CUSTER COUNTY, IDAHO  
01EIFW00-2015-F-0298**



**U.S. FISH AND WILDLIFE SERVICE  
IDAHO FISH AND WILDLIFE OFFICE  
BOISE, IDAHO**

*Acting*  
Supervisor     *Dein Mackay*      
Date     APR 18 2016

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Reasonable and Prudent Measure 1 – The Bureau shall reduce the extent of effects to bull trout and their designated critical habitat.

#### **D. Terms and Conditions**

Term and Condition 1 to implement Reasonable and Prudent Measure 1:

The Bureau shall ensure the proposed action, including all proposed conservation measures and monitoring described in the Assessment, is fully implemented.

#### Reporting and Monitoring Requirements

To be exempt from the prohibitions of section 9 of the Act, the Bureau must ensure compliance with the following Reporting and Monitoring Requirements. The Reporting and Monitoring Requirements are not discretionary and must be undertaken by the Bureau, or be made a binding condition of any permit issued to an applicant, as appropriate.

1. Within one year following finalization of the Opinion, the Bureau shall develop, receive approval of the Service, and begin implementation of a sampling/monitoring plan which incorporates the following terms and conditions.

In order to determine if there is acute and chronic toxicity from the permitted discharge to aquatic organisms (both bull trout and their prey items) from the edge of the mixing zone, in the Salmon River, the Bureau shall:

2. Establish water quality sampling points for metals at outfall 005. Sampling points shall be established at the edge of the mixing zone and 26 meters downstream of outfall 005 to assess if elevated effluent concentrations are occurring beyond the anticipated "affected area". These sampling points shall be in addition to current requirements by the TCMC's NPDES permit. Sampling shall include at least three samples from each sample point in order to establish average values. Sampling shall be implemented once TCMC initiates use of outfall 005 and discharge of effluent is occurring. Sampling shall take place annually for the first two years of use, and then every five years following for verification. Results from the sampling shall be provided to the Service for review in the annual report.

If water quality sampling indicates that an acute or chronic water quality criteria specified in the NPDES permit is exceeded, outside the designated regulatory mixing zone, the Bureau shall meet with the Service to determine if potential effects of the discharge on bull trout in the Salmon River should be re-evaluated.

3. As a permit condition, the Bureau shall require an acclimation study be conducted to determine whether or not the test species (rainbow trout) can acclimate to the Salmon River water. If the species can acclimate, then Salmon River water must be used for WET testing to determine toxicity of the effluent, rather than laboratory water, as a

control or dilution agent. Salmon River water shall be collected in accordance with TCMC's NPDES permit.

4. In order to assess compliance with the requirement that the Salmon River be free from toxic substances in concentrations that impair beneficial uses to cold water species, acute rainbow trout tests shall be conducted to evaluate the potential for adverse effects resulting from short-term exposure in the mixing zone. This test will occur annually for the first two years following the discharge of effluent through outfall 005, and then every five years following. This required WET testing shall be in addition to the WET testing established in the TCMC's NPDES permit. The WET test used shall be a 96-hour static renewal test with reporting at 24 and 96 hours. Following four WET tests and 12 years after discharge begins at outfall 005, this portion of the sampling plan may be re-evaluated if deemed appropriate by both the Service and the Bureau.

In order to assess the potential take of bull trout, the Bureau shall implement a macroinvertebrate monitoring/sampling plan:

5. Macroinvertebrate sampling/monitoring is to be used as a surrogate indicator of impacts to bull trout. Macroinvertebrates shall be sampled between outfall 005 and the confluence of Thompson Creek and the Salmon River, and the confluence of S. Creek and the Salmon River, when suitable locations are available. The closest suitable macroinvertebrate sampling locations to outfall 005 shall be selected. If a suitable sampling location is available downstream of outfall 005, that location shall occur upstream of any confluence to the Salmon River. This required sampling is in addition to the existing macroinvertebrate sampling/monitoring occurring as part of TCMC's NPDES permit. The analysis described in this term and condition shall be conducted for the macroinvertebrate sampling locations required by the TCMC's NPDES permit on the Salmon River above and below outfall 005. If the NPDES permit no longer requires macroinvertebrate sampling/monitoring on the Salmon River, macroinvertebrate sampling/monitoring shall continue, as described in TCMC's NPDES permit for outfall 005 and this Opinion, as a requirement of this term and condition. As part of the macroinvertebrate sampling/monitoring plan, a trend analysis of macroinvertebrate abundance, diversity, and composition over time, as well as a trace element concentration analysis in the macroinvertebrates from all sample locations, shall be included. The trend analysis should examine all available past data prior to discharge, during mining, as well as current data. This is expected to include the results of the macroinvertebrate sampling required by the TCMC's NPDES permit.

Specific endpoints such as: invertebrate density, number of taxa, diversity indices, EPT taxa, and mayfly richness shall be measured as a part of the sampling/monitoring plan. Additionally, statistical analyses shall be performed to assess if there are significant differences in macroinvertebrate chemical concentrations, diversity, abundance, or composition. These analyses should be included in the annual report. Chemical analyses of the macroinvertebrate samples shall be conducted in accordance with the protocols of the United States Geological Survey tissue sampling protocols, *Guidelines for Studies of Contaminants in Biological Tissues for the National Water-Quality Assessment Program*

(Crawford and Luoma 1993). Macroinvertebrate sampling should be done in such a manner as to not interfere with chemical analyses. Results of the chemical analyses should be included in the annual report. Constituents being analyzed shall include: aluminum, arsenic, cadmium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, uranium, and zinc. All constituents listed above shall be analyzed annually for the two years prior to discharge of outfall 005 and annually for the first two years following discharge through outfall 005. Following two years after discharge of outfall 005, the list of constituents to be analyzed can be re-evaluated, in consultation with the Bureau and Service, for refinement and possible exclusion of some constituents.

Sampling should be conducted in the late summer or early fall, once a year, at the same time every year, and continue throughout the life of potential effects of the proposed action. Results of the monitoring shall be summarized in a report, and provided to the Service each year for our review.

In order to assess the impacts of the discharge to listed species, the Bureau will submit to the Service, by May 1<sup>st</sup> of each year, reports from monitoring. Data compiled from Reporting and Monitoring Requirements 2, 4, and 5 shall be made available to the Service in electronic form. The reports can be provided to the Service in electronic form or in a letter. Reports and data can be mailed on a CD to the Service's Eastern Idaho Field Office at:

4425 Burley Drive, Suite A  
Chubbuck, Idaho 83202

The above reporting and monitoring requirements are designed to monitor if impacts that might otherwise result from Mine discharge into the Salmon River rise to the level of incidental take. If, during the course of the action, incidental take is exceeded (i.e., statistical analyses reveals a significant decrease in macroinvertebrate abundance, diversity, or composition between upstream and downstream sampling locations or a statistically significant increase in metals concentrations in macroinvertebrates between years), such incidental take represents new information requiring reinitiation of consultation. The Bureau must immediately provide an explanation of the causes of the taking and review with the Service the need for reinitiation of formal consultation.

## **IX. CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop new information on listed species. The following Conservation Recommendations are pertinent to this action

Promote recovery of bull trout in Thompson Creek by discontinuing use of outfalls 001 and 002 as permitted by TCMC's NPDES permit.

Monitor water quality in Red Bird Creek during Phase 8, Early Closure, and Late-Post Closure.

Work with water rights owner to remove or replace the diversion 0.3 mile upstream of the confluence of Thompson Creek and the Salmon River.

Readdress the TCMC's NPDES permit for effects to aquatic biota.

Monitor bull trout presence in Thompson Creek, S. Creek, and the Salmon River.

Implement the TCMC Proposed Salmon River Mixing Zone Monitoring Plan where it is not in conflict with the above Terms and Conditions.

## **X. REINITIATION-CLOSING STATEMENT**

This concludes formal consultation on the Bureau's proposal to authorize expansion of the Thompson Creek Mine. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.