CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter presents the potential direct and indirect effects of the Proposed Action and alternatives. This chapter also identifies irreversible and irretrievable commitments of resources and residual adverse effects. Mitigation measures that have been developed to reduce or eliminate potential impacts are also described. The alternatives for which effects are presented are described in **Chapter 2**. These alternatives address the issues and indicators identified during the scoping process and are presented at the beginning of each resource section of this impact assessment. Tables summarizing conformance with the CNF RFP (USFS 2003a) and the BLM ARMP (2012) are provided in **Appendix 4A**.

Effects are described in terms of context (site-specific, local, or regional effects), duration (short or long-term), and intensity (negligible, minor, moderate, or major). Duration of effects is defined as the following:

- **Short-term** – Short-term effects are defined as those effects that would not last longer than the life of the project, including initial reclamation.
- **Long-term** – Long-term effects are effects that would remain following completion of the project.

The thresholds of change for the intensity of an impact are defined as the following:

- **Negligible** – the impact is at the lowest levels of detection.
- **Minor** – the impact is slight, but detectable.
- **Moderate** – the impact is readily apparent.
- **Major** – the impact is a severe or adverse impact or of exceptional benefit.

Analysis of the Proposed Action and alternatives was limited to the Study Area, which varied by resource and alternative. Some discussions may address a larger analysis area that includes adjacent areas to establish a broader context.

This chapter is organized to inform the understanding of direct and indirect effects. Alternatives are divided into their individual elements, which are each presented separately. The effects of the alternative elements are presented to provide the Agencies with flexibility in selecting elements out of the alternatives.

In addition, the effects of each element and alternative are presented in two ways. First, the actual impact of each element or alternative is compared to the baseline condition. In most cases, this is the same as the comparison of the impact with the No Action Alternative. Second, the impacts of each element or alternative are compared with the Proposed Action to inform the reader how the element or alternative would differ from the Proposed Action. The Agency Preferred Alternative, identified in **Section 2.8**, is a combination of Alternative 3, Alternative 5, and Alternative 6. Alternative 3 is the Reduced BLM Land Sale, Alternative 5 is the Reduced USFS Land Exchange, and Alternative 6 is the Selective Handling Plan. Aspects of the Proposed Action other than the unique aspects of Alternatives 3, 5, and 6 would be incorporated as well.

4.1 Geology, Minerals, and Paleontology

Issue: Would the economic phosphate ore be utilized?

Indicator:

- Economic mineralization (ore) left in the ground.

4.1.1 Direct and Indirect Impacts

4.1.1.1 Proposed Action

Mineral resources would be directly affected by removal of phosphate ore and overburden. The phosphate resources developed under the Proposed Action would be available to fulfill regional and national demands for this commodity. Under the Proposed Action, deeper phosphate resources remaining after mining in the Northeast, North, West, South, and Southeast Pits would be uneconomic to remove at the current anticipated prices. Backfilling four of the five mined pits would further reduce the potential for future development of these resources. If phosphate prices do increase substantially in the future and the remaining resources are deemed economically recoverable, development may be limited by the need to enlarge the pits and strip additional overburden in addition to removing backfill. If mining did proceed, development of the phosphate resource would eventually be limited by the lease boundaries.

Excavations for haul roads, ore stockpiles, and other facilities would have comparatively minor impacts on geologic resources. A minerals report completed for the tailings pond facility area identified no economic mineralization (BLM 2015); therefore, there would be no direct or indirect impacts to mineral resources from the tailings facility.

Mine Pits

Under the Proposed Action, geologic and mineral resources in the North, West, South, and Southeast Pits would be directly affected by the removal of phosphate ore and overburden. Removal of 310 Million BCY of overburden would have a long-term, major, local effect on these resources. All phosphate ore recovered would be transported to a lined ore stockpile located near the mill. The ore would then be fed into the mill, crushed, screened, weighed, sampled, and processed into concentrated slurry that is expected to be pumped to the Don Plant located in Pocatello, Idaho. Estimated volumes of resources that would be directly affected by pit excavation under the Proposed Action are summarized in **Table 4.1-1**. The leased phosphate resource would be fully recovered.

Table 4.1-1 Disturbed Volumes of Geologic Resources by Geologic Unit

GEOLOGIC UNIT	OVERBURDEN (%)	ORE (%)	TOTAL VOLUME (MILLION BCY)
Wells Formation	1.1	0	
Phosphoria Formation			
Rex Chert Member	32	0	
Meade Peak Member	68	100	Proprietary*
SLF	4.8	0	
Total Overburden Volume (BCY)			**310**
Total Ore Volume (BCY)			**Proprietary***

*Omitted to prevent calculations of business confidential information.

Haul Roads

Construction of the haul roads from the south end of North Pit to the Mill, north end of the South Pit to the Mill, Northeast Pit west toward the North Pit, and Southeast Pit traveling west to the South Pit could potentially disturb areas of the Dinwoody, Phosphoria, and Thaynes Formations. However, the presence of deep to moderately deep soils in this portion of the Project Area indicates impacts would be negligible. The effects on Wells Formation and SLF units from the construction of haul roads would be negligible.

Overburden Disposal Areas

Under the Proposed Action, construction of the ODAs adjacent to the pits and the overburden placed in mined-out pits would indirectly affect mineral resources by limiting access to potential resources. No economically valuable minerals are known to exist under the ODAs. Phosphate resources are known to exist under the pit floors; however, based on cost, depth, and resultant strip ratio, the resources are not economic at this time and the economic recovery of these resources in the future is unlikely. Impacts to mineral resources due to the construction of the ODAs would be negligible.

Miscellaneous Facilities

Construction of the main office/security building with parking area, mill and shop complex, ore stockpile, tailings facility, pipeline, potable water and production/industrial wells, water storage tanks, septic system, wash bay, blasting compound, communication facilities, water control features, powerline, and other support facilities would directly affect areas of alluvium, Salt Lake, Dinwoody, Wells, and Phosphoria Formations. Impacts are negligible because all geologic units, with the exception of the Meade Peak Member of the Phosphoria Formation, are widespread throughout southeastern Idaho, not unique to the Study Area, and not economically or scientifically important. The economics of the Meade Peak Member would not be impacted by the powerline because the unit could still be mined.

Paleontological Resources

Effects to paleontological resources could occur from the disturbance of the ore and overburden removal during mining, along with road construction and other miscellaneous disturbance

activities. Invertebrate fossils in the geologic units that would be disturbed are not likely to be unique and the type of fossils are not restricted only to the Dairy Syncline Mine area. They are likely to be found throughout the outcrop area of these formations in Southeastern Idaho. On the other hand, fossils could be unearthed that would not otherwise be found, potentially adding to paleontological knowledge. Any vertebrate fossils encountered would be managed as described in **Section 2.4.1**. This is expected to present a negligible impact.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect geology. Indirectly, the sale would trade one type of geology for another type because the disposal parcels and the donation parcel have dissimilar geology, with the former covered by older rock units and the latter covered by younger rock units. Portions of the northern disposal parcel abut an existing phosphate lease. While there are sporadic outcrops of Phosphoria Formation on the northern parcel, Simplot has drilled the property and there is no economically recoverable phosphate on the parcel that would be affected (BLM 2015).

USFS Land Exchange

The land exchange would not directly affect geology. Indirectly, the exchange would trade one type of geology for another because the selected parcel and the offered parcel have dissimilar geology. The land exchange would create 121 acres of split estate in the northwest corner of the selected lands. The land exchange would give up some land that overlies geology with phosphate mineral potential within a KPLA (though Simplot has agreed that the federal government would reserve the associated minerals [USFS 2009b]) in exchange for the offered parcel, which does not have any potential for phosphate. The presence of the tailings facility on the selected parcel could complicate any future phosphate leasing although the mineral resources in this KPLA would technically still be available.

4.1.1.2 Alternative 1 – South Trail Canyon Access Route

Alternative 1 impacts to geology, minerals, and paleontology would be the same as those described for the Proposed Action.

4.1.1.3 Alternative 2 – No BLM Land Sale

Alternative 2 impacts to geology, minerals, and paleontology would be essentially the same as those described for the Proposed Action, with the exception that the indirect effects that were associated with the sale of land with certain geological characteristics and the donation of land with dissimilar characteristics would not occur. The leased phosphate resource would still be fully recovered.

4.1.1.4 Alternative 3 – Reduced BLM Land Sale

Alternative 3 impacts to geology, minerals, and paleontology would be essentially the same as those described for the Proposed Action, with the exception that the indirect effects that were associated with the sale of land with certain geological characteristics and the donation of land with dissimilar characteristics would be lesser in extent. The leased phosphate resource would still be fully recovered.

4.1.1.5 Alternative 4 – No USFS Land Exchange

Alternative 4 impacts to geology, minerals, and paleontology would be less than those described for the Proposed Action, under the assumptions for the alternative. Due to the smaller tailings pond capacity, less overburden and ore would be excavated, but the same ancillary facilities would be needed and used. Under Alternative 4, the capacity of the tailings pond would be unable to handle all of the ore mined to be processed under the Proposed Action. This would shorten the life of the Project by one-third, from about 30 years to about 20 years, because there would not be enough tailings pond capacity or it is not clear where the additional tailings would be placed.

4.1.1.6 Alternative 5 – Reduced USFS Land Exchange

Alternative 5 impacts to geology, minerals, and paleontology would be essentially the same as those described for the Proposed Action, except that 121 acres of surface over the KPLA would not be transferred to Simplot so no split estate would be created. The leased phosphate resource would still be fully recovered. Further, although compared to the Proposed Action, the size of alternative selected parcel would be smaller, the actual tailings pond facility size would be the same.

4.1.1.7 Alternative 6 – Selective Handling Alternative

Alternative 6 impacts to geology, minerals, and paleontology would be the same as those described for the Proposed Action. The recovery of the leased ore resources would be the same as the Proposed Action.

4.1.1.8 No Action Alternative

Under No Action, the overburden and phosphate ore would remain in the ground and undisturbed until such time as another permitting action approved its removal. Mineralogical value of the phosphate would still remain if it were left in-place, although phosphate demand would have to be met from some other area. Further, all the phosphate resource in these two leases would not be utilized, which would be a major impact to the resource. In the future, another MRP could be submitted to mine these leases and receive approval, which means that the duration of this major impact cannot be known.

There would be no effects on geologic resources, formations, or paleontology in the areas of the ancillary facilities under No Action because they would not be constructed.

4.1.2 Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action and all Action Alternatives, removal of phosphate ore from the Dairy Syncline Mine would represent an irreversible and irretrievable commitment of resources. Removal, combination, and alteration of separate and intact geologic rock types as overburden would be irreversible.

Loss of any paleontological resources that would occur under the Proposed Action and all Action Alternatives would be irreversible and irretrievable. Paleontological resources discovered, documented, salvaged, and curated by the Agencies during operations would not be lost.

4.1.3 Unavoidable Residual Adverse Effects

Locally, geologic and mineral resources would be unavoidably impacted. Ore would be depleted by mining, and to a lesser extent, by the excavation and relocation of geologic material for the construction of support facilities under the Proposed Action and all Action Alternatives. Residual adverse effects to the availability of phosphate ore and other mineral and geological resources would be negligible in a regional context.

Excavation and curation of any significant fossils encountered during construction or operation under the Proposed Action and all Action Alternatives would decrease the potential for adverse impacts to scientifically significant paleontological resources but would not guarantee that all adverse impacts would be avoided.

4.1.4 Relationship of Short-term Uses and Long-term Productivity

The local short-term use of the phosphate ore, presently determined to be economically recoverable, mined from the Dairy Syncline Mine, would be short-term use and would result in ongoing employment and other short-term economic benefits to the local and regional economies affected the Project and the Don Plant in Pocatello. It would also provide fertilizer for the agricultural areas supplied by the Don Plant. It would also reduce the long-term productivity of the resource as it would no longer be available.

4.1.5 Mitigation Measures

In the event vertebrate fossils are exposed during mining activities, Simplot would halt operation in the vicinity of the discovery and immediately notify the shift supervisor. If the discovery is not in a location where it can reasonably be preserved, Simplot would attempt to record the geographic and stratigraphic locations and take photos of the discovery. If possible, the fossil should be moved to a location where it can be preserved until an agency representative can inspect it. Simplot shall provide timely notification and copies of data collected to the BLM and USFS.

4.2 Air Resources

Issue: Would the Project emissions cause effects to air quality due to emissions from mining and from increased traffic on haul roads and off-site access roads?

Indicators:

- Estimated emissions from the Proposed Action and Action Alternatives.
- Increase in emissions of CO_2, N_2O, and CH_4 from the Project Action and Action Alternatives.
- Estimated contributions to GHGs from emissions from the Proposed Action and Action Alternatives.
- Changes in global climate due to operations and reclamation.

4.2.1 Direct and Indirect Impacts

4.2.1.1 Proposed Action

The Proposed Action would result in impacts to air quality because of construction activities, and mining and milling operational activities. Impacts to air quality would include fugitive dust and gaseous emissions that would occur during blasting, drilling, excavation, material handling, ore crushing and screening, and vehicle operations.

Construction emissions would only occur during the first few years of the Project and represent the total emissions that would occur in single year if all initial construction occurred during that year. Construction emissions include emissions associated with the development of the milling facility, the initial mine road network, the tailings impoundment dam and pond, and the mine access road and office buildings.

Mining emissions would include fugitive and combustion emissions associated with the travel of all on-site vehicles, fugitive and combustion emissions from removing and transporting topsoil, overburden and ore removal and transport, fugitive emissions from direct surface disturbance, blasting emissions, and fugitive and combustion emissions from travel of employees to the Project. The emissions estimates utilized design maximum and reasonably foreseeable assumptions for all emissions calculation inputs. The disturbed areas could potentially also generate fugitive dust emissions from wind erosion, but reclamation activities include backfilling, covering, and revegetation of the disturbed areas. Vegetation on the surface of the disturbed areas would reduce the potential of fugitive dust emissions resulting from wind erosion while also minimizing irreversible air quality conditions.

The milling process at the Project is proposed to occur in a primarily wet state in an enclosed mill, which would reduce emissions. Power for the milling operation is proposed to be provided by electrical line power. Milling emissions were developed for all proposed on-site milling activities. Additionally, the milling emissions calculations accounted for all activities that would occur downstream of the milling process including the emissions associated with the tailing pond operations. Finally, the milling operations would include emissions associated with all proposed emergency electrical generation from on-site generators. During the period of tailing impoundment development, emissions were developed for vegetated and un-vegetated impoundment dam surfaces. The emissions presented assume no vegetation controls.

Total estimated construction, mining and milling related emissions are presented in **Table 4.2-1**. These emission levels would not be high enough to trigger the Federal Land Managers' Guidance (FLAG) thresholds.

Table 4.2-1 Dairy Syncline Proposed Construction, Mining, and Milling Related Emissions

SOURCE	PM_{10}	$PM_{2.5}$	NO_X	VOC	CO	SO_2	HAP
Construction Emissions (tons per year)							
Mining Construction Emissions	23	2	NA	NA	NA	NA	NA
Milling Construction Emissions	93	9.3	NA	NA	NA	NA	NA
Mining Emissions (tons per year)							
On-site Emissions (All Sources)	531	72	445	54	589	0.27	NA
Off-site Employee Travel	5	0	9	11	155	0	NA
Milling Emissions (tons per year)							
On-site Emissions (All Sources)	4	0.7	3.1	3.26	20	0.04	0.03

Source: JBR 2012b

Notes: N/A = Not Applicable; PM_{10} and $PM_{2.5}$ = particulate matter less than or equal in diameter to ten 10 microns and 2.5 microns, respectively; NO_x = nitrogen oxides; VOC = volatile organic compounds; CO = carbon monoxide; SO_2 = sulfur dioxide; HAP = hazardous air pollutants

Metal and other potential pollutants (i.e., selenium) would make up a small percentage of the dust generated from mining operations. A review was completed in 2006 to determine what the effects would be to the environment and potential human health due to the addition of the contaminants (JBR 2006). Calculations were made using local selenium and selected metal concentrations in ore and overburden. It was determined that due to low concentrations, the addition of selenium to surface runoff, the soil profile, and vegetation would be negligible to minor for Smoky Canyon Mine's Panel G and even less for Panel F. Given local selenium and mercury concentrations, resultant dust was determined to be 3.5% of the 0.2 mg/m^3 health standard for selenium and 0.017% of the allowable Association Advancing Occupational and Environmental Health threshold limit value (ACGIH TLV) for mercury (0.025 mg/m^3). These effects were considered to be insignificant. Due to the similarity of the Proposed Action mining operations to the Panel F and G mining operations, it is assumed that the Proposed Action would have similar insignificant effects.

Overall, the impacts to air quality are predicted to be moderate at site-specific levels, but minor beyond the main Project Area (i.e. public access) based upon the intensity thresholds presented at the beginning of this chapter.

Indirect effects to air quality resulting from the Project would also be associated with the continued and prolonged operation of the Don Plant. The Don Plant is located more than 70 miles from the Project and in a different airshed. Because the manufacturing process and the end-product would be the same as under current operations at the Don Plant, the character and rate of emissions would not change. Air emissions from the Don Plant are currently regulated by an IDEQ Title I operating permit. This permit sets monitoring, emission limits, and reporting requirements for all air emission sources at the Don Plant. Current data indicates that ambient SO_2 and $PM_{2.5}$ standards are met near the Don Plant. Fluoride emissions from the Don Plant are also regulated. Simplot has signed a Voluntary Consent Order with IDEQ to reduce fluoride emissions from the Don Plant and

resultant changes are underway. Providing ore to the Don Plant from Dairy Syncline would extend the Plant's operations further into the future, but emission types or levels would not increase.

Climate Change Effects

Mining and milling operations at the Project involve direct and indirect emissions of GHG. Mining GHG emission estimates were developed for all on-site and off-site emissions associated with the removal or transport of earth material. This included the combustion emissions from gasoline and diesel fuel usage associated with the travel of all on-site vehicles, the combustion emissions of equipment from topsoil, overburden, and ore removal and transport, blasting emissions, and combustion emissions of vehicles from travel of employees to the Project. Milling GHG emission estimates included emissions from combustion of diesel fuel by equipment from ore transport at the mill and emergency electrical power generation for the Project. Total direct GHG emissions from the Project are shown in **Table 4.2-2**.

Table 4.2-2 Dairy Syncline Proposed Project GHG Emissions

SOURCE	CO_2E (TONS PER YEAR)
Mining Emissions (All Sources)	
Diesel	41,150
Gasoline	1,753
Milling Emissions (All Sources)	
Diesel	3,668

Source: JBR 2012b

CO_2e – carbon dioxide equivalent

The GHG emissions from the Proposed Action directly associated with mining and milling operations, fuel consumption would be approximately 46,500 tons, which is equivalent to 42,000 metric tons of CO_2e annually.

According to the IDEQ GHG Inventory, the total CO_2 emissions from all combustion sources and activities in the State of Idaho accounted for approximately 37 million metric tons (MMt) of CO_2e emissions in 2005, which was approximately 0.8 percent of the U.S gross GHG emissions. Mining in Idaho represents less than one percent of total CO_2 emissions from industrial sources (IDEQ 2008). It is projected that GHG emissions would increase from 37 MMt CO_2e to 44 MMt CO_2e by 2020 reaching 56 percent above 1990 levels. Although several uncertainties exist, the rise in GHG emissions is attributed to forecasted increases in the transportation sector followed by emissions associated with the agriculture sector and residential, commercial and industrial fossil fuel use in the State of Idaho (IDEQ 2008).

GHG emissions from the Project have a potential to introduce an additional 0.042 MMt CO_2e within the projected time frame. The amount of GHG emissions is considered negligible to minor because they have been estimated to be less than one-tenth of one percent of the projected 2020 statewide GHG emissions.

The national annual emissions of GHG are approximately 6,700 MMt (USEPA 2013b). In comparison to the currently estimated state, national, and global GHG emissions, the GHG emissions from the Project would be less than one-thousandth of one percent and considered negligible to minor. Existing climate prediction models for the prediction of climate change are global in nature; therefore, they are not at the appropriate scale to estimate potential impacts of climate change on the Proposed Action and the associated environment.

In a recent Supreme Court decision, Utility Air Regulatory Group v. EPA, No. 12-1146 (June 23, 2014), the majority opinion held that the CAA does not compel a GHG-inclusive interpretation of the term "any air pollutant" that automatically triggers PSD and Title V permitting requirements. The Court held that the PSD and Title V programs must be read so that their applicability is triggered only by potential to emit conventional pollutants (i.e., SO_2, PM, NO_2, CO, O_3, and Pb) at levels above the 100- to 250-ton-per-year thresholds specified in the CAA. No conventional pollutants associated with the Proposed Action were found to exceed the statutory CAA thresholds for potential to emit (100 to 250 tons per year) as most of the emissions are attributable to haul truck travel. Because those emissions are fugitive in nature and the Proposed Action is not considered a PSD source category, fugitives are not counted toward major source applicability.

Indirect GHG emissions due to the Proposed Action would result from further processing of the phosphate ore at Simplot's existing fertilizer manufacturing plant (i.e., Don Plant). The phosphate ore from the Project would be pumped through a buried pipeline to the Don Plant. This reduces GHG emissions, as there is no need to transport the ore via truck or rail. GHG emissions from the Don Plant would not be affected by the Proposed Action. Alternate sources of phosphate ore needed for continuous operation of the Don Plant would be located, as necessary.

The assessment of GHG emissions and their relationship to climate change is in its formative phase. Consequently, it is not yet possible to know with confidence the net impact to climate from the Proposed Action. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts with a strong degree of certainty. Therefore, climate change analysis for the purpose of this document is limited to accounting and disclosing of factors that contribute to climate change. Recent scientific evidence suggests there is a direct correlation between global warming and emissions of GHGs. Although many of these gases occur naturally in the atmosphere, man-made sources substantially have increased the emissions of GHGs over the past several decades. Of the man-made GHGs, the greatest contribution currently comes from CO_2 emissions.

Although it is impossible to connect a single emitter of GHGs to the degree of impact that emitter may have on global climate change, the USEPA and the U.S. Global Change Research Program (USGCRP) have predicted that the northwest region of the United States, where the Proposed Action would be located, will experience the following general trends related to climate change (Mote et al. 2014):

- Average annual temperatures will increase, with greater increases expected in the summer than in the winter.

- Precipitation will decrease, including decreases in the amount of total snowfall as well as decreases in the portion of precipitation falling as snow. This will cause a decrease in the moisture content of the soil.
- In basins with significant snow accumulation, warmer temperatures will result in earlier snowmelt, causing an increase in winter streamflow and a decrease in summer streamflow. This will increase flood risks around rivers while also making it difficult in summer to meet the water demands of human and natural sources. Competition for water may increase, such that more tradeoffs may be necessary for conflicting uses of summer water. Additionally, it may be necessary to decrease hydropower production to maintain stream flowrates.
- Summer streamflow reductions will stress freshwater fish species, including salmon, steelhead, and trout. Increases in temperatures will increase disease and mortality in salmon species.
- The number of days with precipitation greater than one inch will increase leading to greater flood risks and stormwater management challenges.
- Sea levels will rise causing:
    - A decrease in the quality and extent of coastal wetlands, tidal flats, and beaches;
    - A negative effect on shorebirds and forage fish; and
    - A greater risk of storms, flooding, and erosion on coastal infrastructure and communities.
- Coastal water temperatures will increase and affect marine species.
- There will be increases in wildfire risk and insect and tree disease outbreaks due to warmer and drier conditions, changes in precipitation, and reduced soil moisture.
- Higher temperatures will increase the chance of heat stress to field crops and tree fruit.
- Reductions in summer streamflows in snow-fed rivers could cause irrigation water shortages.
- Higher temperatures have the ability to change plant diseases, pests, and weeds (although further research is needed to project the specific changes).

The effects of the Proposed Action on GHG emissions and climate change would continue after the mine is closed as a result of the long (estimated 100 years) residence time for certain GHGs in the atmosphere. The effects of the Proposed Action on climate change would be long-term and negligible.

Because current climate models for the northwestern United States indicate that warmer winter temperatures will shift the average timing of snowmelt and surface water runoff to earlier in the year, precipitation causing runoff and infiltration into the proposed store and release cover system is expected to occur earlier in the year. Climate models predict an increase in storms with precipitation greater than 1 inch. This change is predicted to increase the average volume of runoff and infiltration generated by individual storms and may increase the total volume of runoff and infiltration during an average year. These trends are projected starting several decades in the future and extending to the end of the century (i.e., southeastern Idaho is predicted to have a 5 percent increase in precipitation for the years 2075 to 2099). The duration of the Proposed Action would

be up to at least 30 years. Projected changes in climate over this period would not be expected to have appreciable impacts on the operation of the mine or initial reclamation activities.

An increase in precipitation may increase the percolation rate of meteoric water into the seleniferous overburden beneath the cover system. An increase in temperature could also lead to an increase in percolation because more precipitation could fall as rain instead of snow, although rain would be more prone to runoff than snow. However, increased infiltration would also increase groundwater flux, resulting in greater dilution of the soluble selenium compounds mobilized and transported to surrounding areas. For a decrease in precipitation under assumed global climate change, the overall rate of precipitation infiltrating the cover may be lower, but it may be offset by the increased percentage of storms with precipitation of more than 1 inch. Long-term changes in the frequency and timing of precipitation and snowmelt could affect how the Proposed Action cover system performs and could cause adjustments in the plant community. These long-term changes are expected to be moderate.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly or indirectly affect air quality. The existing air quality and the meteorological and climate characteristics of the disposal parcels and the donation parcel are likely similar. Further, both of these parcels are in areas that are designated as either attainment or unclassifiable for all NAAQS and both are subject to the same air quality standards. There would be no disturbance on the donation parcel. As such, there would be little difference between the two and no known impacts to air quality from the land sale.

USFS Land Exchange

The land exchange would not directly or indirectly affect air quality. The existing air quality and the meteorological and climate characteristics of the selected parcel and the offered parcel are likely similar, although there may be some small impacts to air quality at the offered parcel from mining activities at the existing and adjacent Smoky Canyon Mine. Further, both of these parcels are in areas that are designated as either attainment or unclassifiable for all NAAQS and both are subject to the same air quality standards. There would be no disturbance on the offered parcel. As such, there would be little difference between the two and because air quality is being controlled at the Smoky Canyon Mine (near the selected parcel) and would be controlled at the Dairy Syncline Project, thus, there would be no impacts to air quality from the exchange.

4.2.1.2 Alternative 1 – South Trail Canyon Access Route

Potential impacts to air resources under the Alternative 1 would be similar to the Proposed Action because the impacts from the construction needed for this alternative would be similar to the Georgetown Access under the Proposed Action.

4.2.1.3 Alternative 2 – No BLM Land Sale

Potential impacts to air resources under Alternative 2 would be similar to the Proposed Action because even though the BLM land sale would not occur, all of the Project components under the Proposed Action would still be constructed and needed.

4.2.1.4 Alternative 3 – Reduced BLM Land Sale

Potential impacts to air resources under the Alternative 3 would be similar to the Proposed Action.

4.2.1.5 Alternative 4 – No USFS Land Exchange

Potential impacts to air resources under Alternative 4 would be less than the Proposed Action because the tailings facility would be smaller, reducing the amount of new surface disturbance and also limiting the amount of ore that can be mined and processed.

4.2.1.6 Alternative 5 – Reduced USFS Land Exchange

Potential impacts to air resources under Alternative 5 would be similar to the Proposed Action because even though the selected parcel would be smaller in size, all of the Project components under the Proposed Action (including the tailings facility) would still be constructed and needed.

4.2.1.7 Alternative 6 – Selective Handling Alternative

Potential impacts to air resources under the Alternative 6 would be similar to the Proposed Action.

4.2.1.8 No Action Alternative

As a result of the No Action Alternative, air emissions from the Proposed Action would not occur, and impacts to the existing air quality would remain at ambient levels.

4.2.2 Irreversible and Irretrievable Commitment of Resources

Impacts to air quality are expected to remain in compliance with permit limits, but there would be some degradation of air quality that would last for the life of the mine; once operations cease then air quality would not be impacted, so there are no implications leading to irreversible and irretrievable commitment of the air quality.

Due to low GHG emissions, the Proposed Action or any action alternative is expected to have negligible impacts to irreversible and irretrievable commitments on climate change.

4.2.3 Unavoidable Residual Adverse Effects

For the Proposed Action and Action Alternatives, unavoidable residual adverse impacts to air quality would only occur if revegetation efforts were not successful. Unsuccessful revegetation would result in a greater potential for emissions of particulate matter due to wind erosion. Unavoidable residual adverse impacts on climate change are not expected to occur because climate change impacts would cease when the mining activity is complete.

4.2.4 Relationship of Short-term Uses and Long-term Productivity

Air emissions and the generation of GHGs during Project operations would result in short-term impacts and uses of the environment, but these uses would not affect the long-term productivity, since when mining ceases, air quality would return to natural conditions. Long-term productivity of the land in the Study Area would not be affected by the mining air emissions and generation of GHGs. Following the completion of the mining activities and subsequent reclamation activities, air quality would return to the current ambient levels.

4.2.5 Mitigation Measures

Because impacts to air quality are predicted to be moderate at site-specific levels, but minor beyond the main Project Area, no mitigation measures for air quality are needed to further reduce/minimize impacts besides those EPMs and BPMs listed in **Section 2.4** that would be implemented as part of the Project.

4.3 Water Resources

Issue: Would the Proposed Action cause changes to the quantity and quality of surface water in the Project Area?

Indicators:

- Reductions in flow or increased concentrations of sediment and metal loading in downgradient streams, seeps, or springs from pumping groundwater.
- Changes in water chemistry.
- Impacts to 303d-listed streams.

Issue: Would the Proposed Action result in changes to the water table and quality of groundwater in Project Area?

Indicators:

- Reduction in available groundwater to supply existing baseline flow of streams, springs, and wells from Project-related pumping.
- Changes in groundwater chemistry.

4.3.1 Surface Water Resources, Direct and Indirect Impacts

4.3.1.1 Proposed Action

The Proposed Action would potentially directly impact HUC 6 watersheds in the Study Area (**Table 4.3-1**). The Proposed Action main Project Area relative to HUC watersheds is shown on **Figure 4.3.1**.

Watershed Area Disturbance

As discussed in **Section 3.3.1.2**, RFP guidelines for the CNF (USFS 2003a) recommend that less than 30 percent of the NFS components of HUC 6 watershed areas should be hydrologically disturbed at any given time. Current disturbance (including wildfire, roads [mining exploration and other], trails, and timber harvest) is less than one percent in each of the Study Area watersheds, as also reported in **Section 3.3.1.2**. Areas that would be disturbed under the Proposed Action include the open pits, stockpiles, external ODAs, roads, staging areas, slurry line, tailings pond, mill pad, and other Project facilities. These disturbances and prescribed percentage within HUC 6 watersheds pertain only to areas located on USFS land. Existing and proposed hydrologic disturbances in the three HUC 6 sub-watersheds that would primarily be affected by the Proposed Action are summarized in **Table 4.3-1**. The other three HUC 6 sub-watersheds (Johnson Creek, Dry Valley Creek, and Lower Georgetown Creek) would each have a negligible (less than 1 acre)

amount of new disturbance associate with the powerline, pipeline, or road improvements, thus the addition would not add beyond a negligible amount to these largely undisturbed watersheds.

Table 4.3-1 Existing and Proposed Hydrologic Disturbances on NFS Lands under the Proposed Action

SUB-WATERSHED	EXISTING SUB-WATERSHED DISTURBANCE (% AREA)	NEW DISTURBANCES IN HUC 6 WATERSHEDS UNDER THE PROPOSED ACTION DURING MINING					TOTAL NEW DISTURBANCE (% AREA)
		PIT (% AREA)	EXTERNAL RUN OF MINE (ROM) DISPOSAL AREAS (% AREA)	TAILINGS POND (% AREA)	ROADS (% AREA)	OTHER FACILITIES (% AREA)	
Headwaters Slug Creek	0.68	7.6	1.9	0	0.36	1.1	11
Upper Slug Creek	0.62	3.2	0.2	0	0.036	0.67	4.1
Goodheart Creek-Middle Slug Creek	0.54	1.0	0.1	1.7	0.019	0.63	3.4

Notes:

Other includes mill, water/sediment retention basins, pipelines, powerline corridor, topsoil, and ore stockpiles.

Roads includes haul roads, access roads, and office/security complex. Complex located in Headwaters Slug Creek.

Some new disturbances associated with mining would overlap with existing disturbances such as exploration roads; this overlap was not accounted for in the table data, providing a measure of conservatism.

During mining, the Proposed Action would increase hydrologic disturbances on NFS lands in the 3 primarily impacted sub-watersheds by 3.4 to 11 percent. The new disturbance would meet the USFS guideline of less than 30 percent in all 3 impacted sub-watersheds.

Impacts to a hydrologically disturbed condition resulting from the Proposed Action would be short-term, minor, and local, lasting until vegetation fully recovered and trees reached sapling/pole size class.

Impacts to Runoff Areas

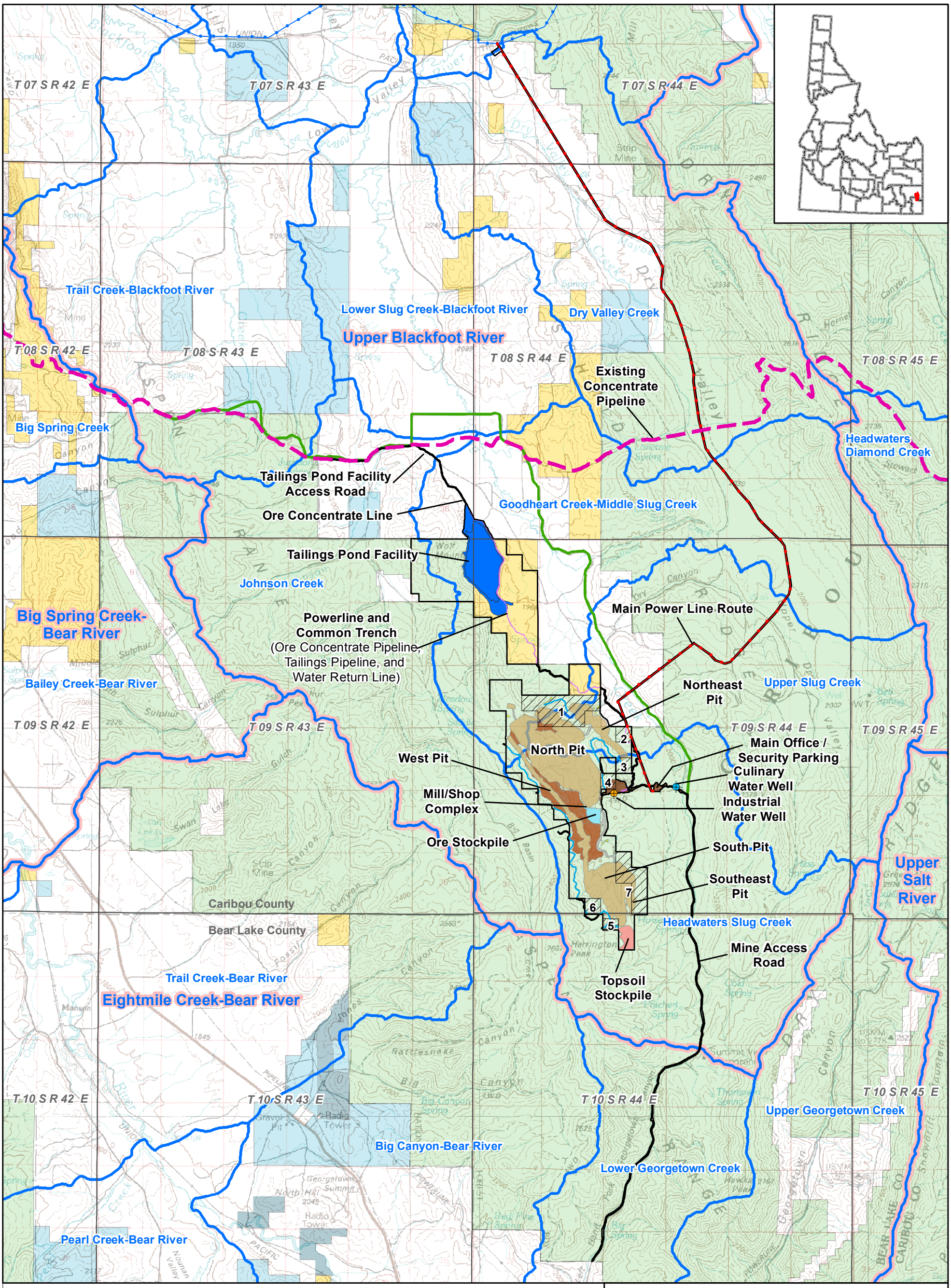
Runoff area impacts would occur during mining operations and post-reclamation. Mining operation impacts would be mainly related to the interception or redirection of surface water runoff by mine features. Post-reclamation impacts would be mainly related to changes in the area of sixth level subwatersheds and individual basins within the respective watersheds.

During mining operations precipitation falling on disturbed areas associated with mine facilities would infiltrate or be retained in sediment catchment and runoff retention basins. Water in these basins would evaporate or infiltrate or be transported to other available approved stormwater storage and infiltration areas. No discharge of runoff water would occur unless the design storm event is exceeded. This means that runoff from the disturbed areas, as well as undisturbed drainages captured by the pits, diversion ditches, and sediment retention pond, would be retained during mining and would not contribute to runoff in the surrounding drainages as would normally occur under the baseline condition. Runoff from the Wilde Canyon access road would be directed to stormwater ponds, controlled via road ditches, and/or released in a manner to prevent erosion. Other runoff from drainage areas upslope of the pit would be rerouted in ditches and/or encouraged to infiltrate, changing peak flows during mining until reclamation is completed. The percent reduction in the contributing watershed is used in the following analysis as an analogue for the percent reduction in streamflow that could occur from the Proposed Action. This is a useful simplification that does not consider all factors that contribute to the volume of runoff generated by a drainage area. The analysis is used for the impacts analysis but should not be interpreted to represent quantitative changes in flows. Estimated reductions in contributing watershed areas related to the Proposed Action for the three sub-watersheds where runoff would be retained are presented in **Table 4.3-2**.

Table 4.3-2 Reduction in Contributing Watershed Areas under the Proposed Action

SUB-WATERSHED WHERE DISTURBANCE AND RUNOFF CAPTURE OCCURS	TOTAL WATERSHED AREA (ACRES)	WATERSHED AREA CAPTURED AND NO LONGER CONTRIBUTING RUNOFF (ACRES)	PERCENT OF WATERSHED AREA CAPTURED AND NO LONGER CONTRIBUTING RUNOFF (ACRES)
Headwaters Slug Creek	11,540	2,250	19
Upper Slug Creek	11,750	580	5
Goodheart Creek-Middle Slug Creek	14,580	2,370	16

A total of approximately 5,200 acres from these 3 subwatersheds would not contribute runoff to the Slug Creek watershed during operations. The Slug Creek watershed drains approximately 62,000 acres, so the removal of 5,200 acres represents a reduction of approximately 8 percent. However, as shown in **Table 4.3-2**, the acreage reduction in some HUC subwatersheds would be greater. Again, reduction in contributing runoff area is not directly equivalent to reduction in stream flow for any particular time scale. Further, as previously discussed, the total acreage that would be removed at any given time would be lower because the pits would be backfilled and reclaimed as mining advances.



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area
- Existing Industrial Water Well
- Existing Culinary Water Well
- Proposed Powerline
- Approved Powerline
- Proposed Design Drainage Channel
- Existing Concentrate Pipeline
- Proposed Tailings Pond Facility
- Proposed Concentrate Pipeline Corridor
- Proposed Access Road
- Proposed Overburden Disposal Area
- Proposed Pit Footprint
- Proposed Mill/Ore Stockpile
- Proposed Topsoil Stockpile
- Proposed Sediment Detention Basin
- Proposed Haul Road
- Fifth Level Watershed
- Sixth Level Subwatershed

Land Status

- Bureau of Land Management
- Private
- U.S. Forest Service
- State
- State Fish and Game

0 1 2 Miles

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Project Area and Watershed Boundaries

Figure 4.3.1

The contributing runoff area of 3 existing sixth level subwatersheds would change post-reclamation due to topographic alterations that would direct runoff in a different direction than it was previously directed. The total Slug Creek watershed area and the fifth level watershed area that contains Slug Creek would not change post-reclamation. The net changes would primarily be caused by the slope and orientation of the final backfill and ODA cover surface. **Table 4.3-3** lists the net change in area of each sixth level subwatershed.

Table 4.3-3 Subwatershed Net Change in Watershed Area after Reclamation

SUBWATERSHED	SUBWATERSHED AREA (ACRES)	NET CHANGE IN AREA (ACRES)	PERCENT CHANGE IN SUBWATERSHED AREA
Headwaters Slug Creek	11,545	-374.3	-3.2
Upper Slug Creek	11,750	312.3	2.7
Goodheart Creek-Middle Slug Creek	14,578	62.0	0.42

The Headwaters Slug Creek sub-watershed would lose 374.3 acres, which would become part of the Upper Slug Creek subwatershed (312.3 acres) and part of the Goodheart Creek-Middle Slug Creek subwatershed (62 acres). The loss is entirely confined to the Green Basin drainage. The drainage outlet is at the head of Wilde Canyon. Upper Slug Creek would lose 66.6 acres to Goodheart Creek-Middle Slug Creek subwatershed, gain 369.5 acres from Headwaters Slug Creek, and gain 9.4 acres from Goodheart Creek-Middle Slug Creek through the newly added acreage from Upper Slug Creek. Goodheart Creek-Middle Slug Creek would gain 66.6 acres from Upper Slug Creek, gain 4.8 acres from Headwaters Slug Creek, and lose 9.4 acres to Upper Slug Creek through the portion of Headwaters Slug Creek lost to Upper Slug Creek. Post-reclamation runoff area impacts to the three impacted subwatersheds would be local, minor, and long-term due to the low percentage changes in these subwatershed areas.

Impacts to Peak Flows

Roads would affect the natural surface and subsurface drainage pattern of a watershed or individual hillslope. Hillslope geomorphology and hydrologic factors are important considerations in the location, design, and construction of a road. Slope morphology impacts road drainage and ultimately road stability. Important factors are slope shape (uniform, convex, concave), slope gradient, slope length, stream drainage characteristics (e.g., braided, dendritic), depth to bedrock, bedrock characteristics (e.g., fractured, hardness, bedding), and soil texture and permeability.

Mine facilities have the potential to affect peak flows through four primary mechanisms:

1. Runoff area decrease;
2. Drainage density increase;
3. Redirection of stream flow;
4. Reduction of spring flow.

First, peak flows would be reduced by a decrease in runoff areas caused by the interception of runoff by pits and the tailings pond. Runoff and peak flow volumes would decrease with decreased runoff area. The runoff area captured by pits at any given time would be a fraction of the total pit areas because the pits would be backfilled and reclaimed as mining advances. The runoff area captured by the tailings pond would remain constant for the operational life of the pond.

Second, the road drainage network of in-slope ditches and cross-drains could alter peak flows and accelerate runoff by increasing drainage density, extending the stream network and causing small-scale trans-basin diversions (Furniss et al. 2000). Stormwater management features and the controls, developed in the SWPPP (**Section 2.4.6.1**), would minimize this potential to the extent possible.

Third, if a stream crossing or culvert cannot pass all stream flow, either because it is blocked or the design event is exceeded, the flow could overtop the crossing or culvert, flow down the road, and be redirected to a tributary channel other than the intended one, which could result in locally higher peak flows, head cutting, and erosion (Furniss et al. 1997). Simplot's SWPPP, as discussed in **Section 2.4.6.1** would address this concern by designing all ditches, culverts, and crossings in a manner that controls runoff and minimizes erosion and sedimentation.

Fourth, flow at certain springs could be reduced when saturated bedrock in spring recharge areas is mined out or covered by a capped ODA. Springs on or adjoining the mine lease have the potential to contribute to peak flow of surface water drainage features during the spring runoff period. Therefore, a reduction of spring flow could lead to a reduction of peak flow.

For the reasons described above for the four primary mechanisms, impacts to peak flow from reduced runoff areas would be short-term, minor, and local. Impacts to ephemeral and intermittent drainage peak flows from roads and road drainage networks would be short-term, minor, and site-specific during the operational mine life. Final reclamation would include removal of some road fill, re-contouring of the remaining road bed, and reestablishing drainages (Simplot 2008). The potential peak flow alterations resulting from these remaining features under the Proposed Action would be minor, site-specific, and long-term.

Impacts to spring peak flow from flow reduction would vary by spring location. Spring DSW-05 and much of the drainage it flows into would be covered by a ROM external disposal area. The lower portion of the drainage would be removed by mining. As a result, the impacts to the drainage peak flow would be long-term, moderate, and site-specific.

DSW-27 is a spring complex in Green Basin at the mouth of Wilde Canyon. The spring complex discharges shallow groundwater in the Rex Chert and alluvium within Green Basin. Spring discharge flows down Wilde Canyon. Most of the bedrock and alluvium storing the shallow groundwater would be mined out and the spring complex would likely go dry or have greatly reduced discharge. Therefore, Wilde Canyon spring season peak flows would likely be reduced. Impacts to Wilde Canyon peak flows would be long-term, moderate, and site-specific.

DSW-01 is a spring located in a drainage a few hundred feet east of the mine lease boundary, near the Northeast Pit. The spring is the source of a perennial stream that flows into Slug Creek. The spring discharges perched groundwater in the Dinwoody and Rex Chert HU's. Much of the

bedrock storing groundwater that discharges to the spring would be mined out and the spring would likely have reduced discharge. Impacts to the spring peak flow would be long-term, moderate, and local.

DSW-53 is a spring on the northern edge of the lease area. The spring likely discharges perched groundwater in the Rex Chert and Dinwoody HU. Bedrock mining could alter groundwater flow patterns and decrease DSW-53 discharge.

Impacts to Channels

Mining under the Proposed Action would remove a number of ephemeral or intermittent drainage channels in the pit areas and intercept a number of upslope drainages above the pit areas. Portions of these drainages would be covered by external ODAs. Disruption of these drainages would change the flow dynamics of the channels and could reduce the amount of runoff reaching Slug Creek during mining operations.

The removal and covering of drainage channels and basins would result in a net change in the total area of 3 current 6th level sub-watersheds. The affected sub-watersheds and net changes are discussed in the *Impacts to Runoff Areas* section.

Post-reclamation backfill and external ODA contours may change overland flow characteristics compared to baseline conditions. The overland flow characteristic changes may alter surface water flow characteristics in undisturbed downstream portions of the drainages. The impacts from these relatively small redistributions of surface flow (i.e., changing overland flow characteristics, and in turn possibly changed downstream flow characteristics) would generally be minor, local, and long-term.

The proposed ore concentrate line would cross Johnson Creek adjacent to the existing Trail Canyon Road crossing and the existing concentrate pipeline. Its installation would be done in a manner that would not alter flow dynamics or channel morphology. It would be buried to the same depth as the existing concentrate pipeline to protect it from scour.

Further, the tailings facility would remove a small intermittent or ephemeral channel in the Slug Creek watershed that does not connect to other surface waters. IDWR regulates dams and mine tailings impoundment structures to protect life and property pursuant Idaho Code §§ 42-1709 through 42-1721, the Mine Tailings Impoundment Structures Rules (IDAPA 37.03.05), and the Safety of Dams Rules (IDAPA 37.03.06) and the tailings dam and associated pond would need to comply with these rules to ensure protection of downstream life and property.

Impacts to Stream and Spring Flows

Changes in surface runoff and groundwater flow that would result from the Proposed Action, carry the potential to impact stream flows, spring flows, and water availability for wetlands.

Slug Creek

Direct impacts to Slug Creek stream flow would be primarily related to reduced runoff reaching the creek during mining operations and the reduction in flow contribution from certain springs. As discussed previously, Slug Creek runoff areas would be temporarily reduced by a maximum of 8

percent during mining under the Proposed Action. Impacts from reduced runoff would be minor, local, and short-term.

Most of the reduced runoff area would occur in the drainage basin whose outlet is the perennial stream formed by the combined discharge of the DSW-15 spring complex, DSW-16 spring complex, Wilde Canyon drainage, and groundwater inflow north and east of the DSW-16 spring complex. For the purpose of discussion, the drainage basin is referred to as the "Wilde Canyon Road drainage."

The Slug Creek interval where direct impacts to stream flow rates by spring flow reduction are possible occurs downstream from the confluence with the Wilde Canyon Road drainage. This is the stream reach that is east of the mine pits and several springs that have some potential to be impacted, as described in the following subsection on springs. Within this interval, potential spring flow reduction or elimination could reduce flow into Slug Creek if these springs are indeed connected to Slug Creek, most likely from the Wilde Canyon Road drainage, and the perennial stream sourced by DSW-01 spring discharge. The Slug Creek flow reduction may or may not be within measurement error, however. A determination on the certainty and/or quantification of this potential impact to Slug Creek is hindered in part due to the limitations and focus of groundwater modeling and in part due to the current understanding of baseline flow conditions. Best estimates of this impact follow.

The majority of spring flow reduction into Slug Creek from the Wilde Canyon Road drainage would likely occur at spring DSW-27. Mining would likely completely eliminate DSW-27 discharge because the spring is within the pit boundary and groundwater flow would be disrupted. Based upon field observations and available flow data, DSW-27 discharge contributes flow to Slug Creek only during the spring-summer of some wetter water years when there is surface water flow from DSW-27 to the confluence with Slug Creek. At all other times DSW-27 discharge infiltrates into the downstream drainage before reaching Slug Creek. Based on these flow characteristics, the presumed elimination of DSW-27 discharge would only directly affect Slug Creek flow rates during the spring and summer of wetter years.

The magnitude of the effect during the spring and summer of wetter years can only be estimated from the baseline dataset for a single point in time. In spring of 2011, DSW-27 contributed less than one percent of the total flow at DSW-28.

DSW-01 is the second spring that would be likely to directly impact Slug Creek stream flow rates by spring flow reduction. DSW-01 discharge would likely greatly decrease during and after mining the Northeast Pit due to reduced recharge area caused by the upgradient pit excavation. Based upon available data, DSW-01 discharge is usually less than one percent of the total flow at DSW-28, regardless of season.

Therefore, the total reduction in Slug Creek flow at DSW-28 due to a presumed likely reduction or elimination in spring discharge at DSW-27 and DSW-01 would be near two percent during the spring and summer of the wettest years and less than one percent during all other times. Impacts to Slug Creek flow during those periods from reduced spring discharge would be minor, local, and long-term.

Goodheart and Johnson Creeks

Flow from Goodheart and Johnson creeks would not be affected by the Proposed Action. Goodheart Creek and Johnson Creek are both hydrologically isolated from any Proposed Action effects.

Springs

Spring discharge for certain perched springs that discharge from HUs stratigraphically isolated from, and above, the Wells HU may also be directly impacted by mining operations. Discharge from some of these springs flows directly into Slug Creek. Direct spring discharge into Slug Creek contributes a portion of the total Slug Creek discharge. Perched spring locations where discharge may potentially be directly impacted by mining operations include (**Figure 4.3.2**):

- DSW-01. Perennial surface water connection to Slug Creek;
- DSW-02. Presumed, but no observed surface water connection to Slug Creek;
- DSW-03. Presumed, but no observed surface water connection to Slug Creek;
- DSW-04. No observed surface water connection to Slug Creek;
- DSW-05. No observed surface water connection to Slug Creek;
- DSW-06. No observed surface water connection to Slug Creek;
- DSW-15. Perennial surface water connection to Slug Creek;
- DSW-16. Perennial surface water connection to Slug Creek;
- DSW-22. No observed surface water connection to Slug Creek;
- DSW-23. No observed surface water connection to Slug Creek;
- DSW-27. Intermittent (seasonal) surface water connection to Slug Creek;
- DSW-53. No observed surface water connection to Slug Creek; and
- DSW-54. Intermittent (seasonal) surface water connection to Slug Creek.

Discharge at these springs could be reduced (or eliminated) when saturated bedrock in spring recharge areas is mined out or local terrain is covered by an ODA (**Figure 4.3.3**). As noted earlier, there is inherent uncertainty associated with predicting impacts to these Study Area springs. In particular, impacts to Tier 1 springs that are close to proposed open pits rely in large part upon interpretation of subsurface geology (e.g., local faults) and less so on the groundwater modeling process which focuses more on the regional aquifer associated with the Wells Formation. In addition, it is not possible to predict whether discharge may: decrease only seasonally or year-round; decrease by a small percentage of its total flow or a larger percentage; or dry up entirely. Therefore, impacts cannot be quantified. Each of these potentially impacted springs, and the likely mechanism of impact, is discussed below.

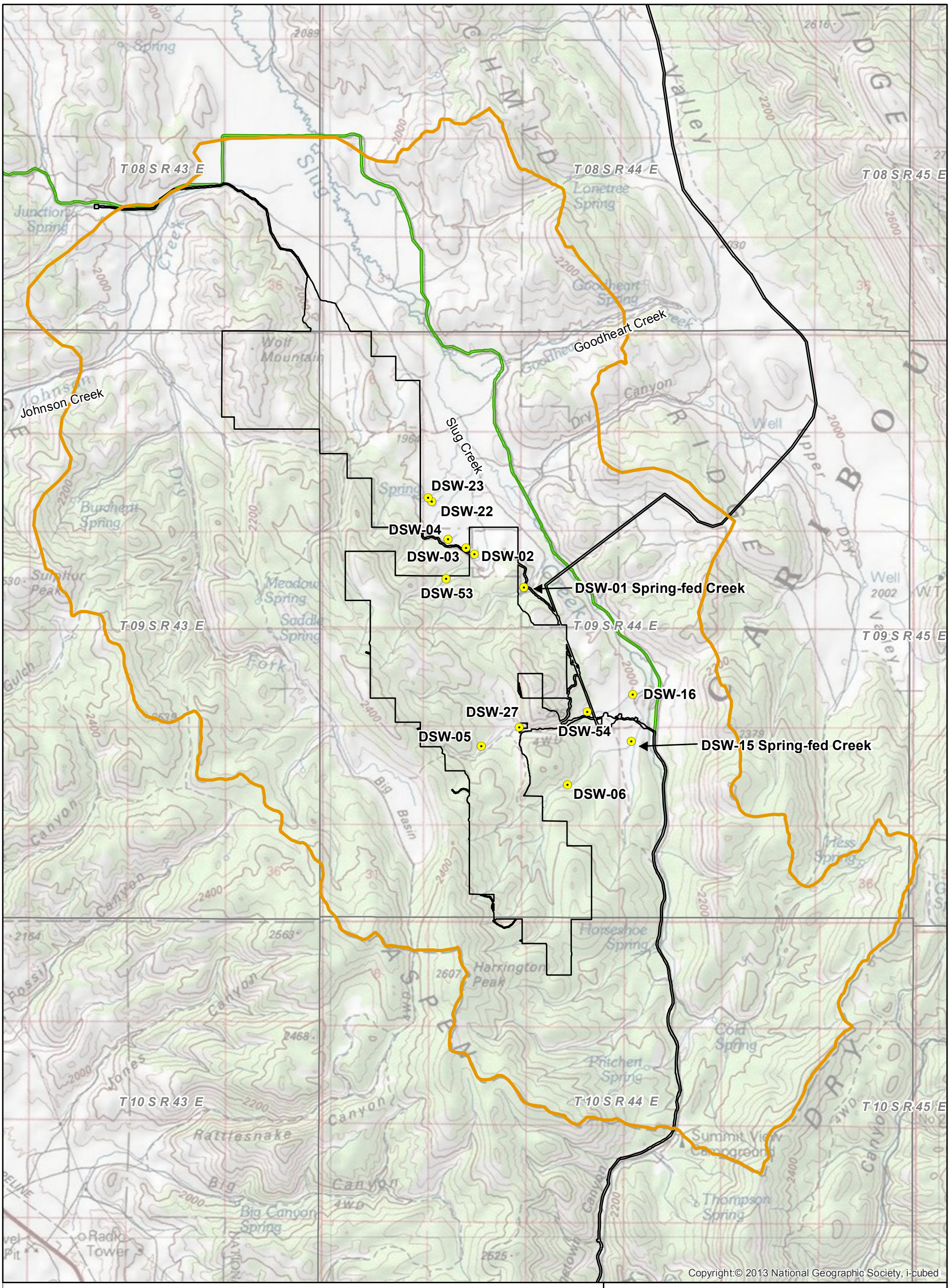
DSW-01 is a spring located in a drainage a few hundred feet east of the mine lease boundary, near the Northeast Pit. The spring discharge forms a perennial stream that flows into Slug Creek. The spring discharges perched groundwater from the Dinwoody and Rex Chert HU's. Much of the bedrock storing groundwater that discharges to the spring would be mined out and the spring's discharge during all times of the year would likely be greatly decreased. Impacts to the spring discharge would likely be long-term, moderate, and local but cannot reliably be quantified.

DSW-02, DSW-03, and DSW-04 are located north of the proposed pits on the west margin of Slug Creek Valley. The springs discharge groundwater from the Dinwoody HU. Mining could decrease perched groundwater elevations in bedrock upgradient of the springs. The lower groundwater elevations could decrease the gradient and flow rate of groundwater flowing to the springs. Most of the decreased perched groundwater elevations would occur in the Rex Chert and Meade Peak stratigraphic units. The hydraulic connection between these affected stratigraphic units and the springs is limited due to the stratigraphic position of the units relative to the springs and the presence of one or more faults between the units and the springs. Surface connection between these springs and Slug Creek is uncertain. The combined measured discharge from the 3 springs varies from 0.01 cfs (4.5 gpm) in the fall to 0.207 cfs (93 gpm) in the spring. Impacts to the spring discharges would likely be long-term, minor, and local but cannot reliably be quantified.

DSW-05 is located in a drainage on the mine lease in the proposed external ODA footprint (**Figure 4.3.3**). The spring discharges perched groundwater from the Rex Chert HU and/or drainage alluvium. The measured discharge rate is about 0.0018 cfs (0.8 gpm) in the fall and about 0.009 cfs (4 gpm) in the spring. Spring discharge flows down the drainage for about 150 feet before completely infiltrating. The spring and adjoining areas would be completely buried by overburden and a cover system. The overburden and cover would decrease meteoric recharge to bedrock or alluvium in the area. This would lower the elevation of perched groundwater in the area and spring discharge would likely cease. Development of the West Pit about 600 feet west of the spring would also reduce perched groundwater elevations and contribute to decreased spring discharge. Impacts to the spring discharge would likely be long-term, major because the spring would be buried, and site-specific but cannot reliably be quantified.

DSW-06 is located in a drainage east of the mine lease (**Figure 4.3.2**). The spring discharges perched groundwater from the Phosphoria Formation. Mining and external ODAs could decrease perched groundwater elevations in bedrock upgradient of the spring. The lower groundwater elevations could decrease the gradient and flow rate of groundwater flowing to the spring. The hydraulic connection between the upgradient areas and the spring is limited due to stratigraphic characteristics and the presence of multiple faults between the units and the spring. The measured discharge rate is zero to 1 gpm in the fall and about 0.4 to 3 gpm in the spring. Impacts to the spring discharge would likely be long-term, negligible, and local but cannot reliably be quantified.

DSW-15 is a spring complex located south of the Wilde Canyon access road. The spring complex is the source of a perennial stream that flows northward to a confluence with Slug Creek north of the road junction of Slug Creek Road and the Wilde Canyon road. The spring complex itself was not sampled or monitored during the baseline study. It discharges groundwater from alluvium in the flat to gently sloping terrain east of the mouth of Wilde Canyon and from the SLF in the same area plus more elevated terrain to the south. Mining could decrease Salt Lake HU groundwater elevations or change recharge areas in bedrock upgradient of the spring. The affected bedrock volumes would be small compared to the total recharge area for the spring complex. Impacts to the spring complex would likely be long-term, negligible, and local but cannot reliably be quantified.



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Conceptual Model Boundary
- Spring with Potential Direct Impacts

0 1 2 Miles

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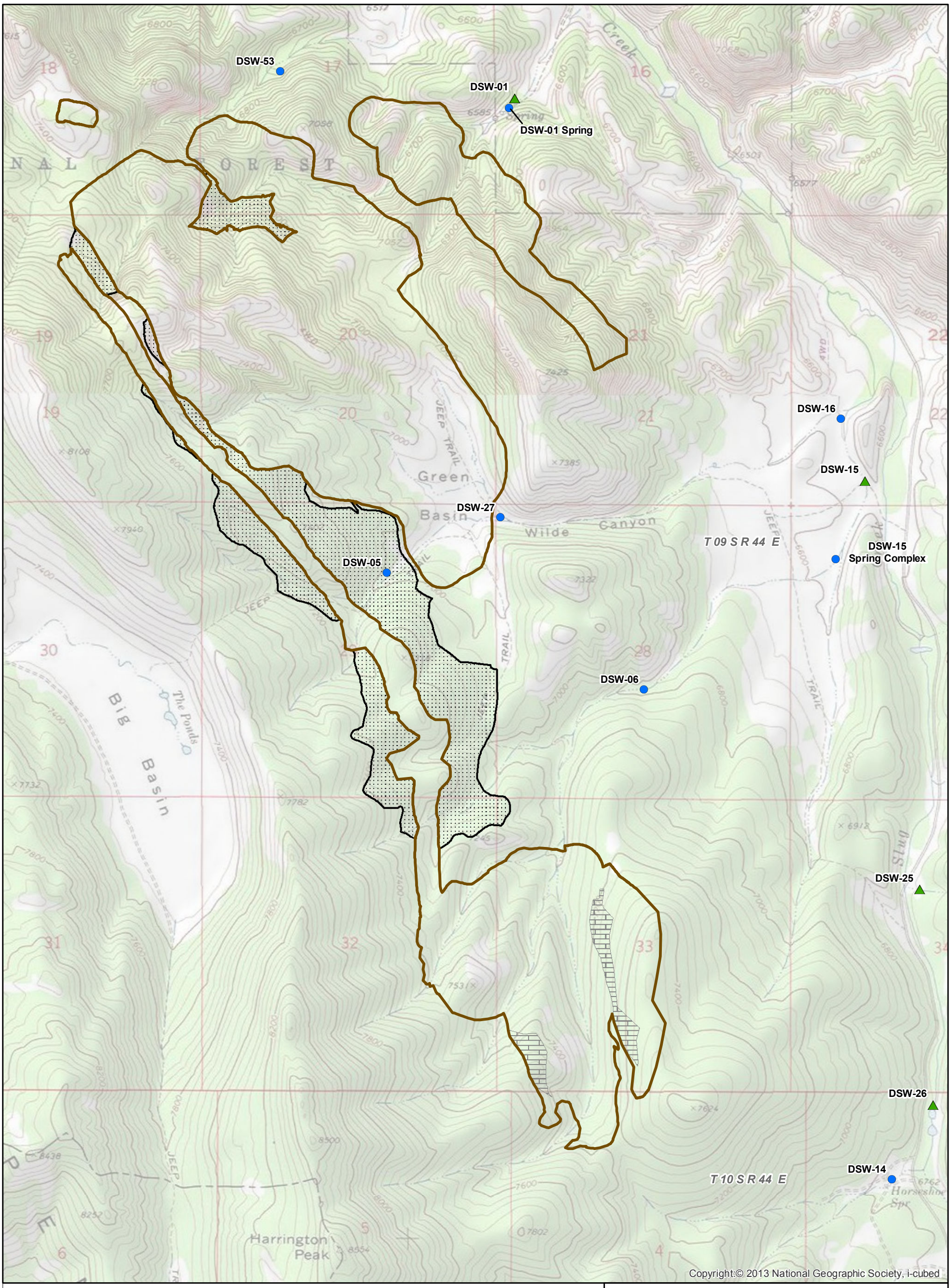
DAIRY SYNCLINE MINE PROJECT

Potentially Impacted Springs

Figure 4.3.2



Explanation

- Proposed Pit Footprint
- Limestone Exposed in Final Grade
- Proposed Overburden Disposal Areas (ODA)
- Surface Water Monitoring Location
- Spring/Seep Location (Tier 1)

0 1,000 2,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Selected Spring and Mine Feature Locations

Figure 4.3.3

DSW-16 is a spring complex located north of the Wilde Canyon access road. The spring complex discharge flows into the perennial stream sourced by the DSW-15 spring complex discharge. The spring discharges groundwater from the local alluvium and SLF. Some of the discharge is potentially sourced from intermittent Wilde Canyon surface water flow that infiltrates into the drainage channel alluvium upgradient from the spring complex. Mining could decrease Salt Lake HU groundwater elevations or change recharge areas in bedrock upgradient of the spring. The affected bedrock volumes would be small compared to the total recharge area for the spring complex. Mining would reduce surface water flow from Wilde Canyon causing a decrease in the volume of water infiltrating into the alluvium. The decreased infiltration could decrease DSW-16 discharge rates. Impacts to the spring complex would likely be long-term, minor, and local but cannot reliably be quantified.

DSW-22 and DSW-23 are located about 3,000 feet north of the mine lease. These two springs likely discharge groundwater from the Dinwoody and Salt Lake HUs. Mining could decrease Dinwoody HU groundwater elevations or change recharge areas in bedrock upgradient of the spring. The affected bedrock volumes would be small compared to the total recharge area for the spring complex. Impacts to the springs would likely be long-term, negligible, and local but cannot reliably be quantified.

DSW-27 is a spring complex located at the head of Wilde Canyon where the canyon opens into Green Basin. The complex extends from the head of Wilde Canyon northward along the eastern margin of Green Basin for about 1,200 feet. The portion of the complex closest to the head of Wilde Canyon is flowing during the spring but generally dry the rest of the year. The spring complex likely discharges groundwater from Green Basin alluvium and possibly the Rex Chert HU. Much of the spring-season discharge is from local snowmelt infiltration. Mining would remove almost all bedrock- and alluvium-storing groundwater that flows to the spring complex. This would likely cause a decrease in Wilde Canyon surface water flow, especially during the spring season. Impacts to the spring complex would likely be long-term, moderate, and site-specific but cannot reliably be quantified.

DSW-53 is a perennial spring located at the northern edge of the mine lease. The spring discharges groundwater from the Rex Chert HU and/or the Dinwoody HU. Mining could decrease groundwater elevations in bedrock upgradient of the spring. Hydraulic communication between the spring and the pit areas is limited by faults and stratigraphy. Impacts to the spring would likely be long-term, minor, and site-specific but cannot reliably be quantified.

DSW-54 is a spring located at the mouth of Wilde Canyon. The spring is located in the Wilde Canyon stream channel about 300 feet upstream of a cattle pond that collects Wilde Canyon stream flows. The spring likely discharges a combination of surface water that has infiltrated into the subsurface and local catchment recharge. Mining would decrease Wilde Canyon stream flow volumes, which would lead to a decrease in surface water infiltration feeding the spring. Spring discharge is subsequently expected to decrease. Impacts to the spring would likely be long-term, moderate, and local but cannot reliably be quantified.

Further, there are two other apparent springs that were not monitored, but which are associated with water rights (27-11425, 27-11861, and 27-11862) located on-lease (**Figure 3.3.2**) that would likely be eliminated. Their flow characteristics are unknown.

The Proposed Action could also result in reduced surface water flow to wetlands adjacent to Slug Creek downstream of Wilde Canyon. Most of the reduced flow would be related to reduced or eliminated discharge from DSW-27. The reduced flow would be limited to the spring and summer of future wetter years when there would have been surface water flow from DSW-27 down to the DSW-16 spring complex. The flow from DSW-27 is likely a small fraction of the total flow to downstream wetlands. Potential indirect wetland impacts would likely be long-term, negligible and local but cannot reliably be quantified.

Impacts to Surface Water Quality

The Proposed Action carries the potential to impact water quality in Slug Creek, springs, and wetlands associated with Slug Creek in the Study Area. Potential impacts to water quality include increases in suspended sediment and turbidity, and an increase of certain solute concentrations. However, overall, the Project would be protective of surface water resources and comply with the CWA.

Slug Creek

Temporary impacts to water quality from increased sediment yield could occur from disturbances related to construction of haul roads and other mine facilities. Runoff from temporary and permanent ODAs, pit backfills, haul roads, and other disturbed areas could also increase the potential for in-channel erosion. EPMs, including BMPs called for in the SWPPP (e.g., sediment fences, straw bales, or geotextiles), would be used to mitigate sediment and turbidity in runoff during construction.

Impacts to water quality from sedimentation during mining would be controlled by diversion structures, sediment ponds, slope stabilization, and/or other BMPs as developed under the SWPPP that would be prepared and as described in **Section 2.4.6.1**. In addition, topsoil stockpiles would be protected from erosion. These stormwater management measures would ensure that there would be a negligible rate of increased sedimentation of stream channels in the Study Area. The Proposed Action is expected to result in negligible sedimentation impacts to Slug Creek because runoff from disturbed areas would be captured in sediment basins and BMPs would be used to control sediment and turbidity as required.

After mining, the ODAs and backfilled pits would be capped and reclaimed. The majority of disturbance areas would be graded to a stable slope and vegetated to prevent erosion. Some areas would be left as unreclaimed highwall and runoff from these areas would likely either remain in the pit or be minimized with EMPs/BMPs to prevent long-term sedimentation impacts. Once reclamation is complete, sediment loads and turbidity in runoff from the previously disturbed areas would be similar to the pre-mining condition, thus no long-term impacts from sedimentation would occur from the Proposed Action. The cover system over the pit backfill and the external ODAs would prevent contact of runoff with overburden, preventing COPC loading to streams and wetlands by this mechanism. As noted in **Section 3.1.1.6**, fluoride, sulfate, nitrate, nitrite, TDS, aluminum, antimony, cadmium, iron, manganese, selenium, thallium, uranium, and zinc are the COPCs associated with the Project.

Impacts to water quality from COPC loading from runoff to surface water would be controlled by diversion structures, sediment ponds, slope stabilization, and/or other BMPs as developed under

the SWPPP that would be prepared and as described in **Section 2.4.6.1**. The Proposed Action is not expected to result in COPC loading impacts to Slug Creek because runoff from disturbed areas would be captured in sediment basins and BMPs would be used to minimize COPC impacted runoff into Slug Creek.

Springs

The Proposed Action is expected to result in negligible solute loading impacts to springs. As discussed under groundwater (**Section 4.3.2**), the Wells HU would be the unit where solute loading would be focused; area springs are located in HUs stratigraphically above the Wells HU and would not commingle with potentially impacted groundwater. Bedrock structural and stratigraphic characteristics that affect flow direction would further prevent impacted groundwater from flowing toward these springs.

Water Rights

Diminished or eliminated spring flows could potentially result in water rights impacts to the following: 27-11425, 27-11861, and 27-11862 (presumed likely); 27-2041a, 27-2041b, 27-11423, 27-11426, and 27-4125 (presumed unlikely), and 27-11570 (possible but unlikely). Three water rights (27-2172, 27-11849, and 27-11828) associated with unnamed ephemeral or intermitted streams would be impacted because the channels would be obliterated. Decreased Slug Creek flows would be unlikely to impact water right holders along Slug Creek due to the presumed small percentage decrease. **Table 3.3-1** and **Figure 3.3.2** provide information on and locations for these water rights.

Don Plant

A potential indirect effect to surface water quality resulting from the Project would be associated with the continued and prolonged operation of the Don Plant. The Don Plant is located more than 70 miles from the Project and in a different watershed. Impacts from the Don Plant to groundwater (and the related environment such as the Portneuf River) are being addressed through a Consent Decree with USEPA and a Voluntary Consent Order with IDEQ. This is described in **Section 4.3.2.1**, and as noted, subsurface conditions have improved. Groundwater contamination at the Don Plant had caused phosphorus loading to the Portneuf River. Historically gypsum was place on unlined facilities. Several years ago, Simplot constructed a lined gypsum facility at the Don Plant. Phosphorus loading to groundwater and subsequent transport to the river continues to decrease due to these infrastructure improvements (Formation Environmental 2018). Continued operations at the Don Plant due to the Project would not be expected to interrupt this trend, due to ongoing improvements and continuing regulation by IDEQ and USEPA.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly impact surface water, but BLM would give up management of a spring (DSW-02) and presumably the associated water right (27-11570), as well as two other water rights (27-2172 and 27-2175). Land draining to surface waters on the disposal parcels in the Slug Creek watershed (unnamed intermittent channels) would no longer be under BLM management. Land draining to surface waters on the donation parcel in the Stump Creek watershed (unnamed

intermittent or ephemeral channels) would come under BLM management, although no change is anticipated from current conditions. Channels on the donation parcel are listed as fully supporting their beneficial uses, but discharge to a receiving stream (Stump Creek) that is designated as having water quality that is impaired for one or more beneficial uses, according to the latest Integrated Report.

USFS Land Exchange

The land exchange would not directly impact surface water and the USFS would continue to have access to water right 27-11427 on the selected parcel. Land draining to surface waters on the selected parcel in the Slug Creek and Johnson Creek watersheds (unnamed intermittent channels) would no longer be under USFS management. Land draining to surface waters on the offered parcel in the Crow Creek watershed (unnamed intermittent or ephemeral channels) would come under USFS management, although no change is anticipated from current conditions. One channel is listed as fully supporting beneficial uses and one channel is listed as impaired on the offered parcel. Both of these channels discharge to a receiving stream that is designated as having water quality that is impaired for one or more beneficial uses, according to the latest Integrated Report.

4.3.1.2 Alternative 1 – South Trail Canyon Access Route

Surface water impacts would be site-specific, long-term, and negligible. Surface water impacts due to the South Trail Canyon access road would include hydrologic disturbance, runoff area impacts, peak flow impacts, stream channel sediment impacts, and stream flow. They would be similar in nature and intensity as under the Proposed Action's Georgetown Canyon access road but located in different watersheds.

Runoff areas would be locally modified by the route due to road drainage features such as culverts, cross drains, and ditches. A portion of the runoff would be directed south and east to an adjoining drainage about ½ mile east of Trail Creek and at times could impact peak flows. Sediment loading to Trail Creek could occur during and after road construction. The loading would be minimized through road design and by BMPs during road construction and post-construction road maintenance. Trail Creek stream flow impacts would be negligible and only occur during peak flow. Surface water quality impacts would be local, long-term, and negligible.

4.3.1.3 Alternative 2 – No BLM Land Sale

Alternative 2 impacts to surface water resources would be the same as those described for the Proposed Action, except there would be no potential indirect impacts from the channels on the donation parcel and/or their receiving streams that are designated as having water quality that is impaired for one or more beneficial uses, according to the latest Integrated Report. In addition, the BLM would not give up management of associated existing water rights.

4.3.1.4 Alternative 3 – Reduced BLM Land Sale

Alternative 3 impacts to surface water resources would be the same as those described for the Proposed Action, except that that BLM would not give up management of water right 27-11570.

4.3.1.5 Alternative 4 – No USFS Land Exchange

This alternative would limit the tailings pond disturbance to 263 acres of land administered by the USFS and 24 acres of private land for a total disturbance of 287 acres. The alternative would require an alternate design shown on **Figure 2.5.3**. A large dam would need to be built along the

edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings, or would require additional NEPA analysis to locate a new tailings facility.

The tailings pond hydrologic disturbance of 287 acres under this alternative is less than the Proposed Action disturbance of 358 acres. The total runoff area that would be intercepted by the tailings pond during operations is about 1,541 acres. The area is less than the 1,874 acres of intercepted runoff area for the Proposed Action. During post-closure, the watershed area formerly intercepted by the pond would again contribute runoff to the HUC 6 sub-watershed. The runoff area intercepted by the tailings pond is moderate, short-term, and local.

Otherwise, impacts to surface water resources would be the same as those described for the Proposed Action. Since there would be no land exchange, potential impacts from land draining to surface waters on the selected parcel in the Slug Creek and Johnson Creek watersheds (unnamed intermittent channels) would no longer be under USFS management. Land draining to surface waters on the offered parcel in the Crow Creek watershed (unnamed intermittent or ephemeral channels) would come under USFS management, although no change is anticipated from current conditions. Channels on the offered parcel and/or their receiving streams are designated as having water quality that is impaired for one or more beneficial uses, according to the latest Integrated Report.

4.3.1.6 Alternative 5 – Reduced USFS Land Exchange

This alternative would have the same impacts to surface water as under the Proposed Action, except a smaller portion of land draining to surface waters on the selected parcel (**Figure 2.5.4**) in the Slug Creek and Johnson Creek watersheds (unnamed intermittent channels) would no longer be under USFS management. Land draining to surface waters on the offered parcel in the Crow Creek watershed (unnamed intermittent or ephemeral channels) would still come under USFS management, although no change is anticipated from current conditions. Channels on the offered parcel and/or their receiving streams are designated as having water quality that is impaired for one or more beneficial uses, according to the latest Integrated Report and these potential indirect impacts could still occur.

4.3.1.7 Alternative 6 – Selective Handling Alternative

Alternative 6 impacts to surface water would be the same as those described for the Proposed Action. The potential for seleniferous seeps from external ODAs would be eliminated. Further, while the only known spring beneath a proposed external ODA is DSW-05, that spring is predicted to dry up entirely (as is also predicted under the Proposed Action). It would therefore not be a seepage source, but if the spring were to remain, it would be less likely to discharge seleniferous water under Alternative 6 than under the Proposed Action. The potential for unmitigated high selenium sediment runoff from uncovered external ODAs prior to covering would be eliminated compared to the negligible potential associated with the Proposed Action.

Alternative 6 would be protective of surface water resources and comply with the CWA.

4.3.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to surface water resources in the Study Area.

However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.3.2 Groundwater Resources, Direct and Indirect Impacts

Groundwater impacts were assessed using a conceptual model, a numeric model, a numeric unsaturated flow model, and a geochemical characterization program. Together the various models and geochemical characterization program form the components of a workflow for analyzing water quality and quantity changes to groundwater resources in the Study Area. Each component has a degree of uncertainty. There is no way to remove all uncertainty associated with each component. The uncertainty is addressed through the following practices and procedures:

- Model sensitivity analysis;
- Model calibration;
- Model inputs based on direct field and laboratory data;
- Conservative model inputs or conceptual model assumptions that reduce the effects of model and data uncertainty; and
- Duplicate analyses of geochemical test columns combined with a rigorous quality control program.

These practices and procedures reduce the possibility that actual changes to groundwater quality and quantity would be greater than predicted in the impacts analysis. The numeric groundwater model domain is shown on **Figure 4.3.4**.

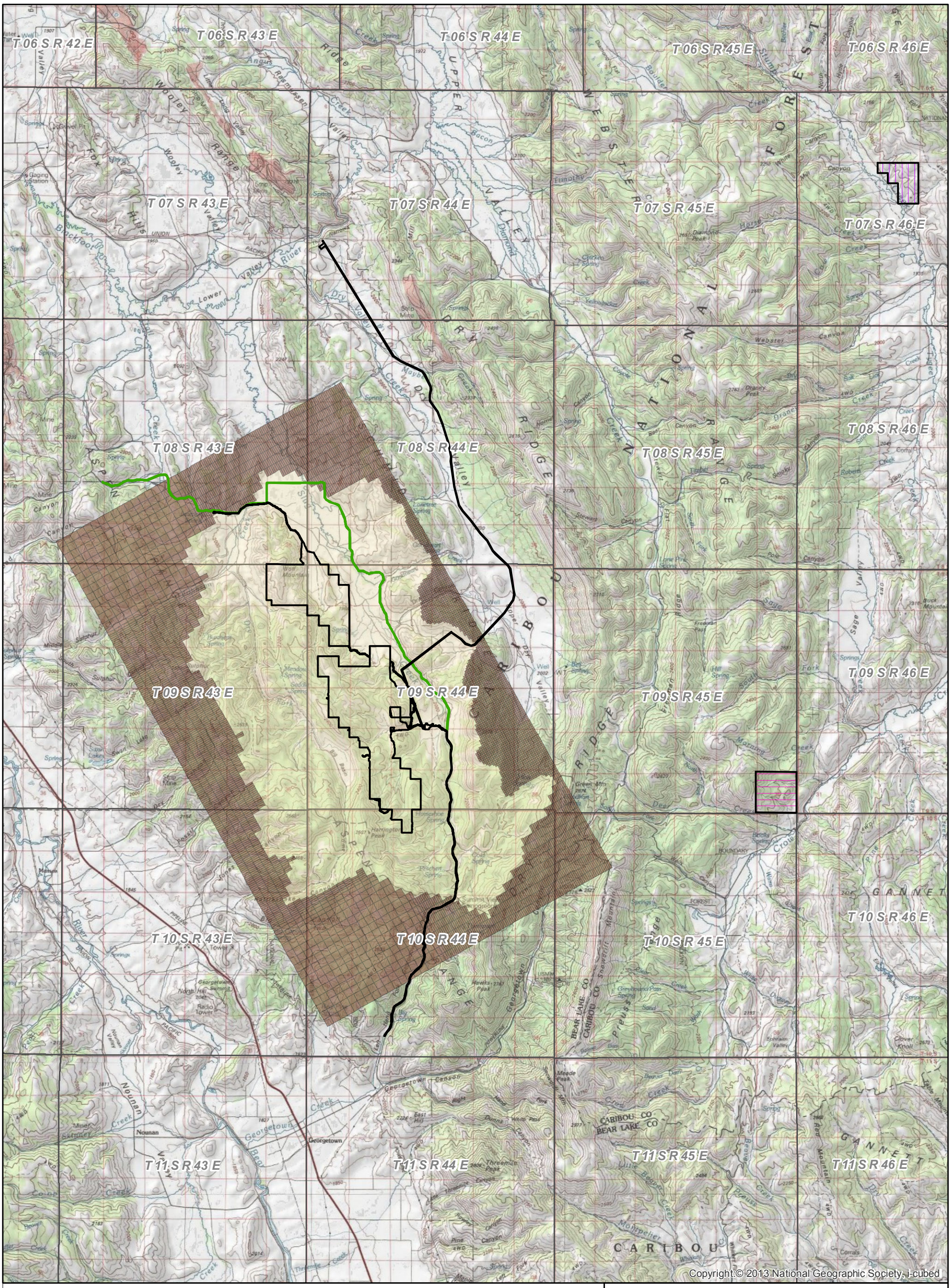
4.3.2.1 Proposed Action

Groundwater Elevation Impacts

Potential groundwater elevation impacts related to the Proposed Action include the following:

- Mining out of mine lease bedrock containing a perched groundwater flow system.
- Mining out of mine lease bedrock that would lead to lower groundwater elevations in unmined portions of the perched groundwater flow system.
- Local regional groundwater elevation changes in mine pit and ODA areas where cover systems reduce meteoric recharge but where previous low permeability bedrock is absent.
- Industrial water supply well pumping.
- Increased or decreased recharge in the tailing storage facility footprint depending on facility liner design.

A perched groundwater flow system is present on the mine lease (SWS 2014 and 2016). Much of the bedrock that contains the system would be mined out, removing the system from the mine pit footprints. Perched groundwater level elevations in adjoining unmined portions of the perched system would decline due to the decreased volume of the perched system and decreased recharge areas as shown in **Figure 4.3.5**. Impacts to the perched mine lease system would be long-term, moderate, and site-specific. The removal of the perched system in some areas and declined perched water level elevations in other areas would decrease flow to mine lease springs fed by the perched water system. Impacts to these springs are analyzed in **Section 4.3.1.1.**



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Active cells
- No flow cells

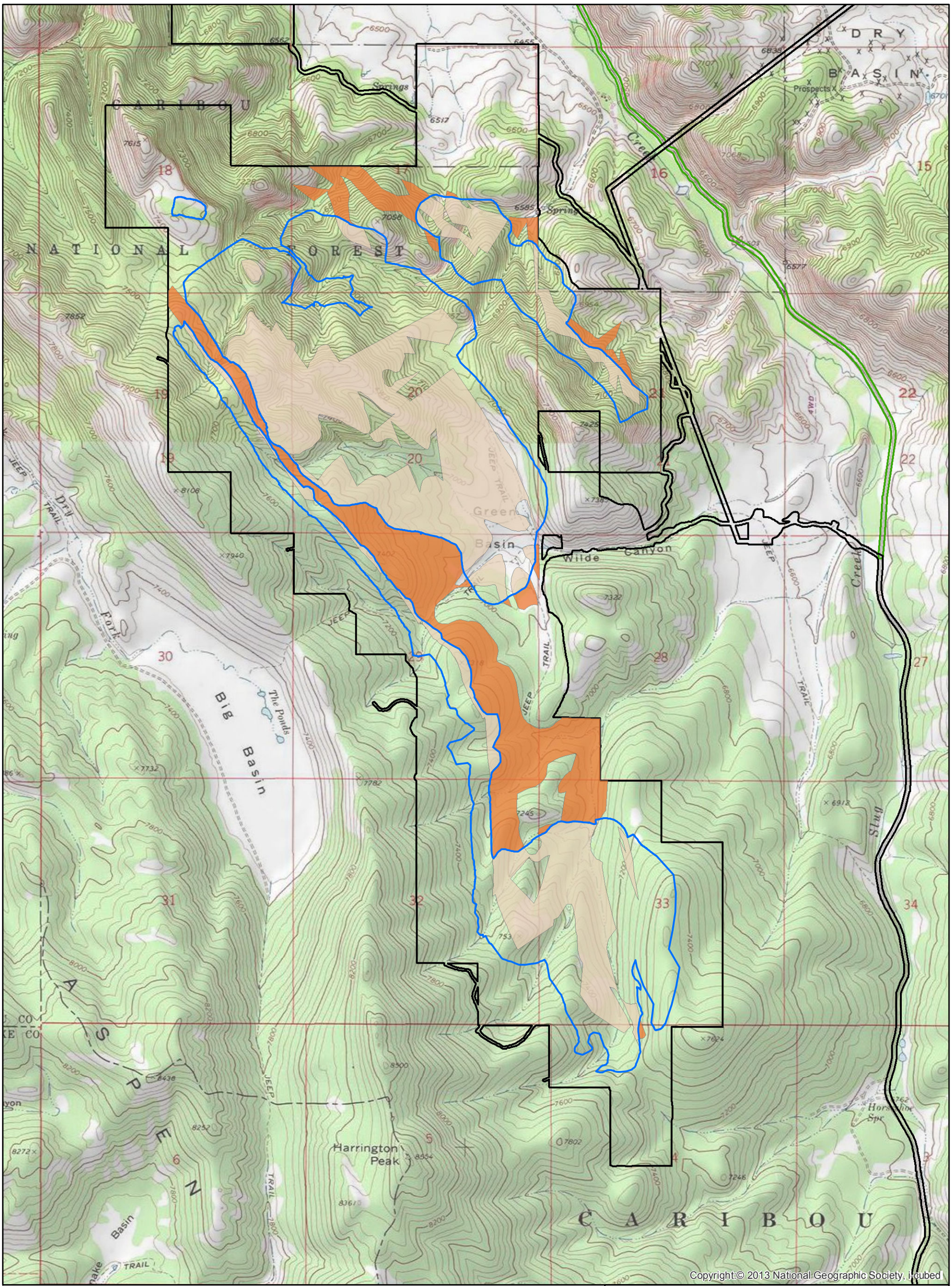
0 4,000 8,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Ground Water Model Domain

Figure 4.3.4



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Proposed Pit Footprint
- Approximate perched flow system area removed by mining
- Remaining perched flow system area on the mine lease with potential water level decline

0 2,000 4,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Perched Ground Water Level Changes at End-of-Mining

Figure 4.3.5

The Proposed Action includes an industrial water supply well to supply water to mill and mine operations. The proposed well location is currently within Wilde Canyon at an uncompleted borehole cased to 240 feet below ground surface with steel casing (PW-1 on **Figure 3.3.9**). The Dairy Syncline flow model simulations include a pumping rate of 550 gpm for the approximate 30-year mine life. The actual operational rate would vary with time but is estimated to average 550 gpm.

Predicted Wells aquifer water table drawdown at the end of mining (EOM) is shown on **Figure 4.3.6**. Predicted drawdowns on the mine lease vary from 4 to 11 feet. The maximum off-lease predicted drawdown is about 13 feet at the pumping well. South of the pumping well in the adjacent off-lease portions of T 9 S R 44 E, Section 28, predicted drawdown ranges from 7 to 11 feet. West of the leases, the predicted maximum drawdown is approximately 6 feet immediately adjacent to the lease in Section 29, reducing to a predicted 1-foot drawdown 2.5 to 3 miles west of the leases (**Figure 4.3.6**). The Wells aquifer water table recovers shortly after the end of pumping. Groundwater elevations of the perched systems that supply water to area springs would not be impacted by pumping the production well because there would be no completion zones within these small aquifers. Predicted water table drawdowns in the Slug Creek Graben are less than 0.1 feet, which is unmeasurable given the magnitude of model error and seasonal water level fluctuations. Impacts to Wells aquifer water table elevations from water supply well pumping would be short-term, local, and moderate. Impacts to Slug Creek graben water levels would be short-term, local, and negligible.

The Dairy Syncline flow model predicts that Wells aquifer water levels would increase within the mine lease up to 3 feet compared to pre-development conditions by 100 years post-closure as shown in **Figure 4.3.7**. The increase is related to infiltration through overburden that would be placed as close as 150 to 300 feet above the Wells aquifer water table in some places. The prediction is well within the model prediction margin of error and the magnitude of seasonal and multi-year water level cycles. The results are consistent with the conceptual model and numerical model results where the flow of groundwater from east of the mine lease would be much greater than meteoric recharge within the mine lease. This condition minimizes the effect of long-term changes to recharge on a local scale. Impacts to Wells aquifer water level elevations related to pit and ODA facilities would be long-term, local, and negligible.

The Proposed Action includes a culinary well east of the mouth of Wilde Canyon as a drinking water supply backup to the mine facility (GR-SVWP on **Figure 3.3.9**). Pumping from the proposed culinary well is simulated at 10 gpm in the flow model for the operational mine life to analyze water level impacts due to culinary well pumping. The 10 gpm discharge for the operational mine life is a conservative assumption because the culinary well would only be used as a backup and would be pumped for some time period or periods much shorter than the mine life. The maximum model predicted water table drawdown is about 1.8 feet at the end of operational pumping as shown in **Figure 4.3.8**. Water levels would recover quickly after pumping ceases. The 1-foot water table drawdown contour extends 500 to 1,200 feet from the well. Predicted drawdowns are within the range of model error and natural seasonal and long-term water level variations. Further, although the 1-foot drawdown contour is shown underlying the Slug Creek stream channel, modeling suggests a predicted streamflow decrease that is less than measurement error and seasonal data trends, even under conservative assumptions (WSP 2018).

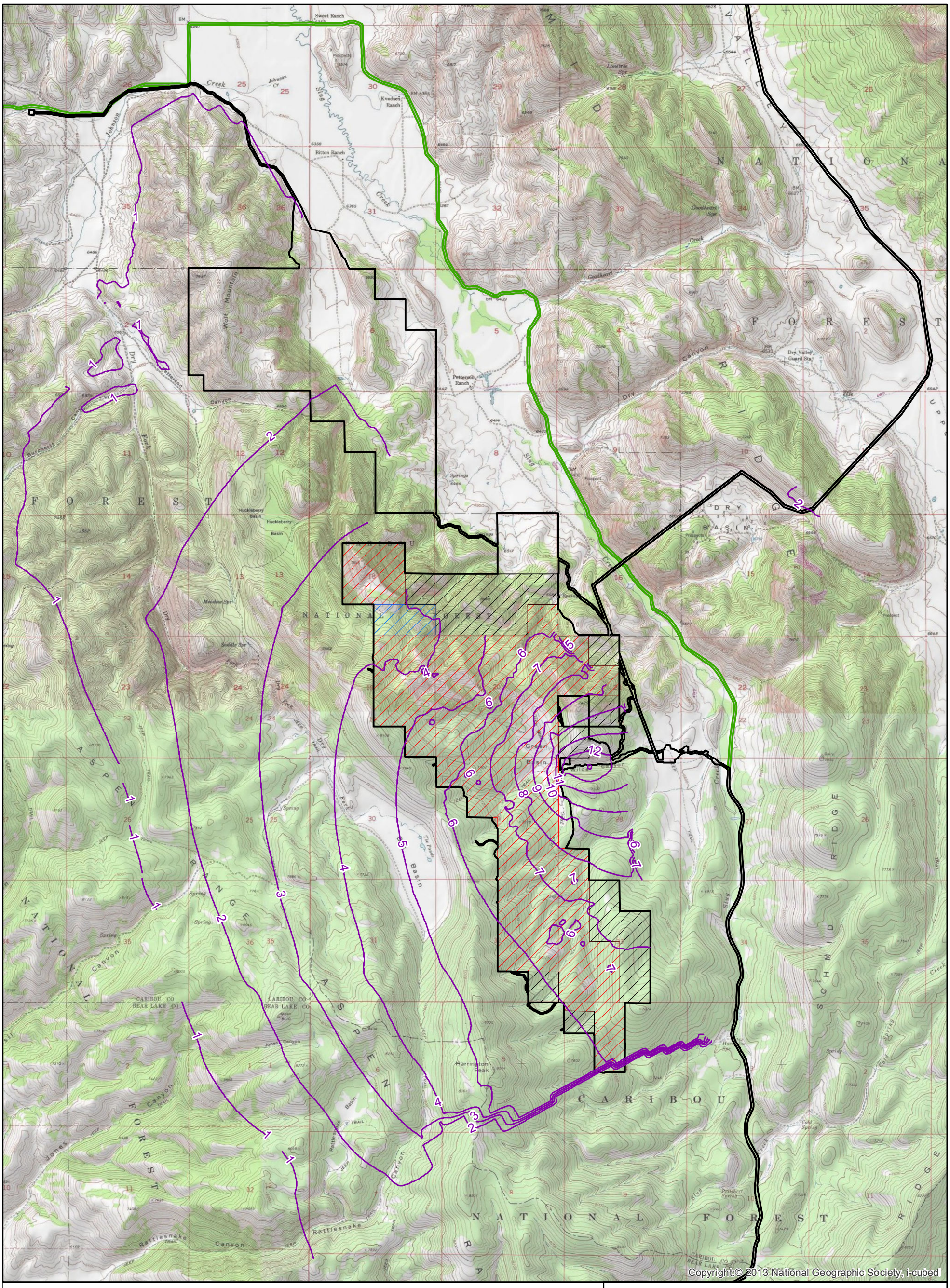
In the tailings pond area, the Dairy Syncline flow model predicts that SLF water levels within the facility footprint would increase above existing ground elevation, forming a groundwater mound. Elevations would be less than the maximum tailings pond elevations during each tailings pond facility operational phase. Water levels in the Wells HU beneath the tailings pond facility are predicted to increase by 8 to 9 feet by the end of its operation and 6 to 7 feet post-closure. The model predicts water level increases up to 16 feet by the end of the tailings pond facility operation and long-term increases of up to 7 feet post-closure beneath the elevated terrain bordering its east side. This terrain is underlain by carbonate bedrock. Water level increases in this area are predicted to be from a component of the tailings pond water flowing or infiltrating across the fault defining the east side of the valley. Impacts to SLF and Wells aquifer water level elevations related to the tailings pond operation would be long-term, local, and negligible.

Groundwater Quality Impacts

The Proposed Action would result in moderate impacts to groundwater quality in the Wells aquifer. The impacts described as follows do not incorporate the existing baseline chemistry of groundwater, which is variable and does not exceed applicable standards except at certain spring locations. Therefore, the concentrations discussed for the Proposed Action in the following text and figures would need to be added to existing groundwater concentrations to calculate concentrations expected if the groundwater were sampled or withdrawn at any given point.

Fate-and-transport modeling results for the Proposed Action predict that contaminant plumes of selenium, manganese, cadmium, uranium, sulfate, TDS, and nitrite above their respective action levels would form in the Wells aquifer beneath the backfilled pits and ODAs at EOM. Action levels for selenium, cadmium, nitrite, and uranium are based on primary groundwater or drinking water standards; the others are based on secondary groundwater standards, which are based on aesthetic concerns. Contaminant plumes of uranium are predicted to remain confined to the mine lease at EOM and 50 years post-mining. After 50-years post-mining, no uranium above the action level is predicted. Contaminant plumes of selenium, manganese, cadmium, sulfate, TDS, and nitrite are predicted to migrate past the limits of the mine lease at EOM and continue for at least 200 years post-closure. The collective plume impacts to Wells aquifer groundwater quality are local, long-term, and moderate.

Simulated groundwater plumes at the action level for each COPC at the Wells aquifer surface (water table) and the approximate depth below the Wells aquifer surface with the greatest lateral extent in the Wells aquifer under the Proposed Action are shown in **Figures 4.3.9** through **4.3.15** for EOM, 50, 100, 150, and 200 years post-closure. Each figure contains five drawings depicting individual time periods. Lateral and vertical extent of COPCs above their respective action levels are discussed below.



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258
- End of Mining Drawdown Contours (feet)

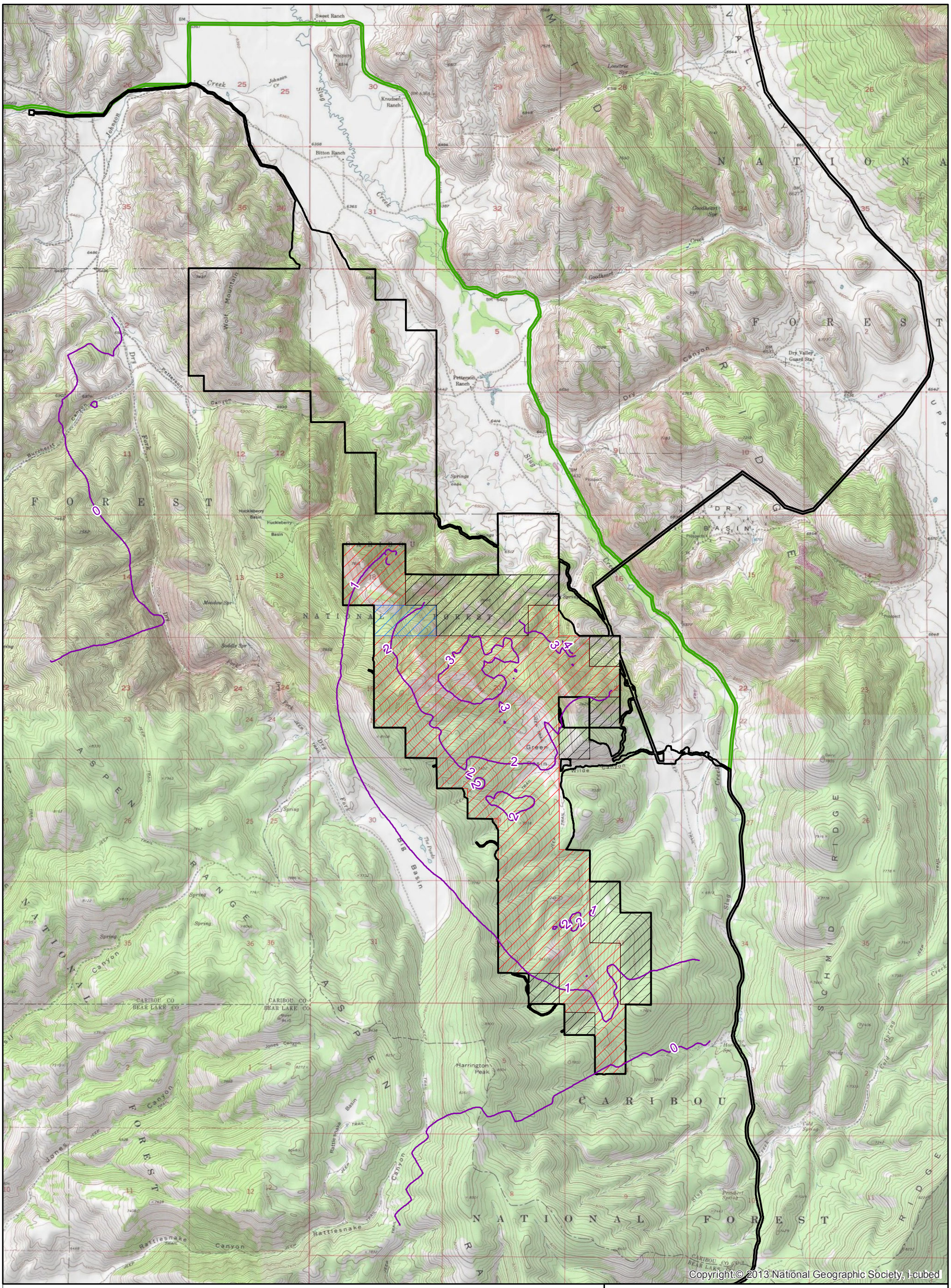
0 4,000 8,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Wells
Aquifer Drawdown
at End-of-Mining

Figure 4.3.6



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258
- 100 Years Post-Closure Contour (elevation increase in feet)

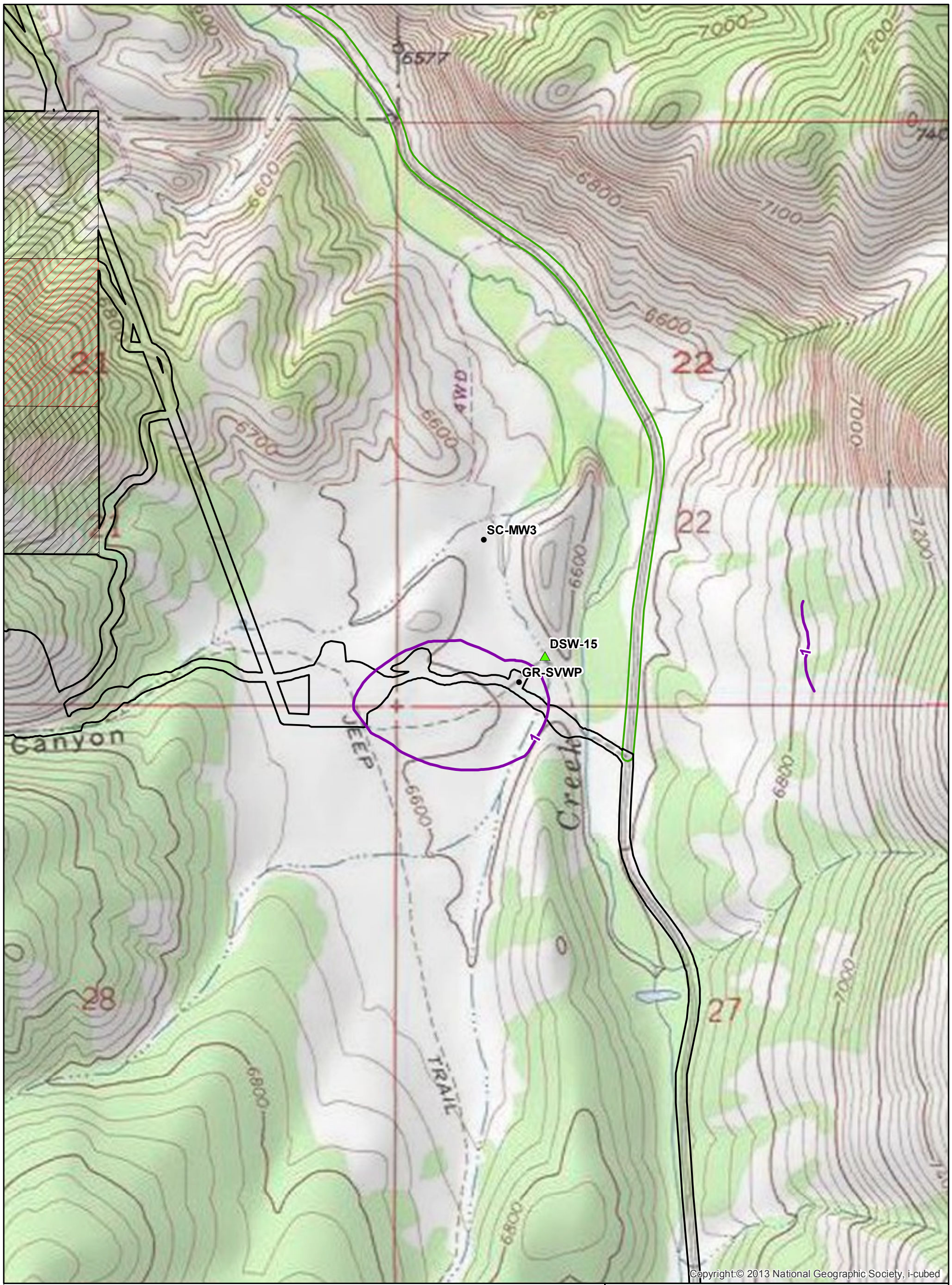
0 4,000 8,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Wells
Aquifer Drawdown
at 100 Years Post Mining

Figure 4.3.7



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Surface Water Monitoring Location
- Ground Water Monitoring Location - Well or Piezometer
- End of Mining Drawdown Contours (feet)

0 800 1,600 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Water Table Drawdown
from Culinary Well
at End-of-Mining

Figure 4.3.8

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.05 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Selenium Concentrations (0.05 mg/l) - Proposed Action

Figure 4.3.9

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.05 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

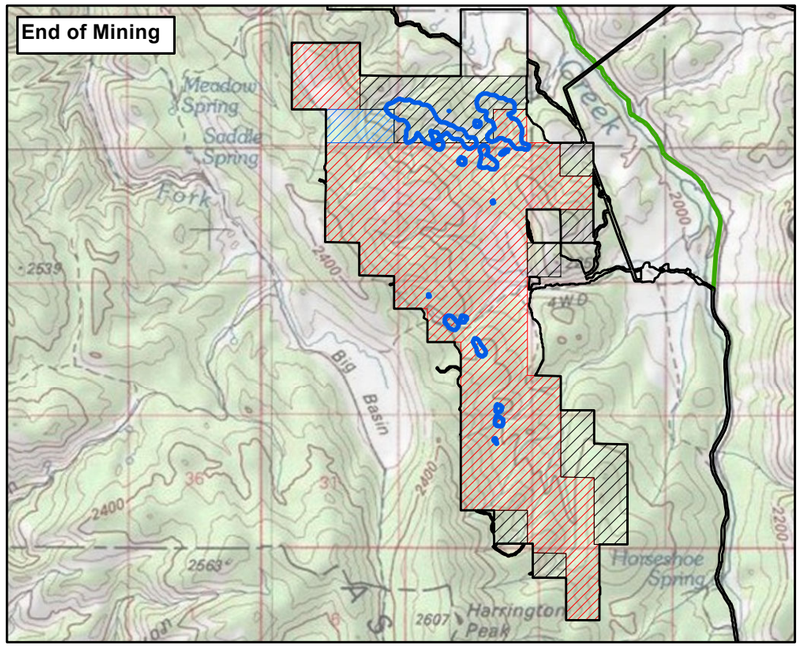
0 3,000 6,000 Feet

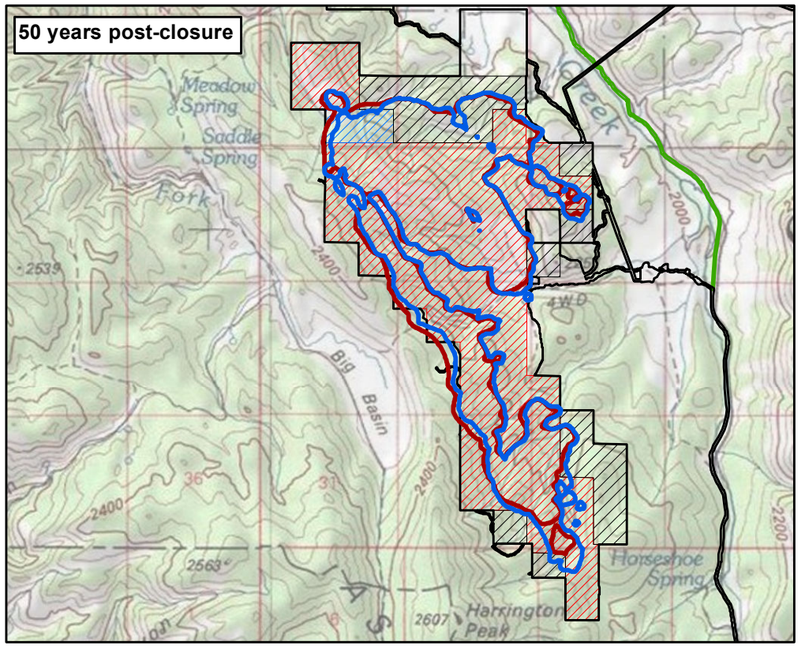
N

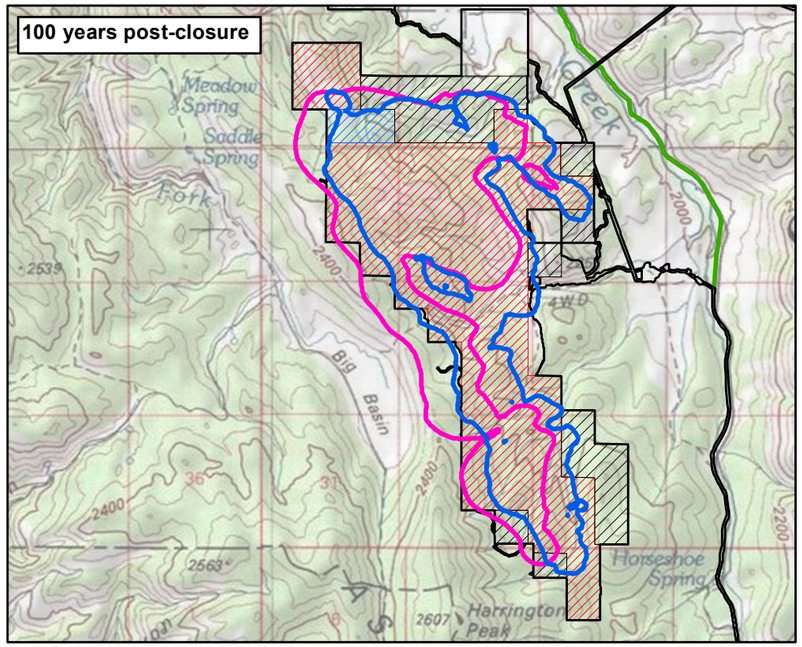
DAIRY SYNCLINE MINE PROJECT

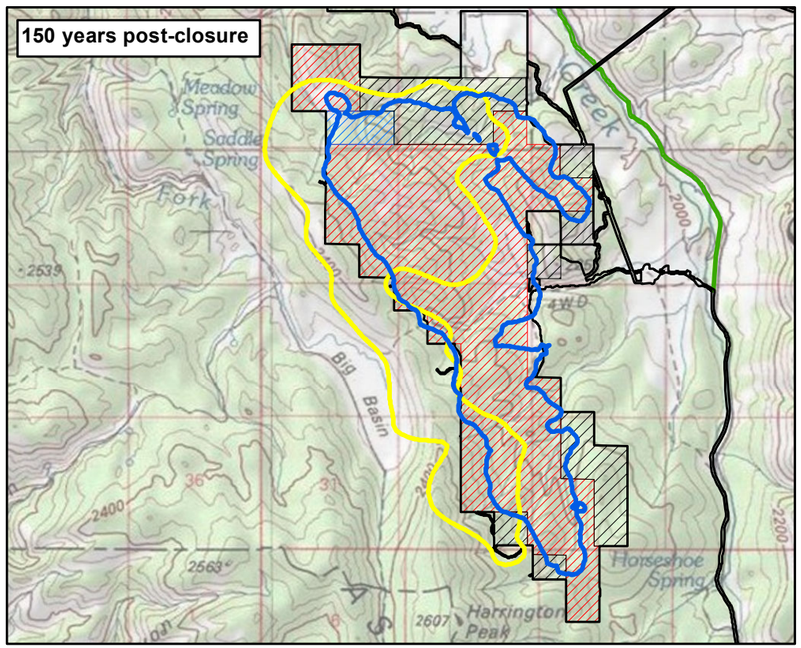
Predicted Manganese Concentrations (0.05 mg/l) - Proposed Action

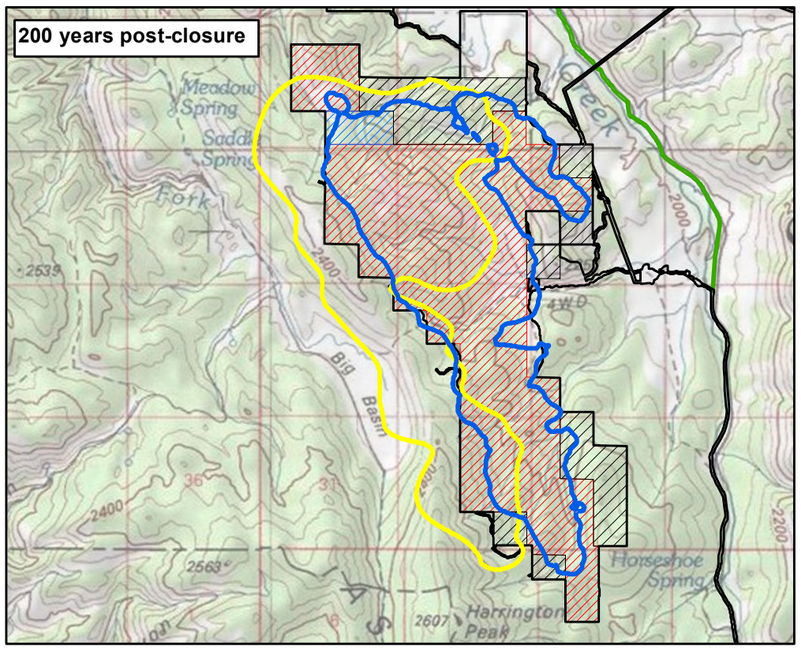
Figure 4.3.10











Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.005 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

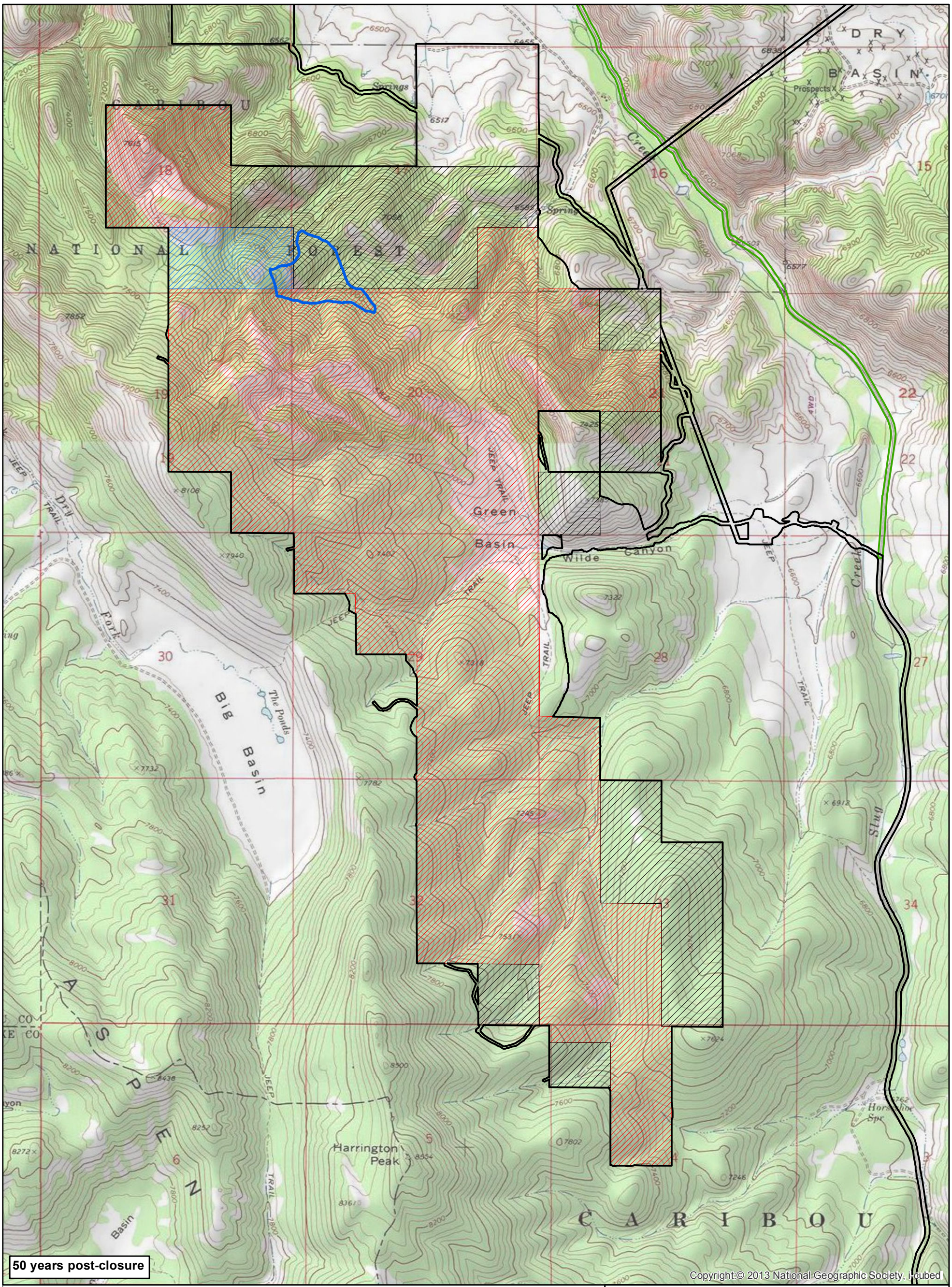
0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Cadmium Concentrations (0.005 mg/l) - Proposed Action

Figure 4.3.11



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258
- Concentration at Water Table - Wells Aquifer Surface

Isoconcentration contour value is IDEQ groundwater standard of 0.03 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

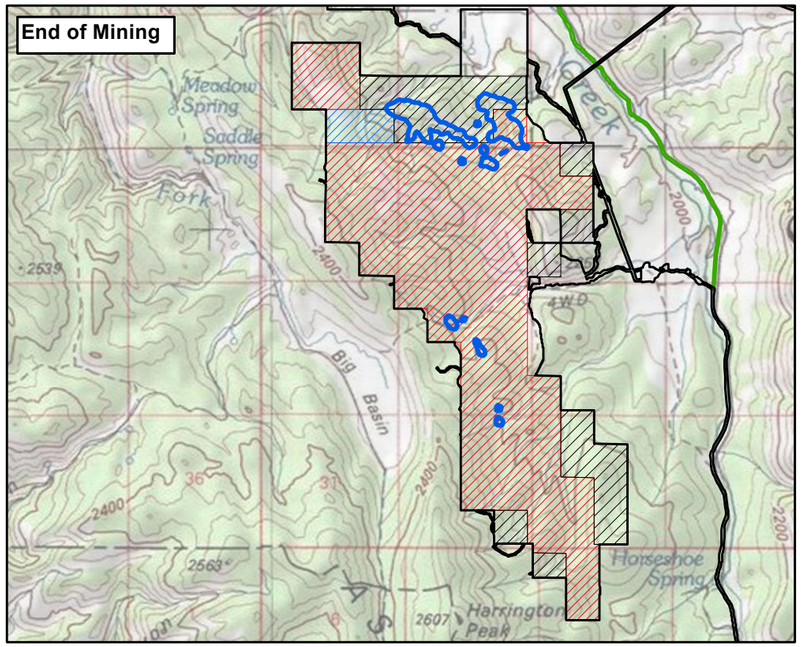
0 2,000 4,000 Feet

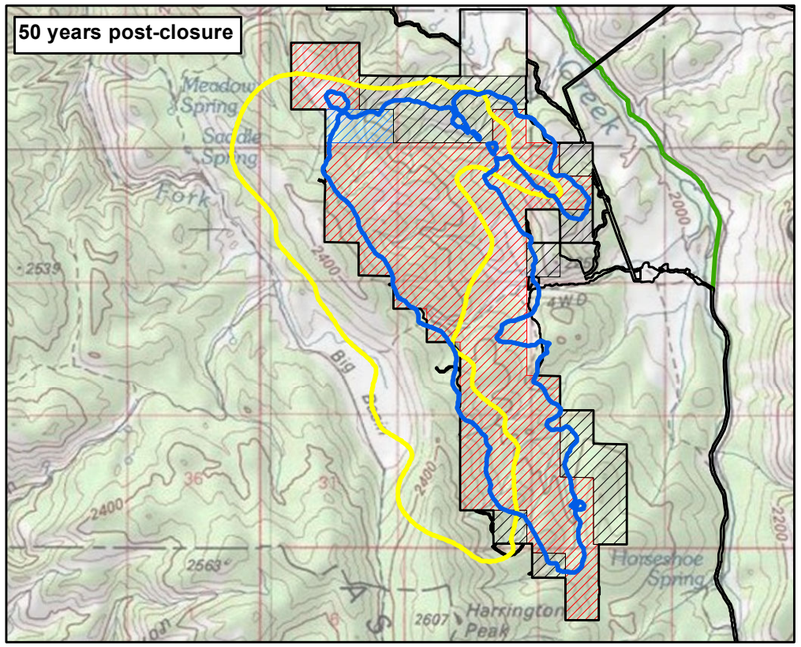
N

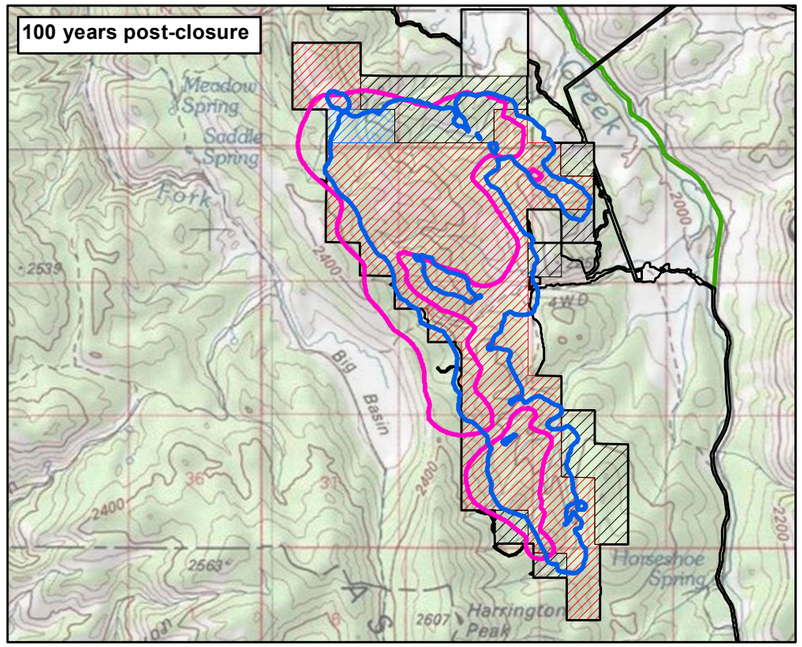
DAIRY SYNCLINE MINE PROJECT

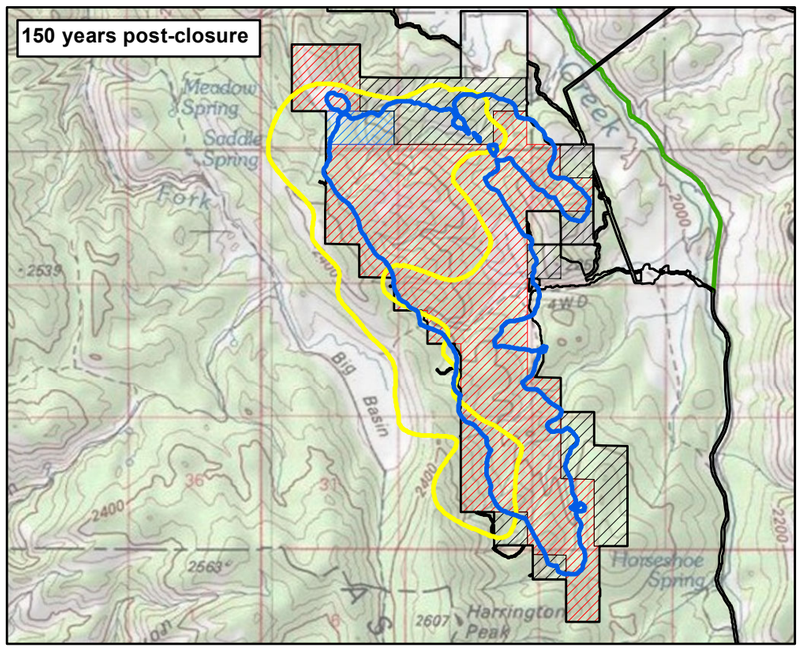
Predicted Maximum Uranium Concentrations (0.03 mg/l) - Proposed Action (50 years Post-closure)

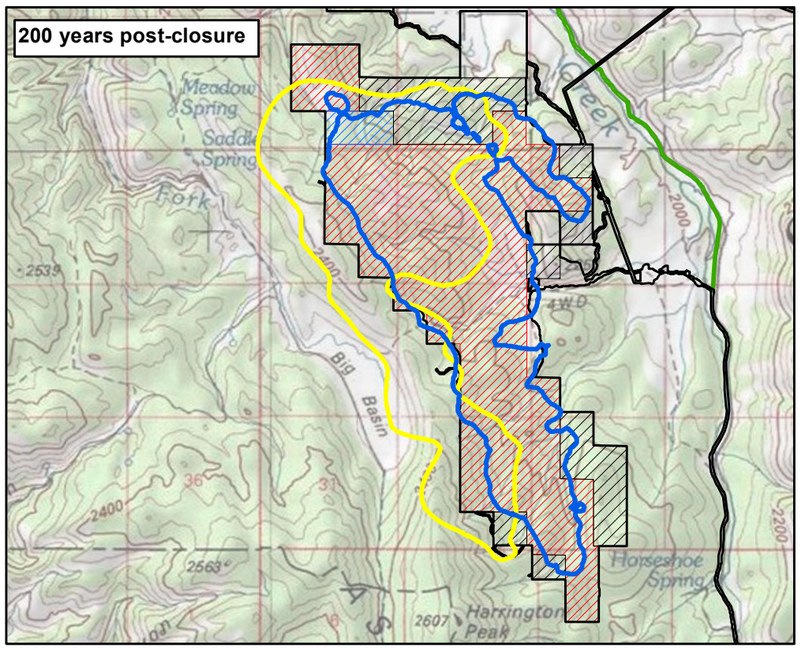
Figure 4.3.12











Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 250 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 250 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Sulfate Concentrations (250 mg/l) - Proposed Action

Figure 4.3.13

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 500 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted TDS Concentrations
(500 mg/l) - Proposed Action

Figure 4.3.14

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 1.0 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Nitrite Concentrations (1.0 mg/l) - Proposed Action

Figure 4.3.15

Selenium

The lateral extent of mining-related selenium concentrations greater than the IDEQ groundwater standard of 0.05 mg/L in the Wells aquifer is shown on **Figure 4.3.9** for the Proposed Action. The IDEQ groundwater standard is used to define the plumes and to define impacts to groundwater quality. The figures present model predicted plume extents at the Wells aquifer surface (water table and other depths below the Wells aquifer surface with the greatest predicted lateral plume extent. Each figure presents plume extents for five points in time:

1. EOM
2. 50 years post-closure
3. 100 years post-closure
4. 150 years post-closure
5. 200 years post-closure

Mining-related Wells aquifer selenium impacts at the water table are mostly limited to the mine lease. The maximum off-lease water table plume extent is about ¼ of a mile west of the mine lease after 150 to 200 years post-closure. The maximum predicted lateral plume extent below the water table is about ¾ of a mile west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 1,200 feet below the Wells aquifer surface beneath and within ½ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

Manganese

The lateral extent of mining-related manganese at the action level of 0.05 mg/L in groundwater within the Wells aquifer is shown in **Figure 4.3.10** for the Proposed Action. Note that the action level for manganese is based upon a secondary standard.

Mining-related Wells aquifer manganese impacts at the water table are mostly limited to the mine lease. The maximum off lease water table plume extent is about 1,700 feet west of the mine lease after 150 to 200 years post-closure. The maximum predicted lateral plume extent below the water table is about 4,900 feet west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 1,200 feet below the Wells aquifer surface beneath and within ½ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

Cadmium

The lateral extent of cadmium at the action level of 0.005 mg/L in groundwater within the Wells aquifer is shown on **Figure 4.3.11** for the Proposed Action.

Mining-related Wells aquifer cadmium impacts at the water table are mostly limited to the mine lease. The maximum off-lease water table plume extent is within a few hundred feet west of the mine lease after 100 years post-closure. Between 100 and 200 years post-closure the water table plume contracts a negligible amount in most areas with local expansion that remains on-lease in other areas. The maximum predicted lateral plume extent below the water table is about 3,300 feet west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 700 feet below the Wells aquifer

surface beneath and within ¼ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

Uranium

The lateral extent of uranium at the action level of 0.03 mg/L in groundwater within the Wells aquifer is shown in **Figure 4.3.12** for the Proposed Action.

At the EOM, uranium above the action level has not migrated to the water table (**Figure 4.3.12**). At 50 years post-closure, groundwater at the water table in a small area under the north pit contains uranium above the action level. However, by 100 years post-closure the plume has dissipated and there is no uranium above the action level in groundwater under the north pit through 200 years post-closure.

Sulfate

The lateral extent of sulfate at the action level of 250 mg/L in groundwater within the Wells aquifer is shown in **Figure 4.3.13** for the Proposed Action. Note that the action level for sulfate is based upon a secondary standard.

Mining-related Wells aquifer sulfate impacts at the water table are mostly limited to the mine lease. The maximum off lease water table plume extent is within a few hundred feet west of the mine lease after 50 years post-closure. Between 50 and 200 years post-closure the water table plume expands slightly in local areas on the east side of the plume, but the western plume extent remains essentially unchanged. The maximum predicted lateral plume extent below the water table is about 3,300 feet west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 700 feet below the Wells aquifer surface beneath and within ¼ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

TDS

The lateral extent of TDS at the action level of 500 mg/L in groundwater within the Wells aquifer is shown in **Figure 4.3.14** for the Proposed Action. Note that the action level for TDS is based upon a secondary standard.

Mining-related Wells aquifer TDS impacts at the water table are mostly limited to the mine lease. The maximum off lease water table plume extent on the west side of the plume is within a few hundred feet west of the mine lease after 100 years post-closure. Between 100 and 200 years post-closure the water table plume expands slightly in local areas on the east side of the plume, but the western plume extent remains essentially unchanged. The maximum predicted lateral plume extent below the water table is about ½ mile west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 700 feet below the Wells aquifer surface beneath and within ¼ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

Nitrite

The lateral extent of nitrite at the action level of 1 mg/L in groundwater within the Wells aquifer is shown in **Figure 4.3.15** for the Proposed Action.

Mining-related Wells aquifer nitrite impacts at the water table are mostly limited to the mine lease. The water table plume does not extend west of the mine lease. The maximum predicted lateral plume extent below the water table is about ¼ mile west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is also approximately 450 feet below the Wells aquifer surface beneath and within ¼ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing but slowing.

Tailings Pond Facility Groundwater Quality

The tailings pond facility COPCs were developed using Simplot's Smoky Canyon Mine tailings pond water chemistry as an analogue (Stantec 2017c). The milling process and the processed ore at the Smoky Canyon Mine are similar to the milling process proposed at Dairy Syncline and the ore that would be mined at Dairy Syncline. The comparison showed that the Smoky Canyon Mine's tailings pond water chemistry is a reasonable approximation of the future Dairy Syncline tailings pond chemistry. The comparison also showed that aluminum and manganese were the only COPCs for the proposed tailings pond facility. Further, water flow from the tailings pond to the groundwater flow system (i.e., leakage) was simulated by assigning time-variable flux rates to model cells representing the bottom and sides of the lined pond. The flux rates were estimated using a 1-dimensional vadose flow model of the tailings facility (Golder 2017). Flux rates are described in the groundwater flow and transport model report (WSP 2018).

The tailings pond facility COPCs (i.e., aluminum and manganese) are predicted by the groundwater model to be predominantly limited to the pond footprint and a contiguous area extending up to 250 feet east of the footprint. At the end of pond operations aluminum concentrations greater than the IDEQ groundwater standard do not extend below the SLF within the tailings pond facility footprint. East of the footprint the plume is predicted to occur in the Wells HU from the water table to a depth up to 250 feet below the Wells aquifer water table and up to 200 feet east of the tailings pond facility. By 20 years, post-closure aluminum concentrations are predicted to be less than the groundwater standard. The maximum aluminum plume extent is shown on **Figure 4.3.16**.

At the end of pond operations manganese concentrations greater than the IDEQ groundwater standard occur within the SLF and up to 300 feet below the SLF and Wells HU contact. Note that the action level for manganese is based upon a secondary standard. East of the footprint the plume is predicted to occur in the Wells HU from the water table to a depth of up to 500 feet below the Wells aquifer water table and up to 250 feet east of the tailings pond facility. The manganese plume is present for a longer time post-closure compared to aluminum. By 180 years post-closure the plume is limited to the tailings pond footprint in the Wells HU 200 to 500 feet below the SLF.

There is no plume predicted in the SLF at that point in time. The maximum manganese plume extent is shown on **Figure 4.3.17**. Water quality impacts related to tailings pond facility operations are predicted to be site-specific, long-term, and minor.

Water Rights

One existing groundwater right (27-2175) would be directly impacted by the tailings pond. Other than the location (shown on **Figure 3.3.2**) and the details given in **Table 3.3.1**, other information about the source or status of this water right is not known.

Simplot would need to obtain water rights to pump from the culinary and production wells. While the presumed pumping rates were incorporated into groundwater modeling and would result in drawdown, there would be no measurable impacts to surface waters or other existing groundwater rights due to this pumping. These wells have been previously drilled and completed for monitoring purposes according to IDWR Well Construction Standards Rules (IDAPA 37.03.09).

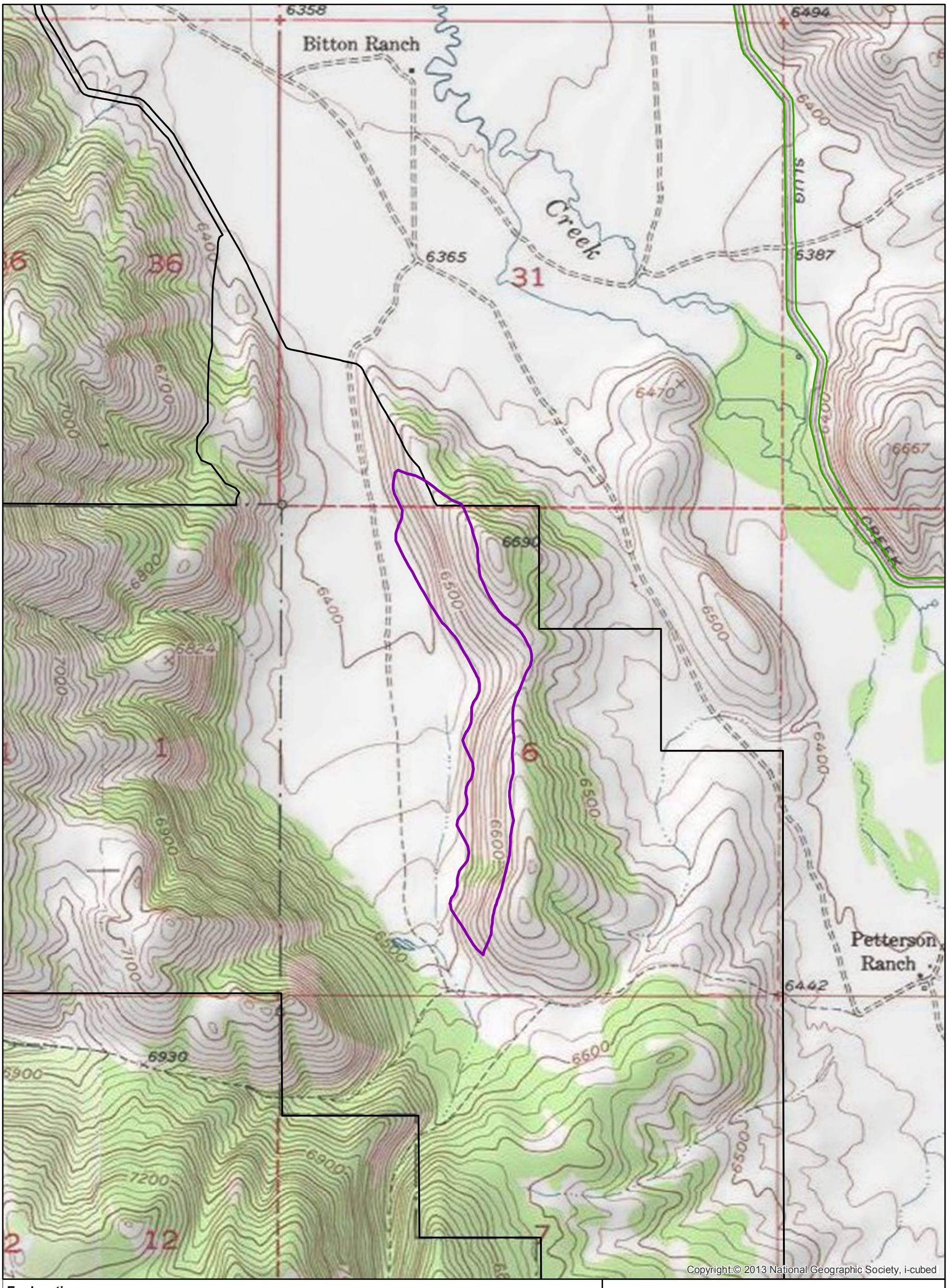
Don Plant

An indirect effect to groundwater quality resulting from the Project would be associated with the continued and prolonged operation of the Don Plant. The Don Plant is located more than 70 miles from the Project and in a different groundwater basin. Impacts from the Don Plant to groundwater are addressed through a Consent Decree with USEPA and a Voluntary Consent Order with IDEQ. Simplot has been implementing various projects for more than a decade to address groundwater contamination from the Don Plant site. This has included placing a synthetic liner on the gypsum stack, making infrastructure improvements in the manufacturing process, and removing contaminated groundwater. These accomplishments have significantly reduced the amount of phosphorus released to the subsurface, based upon unpublished data provided by Simplot.

Providing ore to the Don Plant from Dairy Syncline would extend the Plant's operations further into the future. These storage areas have been the source of past groundwater contamination, though the more recent synthetic liner placement provides protection to the subsurface. Continued operations or expansions due to the Project would be required to include this type of measure as well as any others required by IDEQ and USEPA as part of the approval process for the Don Plant.

Summary of Impacts to Groundwater and Connected Surface Waters

Mining activities are predicted to impact water quality and quantity in areas beneath and proximal to the mine lease and the tailings pond. Impacts to specific surface water features and groundwater aquifer volumes require some degree of hydraulic connection to source areas for an impact to occur. Depending on the feature, the connection may be via surface water, groundwater or both. **Table 4.3.4** provides a summary of current conditions for each system with potentially connected surface- and groundwater; mechanisms of potential impacts based on an assessment of hydraulic connections to source areas; and supplementary notes on the likelihood of impact based upon current understanding and model conclusions, where relevant. As previously stated, there is inherent uncertainty associated with predicting impacts to connected surface waters (i.e., springs and streams) in part due to the limitations and focus of groundwater modeling and in part due to the current understanding of baseline flow conditions.



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Predicted Maximum Aluminum Plume Extent (0.2 mg/l)

Maximum extent occurs at water table in the Wells Formation at the end of TSF operations.

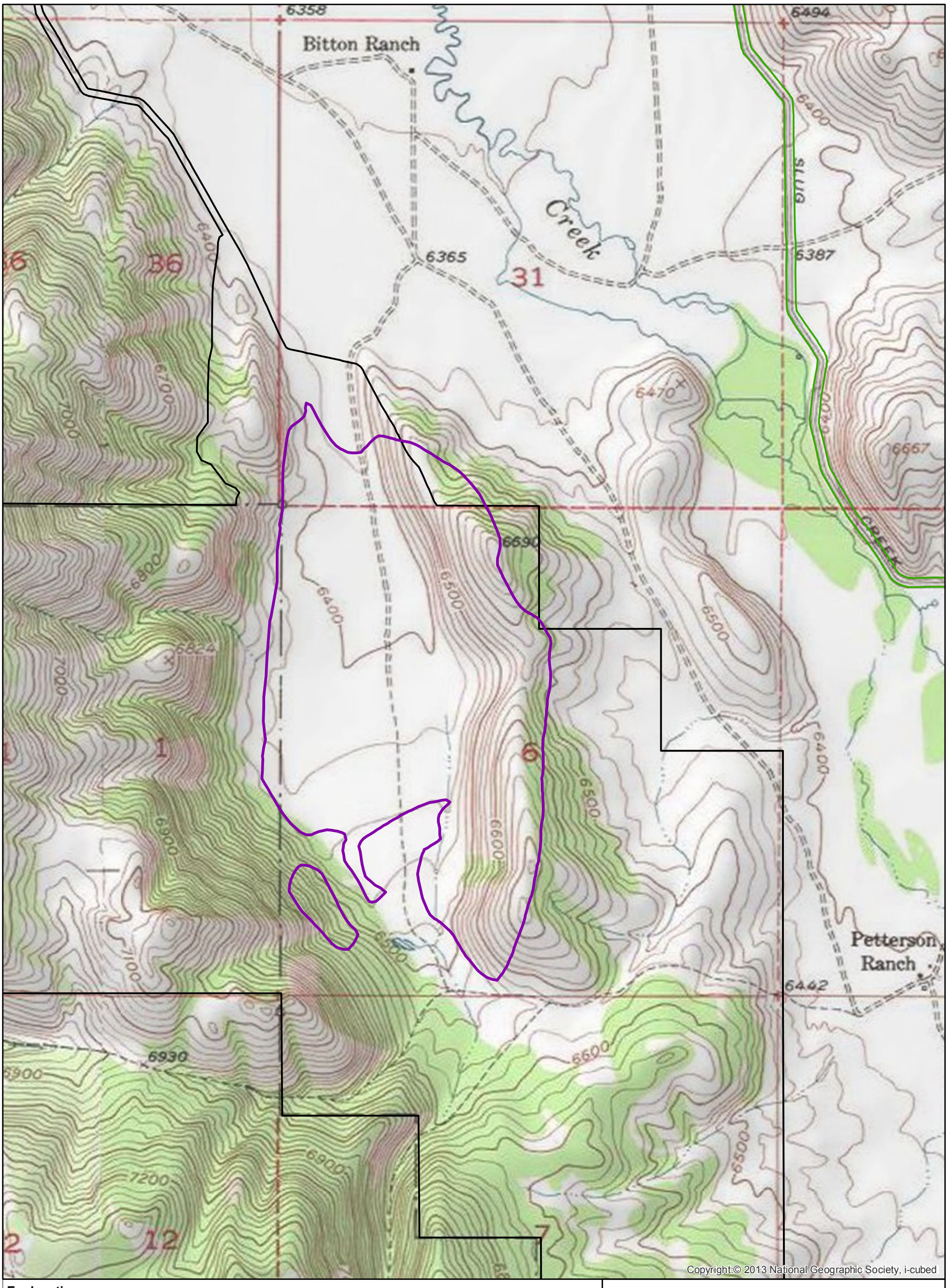
0 1,000 2,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Maximum Aluminum Plume Extent - TSF

Figure 4.3.16



Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Predicted Maximum Manganese Plume Extent (0.050 mg/l)

Maximum extent occurs at water table in the Wells Formation east of the TSF and the equivalent elevation in the Salt Lake Formation beneath the TSF at the end of TSF operations.

0 1,000 2,000 Feet

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DAIRY SYNCLINE MINE PROJECT

Predicted Maximum Manganese Plume Extent - TSF

Figure 4.3.17

Table 4.3-4 Water Resources Impact Summary

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
Southern System	Groundwater discharge to springs and Slug Creek. Surface water flow rates.	None	No predicted impacts.
Schmid Ridge System	Groundwater discharge to springs, Goodheart Creek, and Dry Canyon. Surface water flow from Dry Valley through Schmid Ridge to Slug Creek. Surface water flow varies with year and season.	None	No predicted impacts.
GRABEN		**SYSTEM**	
Slug Creek	Net gaining stream. Some reaches losing or gaining mostly during snowmelt periods. Four perennial tributaries. Water quality impacted by surface water flow from Dry Valley through Dry Canyon and Goodheart Creek drainage.	Long-term reduced flow on stream segments south of the confluence of DSW-16, DSW-15, and Wilde Canyon flow with Slug Creek during spring snow melt period of some years with lower snow pack. Caused by reduced discharge from Wilde Canyon and reduced flow from DSW-16. Long-term reduced flow on stream segments south of confluence with DSW-01 spring discharge caused by DSW-01 spring flow reduction. Short-term reduced flow from surface water runoff during mining. Long-term reduced flow from surface water runoff for some reaches but no net change in Slug Creek basin catchment area. Decrease in groundwater discharge to Slug Creek related to culinary water well pumping.	No predicted water quality impacts. Groundwater flow reduction to Slug Creek from industrial well pumping would likely be short-term and not measurable. Reduced stream flow downstream of Wilde Canyon likely during runoff periods; potentially small but uncertain reduced stream flow in same reach during other flow periods.
Johnson Creek	Perennial stream flowing into the graben from the Western System. Flow at first through natural channel, then through artificial channel with several diversions. Small portion of flow continues through remnant natural channel into pastures.	None	No predicted impacts. No likely direct hydraulic connection to predicted mining impacts.

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
DSW-02, DSW-03, DSW-04	Perennial springs. Discharge goes subsurface and mixes with shallow groundwater.	Potential long-term minor impact to discharge caused by complete removal of perched groundwater in portions of the mine lease or reduced perched groundwater elevations in portions of the mine lease. No impact to spring water quality.	Impacts not likely. Faults between mine lease and springs offset stratigraphic flow pathways creating flow path discontinuities. Perched groundwater flow is preferential along bedding planes in anisotropic stratigraphic units. The bedding dip potentially directs groundwater flow to elevations lower than spring elevations. Based on these factors there are no realistic groundwater transport pathways to the springs.
DSW-15 spring complex	Perennial complex. Discharge flows in perennial channel to confluence of DSW-16 spring complex where the combined flow discharges to Slug Creek.	Potential long-term minor impact to discharge caused by partial removal of SLF on mine lease. Removal of the SLF material would slightly reduce the potential area of SLF recharge to the complex. Potential seepage of perched SLF groundwater through Southeast Pit highwall would reduce the amount of potential flow toward the spring complex. Pit highwall would remain post-closure. Short-term decrease in groundwater discharge to complex related to industrial water well pumping. Short-term decrease in groundwater discharge to complex related to culinary well pumping. No impact to spring water quality.	Impacts related to SLF removal uncertain but not likely. Percentage of total recharge area potentially affected is small. Groundwater flow reduction to complex from industrial well pumping or culinary well pumping would be short-term and not measurable. No source material would be placed in recharge area of the spring complex.
DSW-16	Perennial spring complex. Discharge joins DSW-15 spring complex discharge and flows to confluence with Slug Creek. Mixes with Wilde Canyon flow for several weeks to several months depending on winter snowpack. A portion of discharge likely sustained by subsurface recharge from Wilde Canyon flow.	Potential long-term impact to discharge rate from reduced Wilde Canyon flow. Reduced Wilde Canyon flow would lead to reduced infiltration that is a partial source of DSW-16 discharge. Short-term decrease in groundwater discharge to complex related to industrial water well pumping. Short-term decrease in groundwater discharge to complex related to culinary well pumping No impact to spring water quality.	Best management practices would prevent water quality degradation of any water discharged to DSW-16 through the Wilde Canyon subsurface flow pathway. Groundwater flow reduction to complex from industrial well pumping or culinary well pumping would be short-term and not measurable.

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
DSW-22 and DSW-23	Perennial springs. Discharge goes subsurface and mixes with shallow groundwater	Potential impact to discharge rate caused by complete removal of perched groundwater in portions of the mine lease or reduced perched groundwater elevations in portions of the mine lease. No impact to water quality.	Impacts not likely. Affected area is small compared to the total recharge area for the spring complex. No realistic groundwater transport pathways to the springs because faults create discontinuous transport pathways and bedding dip would direct flow to elevations lower than the springs.
DSW-29	Intermittent spring. Discharge to Slug Creek when flowing. Recharged by subsurface flow from Goodheart Creek drainage.	None	No impacts to flow or chemistry. No direct or indirect hydraulic connection to mine impacts.
DSW-30	Intermittent spring. Discharge to Slug Creek under sufficiently high flow conditions. Recharged by subsurface flow from Goodheart Creek drainage.	None	No impacts to flow or chemistry. No direct or indirect hydraulic connection to potential mine impacts.
DSW-42	Perennial spring. Major regional spring discharging mix of Tier II groundwater and local shallow groundwater.	None	No impacts to flow or chemistry. No direct or indirect hydraulic connection to mine impacts.
Groundwater	Discharges to Slug Creek, some springs, local wetlands, and areas of phreatic vegetation. Local groundwater water quality impacts at mouth of Goodheart Creek based on impacted DSW-29 and DSW-30 water quality. Local groundwater quality impacts at the mouth of Dry Canyon also possible based on seasonal flow of impacted surface water from Dry Valley.	Long-term groundwater mounding and water level increase beneath tailings pond facility footprint. Long-term water level increase in the Wells Formation within a few hundred feet east of the tailings pond facility. Long-term water quality impacts within footprint of tailings pond facility and a few hundred feet east of tailings pond facility. Short-term decrease in total groundwater head within the graben east of the mine lease from industrial water supply pumping. Decrease could affect unconfined and confined groundwater. Decrease in total head of confined water would lower pressure head but not lead to decreased water table elevations. Short-term decrease in confined and unconfined total head from culinary well pumping.	Predicted total groundwater head declines from pumping are well within modeling error, and natural fluctuations.

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
CENTRAL SYSTEM			
DSW-01	Perennial spring. Discharge forms small perennial stream that flows to Slug Creek. Discharges perched groundwater from Rex Chert and Dinwoody.	Mining would remove upgradient perched aquifers that recharge spring. Small amount of discharge from Dinwoody Formation beyond pit limits may still remain but is not expected to be perennial or flow to confluence with Slug Creek. Water quality impacts not expected because any remaining spring flow would be from perched Dinwoody groundwater higher in elevation than backfill.	
DSW-05	Perennial spring discharging groundwater from Rex Chert and drainage alluvium. Surface discharge infiltrates within 150 feet downgradient from spring.	Spring would be covered by non-seleniferous ODA. Discharge from spring would likely cease because the West Pit would remove a portion of perched aquifer that recharges the spring. In addition, the ODA would cover much of the catchment recharging the spring. Based on these factors spring discharge at the contact between ODA and natural ground is unlikely.	
DSW-06	Perennial spring discharging groundwater likely from Phosphoria Formation. Discharge extends an unknown distance down the drainage the spring is located in. The drainage leads to the DSW-15 spring complex. Water quality has exceeded groundwater quality standards for selenium, but this is a frequent characteristic of springs discharging from Phosphoria.	Potential impact to discharge rate caused by complete removal of perched groundwater in portions of the mine lease or reduced perched groundwater elevations in portions of the mine lease. No impact to water quality.	Impacts not likely. Faults between mine lease and spring offset stratigraphic flow pathways creating flow path discontinuities. Some pathways through perched aquifers end at Wells Formation bedrock before reaching spring. Based on these factors there are no realistic groundwater transport pathways to the springs.

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
DSW-27	Perennial spring complex with seasonal surface water discharge to Slug Creek. Inferred discharge from Rex Chert and basin alluvium. Discharge infiltrates subsurface year-round. A portion recharges bedrock beneath Green Basin. Other portions recharge Green Basin alluvium or Wilde Canyon alluvium. Portions recharging Wilde Canyon alluvium seeps into bedrock in the canyon or daylights at DSW-54 or further east in the flats below the cattle pond.	Majority of area discharging to spring would be mined out. ODA cover and higher permeability of the backfill compared to natural bedrock would prevent re-formation of a spring. Some or all spring discharge would likely cease and any surface water discharge in Wilde Canyon would be related to snowmelt runoff, shallow interflow during snowmelt, or local intense precipitation events. Volume of water flowing through Wilde Canyon would likely decrease leading to decreased discharge to DSW-54 and areas further downstream. Continuous flow from Green Basin to Slug Creek may still occur but duration would be much shorter than current conditions.	
DSW-53	Perennial spring discharging perched groundwater from Dinwoody and/or Rex Chert Formation. Extent of surface flow downgradient not observed.	Potential impact to discharge rate caused by complete removal of perched groundwater in portions of the mine lease or reduced perched groundwater elevations in portions of the mine lease. No impact to water quality.	Groundwater quality impacts not likely because spring is cross dip from portion of bedrock that would be mined and backfilled.
DSW-54	Intermittent spring with seasonal discharge to cattle pond. Usually mixes with Wilde Canyon flow. Discharges a mix of infiltrated Wilde Canyon flow and local catchment recharge.	Mining would decrease Wilde Canyon stream flow leading to a decrease in spring discharge. Decreased discharge from the spring would decrease surface water flow to Slug Creek, especially during snowmelt runoff season.	
Groundwater	Perched and regional system. Perched system recharged by local precipitation, the majority as snowmelt. Regional system mainly occurs in Wells HU. Regional flow enters system from east, south, and north. Regional system receives recharge from local precipitation, the majority as snowmelt.	Long-term groundwater quality impacts from backfill and external ODAs. Mainly confined to mine lease but some plumes extend into Western System. Reduction in area and volume of perched groundwater on the mine lease caused by mining of perched system bedrock. Short-term site-specific to local decrease in groundwater elevations caused by water supply well pumping. Long-term site-specific water level decrease under the Proposed	

FEATURE	EXISTING CONDITION	POTENTIAL CHANGES	NOTE
		Action caused by limited recharge through cover system compared to natural conditions.	
		WESTERN SYSTEM	
Groundwater	Groundwater discharge to springs and Johnson Creek. West of Dry Fork there is a potentially major perched system in the Dinwoody HU that is large in area and continuous. The Dinwoody perched system appears to be separated from the underlying Wells HU. All springs west of Dry Fork are recharged by this system. The Wells HU is deeper below ground surface in this area because of several folds with thick sequence of Dinwoody Formation at their core.	Long-term Wells aquifer water quality impacts from plumes migrating westward from mine lease. Maximum plume migration distance into system is about ½ mile after 200 years. Short-term Wells aquifer water level drawdown caused by water supply well pumping. Magnitude and extent may be limited by structural discontinuities.	
Surface water	Springs near eastern boundary of system discharge local perched groundwater. Springs west of Dry Fork discharge from perched system developed mainly in Dinwoody HU but also Rex Chert HU and Salt Lake HU. Johnson Creek headwaters located west of study area. Johnson Creek flows from headwaters across study area boundary before turning north then east and entering Slug Creek Valley. West of Big Basin spring DSW-21 discharges from the Brazer Formation which is part of the Wells HU. The spring is located at the juncture of one mapped fault and a second inferred fault. The spring may discharge water flowing along a fault leading south to elevated terrain.	None	All surface water elevations are higher than the only groundwater transport pathway to the Western System which occurs in the Wells HU.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect groundwater. Groundwater found at depth beneath the disposal parcels is not predicted to have any COPCs exceeding relevant IDEQ groundwater standards due to mining-related Wells aquifer impacts. A portion of the groundwater beneath the northern disposal parcel would be impacted by both the manganese and aluminum plumes due to the tailings storage facility, resulting in exceedances of groundwater standards that would not occur underneath BLM administered land as a result of the land sale. Groundwater quality beneath the donation parcel is not known, but presumably is of good quality currently and not subject to any known source potential degradation.

USFS Land Exchange

The land exchange would not directly affect groundwater. Groundwater found at depth beneath the selected parcel is not predicted to have any COPCs exceeding relevant IDEQ groundwater standards due to mining-related Wells aquifer impacts. Only a very small portion of the groundwater beneath the selected parcel would be impacted by the manganese plume due to the tailings storage facility, resulting in an exceedance of groundwater standards that would not occur underneath NFS land as a result of the land exchange; the aluminum exceedance plume would not reach the selected parcel. Groundwater flow direction across the offered parcel is eastward, but no COPC plumes due to the Smoky Canyon Mine to the west were predicted to result in concentrations greater than groundwater standards under the parcel.

4.3.2.2 Alternative 1 – South Trail Canyon Access Route

Alternative 1 impacts to groundwater resources would be the same as those described for the Proposed Action.

4.3.2.3 Alternative 2 – No BLM Land Sale

Alternative 2 impacts to groundwater resources would be the same as those described for the Proposed Action except for the indirect effects associated with the northern disposal parcel (because BLM would retain management of the land overlying potentially degraded groundwater).

4.3.2.4 Alternative 3 – Reduced BLM Land Sale

Alternative 3 impacts to groundwater resources would be the same as those described for the Proposed Action except for the indirect effects associated with the northern disposal parcel (because BLM would retain management of some of the land overlying potentially degraded groundwater).

4.3.2.5 Alternative 4 – No USFS Land Exchange

Alternative 4 limits the tailings pond disturbance to 263 acres of land administered by the BLM and 24 acres of private land for a total disturbance of 287 acres. The alternative would require an alternate design shown on **Figure 2.5.3**. A large dam would need to be built along the edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings, or would require additional NEPA analysis to locate a new tailings facility.

On the mine lease, the impacts to groundwater quality would be less than the Proposed Action based on a new mining and backfill sequence that would be required if the mine life is only 20 years. The new mining and backfill sequence would likely require some combination of shallower pits and some Proposed Action pits or portions of pits not mined at all. The new mine plan would result in smaller plumes that decay more quickly compared to the Proposed Action.

At the tailings storage facility, water quality impacts from this alternative would be less than the Proposed Action. The smaller pond acreage would reduce the area of pond leakage while also reducing the total mass of pond constituents entering the groundwater system. The overall plume extent, depth, and duration would be reduced compared to the Proposed Action.

4.3.2.6 Alternative 5 – Reduced USFS Land Exchange

Alternative 5 impacts to groundwater resources would be the same as those described for the Proposed Action except for the indirect effects associated with the selected parcel (because USFS would retain management of some of the land overlying potentially degraded groundwater).

4.3.2.7 Alternative 6 – Selective Handling Alternative

Under this alternative, the highest seleniferous overburden would be placed in the North Pit and the northern portion of the West Pit as backfill. Other seleniferous overburden would be placed in the Northeast Pit and South Pit. The selenium concentration source terms of the overburden that would be placed in the Northeast and South Pits are lower than overburden placed in the North Pit and northern portion of the West Pit.

Non-seleniferous overburden would be placed in the southern portion of the West Pit, and the external ODAs on either side of the West Pit. The North, Northeast, South, and northern portion of the West Pit would be covered with the Proposed Action cover system. The southern portion of the West Pit and the external ODAs would receive a minimum of 1.5 feet of soil cover. Mining progression under this alternative is unchanged from the Proposed Action.

Ground Water Elevation Impacts

The Wells aquifer water table drawdown magnitude and extent would be less than the Proposed Action at the EOM. Predicted water table drawdowns on the mine lease at EOM vary from 0 to 9 feet. Zero drawdown is predicted under small areas beneath the southern portions of the West Pit. This is the result of greater recharge through the West Pit and adjoining ODAs compared to the Proposed Action. The maximum off-lease predicted water table drawdown is about 11 feet at the PW-1 well. The Wells aquifer water table recovers shortly after the end of pumping. Predicted water table drawdowns in the Slug Creek Graben are less than 0.1 feet, which is unmeasurable given the magnitude of model error and seasonal water level fluctuations. Impacts to Wells aquifer water table elevations from water supply well pumping during mine operations are short-term, local, and moderate. Impacts to Slug Creek graben water levels are short-term, local, and negligible.

The flow model predicts that the Wells aquifer water table would increase within the mine lease up to 12 feet compared to pre-development conditions by 100 years post-closure. The greatest increase is under the portion of the West Pit that would receive a soil only cover. The increase is related to increased infiltration through overburden. The prediction is slightly greater than the

model prediction margin of error and the magnitude of seasonal and multi-year water level cycles. Model results do not predict the formation of a groundwater mound. Instead the overall hydraulic gradient would decrease across a portion of the mine lease compared to pre-development conditions. Impacts to Wells aquifer water level elevations related to pit and ODA facilities are long-term, local, and minor.

Ground Water Quality Impacts

Alternative 6 would result in moderate impacts to ground water quality in the Wells aquifer. The overall plume is predicted to have a smaller areal and volumetric extent compared to the Proposed Action for most COPCs. Some COPC plumes are predicted to extend further west and deeper than the corresponding Proposed Action plumes. Simulated groundwater plumes at the action level for each COPC at the Wells aquifer surface (water table) and the approximate depth below the Wells aquifer surface with the greatest lateral extent in the Wells aquifer under Alternative 5 are shown on **Figures 4.3.18** through **4.3.23** for EOM, 50, 100, 150, and 200-years post-closure. Each figure contains five drawings depicting individual time periods. Lateral and vertical extent of COPCs above their respective action levels are discussed below.

Alternative 6 would result in moderate impacts to groundwater quality as discussed below. A monitoring plan similar to the existing plan used at the Smoky Canyon Mine would be prepared for the Project (conceptual draft plan provided in **Appendix 2A**). The plan would identify a groundwater and surface water monitoring network to monitor compliance with IDEQ water quality standards. Simplot would apply for a Point of Compliance determination as required by IDEQ.

Selenium

The water table selenium plume is smaller overall under Alternative 6 compared to the Proposed Action plume. The plume consists of two separate parts, one centered on the North and Northeast pits, and one centered on the South Pit (**Figure 4.3.18**). These plumes are mostly limited to the mine lease. The water table plume reaches a maximum extent about 1,700 feet west of the mine lease by 150 years post-closure. By 200 years the water table plume is predicted to recede almost completely into the mine lease limits.

The maximum predicted lateral plume extent below the Wells aquifer surface is about 1 mile west of the mine lease after 200 years at an approximate depth of 450 to 725 feet below the Wells aquifer surface. This is about ¼ mile further west than the Proposed Action plume. The maximum predicted plume depth is approximately 1,625 feet below the Wells aquifer surface beneath and within ½ mile west of the mine lease. After 200 years, the predicted off-lease plume extent of the northern plume is increasing along the western edge and stable to slowing along the northern and southern edges. After 200 years, the predicted off-lease plume extent of the southern plume is increasing but the plume is moving as a slug which is possibly growing smaller with time.

Manganese

The water table manganese plume under Alternative 6 is similar in size and extent to the Proposed Action plume (**Figure 4.3.19**). Mining-related Wells aquifer manganese impacts at the water table are mostly limited to the mine lease and note that the action level for manganese is based upon a secondary standard. The maximum off lease water table plume extent is about 1,800 feet west of

the mine lease after 150 to 200 years post-closure. The maximum predicted lateral plume extent below the water table is about 5,800 feet west of the mine lease after 200 years at an approximate depth of 725 feet below the Wells aquifer surface. The western extent is slightly greater compared to the Proposed Action. The maximum predicted plume depth is approximately 1,625 feet below the Wells aquifer surface beneath and within ½ mile west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing.

Cadmium

The water table cadmium plume is smaller overall under Alternative 6 compared to the Proposed Action plume. The plume consists of two separate parts, one centered on the North and Northeast pits, and one centered on the South Pit (**Figure 4.3.20**). These plumes are mostly limited to the mine lease. The water table plume only reaches the western mine lease boundary at 1 point west of the South Pit by 100 to 200 years post-closure. The western plume edge is stable by 100 years post-closure.

The maximum predicted lateral plume extent below the Wells aquifer surface is about 2,700 feet west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. This is about 600 feet closer to the mine lease than the proposed action plume. The maximum predicted plume depth is approximately 725 feet below the Wells aquifer surface extending up to 2,500 feet west of the mine lease. After 200 years the predicted off-lease plume extent of the northern plume is increasing along the western edge with slower increases along the northern and southern edges. After 200 years the predicted off-lease plume extent of the southern plume is increasing but the plume is moving as a slug.

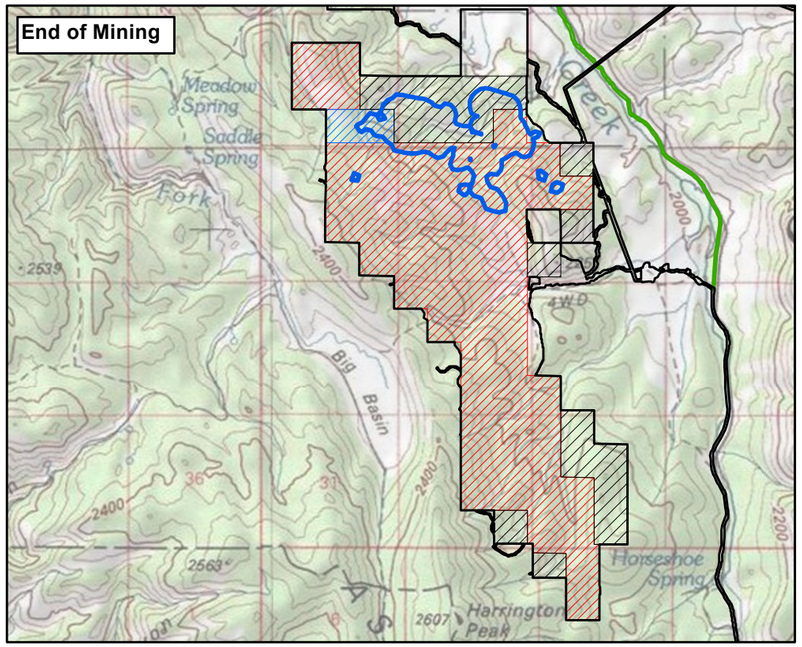
Uranium

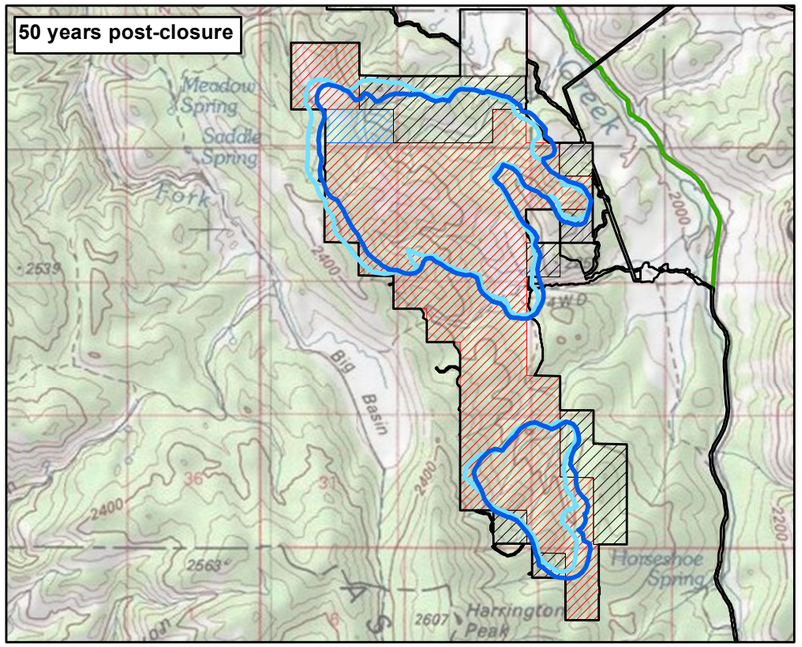
The flow and transport model predicts that uranium concentrations under Alternative 6 are less than the IDEQ ground water standard for the entire model simulation. Under Alternative 6 there are no significant uranium groundwater impacts.

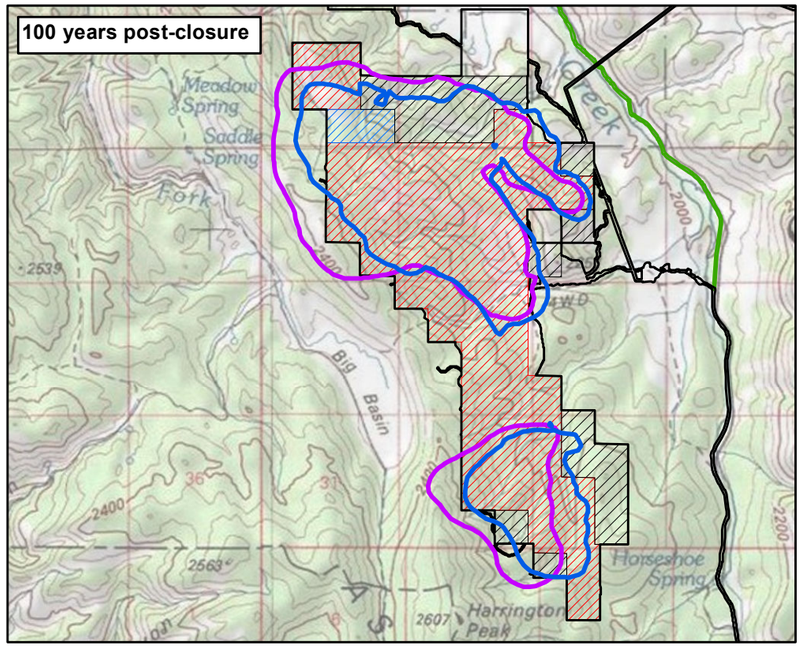
Sulfate

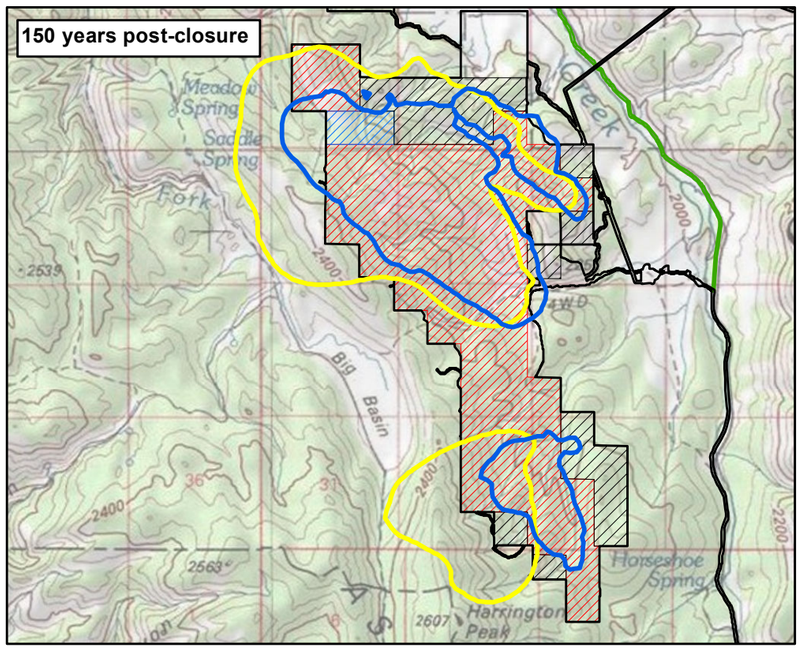
The water table sulfate plume is smaller overall under Alternative 6 compared to the Proposed Action plume. Note that the action level for sulfate is based upon a secondary standard. The plume consists of two separate parts, one centered on the North and Northeast pits, and one centered on the South Pit (**Figure 4.3.21**). These plumes are mostly limited to the mine lease and do not cross the western mine lease boundary. The water table plume extent is stable by 100 years post-closure with only minor on-lease expansion along the southwest plume edge for the northern plume and along the north, south, and west edge for the southern plume.

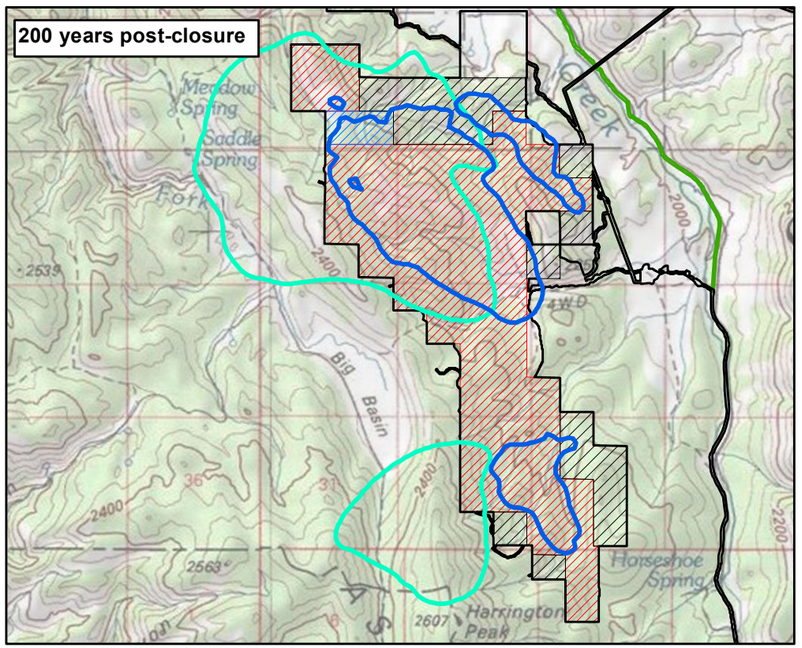
The maximum predicted lateral plume extent below the Wells aquifer surface is about 2,600 feet west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. This is about 700 feet closer to the mine lease than the Proposed Action plume. The maximum predicted plume depth is approximately 725 feet below the Wells aquifer surface extending up to 2,200 feet west of the mine lease. After 200 years, the predicted off-lease plume extent of the northern plume is increasing along the western edge with slower increases along the northern and southern edges. After 200 years, the predicted off-lease plume extent of the southern plume is increasing but the plume is moving as a slug.











Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 150 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table
- Concentration at 725 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.05 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Selenium Concentrations (0.05 mg/l) - Alternative 6

Figure 4.3.18

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 450 feet below water table
- Concentration at 725 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.05 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Manganese Concentrations
(0.05 mg/l) - Alternative 6

Figure 4.3.19

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 0.005 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

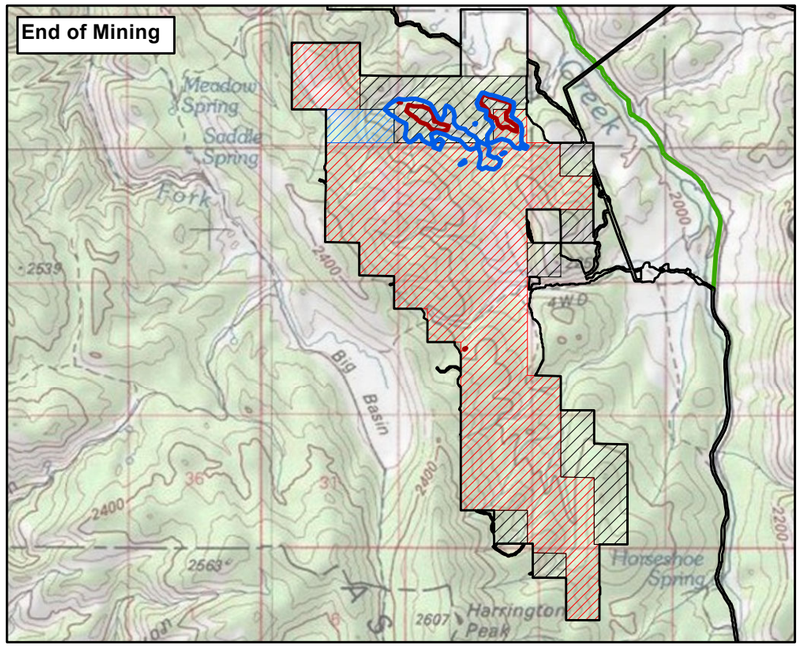
0 3,000 6,000 Feet

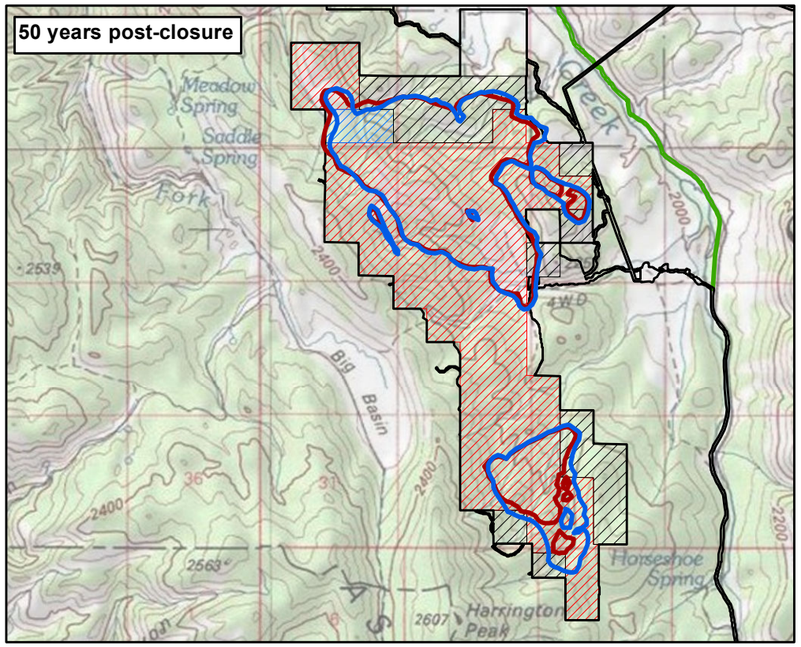
N

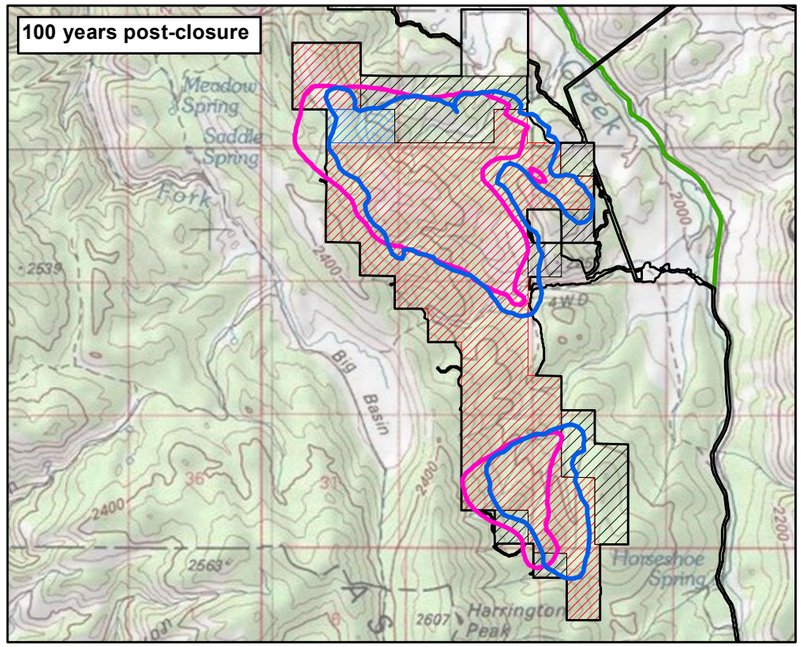
DAIRY SYNCLINE MINE PROJECT

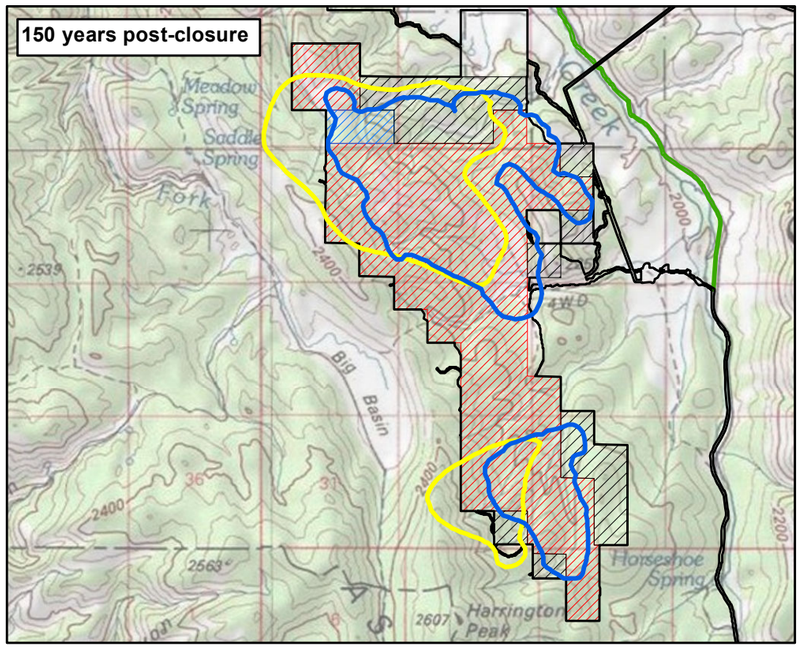
Predicted Cadmium Concentrations (0.005 mg/l) - Alternative 6

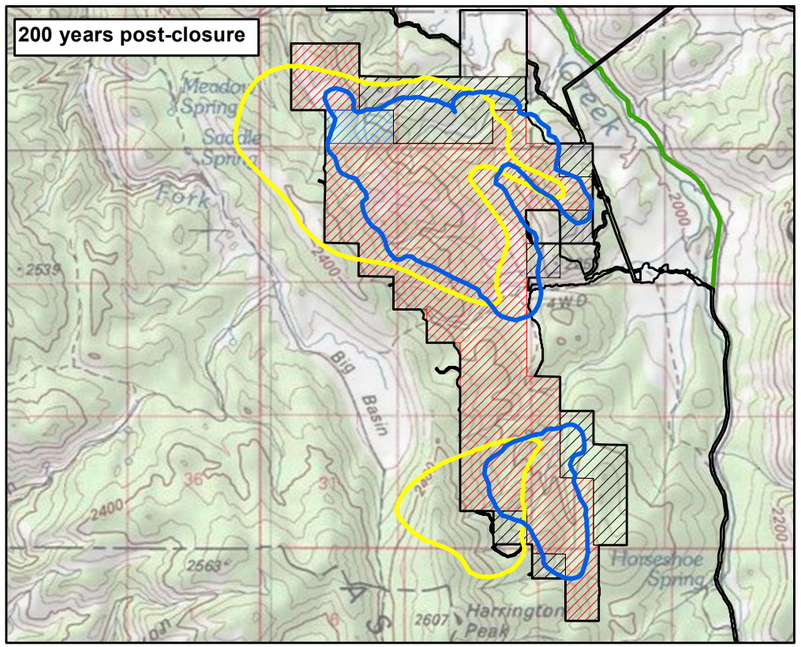
Figure 4.3.20











Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 250 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Sulfate Concentrations (250 mg/l) - Alternative 6

Figure 4.3.21

TDS

The water table TDS plume is smaller overall under Alternative 6 compared to the Proposed Action plume. Note that the action level for TDS is based upon a secondary standard. The plume develops into two separate parts, one centered on the North and Northeast pits, and one centered on the South Pit (**Figure 4.3.22**). These plumes are mostly limited to the mine lease and do not cross the western mine lease boundary. The water table plume extent is stable by 100 years post-closure with only minor on-lease expansion along the southwest plume edge for the northern plume and along the north, south, and west edge for the southern plume.

The maximum predicted lateral plume extent below the water table is about ½ mile west of the mine lease after 200 years at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth is approximately 700 feet below the Wells aquifer surface extending from the mine lease to about 2,200 feet west of the mine lease. After 200 years, the predicted off-lease plume extent is increasing for the north and south plumes but the south plume is moving as a slug.

Nitrite

The water table nitrite plume development under Alternative 6 is similar to the Proposed Action plume but overall slightly smaller. The plume also decays more quickly compared to the Proposed Action plume. The plume develops into two separate parts, one centered on the North and Northeast pits, and one centered on the South Pit (**Figure 4.3.23**). These plumes are mostly limited to the mine lease and do not cross the western mine lease boundary. The water table plume extent reaches a maximum at 50 years post-closure and begins to decline through 200 years post-closure. At 200 years, post-closure the plume extent covers a very small area in the northern portion of the mine lease.

The maximum predicted lateral plume extent below the water table is about ¼ mile west of the mine lease after 150 years post-closure at an approximate depth of 450 feet below the Wells aquifer surface. The maximum predicted plume depth corresponds to the depth of maximum lateral plume extent. After 150 years, the entire plume decays through 200 years post-closure when only a very small plume is predicted at the water table on the mine lease. Nitrite is a reactive solute and geochemical reactions would limit the actual plume extent compared to the model predictions.

4.3.2.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to groundwater resources in the Study Area. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.3.3 Irreversible and Irretrievable Commitment of Resources

The loss of groundwater quantity in the Wells aquifer during mine operations under the Proposed Action would last for the duration of mine operations and would be an irretrievable commitment of the resource. Groundwater quantity would recover post-mining through regional flow and recharge and would not be irreversible. Some perched groundwater areas on-lease and adjoining the lease would be irreversibly removed or reduced in volume.

Irretrievable changes in Wells aquifer groundwater quality under the mine lease and adjoining impacted areas would occur. A portion of the Wells aquifer beneath the mine lease and extending up to one mile west of the mine lease and a few hundred feet east and north of the mine lease is predicted to have water quality impacts from seepage through backfill and ODA areas. Concentrations of selenium and other COPCs within the affected areas of the aquifer are likely to exceed applicable groundwater quality standards under the Proposed Action and Alternative 6. These changes apply for the long-time periods considered for the impacts analysis, but the changes would decrease during post impact analysis time periods.

Final cover placement over the pit backfills with low seleniferous material would irreversibly increase infiltration rates and thus increase recharge after reclamation under Alternative 6. Modeling results for the Proposed Action indicate that groundwater levels in the Wells aquifer would increase up to three feet post-closure. Post-closure increases for Alternative 6 are up to 12 feet. Groundwater mounds would not be associated with the permanent water level increases.

Several springs would be either mined out, irreversibly covered with overburden, or are predicted to have reduced discharge during and after mine operations. The predicted reduction in surface water flow from these springs on a sub-watershed scale is uncertain but minor and less than minor on a watershed scale and within the range of seasonal and annual fluctuations. However, this impact would be mitigated as described in **Section 4.3.6**.

4.3.4 Unavoidable Residual Adverse Effects

Unavoidable adverse effects to water resources in the analysis area after mining ceases, and after any mitigation or final reclamation has occurred, would be mainly from water quality impacts. Under the Proposed Action and Alternative 6, percolation of precipitation through pit backfills and ODAs would continue to affect water quality by releasing COPCs into the Wells aquifer. Under the Proposed Action and Alternative 6, selenium and other COPC concentrations in the Wells aquifer would be greater than Idaho groundwater standards for at least 200 years post-closure beneath the mine lease, small areas north and east of the mine lease, and adjoining areas up to 1 mile west of the lease boundary.

Unavoidable adverse effects to surface water quantity would include reduction or elimination of various springs and downstream streams beyond the mining timeframe.

4.3.5 Relationship of Short-term Uses and Long-term Productivity

Some short-term use of surface and groundwater resources would occur from mining operations. Seepage of infiltration through seleniferous overburden and contribution of COPCs to groundwater downgradient of the areas containing seleniferous overburden would result in long-term water quality impacts of this groundwater.

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 500 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted TDS Concentrations
(500 mg/l) - Alternative 6

Figure 4.3.22

End of Mining

50 years post-closure

100 years post-closure

150 years post-closure

200 years post-closure

Explanation

- Dairy Syncline Proposed Action Project Area
- South Trail Canyon Road Access Alternative Project Area
- Lease Modification/Fringe Lease Area

Simplot Leases

- Simplot Lease I-28115
- Simplot Lease I-0258

- Concentration at Water Table - Wells Aquifer Surface
- Concentration at 50 feet below water table
- Concentration at 250 feet below water table
- Concentration at 350 feet below water table
- Concentration at 450 feet below water table

Isoconcentration contour value is IDEQ groundwater standard of 1.0 mg/l.
Depicted contours represent the lateral extent at the Wells Aquifer surface (water table) and the approximate depth of the greatest lateral extent.

0 3,000 6,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Predicted Nitrite Concentrations
(1.0 mg/l) - Alternative 6

Figure 4.3.23

4.3.6 Mitigation Measures

Mitigation to replace water lost due to mining or disruption of springs that could impact stream and spring flows, with consequent impacts to aquatic habitat and/or water rights would be required.

All impacted stockwater water rights and grazing water sources would need to be replaced. This replacement would be done for water sources that are affected either during (short-term) or after (long-term) mining operations.

Replacement options that would be considered include:

1. Supplying new water tanks with water hauled and/or piped by Simplot;
2. Improving water flow or retention (ponding) at springs near the disturbed area to compensate for springs disrupted within the disturbed area, and/or fencing them (while considering the ramifications of fencing on specific species such as bats);
3. Building new livestock/wildlife watering ponds;
4. Designing some mine runoff and sediment retention ponds to be available to livestock and wildlife, while monitoring water quality to ensure it is suitable for their consumption;
5. Drilling small water wells into local aquifers with windmills to supply water tanks; and,
6. Enhancing nearby existing stock ponds that typically dry up early in the summer with bentonite sealing of the bottom, thereby extending their season of usefulness.

Further, mitigation to replace water in Slug Creek to the extent that it might affect aquatic habitat would be developed and required as needed.

Additional mitigation measures for water quality are not deemed necessary at this time due to Project design features, BMPs, and EPMs discussed in Chapter 2, and further design features under Alternative 6 such as segregated waste to minimize COPC generation.

4.4 Soils

Issue: Would the Project impact soil resources in the Project Area?

Indicators:

- Acres of detrimentally disturbed soil during the Project, including reclamation.
- Estimated quantity of salvageable soils that would be disturbed and the quantity of soils that would be salvaged for reclamation purposes
- Impacts to soil productivity from the Proposed Action and alternatives.

4.4.1 Direct and Indirect Impacts

The Proposed Action would directly impact soil resources within the main Project Area by removing it from areas prior to disturbance due to mining and related activities. These direct impacts to soil resources include loss of soil during salvage, loss due to erosion of stockpiles or

reclaimed areas, exposure and potential mobilization of selenium, and reduced productivity. There could be some minor indirect impacts to soil resources through wind and water erosion.

4.4.1.1 Proposed Action

Soil would be disturbed as part of mine development, as it is removed, stockpiled, and eventually replaced during reclamation activities. This process would directly result in physical and chemical changes to the soil due to mixing of horizons and soil types during initial salvage operations and when the soil is placed in stockpiles for future reclamation use. Direct physical impacts to soil resources would also include compaction and crushing. Related effects include reduced permeability, porosity, and available water holding capacity, as well as increased bulk density. Microorganisms, such as bacteria and fungi, which are important in the decomposition of biological materials and the formation and improvement of soil itself, can be diminished in soils that are handled and then stored long-term in large stockpiles. Combined, these can decrease soil productivity and/or fertility, which could in turn affect reclamation success. Additionally, erosion potential would also increase when soil is stockpiled. However, even if some soil productivity is lost and if some quantity of soil is lost due to erosion, the available salvaged topsoil would still supply an adequate quantity and quality of soil to support reclamation. The salvaged topsoil would support vegetation, and the reclamation surface would stabilize over time.

Table 4.6-1 shows the acres of disturbance by soil type as mapped in the Order 2 Soil Survey, not including the linear features or the reclamation buffer. Considering the depths that could be salvaged within the various mapping units (**Table 4.4-1**), this would result in approximately 7.26 million BCY of affected topsoil.

EPMs noted in **Section 2.4** would reduce topsoil impacts. Suitable topsoil would be salvaged during pre-stripping from disturbed areas for use in reclamation. When possible, due to concurrent mining practices, soil would be direct-hauled rather than stockpiled, preserving much of its productivity values (**Section 2.4.4**), Soil stockpiles would be protected from erosion by seeding and establishment of short-term vegetation cover.

Unreclaimed areas include approximately 97 acres (82 acres of the Southeast Pit, 9 acres of unreclaimed highwall in the South Pit, and approximately 6 acres of unreclaimed highwall in the Northeast Pit). Reclamation would entail placing a topsoil cover and revegetating the disturbed areas. This would return topsoil to a productive resource use, and along with the accompanying grading and reestablishment of drainage patterns would conserve soil by reducing erosion potential.

The soils baseline study included a determination of reclamation suitability (**Section 3.4.1.4**). Some mapping unit components had subsoils that are too clayey. Some soil samples had *limiting* pH values and some localized pockets were too sandy. While selenium concentrations varied they were not considered *limiting* overall because they were below assigned *limiting* concentrations. In all these cases (clay, pH, sand, selenium), blending of different soils during the salvage and stockpiling process would render them suitable. The most limiting feature of Study Area soils is depth to bedrock. This would affect reclamation by controlling the reduced amount of topsoil and subsoil that can be salvaged and then replaced. The estimated volume of salvaged topsoil and the planned replacement depth of a minimum of 1.5 feet account for this limitation. It is impossible to determine the exact amount of soil that can be salvaged, so thickness may be adjusted upward if

more soil is available. Available information indicates that there would be sufficient soil salvaged to allow 1.5 feet to be spread. In any case, as described in **Section 2.3.10**, all available soil would be used during reclamation (i.e., none would be wasted, disposed, or remain stockpiled).

Table 4.4-1 Topsoil and Subsoils Affected by the Proposed Action

SOIL MAPPING UNIT	SOIL MAPPING UNIT NAME	TOTAL DISTURBANCE (ACRES)	AVERAGE ESTIMATED TOPSOIL SALVAGE DEPTH (FEET)	TOPSOIL VOLUME (CUBIC YARDS)
A3	Strickland family - Bischoff family - Schuster family complex, 8 to 25% slopes	189	3.3	1,006,236
A4	Grunder family - Starley family - Strickland family complex, 25 to 40% slopes	282	2.4	1,091,904
M2	W family - Cowlow family complex, 2 to 8 percent slopes	30	3	145,200
M3a	Grunder family - Strickland family complex, 8 to 25% slopes	354	2.4	1,370,688
M3b	Woodcanyon - Sessions family, 8 to 25% slopes	264	1.9	809,248
M4a	Sweetcreek family - Judkins family - Lag family complex, 25 to 40% slopes	265	2	855,067
M4b	Bischoff loam, 25 to 40% slopes	102	1	164,560
M5	Sweetcreek family - Lag family complex, 40 to 55% slopes	78	1.5	188,760
S2	S2: Schuster family - Strickland family - Hunchback family complex, 2 to 8 percent slopes	53	2.3	196,665
S3	Larkspur family-Lag family complex, 8 to 25% slopes	128	0.7	144,555
S4	Larkspur family-Starley complex, 25 to 40 percent slopes	124	0.1	20,005
TS1	Hades loam, 0 to 2% slopes	56	3.7	334,283
TS2	Hades sandy clay loam, 2 to 8% slopes	140	2.5	564,667
TS3	Hades clay loam, 8 to 25% slopes	75	2.9	350,900
TS4	Ricafied - Agassiz family complex, 20 to 45% slopes	55	0.2	17,747
Total[1]		2,195		7,260,485

[1] Total does not include a combined 635 acres associated with the reclamation buffer, linear features, or areas outside of the 2nd Order survey.

For ancillary linear features such as the powerline, where 2nd Order surveys were not performed, soils would also be disturbed during construction. Construction is expected to take one to two seasons and soils would be locally salvaged and used in reclamation along the corridor, but not used for the main mine reclamation areas.

Last, as described in **Section 2.3.10.2**, topsoil would be sampled prior to placement to determine agronomic characteristics, which would then dictate fertilizer types and application rates, if any are needed. Combined, impacts to soil resources would be minor, but long-term.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect soil resources. Indirectly, the money received from the land sale could be used to purchase undisturbed lands that would come under BLM management and the BLM would also gain 440 acres of undisturbed land from the donation parcel that would be added to the existing ACEC.

USFS Land Exchange

The land exchange would not directly affect soil resources. Indirectly, the USFS would exchange 632 acres of the selected parcel, of which approximately 60 acres of soil resources would be disturbed in the selected parcel from the tailings pond facility (although once in private ownership, the entire selected parcel could be disturbed) and the USFS would gain 640 acres of undisturbed soils associated with the offered parcel that would come under USFS management.

4.4.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative, four locations on NFS lands would require widening, and three locations would require road grade modifications, while one location on state lands would require road grade modifications. The total amount of disturbance associated with this route is approximately 26 acres compared to the 14 acres of disturbance in the 3 Georgetown Road segments under the Proposed Action. All other areas of disturbance under this Alternative would be the same as under the Proposed Action. Therefore, overall impacts to soils would be approximately 12 acres more than the Proposed Action.

4.4.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 1,142 acres of land that would accommodate the tailings pond and associated pipeline infrastructure and the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to soils under this alternative would be identical to the Proposed Action, except for the indirect effects associated with the disposal and donation parcels.

4.4.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 642 acres of land. The remaining 500 acres would be sold to Simplot, and is the minimum acreage required to accommodate the tailings pond facility. The disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to soils

under this alternative would be identical to the Proposed Action, except for the indirect effects associated with the disposal and donation parcels.

4.4.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, the tailings facility would not be located on NFS lands and there would be approximately 125 acres fewer acres impacted. The tailings pond associated with this alternative would only serve approximately 20 years of the Proposed Action's 30-year mine life. A large dam would need to be built along the edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings would require additional NEPA analysis to locate a new tailings facility.

The rest of the Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to soils under this alternative would occur on approximately 125 fewer acres but the type and magnitude of impacts would the same as associated with the Proposed Action. Further, the indirect effects associated with the offered and selected parcels would not occur.

4.4.1.6 Alternative 5 – Reduced USFS Land Exchange

Under Alternative 5, the disturbance acreage and tailings pond facility would be the same as under the Proposed Action; therefore, the impacts to soils under this alternative would be identical to the Proposed Action, except for the indirect effects associated with the smaller alternative selected parcel.

4.4.1.7 Alternative 6 – Selective Handling Alternative

Under this alternative, although overburden would be selectively handled according to whether it was low in selenium or had elevated selenium concentrations, the acres to be disturbed and thus impacts to soils under this alternative would essentially be the same as the Proposed Action.

4.4.1.8 No Action Alternative

Under the No Action Alternative, Project activities under the MRP evaluated in this EIS would not occur. Therefore, there would be no impacts to soils associated with the No Action Alternative.

4.4.2 Irreversible and Irretrievable Commitment of Resources

Unreclaimed areas of soil disturbance in the South, Southeast, and North Pits would produce an irreversible and irretrievable commitment of soil resources disturbed by these features.

Further, any loss of soil productivity due to handling (discussed in **Section 4.4.1.1**) would be an irretrievable commitment of those affected soils, but over the long term, productivity would likely return, thus the impact would not be irreversible.

4.4.3 Unavoidable Residual Adverse Effects

Native soil conditions would be lost on the disturbed areas due to the breakdown of soil structure, adverse effects to microorganisms, and discontinuation of natural soil development as a result of salvage operations. Soils salvaged and utilized in reclamation would initially demonstrate a decrease in infiltration and percolation rates, decrease in available water holding capacity, and loss

of organic matter. These effects would be reversed by natural soil development over time. Successful reclamation of disturbed areas would expedite these natural processes and create an environment suitable for long-term vegetation establishment lessening residual effects.

Approximately 97 acres of disturbance under the Proposed Action would consist of unreclaimed highwall areas in the South, Northeast, and Southeast pits.

4.4.4 Relationship of Short-term Uses and Long-term Productivity

Soils would be disturbed in the short-term during mining operations and reclamation of disturbed areas would return the disturbed soil to long-term productivity by being utilized as growth medium in reseeded areas, while the unreclaimed highwall areas under the Proposed Action and all Action Alternatives would permanently eliminate approximately 97 acres from potential production.

4.4.5 Mitigation Measures

No mitigation measures have been identified for the Proposed Action or any of the Action Alternatives. Simplot will monitor the volumes of topsoil salvaged and topsoil used.

4.5 Vegetation

Issue: What are the impacts to vegetation patterns and productivity in the Project Area?

Indicators:

- Acres of vegetation communities and plant species (including USFS Sensitive species and federally-protected species) that would be impacted and susceptible to noxious weed invasion.
- Acres of disturbed area that would be reclaimed and the vegetation communities that would be restored.
- Potential to bioaccumulate contaminants in reclamation vegetation.
- Acres of permanent vegetation conversion from forest to non-forest cover and predicted regrowth back to forest conditions.
- Acres of old growth forest removed.
- Acres of timber removed.
- Acres of disturbed area with potential for terrestrial invasive species and noxious weeds.

4.5.1 Direct and Indirect Impacts

4.5.1.1 Proposed Action

Vegetation Communities

Over the life of the proposed mining activities, the Proposed Action would remove approximately 2,820 acres (includes buffer areas and linear features) of upland (non-wetland) vegetation and approximately 10.0 acres of wetland vegetation (which includes wetland/mesic meadow and riparian). The vegetation communities and associated acreages affected by the Proposed Action

are summarized in **Table 4.5-1**. All vegetation would be removed within the vegetation types impacted by the Proposed Action.

Table 4.5-1 Vegetation Communities and Estimated Affected Acreages Under the Proposed Action

VEGETATION COMMUNITIES	ACRES
Sagebrush	776
Aspen/Mixed Conifer	1,012
Aspen	535
Mixed Conifer	369
Disturbed	37
Clearcut/Regeneration	87
Agriculture/Pasture	3
Wetland/Mesic Meadow[1]	7
Riparian[1]	4
Total Impact to Vegetation	**2,830**

[1]These community types are not meant to indicate jurisdictional status, which is discussed in **Section 4.6**.

Existing vegetation would be protected to the extent feasible by limiting surface disturbance to those areas needed for operations. As mining progresses, reclamation would begin on mined-out areas. Through progressive open pit backfilling and concurrent reclamation, the area of unreclaimed pit disturbance at any one time would be minimized. Reclamation disturbance buffers have been added for pits and ODAs and these are detailed in **Table 2.3-1** and shown on **Figure 2.3.1**. The total amount of Project disturbance (including reclamation disturbance buffers) analyzed is 2,830 acres (**Table 2.3-1**). The reclamation activities for the Proposed Action are described in **Section 2.3.10**.

Under the Proposed Action, approximately 2,733 acres (or 96.6 percent of the area of disturbed vegetation) would be reclaimed, with 97 acres left unreclaimed. Approximately 82 acres of the Southeast Pit would not receive backfill or be reclaimed. There are also 9 acres of unreclaimed highwall proposed in the South Pit, as well as 6 acres of unreclaimed highwall in the Northeast Pit.

To determine the residual wildlife habitat service losses under the Proposed Action, the HEA was used to quantify wildlife habitat services lost through mining and gained through reclamation. Published literature, data from other mines in the region, and the best professional judgment of SWCA, Stantec, and USFS botanists were used to develop recovery trajectories for reclaimed areas. Based on the HEA results, on-site reclamation would result in the long-term credit of 99,991 DSAYs, which indicates that reclamation would offset approximately 46 percent of the wildlife habitat services lost under the Proposed Action with a net debit of 116,045 residual DSAYs. DSAYs are used to quantify the value of all ecosystem services provided by one acre of land over the course of one year. This residual debit in wildlife habitat services would represent a long-term adverse impact of the Proposed Action on wildlife, and also on vegetation as measured by plant species metrics. DSAYs were not determined for either the donation parcel or the offered parcel;

however, those parcels would offset some additional amount of the wildlife habitat services lost as described further in the Land Sale and Land Exchange subsection below.

Once mining is completed, pits would be backfilled concurrently, capped with two feet of low selenium-bearing Rex Chert, followed by two feet of Dinwoody Formation or SLF rock, and finally, covering with a minimum of 1.5 feet of topsoil. The cover would be sloped to direct drainage of surface water off the reclaimed pit and onto native ground. To the extent possible, topsoil removed from its original location would be placed directly on areas ready to be reclaimed. The immediate use of topsoil in reclamation promotes continued growth of vegetative matter and preserves existing seeds in the topsoil. Some topsoil would need to be stockpiled from the initial mining activities, because reclamation areas would not always be available at the time that topsoil is removed.

The management of topsoil would be critical to the success of revegetation. All topsoil deemed suitable would be salvaged and stockpiled or placed directly on areas that are ready for reclamation (**Section 2.3.10.2**). Reclaimed areas would be managed to control invasive and noxious weed species and prevent their introduction. Appropriate BMPs to control invasive and noxious species would be implemented through the duration of the Proposed Action including pre-mining preparations and post-mining reclamation.

The Agency-approved seed mix listed in **Table 2.3.5** would be used on reclaimed areas, although it may be amended in the future based on monitoring results. While vegetation would regrow in reclaimed areas, the resulting species composition and community structure would be different than before disturbance; therefore, direct impacts to vegetation would be long-term.

Some reclamation revegetation on historic southeastern Idaho phosphate mines has been found to accumulate selenium to levels detrimental to livestock foraging on the vegetation. Certain plants are more susceptible to selenium accumulation and include trees, legumes, and species with deep root systems (Mackowiak and Amacher 2003; Ohlendorf 2003; Mackowiak et al. 2004).

The Proposed Action cover would be designed to separate the root systems of the revegetated plants from the selenium in the underlying overburden. All areas of seleniferous overburden disposal (pit backfills and external ODAs) would be covered with two feet of low seleniferous chert, overlain by two feet of Dinwoody Formation and/or SLF as well as a minimum of 1.5 feet of topsoil. This cover system is expected to limit the amount of net percolation of meteoric water through the seleniferous overburden by increasing runoff as well as providing moisture storage available for plant uptake and evapotranspiration.

The reclamation seed mixes were developed to avoid selenium-accumulator or deep-rooted plant species. The seed mixes that would be used in the reclaimed areas would not contain any trees, legumes, or plants that would extend substantial root systems to depths below the cover. Seeds would be drilled or broadcast onto the reclamation areas. The topsoil would be augmented with fertilizer based on site-specific soil analyses. Seeding would typically occur in the fall or spring, following preparation of the site. Some plant species would be difficult to reestablish in reclaimed areas, because reclaimed areas would have different soil characteristics and would likely be drier than existing conditions.

The Proposed Action would likely result in the long-term loss of 535 acres of aspen forests and 1,012 acres of aspen/mixed conifer forests. The 535 acres of aspen forests occur on 16 acres of BLM land, 501 acres of USFS land, and 18 acres of private land. The 1,012 acres of aspen/mixed conifer forests occur on 45 acres of BLM land, 956 acres of USFS land, and 11 acres of private land. Quaking aspen is a clonal species that primarily reproduces vegetatively through the propagation of lateral roots. These roots would be removed or destroyed during mining operations. Without an existing root source, quaking aspens would be difficult and less likely to reestablish in areas where soil had been removed. However, quaking aspens also reproduce sexually through seed production, and under the favorable conditions of an adequate seed source, friable mineral soil, limited competition from other plant species, and available soil moisture, seedling germination is possible (Schier et al. 1984). Furthermore, the regeneration of quaking aspen seedlings on phosphate mine dumps has been reported (Williams and Johnston 1984), although it is not commonly observed (Bill Stout, BLM, Personal Communication, January 25, 2018). However, due to the length of time for woody vegetation to reclaim an area, the loss of woody vegetation would be a long-term loss.

Mixed conifer forests primarily reproduce sexually through seeds and do not require high levels of available soil moisture as compared to aspen-dominated forests. However, the Proposed Action would also result in the long-term loss of 369 acres of mixed conifer forests, because these forests are not anticipated to regenerate to their former conditions for approximately 100 to 200 years after the completion of the Proposed Action and the initiation of reclamation (Uchytil 1991; Smith and Fischer 1997; Hermann and Lavender 1990; Lotan and Critchfield 1990). The 369 acres of mixed conifer forests occur on 368 acres of USFS land, and 1 acre of private land.

Through reclamation and succession, the Proposed Action would likely result in the long-term loss of approximately 1,916 acres of snag-producing forest communities and would likely be replaced for decades by grasslands and shrublands as the processes of reclamation and succession continue.

Impacts to vegetation from elevated selenium concentrations are predicted to be negligible due to the implementation of the cover system and would be long-term.

Forest Vegetation (Timber)

Old-Growth

The Proposed Action would have no impact on old-growth forests, as no old-growth forests occur within the Study Area (Beck 2012).

Allowable Sale Quantity

The Proposed Action would impact approximately 1,168 acres of suitable timber. Within the entire CNF, there are approximately 84,000 acres of suitable timber designated to contribute to the ASQ. The Proposed Action would, impact approximately 1.4 percent of the ASQ acreage within the CNF (Beck 2012), dropping the average annual sustainable harvest from approximately 610 to 601 acres. Thus, the impact of the Proposed Action on ASQ would be long-term but minor.

Special Status Plant Species

Based on the lack of potentially suitable habitat for the majority of species, the Proposed Action would only have the potential to impact two special status plant species, the Idaho sedge and Ute lady's tresses, as the Study Area does contain potentially suitable habitat for these species. Up to 11 acres of potentially suitable habitat for the Idaho sedge would be removed (i.e. riparian and mesic meadow/wetland). This is approximately 32 percent of the total available habitat within the Study Area. However, the impacts to suitable habitat would not occur where this species has been previously observed (IFWIS 2018). Therefore, the potential impacts to Idaho sedge would be site-specific, short-term and minor.

The Proposed Action would impact unoccupied but marginally suitable habitat for Ute lady's tresses in the form of wetland and riparian areas. Potential impacts to Ute lady's tresses orchid would be site-specific, short-term, and minor due to potential impacts to a very small amount of marginally suitable habitat.

No special status plant species were documented within the Study Area during the botanical surveys conducted by JBR in 2002, 2008, 2009, and 2011 (JBR 2012e; JBR 2013c). The Proposed Action would have no impact on potential habitat for the three USFS Sensitive species: cache beardtongue (*Penstemon compactus*), Payson's bladderpod (*Lesquerella paysonii*), and starveling milkvetch (*Astragalus jejunus* var. *jejunus*), as well as the USFWS Candidate species whitebark pine (*Pinus albicaulis*).

Noxious Weeds and Invasive Species

Executive Order 13112 (64 CFR 6183, Invasive Species, February 1999) requires that a federal agency ". . . not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless, pursuant to guidelines it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm would be taken in conjunction with actions." The primary purpose of Executive Order 13112 is to reduce the ecological and economic effects of invasive plant and animal species to agriculture, industry, recreation, and the environment.

Disturbance promotes the colonization of non-native plants, including noxious weeds. Once established, non-native plants are often able to outcompete native plants for resources and may reduce the diversity of the native plant community.

In total, the Proposed Action would produce approximately 2,830 acres of surface disturbance, including approximately 43 acres associated with roads. Vehicles are effective means of seed transport and dispersal. Linear surface disturbances such as those associated with roads can and have provided corridors (Gelbard and Belnap 2003; Watkins et al. 2003) and serve as a source of propagules (D'Antonio et al. 2001) for further spread of noxious and invasive species into adjacent undisturbed areas. Thus, the risk of non-native plant infestation increases with increased traffic volume. Other sources of weed infestation include the transportation and use of topsoil that contains weed seeds and the potential use of contaminated hay bales for erosion control and mulch material for reclamation. EPMs and BMPs have been designed to minimize the potential for the

establishment of noxious weeds such as keeping active mining disturbances to a minimum for as short a timeframe as possible with ODAs and pit backfill advancing in concert with the active pit; monitoring and controlling noxious weed infestations; implementing an annual noxious weed treatment plan; and using certified noxious weed-free seed mixes, mulch, and straw. Mitigation for weeds would continue through the life of the mine and reclamation. Impacts from noxious weed infestations would be site-specific, short-term, and minor.

Tribal Plants of Concern

Reclamation would occur concurrent with and upon the completion of the mining activities. The seed mix applied during reclamation would include grass and forb species intended to inhibit soil erosion and promote soil stability through rapid germination and growth. The stability of the reclaimed landscape would promote the reestablishment of the native plant community and would allow for natural successional patterns to occur over time. The lag between the initiation of reclamation and the reestablishment of natural successional patterns, estimated to take at least 100 years for re-establishment of the current native plant communities, would constitute a temporary and minor to moderate impact to tribal access of vegetation within the Study Area. However, through the BLM land sale and the USFS land exchange, approximately 1,080 acres of undisturbed land would be added to the federal land base and would be available for tribal access of vegetation.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect vegetation resources. Indirectly, the money received from the land sale could be used to purchase undisturbed lands that would come under BLM management and the BLM would also gain 440 acres of undisturbed land from the donation parcel that would be added to the existing ACEC. The disposal parcels and the donation parcel have somewhat dissimilar vegetation types, with the former primarily sagebrush, aspen/mixed conifer, and aspen, and the latter primarily sagebrush/mountain shrub with some aspen and aspen/conifer mix. The southern disposal parcel also contains a small area of wet mesic meadow, which would come under private ownership under the land sale. Also, under the Proposed Action, with the BLM land sale, management of the reclamation would change with IDL managing reclamation through an approved Reclamation Plan.

HEA analyses were not performed for the donation parcel because there were no potential wildlife habitat services to be lost from the Project within the parcel. However, there are DSAYs for the donation parcel that would offset some amount of the wildlife habitat services lost due to the sale of the disposal parcels because the BLM would be able to preserve the DSAYs on this currently private land that could otherwise be developed at any moment.

USFS Land Exchange

The land exchange would not directly affect vegetation resources. Indirectly, the USFS would exchange 632 acres of the selected parcel, of which approximately 60 acres of vegetation resources would be disturbed in the selected parcel from the tailings pond facility (although once in private ownership, the entire selected parcel could be disturbed) and the USFS would gain 640 acres of undisturbed vegetation associated with the offered parcel that would come under USFS management. The selected parcel and the offered parcel have similar vegetation types dominated

by sagebrush, aspen/mixed conifer, and aspen community types. Also, under the Proposed Action, with the USFS land exchange, management of the reclamation would change. IDL would manage reclamation through an approved Reclamation Plan.

HEA analyses were not performed for the offered parcel because there were no potential wildlife habitat services to be lost from the Project within the parcel. While the HEA analysis for the Study Area included the selected parcel, information focusing only on the selected parcel was not excerpted for individual analysis. However, there are DSAYs for the offered parcel that would offset some amount of the wildlife habitat services lost on the selected parcel because the USFS would be able to preserve the DSAYs on this currently private land that could otherwise be developed at any moment.

4.5.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative, four locations on NFS lands would require widening, and three locations would require road grade modifications, while one location on state lands would require road grade modifications. The total amount of disturbance associated with this route is approximately 26 acres compared to the 14 acres of disturbance in the 3 Georgetown Road segments under the Proposed Action. All other areas of disturbance under this Alternative would be the same as under the Proposed Action. Therefore, besides the 12 acres of increased disturbance to vegetation resources, overall impacts would be very similar to the Proposed Action.

Noxious weed control methods for Alternative 1 would be unchanged from those described in the Proposed Action. The potential for noxious weeds and other non-native plant species to colonize disturbed locations along the impacted roadways is slightly increased.

4.5.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 1,142 acres of land that would accommodate the tailings pond and associated pipeline infrastructure and the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, impacts to vegetation under this Alternative would essentially be the same as the impacts associated with the Proposed Action. However, there would be no offset to the HEA losses that would still occur due to the tailings pond facility, because the donation parcel would not come into federal management.

4.5.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 642 acres of land. The remaining 500 acres would be sold to Simplot, and is the minimum acreage required to accommodate the tailings pond facility. The disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to vegetation under this Alternative would essentially be the same as the impacts associated with the Proposed Action. However, there would be a greater offset to the HEA losses on the disposal parcels due to the tailings pond facility, because the larger donation parcel would still come into federal management.

4.5.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, the tailings facility would not be located on NFS lands and there would be approximately 125 acres fewer acres impacted. The tailings pond associated with this alternative would only serve approximately 20 years of the Proposed Action's 30-year mine life. A large dam would need to be built along the edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings would require additional NEPA analysis to locate a new tailings facility.

The rest of the Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to vegetation under this alternative would occur on 137 fewer acres but the type and magnitude of impacts would be essentially the same as associated with the Proposed Action. However, there would be no offset to the HEA losses that would still occur due to the tailings pond facility because the offered parcel would not come into federal management.

4.5.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, the USFS would retain ownership of approximately 472 acres of land. The remaining 160 acres would be turned over to Simplot for the tailings pond facility. However, the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to vegetation under this Alternative would essentially be the same as the impacts associated with the Proposed Action. However, there would be a greater offset to the HEA losses on the selected parcel due to the tailings pond facility, because the larger donation parcel for the exchange would still come into federal management.

4.5.1.7 Alternative 6 – Selective Handling Alternative

Under this alternative, although overburden would be selectively handled according to whether it was low in selenium or had elevated selenium concentrations, the acres to be disturbed and thus impacts to vegetation resources under this alternative would essentially be the same as the Proposed Action.

4.5.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to vegetation resources in the Study Area. The No Action Alternative would maintain the current status of vegetation resources in and around the Study Area. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.5.2 Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action and Action Alternatives, the loss of aspen and conifer forests is considered an irreversible commitment of resources. Although the 2013 MRP would reestablish grassland and shrubland vegetation communities in disturbed areas after mining operations cease, aspen, aspen/mixed conifer, and mixed conifer forests are not anticipated to regenerate in the foreseeable future, because the post-disturbance successional patterns of these communities likely require decades or centuries to develop into their pre-disturbance conditions.

The Proposed Action and Action Alternatives would also result in the loss of timber, which would be an irreversible commitment of resources. Even with the reclamation of forest communities, conifer forests, in particular, would not recover to their current stature and complexity for at least 100 years (Uchytil 1991; Smith and Fischer 1997; Hermann and Lavender 1990; Lotan and Critchfield 1990).

4.5.3 Unavoidable Residual Adverse Effects

For the Proposed Action and action alternative, an unavoidable residual adverse impact would occur if existing vegetation were not eventually replaced through reclamation and subsequent natural succession. Simplot would be required to stabilize and revegetate disturbed areas in accordance with their approved MRP. Performance bonds would be held by regulatory agencies to ensure that the site is reclaimed to land use plan standards and other established requirements. Despite reclamation efforts, the Proposed Action and Action Alternatives would have a long-term residual adverse effect on vegetation communities, as some vegetation communities (i.e., aspen, aspen/mixed conifer, and mixed conifer) may never recover to baseline conditions, and if these communities are able to recover, the process would likely take decades.

Based on the HEA, reclamation would offset approximately 46 percent of the wildlife habitat services lost under the Proposed Action (not including any gain obtained with the donation parcel or the offered parcel) with a net debit of 116,045 residual DSAYs of lost wildlife habitat services (SWCA 2017). The BLM land sale and USFS land exchange would result in approximately 1,080 acres of undisturbed wildlife habitat (with the three major vegetation community types being approximately 560 acres of sagebrush/mountain brush habitat type, 245 acres of mixed conifer habitat type, and approximately 170 acres of aspen habitat type) that would also help offset a percentage of the wildlife habitat services lost under the Proposed Action. The loss of wildlife habitat services would be an unavoidable residual adverse effect of the Proposed Action.

4.5.4 Relationship of Short-term Uses and Long-term Productivity

The Proposed Action and Action Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to vegetation while providing the short-term benefits of phosphate resources and productive employment.

4.5.5 Mitigation Measures

No mitigation measures have been identified for the Proposed Action or any of the Action Alternatives.

4.6 Wetlands and Riparian Areas

Issue: Would Project construction and other disturbances directly affect wetlands and WoUS?

Indicators:

- The number of wetland acres and relative function and value components that would be affected by the Project.
- The acres of wetland disturbance and number of WoUS crossings caused by the Project.
- Impacts to wetlands from changes in flow.

4.6.1 Direct and Indirect Impacts

4.6.1.1 Proposed Action

EO 11990, Protection of Wetlands, requires that federal agencies ". . . avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." Under the Proposed Action, there would be approximately 4.1 acres of direct removal of wetlands and WoUS. **Table 4.6-1** summarizes Project components that would result in direct impacts to wetlands. The wetland impacts would be local, long-term, and moderate as a result of Project design, the use of BMPs, acreage, and similar functionality of wetlands near the Study Area that would not be impacted.

AIZs apply to the aquatic influence zone associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands under the Management Prescription 2.8.3 of the CNF RFP. Management emphasis is to restore and maintain the health of these areas (USFS 2003a). Minerals and Geology Guidelines in the CNF RFP state that the construction of new structures, support facilities, and roads occur outside of AIZs except in circumstances where no alternative exists (USFS 2003a). Where no alternatives exist, facilities should be sited such that impacts to AIZs are avoided or minimized, and roads should be constructed such that disturbance to these zones is held to the minimum required for the approved mineral activity. Since development of ore deposits is dependent on the location of those deposits, no alternative (other than pit configuration modification) exists regarding the locations of mine pits (see **Section 2.6.2.6**). Impacts to fisheries, aquatics and AIZs are discussed in more detail in **Section 4.8**.

Table 4.6-1 Direct Impacts to Jurisdictional Wetlands and Other WoUS

LOCATION AND/OR COMPONENT	FEATURE		CONDITION [1]	IMPACTED ACRES
	NAME	TYPE		
Lease Area	G	Wet Meadow	Fair/0.614	2.77
Lease Area	H	Spring	Poor/0.484	0.04
Lease Area	Drainage between Wetland H, Pond 1 and confluences	Drainage	N/A	0.11
Lease Area	Pond 1	Pond	Poor/N/A	0.05

LOCATION AND/OR COMPONENT	FEATURE		CONDITION [1]	IMPACTED ACRES
	NAME	TYPE		
Lease Area	Drainage between Pond 2 and Wetland G, and to confluences	Drainage	N/A	0.03
Lease Area	Pond 2	Pond	Poor/N/A	0.07
Lease Area	Drainage between Pond 3 and confluences	Drainage	N/A	0.05
Lease Area	Pond 3	Pond	Poor/N/A	0.13
Lease Area Total				**3.25**
Powerline	TLX-SC	Slug Creek	Good/0.706	0.00 (would be spanned)
Powerline	TLX-DV1	Wet Meadow	Excellent/0.89	0.00 (would be spanned)
Powerline	TLX-DV2	Freshwater Pond	Excellent/0.92	0.00 (would be spanned)
Powerline	Stock Ponds (3)	Stock Ponds	N/A	0.00 (would be spanned)
Powerline Total				**0.00**
Pipeline	DSW-01A	Spring	Good/0.77	0.06
Pipeline	JC	Wetland	Fair	0.12
Pipeline Total				**0.18**
Access Road	Wilde Canyon	Drainage	N/A	0.11
Access Road	JC	Wetland	Fair	0.18
Access Road	GC-2	LH Fork (Georgetown Canyon)	Fair/0.589	0.02
Access Road	SC-4	Slug Creek (Headwaters)	Good/0.713	0.21
Access Road	SC-5	Slug Creek (Headwaters)	Excellent	0.02
Access Road	SC-1A	Slug Creek	Fair/0.67	0.03
Access Road	SC-2A	Slug Creek	Excellent/0.91	0.08
Access Road Total				**0.65**
Proposed Action Total				**4.08**

[1] Based on the Overall Score unless otherwise indicated

[*] Based on the SVAP (Stream Visual Assessment Protocol) Score

Source: JBR 2012b; JBR 2013b

As discussed in detail in **Section 4.3**, the capture of surface runoff during active mining would decrease the quantity of water in streams and wetlands downstream of the Study Area over the short-term. The reduced quantity of water may result in the localized drying of some wetlands downstream of the Study Area over the short-term. However, in general, impacts to peak flow from reduced runoff areas would be short-term, minor to moderate, and local.

The roads and road drainage networks, with the exception of the Georgetown Road access road upgrades, would have short-term, minor, and site-specific impacts to ephemeral and intermittent drainage peak flows during the operational mine life. The greatest impact to surface water flows would be to springs located in and near the Study Area. Not all springs would be impacted, and intensity of impacts would vary by spring location. Potential impacts to surface water resource are discussed in detail in **Section 4.3**.

Simplot would implement BMPs to control erosion, sedimentation, and the release of COPCs (i.e., fluoride, sulfate, nitrate, nitrite, TDS, aluminum, antimony, cadmium, iron, manganese, selenium, thallium, uranium, and zinc) to protect surface waters, including wetlands, in and around the Proposed Action or Action Alternatives.

In accordance with USEPA regulations, an SPCC Plan would be developed prior to construction and for operations and would provide direction for preventing and controlling potential spills within the Study Area and within wetlands that would not be directly impacted by the Project.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect wetlands or riparian areas. Further, neither wetland A nor Seep 1, located on the disposal parcels, would be impacted by Project disturbances, although they would no longer be managed as part of public lands. A potential small wetland is located in the donation parcel and the BLM would incorporate its management.

USFS Land Exchange

The land exchange would not directly affect wetlands or riparian areas. Further, Seep 2, located on the selected parcel, would not be impacted by Project disturbances, although it would no longer be managed as part of NFS lands. No wetlands or riparian areas are known on the offered parcel so the USFS would not obtain any of those types of habitats as part of the exchange, which would result in a net loss to NFS management.

4.6.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative five jurisdictional wetland areas occur along South Trail Canyon Road. **Table 4.6-2** summarizes the Project components that would result in impacts to wetlands and other WoUS within the access routes for the South Trail Canyon Access Route Alternative.

The proposed access route for the South Trail Canyon Access Route Alternative would result in approximately 0.20 acres of unavoidable permanent impacts to wetlands and other WoUS.

Table 4.6-2 Direct Impacts to Jurisdictional Wetlands and Other WoUS within the South Trail Canyon Access Route Alternative

PROJECT COMPONENT	FEATURE		CONDITION [1]	IMPACTED ACRES
	NAME	TYPE		
Access Road	TC-2	Trial Creek	Excellent [*]	0.20
Access Road	TCR-E	Wet Meadow	Good	<0.1
Total				**0.20**

[1] Based on the Overall Score unless otherwise indicated

[*] Based on the SVAP (Stream Visual Assessment Protocol) Score

Source: JBR 2012b; JBR 2013b

The South Trail Canyon Access Route Alternative would result in indirect impacts to wetlands similar to those of the Proposed Action. The South Trail Canyon Access Route Alternative would permanently impact approximately 0.20 acres of wetlands and other WoUS that would not be impacted under the Proposed Action. This alternative could indirectly impact wetlands near proposed activities. Mitigation of these sites would be determined in consultation with the USACE for the CWA Section 404 permit. Resulting from the Project design, use of BMPs, and acreage and similar functionality of wetlands not impacted in and near the Study Area, the wetland/riparian impacts from the South Trail Canyon Access Route Alternative were determined to be local, long-term, and moderate.

4.6.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 1,142 acres of land that would accommodate the tailings pond and associated pipeline infrastructure and the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the direct impacts to wetlands under this alternative would be the same as the impacts associated with the Proposed Action. However, wetland A and Seep 1, located on the disposal parcels, would continue to be managed as part of public lands; the potential small wetland that is located in the donation parcel would not come under BLM management.

4.6.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 642 acres of land. The remaining 500 acres would be sold to Simplot, and is the minimum acreage required to accommodate the tailings pond. Although the tailings facility pipelines and other associated linear infrastructure would be permitted separately, the disturbance acreage and Project facility layout under this Alternative would be the same as under the Proposed Action; therefore, the direct impacts to wetlands under this Alternative would be the same as the impacts associated with the Proposed Action. However, wetland A and Seep 1, located on the disposal parcels, would continue to be managed as part of public lands; and the small wetland that is located in the donation parcel would still come under BLM management.

4.6.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, the tailings facility would not be located on NFS lands and there would be approximately 125 acres fewer acres impacted. The tailings pond associated with this alternative would only serve approximately 20 years of the Proposed Action's 30-year mine life. A large dam would need to be built along the edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings would require additional NEPA analysis (and any applicable and additional assessment of the presence of wetlands with possible wetlands permitting and mitigation) to locate a new tailings facility.

The rest of the Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the direct impacts to wetlands under this alternative would be the same as associated with the Proposed Action, including that there would be no wetlands impacted specifically due to the tailings pond. However, Seep 2, located on the selected parcel, would continue to be managed as part of NFS lands.

4.6.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, the USFS would retain ownership of approximately 480 acres of land. The remaining 160 acres would be turned over to Simplot for the tailings pond facility. However, the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the direct impacts to wetlands and riparian areas under this Alternative would be the same as the impacts associated with the Proposed Action. However, Seep 2, located on the selected parcel, would continue to be managed as part of NFS lands, although a portion of wetlands associated with Seep 2 would still occur within the smaller selected parcel under this alternative.

4.6.1.7 Alternative 6 – Selective Handling Alternative

Under this alternative, although overburden would be selectively handled according to whether it was low in selenium or had elevated selenium concentrations, the acres to be disturbed and thus impacts to wetland resources under this alternative would essentially be the same as the Proposed Action.

4.6.1.8 No Action Alternative

Under the No Action Alternative, Project activities under the MRP evaluated in this EIS would not occur. Therefore, there would be no impacts to wetlands associated with the No Action Alternative.

4.6.2 Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action and the Action Alternatives, the loss of wetlands is considered an irreversible commitment of resources. Impacted wetland areas would be reseeded with upland vegetation, and while off-site mitigation would be required to offset wetland impacts under the CWA, the loss of wetland and riparian habitat within the Study Area would be irreversible.

Wetlands and other WoUS physically disturbed by pits and ODAs would be a permanent loss of wetlands. Mitigation of these sites would be determined in consultation with the USACE for the CWA Section 404 permit.

4.6.3 Unavoidable Residual Adverse Effects

For the Proposed Action and Action Alternatives, an unavoidable residual adverse impact would occur if existing wetland areas were not eventually replaced through mitigation, reclamation, and subsequent natural succession. Simplot would be required to stabilize and revegetate disturbed areas in accordance with their approved MRP and CWA Section 404 permit. Performance bonds would be held by regulatory agencies to ensure that the site is reclaimed to land use plan standards and other established requirements. Despite reclamation efforts, the Proposed Action and Action Alternatives would have a long-term residual adverse effect on wetland areas, as these communities may never recover to baseline conditions.

4.6.4 Relationship of Short-term Uses and Long-term Productivity

The Proposed Action and Action Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to wetlands while providing the short-term benefits of phosphate resources and productive employment.

4.6.5 Mitigation Measures

Simplot would submit a Section 404 permit application to the USACE for the direct disturbance of wetlands and other WoUS. This EIS constitutes the primary impact analysis that the USACE would use to assess the application. As part of the application, and in compliance with the Final Rule, Compensatory Mitigation for Losses of Aquatic Resources (i.e., 33 CFR Parts 325 and 332 and 40 CFR Part 230), Simplot would submit a Compensatory Mitigation Plan that identifies potential compensatory mitigation for the USACE to consider in replacement of wetlands and lost functions and values. The Plan would identify potential compensatory mitigation to offset wetland loss as well as loss of related functions and values in order to maintain no net loss of wetlands. The required amount of wetland mitigation would be based on a functional assessment of projected levels of ecological functions.

Simplot has identified a potential wetland mitigation site along a reach of Trail Creek on their privately-owned land. Potential activities to provide wetland mitigation could include beaver dam analogs, restoration of hydrology to existing swales, exclusion of grazing, noxious weed control, improvement of hydrology function on tributaries, etc. A detailed Plan describing the activities to provide the wetland mitigation would be developed and approved by a variety of agencies prior to implementation.

4.7 Wildlife Resources

Issue: Would the Project physically affect terrestrial wildlife (including migratory birds), federally listed species, and USFS sensitive species through direct disturbance and fragmentation of habitat?

Indicators

- Acres of different wildlife habitat physically disturbed and the proximity of that disturbed habitat over the life of the Project.

- Disruption and displacement of wildlife from high value habitat, such as crucial and or high value big game ranges, sensitive species habitats (i.e. sage-grouse), leks, nest, or roost sites; wetlands, and seeps and spring areas.
- Potential for increased uptake by wildlife of selenium and other contaminates of concern in Project-related disturbance areas including reclaimed areas.
- Changes in noise levels from Project activities in wildlife habitat.
- An analysis of the Discounted Service Acre Years (DSAYs) as calculated in the HEA.

4.7.1 Direct and Indirect Impacts

4.7.1.1 Proposed Action

Impacts of the Proposed Action on wildlife resources would include: 1) immediate, direct effects in terms of wildlife mortality, disturbance, and displacement; and 2) changes in wildlife behavior and composition associated with long-term changes in land cover and reclamation.

Although small mammals and ground-nesting birds are more likely to experience these types of mortalities, mortalities of large and intermediate-sized wildlife (e.g., coyote, big game, and raptors) may occur. Raptors and other birds may also suffer mortality as a result of powerline electrocutions within the Study Area. The potential for these mortalities is expected to occur on an individual, short-term, and localized scale. The impact of these mortalities at the population or community level is, therefore, expected to be negligible.

Direct impacts on large and mobile terrestrial wildlife may include disturbance and/or displacement under the Proposed Action. These impacts are anticipated to have a greater effect on intermediate- and large-sized mammals (e.g., coyote and big game) and birds. These wildlife groups may be disturbed by human presence and noise, which could lead to short-term stress and behavior modifications. As mining proceeds, wildlife may also displace into adjacent areas to establish temporary or long-term territories and home ranges. Displacement to already occupied habitats would likely result in increased competition for available resources. Depending on the season and species, overall disturbance and displacement impacts would be short-term and negligible to minor.

Increased human presence associated with the mine and the reduction in the cover of native vegetation resulting from the Proposed Action disturbance may intensify the potential for wildlife-human interaction.

Wildlife may be indirectly affected by exposure to COPCs, which include selenium in terrestrial vegetation. An effective cap-and-cover design over backfill and overburden and the use of a seed mix with plant species that are relatively shallow rooted and not selenium accumulators would address issues associated with adverse COPC concentrations in reclaimed landscapes. Therefore, vegetation growing on the reclaimed areas would not create a selenium exposure pathway for wildlife in the reclaimed areas. The COPCs for the Project were developed as described in **Section 3.1.1.6** and are fluoride, sulfate, nitrate, nitrite, TDS, aluminum, antimony, cadmium, iron, manganese, selenium, thallium, uranium, and zinc.

As described in **Section 4.3** there is not anticipated to be releases of COPCs to Slug Creek because runoff from disturbed areas would be captured in sediment basins and BMPs would be used to

minimize COPC impacted runoff into Slug Creek. However, should sediment basins retain runoff containing COPCs, that water may then be used by insects and plants, which in turn may take up the COPCs. Wildlife that consume aquatic insects and plants and those that prey upon wildlife consuming these foods may, therefore, have a greater risk of toxicity associated with COPC exposure within and around the Study Area. These effects would be long-term and negligible depending on a wide range of factors that include the mobility of the affected species, the percentage of time spent in the vicinity of the Study Area, the susceptibility of the species to toxicity effects, the COPC concentrations in surface water and/or vegetation, and the abundance or rarity of the species within the vicinity of the Study Area.

For all wildlife species discussed in this section, there would be a negligible to minor impact from the reduction of water quantity from the Proposed Action. This impact would come from some loss of habitat around springs in the main Project Area as well as some decrease in flow to Slug Creek. However, this impact would not substantially affect wildlife species as there are numerous other sources of water in the vicinity.

Indirect effects to terrestrial wildlife populations from habitat alteration and reclamation would generally be localized and long-term. As described in **Section 4.5**, the Proposed Action would result in the loss of approximately 2,830 acres of primarily forested and shrubland wildlife habitat. These landscapes include approximately 2,820 acres of disturbance to upland habitats and 10 acres of disturbance to wetland and riparian habitats, which are particularly high-value wildlife habitats. Although wetlands only comprise 1 percent of Idaho's land area, more than 75 percent of Idaho's wildlife species depend on them during a portion of their life cycle (IDFG 2004). Therefore, disturbance to wetlands resulting from the Proposed Action may have a disproportionately greater impact on wildlife than disturbance to upland habitats.

Approximately 97 percent of disturbed habitat would be reclaimed to grasslands and forbs, with shrublands returning over time. Over the long-term, reclaimed landscapes would likely regain the level of wildlife habitat services provided by the baseline sagebrush communities within the Study Area. However, even after reclamation, the Proposed Action would result in the net debit of 116,045 DSAYs after the reclamation is completed at the mine (SWCA 2017). This measurement indicates that the Proposed Action would have a long-term net negative impact on wildlife habitat. Aspen and aspen/mixed conifer forest habitats are unlikely to reestablish on reclaimed landscapes in the short-term due to environmental alterations during disturbance, which include changes in soil characteristics, reduced soil moisture, and the removal of aspen root systems from the soil (Schier et al. 1984). Reclaimed mixed conifer forests would not likely recover to their current stature and complexity for at least 100 years (various sources cited in BLM and USFS 2016). Therefore, disturbance and reclamation within the disturbed area would result in the transition of previously forested habitats to grassland and shrublands for years to decades after reclamation efforts conclude. This environmental change would contribute to long-term fragmentation of previously forested landscapes and would be expected to alter the species composition of the wildlife community as forest-dependent species (e.g., woodpeckers and martens) locally decline in abundance, while grasslands, shrublands, and generalist wildlife species (e.g., meadowlarks and coyote) locally increase in abundance within the Study Area.

Mammals

Direct impacts on mammals would be similar to those described for wildlife in general. Small mammals may be crushed or trampled by mine equipment or vehicles, although this is unlikely due to the mobility of the species. Mortalities are expected to occur on a short-term, individual, and localized scale; therefore, population- or community-level impacts on wildlife from mortalities would likely be negligible.

Indirect impacts to mammals resulting from the Proposed Action would be habitat alterations, disturbance, and displacement from mine activities. Habitat structure and composition determine the current diversity of species within the Study Area. The landscape alterations would cause some large mammals to displace to surrounding habitats, which could potentially increase the competition for resources with other wildlife already occupying those habitats. However, some species (e.g., coyote) may acclimate to human presence and disturbances and may continue using habitats and resources within and near the Study Area. Noxious weed and invasive plant introductions could indirectly impact mammals (including special status mammals as described below) over the long-term through a reduction in habitat quality or changes in trophic structure. The potential for invasive species to spread would be highest in newly disturbed areas. However, impacts from noxious weeds are anticipated to be minimal because of the use of BMPs to control them.

Over the long-term, reclaimed areas are anticipated to recover to sagebrush communities as succession progresses. Aspen and aspen/mixed conifer forests affected by the Proposed Action would be difficult to reestablish, because reclaimed landscapes would have different soil characteristics and would likely be drier compared to the existing conditions. Aspen trees would also have difficulty reestablishing on previously disturbed landscapes because aspen is a clonal species that primarily reproduces vegetatively through the propagation of lateral roots. Since these roots would be removed or destroyed during mining operations, the aspens would lack the established root systems from which regeneration could quickly occur (Schier et al. 1984). Mixed conifer forests affected by the Proposed Action are also anticipated to recover to grassland and shrubland communities as succession progresses (in the short-term), as these forests are not expected to regenerate to their former conditions for approximately 100 to 200 years after the completion of the Proposed Action (in the long-term) and the initiation of reclamation (various sources cited in BLM and USFS 2016).

Due to the long-term successional processes of post-disturbance forest habitats, these habitats would be reclaimed to forbs, grasslands, and shrublands as succession proceeds, which would result in structural and compositional changes in the vegetative landscape. These changes could also alter the species composition of the mammalian community as the abundance of forest-dependent species locally declines, while the abundance of grassland- and shrubland-resident species and generalist species locally increases within and near the Study Area. Overall indirect impacts on mammals from the Proposed Action are expected to be long-term and negligible to minor as a result of the localized scale of landscape alterations.

Direct and indirect impacts on individual groups of mammals are analyzed below. The impacts generally described for mammals apply to all mammalian groups discussed in the following

paragraphs. Only those impacts that are unique to an individual mammalian group are subsequently discussed.

Big Game

Winter range for big game is generally located to the east of the Study Area along Schmid Ridge and to the east of Highway 30 between Highway 30 and the main portion of the Project along the Aspen Range. Winter range is important for big game, as it provides valuable food and thermal cover that allows ungulate species to conserve energy during severe winter weather conditions (USFS 2003b). The Proposed Action would directly impact small portions of both of these winter range locations (**Figure 3.7-1**), as the access road of the Proposed Action runs through both winter range sections, and the proposed powerline corridor overlaps with the winter range located along Schmid Ridge. These overlapping locations between big game winter range and the Proposed Action account for 4 acres. Small portions of the existing access road would require widening and the powerline would disturb the landscape. The existing access road may fragment big game winter range, as deer and elk, in particular, have demonstrated sensitivities to barriers created by large roads, although this access road has been existing for many years and would only need to be widened in several locations. However, ungulates are not likely to alter their behavioral patterns as a result of the presence of a powerline. The increase in human presence associated with the mine and the reduction in the cover of native vegetation resulting from the Proposed Action disturbance may intensify the potential for wildlife-human interaction. Human-related disturbances within winter ranges may result in big game burning necessary fat reserves that allow them to survive in harsh winter conditions. Extra activities and unnecessary movements, such as running from the sound of a vehicle, could affect big game survivorship, as could the need to travel great distances to an alternate range with crucial habitat (Canfield et al. 1999; Lutz et al. 2011). However, based on other mines in the region (e.g. Smoky Canyon Mine), it is possible for big game to become attenuated to the disturbance from the roads.

The access road of the Proposed Action would not be reclaimed as the Project concludes but would rather remain intact for future use as part of the County and USFS system of roads. Given the above, the loss of big game winter range resulting from the Proposed Action would have a long-term and minor to moderate effect on big game survivorship.

Data from IDFG suggest that mule deer summer range overlaps with the vast majority of the main Project Area and broadly surrounds it (IDFG 2013). Mule deer are dependent on shrublands for browse and cover (Cox et al. 2009); thus, the initial loss of shrubs from the Proposed Action would likely adversely affect mule deer within the Study Area over the short-term. Over the long-term, the disturbed areas and surrounding landscape would again become suitable mule deer foraging habitat, as reclamation promotes vegetative succession and the development of shrublands.

Elk summer range overlaps with the entire Study Area and broadly surrounds it (IDFG 2013). Elk primarily inhabit mountainous forests where mature timber provides protective security (Alldredge 2002). Within and near such forested communities, elk graze on a wide variety of shrubs, forbs, and grasses in order to fulfill their nutritional requirements (Kufeld 1973; Alldredge 2002). Thus, the initial loss of native shrubs, forbs, and grasses under the Proposed Action would likely adversely impact elk within the Study Area over the short-term, while the loss of forested habitat would likely adversely affect elk over the long-term. Over the long-term, the disturbed areas and

surrounding landscape would again become suitable elk foraging habitat; however, the mature forests that provide optimal protective cover for elk would not likely regenerate for approximately 100 years after the Proposed Action disturbance (various sources cited in BLM and USFS 2016).

Noise and human presence associated with the mine would interrupt big game movement corridors and displace some big game into adjacent habitat. Mule deer are known to avoid heavily disturbed areas at mines during migration (Merrill et al. 1994 and Blum et al. 2015, both as cited in BLM and USFS 2016). In addition to affecting movement corridors, the Proposed Action would likely displace at least some big game from parturition and winter ranges over the short-term. Noise and disturbance during the calving/fawning season may cause pregnant elk and mule deer and those with young calves or fawns to vacate the area, which could negatively impact calf and fawn survivorships.

A study on the response of elk calves to human activity and simulated mine noises in southeastern Idaho determined that elk calves exposed to disturbance travel greater distances, inhabit larger areas, and utilize less favorable habitat than calves unexposed to disturbance (Kuck et al. 1985 in BLM 2011b). However, if resources in the disturbed habitat is of high quality, or no suitable alternative habitats exist, then big game may not flee (Frid and Dill 2002). Additionally, active mines are located within the vicinity of the Proposed Action (e.g., Smoky Canyon Mine), and big game within the region may have become habituated to the noise, disturbance, and human presence associated with mining activities.

Overall, impacts to big game would be long-term and moderate under the Proposed Action. The effects of noise and disturbance would be short-term but would occur over a relatively wide area, whereas the effects of habitat removal would be localized to the mine footprint but would be long-term.

Bats

The mining activities under the Proposed Action could disturb bat roosts and result in the long-term loss of bat foraging habitat. Undocumented bat roosts and habitat could be directly impacted under the Proposed Action through tree removal. Bats may also collide with vehicles and mine equipment, particularly when bats are most active in the region, which is at night during the summer. Due to the lack of potential bat roosting habitat in the form of mine workings (e.g. adits) and caves within the Study Area, the Proposed Action would most likely affect a small number of individual bats that may roost in trees or rock crevices. The Proposed Action would also not likely have population-level impacts on bats due to the lack of significant roosts or hibernacula within the Study Area. Overall, impacts to bats are expected to be minor under the Proposed Action, as such impacts would occur on an individual and localized scale.

Birds

Upland Game Birds

The Proposed Action would result in the permanent loss of approximately 1,916 acres of forested habitat for dusky grouse (*Dendragapus obscurus*). Indirect impacts from the loss of habitat would be long-term, because the final reclamation plan as described in **Section 2.3.10** would result in the establishment of communities dominated by forbs and perennial grasses. Although dusky grouse

would probably migrate to other suitable habitats outside of the Proposed Action disturbance, increased predation by raptors and other predators may occur in the short-term due to the reduction in vegetative cover through disturbance. The powerline that would be constructed under the Proposed Action may provide a perching platform for raptors, which could enhance the ability of raptors to prey on dusky grouse over the short-term. To reduce the potential for increased predation, powerlines and poles shall be configured to minimize raptor nesting and perching. Overall impacts on upland game birds are expected to be minor due to the localized scale of Proposed Action disturbance. Impacts to greater sage-grouse and Columbian sharp-tailed grouse are discussed in **Section 4.8**.

Migratory Birds

The Proposed Action would result in the short-term loss of approximately 2,830 acres of a variety of migratory bird habitats (**Table 4.5-1**). The majority of the Proposed Action disturbance would be reclaimed, but the post-reclamation habitat structure and composition would initially convert to grasslands and subsequently likely develop into a shrubland over the long-term (and later into forested as trees begin encroachment into those areas). Birds that inhabit shrubland, forest, and riparian communities would likely decrease in abundance within the Study Area both during and after mining disturbance, whereas bird species that are generalists or that occupy grasslands may remain at levels similar to the pre-disturbance conditions or increase in abundance. Avian species associated with aspen, aspen/mixed conifer, mixed conifer, and wetland/riparian habitats would be the species most affected by the Proposed Action.

Potential direct impacts to migratory birds under the Proposed Action would include direct mortality (resulting from trampling, vehicle collision, and/or powerline collision), forced movement, and stress related to increased noise and human activity. Simplot would attempt to plan ground-clearing activities during the non-nesting season in order to minimize potential impacts to nesting birds. As described in **Section 2.4.8**, surveys for avian species would take place in areas planned for disturbance if they took place during the nesting season (May 15 through August 15). If nests are found, they would either be avoided until fledging occurs according to direction provided by the authorized officer or other plans would be developed by the authorized officer according to current policies. Indirect effects to migratory birds resulting from the Proposed Action could include increased competition between displaced individuals and resident birds.

Many migratory bird species are susceptible to collisions with powerlines, especially during inclement weather when the powerlines may be more difficult to see (Manville 2005; Loss et al. 2014). In a recent study by Loss et al. (2014), the average number of avian mortalities resulting from powerline collisions was 18.4 avian deaths per mile of powerline per year in the U.S. (although, this collision rate varies widely depending on a number of factors such as habitat and the species involved). For this analysis, the average number of avian deaths is assumed here. The proposed powerline crosses approximately 1,000 feet of riparian areas and 3,200 feet of mesic/wet meadows. The remainder of the line is in forested or shrubland/grassland habitats. The line also does not cross any known migration routes. Avian powerline collision mortalities resulting from the Proposed Action would have a short-term, negligible to moderate impact on local migratory bird populations, but the impact is dependent on the species involved in the collision deaths. Avian species with large, increasing, or stable populations are less likely to be

adversely impacted by localized individual mortalities, whereas species with small or declining populations are more likely to be adversely impacted.

The Proposed Action would also result in habitat fragmentation (i.e., the division of contiguous habitat into smaller, isolated patches). The effects of habitat fragmentation on avian communities may depend on the scale of analysis (Fahrig 2003). On a landscape scale, fragmentation of shrub steppe habitat in the Intermountain West has been linked to range-wide declines in several bird species, including Brewer's sparrow, western meadowlark, and horned larks (*Eremophila alpestris*). However, on a more localized scale, such as the Study Area, vegetation within a habitat tends to have a larger influence on the productivity and survival of individual birds compared to the same habitat at a landscape scale (Knick and Rotenberry 2002). Additionally, bird species that are adapted to breeding in naturally fragmented landscape may be relatively tolerant of anthropogenic habitat fragmentation (Berry and Bock 1998). The habitats within the Study Area are naturally patchy, therefore, the effects from additional anthropogenic fragmentation resulting from the Proposed Action are anticipated to be minor.

Research has shown that bird populations, particularly breeding bird populations, may be negatively impacted by elevated noise levels (Reijnen and Foppen 2006 as cited in BLM and USFS 2016; Bayne et al. 2008; Ortega 2012). Additionally, increased visual stimuli at relatively short distances may also adversely affect bird populations; however, noise appears to have a more severe impact on birds compared to visual stimuli.

The noise produced from traffic and mining activities could impact avian populations in various ways. For example, acoustic interference from noise could hamper the detection of mating songs, which could make the following bird behaviors difficult: establishing and maintaining territories, attracting mates, and maintaining pair bonds. Thus, noise may reduce avian breeding success (Reijnen and Foppen 1994; Habib et al. 2007; Swaddle and Page 2007 as cited in BLM and USFS 2016; Ortega 2012). Noise may also adversely impact avian population dynamics by dampening the calls of nestlings when begging for food. In the presence of loud noise, nestlings may need to produce louder calls in order to elicit the desired response from their parents. As a result, the energetic cost of obtaining food may increase and fitness may decrease (Leonard and Horn 2005 and Reijnen and Foppen 2006, both as cited in BLM and USFS 2016; Ortega 2012; Schroeder et al. 2012). High levels of anthropogenic noise may also interfere with the detection of avian alarm calls such as those signaling the presence of predators, which could lead to higher rates of predation (Parris and Schneider 2008; Ortega 2012).

Noise may effectively extend habitat disturbance beyond the actual Proposed Action disturbance, because birds may avoid locations close to noise sources. The effects of traffic noise on nesting birds may extend more than 984 feet (or 300 meters) on both sides of a roadway (Ortega 2012). In a study conducted by McClure et al. (2013), recorded traffic noise was determined to have a negative relationship with the abundance of 13 migratory bird species at a site in Idaho. Near energy facilities in Alberta, Canada, songbird densities were 1.5 times lower near noise-producing facilities compared to those near noiseless facilities, which indicates that birds avoid locations with anthropogenic noise (Bayne et al. 2008). Additionally, a study by Francis et al. (2009) determined that fewer avian species nested near natural gas wells with noise-producing compressors than at those with noiseless controls.

The effects of noise on birds are species-specific with some avian species (e.g., black-chinned hummingbird [*Archilochus alexandri*] and house finch [*Haemorhous mexicanus*]) seeming to prefer noisy locations and other species (e.g., mourning dove [*Zenaida macroura*] and black-headed grosbeak [*Pheucticus melanocephalus*]) avoiding noise. Numerous avian species (e.g., black-throated gray warbler [*Setophaga nigrescens*], gray flycatcher [*Empidonax wrightii*], gray vireo [*Vireo vicinior*], and spotted towhee [*Pipilo maculaus*]) avoid nesting near sources of noise, which demonstrates that noise has a negative effect on breeding bird communities (Francis et al. 2009). Additional research about the effects of noise on avian behavior have reached similar conclusions. A study by Herrera-Montes and Aide (2011) determined that avian species richness and occurrence in Puerto Rico were lower at locations near highways where noise exceeded 60 dB compared to those where noise was below 60 dB. A study in New Mexico determined that the impacts of gas well compressor noise on breeding songbird populations in piñon-juniper (*Pinus* spp.-*Juniperus* spp.) habitat were strongest in locations where noise levels were greater than 50 dB. However, moderate noise levels (i.e., 40 to 50 dB) also had some effect on bird densities (LaGory et al. 2001). While there would be continuing noise levels, none are expected to exceed 60 dB outside of the main Project Area.

Under the Proposed Action, the potential exposure pathway to selenium for birds would be through downstream surface water and the aquatic food chain; however, based upon the analysis in **Section 4.3**, these potential impacts are not predicted.

Raptors

Raptors that occur within the Study Area could be directly and indirectly affected by the Proposed Action. Raptors could be subjected to mortality and directly disturbed by noise and activities associated with the Proposed Action. Raptors are sensitive to noise and human presence near their nests and may become agitated and ultimately abandon nests located near disturbance. The distance at which raptors are sensitive to disturbance varies by species, habitat, topography, and the habituation of individual birds to humans (Richardson and Miller 1997). To minimize impacts to nesting raptors, Simplot would implement appropriate EPMs, such as buffer zones around occupied nest, during the nesting season.

Raptors often perch and nest on powerline poles and may collide with powerlines when in flight. Thus, powerlines pose an electrocution risk to raptors. In order to address this risk, Simplot would implement EPMs (**Section 2.4**) that reduce the risk of electrocution. At least some of these mortalities may be raptors, as raptors are known to be vulnerable to powerline collision (Manville 2005).

Under the Proposed Action, indirect impacts to raptors would include the loss of foraging habitat, reduction or alteration of prey abundance, and loss of nesting habitat. Over the short-term, the Proposed Action would reduce habitat for a number of prey species, including mice, voles (*Microtus* spp), ground squirrels (*Ammospermophilus* spp), and rabbits (*Sylvilagus* spp). However, abundant foraging habitat exists adjacent to the Study Area, which would limit the potential effects of the Proposed Action on raptors. Additionally, reduced vegetative cover in disturbed landscapes following reclamation may cause the prey species that colonize such landscape to be more visible to raptors and, thus, more susceptible to predation.

With the implementation of buffer zones around active raptor nests and the institution of EPMs for the proposed powerline (**Section 2.4.8**) and for the reasons described above, direct impacts are negligible, and with remaining indirect impacts, the overall impacts on raptors under the Proposed Action are expected to be local, short-term, and minor.

Passerines and Small Birds

Passerines and small birds (PSBs) would be directly and indirectly affected by the Proposed Action as described above under Migratory Birds. PSBs and their nests could be directly impacted by being trampled by mining equipment and vehicles, colliding with mine facilities, and disturbance from noise and activities associated with construction and mining operations. Indirect disturbances to PSBs would include the loss of foraging habitat, nesting habitat, and vegetative cover. Impacts to PSBs from the Proposed Action are anticipated to be long-term and negligible. The EPMs discussed above for migratory birds would also be implemented to minimize the impacts to nesting PSBs.

Water Birds

Under the Proposed Action, water birds would be subject to impacts similar to those described more generally for migratory birds. Water birds are particularly sensitive to the removal and degradation of riparian and wetland habitats, as they depend on such habitats to a greater degree than upland avian species. Additionally, water birds are particularly sensitive to powerline collision, especially at locations where powerlines cross bodies of water or riparian communities adjacent to bodies of water. Water birds tend to be large-bodied and have less maneuverability compared to other groups of birds. Relatively large numbers of crane, heron (*Ardeidae* family), swan (*Cygnus* spp.), and pelican (*Pelecanus* spp.) mortalities have been documented in locations where powerlines cross bodies of water (Manville 2005). The proposed powerline would cross two water bodies: Slug Creek (i.e., wetland TLX-SC) and several ponds. At these locations, the proposed powerline would have the potential to cause disproportionately high mortality of water birds over the short-term.

Overall impacts to water birds as a result of the Proposed Action are expected to be long-term and minor. Implementation of EPMs and the measures that would be implemented to reduce impacts to migratory birds in general, would assist in mitigating adverse effects.

Threatened, Endangered, Proposed, and Candidate Wildlife Species

The USFWS identified one federally listed, proposed, or candidate species as having the potential to occur within or near the Study Area, which was the Canada lynx (*Lynx canadensis*), a Threatened species. In accordance with the consultation requirements under Section 7 of the ESA, a BA would be prepared and finalized prior to the signing of the ROD that documents the potential impacts to federally-listed species from the selected alternative. Overall impacts to Threatened and special status wildlife species from the Proposed Action would be long-term and negligible to moderate. Individual wildlife species are discussed below. No endangered species occur within the vicinity of the Proposed Action and as stated in **Chapter 3**, no critical habitat exists in the Study Area; therefore, none would be impacted by the Proposed Action.

Canada Lynx

As discussed in **Section 3.7.1.3**, the Study Area lies within linkage habitat for the Canada lynx. Therefore, the primary impact of the Proposed Action on the Canada lynx would be the potential disruption of lynx movement through the linkage habitat. As a part of a linkage habitat, the Study Area would only be expected to be used by transitory lynx and would only be temporarily and negligibly impacted by the Proposed Action through the small-scale removal and alteration of habitat.

The year-round noise and human activity associated with the construction and active mining phases of the Proposed Action would likely influence Canada lynx to travel around the periphery of the disturbed area rather than directly through it. Indirect impacts may also occur from the potential impacts to prey species. Furthermore, upon the completion of the proposed mining activities, the majority of the disturbance would be reclaimed, and the human presence in the area would be minimal. Thus, the Proposed Action would have short-term and negligible impacts on Canada lynx. Over the long-term, there would be no impact on Canada lynx movement through the region. As such, a preliminary determination that the Proposed Action may affect but is not likely to adversely affect the Canada lynx has been made.

Special Status Wildlife Species

The following sections describe impacts from the Proposed Action to USFS and BLM Sensitive wildlife species that have potential to occur within the Study Area. The following non-aquatic (i.e., does not include fish, amphibians and reptiles, or invertebrate species) Sensitive wildlife species are not likely to occur in the Study Area due to the lack of suitable habitat and would, therefore, not be affected by the Proposed Action or any of the Action Alternatives:

Birds

- American white pelican (*Pelecanus erythrorhynchos*)
- Black tern (Chlidonias niger)
- Calliope hummingbird (*Stellula calliope*)
- Hammond's flycatcher (*Empidonax hammondii*)
- Harlequin duck (Histrionicus histrionicus)
- Lewis' woodpecker (*Melanerpes lewis*)
- Loggerhead shrike (*Lanius ludovicianus*)
- Peregrine falcon (*Falco peregrinus*)
- Trumpeter swan (*Cygnus buccinator*)
- Virginia's warbler (*Vermivora virginiae*)
- White-faced ibis (*Plegadis chihi*)
- Williamson's sapsucker (*Sphyrapicus thyroideus*)
- Yellow-billed cuckoo (*Coccyzus americanus*)

Mammals

- Cliff chipmunk (*Tamias dorsalis*)
- Kit fox (Vulpes velox)
- Pygmy rabbit (Brachylagus idahoensis)
- Spotted bat (Euderma maculatum)

These 17 species are not discussed further, herein, but will be analyzed in the Biological Evaluation (BE). The BE will be prepared and finalized prior to the signing of the ROD and will document the potential impacts to all USFS and BLM sensitive wildlife species from the selected alternative.

Birds

American Three-Toed Woodpecker

If American three-toed woodpeckers are nesting in the vicinity of the mine, noise and human activity may disturb or disrupt nesting pairs. However, American three-toed woodpeckers are relatively tolerant of noise and human presence and are unlikely to abandon nests as a result of these factors (Leonard 2001 as cited in BLM and USFS 2016). Vegetation removal associated with the Proposed Action would try to be conducted outside the nesting season in order to avoid the removal of active American three-toed woodpecker nests. However, as described in **Section 2.4.8**, any vegetation removal that occurs during the nesting season would first be surveyed to locate any active nests. Any active nests would be avoided until fledging occurs.

Project noise and activity may influence the American three-toed woodpecker to temporarily avoid areas near the Proposed Action while active mining is occurring. American three-toed woodpeckers could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead powerline) and moving vehicles, particularly at night. Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 1,381 acres of potentially suitable American three-toed woodpecker habitat (i.e., aspen/mixed conifer and mixed conifer forests) would be removed under the Proposed Action or approximately 64 percent of these suitable habitats within the main Project Area. In addition to direct habitat loss, habitat removal could indirectly impact the American three-toed woodpecker by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity. Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for American three-toed woodpecker and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the longer term (and potentially reverting to forested areas over 100-200 years), and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities.

Due to the relatively small area of mature forest that would be impacted and the lack of indication from baseline studies that a robust American three-toed woodpecker population inhabits the Study Area, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on American three-toed woodpecker. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on migratory birds, which would also benefit the American three-toed woodpecker, would result in long-term but minor impacts to this species.

Bald Eagle

The Proposed Action is unlikely to impact nesting bald eagles due to the lack of known nests or suitable nesting habitat within the Study Area. Suitable bald eagle roosting habitat occurs at the northern end of the proposed powerline corridor along the Blackfoot River, but no suitable roosting habitat exists along Slug Creek (JBR 2012g). The Proposed Action impacts described below would, therefore, most likely affect small numbers of individual bald eagles that forage within the vicinity of the Study Area or move through it during the non-breeding season. Impacts are not anticipated to occur to those individuals or wintering habitat located near the Blackfoot Narrows area.

Project noise and activity may influence bald eagles by causing them to temporarily avoid areas of the Project footprint in which active mining or other activities are occurring. Additionally, bald eagles could be directly impacted as a result of mortality from collisions with aboveground structures (such as the proposed overhead powerline) and moving vehicles although this has not been reported as occurring at the nearby Smoky Canyon Mine previously. Numerous studies have been conducted and published on the interactions between raptors (including bald eagles) and transmission lines, and raptor electrocution continues to be a concern for state and federal agencies (USGS 1999; Lehman 2001; Erickson et al. 2005; Manville 2005; Mojica et al. 2009). In order to minimize these potential impacts, Simplot would implement EPMs, which could include the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 11 acres of potentially suitable bald eagle foraging habitat (i.e., wetland/mesic meadows and riparian communities) would be removed under the Proposed Action. In addition to direct habitat loss, the impacts to aquatic habitats described in **Section 4.8** could alter the prey base for bald eagles; however, as noted in **Section 4.8**, substantial impacts on the overall fish population in the Study Area are unlikely.

Due to the relatively small area of wetland/mesic meadows and riparian foraging habitats that would be impacted and the negligible to minor effects anticipated to occur to aquatic resources, direct and indirect impacts under the Proposed Action are unlikely to have population-level impacts on bald eagles. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on raptors, is expected to result in long-term but minor impacts on bald eagles.

Boreal Owl

If boreal owls are nesting in the vicinity of the Proposed Action, noise and human activity may disturb or disrupt nesting pairs. However, boreal owls are relatively tolerant of noise and human presence near their nest sites and are unlikely to abandon nests as a result of these factors (Hayward and Verner 1994). Vegetation removal associated with the Proposed Action would not be conducted during the nesting season in order to avoid the removal of active boreal owl nests. In Idaho, the nesting season for boreal owls occurs from mid-April to late May (USFS 2003b).

Project noise and activity may influence boreal owls to temporarily avoid areas near the Proposed Action while active mining is occurring. Boreal owls could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead

powerline) and moving vehicles, particularly at night. Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 1,916 acres of potentially suitable boreal owl habitat (i.e., aspen, aspen/mixed conifer, and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact boreal owls by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity (e.g., great horned owls). Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for boreal owls and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long-term, and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities.

Due to the relatively small area of mature forest that would be impacted and the lack of indication from baseline studies that a robust boreal owl population inhabits the Study Area, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on boreal owls. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on raptors, is expected to result in long-term but minor impacts on boreal owls.

Brewer's Sparrow and Sage Sparrow

In order to comply with the MBTA, Simplot would minimize the potential for direct mortality of migratory birds by clearing vegetation from potential nesting habitats outside of the breeding season. If Brewer's sparrows or sage sparrows are nesting within the vicinity of the proposed mine, noise and human activity may disturb or disrupt nesting pairs. As discussed in **Section 4.7.1.1.2**, noise can negatively impact small birds by interfering with acoustic communication and eliciting an avoidance response.

Approximately 776 acres of potentially suitable Brewer's sparrow and sage sparrow habitat (i.e., sagebrush shrubland) would be removed under the Proposed Action or approximately 45 percent of the main Project Area. The majority of this habitat loss would be temporary, as most of the areas disturbed by the Proposed Action would be reclaimed once mining ceases, and the disturbed sagebrush communities would again recover to sagebrush communities and would again provide potential habitat for Brewer's sparrows and sage sparrows over the long-term.

Under the Proposed Action, the powerline may provide a hunting perch for predators such as raptors and ravens. The powerline would be constructed in compliance with EPMs to minimize raptor perching and, thereby, reduce the predation of Brewer's sparrows, sage sparrows, and other migratory birds.

Due to the relatively small area of sagebrush habitat that would be impacted, as well as the reclamation practices that would return the majority of the Project disturbance to sagebrush habitat

after the cessation of mining, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on Brewer's sparrow and sage sparrow. Overall, the Proposed Action, with the implementation of EPMs used to minimize impacts on migratory birds, is expected to result in long-term but minor impacts on Brewer's sparrows and sage sparrows.

Columbian Sharp-Tailed Grouse

No Columbian sharp-tailed grouse leks were observed during baseline surveys (JBR 2012g). However, sharp-tails have been heard lekking in the vicinity of the Slug Creek 2 lek in 2014. While some individuals have been heard near leks, the Study Area does not appear to support a breeding population of Columbian sharp-tailed grouse (JBR 2012g). Therefore, the Proposed Action would primarily affect individual Columbian sharp-tailed grouse during the non-breeding season. Project noise and activity would likely cause Columbian sharp-tailed grouse to temporarily avoid some areas of the Proposed Active during active mining. Columbian sharp-tailed grouse would be at risk of collisions with moving vehicles along access and haul roads. Roads would also fragment formerly contiguous sagebrush communities and create potential barriers to grouse movement, especially during periods of heavy truck traffic.

Approximately 776 acres of potentially suitable Columbian sharp-tailed grouse foraging and wintering habitat (i.e., sagebrush shrublands) would be directly removed under the Proposed Action. The majority of this habitat loss would be short-term, as most of the areas disturbed by the Proposed Action would be reclaimed once mining ceases, and the disturbed sagebrush communities would again recover to sagebrush communities and would again provide potential habitat for Columbian sharp-tailed grouse over the long-term. Noxious weed and invasive plant introductions could indirectly impact Columbian sharp-tailed grouse over the long-term through a reduction in habitat quality or changes in trophic structure. The potential for invasive species to spread would be highest in newly disturbed areas. However, impacts from noxious weeds are anticipated to be minimal because of the use of BMPs to control them.

Under the Proposed Action, the powerline may provide hunting perches for raptors and ravens, which may indirectly result in increased predation on Columbian sharp-tailed grouse within the Study Area. The powerline would be constructed in compliance with EPMs to minimize the raptor perching and thereby reduce predation on Columbian sharp-tailed grouse.

The Proposed Action is unlikely to have population-level effects on Columbian sharp-tailed grouse, as this grouse species is only likely to inhabit the Study Area sporadically and primarily during the non-breeding season. Overall, the Proposed Action is expected to result in long-term and minor impacts on Columbian sharp-tailed grouse.

Flammulated Owl

If flammulated owls are nesting in the vicinity of the mine, noise and human activity may disturb or disrupt nesting pairs. However, flammulated owls are relatively tolerant of noise and human presence near their nest sites and are unlikely to abandon nests as a result of these factors (Hayward and Verner 1994). Vegetation removal associated with the Proposed Action would try to be conducted outside the nesting season to the extent possible in order to avoid the removal of any active flammulated owl nests. As described in **Section 2.4.8**, if vegetation removal did occur

during the nesting season, surveys would occur first to identify any active nest locations. Avoidance plans would be developed as necessary before these areas are disturbed.

Project noise and activity may influence flammulated owls to temporarily avoid areas near the Proposed Action while active mining is occurring. Flammulated owls could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead powerline), particularly at night. Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 1,916 acres of potentially suitable flammulated owl habitat (i.e., aspen, aspen/mixed conifer, and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact flammulated owls by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity (e.g., great horned owls). Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for flammulated owls and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long-term, and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities.

Due to the relatively small area of mature forest that would be impacted and the lack of indication from baseline studies that a robust flammulated owl population inhabits the Study Area, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on flammulated owls. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on raptors, is expected to result in long-term but minor impacts on flammulated owls.

Great Gray Owl

If great gray owls are nesting within the vicinity of the mine, noise and human activity may disturb or disrupt nesting pairs. Vegetation removal associated with the Proposed Action would try to be conducted outside the nesting season to the extent possible in order to avoid the removal of active great gray owl nests. If vegetation removal did occur during the nesting season, surveys would occur for active nest sites and avoidance plans would be developed as necessary before disturbance began.

Project noise and activity may influence great gray owls to temporarily avoid areas near the Proposed Action while active mining is occurring. Great gray owls could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead powerline) and moving vehicles, particularly at night. Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 1,916 acres of potentially suitable great gray owl habitat (i.e., aspen, aspen/mixed conifer, and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact great gray owls by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity (e.g., great horned owls). Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for great gray owls and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long term (and potentially reverted back to forested habitats over 100 to 200 years), and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities.

Due to the relatively small area of mature forest that would be impacted and the lack of indication from baseline studies that a robust great gray owl population inhabits the Study Area, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on great gray owls. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on raptors, is expected to result in long-term but minor impacts on great gray owls.

Greater Sage-Grouse

The Proposed Action may impact greater sage-grouse through the short-term displacement of individuals, long-term habitat loss and alteration, direct mortality from vehicle collisions, avoidance responses to the proposed powerline, and increased predation. The Study Area contains lands designated as GHMA by the State of Idaho in Executive Order 2015-04, which directly corresponds to GHMA as mapped by the BLM and USFS (BLM and USFS 2015). The Study Area does not, however, contain the other two federal classifications of greater sage-grouse habitat (i.e., PHMA and IHMA) (**Figure 3.7.2**) (Definitions of the habitat are included in **Section 3.7.1.2**). Under the Proposed Action, mining operations could potentially cause greater sage-grouse to temporarily or permanently avoid suitable habitat within and near the Project footprint. As a result, displaced greater sage-grouse may relocate to unaffected but already occupied habitats, thus causing bird densities and competition to increase. The consequences of such displacement and competition could result in lower survival and potentially lower reproductive success for individual birds (Sage-grouse NTT 2011).

No confirmed greater sage-grouse leks would be impacted by the Proposed Action. The two leks closest to the main Project Area (i.e., Slug Creek 1 [EC006] and Slug Creek 2 [EC012]) are located within two miles and one mile of the area to the north and northeast, respectively. Both of these leks were classified as unoccupied by the BLM during their most recent survey conducted in 2014 (BLM and USFS 2015). Only one occupied greater sage-grouse lek (i.e., BLM Project [EC028]) is located within ten miles of the Proposed Action. The BLM Project lek is located approximately 5.6 miles northwest of the Study Area (BLM and USFS 2015). Given the distance from the lek to the Study Area and the intervening topography and vegetation, no impacts to the lek itself are anticipated. Nor would there be any impact to breeding habitat associated with this lek as the portion of the Study Area that occurs within 6.2 miles of the lek (i.e. the breeding area) is associated with the alternate access route. This route is an existing road and there would be limited

new disturbance. As described in **Chapter 3**, an unrelated survey in Dry Valley identified two additional possible leks near the proposed powerline route and more surveys are required to determine the status before a designation may be assigned.

Habitat modifications associated with the development of the Proposed Action may fragment potential sagebrush habitat for greater sage-grouse and could directly and indirectly impact individual birds. However, the sagebrush shrublands within the Study Area are naturally patchy and fragmented. Under the Proposed Action, approximately 776 acres of sagebrush habitat would be directly removed, and of this habitat, approximately 277 acres is classified as GHMA. Another 262 acres of GHMA occurs within the BLM land sale parcel but is not proposed to be disturbed by the Project, although once in private ownership it could be. The GHMA is considered suitable brood-rearing habitat for greater sage-grouse (JBR 2012g), and the remaining sagebrush habitat within the Study Area may provide at least marginal habitat locally for small numbers of individual birds.

Over the long-term, the reclaimed landscapes affected by the Proposed Action would be expected to recover to the baseline conditions of the sagebrush communities within the Study Area and could again be used by greater sage-grouse, as has been observed in other areas (Bill Stout, BLM, Personal Communication, January 26, 2018).

The introduction of noxious weeds and other invasive plants resulting from or enhanced by the Proposed Action disturbance could indirectly impact greater sage-grouse over the long-term through a reduction in habitat quality or changes in trophic structure. The potential for the spread of invasive plant species would be highest in newly disturbed areas. However, impacts from noxious weeds and invasive species are anticipated to be minimal due to the use of BMPs that would control their spread.

Individual greater sage-grouse could collide with moving vehicles along the proposed access and haul roads. A study conducted in Montana determined that greater sage-grouse collisions with vehicles were a more frequent cause of mortality compared to collisions between greater sage-grouse and wires or fences (Wallestad 1975). According to Hagen (2005), greater sage-grouse collisions with vehicles were the cause of mortality for four percent of radio-marked females in Idaho. However, vehicle collisions were not a notable cause of greater sage-grouse mortality for a study conducted in Nevada (Blomberg et al. 2013). Under the Proposed Action, vehicles would travel the access and haul roads at low speeds, which would limit the potential for collisions.

The proposed powerline could have direct and indirect impacts on individual greater sage-grouse inhabiting the Project Area. However, the proposed powerline corridor is outside of the mapped GHMA. Multiple studies suggest that greater sage-grouse and related species instinctively avoid landscapes where powerlines or other vertical structures are visible in order to avoid predation (Schroeder 2010). Additional studies have shown that greater sage-grouse tend to avoid habitat located within 1,968 feet (or 600 meters) of powerlines (Braun 1998; Gillan et al. 2013). By avoiding habitats in close proximity to powerlines, greater sage-grouse lose the benefits of those habitats. Thus, the effective habitat loss and fragmentation created by powerlines may extend to an area much larger than the actual powerline corridor. The impacts of the proposed powerline on

greater sage-grouse are expected to be minor, as the powerline would not fragment any PHMA, IHMA, GHMA, or other important greater sage-grouse habitats.

Powerlines also provide hunting perches for raptors and ravens, which may result in increased greater sage-grouse predation along the proposed powerline corridor (Schroeder 2010; NGSGCT 2010) although this impact may be reduced as sage-grouse may avoid areas around the powerlines. The proposed powerline would be constructed in compliance with EPMs to minimize raptor perching and thereby reduce predation on greater sage-grouse.

The construction of the tailings pond and other sediment ponds would have the potential to increase West Nile virus (primarily spread by mosquitoes), an additional stressor on sage-grouse populations (Walker et al. 2004). However, this potential indirect impact would be minor as the ponds would not be constructed near any known active leks.

Overall, the Proposed Action would have long-term, minor impacts on greater sage-grouse, as it would directly impact approximately 539 acres of GHMA habitat and would not impact occupied leks. Of the GHMA potentially impacted, only 277 acres would be directly impacted. The additional 262 acres lies outside of the impact area but is part of the proposed BLM land sale. Of the GHMA directly impacted, 218 acres occur on BLM land and 59 acres occur on private land. The Proposed Action would also be in compliance with the Idaho State Board of Land Commissioners Greater Sage-grouse Plan since as stated in **Section 3.7**, the Project Area was determined to not fall within Core or Important Habitat areas.

In 2017 and 2018, the Department of Interior initiated a review of the 2015 ARMPA for the purpose of enhancing cooperation with Western states greater sage grouse mitigation plans. Two alternatives were identified for Idaho: (a) no action, which would continue implementation of the 2015 ARMPA; and (b) an adjustment to the 2015 ARMPA to align more closely with the State of Idaho Conservation Plan for the greater sage grouse (known as the Management Alignment Alternative). The two alternatives do have different mitigation requirements and have direct application to the Proposed Action. If the Management Alignment Alternative, is approved, it would remove both the requirement to provide compensatory mitigation across all management zones and to do so consistent with the net conservation gain standard which is a current requirement under the 2015 ARMPA. A decision is scheduled for December 2018.

Under the 2015 ARMPA, it requires mitigation to offset or minimize impacts from anthropogenic disturbance. This is generally accomplished by avoiding sage-grouse habitat, limiting disturbance, or by application of established design features which minimize impacts. The ARMPA further requires that GHMA be retained in federal management unless (1) the disposal will result in no direct or indirect adverse impact to sage-grouse conservation or (2) the disposal will provide a net conservation gain. The 2015 ARMPA does not provide direction for how to achieve criteria (2). The Project would not meet criteria (1), since the BLM land sale would result in 277 acres of disturbance in GHMA which cannot be avoided.

For the Proposed Action, the habitat was quantified using a modified Nevada Habitat Quantification Tool (HQT). The Nevada HQT was modified by using applicable Idaho and site-specific data and sources for the Project and using an alternative method for generating the Habitat Suitability Index (this index is used as a local-scale modifier of habitat function), since sage-grouse

telemetry location was not available. The HQT calculates debits and credits from the change in baseline or current functional acres and project functional acres. Functional acres are calculated by multiplying the overall habitat function by the total acres associated with the debit or credit project acres. The HQT for the Proposed Action determined that the surface disturbance in the GHMA in the Study Area would result in a total of 120.5 debits and the indirect effects would result in a total of 73 debits. These debits are a product of the change in functional acres and the management importance category multiplier. Overall, the Proposed Action would result in a total of 193.5 debits being generated (HDR 2017).

Under the 2015 ARMPA, BLM needs to consider potential credits to offset and provide a net benefit to greater sage-grouse, the HQT also examined two parcels that Simplot may use as a form of mitigation/credit. They include the Jouglard Ranch and the BLM donation parcel. As with the debit, the HQT only examined the lands designated as GHMA in those two parcels. The Jouglard Ranch has a credit potential of 690.7 and the BLM donation parcel has a credit potential of 49.8. The overall total credit potential generated is 740.5. As with the debits, the credits are a product of the change in functional acres and the management importance category multiplier. Based on the results of the HQT, there are 193.5 debits generated from the Proposed Action and 740.5 credits available from the potential credit project(s). Under the HQT, debits and credits have a 1:1 ratio and given the results, there are sufficient credits available to offset the debits (HDR 2017).

By contrast, under the Management Alignment Alternative and consistent with Idaho's Management Plan, Simplot would not be required to provide compensatory mitigation for the greater sage-grouse and may not need to utilize the Jouglard Ranch or the BLM donation parcel to provide a net benefit to sage-grouse. However, Simplot may work with Idaho and BLM to voluntarily provide mitigation for the greater sage-grouse that is less than, equal to, or greater than the debits being generated by the Proposed Action.

Northern Goshawk

There is one known northern goshawk nesting territory in the Study Area and a nest within the territory was found to be active in 2017. The nest location is situated within the proposed footprint of a pit, thus would eventually be removed as a result of mining activities. In addition to the direct impact to this specific nest, nesting northern goshawk pairs in the vicinity of the mine may be disturbed or disrupted by noise and human activity. Nesting northern goshawks can be sensitive to disturbance at a nest site from nest construction through 20 days post-hatch (Squires and Kennedy 2006). Any activity near active nest sites may cause goshawks to abandon the nest. Vegetation removal associated with the Proposed Action would try to be conducted outside the nesting season to the extent possible in order to avoid the removal of active northern goshawk nests. However, if vegetation removal did occur during the nesting season, surveys for active northern goshawk nests would be conducted and avoidance plans would be developed as necessary, to avoid directly impacting any active nests.

Project noise and activity may influence northern goshawk to temporarily avoid areas near the Proposed Action while active mining is occurring. Northern goshawks could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead powerline) and moving vehicles, particularly at night. Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between

conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 1,916 acres of potentially suitable northern goshawk habitat (i.e., aspen, aspen/mixed conifer, and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact northern goshawk by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity (e.g., great horned owls). Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for northern goshawk and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long term, and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities. Additionally, it is anticipated that over a longer period of time (i.e. 100 to 200 years), some of the reclaimed areas would revert back to forested habitats as part of natural succession.

Due to the relatively small area of mature forest that would be impacted, and the CNF nest territory occupancy monitoring data described in **Section 3.7**, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on northern goshawks.

Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on raptors, is expected to result in long-term but minor impacts on northern goshawk.

Olive-Sided Flycatcher

In order to comply with the MBTA, Simplot would minimize the potential for direct mortality of olive-sided flycatchers by clearing vegetation from potential nesting habitats outside of the breeding season. If olive-sided flycatchers are nesting within the vicinity of the proposed mine, noise and human activity may disturb or disrupt nesting pairs. As discussed in **Section 4.7.1.1.2**, noise can negatively impact small birds by interfering with acoustic communication and eliciting an avoidance response.

Approximately 1,916 acres of potentially suitable olive-sided flycatcher habitat (i.e., aspen, aspen/mixed conifer and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact olive-sided flycatcher by altering their prey base and potentially increasing the abundance of predators that are more tolerant of human activity. Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for olive-sided flycatcher and would likely support different prey communities, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long-term, and these vegetation communities would favor wildlife species associated with grasslands and shrublands and rodent species that are habitat generalists as opposed to wildlife species that inhabit forest communities.

Under the Proposed Action, the powerline may provide a hunting perch for predators such as raptors and ravens. The powerline would be constructed in compliance with EPMs to minimize raptor perching and, thereby, reduce the predation of olive-sided flycatchers and other migratory birds.

Due to the relatively small area of mature forest that would be impacted and the lack of indication from baseline studies that a robust olive-sided flycatcher population inhabits the Study Area, direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on olive-sided flycatcher. Overall, the Proposed Action, with the implementation of EPMs to minimize impacts on migratory birds, is expected to result in long-term but minor impacts on olive-sided flycatcher.

Prairie Falcon

Due to a lack of known nests or suitable nesting habitat (e.g., cliffs) within the Study Area, the Proposed Action would not impact nesting prairie falcons. Therefore, the Proposed Action impacts described below would most likely affect small numbers of individual prairie falcons that forage within the vicinity of the Proposed Action or move through the Study Area during the non-breeding season.

Project noise and activity may influence prairie falcons to temporarily avoid areas near the Proposed Action while active mining is occurring. Prairie falcons could also be directly impacted as a result of mortality through mechanisms such as collision with aboveground structures (e.g., the overhead powerline). Simplot would minimize collision risk on the powerline by using EPMs such as the appropriate spacing between conductors and grounded hardware, the use of insulating or cover-up materials for perch management, and the installation of bird flight diverters on the top grounding wire.

Approximately 776 acres of potentially suitable prairie falcon foraging habitat (i.e., sagebrush shrublands) would be removed under the Proposed Action. The majority of this habitat loss would be temporary, as most of the areas disturbed by the Proposed Action would be reclaimed once mining ceases, and the disturbed sagebrush communities would recover to their baseline conditions and would again provide potential foraging habitat for prairie falcons over the long-term.

Direct and indirect impacts under the Proposed Action are unlikely to have population-level effects on prairie falcons, because the Study Area lacks suitable nesting habitat, and prairie falcons may only occupy the Study Area sporadically. Overall, the Proposed Action, with the implementation of design features and measures used to minimize impacts on raptors, is expected to result in long-term but negligible impacts on prairie falcons.

Willow Flycatcher

In order to comply with the MBTA, Simplot would minimize the potential for direct mortality of willow flycatchers and other migratory birds by clearing vegetation from potential nesting habitats outside of the breeding season. If willow flycatchers are nesting in the vicinity of the proposed mine, noise and human activity may disturb or disrupt nesting pairs. As discussed in **Section 4.7.1.1.2**, noise can negatively impact small birds by interfering with acoustic communication and eliciting an avoidance response.

Approximately 2 acres of potential willow flycatcher habitat (riparian communities) would be removed under the Proposed Action or approximately 10 percent of the main Project Area. This loss of habitat would be long-term and permanent, because reclaimed areas would be seeded with upland vegetation as discussed in **Chapter 2** rather than being restored to their baseline riparian habitat conditions.

Due to the very small areas of riparian habitat that would be indirectly impacted, the Proposed Action is very unlikely to have population-level effects on the willow flycatcher. Overall, the Proposed Action, with the implementation of EPMs used to minimize impacts on migratory birds, is expected to result in long-term but minor impacts on willow flycatchers.

Mammals

Gray Wolf

As discussed in **Section 3.7.1.4**, the utilization of the Study Area by gray wolves is likely limited to occasional transitory movements of individual wolves, as there are no established gray wolf packs or breeding pairs in the CNF (USFWS et al. 2016. Therefore, the primary impact of the Proposed Action on the gray wolf would be the disruption of wolf movement through the area. Impacts of temporary, small-scale habitat removal and alteration would be negligible for the gray wolf due to their broad range of habitats and lack of regular use of the Study Area.

The year-round noise and human activity associated with the construction and active mining phase of the Proposed Action would likely influence wolves to travel around the periphery of the Study Area rather than directly through the Study Area. If gray wolves were to move through the Study Area during construction or active mining, they could be at risk of vehicle collisions along the proposed access and haul roads. However, such collisions would be extremely rare occurrences, as wolves would be more likely to travel around the periphery of the Proposed Action rather than directly crossing access and haul roads during times of heavy traffic. Upon the completion of mining activities, the majority of Project disturbance would be reclaimed, and human presence in the area would be minimal. Therefore, over the long-term, the Proposed Action would have no impact on the movement of gray wolves within the region. Disturbance from the Proposed Action would likely alter the distributions of prey species (e.g., mule deer, elk, and moose) over the short-term; however, over the long-term, reclaimed areas would recover to shrubland habitats that support big game. However, over the even longer term (100-200 years) it is possible that forested areas would encroach on these shrublands and eventually return them to forested areas. Therefore, hunting areas for gray wolves may shift away from the Study Area disturbance over the short-term, long-term movement patterns of gray wolves would not be affected. Overall, the Proposed Action would result in long-term but negligible impacts on gray wolves.

Townsend's Big-Eared Bat, Long-eared Myotis, and Long-legged Myotis

The primary potential impacts of the Proposed Action on the Townsend's big-eared bat, long-eared myotis, and long-legged myotis include the loss of foraging and commuting habitat, loss and degradation of water sources, mortality from vehicle collisions, and changes in predator communities. Impacts to roosts or hibernacula for this bat species are unlikely, as no known suitable roosting habitat (e.g., caves or underground mine openings) occur within the Study Area.

The Proposed Action would result in the loss or alteration of approximately 2,830 acres of potential foraging habitat for sensitive bats, which includes the entire Proposed Action disturbance area, as these bat species are known to forage in a wide variety of habitats. Foraging habitat impacts would be long-term. The majority of the Project disturbance (including aspen, aspen/mixed conifer, mixed conifer, wetland/mesic meadow, and riparian communities) would be reclaimed and would eventually recover to shrubland communities over the long-term, and the loss of forested and wetland/riparian communities would be considered a permanent loss for the purpose of this analysis. However, over 100-200 years, it is possible for trees to regrow in these areas through natural succession. Water sources utilized by these sensitive bat species could be indirectly altered by sedimentation and a reduction in water quality. These indirect impacts associated with changes to hydrology, would be short-term, as they would primarily occur during the construction and active mining phases of the Proposed Action.

Sensitive bat species could collide with moving vehicles along the proposed access and haul roads when vehicles are traveling the roads between dusk and dawn, although this potential is very minimal based upon past experience. Under the Proposed Action, the impact of vehicle collisions on these bats would be short-term, as human presence in the area would be minimal upon the conclusion of Project activities.

Townsend's big-eared bats, long-eared myotis and long-legged myotis could also be subjected to increased mortality from predators (e.g., great horned owl) that are relatively more tolerant of human disturbance and which may benefit from perching on the proposed overhead powerline. The proposed powerline would be constructed in compliance with EPMs to minimize raptor perching and, thereby, reduce the predation of sensitive bats.

The overall impacts to Townsend's big-eared bats, long-eared myotis and long-legged myotis under the Proposed Action would be long-term and minor.

Uinta Chipmunk

Under the Proposed Action, the primary potential impacts on the Uinta chipmunk include the loss of habitat, loss and degradation of water sources, mortality from vehicle collisions, and changes in predator communities.

Approximately 1,916 acres of potential Uinta chipmunk habitat (i.e., aspen, aspen/mixed conifer, and mixed conifer forests) would be removed under the Proposed Action. In addition to direct habitat loss, habitat removal could indirectly impact Uinta chipmunks by the potential increase in the abundance of predators that are more tolerant of human activity. Most of the areas disturbed by the Proposed Action would be reclaimed as soon as the areas were no longer utilized for Project activities; however, reclaimed landscapes would not function as suitable habitat for Uinta chipmunk, as the forested habitats impacted by the Proposed Action would be reclaimed to grassland and shrubland communities over the short-term and shrubland communities over the long-term.

Uinta chipmunks could be crushed by moving vehicles along the proposed access and haul roads. Under the Proposed Action, the impact of vehicle collisions on Uinta chipmunk would be

short-term, as human presence in the area would be minimal upon the conclusion of Project activities.

Uinta chipmunks could also be subjected to increased mortality from predators that are relatively more tolerant of human disturbance and which may benefit from perching on the proposed overhead powerline. The proposed powerline would be constructed in compliance with EPMs to minimize raptor perching and, thereby, reduce the predation of Uinta chipmunks.

The overall impacts to Uinta chipmunk under the Proposed Action would be long-term and minor.

Wolverine

As discussed in **Section 3.7.1.4**, the use of the Study Area by wolverines is likely limited to occasional transitory movements of individual wolverines. Therefore, the primary impact of the Proposed Action on the wolverine would be the disruption of wolverine movement through the general area. Under the Proposed Action, the impacts of temporary, small-scale habitat removal and alteration, would be negligible for the wolverine due to their wide-ranging nature and lack of regular use of the Study Area.

The year-round noise and human activity associated with the construction and active mining phases of the Proposed Action would likely influence wolverines to travel around the periphery of the Study Area rather than directly through it. If wolverines did move through the Study Area during the proposed construction or active mining phases, they could be at risk of collisions with vehicles along the access and haul roads. Such collisions, however, would be an extremely rare occurrence, as wolverines would more likely travel around the edges of the Study Area rather than directly crossing the access and haul roads during times of heavy traffic.

Upon the completion of mining activities, the majority of Project disturbance would be reclaimed, and human presence in the area would be minimal. Therefore, over the long-term, the Proposed Action would have no impact on the movement of wolverines within the region. Disturbance from the Proposed Action would likely alter the distributions of prey species (e.g., mule deer, elk, and moose) over the short-term; however, over the long-term, reclaimed areas would recover to shrubland habitats that support big game. Therefore, hunting areas for wolverines may shift away from the Study Area disturbance over the short-term, long-term movement patterns of wolverines would not be affected. Overall, the Proposed Action would result in long-term but negligible impacts on wolverines.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect wildlife resources. Indirectly, the money received from the land sale could be used to purchase undisturbed lands that would come under BLM management and the BLM would also gain 440 acres of undisturbed land from the donation parcel that would be added to the existing ACEC which would provide habitat for a variety of wildlife species including important elk winter range. HEA analyses were not performed for the donation parcel because there were no potential wildlife habitat services to be lost from the Project within the parcel. However, there are DSAYs for the donation parcel that would offset some amount of the

wildlife habitat services lost due to the sale of the disposal parcels because the BLM would be able to preserve the DSAYs on this currently private land that could otherwise be developed at any moment.

Within the disposal parcel, there would be approximately 217 acres of GHMA lost due to direct disturbance with another 262 acres of GHMA outside the direct disturbance area but within the disposal parcel. The HQT analysis determined that this indirect effect would result in a debit of 73. The disposal parcel itself contains 479 acres of GHMA, all of which would no longer be under BLM management. With the incorporation of the donation parcel, which contains 436 acres of GHMA, the net GHMA acreage loss simply due to the sale would be 43 acres.

USFS Land Exchange

The land exchange would not directly affect wildlife resources. Indirectly, the USFS would exchange 632 acres of the selected parcel, of which approximately 60 acres of habitat for wildlife resources would be disturbed in the selected parcel from the tailings pond facility (although once in private ownership, the entire selected parcel could be disturbed) and the USFS would gain 640 acres of undisturbed wildlife habitat associated with the offered parcel that would come under USFS management. The selected parcel and the offered parcel have similar wildlife habitats.

HEA analyses were not performed for the offered parcel because there were no potential wildlife habitat services to be lost from the Project within the parcel. While the HEA analysis for the Study Area included the selected parcel, information focusing only on the selected parcel was not excerpted for individual analysis. However, there are some DSAYs for the offered parcel that would offset some amount of the wildlife habitat services lost on the selected parcel because the USFS would be able to preserve the DSAYs on this currently private land that could otherwise be developed at any moment.

4.7.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative, four locations on NFS lands would require widening, and three locations would require road grade modifications, while one location on state lands would require road grade modifications. The total amount of disturbance associated with this route is approximately 26 acres compared to the 14 acres of disturbance in the 3 Georgetown Road segments under the Proposed Action. All other areas of disturbance under this Alternative would be the same as under the Proposed Action. Impacts to wildlife species from the proposed re-routing of the access road would be similar to those described under the Proposed Action as the increase in disturbance would account for a less than one percent increase in overall disturbance. GHMA acres directly impacted due to this access road alternative would be 3.1 acres, all within the Warming Hut Route Segment. This access road as a whole would cross 58 acres of GHMA, but most of this would require no ground disturbance beyond what has already occurred.

4.7.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 1,142 acres of land that would accommodate the tailings pond and associated pipeline infrastructure and the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, there would be no difference in the direct impacts to wildlife under this alternative, all impacts would be the same as described in **Section 4.7.1.1.** Without the sale of the

disposal parcels or the incorporation of the donation, there would not be a transfer of 262 acres of GHMA from BLM to private because the parcel would remain under BLM ownership (the GHMA loss due to direct disturbance on the BLM disposal parcel would remain the same as for the Proposed Action). However, there would be no offset to the HEA losses that would still occur due to the tailings pond facility because the donation parcel would not come into federal management.

4.7.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, the BLM would retain ownership of approximately 642 acres of land. The remaining 500 acres would be sold to Simplot, and is the minimum acreage required to accommodate the tailings pond facility. The disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to wildlife resources under this alternative would be the same as the impacts associated with the Proposed Action. Although the direct impacts to GHMA acres would be the same, under this alternative, there would be approximately 153 acres less GHMA acres than the Proposed Action transferred from BLM to private ownership, due to the smaller disposal parcel. However, there would be a greater offset to the HEA losses on the disposal parcels due to the tailings pond facility, because the larger donation parcel would still come into federal management.

4.7.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, the tailings facility would not be located on NFS lands and there would be approximately 125 acres fewer acres impacted. This would reduce the approximate acres of impacted habitat by 80 acres for sagebrush, 30 acres for mixed coniferous/aspen, and 15 acres of aspen vegetation communities. The tailings pond associated with this alternative would only serve approximately 20 years of the Proposed Action's 30-year mine life. A large dam would need to be built along the edge of the western property line. Should this alternative be chosen, the mine would either shut down after 20 years, or when there is no longer capacity for the tailings would require additional NEPA analysis to locate a new tailings facility.

The rest of the Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to wildlife resources under this alternative would occur on 137 fewer acres but the type and magnitude of impacts would essentially be the same as associated with the Proposed Action. However, there would be no offset to the HEA losses that would still occur due to the tailings pond facility because the offered parcel would not come into federal management.

4.7.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, the USFS would retain ownership of approximately 480 acres of land. The remaining 160 acres would be exchanged to Simplot for the tailings pond facility. However, the disturbance acreage and Project facility layout under this alternative would be the same as under the Proposed Action; therefore, the impacts to wildlife under this Alternative would essentially be the same as the impacts associated with the Proposed Action. However, there would be a greater offset to the HEA losses on the selected parcel due to the tailings pond facility because the offered parcel (640 acres) would still come into federal management.

4.7.1.7 Alternative 6 – Selective Handling Alternative

Under this alternative, although overburden would be selectively handled according to whether it was low in selenium or had elevated selenium concentrations, the acres to be disturbed and thus

impacts to wildlife resources under this alternative would essentially be the same as the Proposed Action.

4.7.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to wildlife in the Study Area. The No Action Alternative would maintain the current status of terrestrial wildlife populations within and near the Study Area along with their associated habitats. However, this alternative does not preclude future development of the federal phosphate leases under a different mine plan.

4.7.2 Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action and Action Alternatives, the loss of aspen and conifer forests is considered an irreversible commitment of resources and would have long-term impacts on the wildlife species inhabiting these communities. Although the MRP would reestablish grassland and shrubland vegetation communities in disturbed areas after mining operations cease, aspen, aspen/mixed conifer, and mixed conifer forests are not anticipated to regenerate in the foreseeable future, because the post-disturbance successional patterns of these communities likely require decades or centuries to develop into their pre-disturbance conditions. Impacted wetland and riparian areas would be reseeded with upland vegetation, and while off-site mitigation would be required to offset wetland impacts under the CWA, the loss of wetland habitat within the Study Area would be irreversible. As a result of the loss of habitat, wildlife species that use aspen and conifer forests and wetland habitats may locally decrease following a small-scale shift in wildlife community composition in and near the Study Area and this would also be an irreversible commitment of resources.

4.7.3 Unavoidable Residual Adverse Effects

Based on the HEA, reclamation would offset approximately 46 percent of the wildlife habitat services lost under the Proposed Action (not including any offsetting gains from the BLM donation parcel or the USFS offered parcel) with a net debit of 116,045 residual DSAYs of lost wildlife habitat services (SWCA 2017). The loss of wildlife habitat services would be an unavoidable residual adverse effect of the Proposed Action.

4.7.4 Relationship of Short-term Uses and Long-term Productivity

The Proposed Action and all Action Alternatives would implement ground-disturbing activities that would produce short- and long-term effects to wildlife and Special Status Species and the habitat they use in the Study Area. Species that depend on mid- and late-seral forested vegetation that occurs within the Study Area would be displaced and the long-term productivity of this habitat would be impacted.

4.7.5 Mitigation Measures

On-site reclamation would partially offset the loss of wildlife habitat resulting from the Proposed Action and all Action Alternatives, as 95 percent of the total disturbance would be reclaimed. Based on the HEA results, on-site reclamation would result in the long-term credit of 99,991

DSAYs, which indicates that reclamation would offset approximately 46 percent of the wildlife habitat services lost under the Proposed Action (not including any gains from the donation parcel or the offered parcel) with a net debit of 116,045 residual DSAYs.

Mitigation requirements for greater sage grouse may be adjusted if the current review of the Sage-grouse amendments to the Resource Management Plan are completed at the time of the Dairy Syncline Mine ROD. Currently, the 2015 ARMPA (the no action alternative being considered in the current review) requires that GHMA be retained unless there would be a net conservation gain or the land tenure adjustment would have no adverse impact on GRSG (BLM and USFS 2015). If approved, the second alternative being considered in the current review, the Management Alignment Alternative, would require the Project to avoid and minimize impacts to the extent practicable and the sale of GHMA would result in No Net Loss. To meet the requirements of both alternatives currently under review, Simplot has proposed a range of several preliminary mitigation options that include:

- The BLM donation parcel.
- Using all or some portion of their privately owned Jouglard Ranch, which has high quality sage-grouse habitat consisting of approximately 691 documented credits based on the HQT (HDR 2017). Simplot believes this ranch provides an excellent opportunity to develop a collaborative approach with stakeholders to demonstrate that proper livestock grazing and related ranch operations are compatible with sage-grouse habitat, and in some cases, may be used to address habitat threats. Because of the excellent documented habitat quality at this functioning ranch, Simplot believes this provides a unique opportunity to provide a demonstration project. Simplot would provide a documented management plan which would focus on maintaining and/or enhancing habitat values for sage-grouse. Monitoring and reporting would be required and provided for BLM and State review. Appropriate assurances that would document the durability of this demonstration program throughout the life of the Dairy Syncline Mine would be provided as well.
- Working with the State of Idaho, there is potential for developing a voluntary in-lieu fee approach for mitigation in GHMA. This is part of the Idaho's Sage Grouse Management Plan which would have technical assistance from an interagency governmental group.

4.8 Fisheries and Aquatics

Issue: Would the Project affect cutthroat trout and other native fish in the Project Area?

Indicators:

- Increased concentrations of suspended sediment, and COPCs in fishery resources in the area, with emphasis on compliance with applicable aquatic life water quality standards.
- Removal or degradation of habitat for Yellowstone Cutthroat Trout or Northern Leatherside Chub. Degradation includes reductions in streamflow.
- Changes in COPC concentrations in benthic macroinvertebrate tissues and/or changes in community structure of benthic macroinvertebrates.
- The length of intermittent and perennial stream channels affected by the Proposed Action compared with the undisturbed lengths of these stream channels in the Study Area.

- Acres of Aquatic Influence Zone habitat to be affected and comparison with undisturbed acreage of this habitat within the Project Area.

4.8.1 Direct and Indirect Impacts

4.8.1.1 Proposed Action

Direct and indirect effects to fisheries and aquatic resources would primarily be driven by: 1) streamflow alterations due to watershed disturbance and mine water management; 2) direct disturbance due to access road construction; 3) sediment transport to streams from disturbed areas, and; 4) accidental releases of contaminants to the aquatic environment. These mechanisms and the direct and indirect effects that could occur from them are described in separate subsections for aquatic habitat, macroinvertebrates, and fish. Direct disturbance to AIZs is also quantified and discussed below. Because any effects to fisheries and aquatic resources are largely connected to changes in surface water, this section tiers to **Section 4.3.1.1** and is referenced for further details, as applicable.

Phosphate mining in southeast Idaho has resulted in increased levels of selenium and other COPCs in some surface waters from the weathering of overburden and subsequent transport of these COPCs to surface water via groundwater. The Proposed Action is expected to increase concentrations of selenium and other COPCs in groundwater, specifically the Wells aquifer (**Section 4.3.2.1**). However, the Proposed Action is not expected to result in any solute loading impacts to surface water because the flow of potentially impacted groundwater from source areas to surface water within the Study Area is not expected based on bedrock structural and stratigraphic characteristics. Because impacts to surface water from groundwater with COPCs from the Project are not expected, there would be no change in the ability of surface waters to meet aquatic life water quality standards, including fish tissue-based selenium standards.

Aquatic Influence Zones

The Proposed Action would include direct disturbance of approximately 111 acres within AIZs, which represents approximately 3 percent of the AIZs within the Study Area. No indirect effects to AIZs are anticipated. The areas that would be disturbed include:

- Approximately 2 acres within AIZs on perennial streams. This disturbance would be on Slug Creek and would be associated with access road construction.
- Approximately 109 acres within AIZs associated with small intermittent drainages. This includes drainages that are tributary to Slug Creek, such as the Wilde Canyon stream and the unnamed tributary just west of Slug Creek (called DSW-15). It also includes multiple intermittent drainages that have no surface water connection with Slug Creek, primarily within the pit disturbance areas.

Disturbance within AIZs can result in a variety of effects to aquatic habitats, such as increases in water temperature due to a loss of shading from riparian vegetation, increases in sediment due to the removal of riparian vegetation, changes to stream channel morphology, etc. The changes can then lead to adverse effects on biota such as macroinvertebrates and fish. Under the Proposed Action, the approximately 2 acres disturbed on Slug Creek are unlikely to result in the effects mentioned above, due to the small amount of disturbance relative to undisturbed portions of Slug

Creek. The disturbance of 109 acres of intermittent drainages would have effects to Slug Creek that are primarily related to streamflow reductions. These effects are described below for aquatic habitat. **Appendix 4A** summarizes compliance with the CNF RFP with regards to AIZs under the Proposed Action.

Aquatic Habitat

Potential impacts to aquatic habitat are discussed in separate subsections below for streamflow alterations, access road construction, sediment transport from disturbed areas, and accidental releases of contaminants. Impacts due to access road construction would include direct and indirect impacts. Potential impacts due to the other actions listed would be indirect.

Streamflow Alterations

The Proposed Action would not impact streamflow in Johnson Creek, Goodheart Creek, Dry Valley Creek, Maybe Creek, or Left Hand Fork Georgetown Canyon. The Proposed Action would, however, impact streamflow in Slug Creek and intermittent tributaries. These impacts would be due to: 1) a decrease in groundwater discharge related to water well pumping; 2) the interception or redirection of surface water runoff by mine features, and; 3) reduced discharge at several springs that contribute to Slug Creek. These mechanisms are discussed in detail in **Section 4.3.1.1**, with the latter most relevant to aquatic impacts as discussed here.

Aquatic habitat in Slug Creek would be most sensitive to decreased streamflow during summer/fall baseflows. During peak flows (e.g., during spring runoff), flow loss due to mine water management would be less noticeable due to contributions from the entire watershed. A reduction in peak flows can increase amounts of fine sediment in the substrate (because less flow is available for downstream transport). Sediment levels are already high in reaches downstream of the Project. This is primarily due to inputs from agricultural activities and a small decrease in peak flow is unlikely to have a noticeable effect. In contrast, Slug Creek flows can be very low during baseflow, with only limited fish habitat present, particularly in reaches upstream of other water inputs (e.g., Goodheart Creek, DSW-42). Baseflow reductions could reduce the quantity and quality of habitat available for aquatic organisms due to decreased wetted stream widths, shallower pool depths, less instream cover, and increased temperatures (Harvey et al. 2006). Because the baseflow period is more sensitive to potential flow alterations, the remainder of the discussion focusses on the potential for effects to baseflow from the proposed wells and predicted reduced discharges from DSW-15, -16, and -01, which are the three springs that have perennial connections to Slug Creek.

As explained in **Section 4.3.1.1**, flow alterations in these springs are difficult to quantify because the groundwater data/modeling has inherent limitations. As a result, the discussion of impacts is more qualitative than quantitative and presents a range of potential impacts. The assumptions made regarding flow loss to each spring are discussed below.

> DSW-15 – There could be some reduction in flow, but it would be less than the lowest flow measured during fall monitoring (0.13 cfs; **Table 3.3-4**). Fall measurements are used since we are comparing to fall baseflow measurements in Slug Creek.
>
> DSW-16 – There could be some reduction in flow, but that it would be less than the lowest flow measured during fall monitoring (0.066 cfs; **Table 3.3-4**).

DSW-01 – There would be a long-term loss of flow from this spring. Based on baseflow measurements collected between 2008 and 2013, potential flow loss to Slug Creek would be between 0.0005 and 0.050 cfs.

Based on the analysis above, streamflow in Slug Creek would be reduced by at least 0.0005 to 0.050 cfs due to reductions at DSW-01. This would be an approximately 0.1 to 5.5 percent reduction in Slug Creek streamflow at DSW-28 (located where water from DSW-01 enters Slug Creek). These percentages are based on measurements made between 2008 and 2013. Additional flow data has been collected by other entities. Although it shows a broader range of flows, the data is not included here as it does not affect the associated impact analysis. Streamflow reductions could be greater than those described above for DSW-01 due to groundwater drawdown below Slug Creek and flow reductions at DSW-15 or DSW-16. Although flow reductions from DSW-15 and DSW-16 have not been quantified, any reduction is predicted to be less than 0.2 cfs (the sum of the lowest recorded fall flows at both springs). The magnitude of flow related effects would vary longitudinally in Slug Creek due to the differences in flow from upstream to downstream. While the overall effects to the stream are likely minor, they could be moderate in the most upstream areas if losses at DSW-15 and DSW-16 are more than expected, and yet be negligible in downstream areas. The effects would contribute to Slug Creek's inability to meet its beneficial use of cold water aquatic life. The effects would be long-term as disturbed and reclaimed areas would begin to function as part of the watershed following reclamation, but flow patterns may take longer to re-establish and some spring contributions would not likely recover.

Access Road Construction

Access road construction would impact the following streams: Slug Creek, the unnamed tributary to Slug Creek (DSW-15), the stream in Wilde Canyon, and Left Hand Fork Georgetown Canyon. The section of access road from the Slug Creek Road to the main office and security parking crosses Slug Creek and the unnamed tributary immediately west of Slug Creek. Because the access road would be wider than the existing road, the existing culverts would need to be replaced. The new culverts would be approximately 120 feet long. The use of heavy equipment around stream banks during removal and installation of the culverts would displace and erode sediment in the bed and bank. This would increase turbidity immediately downstream of the culverts, but the effects should be negligible as suspended sediments would settle out relatively quickly. The introduction of sediment can also diminish habitat suitability by altering substrate composition, but the EPMs (**Section 2.4**) would reduce sediment introduction to negligible levels and these types of effects are not expected. Culverts would be installed to conform to the natural streambed and slope so that a minimum depth of water is available for fish passage.

Construction of the access road through Wilde Canyon would cross the intermittent stream twice This would require the placement of 2 culverts of approximately 140 feet and 220 feet in length. Depending upon when construction occurs water may or may not be present in the stream. The installation would displace and erode sediment in the bed and bank. If water is present, this would increase turbidity downstream during construction, but the suspended sediment would settle out following construction. The introduction of sediment would be reduced to negligible levels by the EPMs (**Section 2.4**) and changes to substrate composition would be negligible.

Upgrades along the Left Hand Fork of Georgetown Canyon Road (described in **Section 2.3.9**) would include disturbance along approximately 0.4 miles of road below Big Spring that would be adjacent to the stream. No instream work would be required and there would be no direct impacts. However, heavy equipment work and ground disturbance adjacent to the stream has the potential to introduce sediment to the stream. Although implementation of EPMs (**Section 2.4**) would limit the potential for major sediment introductions, some sediment may enter live water, particularly if storm events overwhelm EPMs. Given the small amount of disturbance, the amount of sediment that could be introduced would likely be small and not enough to result in more than minor temporary changes to streambed substrate.

Sediment Transport

Mining activity has the potential to introduce sediment into aquatic habitat due to runoff from disturbances related to construction of the powerline, haul roads, and other mine facilities. Introduced fine sediment can impact habitat quality as described above for streamflow alteration. However, EPMs and BMPs during construction activities (e.g., sediment fences, straw bales, or geotextiles) and during mining (e.g., diversion structures, sediment ponds, slope stabilization, etc.) would capture sediment prior to it entering live water. As a result, it is expected that sedimentation impacts to aquatic habitat in the Study Area would be negligible (i.e., if any sediment were introduced it is expected to be a small enough amount that impacts would not be measurable) and short-term.

Accidental Contaminant Releases

Mining activity uses a variety of materials that can contaminate water and impact aquatic habitat were an accidental release (i.e., spill) to occur. The most likely sources of an accidental release would be mobile equipment used in construction of the powerline, pipeline, or access road and/or vehicles delivering chemicals and other materials to the mine along the access road. There is also the potential for Slug Creek to be impacted by accidental releases from other mining facilities (e.g., shop, mill, etc.) via tributaries such as the unnamed perennial stream (DSW-15), Wilde Canyon stream, etc. The magnitude of the effects of an accidental release would vary depending upon the amount released and the proximity to live water but would generally be short-term. Given that the potential for an accidental release is slight due to EPMs and BMPs that would be implemented, and the SPCC plan that would be prepared for the Proposed Action, and other precautionary measures in place, effects are not expected.

Benthic Macroinvertebrates

Changes in COPC concentrations (e.g., selenium) in benthic macroinvertebrate tissue concentrations are not expected as solute loading to surface water is not expected based on geological characteristics. Rather, impacts to benthic macroinvertebrates would primarily be due to streamflow alterations. Potential impacts form access road construction, sediment transport from disturbed areas, and accidental contaminant releases are also discussed.

Streamflow Alterations

Streamflow reductions can affect macroinvertebrates by reducing the amount of habitat available (i.e., a reduced amount of wetted substrate), as well by reducing the suitability of that habitat (i.e., increased fine sediment in the substrate due to a lack of flow available to transport the sediment,

and increased temperatures). Because the impact on instream flow would be more drastic in upper Slug Creek than in lower Slug Creek, effects to macroinvertebrates would be most pronounced in upper Slug Creek. Effects may include decreases in density and changes in community composition towards taxa tolerant of low flow conditions, higher amounts of fine sediment, etc. However, because conditions for macroinvertebrates are already poor at both upstream and downstream locations, the measurable effect may only be small. A small measurable effect, would, by definition be a minor effect, but the effect would be long-term as described for aquatic habitat.

Access Road Construction

Access road construction would result in short-term impacts to water quality (turbidity) in Slug Creek and the unnamed tributary (DSW-15). Access road construction would result in negligible changes in substrate composition on these streams, as well as the Left Hand Fork Georgetown Canyon. Short-term increases in turbidity are not expected to result in impacts to macroinvertebrates, particularly since the macroinvertebrate communities in these streams are already composed of taxa tolerant of high sediment levels. Negligible changes in substrate are also not expected to affect macroinvertebrate communities given that no measurable change is expected.

Sediment Transport

Any increases in sediment would negatively affect macroinvertebrates through alteration of substrates. Because macroinvertebrate taxa vary in their responses to sediment, the most likely effects of any perturbations would be a shift in the composition of local macroinvertebrate communities. Because sediment introductions are expected to be negligible due to the EPMs, and because macroinvertebrate community compositions are already affected by existing sediment levels, changes in macroinvertebrate community compositions are unlikely.

Accidental Contaminant Releases

Any increases in contaminants would negatively affect macroinvertebrates through alteration of water quality. As described above for sediment, macroinvertebrate taxa vary in their responses to water quality changes. As a result, the most likely effects of any perturbations would be a shift in the composition of local macroinvertebrate communities. Because accidental releases are not expected, no effects to macroinvertebrates are expected. Were a release to occur, the most likely effect would be a short-term change in community composition, with the magnitude of the change dependent upon the type and magnitude of the release.

Fish Populations

Similar to macroinvertebrates, impacts to fish populations would primarily be due to streamflow alterations. However, potential impacts from access road construction, sediment transport from disturbed areas, and accidental contaminant releases are also discussed.

Streamflow Alterations

The potential streamflow decreases in Slug Creek could have adverse effects to fish. Potential effects include a loss of habitat as described in the aquatic habitat section, and reduced macroinvertebrate density due to loss of habitat and increased sedimentation, as described in that section. Reduced macroinvertebrate density would lead to reduced food available for fish. The

predicted flow decreases are unlikely to eliminate all fish habitat. Further, in the areas most likely to be affected (upstream reaches) fewer fish are present. However, population sizes of any fish present could be reduced due to the loss of habitat and loss of a prey base, and/or populations present could be reduced in distribution. Reduced population sizes or a reduced distribution of these populations would be a moderate effect (i.e., easily discernable). Although flows and associated ecological function (e.g., cleaner substrates, macroinvertebrate populations) would return to normal at some point following reclamation, fish populations may take longer to recover, thus the effects would be long-term.

Access Road Construction

Turbidity increases in Slug Creek and the unnamed tributary (DSW-15) would cause temporary gill irritation to individual fish immediately downstream. Few fish are expected to be present in these reaches of stream and given the short distances of stream that would be affected, it is anticipated that any fish present would tend to disperse away from affected areas. Fish would be expected to return once turbidity levels have decreased. Because the effects would not result in any measurable changes to fish populations, effects would be temporary and negligible. Further, because any increases in sediment are not expected to alter substrate or affect macroinvertebrates, further effects to fish are not expected. This is also true for Left Hand Fork Georgetown Canyon.

Sediment Transport

Sediment introductions from disturbed areas are not expected to alter substrate composition or result in changes to macroinvertebrate communities. As a result, effects to fish populations due to sediment transport from disturbed areas of the mine are not expected.

Accidental Contaminant Releases

The effects of an accidental release of contaminants on fish populations could range from behavioral changes (e.g., movement to avoid the contaminated area) to mortality. The effects would vary on the type and magnitude of the release. However, it is expected that the EPMs in place would make a release and its associated effects unlikely.

Special Status Species

Yellowstone Cutthroat Trout

No adverse effects to YCT in Johnson Creek, Dry Valley Creek, and Left Hand Fork Georgetown Canyon are expected due to the lack of predicted impacts for these streams. YCT in Slug Creek could be affected by streamflow alterations because YCT depend on cold, clear water, and a clean substrate. As described for general fish populations, streamflow related effects could lead to reduced population sizes and distribution in stream reaches affected by flow alterations. These effects could be moderate for any populations found in reaches between the Wilde Canyon area and Goodheart Creek and would likely be long-term as populations would be slow to recover following reclamation. However, with the exception of YCT collected at SLG-11 by GYC, YCT have primarily been found downstream of Goodheart Creek inputs at DSW-34. Flow alterations would be attenuated at these more downstream locations due to inputs from other sources (e.g., Goodheart Creek) and/or negated due to other water diversions (e.g., between DSW-33 and DSW-32). As a result, effects to YCT would likely be negligible to minor in more downstream reaches.

Northern Leatherside Chub

Northern leatherside chub have not been found in the Study Area and no effects are expected. If they are found within the Study Area at some time in the future, the effects would be as described for fish populations in general.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not directly affect fisheries or aquatic habitat. Indirectly, there are no fisheries within either the disposal parcels or the donation parcel, and no known macroinvertebrate populations so there would be no change to these resources due to the land sale.

USFS Land Exchange

The land exchange would not directly affect fisheries or aquatic habitat. Indirectly, there are no fisheries within either the selected parcel or the offered parcel, and no known macroinvertebrate populations (though there may be poor macroinvertebrate habitat on the offered parcel as noted in Section 3.8.2.2) so there would be no change to these resources due to the exchange.

4.8.1.2 Alternative 1 – South Trail Canyon Access Route

This alternative differs from the Proposed Action only in effects to Left Hand Fork Georgetown Canyon and Trail Creek. All other effects described for the Proposed Action would occur under this alternative as well. Under this alternative there would be no effects to the stream in Left Hand Fork Georgetown Canyon, as no road construction would occur there. Rather, there is the potential for access road related effects to Trail Creek. These effects would include slight changes to peak streamflow, as described in **Section 4.3.1.2**, and sediment effects related to road construction and placement of a 122-foot culvert.

Placement of the culvert would require the use of heavy equipment around stream banks during removal and installation of the culverts. As described for Slug Creek, this would displace and erode sediment in the bed and bank and increase turbidity immediately downstream of the work. However, the effects should be negligible as suspended sediments would settle out relatively quickly. The introduction of sediment can also diminish habitat suitability, but the EPMs (**Section 2.4**) would reduce sediment introduction to negligible levels. Further, culverts would be installed to conform to the natural streambed and slope so that a minimum depth of water is available for fish passage. As a result, only negligible effects to habitat, macroinvertebrates, and fish populations are expected.

4.8.1.3 Alternative 2 – No BLM Land Sale

Alternative 2 impacts to fisheries and aquatic resources would be the same as those described for the Proposed Action.

4.8.1.4 Alternative 3 – Reduced BLM Land Sale

Alternative 3 impacts to fisheries and aquatic resources would be the same as those described for the Proposed Action.

4.8.1.5 Alternative 4 – No USFS Land Exchange

This alternative has less tailings pond facility disturbance than the Proposed Action, which would lead to a slight decrease in the amount of the watershed that would no longer contribute to runoff. However, this reduction would be negligible in terms of runoff delivered to Slug Creek, particularly since the tailings pond facility is located near the lower reaches of Slug Creek, where streamflow reductions are expected to have fewer impacts than higher in the watershed. As a result, the impacts to fisheries and aquatic resources would essentially be the same as described for the Proposed Action.

4.8.1.6 Alternative 5 – Reduced USFS Land Exchange

Alternative 5 impacts to fisheries and aquatic resources would be the same as those described for the Proposed Action.

4.8.1.7 Alternative 6 – Selective Handling Alternative

Alternative 6 impacts to fisheries and aquatic resource would be the same as those described for the Proposed Action.

4.8.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. The No Action Alternative would result in no new impacts to fisheries and aquatic resources in the Study Area. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.8.2 Irreversible and Irretrievable Commitment of Resources

Several springs that contribute to Slug Creek would have reduced discharge during and after mine operations, thus irreversible and irretrievable impacts to fisheries and aquatics habitat, including macroinvertebrates and fish populations would occur.

4.8.3 Unavoidable Residual Adverse Effects

The direct loss of AIZs and intermittent drainages would be an unavoidable adverse impact as these drainages would be difficult to restore to achieve the original structure and function, following reclamation.

4.8.4 Relationship of Short-term Uses and Long-term Productivity

The Proposed Action and all Action Alternatives would implement activities that would produce short- and long-term effects to aquatic organisms and the habitat they use in the Study Area. The species that depend on this habitat would see their populations sizes or distribution reduced and the long-term productivity of this habitat would be impacted.

4.8.5 Mitigation Measures

No mitigation measures for fisheries and aquatics have been identified.

4.9 Land Use and Special Designations

Issue: Would the Project impact current land use activities in the Project Area?

Indicators:

- Changes to current land uses in the Project Area, including impacts to access from the Project and Action Alternatives.
- Description of impacts to roadless attributes and wilderness characteristics.
- Acres of roadless area lost or gained.

4.9.1 Direct and Indirect Impacts

As described in **Section 1.4.1**, two federal land management plans guide land use developments and activities in the Study Area: the BLM ARMP (BLM 2012) and the CNF RFP (USFS 2003a). As described in **Section 3.9.1**, sustaining watersheds, forests and rangelands, and providing for the multiple uses are the primary purposes of land and resource planning on the CTNF. Project impacts could be either to land uses that are guided by those plans (e.g., recreation, grazing, travel) or to the plans themselves (e.g., jurisdictional changes).

4.9.1.1 Proposed Action

Land Use and Jurisdiction

The Proposed Action would convert mostly undeveloped forest and range lands to mining and mining-related uses. Some of this land has recently been used for mining exploration. The predominant current and historical uses of these lands (e.g., recreation, grazing, travel) would be restricted or disallowed until reclamation returns the Proposed Action disturbances to productive land uses. For example, the proposed fencing would prevent humans and livestock from accessing active mining areas as a needed safety measure, although some controlled access would be allowed to other areas in/near the mining area. The impacts to these specific uses are discussed in more detail in **Section 3.10** (recreation), **Section 3.11** (grazing), and **Section 3.14** (transportation).

Within the existing lease areas, Simplot has the right to develop the land for mining and the BLM has the obligation to assure ultimate maximum recovery of the leased minerals. Outside of the lease areas, additional approvals are needed before land use changes occur. This EIS is part of that process. Further, the Project would comply with the BLM ARMP Minerals Management, Management Objective ME-1.1: "Developing mineral resources (oil and gas, geothermal, solid minerals) consistent with other resources and uses as part of an ecologically healthy ecosystem. The federal mineral estate will be managed consistent with laws, policies and established requirements."

Regarding impacts to jurisdiction under the Proposed Action, most of the lands would continue to be under the same jurisdiction as currently, though the specific management/programs would change as described in the following subsections. However, there would be certain jurisdictional changes as a result of the Proposed Action due to the BLM land sale and USFS land exchange, discussed separately below.

Some Project components would be placed on privately owned land, as shown on **Figure 1.1.3**. This includes 7 acres of the Northeast Pit, 29 acres associated with the pipelines, 26 acres associated with the powerline, and 82 acres of the tailings pond. In addition, an access road would be constructed to allow access to the tailings pond. The road would also contain a portion of an ore concentrate line that would deliver the ore concentrate to Simplot's existing slurry line located north of the tailings pond facility. This access road and pipeline corridor would extend south from the South Trail Canyon Road to the tailings pond facility, crossing private land. This would be a minor impact to private land not currently owned by Simplot.

USFS Special Use Authorizations and Prescriptions

The Proposed Action would result in 212 additional acres of CTNF land bound under SUAs in the Study Area (**Table 2.3-4**; **Figure 2.3.2**). This would result in a less than 1 percent reduction in CTNF land in the Study Area available for public use, which would be a negligible effect on land use, transportation, or special designations.

In addition, management prescriptions on NFS lands would change as follows: (1) a utility corridor would be designated for all new powerlines and waterlines, and the management of these areas would change to prescription 8.1 (b) Concentrated Development Area; and (2) the mine leases and lease modification/fringe lease areas would begin to be managed under designated prescription 8.2.2 (g) Phosphate Mine Areas. The currently designated prescriptions (**Figure 3.9.1**) would no longer apply for those areas.

Lease Modification/Fringe Leases

Under the Proposed Action, approximately 722 acres of lease modifications/fringe leases would be needed to maximize the recovery of the phosphate resource. These would be new lands under lease and the rights associated with phosphate leases would apply to these 722 acres. As described in **Section 1.1**, the BLM would manage phosphate mining operations on those acres. These lease modifications/fringe leases would be distributed around the two existing leases in seven separate areas (**Figure 1.1.2**). The decisions as to whether the specific action for each of the 7 areas would be a modification to the adjacent lease or the assignment of a small, new "fringe" lease would consider the 2,560-acre maximum allowed lease area of an individual lease (43 CFR Part 3565). Regardless, land within these modification/fringe areas would not all be disturbed (as shown in **Table 2.3-2**, about 304 out of the 722 acres would be disturbed). Further, the change to land use would be the same whether the action for a particular parcel was a lease modification or a fringe lease.

Special Designations

Two IRAs would be affected by the Proposed Action, the HBIRA and the SCIRA. In part this would occur due to the BLM land sale and BLM land exchange, as described in a separate subsection below, but in addition, 1,179 acres of surface disturbance would occur within on- and off-lease lands that are currently within the HBIRA and are being managed under the GFRG theme. Phosphate mining is an allowable use under this theme because the Project would be an allowable use under the exceptions for phosphate mining in the GFRG theme.

Appendix 4B contains IRA worksheets that detail anticipated impacts to the wilderness attributes including recreation opportunities, special features, and manageability. The ground disturbance, changes to vegetation communities, noise, visual disturbances created by the Project would impact all of these attributes except for special features and manageability. This is because there are no special features in the IRA portion of the Study Area, and the Proposed Action would not affect manageability of the IRA because it would neither bisect or otherwise fragment the IRA into smaller pieces that would not meet the IRA size criteria (5,000 acres or more), nor reduce access to the majority of the IRA. The affected attributes would be degraded during Project activities and generally return to a stable condition post-reclamation.

Appendix 4B also contains IRA worksheets that detail anticipated impacts to the roadless characteristics of soil, water, air resources, sources of public drinking water, diversity of plant and animal communities, habitat for special status species and species dependent on large undisturbed areas of land, primitive and semi-primitive classes of recreation, reference landscapes for research study or interpretation, landscape character and integrity, traditional cultural properties and sacred sites, and other locally unique characteristics. The Project would impact all of these characteristics except sources of public drinking water, reference landscapes, and traditional cultural properties and sacred sites. The impacts to these characteristics are analyzed in detail in other sections of this chapter of this EIS.

Land Sale and Land Exchange

BLM Land Sale

The driving force for the proposed land sale is the proposed location of the tailings pond facility. The BLM's sale would meet the criteria for a land sale under the BLM ARMP (BLM 2012) and the FLPMA 203(a)(3) criteria. Specifically, the disposal of the parcels would serve important public objectives including economic development and improved administrative management efficiency.

In addition, Simplot proposes to donate 440 acres of private land to the BLM (donation parcel) to offset effects to the public and tribes from the mine operation and land tenure adjustments under the Proposed Action (**Figure 2.3.3**). This parcel would most likely be added to the adjacent existing Stump Creek Ridge ACEC (**Figure 3.9.4**), thus consolidating resource management and land uses. The ACEC is approximately 2,500 acres and the addition would increase its size by approximately 20 percent. This would be an indirect moderate long-term positive effect if it occurs.

The sale and donation of these lands would change their jurisdictional status and alter the current uses on them in other ways as well. For example, with the land sale and the resultant land transference to private ownership, Idaho state agencies (specifically IDL and IDEQ) would regulate the tailings pond area. That would also mean that bonding for the tailings pond would also need to be held by the state for reclamation, etc. This would be similar to Simplot's Smoky Canyon Mine where the tailings pond is on private land and state management has been effective.

USFS Land Exchange

The driving force for the proposed land exchange is the proposed location for the tailings pond facility. To accommodate the tailings pond facility placement, the Proposed Action includes a land exchange of 632 acres of NFS lands managed by the CTNF (selected parcel) for up to 640 acres

of Simplot-owned land (offered parcel). The USFS's land exchange would allow a key aspect of the Project (the tailings pond facility) to be accommodated without decreasing the land base or resources available to the public.

The exchange would remove 632 acres from the HBIRA, thereby modifying the HBIRA boundary. This would shrink the HBIRA by approximately 3 percent by reducing it from 20,200 acres to 19,568 acres. These changes to the HBIRA would both be direct minor effects; active mining within the HBIRA would result in long-term impacts and the acreage reduction would be permanent.

The SCIRA would be affected by the proposed land exchange because the 640-acre Simplot-owned private parcel that would be exchanged is located immediately adjacent to the SCIRA (**Figure 2.3.3**). Once transferred into NFS lands management, the parcel would likely be incorporated into the SCIRA and assigned a BCR management theme. With this boundary modification, the SCIRA size would increase from 12,800 acres to 13,440 acres, an increase of approximately 5 percent. This would be a minor long-term and positive effect. In addition, the USFS would designate this area under Prescription 2.7.2, Elk and Deer Winter Range, to match the existing prescriptions surrounding the offered parcel.

The jurisdictional status and uses on the selected and offered parcels would change in other ways as well. For example, as noted previously, IDL and IDEQ would regulate the tailings pond area and the state would hold its reclamation bond once the selected parcel is under private ownership.

4.9.1.2 Alternative 1 – South Trail Canyon Access Route

Land Use and Jurisdiction

The same conversion of land uses as would occur under the Proposed Action would also occur under this alternative because the large majority of lands and Project components are the same. Further, the same jurisdictional changes would apply, in regard to the land sale, donation, and exchange. However, in addition, IDL would also have jurisdiction under this Alternative, where the access route would require an easement across state lands (**Figure 2.5.1**). The changes to private land uses would be the same under this Alternative as under the Proposed Action.

USFS Special Use Authorizations

There would be 5.2 more acres of required SUAs under this Alternative because the improvements for the Georgetown Canyon Access Road would not be needed, but instead the Trail Canyon Road improvements would take their place.

BLM Lease Modification/Fringe Leases

There would be no difference regarding lease modifications and/or fringe leases between this alternative and the Proposed Action.

Special Designations

There would be no difference regarding the IRAs or ACEC special designation areas between this alternative and the Proposed Action.

4.9.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, Project configuration and access would be the same as for the Proposed Action. As such, land use conversion, IRAs, SUAs, lease modifications, the USFS land exchange, and private land impacts would all be the same as with the Proposed Action. However, the jurisdictional changes under this Alternative would be fewer than for the Proposed Action: there would be no land sale, and thus no land donation. Without the 1,142-acre land sale, BLM would need to permit the tailings pond facility and associated Project features by issuing a ROW even though using these public lands for disposal of mine tailings is not the BLM's preference. With no donation parcel, the Stump Creek ACEC would not increase by 440 acres, as it would under the Proposed Action.

4.9.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, Project configuration and access would be the same as for the Proposed Action. As such, land use conversion, IRAs, SUAs, lease modifications, the USFS land exchange, and private land impacts would all be the same as with the Proposed Action. However, the jurisdictional changes under this Alternative would affect fewer acres than with the Proposed Action. Rather than the BLM land sale being 1,142 acres it would be 500 acres. The other 642 acres that would be sold under the Proposed Action would still be needed for the tailings pond facility land. BLM would still need to permit a portion of the tailings pond facility and associated Project features through a ROW, even though using public lands for disposal of mine tailings is not their preference. The private land donation to BLM would still proceed, so the Stump Creek ACEC would likely increase by 440 acres, the same as under the Proposed Action.

4.9.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, Project acreage would be reduced because the tailings pond facility would be smaller. Other Project features and surface disturbance acreage would be the same as for the Proposed Action. Generally, land use conversion, SUAs, lease modifications, the BLM land sale, and private land impacts would all be the same as with the Proposed Action. However, the jurisdictional and IRA changes under this Alternative would affect fewer acres than with the Proposed Action due to not exchanging 632 acres from the HBIRA for 640 acres to be added to the SCIRA. As mine life would be reduced, reclamation would take place sooner, restoring land uses earlier.

4.9.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, Project configuration and access would be the same as for the Proposed Action. As such, land use conversion, IRAs, SUAs, lease modifications, the BLM land sale, and private land impacts would all be the same as with the Proposed Action. However, the jurisdictional changes under Alternative 5 would affect fewer acres than with the Proposed Action. Rather than the selected parcel being 632 acres it would be 160 acres. The USFS would still receive approximately 640 acres with the combination of the smaller offered parcel and the USFS donation parcel.

4.9.1.7 Alternative 6 – Selective Handling Alternative

Regarding land use and land ownership effects, this alternative would be no different than the Proposed Action.

4.9.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. There would be no land exchange, no land sale, and no land donation. Existing land use and land management direction would continue for the short-term. Given the terms and conditions of these federal phosphate leases, the same or similar proposal for development could be submitted in the future, and land uses effects similar to the Proposed Action could occur.

4.9.2 Irreversible and Irretrievable Commitment of Resources

If the Proposed Action or the Action Alternatives that involve the land sale and/or land exchange occur, then there would be irreversible and irretrievable commitments of reducing the HBIRA, increasing the SCIRA, and increasing the Stump Creek ACEC. BLM land would be sold and converted to private land. There would be irreversible or irretrievable commitment of land use resources to recreation and grazing. Those are discussed in **Sections 4.10.2** and **4.11.2**, respectively.

4.9.3 Unavoidable Residual Adverse Effects

The Proposed Action and all Action Alternatives would result in approximately 97 acres of unreclaimed land associated with unreclaimed highwalls (**Section 2.3.10**). The only potential land uses under the Proposed Action or Alternatives for which this would be a potentially residual effect would be recreation and grazing. Those are discussed in **Sections 4.10.3** and **4.11.3**, respectively.

4.9.4 Relationship of Short-term Uses and Long-term Productivity

The Project would implement land jurisdictional changes and ground-disturbing activities that would reduce short-term land uses including grazing and recreation.

4.9.5 Mitigation Measures

No land use mitigation needs have been identified.

4.10 Recreation

Issue: Would recreational use and public access to the Project Area be limited or prevented by the Proposed Action?

Indicators:

- Acres to be disturbed, access and recreational areas that would be unavailable during Project activities, and comparison of disturbed recreation areas and access with the undisturbed areas and access in the Study Area.
- Impacts to hunting areas located in the area of the proposed land exchange.
- Loss of access roads and impacts to travel through the Project Area.
- Impacts to access temporary and permanent public recreation access.
- Loss of camping areas in the Study Area.

4.10.1 Direct and Indirect Impacts

4.10.1.1 Proposed Action

Recreation in the Study Area mainly occurs on the CTNF and is primarily limited to dispersed recreation activities such as hunting, camping, and use of trails by OHV riders, snowmobilers, mountain bikers, hikers, and horseback riders. Limited dispersed recreation activities occur on BLM land due to the limited amount of BLM land in the Study Area.

Disturbance activities associated with the Proposed Action would impact approximately 2,324 acres of ROS classes, including approximately 1,966 acres of the SPM class and approximately 358 acres of the RM class. There is a total of approximately 14,493 acres of the SPM class and approximately 19,117 acres of the RM class in the Study Area. Given the nature of the Proposed Action, recreation either would be restricted or prohibited for the protection of public safety on these lands during the times when the relevant components of the Proposed Action would be active, or recreationists would choose not to use these lands. The acreage lost to recreational use under the Proposed Action is a small fraction of the lands that would remain open to recreation in the area. The CTNF alone accounts for approximately 2.6 million acres of land that would remain open to recreation. The acreage of lands available for recreation that would be reduced under the Proposed Action is negligible.

There are no developed campsites on lands that would be impacted under the Proposed Action. The Summit View Campground is the only developed recreational facility within the Study Area and is accessed from Georgetown Road, or the Proposed Action Access Road; however, the proposed disturbance associated with Georgetown Road would not impact access to the Summit View Campground. It may decrease user experience however, due to increased traffic.

The Proposed Action would result in the elimination (obliteration/reclamation/closure) of approximately 19.3 miles of existing roads (9.5 miles) and trails (9.8 miles) as a result of the Project and following mining, reestablishment of impacted roads and trails is not anticipated as a result of required reclamation activities. However, approximately 1.5 miles of existing road (Road #187) that would be obliterated and closed during the Project, would eventually be replaced after the Project within almost the identical location as it would be the main access road for the Project, thus this portion of road is not considered in the impact analysis, and a total of approximately 17.8 miles of existing roads (8 miles) and trails (9.8 miles) would essentially be eliminated as a result of the Project (**Figure 4.10.1**). New roads that Simplot would build specifically accommodate the mining activity would not be part of the USFS's Revised Travel Plan and would not be useable by the public.

The USFS requires that designations of motor vehicle use on roads and trails requires the consideration of effects on resources, with the objective of minimizing those effects. **Appendix 4C** provides this analysis of minimization criteria for new roads and trails as a result of the Project. An EPM outlined in **Section 2.4.3** has been developed to identify the need for reestablishing new trail routes outside the mine area. The specifics for the routes would be considered mitigation as discussed in **Section 4.10.5** and would follow USFS guidance.

The only dispersed recreational facilities that would be impacted by Project activities would be the existing snowmobile groomed trails that would be closed since the proposed access road (Left

Hand Fork Georgetown Canyon Road) to the Project Area, currently a snowmobile groomed trail in the winter, would need to be plowed and open for vehicle travel all year, thus making it unavailable for snowmobile use. Approximately 7,000 feet of snowmobile groomed trails would be impacted by Project activities. These trails would need to be rerouted. An EPM outlined in **Section 2.4.3** has been developed to identify the need for reestablishing a new snowmobile route outside the mine area. The specifics for the route would be considered mitigation as discussed in **Section 4.10.5** and would follow USFS guidance and Caribou County trail grooming requirements.

No current data on the number of individuals who recreate on a majority of the lands that could be impacted by the Proposed Action exist. It was estimated in 2010 that there were approximately 2.1 million visits to the CTNF, with the most popular activities including viewing natural features, hiking/walking, relaxing, and driving for pleasure (USFS 2015a). Due to the increased noise, dust, and other mining activities, most of these activities could occur elsewhere in the CTNF. Additionally, any hunters or wildlife viewers that had used the Study Area for activities previously could continue to pursue game species on public and private lands (where permitted) to which these species would likely migrate when Project activities commence.

Direct and indirect impacts to recreation would be moderate and site-specific at the local scale, but negligible at the regional scale. Following cessation of activities under the Proposed Action, including reclamation, both direct and indirect impacts to recreation may be realized. While approximately 95 percent of the area disturbed by the Proposed Action would be reclaimed and re-opened for recreation, these areas may not be desirable for some recreational uses because of the altered topography and vegetation. Conversely, other recreationists (for instance, hunters) may find these areas desirable, as the revegetated areas may provide better forage for game species than the original habitat.

Land Sale and Land Exchange

BLM Land Sale

Dispersed recreation would either no longer occur or become more limited on the disposal parcels. However, recreation would be allowed on the donation parcel, which would be added to the adjacent existing Stump Creek Ridge ACEC.

USFS Land Exchange

Dispersed recreation would either no longer occur or become more limited on the selected parcel but would be allowed on the offered parcel.

4.10.1.2 Alternative 1 - South Trail Canyon Access Route

Recreational impacts under Alternative 1 would be similar but with somewhat different USFS roads and groomed snowmobile trail segments affected than under the Proposed Action. However, as under the Proposed Action, the snowmobile groomed trail and USFS roads would need to be rerouted, which makes the alternative essentially the same as the Proposed Action. EPMs outlined in **Section 2.4.3** have been developed to identify the need for reestablishing a new snowmobile route and Forest Service trails outside the mine area. The specifics for the routes would follow USFS guidance and Caribou County trail grooming requirements specifically for the reestablished snowmobile route.

4.10.1.3 Alternative 2 – No BLM Land Sale

Impacts to recreational opportunities and facilities under Alternative 2 would generally be the same as the impacts associated with the Proposed Action. While the 1,142-acre disposal parcel would remain under BLM management, recreational opportunities would not occur within portions that are impacted by Project activities until well after reclamation of the tailings pond facility. Further, without the 440-acre donation parcel there would not be any added recreational lands under this alternative.

4.10.1.4 Alternative 3 – Reduced BLM Land Sale

Impacts to recreational opportunities and facilities under Alternative 3 would generally be the same as the impacts associated with the Proposed Action. The 500 acres held out of this alternative would remain under BLM management, but recreational experiences could be diminished due to the proximity of the tailings pond facility. The 642-acre disposal parcel would not have recreational opportunities until well after reclamation of the tailings pond facility due to Project activities. Like the Proposed Action, the 440-acre donation parcel would provide public recreational opportunities to offset diminished recreation proximal to the tailings pond facility.

4.10.1.5 Alternative 4 – No USFS Land Exchange

Under Alternative 4, with the removal of the selected parcel, there would be approximately 600 fewer acres of the SPM ROS class and approximately 30 fewer acres of the RM ROS class affected under this alternative. Recreational opportunities on the selected parcel would remain unchanged.

4.10.1.6 Alternative 5 – Reduced USFS Land Exchange

Under Alternative 5, with the smaller selected parcel (160 acres), there would be approximately 440 fewer acres of the SPM ROS class and approximately 30 fewer acres of the RM ROS class affected under this alternative than under the Proposed Action and more land would be available for recreation opportunities as the entire offered parcel (640 acres) would come under USFS management and become available for public recreation.

4.10.1.7 Alternative 6 – Selective Handling Alternative

The disturbance acreage under Alternative 6 would be the same as under the Proposed Action; therefore, the impacts to recreational opportunities and facilities under Alternative 5 would be the same as the impacts associated with the Proposed Action.

4.10.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. Therefore, there would be no impacts to recreational opportunities and facilities. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.10.2 Irreversible and Irretrievable Commitment of Resources

There would be only negligible to minor irreversible or irretrievable commitment of recreational resources associated with the Proposed Action or Action Alternatives, as existing trails to be impacted would be relocated to undisturbed areas.

4.10.3 Unavoidable Residual Adverse Effects

The Proposed Action and Action Alternatives would result in residual adverse effects on recreation opportunities by reducing the miles of public roads and trails in the Study Area.

4.10.4 Relationship of Short-term Uses and Long-term Productivity

The Project would implement ground-disturbing activities that would reduce short-term uses of land for recreation activities. After establishment of vegetation communities on the disturbed areas, recreation activities that currently take place would once again be available.

4.10.5 Mitigation Measures

Impacted trails and roads used for recreation would be mitigated by the establishment of new routes as discussed in **Appendix 4C**. **Figure 4.10.1** shows which roads would be obliterated and where the new realignments or replacement segments would be. As a result of this project, 17.8 miles of roads and trails would be eliminated, but 5.3 miles of replacement roads and trails would be constructed. The net loss would be about 13 miles of roads and trails.

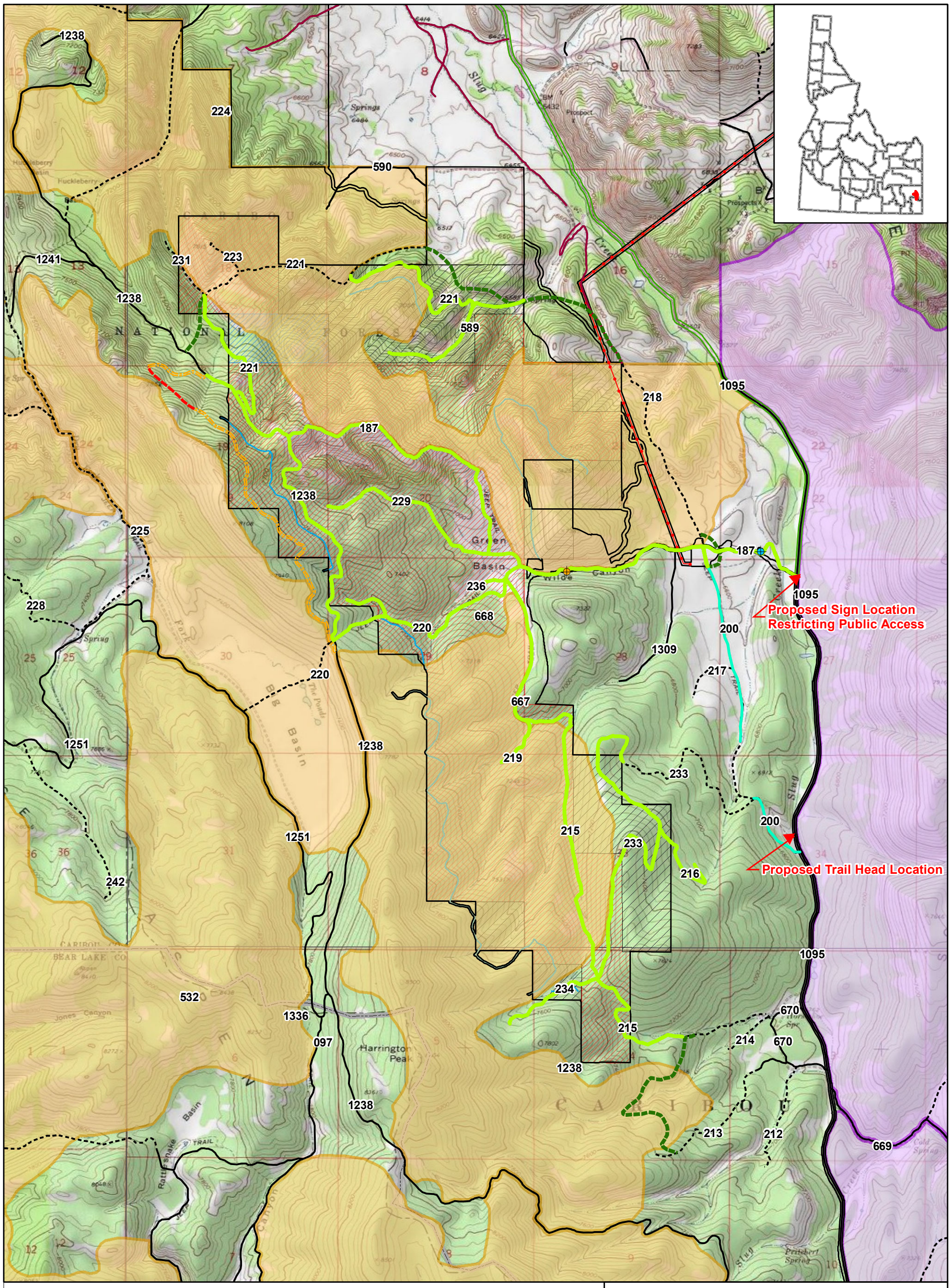
Impacted snowmobile routes would be mitigated by the establishment of new routes and a potential new parking lot near the Summit View Campground. Potential replacement alignments and the potential new parking area are shown on **Figure 4.10.2**. Impacts from establishing new snowmobile routes and the parking area would include some level of vegetation clearing, although new surface disturbance would likely be minimal as the parking area would likely be situated immediately adjacent to the existing Georgetown Canyon Road and clearing the potential snowmobile routes should only involve clearing some trees to provide a safe route width.

4.11 Grazing Management

Issue: Would the Project impact permitted livestock grazing within and adjacent to the Project Area?

Indicators:

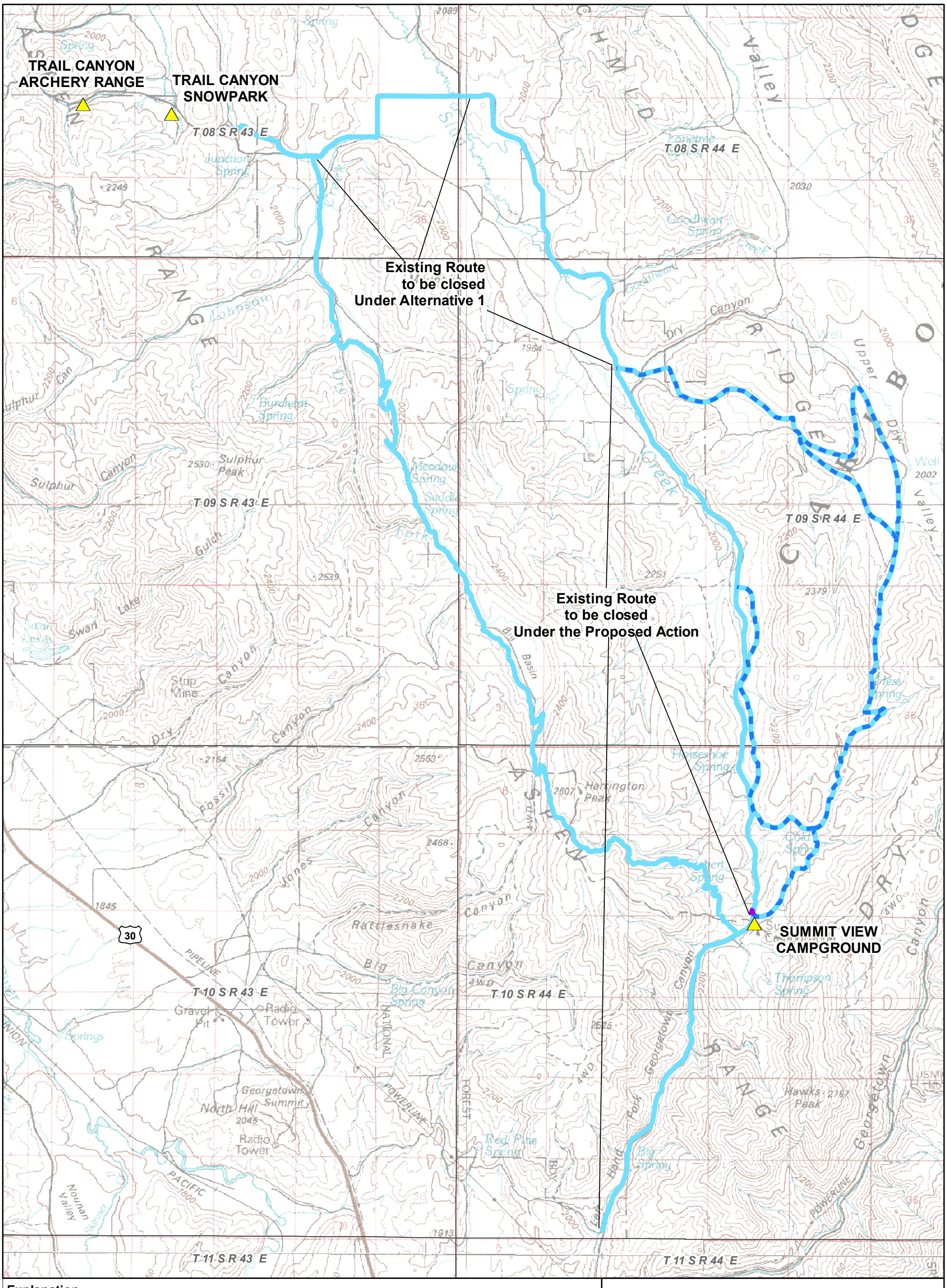
- Acres of suitable grazing areas to be disturbed and the length of time livestock would be excluded from the Study Area and comparison with undisturbed acres of grazing allotments in the Study Area.
- Loss of AUMs by individual permittee and allotment.
- Loss of grazing allotment improvements and structures that would be impacted.
- Impacts to forage quality following reclamation.
- Impacts to grazing water resource quality and availability.
- Loss of access to grazing areas.



DAIRY SYNCLINE MINE PROJECT

Road Analysis

Figure 4.10.1



Explanation

- Potential Alternate Snowmobile Routes
- Existing Snowmobile Groomed Trail
- Existing Recreation Sites
- Proposed Snowmobile Parking Lot

0 6,000 12,000 Feet

N

DAIRY SYNCLINE MINE PROJECT

Potential Snowmobile Mitigation Routes

Figure 4.10.2

4.11.1 Direct and Indirect Impacts

4.11.1.1 Proposed Action

All vegetation would be removed from acreage on grazing allotments disturbed by the Proposed Action, and these areas would be temporarily unsuitable for grazing. **Table 4.11-1** shows the acres of each allotment that would be rendered unusable for grazing under the Proposed Action. The six USFS allotments and three BLM allotments that are within or overlap the Project Area total approximately 52,662 acres.

Under the Proposed Action, approximately 2,400 acres would be rendered unusable for grazing during Project activities, which equates to approximately 7 percent of the entire allotment acreage in the Project Area. The USFS Dry Valley allotment accounts for approximately 45 percent of the total number of allotment acres and would realize the greatest impacts, as approximately 83 percent of the total impacted allotment acres and 86 percent of the total impacted AUMs are in the USFS Dry Valley allotment. Range improvements within the Dry Valley allotment that could be impacted include 7 ponds, 1 cattleguard, and the Green Basin spring and trough. Further, Term Grazing Permit modifications would also close certain areas (e.g., active mine and reclamation areas) to livestock grazing.

The remaining 5 allotments (Slug Creek, Redpine, North Petterson Ranch, South Petterson Ranch, and Unit 4 Slug Creek) to be impacted by the Proposed Action would only realize a total of approximately 410.5 acres or 17 percent of the total acres rendered unusable for grazing during mining activities, as well as a loss of 95.3 AUMs or approximately 14 percent of the impacted AUMs (**Table 4.11-1**). There would be no range improvement impacts associated with these allotments.

Impacts to the allotments would be long-term and minor to moderate depending upon the affected allotment, as the grazing lands would not be displaced all at once, but progressively as mining activities continue; therefore, portions of the grazing lands affected by the Proposed Action may remain accessible during mining activities.

As shown on **Figure 3.3.2**, 9 stockwater water rights and water sources for grazing could be directly and/or indirectly impacted. These are discussed further in **Section 4.3.1**. During and following the cessation of mining at the Proposed Action, approximately 95 percent of the Proposed Action would be reclaimed. As described in **Section 2.3.10**, the main objectives of reclamation are to reestablish drainage patterns and vegetation. Reclamation goals would be to establish a plant cover suitable to support the post mining land use of grazing and wildlife habitat, as well as to enhance the evapotranspiration function of the proposed cover system. A noxious weed control program would be employed throughout the life of the Project.

Table 4.11-1 Allotments Impacted by the Project

ALLOTMENT NAME	TOTAL ACRES (USFS/BLM)	PERMITTED AUMS	ACRES PER AUM	ACRES IMPACTED BY PROPOSED ACTION[1]	AUMS IMPACTED BY PROPOSED ACTION	RANGE IMPROVEMENTS IMPACTED BY PROPOSED ACTION	ACRES IMPACTED BY ACCESS ALT.	AUMS IMPACTED BY ACCESS ALT.	RANGE IMPROVEMENTS IMPACTED BY ACCESS ALT.
USFS									
Dry Valley	23,717	7,132	3.3	2,002.7 + 632[2]	606.9 + 191.5[2]	7 ponds, 1 cattleguard, and Green Basin spring and trough	2,002.7 + 632[2]	606.9 + 191.5[2]	7 ponds and Green Basin spring and trough
Johnson Creek	5,461	849	6.4	0	0	none	14.5	2.3	none
North Sulphur	4,440	849	5.2	0	0	none	5.4	1.0	none
Slug Creek	5,888	1,035	5.7	101.9	17.9	none	95.8	16.8	none
Redpine	11,837	994	11.9	8.5	0.7	none	0	0	none
Manning Creek	5,511	1,251	4.4	(554 added)[3]	(+125)[3]	none	(554 added)[3]	(+125)[3]	none
Sage Valley	2,237	656 (+42 private land AUMs)	3.4	(86 added)[3]	(+25)[3]	none	(86 added)[3]	(+25)[3]	none
BLM									
North Petterson Ranch	580	148	3.9	198.3 + 166.7[4]	50.9 + 42.7[4]	none	198.3 + 166.7[4]	50.9 + 42.7[4]	none
South Petterson Ranch	580	148	3.9	95.5 + 484.2[4]	24.5 + 123.5[4]	none	95.5 + 484.2[4]	24.5 + 123.5[4]	none
Unit 4 Slug Creek	159	32	5.0	6.3 + 152.7[4]	1.3 + 30.7[4]	none	6.3 + 152.7[4]	1.3 + 30.7[4]	none
Total Disturbance	**52,662**	**--**	**--**	**2,413.2**	**702.2**	7 ponds, 1 cattleguard, and Green Basin spring and trough	**2,418.1**	**703.7**	7 ponds and Green Basin spring and trough

Note: **Table 4.11-1** does not include allotments in the Study Area that are not impacted by the Project.

[1]Does not include powerline corridor, where grazing is assumed to continue unimpeded.

[2]This includes the entire 632-acre selected parcel, which would no longer be managed in the USFS Dry Valley allotment. Not included in disturbance totals.

[3] Donation parcel not included in disturbance totals.

[4]This includes acres within the sale parcels, which would no longer be managed in BLM allotments. Not included in disturbance totals.

After reclamation of any given area, permitted livestock numbers could be reinstated. The forage production and condition of the grazing land may be increased short term compared to existing conditions as forested areas would become grasslands. In the early stages of succession after reclamation, grasses would dominate, and relatively more forage may be available for livestock grazing than before mining. However, reseeded vegetation is generally less palatable and desirable in comparison with native vegetation. Noxious and invasive species would be actively controlled on disturbed and reclaimed lands (**Section 4.5.1.1**). Therefore, in the long-term, impacts to the quality of grazing lands would be minor.

Land Sale and Land Exchange

BLM Land Sale

Once the BLM disposal parcels are sold, the entire North Petterson and South Petterson allotments, plus the Slug Creek 4 allotment would no longer be managed by BLM as grazing allotments and could be unavailable for future grazing. However, Simplot would likely allow grazing to continue as they have on other lands they own in areas that are not actively being mined. Three water rights are within the land sale parcels and could be impacted (**Section 4.3.1**).

The donation parcel would continue to be part of the BLM Star Valley allotment, open and used for grazing.

USFS Land Exchange

Under the land exchange, approximately 632 acres of USFS land (i.e., selected parcel) would be converted to private land and would no longer be managed by USFS as part of the Dry Valley allotment. This would be a long-term, minor impact to the Dry Valley permittee as it represents 2.7 percent of the 23,717-acre allotment. However, Simplot would likely allow grazing to continue as they have on other lands they own in areas that are not actively utilized as part of the mining operation. One water right is within the land exchange selected parcel and could be impacted (**Section 4.3.1**).

For the 640-acre offered parcel that the USFS would receive in the land exchange, the north and west portion of the land (554 acres) would be included in the adjoining Manning Creek sheep allotment and the south and east portion (86 acres) would be included in the Sage Valley cattle allotment. Under the land exchange, these two allotments would increase in size; the Manning Creek allotment would include 6,065 acres and the Sage Valley allotment 2,323 acres. However, the Sage Valley permittee currently utilizes the entire 640-acre private parcel in combination with the federal lands in the Sage Valley allotment; therefore, the acreage distributed to the Manning Creek allotment would reduce the acreage available to the Sage Valley permittee.

4.11.1.2 Alternative 1 - South Trail Canyon Access Route

Under Alternative 1, approximately 19.9 acres in the USFS Johnson Creek and North Sulphur allotments would be rendered unusable for grazing during Project activities, with a loss of 3.3 AUMs. In addition, there are five water rights along this access route that could be impacted by road improvement activities (**Section 4.3.1**). Essentially all other impacts to grazing resources would be the same as the Proposed Action (**Table 4.11-1**).

4.11.1.3 Alternative 2 – No BLM Land Sale

Under Alternative 2, portions of the North Petterson, South Petterson, and Slug Creek 4 allotments not impacted and disturbed by Project activities could be available for grazing as managed by the BLM. All other impacts to grazing allotments, including range improvements, water rights, and loss of AUMs under Alternative 2 would be the same as the impacts associated with the Proposed Action.

4.11.1.4 Alternative 3 – Reduced BLM Land Sale

Under Alternative 3, the BLM would retain ownership of approximately 642 acres of land and those portions of the North Petterson, South Petterson, and Slug Creek 4 allotments not impacted and disturbed by Project activities could be available for grazing as managed by the BLM. The remaining 500 acres would be sold to Simplot and would likely not be available for grazing for the life of the mine. All other impacts to grazing allotments, including range improvements, water rights, and loss of AUMs under Alternative 3 would be the same as the impacts associated with the Proposed Action.

4.11.1.5 Alternative 4 – No USFS Land Exchange

Under Alternative 4, the tailings facility would not be located on NFS lands, thus approximately 632 acres of land within the USFS Dry Valley allotment would be available for continued grazing activities as managed by the USFS. Under this alternative, there would be approximately 12 fewer acres of the BLM North Petterson Ranch allotment and approximately 3 fewer acres of the BLM South Petterson Ranch allotment impacted under Alternative 4 than under the Proposed Action. There would be no impact to the associated water right (**Section 4.3.1**).

There would be no changes to the Manning and Sage Creek allotment sizes associated with the offered parcel because it would not be offered under this alternative. The Sage Creek allotment permittee would continue to use this entire parcel for grazing.

4.11.1.6 Alternative 5 – Reduced USFS Land Exchange

Under Alternative 5, the selected parcel would be smaller (160 acres), thus approximately 440 more acres of land within the USFS Dry Valley allotment would be available for continued grazing activities under USFS management than under the Proposed Action. The associated water right would be within or adjacent to the 160 acres and could be impacted (**Section 4.3.1**). In addition, the entire offered parcel (640 acres) would still be included as part of this alternative and impacts as described for the Proposed Action on the offered parcel would still occur.

4.11.1.7 Alternative 6 – Selective Handling Alternative

The disturbance acreage associated with Project activities under this alternative would be the same as under the Proposed Action; therefore, the impacts to grazing allotments, including range improvements, water rights, and loss of AUMs under this Alternative would be the same as the impacts associated with the Proposed Action.

4.11.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. Therefore, there would be no impacts to grazing. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.11.2 Irreversible and Irretrievable Commitment of Resources

The Project could implement land jurisdictional changes that could be an irreversible and irretrievable commitment of grazing resources.

4.11.3 Unavoidable Residual Adverse Effects

The Proposed Action and alternatives would result in only minor residual adverse effects on grazing. The No Action Alternative would not result in any unavoidable residual adverse effects.

4.11.4 Relationship of Short-term Uses and Long-term Productivity

The Project would implement ground-disturbing activities that would reduce short-term uses of grazing resources. After establishment of vegetation communities on the disturbed areas, long-term productivity impacts to grazing resources would be restored under the Proposed Action and other Action Alternatives.

4.11.5 Mitigation Measures

Disturbed areas would be reclaimed (**Section 2.3.10**) and revegetation would be implemented (**Section 2.4.5**). Simplot would be required to prevent livestock grazing on active and reclaimed mine disturbances until these areas are accepted for grazing management by the CTNF and BLM. This would be done by periodic coordination between Simplot and the agency to identify exclusion areas and discuss additional measures that may be needed, such as fencing or bilingual signs. Simplot would also collaborate annually with the agency to share mining progress plans and to discuss and resolve any potential access issues.

All impacted stockwater water rights (**Section 4.3.1**) and grazing water sources would need to be replaced or Simplot would need to work with the affected permittees to establish agreements for alternative grazing areas and associated grazing water sources. The replacement and/or agreements would be done for water sources that are affected either during (short-term) or after (long-term) mining operations.

Besides providing agreements for alternative grazing areas, water source replacement options that could be considered include:

- Supplying new water tanks with water hauled and/or piped by Simplot;
- Improving water flow or retention (ponding) at springs near the disturbed area to compensate for springs disrupted within the disturbed area, and/or fencing them (while considering the ramifications of fencing on specific species such as bats);
- Building new livestock/wildlife watering ponds;
- Designing some mine runoff and sediment retention ponds to be available to livestock and wildlife, while monitoring water quality to ensure it is suitable for their consumption;
- Drilling small water wells into local aquifers with windmills to supply water tanks; and,
- Enhancing nearby existing stock ponds that typically dry up early in the summer with bentonite sealing of the bottom, thereby extending their season of usefulness.

4.12 Visual Resources

Issue: Would there be impacts to visual resources in the Project Area?

Indicators:

- Compliance with USFS visual management system and the designation for the area and the contrast, color, and line of the Study Area including impacts from reclamation activities.
- Compliance with BLM visual resource management system through the visual contrast rating process.

4.12.1 Direct and Indirect Impacts

4.12.1.1 Proposed Action

Under the Proposed Action, direct and indirect impacts to visual resources would include the introduction of Project components and mine-related activities to the existing natural landscape for the duration of Proposed Action. The Project-related structures, landforms, and activities would introduce new elements and visual contrasts compared to the existing landscape character. Under the Proposed Action, short-term localized effects to the visual character of the landscape would result from removal of vegetation, timber, and exposure of soils of contrasting colors and textures relative to the surrounding landscape. Mine-related vehicles and equipment would be observed traveling to and from the mine for the 30-year life of proposed mining activities.

A KOP is a location within the Study Area from which the Project could be visible from travel corridors, recreation use areas, and residences. The potential viewers (casual observers) of the Study Area could be local residents and ranchers, mine personnel, and motorists traveling on portions of Trail Canyon Road, Slug Creek Road, Left Hand Fork Georgetown Canyon Road, and surrounding federal lands. One KOP location was selected at the intersection of Slug Creek Road and South Canyon Road showing the tailings pond area because the tailings facility is the only feature that would be obvious to visitors accessing the area from the west, the north, and the southeast. Other KOPs and viewpoints were considered but not analyzed because the mine disturbance was not visible from those points (Enviroscientists, Inc. 2015).

The tailings pond facility is proposed to be located primarily on lands managed under the BLM VRM Class IV classification (**Figure 3.12.1**) and a small portion managed under NFS VQOs (**Figure 3.12.2**). KOP #1 is representative of the view of the tailings facility area and is shown on **Figure 3.12.1**. The tailings pond facility would remain in the viewshed for an extended amount of time; however, once the facility was built, it would resemble a natural or manmade feature such as a lake or a reservoir. The primary feature of the tailings facility would be the embankment and disturbance associated with the building of the dam, the latter of which would be from within the footprint of the pond, (that is where the borrow material would come from), making it indiscernible when the pond is in operation.

A computer-generated visual simulation was created by photographing the existing landscape at KOP#1, then modifying the photograph to show the Proposed Action components as seen from the KOP. The visual simulation serves as an aid to visualize the changes associated with mining and reclamation to identify the degree of visual contrast of the Proposed Action components relative to the existing and surrounding landscape. **Photo 4.12-1** illustrates existing conditions as seen from KOP #1 and **Photo 4.12-2** shows the proposed tailings pond embankment. The embankment would be composed primarily of material stockpiled from the tailings pond area. This material is light in color and would form a moderate contrast with the primarily green colors in the area. This contrast would be short-term because the embankment would be seeded once in place. Once vegetation had reestablished, the contrast would be minor, similar to that shown on **Photo 4.12-3** (post reclamation). The form of the embankment would be rounded and sloped and would appear similar to the surrounding hills except for the horizontal flat top.

The proposed powerline in the mine area would be seen briefly by motorists where the line crosses the access road (**Figure 1.1.3**) and more extensively where the powerline traverses Dry Valley. Dry Valley is a long northwest trending nearly one-mile-wide valley. There are numerous linear features in Dry Valley that primarily parallel but also crosscut the proposed powerline. These features include sets of roads, long linear open pits and open cuts from phosphate mining, and ranches and residences.

Photo 4.12-1 Existing Condition from KOP #1 (looking south)

Photo 4.12-2 Simulation of the Tailings Pond Embankment from KOP #1

Photo 4.12-3 Simulation of Tailings Pond Embankment Post-Reclamation from KOP #1

Views of the powerline would vary based on which section of the powerline was being viewed. The powerline would provide a very linear feature that would be accentuated when tree removal was considered necessary. The powerline would be at a perpendicular angle to most of the viewpoints. Where the powerline crosses over hilly or mountainous terrain it would be seen for short distances at higher elevations if it is skylined; however, the hilly terrain would screen the poles by allowing the vertical forms to blend to some degree into the surrounding variable textures and colors of the slopes in the background. Once the powerline reaches and follows Dry Valley it would be visible along the entire valley; however, due to perspective and the vanishing point of an object in the distance only a short segment would be seen from any single location when looking up or down the line. If driving parallel to the powerline, the view would be at an angle. The proposed powerline would result in a weak degree of contrast in form, line, color, and texture relative to the elements of the existing landscape in the surrounding middleground distance zone. No specific photographs were taken of the powerline route; however, based on other powerline or linear feature evaluations, powerlines are only visible at close range and the vanishing point occurs within eight to ten power poles (Enviroscientists, Inc. 2015).

VQOs are met on NFS lands because the majority of areas with proposed disturbance is rated M where human activity may dominate the characteristic landscape but at the same time must utilize naturally occurring elements of the landscape including form, line, color, and texture (**Section 3.12.1.2**). The majority of the open pits, ODAs, soil stockpiles, access roads, haul road, and powerline is located on lands rated M. A small amount of NFS lands is rated PR where human activities may be evident but must remain subordinate to the characteristic landscape (**Section 3.12.1.3**). Existing access routes, temporary access routes, a portion of an open pit, a portion of the powerline, and a portion of the concentrate underground pipeline are or would be located on lands rated PR. The sensitivity level (which is a USFS rating described in **Section 3.12.1.3** as a measure of the viewer's concern for scenic quality in a given area) in the area is Level 2 (average sensitivity). Given the average sensitivity of viewers in the area, these components located on lands rated PR would meet the objectives because the small portions of visible development would be a small addition to the larger natural landscape.

During night hours, the Proposed Action would have a substantially different type of impact on visual resources than during daylight hours. Mine facilities would be lighted at night and lights would be used on Project equipment and vehicles during nighttime operations, and stationary lights would be positioned at various locations within the mine area. Night-lighting is generally visible for longer distances than the Project facilities. Mine lighting would affect dark night skies until the completion of active mining. However, as detailed in **Section 2.4.10**, light fixtures would avoid being cast skyward or over long distances, such that night-lighting from the facilities would be minimized; thus, impacts are expected to be negligible to minor based upon the remoteness of the Study Area.

After mine closure is complete, long-term visual impacts would be reduced by reclamation and revegetation. Successfully revegetated areas would reduce differences in color and texture among disturbed and undisturbed areas. Based on the visual simulation for reclamation conditions (**Photo 4.12-3**), reseeded areas may appear as somewhat different colors and textures compared with the surrounding landscape. After successful reclamation, the vegetative cover of the reclaimed landscape is anticipated to be a mixture of grasses and forbs.

Unreclaimed pit walls, water management facilities, and reclaimed ODAs would represent long-term modifications to topography and the existing landscape character in localized areas but would not be seen by the general public. The reclaimed landscape may mimic surrounding topography and vegetative cover so that the existing landscape character would be retained to the extent possible over the long-term.

The USFS land within the Study Area, including the areas visible from KOP 1, are designated VQO Modification as defined in the USFS RFP. The VQO of Modification allows the greatest change in the landscape, including management activities that dominate the original characteristic landscape. Implementation of the Proposed Action would add industrial components to a landscape currently characterized by a natural appearance. Under the Proposed Action, there would be low to moderate visual changes to the characteristic landscape and the Proposed Action would meet the USFS VQO of Modification.

Land Sale and Land Exchange

BLM Land Sale

The land sale would not affect visual resources on the disposal parcels or the donation parcel, except that the donation parcel would be managed by the BLM.

USFS Land Exchange

The land exchange would not affect visual resources on the selected parcel or the offered parcel except that the offered parcel would be managed by the USFS.

4.12.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative, any residents living along the Trail Canyon Road would have no view of the mine, tailings pond facility, or powerline. There would be very minor visual impacts associated with the Warming Hut re-route.

4.12.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, the visual impacts would be the same as the Proposed Action.

4.12.1.4 Alternative 3 – Reduced Land Sale

Under this alternative, the visual impacts would be the same as the Proposed Action.

4.12.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, the visual impact from the tailings embankment (dam) would be greater than the Proposed Action due to the larger dam, although the tailings facility would have a smaller footprint. The Project would also be shorter in duration and/or have a reduced mining footprint, which would also reduce the visual resources impacts. However, this alternative could also require a new tailings pond to be permitted and built which, would visually impact another location.

4.12.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, the visual impact from the tailings embankment (dam) would be the same as the Proposed Action.

4.12.1.7 Alternative 6 – Selective Handling Alternative

Under Alternative 6, the impacts to visual resources would be the same as the Proposed Action.

4.12.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. Therefore, there would be no impacts to visual resources. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.12.2 Irreversible and Irretrievable Commitment of Resources

Unreclaimed pit walls, water management facilities, and reclaimed ODAs would represent irreversible modifications to topography and the existing landscape character; however, reclamation would minimize the effects to visual resources. The reclaimed landscape may mimic surrounding topography, and vegetative cover would be predominantly grasses.

4.12.3 Unavoidable Residual Adverse Effects

The scenic landscape would unavoidably be altered by mining and would likely always be noticeable to a certain degree. While reclamation efforts would result in cover replacement and revegetation, there are some aspects of the landscape, notably the landforms and vegetative patterns, that would be changed and never be fully restored.

4.12.4 Relationship of Short-term Uses and Long-term Productivity

The Study Area would be actively mined of its phosphate resource, producing a number of socioeconomic benefits in the short-term. As previously mentioned, the disturbed area would never be fully returned to its natural topography and the visual resources of the area would be permanently altered. As vegetation becomes established visual effects would gradually lessen.

4.12.5 Mitigation Measures

Mitigation measures for visual resources are not deemed necessary.

4.13 Native American Concerns and Treaty Rights Resources

Issue: Would the Project impact resources of cultural significance to the Shoshone-Bannock Tribes?

Indicators:

- Impacts to ethnobotanical resources.
- Impacts to tribal access to exchanged lands.
- Impacts of the Project to tribal members' treaty rights.

4.13.1 Direct and Indirect Impacts

Resources or issues of interest to the Tribes that could involve their traditional use or treaty rights include Tribal historic and archaeological sites, sacred sites and TCPs, traditional use sites,

fisheries, traditional use plant and animal species, vegetation (including noxious and invasive, non-native species), air and water quality, wildlife, access to lands and continued availability of traditional resources, land status, and the visual quality of the environment. As reflected in the indicators listed above, Tribal concerns include potential changes in the quality and quantity of groundwater and surface water, traditionally valued vegetation, grazing resources, and wildlife. Changes in quality of these resources may include increased uptake of COPCs by vegetation and wildlife, changes in the natural setting of traditional resources that would diminish their value to traditional practices, rendering of culturally important natural resources unfit for harvest or consumption, and impairment of access to resource areas. In addition, some cultural resources that are not considered to be historic properties may have traditional value to the Tribes. Many of these resources or issues overlap with other resource concerns discussed in other sections of this EIS and are discussed in consultation with the Tribes. Tribal consultation to date has not identified culturally unique resources in this Study Area, including any sacred sites.

4.13.1.1 Proposed Action

There would be both temporary and permanent interruption, during and following mining activities, to the Shoshone and Bannock Tribes' access to the lands to exercise treaty rights and traditional uses because some access would not be restored at the completion of mining. This would be a minor impact as there are alternate routes to the same general areas.

The Proposed Action would result in adverse impacts to some of the natural resources that the Tribes may desire in the exercise of their treaty rights. Long-term impacts would be associated with the disturbance or displacement of plant and wildlife species that are used for traditional purposes and subsistence and would be minor. However, any loss of the ability to implement treaty rights would be a major impact to the Tribes. The assessed value of the disposal parcels plus the donation parcel would help to minimize that impact as much as possible within the federal framework. In addition, the land exchange would actually result in a net gain, although small, of NFS lands.

There would be no impacts to tribal historic/archaeological sites as no tribal historical or prehistoric archaeological sites have been identified within the Project Area that would be impacted (**Section 1.7**). No occurrences of rock art, sacred sites (EO 13007), or TCPs (NHPA) have been identified in the Project Area. In addition to the permanent alterations of the Project Area, the Project would cause changes to the local landscape. Although there are now known sites that would be impacted, changes to the landscape would have negligible to minor impacts on nearby ceremonial or traditional use sites that may exist, depending on whether they could be seen from those sites.

A brief summary of various resource impacts that could affect treaty rights that have been thoroughly described and analyzed in earlier sections of **Chapter 4** are provided below.

Surface water quality would not be impacted although flow in several springs would be permanently reduced or eliminated resulting in reduced flow in Slug Creek. The Proposed Action would not impact streamflow or fisheries in Johnson Creek, Goodheart Creek, Dry Valley Creek, Maybe Creek, or Left Hand Fork Georgetown Canyon. Over the disturbed area, native plant communities would be replaced through reclamation. The replacement of the native vegetation

community through succession may take over 100 years. Although, wetlands would be disturbed, there would be no net loss as a result of required compensatory mitigation. However, wetland mitigation would likely occur on private land, thus making the wetlands inaccessible to the tribes. Large and small game may avoid the area due to human activity and habitat alteration. As the deposit is mined certain areas would be closed to access until reclaimed. Up to 1,774 acres of BLM and NFS lands would leave federal management, but 1,080 acres would be brought into federal management. These acquired lands would be undisturbed and provide similar resources during and after the life of the mine.

Land Sale and Land Exchange

BLM Land Sale

Under the Proposed Action there would be a change in land status of 1,142 acres from BLM public to private land through a land sale. These disposal parcels are currently surrounded by private and NFS lands. Other portions of the Study Area that currently contain unoccupied public or NFS lands would retain that status; however, there would be substantial areas of disturbance on those federal lands. The Shoshone and Bannock Tribes' treaty rights associated with the disposal parcels that would become Simplot property would be lost. This loss would be a permanent negligible to minor impact based upon the amount of available public land in southeast Idaho that treaty rights can be exercised on. However, the money received from the land sale could be used to purchase undisturbed lands that would come under BLM management where treaty rights could also be exercised on. In addition, the 440-acre donation parcel would become part of the adjacent ACEC and would be accessible to tribe members, as it would to all members of the public.

USFS Land Exchange

The USFS land exchange would result in approximately 632 acres of NFS lands (i.e., selected parcel) being exchanged for 640 acres of private land (offered parcel), with a net result of 8 acres of NFS lands being added to the CTNF. Other portions of the Study Area that currently contain unoccupied public or NFS lands would retain that status; however, there would be substantial areas of disturbance on those federal lands. The Shoshone and Bannock Tribes' treaty rights associated with the selected parcel that would become Simplot property would be lost. This loss would be a permanent negligible to minor impact based upon the amount of available public land in southeast Idaho that treaty rights can be exercised on.

The offered parcel would be located along Crow Creek and would become part of the SCIRA. It would similarly be accessible to all members of the public, including Tribal members.

4.13.1.2 Alternative 1 – South Trail Canyon Access Route

This alternative would have the same impacts to resources as the Proposed Action.

4.13.1.3 Alternative 2 – No BLM Land Sale

This alternative would have the same impacts to resources as the Proposed Action, although impacts to the treaty rights would be less as BLM land would not be sold and become private. The donation parcel would not become public land.

4.13.1.4 Alternative 3 – Reduced BLM Land Sale

This alternative would have the same impacts to resources as the Proposed Action, although slightly less, as not all the BLM land would be sold and become private. Therefore, more of the resources would remain available for treaty rights to be exercised on because the land would remain public. In addition, the full donation parcel would still become BLM land providing additional federal land for exercising treaty rights on.

4.13.1.5 Alternative 4 – No USFS Land Exchange

This alternative would have similar impacts to resources as the Proposed Action, except that resources on the selected parcel that would not be exchanged would remain in place in the long-term, though with at least temporarily deferred or decreased uses.

4.13.1.6 Alternative 5 – Reduced USFS Land Exchange

This alternative would have similar impacts to resources as the Proposed Action, except that the loss of resources available for treaty rights on the selected parcel would be smaller because the alternative selected parcel is smaller (160 acres). In addition, the full offered parcel (640 acres) would still become NFS land providing additional federal land for exercising treaty rights on.

4.13.1.7 Alternative 6 – Selective Handling Alternative

This alternative would have the same impacts to resources as the Proposed Action.

4.13.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. Therefore, there would no impacts to known resources that affect Tribal treaty rights and interests. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.13.2 Irreversible and Irretrievable Commitment of Resources

The Project represents an irretrievable commitment of resources that affect treaty rights for the duration of mining, mining reclamation, and rehabilitation of the area. The loss of timber and potential loss of springs would be irreversible commitments of resources. Conifer forests in particular may not recover to current stature and complexity for at least 200 years. The change in topography because of mining and reclamation represents an irretrievable commitment of lands of cultural importance to the Tribes.

Mining would result in the short-term partial or complete loss of access to traditional resources on the impacted public lands during mining and initial reclamation. Over time, access to unoccupied public lands and resources would be restored. Valued and traditional resources, including vegetative resources and wildlife habitat, would be reclaimed or replaced.

4.13.3 Unavoidable Residual Adverse Effects

The temporary use of unoccupied federal lands for the Project would affect the exercise of Treaty Rights during the life of the Project and subsequent reclamation. The potential for the indirect impact of selenium uptake due to bioaccumulation in plants and animals utilized by the Tribes would be minimized by the Project design and EPMs. The change in topography as a result of

mining and reclamation represents an unavoidable adverse impact to lands of cultural importance to the Tribes.

4.13.4 Relationship of Short-term Uses and Long-term Productivity

The general area of southeastern Idaho is of cultural importance to the Tribes. Although no specific areas of traditional cultural significance have been identified within the Study Area, the short-term use of natural resources and the temporary unavailability of unoccupied federal land during the mining activities would adversely impact the long-term productivity of these lands in terms of providing Treaty Resources.

4.13.5 Mitigation Measures

EPMs and BMPs described in **Chapter 2** would be implemented as part of the Project to reduce and/or minimize impacts to resources that impact Native American concerns or the exercising of treaty rights. In addition, mitigation measures could also be applied for specific resources as described throughout **Chapter 4**, where applicable. No detailed mitigation measures for Native American concerns or Treaty Rights resources specific to this Project have been identified.

4.14 Transportation

Issue: Would the use of public roads in the Study Area for access affect current density, character, and use of the roads with increased risk of accidents and potential for spills?

Indicators:

- Relative increase in traffic on public roads as a result of the Project.
- Impact to Georgetown from increase in Project-related traffic.
- Estimated potential for spills on these roads and measures to respond to such incidents.
- Change in road density on NFS lands as a result of implementation of the Project.

4.14.1 Direct and Indirect Impacts

4.14.1.1 Proposed Action

Under the Proposed Action, the workforce and equipment currently being used at the Smoky Canyon Mine would transition to the Dairy Syncline Mine. However, current access to the Smoky Canyon Mine is via Afton, Wyoming, so traffic levels would transfer from roadways in Afton to roadways leading out of Georgetown, Idaho, specifically Stringtown Road to Left Hand Fork Georgetown Canyon Road and Slug Creek Road (**Figure 1.1.1**). Specific traffic levels on these roadways and roadways in the vicinity associated with the Proposed Action cannot be quantified exactly at this time since the specific number of vehicles and equipment to be used at the Project are also unknown. **Table 2.3-3** lists the types of vehicles and equipment that would use these access roads; in addition, there would be daily traffic due to employee commuting and deliveries of various supplies such as fuel. This information was used to make assumptions for the noise modeling discussed below. Due to the employees of the Smoky Canyon Mine primarily living in Bannock County, Idaho, and Lincoln County, Wyoming, it can be anticipated that traffic levels on roads and highways in the vicinity of the Project would increase, since Project employees would

potentially live in either the City of Soda Springs or the City of Georgetown resulting in roadways out of Georgetown being used to access the Project.

Traffic Noise

As described in **Section 3.14.1.5**, the main existing traffic noise source in the Study Area is Left Hand Fork Georgetown Canyon Road with a predicted Ldn value for existing traffic at a distance of 50 feet from the centerline of 41.9 dB. Noise levels due to Project-related traffic on Left Hand Fork Georgetown Canyon Road were predicted using the FHWA Highway Traffic Noise Prediction Model (FHWA-RF-77-108). The AADT for Project traffic was predicted to be approximately 291 vehicles. Estimated medium truck traffic volume was five per day, and heavy truck volume was estimated at ten per day. Day-night distribution of auto traffic was assumed to be 74 percent/26 percent, and day-night distribution of truck traffic was assumed to be 90 percent/10 percent. Average vehicle speed was assumed to be 25 miles per hour.

Table 4.14-1 lists the traffic noise modeling results for the year 2012 with the Project in terms of L_{dn}. These results assume that all Project traffic is directed to Left Hand Fork Georgetown Canyon Road, which would lead to an increase in the predicted L_{dn} along that roadway of 7.5 dB.

Table 4.14-1 Project Traffic Noise Levels

ROADWAY	PREDICTED L_{DN}, DB, AT 50 FEET FROM CENTERLINE				DISTANCES FROM CENTERLINE TO L_{DN} CONTOURS, FEET		
	AUTOS	MEDIUM TRUCKS	HEAVY TRUCKS	TOTAL	55 DB	60 DB	65 DB
Georgetown	45.6	39.7	46.1	49.4	21	10	5

FHWA criteria assumes that the potential for annoyance is substantial when a new noise source adds to an already elevated (and presumably less acceptable) ambient noise level and exceeds it by 10 dB for residential receivers. The 23 CFR 772 purposefully provides the state highway agencies with flexibility to establish their own definition of "substantial increase." The Idaho Department of Transportation (ITD), under this authority delegated by FHWA has established a substantial increase threshold of 15 dB.

Because the changes in L_{dn} due to Project-related traffic increase from 41.9 dB (see **Section 3.14.1.5**) to 49.4 dB, they are considered by both FHWA and ITD to result in “no impact” based on substantial increase criteria, to noise sensitive land uses, including both residential uses and “lands set aside for serenity and quiet.”

Potential for Spills

There would be an increased potential for spills on roads associated with the Project, primarily due to releases of hydrocarbons during travel accidents. Based upon past operations at the Smoky Canyon Mine, likelihood of accidents is small. These types of accidents could occur during construction throughout the Project site, or during operations via delivery vehicles or other travelers along the access road. The magnitude of the effects of an accidental release would vary

but would be generally be short-term. Simplot would respond rapidly according to their SPCC plan, which would also include measures for proper notification of authorities.

Change in Road Density on NFS Lands

As discussed in **Section 4.10**, the Project would reduce the overall public road density on NFS lands.

Land Sale and Land Exchange

BLM Land Sale

The land sale would result in the BLM selling land (the disposal parcels) that has several unimproved roads and trails but gaining land (donation parcel) that does not have roads.

USFS Land Exchange

The land exchange would result in the USFS exchanging the selected parcel that does not contain any roads and gaining a similar size parcel without any roads as well, so there would be no effect on transportation due to the exchange.

4.14.1.2 Alternative 1 - South Trail Canyon Access Route

Under this alternative, access to the Dairy Syncline Mine would be from the Trail Canyon Road to South Trail Canyon Road and Slug Creek Road (**Figure 1.1.1**). Specific traffic levels on these roadways and roadways in the vicinity associated with Alternative 1 would be similar to the Proposed Action.

Traffic Noise

Noise levels due to traffic associated with Alternative 1 on Trail Canyon Road were also predicted using the FHWA Highway Traffic Noise Prediction Model (FHWA-RF-77-108). The analysis used the same assumptions as the Proposed Action analysis. **Table 4.14-2** lists the traffic noise modeling results for the year 2012 for Alternative 1 in terms of L_{dn}. These results assume that all traffic associated with Alternative 1 is directed to Trail Canyon Road, which would lead to an increase in the predicted L_{dn} along that roadway of 8.7 dB.

Table 4.14-2 South Trail Canyon Access Route Alternative Traffic Noise Levels

ROADWAY	PREDICTED L_{DN}, DB, AT 50 FEET FROM CENTERLINE				DISTANCES FROM CENTERLINE TO L_{DN} CONTOURS, FEET		
	AUTOS	MEDIUM TRUCKS	HEAVY TRUCKS	TOTAL	55 DB	60 DB	65 DB
Trail Canyon	45.3	38.9	45.9	49.1	20	9	4

According to **Table 4.14-2**, the changes in L_{dn} due to traffic associated with Alternative 1 from 40.4 dB (see **Section 3.14.1.5**) to 49.1 dB are considered by the FTA to result in "no impact" to noise sensitive land uses, including both residential uses and "lands set aside for serenity and quiet."

4.14.1.3 Alternative 2 – No BLM Land Sale

Under this alternative, Project activities would generally be the same as under the Proposed Action; therefore, there would be no differences in roadway traffic volumes or traffic noise. The implications to transportation due to the land sale would not occur.

4.14.1.4 Alternative 3 – Reduced BLM Land Sale

Under this alternative, Project activities would essentially be the same as under the Proposed Action; therefore, there would be no differences in roadway traffic volumes or traffic noise. The implications to transportation due to the land sale would be somewhat reduced simply due to the reduced size of the disposal parcels.

4.14.1.5 Alternative 4 – No USFS Land Exchange

Under this alternative, Project activities (e.g., mining) would be the same as under the Proposed Action, although Project details would differ (e.g., smaller tailings pond configuration); therefore, there would be no differences in roadway traffic volumes or traffic noise.

4.14.1.6 Alternative 5 – Reduced USFS Land Exchange

Under this alternative, Project activities (e.g., mining) would be the same as under the Proposed Action because there would be no differences in roadway traffic volumes or traffic noise.

4.14.1.7 Alternative 6 – Selective Handling Alternative

Under this alternative, Project activities would be the same as under the Proposed Action; therefore, there would be no differences in roadway traffic volumes or traffic noise.

4.14.1.8 No Action Alternative

Under the No Action Alternative, the federal phosphate leases would not be developed. Therefore, there would be no impacts from increased traffic volumes or noise along Project roadways. However, this does not preclude future development of the federal phosphate leases under a different mine plan.

4.14.2 Irreversible and Irretrievable Commitment of Resources

During mining operations, noise and traffic on Left Hand Fork Georgetown Canyon Road under the Proposed Action and South Trail Canyon Road under Alternative 1cannot be reduced during the mine life but would diminish after mining and reclamation were complete. These would irretrievable, but not irreversible, commitments of resources.

4.14.3 Unavoidable (Residual) Adverse Effects

Under the Proposed Action and alternatives, the unavoidable adverse impacts to public access routes and access to the CTNF would be minor. The Proposed Action and Alternative 1 would increase traffic levels on either Left Hand Fork Georgetown Canyon Road or South Trail Canyon Road. Large delivery trucks would be part of this additional traffic where such vehicles are currently non-existent on either of the two proposed access roads.

Following completion of the proposed mining operations and subsequent reclamation activities, all mine-related traffic in the Study Area would cease, and public access to the CTNF would return

to pre-existing conditions. All roads deemed no longer necessary for reclamation maintenance access, monitoring of the closed and reclaimed mining operations, or public access consistent with USFS management plans, would be reclaimed when no longer needed for the purpose of mining activities. **Section 4.10** provides additional detail and analysis on the future NFS roads that would be impacted by the Project.

4.14.4 Relationship of Short-term Uses and Long-term Productivity

There would be no consequences of short-term uses and long-term productivity of using transportation resources.

4.14.5 Mitigation Measures

No mitigation measures have been identified for the Proposed Action or Action Alternatives.

4.15 Social and Economic Resources

Issue: Would there be impacts to social and economic resources from the Proposed Action?

Indicators:

- Loss of economic viability for potentially affected, nearby ranches (see **Section 4.11**, Grazing Management).
- Changes to the community of Georgetown due to increased traffic.
- Changes to other communities based on alternative selection.
- Changes to the local economy.
- Impacts to the County(ies) services and tax base.
- Impacts to local employment (Idaho and Wyoming).
- Changes in property values.

4.15.1 Direct and Indirect Impacts

4.15.1.1 Proposed Action

The analysis area for the socioeconomic environment is Bannock, Bear Lake, Bingham, Caribou, Franklin, and Power Counties in Idaho, and Lincoln County in Wyoming. This area would be the most impacted by the Project.

For the purposes of socioeconomic analysis there would be two phases to the Project: construction and operations. No cost estimate has been provided for the construction phase, which would likely include improvements to access roads, mill facilities, and other project infrastructure (**Section 2.3.7**). Based on the assumption (below) that Simplot would transition its employees from the Smoky Canyon Mine to the Dairy Simplot Mine, the construction phase would best be described as any preparation work needed for the operation of the Dairy Syncline Mine would be performed by an outside contractor.

For the operations phase of the Project, it is anticipated that the majority of the mine's workforce would reside in Caribou and Bear Lake counties, however, some workers would reside in the remaining five counties.

The socioeconomic analysis is based on the following assumptions:

- The Project would use the workforce currently employed at Simplot's Smoky Canyon Mine, who would transition to the Dairy Syncline Mine as Smoky Canyons Mine nears closure, and
- Employment and expenditures figures provided by Simplot for the Smoky Canyon Mine for 2015 provide a reasonable basis for modeling socioeconomic impacts for the Dairy Syncline Mine.

Economic analysis was performed using the U.S. Bureau of Economic Analysis Regional Input_Output Modeling System (RIMS II) (BEA 2017). **Table 4.15-1** shows 2015 employment, earnings, and other purchasing data provided by Simplot, which are shown as "Direct" in the table. Using the RIMS II multipliers for the seven-county analysis area, employment and earnings impacts were estimated for indirect (impacts to regional businesses that provide goods and services directly to the mine) and induced (impacts created as a result of mine employee spending in the region for goods and services) effects. Impacts from mining operations were determined using multipliers for "Mining, except oil and gas" and impacts from the Don Plant were determined using the multipliers for "Nonmetallic mineral product manufacturing." As shown in the table, the presence of the Smoky Canyon Mine essentially produces a second indirect or induced job in the region for every direct job at the mine and plant.

Table 4.15-1 RIMS II Model Results

	EMPLOYMENT (JOBS)			EARNINGS		
	DIRECT	**INDIRECT**	**INDUCED**	**DIRECT**	**INDIRECT**	**INDUCED**
Smoky Canyon Mine	254	187	199	$25,077,772	$12,719,446	$7,402,958
Don Plant	372	161	156	$35,674,038	$17,066,460	$10,327,634
Total	626	348	355	$60,751,810	$29,785,906	$17,730,592
Grand Totals	1,329 Employed			$108,268,308 Earnings		

It must be noted that these are jobs that are already in the analysis area as a result of the Smoky Canyon Mine. These positions would continue for the life of the mine. Over time, as the Smoky Canyon Mine phases out, the benefits of those jobs and money would shift from Lincoln County into Caribou and Bear Lake Counties as the Dairy Syncline Project ramps up.

In addition to these jobs and associated earnings, the Smoky Canyon Mine spent an additional $12,991,222 for materials and services from other producers in Idaho in 2015, and the Don Plant spent an additional $14,657,530. Given the multiplier effect in the economy these $27,648,752 contributed a total of $40,720,615 to the regional economy.

Actions or decisions that influence the economic feasibility of the mining operations would also be reflected in the socioeconomic environment. Mine economics have an effect on employment, salaries, property tax payments, royalties going to schools, roads, and bridges, net proceeds of mining tax revenues, and local purchases by Simplot and its employees.

The overriding impact of the Proposed Action would be to extend the mine's operation for approximately thirty years, which would be a long-term, beneficial, major impact. It would also allow Simplot to continue to contribute to the Western U.S. integrated phosphate nutrient/fertilizer network. Within the seven-county analysis area there would be no change to a negligible impact on population, income, community services, local government finances, or employment. Aspects of social and economic conditions are discussed in the following sections.

Population

For the construction phase of the Project, no estimate is yet available of the number of construction workers that would be required or what percentage of those workers would come from the seven-county analysis area (i.e., would be from the local workforce). Impacts from construction workers from outside the analysis area would be short-term.

For the operations phase of the Project, it is expected that the workforce and equipment currently excavating the deposits at the Smoky Canyon Mine would shift to the Proposed Action as the Smoky Canyon Mine deposits are exhausted. While some employees may transition to new jobs and some new employees may be hired as replacements, staffing levels would generally remain the same; therefore, no in-migration of new workers and their families is expected. However, the population distribution throughout the Study Area may change as the concentration of workers associated with the Smoky Canyon Mine that primarily reside in the Star Valley area in Lincoln County, Wyoming, may move to Caribou or Bear Lake counties, which are closer to the Project. Commuting distance from Afton, Wyoming to the Smoky Canyon Mine is approximately 18 miles; commuting distance from Afton to the Dairy Syncline Mine via Georgetown would be approximately 68 miles.

A similar population re-distribution may be expected among indirect and induced employment positions as they relocate with the workforce over time. How quickly the population distribution would occur, or on what scale, cannot be predicted, but with an expected mine life of 30 years, it is likely to occur. This would be a long-term, negligible to minor impact based upon the slight, but detectable, change to population numbers.

No impacts (increases or decreases) to the overall population in the seven-county analysis area are anticipated as a result of the Proposed Action.

Economy and Employment

No estimates of economics or employment are available for the construction phase of the Project due to the range of options yet to be determined for the Project. This would likely be a short-term impact.

The Proposed Action would result in no changes in employment or distribution of jobs within the Study Area during transition from the Smoky Canyon Mine to the Dairy Syncline Mine or during operations. It is expected that the workforce and equipment currently excavating the deposits at the Smoky Canyon Mine would shift to Dairy Syncline as the Smoky Canyon Mine deposits are exhausted. The direct and indirect effects of current operations at the Smoky Canyon Mine, including the positive effects of direct, indirect, and induced employment, would be extended for another 30-year duration of active mining under the Proposed Action. Therefore, the Proposed Action would most likely preserve the approximately 1,300 direct, indirect, and induced employment positions supported by the Simplot's current activities within the Study Area and elsewhere in Idaho.

Unemployment and Labor Force

The Proposed Action would result in negligible changes in employment or the size of the labor force. It is expected that the workforce and equipment currently excavating the deposits at the Smoky Canyon Mine would shift to Dairy Syncline as the Smoky Canyon Mine deposits are exhausted. The direct and indirect effects of current operations at the Smoky Canyon Mine (including the positive effects of direct, indirect, and induced employment) would be extended for another 30 years of active mining under the Proposed Action, and thus there would be no impact to unemployment rates or the size or composition of the labor force within the Study Area. However, there would likely be a redistribution of employment within the seven-county area of analysis, which would be a minor impact in the short-term but a negligible impact in the long-term.

Income

Direct income to Simplot employees, as provided in **Table 4.15-1**, are for 2015, as are the modeled indirect and induced incomes. Except for adjustments based on inflation, impacts to income would be negligible for the Proposed Action.

Housing

Under the Proposed Action there would be a short-term minor impact from the construction phase as some contractors and workers would likely be from outside the local market. This would put a short-term negligible to minor stress on the housing market, even though a substantial number of vacant units are available in Caribou and Bear Lake counties. This stress would be compounded by a likely population shift of Simplot employees from the Smoky Canyon Mine to locations with shorter commutes to the Dairy Syncline Mine. As this shift would likely occur over several years, and a substantial number of vacant housing units exist in Caribou and Bear Lake counties, this would be a long-term minor impact.

Assuming the workforce would relocate over time from the Smoky Canyon Mine area, particularly from Lincoln County, Wyoming, to Caribou and Bear Lake counties in Idaho, housing would be affected. Property values in the area around the Smoky Canyon Mine would be expected to decline over time and property values in areas closer to Dairy Syncline would be expected to rise. Since the transition (and construction phase) may take several years to complete, as the Dairy Syncline Mine is prepared and the Smoky Canyon Mine undergoes reclamation, the pressure on the housing market would be moderated to some extent. This is likely to be a long-term, negligible to minor

impact; depending on one's location and point of view, it may be either an adverse or a beneficial impact.

Community Services

As the population shift occurs it may be expected that community services may take several years to reflect the local population. However, as tax collections from Simplot operations are ongoing, communities should have ample time to plan for the population shift and funding of community service transitions should not be an issue.

Public Finance

Taxation of Simplot operations is ongoing and would not be expected to change substantially with the transition of operations from the Smoky Canyon Mine to the Dairy Syncline Mine.

Land Sale and Land Exchange

BLM Land Sale

The disposal parcels would be purchased for an appraised value and those payment funds could be used by the BLM to purchase private land that would come under federal ownership. Any payment in lieu of taxes currently paid to counties from the existing BLM land that would be sold would stop, although the BLM could purchase private land within the same county and these payments in lieu of taxes for any new federal land would again be paid to the county. In addition, the donation parcel would come under federal ownership and any revenue from taxes paid on the private land would shift from being paid by Simplot to being paid as part of the payment in lieu of taxes.

USFS Land Exchange

The land exchange would essentially exchange the same acreage of land, although any revenue from taxes paid on the private land would shift from being paid by Simplot to being paid as part of the payment in lieu of taxes.

4.15.1.2 Alternative 1 – South Trail Canyon Access Route

Under this alternative, the only substantive deviation from the Proposed Action would be moving the mine access to avoid or reduce impacts to the town of Georgetown, Idaho. By doing so, traffic on U.S. 30 through Georgetown would be reduced and some mine workers may prefer to reside closer to Soda Springs than to Georgetown. The reduction in traffic through Georgetown would be shifted north, likely through Soda Springs. This would be a long-term, minor socioeconomic impact.

4.15.1.3 Alternative 2 – No BLM Land Sale

Socioeconomic impacts under this alternative would be the same as under the Proposed Action, although potential impacts related to revenue from taxes from the private land or payment in lieu of taxes from the federal land as discussed under the Proposed Action would not be applicable.

4.15.1.4 Alternative 3 – Reduced BLM Land Sale

Socioeconomic impacts under this alternative would be the same as under the Proposed Action, although there would be a decrease in the amount of BLM land that would become private, thus reducing the potential impacts related to revenue from taxes from the private land or payment in lieu of taxes from the federal land as discussed under the Proposed Action.

4.15.1.5 Alternative 4 – No USFS Land Exchange

Socioeconomic impacts under this alternative would be the same as under the Proposed Action except that the life of the mine may be shortened due to the smaller tailings pond facility and impacts related to revenue from taxes from the private land or payment in lieu of taxes from the federal land as discussed under the Proposed Action would not be applicable.

4.15.1.6 Alternative 5 – Reduced USFS Land Exchange

Socioeconomic impacts under this alternative would be the same as under the Proposed Action, although there would be a decrease in the amount of NFS land that would become private, thus reducing the potential impacts related to revenue from taxes from the private land or payment in lieu of taxes from the federal land as discussed under the Proposed Action.

4.15.1.7 Alternative 6 – Selective Handling Alternative

Socioeconomic impacts under this alternative would be the same as under the Proposed Action.

4.15.1.8 No Action Alternative

Under the No Action Alternative, the Dairy Syncline Mine would not be opened and the employment that would continue under the Proposed Action would be lost when the Smoky Canyon Mine closes down. None of the benefits or adverse impacts of the mine described above would occur. Loss of employment, financial inputs to local governments, and income would likely lead to a reduction in the population, lower property values and reduced community services. This would be a long-term, major impact.

The No Action Alternative could also cause the regional price of fertilizer and cost of agricultural production to increase for a period of time if Simplot had to curtail production at the Don Plant until they could find and permit an alternate orebody to mine or another source of phosphate ore for the Don Plant.

4.15.2 Irreversible and Irretrievable Commitment of Resources

There would be no irreversible and irretrievable commitment of social or economic resources associated with the Proposed Action or Action Alternatives.

4.15.3 Unavoidable Residual Adverse Effects

There would be no residual adverse impacts to social or economic resources as a result of the Proposed Action or Action Alternatives.

4.15.4 Relationship of Short-term Uses and Long-term Productivity

The short-term use of mining of the phosphate ore would result in beneficial long-term effects from increased public funds available for social programs and/or infrastructure improvements due to increased federal lease royalties. There would also be an increase in wealth and economic stimuli from the manufacture of goods and services related to mining phosphate ore from the leases. Mining and use of the phosphate resource would make good use of the mineral in the short-term but would reduce its availability for the future.

4.15.5 Mitigation Measures

No mitigation measures for socioeconomic impacts would be required (impacts would be beneficial overall).

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CHAPTER 5
CUMULATIVE EFFECTS

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5.0 CUMULATIVE EFFECTS

For the purpose of this EIS, the cumulative impacts are the sum of all past, present, and reasonably foreseeable future actions (RFFAs) including but not limited to mining, commercial activities, and public uses. The purpose of the cumulative effects analysis in the EIS is to evaluate the significance of the Proposed Action's contributions to cumulative impacts. A cumulative impact is defined under federal regulations as follows:

> "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individual minor but collectively significant actions taken place over a period of time" (40 CFR 1508.7).

As required under the NEPA and the regulations implementing the NEPA, this chapter addresses those cumulative effects on the environmental resources in the Cumulative Effects Study Areas (CESAs) that could result from the implementation of the Proposed Action and Action Alternatives, past actions, present actions, and RFFAs. The extent of each CESA will vary by resource, based on the geographical or biological limits of that resource and on the potential extent of the expected impacts. As a result, the list of projects considered under the cumulative analysis varies according to the resource being considered. In addition, the length of time for cumulative effects analysis will vary according to the duration of impacts from the Proposed Action and Action Alternatives on the particular resource.

For the purposes of this analysis and under federal regulations, 'impacts' and 'effects' are assumed to have the same meaning and are interchangeable. The cumulative impacts analysis was accomplished through the following three steps:

- Step 1: Identify, describe, and map CESAs for each resource to be evaluated in this chapter;
- Step 2: Define timeframes, scenarios, and acreage estimates for cumulative impact analysis; and
- Step 3: Identify and quantify (if possible) the location of possible specific impacts from the Proposed Action and Action Alternatives and judge the significance of these contributions to the overall impacts.

5.1 Geology, Minerals, and Paleontology

5.1.1 Cumulative Effects Study Area Boundary

The CESA for geology, mineral resources, and paleontology is the Southeast Idaho Phosphate District, including KPLAs in Bear Lake and Caribou Counties, Idaho, plus the non-contiguous donation parcel (**Figure 5.1.1**). With the exception of the Gay Mine, located on the Fort Hall Indian Reservation, impacts to geology, minerals, topography, and paleontology from past, present, and future phosphate mining operations are confined to specific phosphate mining properties (KPLAs

and leases) within Caribou and Bear Lake counties. This is an area approximately 509,500 acres in size within which there are current phosphate leases for approximately 39,000 acres or about 8 percent of the total CESA area.

5.1.2 Introduction

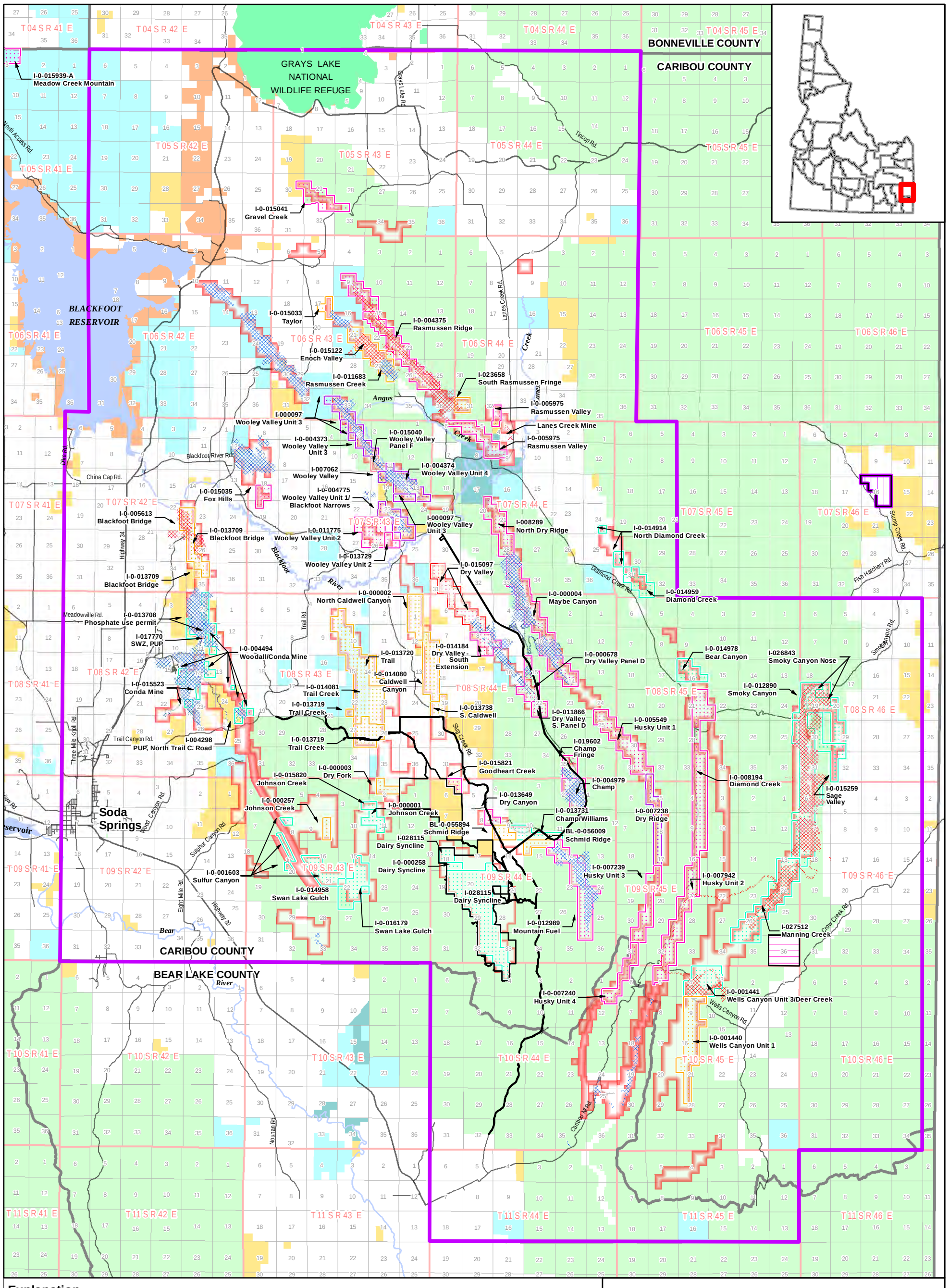
Within the CESA, implementation of the Proposed Action or Action Alternatives and other reasonably foreseeable actions would have potential effects related to: mineral resource depletion; topographic changes; exposure of seleniferous materials; and other COPCs to weathering processes and subsequent mobilization through seepage; geotechnical instability; and discovery, damage, or removal of paleontological resources. Impacts to these resources from past, present, and reasonably foreseeable future phosphate mining operations are generally confined to specific phosphate mining properties (KPLAs and federal phosphate leases) within the CESA.

Ground disturbing activities are the primary cause of impacts to paleontological resources. Lesser impacts to currently undiscovered or unrecognized geologic and mineral resources can also result from these activities. Within the CESA, ground disturbing activities consist of mining processes, and to a lesser extent, construction of transportation infrastructure. Impact types include direct destruction of resources and the loss of contextual geologic and paleontological data. Production of phosphate ore has historically been an important socioeconomic process within the CESA and is expected to continue to be important in the future. Mining is expected to continue within the CESA until all economically recoverable phosphate has been produced from current and future federal phosphate leases.

Other land uses within the CESA such as agriculture and forest management may disturb surface acreage but typically conform closely to the local topography and have negligible impacts on geology, mineral resources, topography, and paleontology compared with phosphate mining.

5.1.3 Past and Present Actions

Since phosphate mining began in southeastern Idaho, there have been more than 30 phosphate operations in the area (USGS 2011). Some of these phosphate operations resulted in less than one or two acres of disturbance, others were small underground mines that have been closed for years. Two former underground phosphate mines within the CESA, Conda and Maybe Canyon, were converted to surface mining operations, and the surface mine disturbance for these mines is still noticeable. The open pit phosphate mines in the CESA with significant production include: Conda, Ballard, Maybe Canyon, Georgetown Canyon, Mountain Fuel, Henry, Wooley Valley, Lanes Creek, Champ, Rasmussen Valley, Smoky Canyon, Blackfoot Bridge, Rasmussen Ridge, South Rasmussen, and Dry Valley. **Table 5.1-1** details all but the smallest known phosphate mines in the CESA and notes the five that are currently active.



Explanation

- Proposed Action and Alternatives
- Geology, Minerals, and Paleontology CESA
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- Known Phosphate Lease Areas (KPLAs)

Phosphate Mine Status*

- Active
- Inactive
- Non-Phosphate (Inactive)

Phosphate Mine Leases (by Lessee)

- Agrium
- FMC
- FMC; Rhodia Inc.
- JR Simplot Co.
- Monsanto
- Rhodia Inc.

Land Status

- Indian Reservation
- Bureau of Land Management
- National Wildlife Refuge
- State of Idaho: Fish & Game; Park & Recreation
- State of Idaho: Other
- US Forest Service

- Private
- Road
- Major River

Notes
* = Areas of active and inactive mines change over time and may be different than the snapshot depicted in this figure.

0 1.5 3 Miles N

Source: Arcadis, 2016

DAIRY SYNCLINE MINE PROJECT

Geology, Minerals, and Paleontology CESA

Figure 5.1.1

Table 5.1-1 Past Disturbance: Phosphate Mines of Southeastern Idaho within the CESA

MINE	DISTURBED AREA (ACRES)
Conda	1,914
Ballard	638
North and South Maybe Canyon	1,120
Georgetown Canyon	251
Wooley Valley/Enoch Valley	1,102
Diamond Gulch	32
Mountain Fuel	718
Henry/Enoch Valley	1,146
Lanes Creek*	199
Champ and Champ Extension	404
Smoky Canyon*	3,881
Rasmussen Ridge/Rasmussen Valley Mines*	1,559
South Rasmussen*	407
Dry Valley	1,093
Blackfoot Bridge*	483
Total Disturbance	14,947

Source of information: BLM GIS data compilation, updated for active mines.
* active mine

Although volumes of mined ore and overburden material may be better indicators of disturbances to geologic and paleontological resources, volumetric data may either be non-existent for older mines or proprietary in the cases of current or recently operating mines. Therefore, acres of known disturbance are presented in **Table 5.1-1**. Based solely upon the information presented previously, past and present disturbances strictly from phosphate mining activities within the CESA total approximately 14,900 acres, approximately 6,500 of which are active.

There are currently five active phosphate mines in the Southeast Idaho Phosphate District: Smoky Canyon (Simplot), Rasmussen Ridge Mines (Agrium), Rasmussen Valley (Agrium), Lanes Creek (Agrium), and Blackfoot Bridge (P4). Each of the currently operating mines simultaneously performs mining and reclamation activities in different parts of the mines. The portion of the mined-out areas at previously approved mines that has been reclaimed is unclear, as reclamation varies from mine to mine, and information for older mines is sparse. Mines in operation before 1970 were often released from lease liabilities without stipulations requiring backfilling, regrading, or reseeding disturbed areas (Causey and Moyle 2001). These modern mining operations work within the current environmental protection requirements by the State, BLM, and USFS. A major environmental mitigation measure employed by each of these mining operations is concurrent reclamation wherein previously disturbed areas are reclaimed during the course of ongoing mining.

U.S. phosphate production increased slightly in 2017 to 27,700 million tons, up from 27,100 million tons in 2016 (USGS 2018). According to USGS (2018), domestic phosphate rock production capacity is expected to remain at approximately 32.6 million tons for the next several years as any new mines would be replacements by existing mines. Positive effects associated with recovery of this resource include making this commodity available now, economic growth and employment, and increased understanding of the geology of this and similar deposits.

Altogether, the past phosphate mining operations within the CESA have disturbed approximately 14,900 acres of surface or about 3 percent of the total CESA. The historic mining operations are typically not reclaimed to the same standards as today, thus there is more unreclaimed topographic disturbance associated with the historic mining operations and less with the more recently operated mines. The mines that were in operation within the last 20 to 30 years have undergone various degrees of reclamation to restore the land to a stable and usable condition. This reclamation has typically included: removal of structures and equipment, backfilling open pits during mining where feasible, regrading overburden piles to slopes of approximately 3H:1V, stabilizing surface runoff patterns, and revegetating regraded surfaces.

Past reclamation activities have not always resulted in complete remediation of environmental risk from selenium and other COPCs. CERCLA-related studies and related remediation projects are underway at many of the mine sites in the CESA, due to the potential presence of COPCs in vegetation and water from mining activities. For example, remediation-related work at Dry Valley and Wooley Valley has either just recently began and/or is scheduled to begin in the near future (BLM and USFS 2016).

Within the CESA, other major earth-moving activities such as construction of highways, railroad lines, dams, aggregate pits, and hard rock mines can also potentially affect geology, mineral, topography, and paleontological resources. These features primarily impact topographic resources, with lesser influences on geologic, mineral, and paleontological resources. The impact of aggregate pits on geologic resources is negligible in comparison to phosphate mining. Transportation features can disturb significant surface areas but are purposely designed to have minimal excavations in solid rock, so they do not affect geology and mineralogy to a significant degree. They are also designed to have minimal cut and fill volumes so their effects on topography are not as severe as phosphate mining. There are small to moderately-sized aggregate mining operations located with the CESA. They tend to only involve disturbance of unconsolidated earth materials and therefore only impact surficial deposits with minor effects on geology, mineral resources, and topography.

There is no known past oil or gas production in the CESA. Although exploration wells have been drilled in the recent past, no commercial production has been established. Hard-rock mineral and metals mines operate in Idaho, but not within the CESA, although some gold prospecting does occur (Gillerman and Bennett 2007). The inactive Lhoist North America Limestone Mine does occur within the CESA and has resulted in approximately 17 acres of previous disturbance.

Gold and copper mining was historically important on the CTNF and small-scale, gold placer mining is still practiced (USFS 2003b). A small amount of gold prospecting occurs in the CESA. There are few disturbances in the CESA for metals exploration or development.

5.1.4 Reasonably Foreseeable Future Actions

Ongoing and future phosphate mining is expected to be the most prominent foreseeable cause of future disturbances within the CESA. In addition to the US phosphate production discussed above, the world phosphate fertilizer demand is expected to increase by 2 percent per year through 2020 (USGS 2018). World consumption of marketable phosphate is expected to increase incrementally from 45.7 million tons in 2017 to 48.8 million tons in 2021 (USGS 2018). Based on this information, phosphate production from the CESA will likely also be stable or increase slightly.

Florida and North Carolina have produced approximately 75 percent of all phosphate rock in the U.S. in recent years, while Idaho and Utah produced the rest (USGS 2018). Average annual production in the CESA is expected to be between 5 and 6 million tons per year.

Reasonably foreseeable mining disturbances within the CESA include continued mining at the Blackfoot Bridge Mine, the East Smoky Panel at the Smoky Canyon Mine, the recently approved Rasmussen Valley Mine, the proposed Caldwell Canyon Mine, and the Husky/North Dry Ridge Mine (currently on hold, although the application has not been withdrawn); these total 4,100 acres (**Table 5.1-2**). The continued mining of Blackfoot Bridge and the proposed new mines in conjunction with the Proposed Action and Action Alternatives would result in approximately 6,930 acres of additional disturbance, the majority of which would be reclaimed.

Table 5.1-2 Reasonably Foreseeable Future Phosphate Mining

NAME	ACRES
Blackfoot Bridge Mine	330
East Smoky Panel	850
Rasmussen Valley Mine	340
Caldwell Canyon Mine	1,530
Husky/North Dry Ridge Mine	1,050
Total	4,100

Stonegate Agricom Ltd. proposed to develop the Paris Hills phosphate project in Bear Lake County which would be a 2,495-acre underground phosphate rock mine where 3 previous mines operated intermittently during the 20th century. The proposed Paris Hills mine has total measured and indicated mineral reserves of 16.7 million tons of marketable rock and expected average annual rate of production of about 0.9 million tons (Stonegate Agricom Ltd. 2017). However, this proposal has been curtailed because of financial constraints and the proposed project is situated south of the CESA and thus, not included in the acreage for reasonably foreseeable disturbance.

Lower Valley Energy (LVE) has proposed an approximately 49-mile, 12-inch diameter pipeline to provide natural gas to Afton, Wyoming. The Crow Creek pipeline would connect an existing pipeline south of Montpelier, Idaho to a regulator station in Afton, Wyoming. Approximately 39 miles of the proposed pipeline route includes private, USFS, BLM, and state lands through Caribou and Bear Lake Counties, Idaho with the remaining 10 miles crossing private and state lands in Lincoln County, Wyoming. The construction ROW would be 50-feet-wide for a total disturbance of approximately 300 acres. After construction, LVE would generally maintain a 20-foot-wide

permanent ROW easement. The only aboveground facilities associated with the pipeline would be the stations at each end, and markers within line-of-sight from each other indicating the presence of a pipeline and company contact information.

5.1.5 Cumulative Activities

The total disturbance for the Proposed Action would be approximately 2,830 acres, 97 percent of which would be reclaimed through reseeding and recontouring to near-original topography. When combined with agency-approved unreclaimed disturbances, existing disturbances at previously approved mines within the CESA, and reasonably foreseeable future disturbance, a total of about 22,000 acres would be disturbed, at least temporarily, including the Proposed Action or Action Alternatives.

If all KPLAs within the CESA are developed to the extent that 90 percent of each federal phosphate lease is disturbed through excavation, construction, or other ancillary activities, approximately 39,300 acres (approximately 8 percent of the CESA) would be disturbed at some point. The volumetric equivalent of geological, mineral, and paleontological resources that would be disturbed is uncertain because each mine would design mine plans according to geologic and market constraints unique to each phosphate lease.

5.1.6 Cumulative Effects

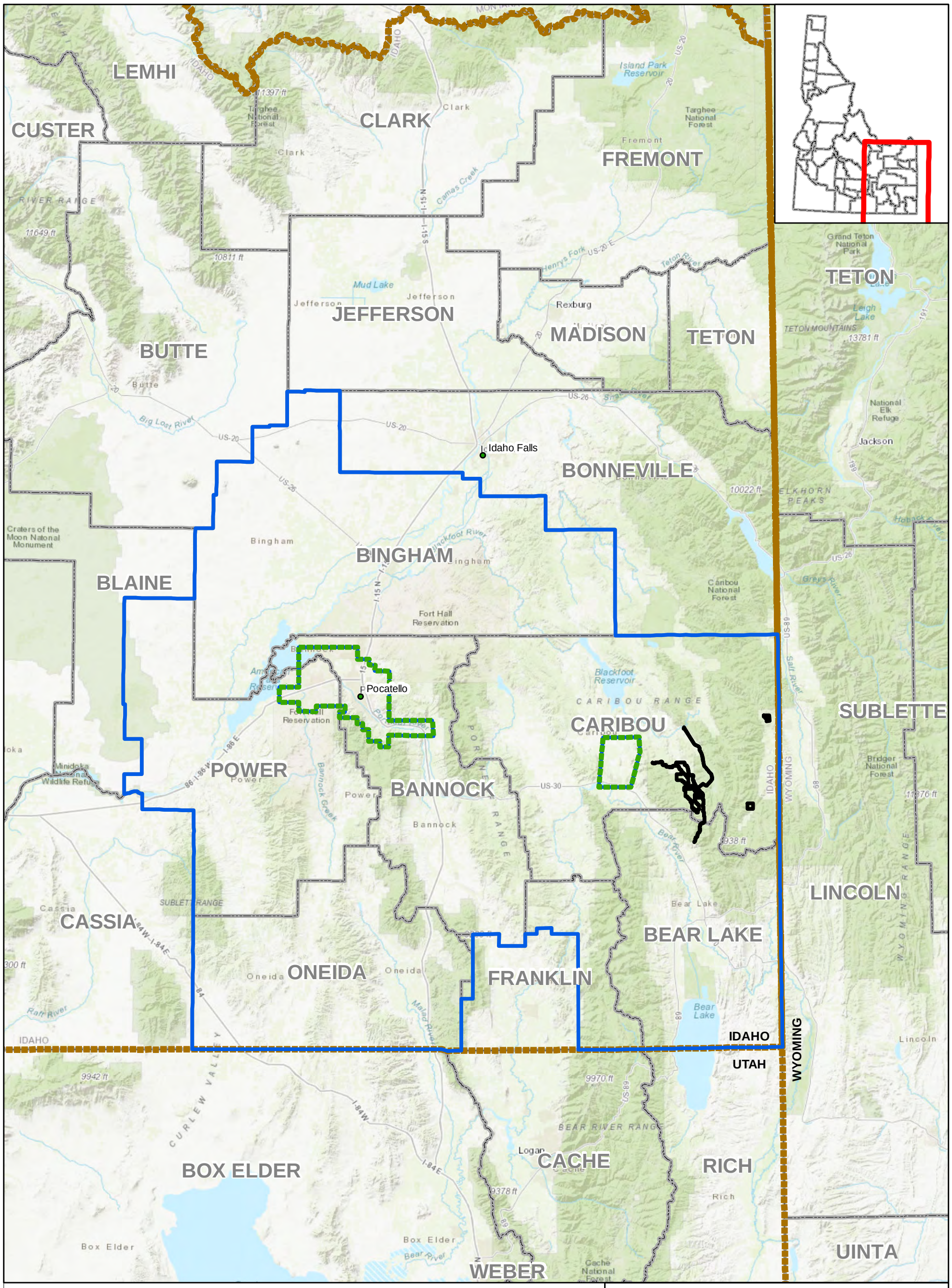
Past, present, and reasonably foreseeable actions within the CESA have resulted or would result in both beneficial (e.g., production and understanding of phosphate and other geologic and mineral resources) and adverse (e.g., destruction of fossils) cumulative impacts on this resource group. The cumulative result of this action when combined with other past, present, and foreseeable future disturbances in the CESA would be a total of approximately 22,000 acres for which there is a residual change in topography following mineral development. This would be approximately 4 percent of the CESA. A large majority of this disturbance would be fully reclaimed.

Phosphate mining affects higher volumes of rock across larger areal extents than other activities; therefore, the contribution from activities other than phosphate mining to cumulative adverse impacts within the CESA is expected to be minor.

5.2 Air Resources

5.2.1 Cumulative Effects Study Area

The CESA for air quality (**Figure 5.2.1**) is determined to be the Air Quality Control Region (AQCR) 16 within which the Project is located. The AQCR includes Bear Lake, Oneida, and Bingham counties, as well as portions of Caribou, Franklin, Bannock, and Power counties. The AQCR covers an area of 5,636,721 acres and includes the two Specific Air Quality Planning Areas shown on **Figure 5.2.1**. This CESA was selected based on the State of Idaho's air quality management area, which includes the Project Area. This CESA includes the area of the Proposed Action and Action Alternatives and other past, present, and RFFAs that have the potential to affect air quality. Air pollutants are expected to comply with all federal and state air quality standards within the CESA. Cumulative effects are not anticipated outside of the AQCR.



Explanation

- Proposed Action and Alternatives Boundary
- Air Quality CESA
- Specific Air Quality Planning Area
- State Boundary
- County Boundary

DAIRY SYNCLINE MINE PROJECT

Air Quality CESA

Figure 5.2.1

5.2.2 Introduction

As a contributor to local GHG emissions and potentially climate change, the Project and other phosphate mining activities can be viewed within the same CESA as air resources. The CESA for issues related to global climate change is based on the global atmospheric system. The CESA is within a region of generally north- to northwest-trending mountain ranges and valleys. CO_2 is the primary GHG contributing to recent climate change. Through animals and plant respiration, volcanic eruptions, and ocean-atmospheric exchange, CO_2 is naturally forming. Human activities (such as burning of fossil fuels) contribute CO_2 to the atmosphere, which cumulatively increases the total generated CO_2 emissions with the naturally forming CO_2 from the carbon cycle activities (USEPA 2016b). GHG emissions from the Proposed Action or the Action Alternatives with the exception of Alternative 4 – No USFS Land Exchange would be roughly similar to those at the currently operating Smoky Canyon Mine and, therefore, would not constitute an additional contribution to cumulative impacts. If Alternative 4 were selected, emissions would be lower because the overall mine footprint and associated disturbances (i.e. tailings pond) would be slightly smaller and the overall mine life would be shorter by about one-third.

5.2.3 Past and Present Activities

Prior to the implementation of the Clean Air Act, few if any measures to control or minimize impacts to air quality were required. Most mining operations were of smaller scale and consisted of operations with small disturbance footprints. Past (i.e., inactive) and present (i.e., active) phosphate mining disturbances within the Air Quality CESA have disturbed approximately 13,900 and 6,600 acres, respectively, for a total of approximately 20,500 acres, less than 1 percent of the CESA. Most air quality impacts from these operations consisted of the generation of fugitive dust during construction and mining operations, as well as agricultural operations and travel on dirt roads. Present actions within the Air Quality CESA that are likely to be contributing to air quality impacts include existing mining operations, wildfires and controlled burns, dispersed recreation, timber harvesting, agriculture, grazing, travel on paved and unpaved roads, and road construction and maintenance. These activities are principally contributing particulate matter emissions and fugitive dust to the air quality impacts; however, products of combustion are also emitted.

There are 7 permitted stationary sources located within approximately 25 km of the Project Area. The majority of the sources are located near the city of Soda Springs, more than 15 km away from the Project. **Table 5.2-1** summarizes the permitted criteria pollutants and HAP emissions from these facilities, based on the current air quality permits.

Table 5.2-1 Stationary Source Permitted Emissions

FACILITY	EMISSIONS (TONS PER YEAR)						
	PM_{10}	$PM_{2.5}$	NO_X	SO_2	VOC	CO	HAP
NuWest Conda Phosphate Operations	80.6	---	152	736	5.78	100.8	3.25

FACILITY	EMISSIONS (TONS PER YEAR)						
	PM_{10}	$PM_{2.5}$	NO_X	SO_2	VOC	CO	HAP
NuWest Rasmussen Ridge Mine	3.4	---	82.1	0.16	26.5	23.4	0.45
P4 Production Blackfoot Bridge Mine	124.61	---	51.98	7.11	---	103.5	---
P4 Production Soda Springs Facility	823	---	3,905	2,073	0	19,600	19.93
Soda Springs Phosphate	22	---	5.4	0.03	0.3	1.1	0
Northwest Pipeline – Soda Springs	16.9	---	1711	0.4	74.8	233	49.7
Simplot Don Siding Plant*	194.7	---	106.5	1,579	2.4	35.3	154
Tronox, LLC	2.37	---	0.74	0.63	0.06	1.09	2.37

Source: JBR 2012b (updated where appropriate with newer data from associated permit of Statement of Basis)
* The Don Plant Emissions are based on Actual Emission Estimates (likely permitted) as discussed with Idaho DEQ.

Among the eight sources located within the Air Quality CESA, three sources are operating under IDEQ Tier I Operating permits: Simplot Don Siding Plant, NuWest Conda Phosphate Operations and Northwest Pipeline, as outlined in Permit No. T1-2007.0109, T1-060308 and T1-2015.0037, respectively. There is one source operating under a Tier II Operating permit, and the remaining five sources have an individual Permit to Construct (PTC).

Wildfires are short-term sources of air pollutants and can generate fine particulate matter. Smoke and gas from wildfire or controlled burns can produce a complex mixture of different gases in the form of particulates and gases and can potentially impact visibility at Class I Areas. The effects of controlled burns would be mitigated through the implementation of a burn plan, which would result in temporary impacts. The effects of recreational activities, timber harvesting, grazing, and agriculture have the potential to contribute to uncontrolled emissions of particulate and gaseous emissions on a seasonal basis. Vehicle travel on paved and unpaved roads can also contribute to adverse impacts to air quality. This source, however, has not adversely affected air quality measurably in the past and is not considered a concern (BLM and USFS 2008). Other past and present activities that would impact air quality are residential and small industrial sources located in Soda Springs. These impacts are minimal and expected to remain approximately equal to present conditions.

Present actions within the CESA that are likely to be contributing to climate change include the combustion emissions from existing mining operations, wildfires and controlled burns, dispersed recreation, road construction and maintenance, timber harvesting, and agriculture. The prediction of climate change is global in nature; therefore, the impacts from these activities are minimal and expected to remain approximately equal to present conditions.

The past and present actions generating GHG emissions are directly related to phosphate mining operations, public traffic through and to recreational locations within the CESA, operation of agricultural equipment, residential and small industrial heating sources, and other commercial and industrial activities. Quantitative data on these varied sources are not readily available; their contribution is small compared to phosphate mining and processing, and they are expected to remain approximately equal to present conditions.

5.2.4 Reasonably Foreseeable Future Actions

Reasonably Foreseeable Future Actions within the Air Quality CESA that may contribute to impacts to air quality include existing and new phosphate mining, construction of the Crow Creek pipeline, dispersed recreation, transportation, wildfires and controlled burns, timber harvesting, agriculture and grazing, and residential and small industrial sources. Air quality impacts from RFFAs could include generation of fugitive dust during mining. Emissions may also be generated from vehicle travel on paved and unpaved roads, fugitive dust from travel on unpaved roads, and road construction and maintenance. Some of these emissions would be localized and subject to IDEQ air quality permits and compliance, development of mitigation measures, and implementation of operational performance standards. Others would be more long-term and basin-wide.

Within the CESA that may contribute to climate change, RFFAs include existing and new phosphate mining, dispersed recreation, transportation, wildfires and controlled burns, agriculture, residential, and industrial sources. However, the prediction of climate change is global in nature; therefore, the impacts from RFFAs are minimal and expected to remain approximately equal to present conditions.

Foreseeable GHG-generating activities include the continued operations and the development of new phosphate mining and processing projects, ongoing and general traffic, agricultural operations, small industrial heating sources, and other commercial and industrial activities. Quantitative data on these varied sources that are not directly associated with phosphate mining are not readily available, but their contribution is small compared to phosphate mining and processing operations, and they are expected to remain approximately equal to present conditions for the CESA. As technology advances, implementation of other types of equipment (such as renewable power sources or hydrogen fuel cells) for operations within the CESA may be more economically feasible in the future. Lower GHG-emitting engines for vehicles may possibly reduce GHG emissions in the foreseeable future.

5.2.5 Cumulative Activities

Phosphate mining and processing, agricultural operations, deforestation, and burning of fossil fuels such as coal, oil, and natural gas for engines are all activities within the CESA contributing to air

and GHG emissions. Other natural activities (such as soil respiration and decomposition and plant and animal respiration) are sources of air and GHG emissions, which account for a much larger impact than human sources. Human sources of air and GHG emissions are much smaller in scale than natural sources but carry the potential to upset the balance in the existing carbon cycle (DOE 2008). The Proposed Action and Action Alternatives include only phosphate mining operations and do not incorporate phosphate processing. Phosphate processing activities are ongoing at the Conda Phosphate Operations approximately 5 miles north of Soda Springs, Idaho on State Route 34. The phosphate processing plant contributes to GHG emissions at a larger scale than the mining activities, as CO_2 is produced not only by fossil fuel combustion but also from wet-processing of phosphate rock to generate phosphoric acid (USEPA 2011b) with CO_2 as a byproduct.

The Simplot Don Plant contributes a large portion of emissions within the CESA, specifically SO_2. However, the entire CESA is well within attainment of the SO_2 1-hr primary standard as shown in **Chapter 3**, **Section 3.2.1.1**. Current data indicates that ambient SO_2 and $PM_{2.5}$ standards are met near the Don Plant. Fluoride emissions from the Don Plant are also regulated. The Don Plant emissions should not add cumulatively to the Proposed Action or Action Alternatives because the transfer of phosphate ore occurs via pipeline. Additionally, the amount of phosphate ore going to the Don Plant will not be increasing, thus emissions will remain the same under the currently permitted regulations.

5.2.6 Cumulative Effects

Each of the identified individual projects within the CESA, including existing and proposed mining operations, emit air pollutants. The existing and proposed mining operations are the major sources of criteria pollutants within the CESA. The Proposed Action or Action Alternatives would result in cumulative impacts to air and atmosphere resources, which is the same impact as the Proposed Action or Action Alternatives when considered individually. The Crow Creek pipeline construction would contribute fugitive dust and vehicular emissions temporarily. The RFFAs would result in additional emissions similar to those currently emitted by the existing operations within the CESA. In addition, the major sources of pollutants within the CESA would operate under permit conditions established by the IDEQ.

Each of the identified individual projects within the CESA, including existing and proposed mining operations, emit GHGs. The existing and proposed mining operations are the major sources of GHG emissions within the CESA. The Proposed Action or Action Alternatives would result in cumulative impacts to climate change, which is the same impact as the Proposed Action or Action Alternatives when considered individually. The RFFAs would result in additional GHG emissions similar to those currently emitted by the existing operations within the CESA.

Past, present, and reasonably foreseeable contributions to GHG emissions in the CESA have been and would continue to be predominantly associated with phosphate mining activities. GHG emissions from the mining operations are associated with direct fuel consumption for operating equipment and machinery including haul trucks and other mining equipment, and generation of electricity consumed at the facilities. All impacts associated with the Don Plant will remain unchanged from current operations as the amount of processed ore sent to the plant is the same. Ore will incrementally transfer from the Smoky Canyon Mine to the Dairy Syncline Mine until all ore eventually comes from the Dairy Syncline Mine.

GHGs are considered to have caused a warming trend globally and could continue to do so if atmospheric levels are not reduced. The generation of GHGs would still occur under the Proposed Action or Action Alternatives. Because the scale of the global warming issue is so large and the release of CO_2 from fuel consumption from both the existing/approved and proposed operations is relatively miniscule compared to the U.S. emission rate (U.S. GHG emissions totaled 6,870 million metric tons of carbon dioxide equivalents in 2014 (USEPA 2016b)), an assessment of the effects of the Proposed Action or Action Alternatives on global climate change would be unreliable. Impacts from GHGs may be countered locally by CO_2 sequestration in the vegetation of the adjacent CTNF and added to by any future fires in the CTNF; however, the RFP FEIS (USFS 2003b) cautions that estimating these effects may not be reliable.

5.3 Water Resources

5.3.1 Cumulative Effects Study Area Boundary

The CESA for surface water resources and surface water quality is determined to be the Upper Blackfoot River Watershed, upgradient of the Blackfoot Reservoir, as well as the Georgetown Canyon Watershed (**Figure 5.3.1**), the donation parcel, and the offered parcel. This CESA was selected based on the location of the Project relative to the location and patterns of surface water and drainages relative to the Project Area. It is 247,622 acres in size.

The CESA for groundwater resources and groundwater quality is determined to be an area that includes and surrounds the mining and processing portion of the Project Area, the boundary of which starts at the Summit View Campground and generally extends northeast along Dry Ridge, then northwest along Schmid Ridge, crosses the Slug Creek Drainage along the Trail Canyon access route, then follows the Aspen Range ridge southeast to the Summit View Campground, plus the noncontiguous donation and offered parcels (**Figure 5.3.2**). This determination is based on the location of the Project relative to the location and patterns of subsurface water and aquifers, as well as the anticipated extent of potential impacts to groundwater from the Project, in addition to the need to incorporate the land sale and land exchange aspects of the Proposed Action. The CESA totals 35,167 acres.

Although there would be some impacts to surface water and groundwater emanating from the Don Plant in Pocatello for the duration of operations at the Dairy Syncline Mine, they would not add cumulatively to impacts predicted from the Dairy Syncline Mine. Therefore, the Don Plant is not included within the surface water and groundwater CESAs.

5.3.2 Introduction

Cumulative effects on surface water resources resulting from other past and present activities in the CESA include primarily phosphate exploration, mining, ranching, and farming, but also include timber harvesting, livestock grazing, wildfires and fire suppression activities, road building, and development of domestic, commercial, and industrial land parcels.

Surface water quality issues in the CESA include COPCs leaching from phosphate mine overburden and sedimentation from a variety of sources such as road construction, timber harvesting, livestock grazing, and any other ground-disturbing activities. Agricultural practices

also impact water quality through the introduction of fertilizers and animal and vegetation waste. Various land use practices, such as mining, farming, grazing, and construction activities, can impact surface water by affecting volume and timing of surface runoff and through alteration of natural channel morphology.

Cumulative effects to surface water resources may include impacts to water quantity related to changes in volume and timing of surface runoff and reduction of spring discharge.

Cumulative effects on groundwater resources resulting from other past and present activities in the CESA include primarily phosphate mining and development of domestic, agricultural, and industrial land parcels. Groundwater quality issues in the CESA include COPCs leaching from phosphate mine overburden and local agricultural practices that impact water quality through the introduction of fertilizers and animal and vegetation waste. Various land use practices such as mining and construction activities can impact groundwater - surface water interaction by altering or eliminating spring discharge. Cumulative effects on groundwater quantity may include groundwater withdrawal for industrial, agricultural, and domestic uses that may change depth to water or total groundwater heads and decreased or increased depth to water from infiltration rate changes. Effects from timber harvesting, grazing, rights-of-way, and recreational uses on groundwater resources are negligible.

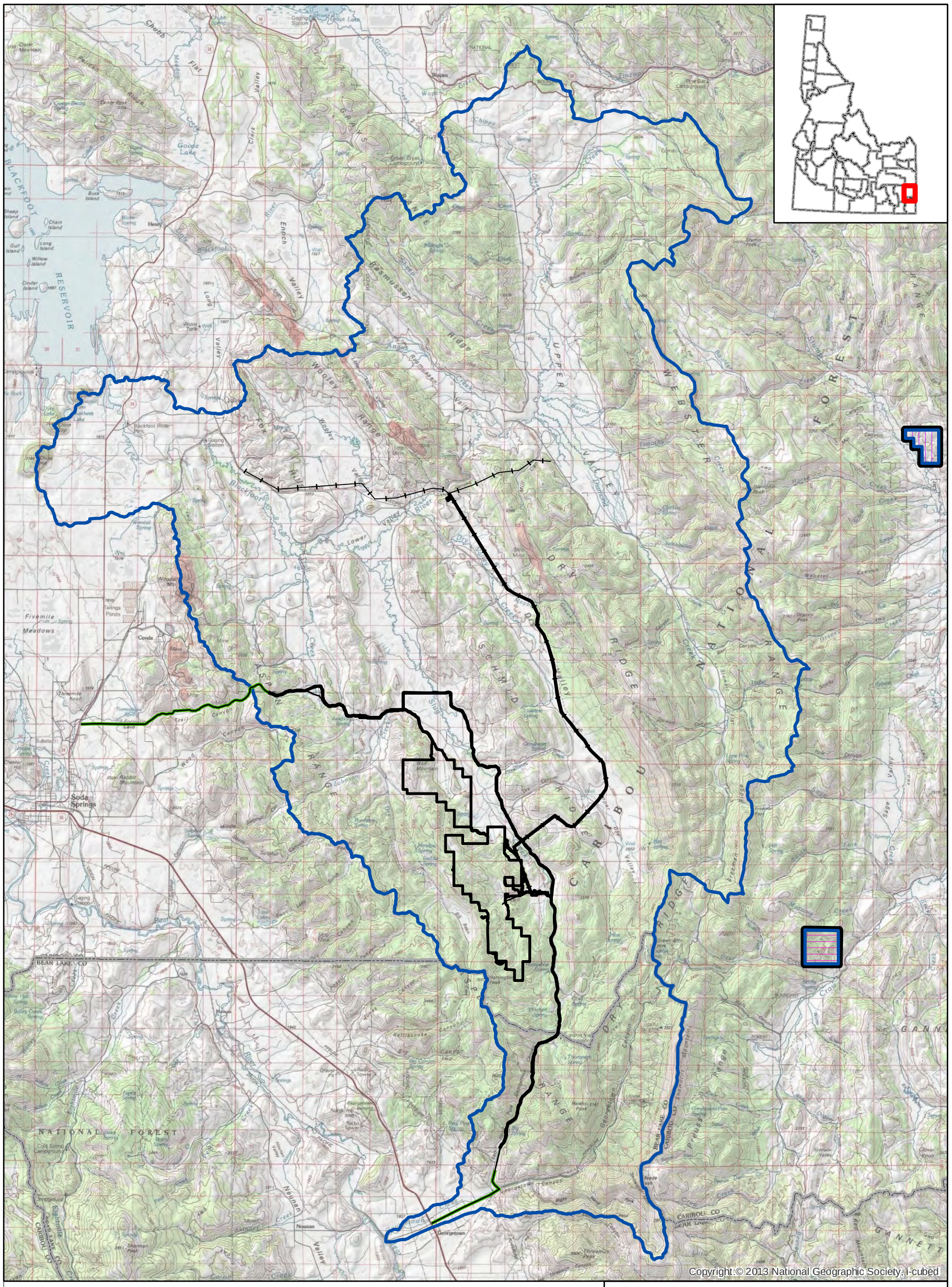
5.3.3 Past and Present Actions

Previous phosphate mining operations have left open pits and overburden piles at locations throughout the watershed. Older mining reclamation practices have left reclaimed surfaces containing overburden with elevated levels of selenium and other COPCs either exposed at the surface, or with thin or no cover. Older overburden piles generally do not have engineered covers to restrict infiltration, and the surfaces may have shallow slopes or rough surfaces that do not minimize infiltration of precipitation. Water seepage from many of the overburden disposal sites contain COPCs at elevated concentrations that may be transported into streams (CTNF 2009). Selenium is the COPC of greatest regulatory concern in the CESA.

Active and inactive phosphate mines (see **Table 5.3-1** disturbed acreage within the surface and groundwater CESAs) are present in southeast Idaho (**Figure 5.1.1**). Several are located within the surface water CESA boundary. All mines are located north, east, and south of the Project Area. There are no active or inactive mines west of the Project Area within the surface water CESA. Total disturbances related to past, present, or current agency-approved mining and mining-related activities are estimated to be approximately 8,000 acres (3 percent) of the surface water CESA (**Table 5.3-1**) and 12 acres (<0.1 percent) within the groundwater CESA.

Table 5.3-1 Phosphate Mine Disturbances in Water Resources CESAs

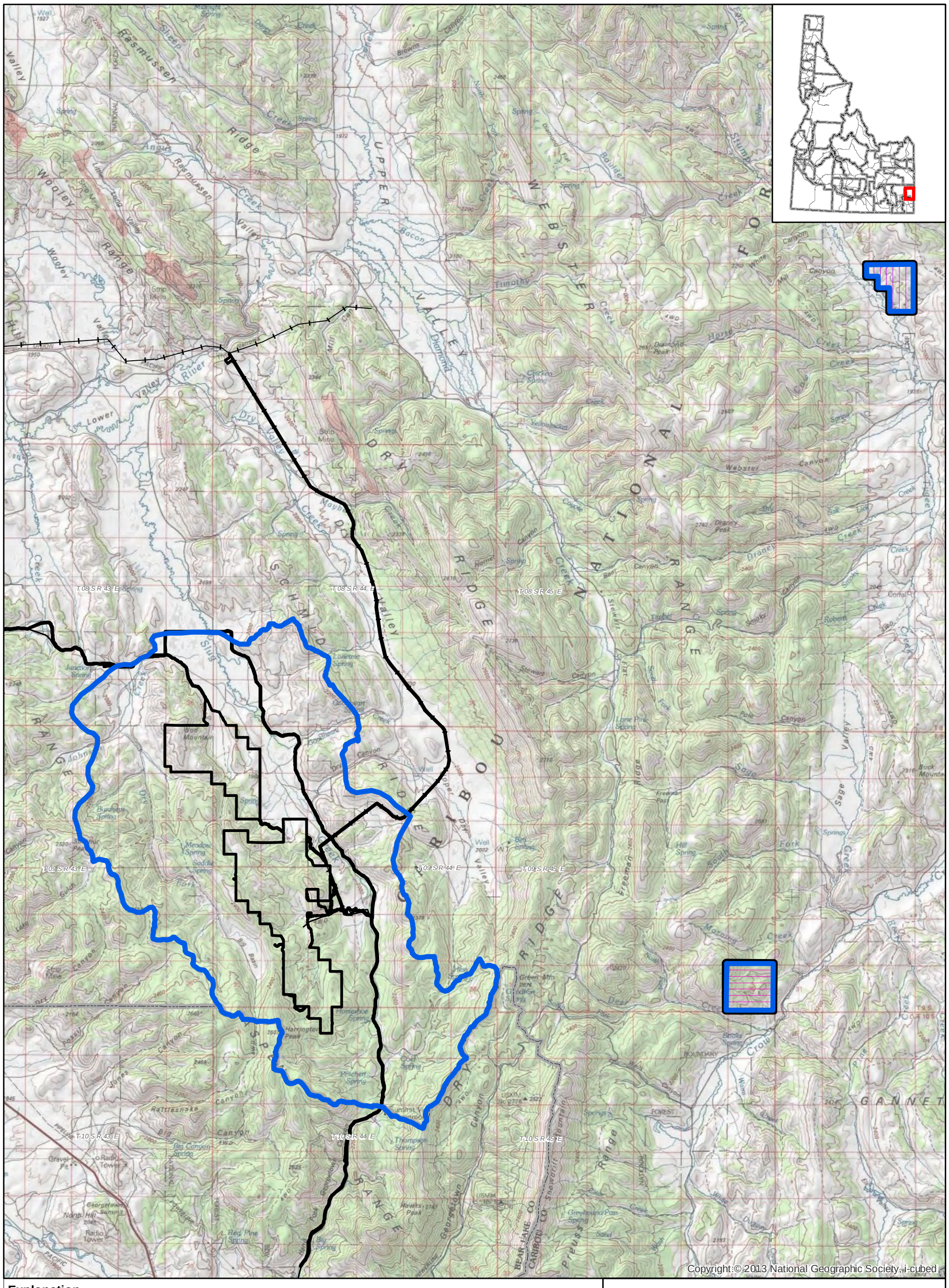
NAME	TOTAL CESA ACRES	PHOSPHATE ACRES ACTIVE	PHOSPHATE ACRES INACTIVE	TOTAL PHOSPHATE ACRES
Surface Water	247,622	2,110	5,870	7,980
Groundwater	35,167	0	12	12



DAIRY SYNCLINE MINE PROJECT

Fisheries and Aquatics, Recreation, Soils, Special Status Species, and Surface Water CESA

Figure 5.3.1



Explanation

- Proposed Action and Alternatives Boundary
- CESA Boundary
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- County Boundaries
- Access Road
- Powerline

0 1.5 3 Miles

N

DAIRY SYNCLINE MINE PROJECT

Ground Water Resources CESA

Figure 5.3.2

Past and present mining activities in the CESA have resulted in increased selenium concentrations in the Blackfoot River and some of its tributaries. In 2001, IDEQ began an annual, mid-May, synoptic survey of selenium concentrations at 21 locations in the Upper Blackfoot River Watershed to assess water quality impacts from phosphate mining operations. In cooperation with BLM, the USGS collected time series (2001-2014) water quality parameters at a single location on Blackfoot River near the inlet to the Blackfoot Reservoir (USGS stream gage 13063000). Results of both of these efforts have been evaluated by Mebane et al. (2015) to support an understanding of selenium in runoff in the Upper Blackfoot River Watershed.

The evaluation found that the Idaho CCC for selenium of 5 micrograms per liter was exceeded in the majority of samples collected during peak stream runoff in May of each year with less frequent exceedances during April and June. No exceedances occurred outside the April to June timeframe. The study showed that the majority of selenium load passing the outlet of the watershed could be attributed to a single tributary at East Mill Creek which enters the Blackfoot River through Spring Creek.

Portions of the Blackfoot River and tributaries are listed as impaired under Section 303(d) of the Clean Water Act. The most frequent causes of impairment are selenium, dissolved oxygen, *Escherichia coli*, and temperature. Portions of the Blackfoot River and tributaries are also identified as impaired by sediment loads.

Past and present actions have resulted in local-scale groundwater quality impacts primarily from phosphate mining activities and local agricultural practices. CERCLA investigations have been initiated at six inactive mine sites within the CESA. Groundwater is extracted for mining, industrial, agricultural, and domestic use. Most of the groundwater is extracted from the Wells aquifer, a regional water supply source. On a CESA scale, groundwater extraction is a small percentage of recharge at any given time.

5.3.4 Reasonably Foreseeable Future Actions

Foreseeable future activities that carry the potential to affect surface water resources in the CESA include future phosphate mining activities on areas that have not been developed, currently operating phosphate mines, remediation of inactive mines, agricultural and livestock range land uses, and construction activities, such as the Crow Creek pipeline installation, resulting in ground disturbance.

Reasonably foreseeable mining disturbances within the surface water CESA include continued mining at the Blackfoot Bridge Mine, the recently approved Rasmussen Valley Mine, the proposed Caldwell Canyon Mine, and the Husky/North Dry Ridge Mine (currently on hold, although the application has not been withdrawn); these total 3,350 acres (**Table 5.1-2**). The continued mining of Blackfoot Bridge and the proposed new mines in conjunction with the Proposed Action and Action Alternatives would result in approximately 6,080 acres of additional disturbance within the CESA.

CERCLA investigations and remedial actions may occur at phosphate mining sites within the CESA. Remedial activities could include regrading, capping, and revegetation of existing overburden piles or backfills; backfilling of pits; and removal of overburden that was placed as

cross-valley fills. Remedial activities would be designed to mitigate existing sources of COPCs associated with these sites and minimize contaminated seepage from existing overburden disposal facilities and sediment loading to surface water from past mining disturbances.

Phosphate mining is an important economic resource for the State of Idaho with national and worldwide demand for agriculture and chemical use; therefore, it is anticipated that the trend for phosphate mining resource development within the watershed will continue at a similar pace.

Foreseeable future activities that carry the potential to affect groundwater resources in the CESA include future phosphate mining activities on areas that have not been developed, currently operating phosphate mines, remediation of inactive mines, and agricultural and livestock range land uses.

5.3.5 Cumulative Activities

Past, ongoing, or reasonably foreseeable activities or events would have a cumulative effect on surface water resources under the Proposed Action or Action Alternatives. Of all identified developments within the CESA, mining carries the greatest potential to cumulatively impact water resources. However, other activities, such as agriculture, livestock range land use, road construction, wildfires, and recreational uses, also carry the potential to cumulatively affect water resources.

Past, ongoing, or reasonably foreseeable activities or events would have a cumulative effect on groundwater resources under the Proposed Action or Action Alternatives. Of all identified developments within the CESA, mining carries the greatest potential to cumulatively impact groundwater resources. Other activities, such as agricultural and livestock range land uses also carry the potential to cumulatively affect water resources.

5.3.6 Cumulative Effects

Cumulative impacts to surface water quality would occur primarily as a result of contaminated runoff from overburden at the previously approved mines impacting nearby surface water features. Contaminants from the inactive Mountain Fuel and Champ mines in Upper Dry Valley have impacted Slug Creek water quality through the surface water pathway. The majority of the Project is upgradient of these impacts.

Soil erosion within the CESA has contributed to reduced water quality in various surface water bodies. The Final 2012 Integrated 303(d)/305(b) Report (IDEQ 2014) lists the Blackfoot River, as well as several tributaries (Slug Creek, Dry Valley Creek, Chicken Creek, Maybe Creek, Diamond Creek, Lanes Creek, Bacon Creek, Sheep Creek, Angus Creek, Rasmussen Creek, and State Land Creek) as Category 4a waters impaired by sediment loads with USEPA-approved TMDLs (IDEQ 2014). Excessive sediment levels in the CESA have not been attributed to a specific source and have likely resulted from a combination of activities within the CESA.

As discussed in **Section 5.3.3**, the Blackfoot River has been impacted by increased selenium concentrations from phosphate mining activities in the CESA. The predicted selenium load under the Proposed Action or Action Alternatives would result in no increases of instream concentrations

in the Blackfoot River and no increases of instream concentrations in Slug Creek. Cumulative effects to surface water quality resulting from past, present, and other foreseeable future mining activities in the CESA are moderate to major and long-term until remediation actions at inactive mines reduce selenium load to streams. Additional effects from the Proposed Action or Action Alternatives would have negligible impacts within the surface water CESA.

Surface-disturbing activities from mining and reclamation activities at the Dairy Syncline Mine have the potential to increase sediment loads to Wilde Canyon. However, the implementation of BMPs would reduce this sediment loading. These effects are expected to be most pronounced during rainstorms and spring runoff. BMPs and other controls would result in negligible sediment loading. Cumulative increases in sediment loads within CESA are expected to be minor, local, and short-term. Long-term increased runoff as a result of capping of reclaimed areas may result from mines within the CESA. These impacts would be localized and negligible in the CESA.

Cumulative impacts to groundwater quality would primarily occur where metals are mobilized during mining at proposed and operating mines, and by leaching of COPCs from overburden at active, historical, and future phosphate mines. Contaminant fate-and-transport modeling results indicate that under the Proposed Action or Action Alternatives, contamination of perched groundwater and the regional Wells Formation aquifer at the Dairy Syncline Mine would be localized and of limited extent and would not cumulatively affect the groundwater quality in the CESA outside of the Study Area.

Impacts from groundwater withdrawals during mining would be short-term, lasting for the duration of the mine life. Maximum impacts from groundwater withdrawals would occur at and near the end of the mine life. There are no predicted impacts related to groundwater withdrawals in the CESA outside of the Study Area. In the long-term, reduced infiltration may occur because of ODA and backfill capping. Under Alternative 6, long-term increased infiltration may occur in a limited on-lease area. Cumulative impacts to groundwater quantity may also occur from pumping related to irrigation, municipal and domestic water supply, and other industrial activities. These potential cumulative impacts to groundwater quantity in the CESA are expected to be long-term and negligible. As noted above, groundwater impacts from the Don Plant would not add cumulatively to impacts predicted from the Dairy Syncline Mine, and the Don Plant is outside the groundwater CESA.

5.4 Soils

5.4.1 Cumulative Effects Study Area Boundary

The CESA for soils includes the Upper Blackfoot River Watershed and the Georgetown Canyon Watershed, the donation parcel, and the offered parcel (**Figure 5.3.1**). This 247,622-acre CESA was selected so that the analysis for soils would be consistent with that for surface water, so as to encompasses potential soils-related (e.g., erosion) effects on surface water (e.g., sedimentation).

5.4.2 Introduction

Direct impacts to soil resources typically occur as a result of ground-disturbing activity. Activities affecting soils, and that are themselves affected by soil disturbance within the CESA, could include

mining, farming, ranching, wildfires, fire suppression activities, timber harvest and management, road building, recreation, and development of domestic, commercial, and industrial land parcels. Potential impacts to soil resources include damage or removal of topsoil and subsoil profiles and structure, slope failure, and weathering processes and subsequent erosion. Although disturbed soil would develop new profiles over extended periods of time, cumulative impacts to soils can include the loss of productivity and increased risk of exposure to people and facilities due to slope failures.

The most extensive impacts to soils in the CESA would likely result from mining and agricultural activities. Impacts to soils beyond initial disturbance and relocation (e.g., soil loss through erosion) are minimized because the success of mine reclamation largely depends on the reuse of stockpiled or live-handled topsoil, and all mines are required to implement a SWPPP. The success of the agricultural industry is also inherently dependent on maintaining soil quantity and quality, and soil management practices are widely implemented during these activities. Forest management activities on the CTNF include timber sales, livestock grazing, and public recreation. Large portions of the CESA are located on lands administered by the CTNF. Activities in these areas are subject to management goals and standards provided in the CNF RFP (USFS 2003b). Forest management activities (including timber sales, livestock grazing, and public recreation) are not expected to contribute to cumulative effects on soil resources within the CESA.

5.4.3 Past and Present Actions

Past and present disturbances within and near the CESA are similar to those discussed in **Section 5.3.3**.

Mining activities have major impacts on soil resources within the CESA. Soils are directly impacted by removal and storage during open pit excavations and subsequent replacement during reclamation. Successful reuse of soils is a primary goal of mine reclamation and is a critical component of maintaining soil productivity. Soil disturbances related to approved past and present mining and mining-related activities within the CESA are estimated to be approximately 8,000 acres or 3 percent of the CESA (**Table 5.3-1**). This acreage does not include reasonably foreseeable future disturbances that are not yet approved.

Typical recreation activities in the CESA include hunting, fishing, and other outdoor activities. Generally, these activities have a lesser impact on soil resources than other uses as a result of their intermittent and seasonal nature. Effects on soil resources as a result of past and present recreation are limited to compaction from off-road vehicle travel and runoff from dirt roads and hiking or pack trails.

5.4.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future mining activities, as described in **Section 5.1.4**, the majority of which are included within the CESA except for the East Smoky Panel, would result in additional disturbance to soil resources. Over 6,000 acres of reasonably foreseeable mining disturbances can be expected within the CESA, of which less than 10 percent would remain unreclaimed.

Future quantities, extents, and types of grazing activities within the CESA are not expected to vary from current activities. Present rates of soil loss in agricultural areas are expected to be maintained

in the foreseeable future. Changes to private agricultural lands and disruption of soils are likely as small portions of some of the private lands could be converted into residential areas. Timber sales are anticipated to continue at similar to current levels, with constraints on soil disruption similar to those in recent years (USFS 2003b). Installation of the Crow Creek pipeline would disturb soils but as this project is located almost entirely outside the CESA, its disturbance in the CESA would be minimal. No known changes to transportation or recreational uses beyond those identified in the Proposed Action or Action Alternatives have been proposed that would affect soil resources within the CESA.

5.4.5 Cumulative Activities

Cumulative disturbances of soil resources within the CESA as a result of past, present, and reasonably foreseeable developments, including the Proposed Action or Action Alternatives, would primarily be the result of phosphate mining activities and agricultural practices. If it is approved, the Crow Creek pipeline may clip the Simplot exchange parcel and result in approximately three acres of temporary disturbance. Additional disturbances of soils as a result of timber sales and other minor new surface disturbances would also occur but would be of smaller scale.

5.4.6 Cumulative Effects

Combined past, present, and reasonably foreseeable future mining activities within the CESA are expected to directly affect approximately 7 percent of the soils (16,800 acres) within the CESA. Future mines are expected to salvage, stockpile, and replace soils during reclamation and to use soil erosion and sediment transport BMPs to control soil loss from disturbance areas. Soil productivity would decrease, and soil erosion rates would increase on disturbed soils. The impact duration from soil disturbance is expected to vary according to mine-specific reclamation practices. Other than the long-term soil profile development, impacts would not be expected to extend more than three or four years beyond final reclamation. The unreclaimed disturbances from mining activities in the area would represent a long-term impact to less than one percent of soils within the CESA.

BMPs would be designed to contain sediment derived from mining disturbance. Soil erosion as a result of the Proposed Action or Action Alternatives is expected to be minimal since soil loss would be controlled by installation of stormwater ponds, runoff control ditches, and implementation of other BMPs.

Agricultural, recreation, forestry, and land development activities would continue to contribute to soil loss within the CESA. Similarly, increased regulatory control on soil erosion, verified by reclamation monitoring, is expected to minimize impacts to soil productivity and erosion within the CESA. The short- and long-term contributions of the Proposed Action or Action Alternatives to cumulative effects on soil resources are expected to be minor in the CESA.

5.5 Vegetation, including Wetlands and Riparian Areas

5.5.1 Cumulative Effects Study Area Boundary

The CESA for vegetation and wetlands includes the local HUC 12 watersheds that cover the main Project Area as well as the donation and the offered parcels (**Figure 5.5.1**). This CESA was selected because any potential effects to vegetation and wetlands from the Project would occur within this area. It covers approximately 125,000 acres. Vegetation is supported and influenced by surface water and near surface groundwater. Disturbance to vegetation would also be roughly equivalent to the disturbance of soil in the same area. For these two reasons, vegetation or wetland impacts from the Proposed Action or Action Alternatives do not have the potential to extend beyond the natural watershed boundaries that define the bulk of the CESA.

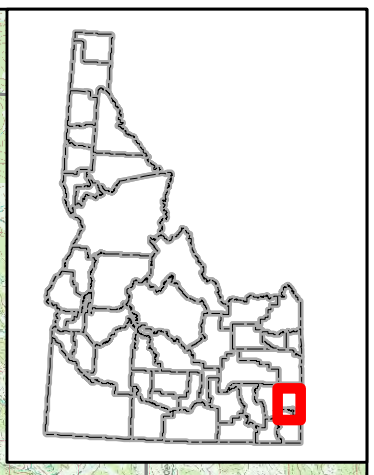
5.5.2 Introduction

Vegetation disturbance in the CESA occurs from activities associated with mining, agriculture, grazing, vegetation management, wildfires, controlled burns, and off-road vehicle use. The reasonably foreseeable developments in the CESA include the continuation of past and present disturbances. The CESA as described above is a larger area than the vegetation analysis area discussed in **Chapter 4**. Vegetation and fresh water accounts for almost all the CESA (USGS 2011). The dominant undisturbed native vegetation land cover types are Inter-Mountain Basins Montane Sagebrush Steppe, Rocky Mountain Lodgepole Pine Forest, Middle Rocky Mountain Montane Douglas-fir Forest and Woodland, Rocky Mountain Aspen Forest and Woodland, and Rocky Mountain Aspen Forest and Woodland, together making up approximately 75 percent of the CESA. According to available quantitative data, approximately 6 percent of the total CESA has past and present land uses and direct disturbances to vegetation (developed, quarries, mines [phosphate and other], gravel pits, cultivated cropland, pasture, and harvested forest areas).

According to NWI data, approximately 13,500 acres of palustrine wetlands (including forested, scrub-shrub, unconsolidated bottom permanently flooded [freshwater pond]), lacustrine wetlands (including unconsolidated bottom permanently flooded ([lake]), and riverine wetlands are present within the CESA. Many activities that have affected wetlands and riparian areas in the past are expected to continue in the reasonably foreseeable future (e.g., agriculture, recreation, and mining).

5.5.3 Past and Present Actions

Acreage of disturbance from various past and present actions in the CESA totals approximately 7,570 acres for quantified disturbance. Based on USGS data (2011, with updates for known phosphate disturbances), the principal past and present anthropogenic disturbances to vegetation within the CESA include quarries, mines and gravel pits, agriculture (cultivated cropland, pasture/hay), harvest forest activities, and developed areas. Estimated inactive and active phosphate disturbances, based on GIS (USGS 2011) and updated BLM information, are 4,400 and 1,300 acres, respectively, for a total of approximately 5,700 acres in the vegetation CESA.



CARIBOU

BEAR LAKE

Explanation

- Proposed Action and Alternatives Boundary
- HUC 12
- CESA Boundary
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- County Boundary
- Access Road
- Paved County Road
- Powerline

Land Status

- Bureau of Land Management
- Private
- State
- U.S. Forest Service

0 2 4 Miles

N

DAIRY SYNCLINE MINE PROJECT

Vegetation, Visual, and Wetlands and Riparian Zones CESA

Figure 5.5.1

Areas of vegetation with elevated levels of selenium have been found growing on some reclaimed mine sites in the CESA, particularly those areas with vegetation growing directly in overburden with no topsoil. The practice of growing reclamation vegetation directly in overburden was discontinued as mines were encouraged to salvage and reuse topsoil and mining practices were changed to minimize the release of selenium in the 1990s.

The IDEQ sampled terrestrial vegetation at the Conda and Ballard Mines as part of an area wide risk assessment study. This study found selenium concentrations ranging from 8.9 to 39 milligrams per kilogram (mg/kg) at the Ballard Mine and from 1.5 to 20 mg/kg at the Conda Mine (IDEQ 2003). Mackowiak et al. (2004) conducted a study of trace element concentrations in plants sampled at the Wooley Valley Unit 1, 3, and 4 overburden piles and undisturbed sites at Dairy Syncline, Deer Creek, Dry Valley, Maybe Canyon, and Rasmussen Ridge. The authors found the highest tissue selenium concentrations in plants growing in highly disturbed soils, such as those comprising the Wooley Valley overburden piles. Grasses, shrubs, and forbs growing on overburden piles generally exhibited lower average selenium concentrations (18 mg/kg, 6 mg/kg, and 3 mg/kg, respectively) than legumes and trees, which yielded average selenium concentrations of 80 mg/kg and 52 mg/kg, respectively. In comparison, background selenium concentrations in terrestrial plants have been reported to range from 0.01 to 0.6 mg/kg (Ohlendorf 2003 in BLM and USFS 2016).

The acreage of vegetation in the CESA with elevated selenium has not been quantified. Studies indicate that vegetation with elevated selenium concentrations is associated with historical mines. The inactive phosphate mines occupy approximately 4,400 acres or 3.6 percent of the CESA. The acreages associated with the historical mine sites that exceed the BLM action level of 5 mg/kg have not been quantified, but investigations show that not all areas contain vegetation with concentrations of selenium higher than the 5 mg/kg action level; therefore, it is expected that the area of exceedances are less than the approximately 4,400 acres.

Past and present activities that occur in the CESA, such as agricultural land uses, mining, roads, buildings, and other facilities, likely contributed to wetland impacts. Programs administered by various regulatory agencies have greatly reduced or eliminated a potential net loss of wetlands through some type of mitigation, whether it is enhancement, restoration, or creation.

Indirect and direct impacts resulting from agricultural activities may include draining, flooding, leveling, and grazing in wetlands. These impacts are relatively transient and reversible. In contrast, roads, buildings, and mines may have long-term or permanent impacts on wetlands as a result of long-term changes in topography and hydrology, although compensatory mitigation is required for these types of wetland impacts.

Indirect impacts to wetlands, such as those resulting from sedimentation and selenium contamination, have likely occurred as well in the CESA, but are difficult to quantify.

In 2014, the USGS released a report summarizing more than a decade of data (2001 to 2012) on selenium levels in streams across the Upper Blackfoot River Watershed (Mebane et al. 2015). The USGS collected selenium data from the Blackfoot River near the outlet of the Blackfoot Reservoir near Henry, Idaho, from 2001 to 2012. Dissolved selenium concentrations at this site ranged from 0.5 to 11.4 µg/L, and 31 percent of the samples exceeded the State of Idaho CCC concentration of

5 µg/L. Most of the exceedances were measured in May of each year, and all exceedances occurred from April to June (coinciding with the spring runoff season). Concurrently with the USGS single-point sampling, the IDEQ sampled selenium at 21 locations along the main stem of the Blackfoot River and its tributaries in May of each year. Selenium concentrations measured during the IDEQ sampling effort ranged from less than 2 µg/L to 870 µg/L in 176 samples. Examination of the IDEQ data in concert with the USGS data revealed that the majority of the selenium loads passing the USGS sampling point could be attributed to a single stream (East Mill Creek), which is located downstream of the North Maybe Canyon Mine and enters the Blackfoot River through Spring Creek. Selenium loads decreased by about half from East Mill Creek before reaching the Blackfoot River, which suggests that aquatic vegetation or sediments sequester much of the selenium in the creek, at least temporarily (Mebane et al. 2015). Wetlands are known to filter and sequester pollutants including selenium (Peltier et al. 2003; Hansen et al. 1998; Mickle 1993). Therefore, it is possible that elevated selenium concentrations have occurred in wetland waters, plants, and sediments across the CESA given the results of the Mebane et al. (2015) study.

The USGS and IDEQ analyses published in Mebane et al. (2015) were limited to data collected through 2012. Data collection is ongoing. Preliminary inspection of the two most recent years of data (2013 and 2014) reveals noticeable differences from the previous data. First, most selenium concentrations during spring peak-flow periods in 2013 and 2014 were lower than those in several of the preceding years, although an anomalously high concentration of 0.0138 mg/L (13.8 µg/L) on May 13, 2013 was recorded. Second, from 2001 through 2012, selenium concentrations showed an increasing upward trend during the generally low-flow period between August and October, especially from about 2004 through 2012 (Mebane et al. 2015). However, visual inspection of the most recent two years of data suggests that this upward trend has not continued. In 2014, selenium concentrations during low-flow periods were lower than in recent years and generally lower than the surface water standard of 0.005 mg/L (USGS 2015). Therefore, existing impacts to wetlands in the CESA from selenium may be less severe than the older data would indicate.

5.5.4 Reasonably Foreseeable Future Actions

The reasonably foreseeable developments within the CESA that would affect vegetation include potential phosphate mining (as previously described) and transmission line development (112 to 188 acres for the Hooper Springs Transmission Line (BPA 2013)). Installation of the Crow Creek pipeline would disturb vegetation but as this project is located almost entirely outside the CESA, its disturbance in the CESA would be minimal. Additional alteration and disturbance to vegetation from unquantifiable activities, such as livestock grazing and other miscellaneous disturbances, is also expected to continue in the future.

Impacts related to vegetation containing selenium at historical phosphate mines in the CESA would be expected to continue until remedial action measures are completed. New phosphate mines would be required to incorporate BMPs and cover designs that limit potential for selenium uptake by vegetation, unlike past mines that were constructed without consideration for the potential of selenium release (IDEQ 2006).

Activities that may result in impacts to wetlands in the CESA but cannot be quantified as a result of lack of data, include road maintenance and other activities, such as those conducted on private lands. There is also the possibility that future mining within the CESA would directly impact

wetlands, though mitigation measures would likely be implemented to compensate for these impacts. Future indirect impacts to wetlands from sedimentation and selenium contamination are also possible, though BMPs would likely minimize these impacts as well.

5.5.5 Cumulative Activities

The potential new disturbance to vegetation from the Proposed Action or Action Alternatives (approximately 2,830 acres), added to known past, present, and reasonably foreseeable future disturbances (10,400 acres of past/present disturbance (**Section 5.5.3**) and approximately 2,930 acres of reasonably foreseeable disturbance from three phosphate mines, for a grand total of 13,330 acres), results in approximately 11 percent of the CESA being disturbed for the Proposed Action and Action Alternatives. The majority of this quantified disturbance is a result of phosphate mining, though it should be noted that an additional amount of unquantified disturbance to vegetation occurs in the CESA as a result of livestock grazing and other activities. Natural revegetation and reclamation would re-establish vegetation relatively quickly to most areas disturbed by mining, although the vegetation composition and community type would be changed and modified from its pre-disturbance state and only a very small percent of the CESA, less than one percent, would not be reclaimed and would remain barren over the long-term, mainly as part of pit highwalls.

No site-wide increases of vegetation with selenium concentrations higher than action levels in the CESA are expected under the Proposed Action or Action Alternatives, and no substantial contribution to cumulative effects would occur to vegetation in the CESA from this potential impact. Under either the Proposed Action or Action Alternatives, seed mixes have been developed to avoid the use of selenium accumulator species. Therefore, there would be no corresponding cumulative effects of COPCs on vegetation from the Proposed Action or Action Alternatives.

In addition to past and present impacts, implementation of the Proposed Action or Action Alternatives would result in a maximum direct disturbance of approximately 4 acres of jurisdictional WoUS, including wetlands, representing approximately 0.03 percent of the total known WoUS, including wetlands, in the CESA. Some riparian areas associated with the wetlands would be impacted as well. These impacts would result in cumulative impacts to wetlands and riparian areas when added to past, present, and reasonably foreseeable future disturbances. The acres of wetland impacts from the Proposed Action or Action Alternatives would require compensatory mitigation pursuant to the requirements of the CWA, as any decision by the USACE to issue a permit would include approving measures to mitigate impacts to affected WoUS including wetlands. The type of mitigation for the impacts would be determined in consultation with the USACE.

5.5.6 Cumulative Effects

Cumulative impacts to vegetation resources would occur, although it would represent less than 10 percent of the CESA. Although there are areas of historical reclamation with elevated selenium and other COPCs in the CESA, it is not expected that either the Proposed Action or Action Alternatives would add to these areas or any impacts from vegetation with elevated COPCs. Future mines would likely incorporate closure practices and BMPs that would minimize selenium uptake as well.

Wetland impacts from the Proposed Action or Action Alternatives would be mitigated through the Section 404 Permit so as not to cause a net cumulative impact to WoUS, including wetlands.

5.6 Wildlife Resources

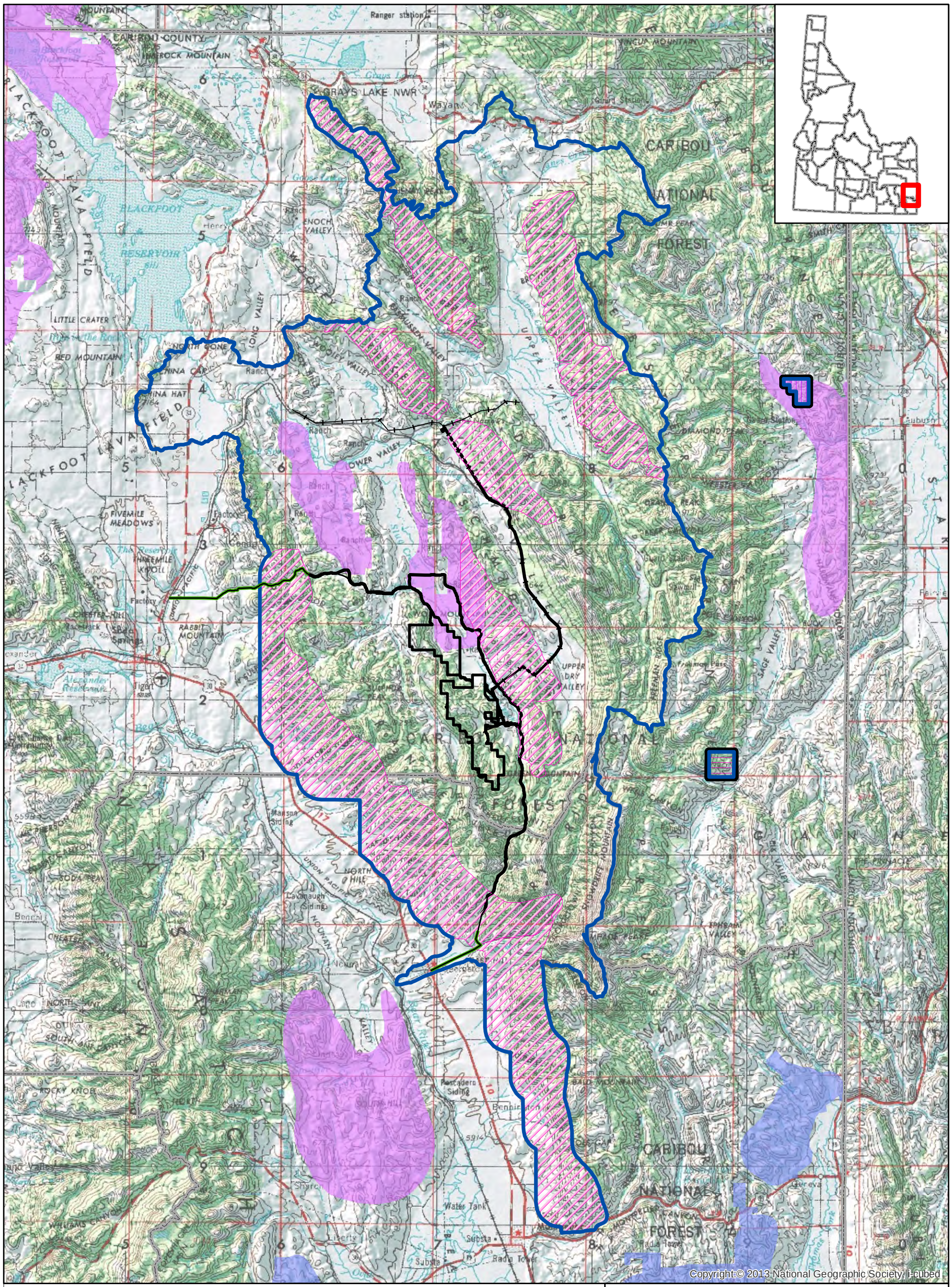
5.6.1 Cumulative Effects Study Area Boundary

The CESA for wildlife, including special status species, includes the Upper Blackfoot River Watershed, upgradient of the Blackfoot Reservoir, the Georgetown Canyon Watershed Area, those portions of big game winter range that extend beyond the watershed, the donation parcel, and the offered parcel (**Figure 5.6.1**). This 302,653-acre CESA was selected based on the likely location of any potential effects to wildlife. There are no Wild and Scenic Rivers, wilderness, or other ecologically critical areas within the CESA. Most impacts to wildlife would occur within or immediately adjacent to the Project Area and would affect individuals with home ranges overlapping or immediately adjacent to the Project Area. The watershed area surrounding the Project Area is large enough to encompass the home ranges of the most wildlife individuals in the Project Area. It is unknown to what extent wildlife individuals would be displaced and what the impacts of displacement on resident populations would be; however, given the scale of the Proposed Action or Action Alternatives, it is unlikely that any short- or long-term adverse impacts to wildlife species would occur beyond the identified CESA.

5.6.2 Introduction

GAP landcover data (USGS 2011) were used to quantify habitat types in the CESA, as this data source focuses on habitat identification, provides habitat categories similar to those delineated in baseline studies (JBR 2012e; 2013c), and covers the entire CESA. According to GAP landcover data (USGS 2011), sagebrush, coniferous forest, aspen forest, and wetland/riparian areas are the dominant wildlife habitat types within the CESA. Other native habitats (including grassland, open water, and other types of shrubland) are present throughout the CESA in smaller quantities. This diversity in habitat types allows for many wildlife species, including a wide variety of mammals and birds, to utilize the area.

According to preliminary IDFG data (Wackenhut 2014) and the CNF RFP (USFS 2003b), elk and moose winter range, mule deer summer range, and some elk parturition areas occur in the wildlife CESA. Big game winter range covers 86,835 acres. Other mammals in the wildlife CESA include small herbivores (e.g., rabbits), omnivores (e.g., rodents), bats, and medium- to large-sized carnivores (red fox and coyote). There are several species of upland game birds found in the wildlife CESA, including ruffed grouse, greater sage-grouse, Columbian sharp-tailed grouse, and dusky grouse. Within the wildlife CESA, there are approximately 14,540 acres of GHMA. Habitat for migratory birds occurs throughout the wildlife CESA and includes every listed cover type. Suitable habitat for nesting and foraging raptors occurs throughout the wildlife CESA. According to the USGS (USGS 2011), there are about 10,000 acres of open water habitats in the CESA. These open water habitats may be used by a wide variety of water birds for foraging, brood-rearing, and nesting.



Explanation

- Proposed Action and Alternatives Boundary
- CESA Boundary
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- Big Game Winter Range
- Important Habitat Management Area (IHMA)
- General Habitat Management Area (GHMA)
- County Boundaries
- Access Road
- Paved County Road
- Powerline

0 3 6 Miles

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DAIRY SYNCLINE MINE PROJECT

Wildlife CESA

Figure 5.6.1

5.6.3 Past and Present Actions

The foremost impact to wildlife within the area has been habitat changes associated with past and present mining activities, grazing, timber harvest, wildfires, roads/trails, agriculture, and residential development, but these changes occur on a relatively small percentage of the CESA that provides wildlife habitat. Past and present actions in the wildlife CESA have likely resulted in both beneficial and negative impacts, at various levels, on wildlife.

Beneficial impacts related to timber harvesting include increased foraging opportunities for species that utilize forest openings. Negative impacts would include loss of habitat, displacement, and fragmentation as a result of mining, timber harvesting, roads, private land development, and agriculture, and recreation. Specific to small and less mobile wildlife species (i.e., small mammals, amphibians, and reptiles), past impacts from direct crushing and mortality by vehicles has likely also occurred within the CESA. In addition, grazing can contribute impacts by increasing competition for forage and changes in the structure or composition of native plant communities. Grazing in the CTNF is conducted in compliance with standards and guidelines contained in the CNF RFP (USFS 2003a). Other impacts that are not quantified have included noise disturbance/displacement from mining, roads, and recreational activities.

Past and present timber harvests in the CESA have resulted in habitat changes that affect wildlife. The majority of habitat conversion is in the form of forest removal followed by reforestation with a short period of early seral conditions. This habitat conversion would cause forest-dependent wildlife using the affected areas to disperse in search of new areas and wildlife that prefer more open areas to use these areas following the timber harvests.

The general effects of grazing in the CTNF portion of the CESA are discussed in the FEIS for the RFP (USFS 2003b). As described in the Canada Lynx Conservation Assessment Strategy (Ruediger et al. 2000), both domestic livestock and/or wild ungulate grazing may change the structure or composition of native plant communities. Proper rotation and stocking rates can minimize these negative effects.

Human presence tends to disturb many species of wildlife. Past and present recreational uses in the area include hunting, fishing, ATV and snowmobile use, camping, and picnicking. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Past and present disturbances from existing roads and mining activities have resulted in fragmentation of certain, less mobile wildlife populations and their habitats. Fragmentation effects within the CESA have not been quantified by the land management agencies.

Within the vegetation CESA, quantified numerous past and present disturbances based on the GAP landcover data (USGS 2011) have resulted from agriculture; roads, buildings, and other development; timber harvests; and quarries, mines, and gravel pits (**Section 5.5.3**) and those would also apply to the larger wildlife CESA. Estimated past and present phosphate mining activity in the wildlife CESA indicates approximately 8,100 acres (or about 3 percent) have been disturbed

by mining. However, much of this area has been reclaimed and supports grassland and shrubland wildlife habitat.

Wildfires have disturbed more than 3,800 acres in the CESA since 1980 (WFDSS 2013). Range allotments, which have affected vegetation through grazing, occur on more than 91,000 acres (16 percent) of the CESA, but it is not possible to quantify the extent of grazing impacts to wildlife habitat.

Additional unquantified past and present activities in the CESA that may affect wildlife include residential development; vegetation management activities on private lands; roads; powerlines; and recreational uses such as hunting, fishing, ATV and snowmobile use, camping, and picnicking.

5.6.4 Reasonably Foreseeable Future Actions

Specific future land impacts on private lands in the CESA are difficult to quantify as a result of lack of data but would be an area smaller than the private land ownership area. Past and present actions on private land within the CESA have mainly included mining, agriculture, and grazing activities, and these are anticipated to continue in the future. Occasional instances of housing development have also occurred on the large ranches within the CESA, and this is also anticipated to continue.

Section 5.1.4 describes some of the foreseeable future mining activities that are likely to occur within the CESA and the Hooper Springs Powerline will impact an additional 112 to 188 acres in the foreseeable future (BPA 2013). The Crow Creek pipeline may impact up to 300 acres, but this project just clips the Simplot exchange parcel CESA.

BLM phosphate mining regulations at 43 CFR § 3591.1 direct operators to take measures to "avoid, minimize or repair" damage to vegetation, fish, and wildlife habitat. The EPMs described in **Section 2.4** and mine reclamation would reduce or avoid impacts to wildlife and wildlife habitat from mining activities. Implementation of these mitigation measures would also tend to meet established requirements such as those contained in the federal land use plans, the Idaho Surface Mining Act, and contractual provisions in the individual federal phosphate leases.

5.6.5 Cumulative Activities

The foremost impact to wildlife within the CESA has been and will continue to be habitat changes associated with development, mining, agriculture, grazing, and timber harvest. Based on GAP landcover data (USGS 2011) and known disturbance from existing and historic phosphate mining activity, quantified past disturbance to wildlife habitat measures approximately 4 percent of the CESA. Adding known reasonably foreseeable future disturbances from mining, including the Proposed Action or Action Alternatives, along with construction of the Hooper Springs Powerline, the Crow Creek pipeline, to the past and present disturbances, disturbance would increase in the CESA to about 6 percent.

Implementing the Project would result in some level of additional fragmentation to certain wildlife populations and their habitat. Disturbance associated with activities in the CESA would limit the attractiveness of the CESA to Canada lynx, wolverine, and gray wolves, which generally prefer

extensive tracts of undeveloped land. Impacts to mature forest and the disturbances associated with the Proposed Action or Action Alternatives would cause wildlife using the Project Area to displace into adjacent undisturbed habitats and forested areas that are available for reasonable movement activities.

Acquisition of the donation parcel in conjunction with the habitat enhancement projects to offset the Rasmussen Valley Mine would cumulatively increase wildlife benefits specifically to sage-grouse habitat and big game winter range. Acquisition of the offered land exchange parcel would cumulatively increase benefits of land managed as elk and deer winter range. Federal management of these lands would potentially decrease the potential for habitat fragmentation in these areas.

5.6.6 Cumulative Effects

The cumulative activities within the CESA may have a wide array of effects on wildlife. Some types of activities such as timber harvest, vegetation treatments, and fires, may be beneficial for wildlife species that utilize forest openings or early seral stages. The majority of habitat conversion from timber harvest is in the form of forest removal followed by reforestation with a short period of early seral (non-climax grass or shrub) conditions. This habitat conversion would cause forest-dependent wildlife using the affected areas to disperse in search of new areas. In contrast, most wildfires in the CESA have affected the scrub/shrub (largely sagebrush) vegetation type. The flush of new vegetation growth following a fire may provide a beneficial food source for wildlife such as big game. Once active mining had ceased under the Proposed Action or Action Alternatives, the newly reclaimed areas may likewise benefit some wildlife species through new growth of a variety of native forbs and grasses that could provide forage for a number of species, but at a detriment to other species because of lost forest habitat and further fragmentation.

Negative impacts to wildlife within the CESA include loss of habitat; displacement; and fragmentation as a result of fires, mining, timber harvesting, roads, private land development, agriculture, and recreation. Other impacts that are not quantified include the effects of noise on wildlife, habitat fragmentation, and displacement from mining, roads, and recreational activities. Additionally, small, less mobile wildlife (such as small mammals and reptiles that cannot relocate outside of disturbance areas) are subject to direct mortality and localized population reductions from ground-disturbing activities.

In general, displacement of larger, more mobile wildlife from habitat disturbance decreases survival rates of affected individuals to some degree and increases competition. Mine construction and operation could temporarily cause some wildlife, such as big game, carnivores, and raptors (which generally prefer areas free from anthropogenic noise and activity), to avoid the portion of the CESA close to mining. Implementing the Proposed Action or Action Alternatives would result in the displacement of mobile wildlife from the Study Area and the surrounding habitat into adjacent undisturbed areas, where competition in already-occupied habitats may increase.

Past and present disturbances from roads and mining activities have resulted in fragmentation of certain wildlife populations and their habitats. While larger, more mobile species may be able to traverse or route around mines, small, relatively immobile animals (such as reptiles and small mammals) may be subject to isolation as formerly contiguous habitats are disturbed by features such as roads and mines. Implementing the Proposed Action or Action Alternatives would result

in additional fragmentation to wildlife habitat and could isolate populations of small, immobile wildlife.

Many game species are hunted within the CESA. Human presence in the form of recreation may disturb many species of wildlife. Human disturbance during periods of the year when wildlife are otherwise stressed (such as during the winter) can further stress wildlife and affect their survivorship. Wintering big game may be subject to harassment by recreationists, particularly if available hiding and escape cover is reduced by other activities. The Project would cumulatively contribute to displacement and stress on wintering big game.

Wildlife are affected by livestock grazing as a result of competition for forage and alteration of plant communities. However, livestock grazing on the CTNF and BLM land is conducted in compliance with standards and guidelines contained in the CNF RFP (USFS 2003b) and the ARMP, respectively. Grazing conducted in compliance with agency management guidance is expected to have minimal impacts on wildlife and their habitat.

The residual debits (116,045 DSAYs) in lost wildlife habitat services as calculated under the HEA for the Proposed Action (varies slightly for several of the Action Alternatives) would represent a long-term adverse cumulative impact on wildlife, and also on vegetation as measured by plant species metrics.

As part of the Project, Simplot has offered to donate 440 acres of land to BLM. This private parcel owned by Simplot is in the Stump Creek area, adjacent to a BLM ACEC (primarily big game winter habitat and sage grouse habitat). The parcel is in an area where some residential homes may be constructed in the future with an associated impact to wildlife habitat. A donation of this land to BLM in conjunction with an approval of the Dairy Syncline Mine would reduce cumulative impacts to wildlife habitat an unknown amount in the CESA.

Similar types of residual impacts to wildlife habitat would occur from reasonably foreseeable future mines in the CESA.

5.7 Fisheries and Aquatics

5.7.1 Cumulative Effects Study Area Boundary

The CESA for fisheries and aquatics includes the upper Blackfoot River watershed above the Blackfoot Reservoir, as well as the Georgetown Canyon watershed, the donation parcel, and the offered parcel (**Figure 5.3.1**). This CESA was chosen because it includes the entire watersheds downstream of the Project as well as other feeder streams and sub-watersheds that may contribute to cumulative effects. Also, because fish in these watersheds are mobile, effects to downstream reaches can impact fisheries throughout an entire watershed. The most mobile aquatic species in the CESA are salmonids, such as cutthroat trout. Cutthroat trout in the CESA may be resident, fluvial, or adfluvial. Fluvial and adfluvial fish would live as adults in mainstream streams or reservoirs, but spawn in upstream reaches and/or tributary streams. The limits to downstream impacts were set at the lower reaches of the watersheds, as impacts are not likely to be seen further downstream due to dilution and flow regulations (e.g., the Blackfoot Reservoir would have a large dilution factor and would regulate flow to downstream areas). The primary impact to fish and

aquatics from this Project is expected to be decreased flow to streams and rivers from the mining operations. Selenium, other metals, and sediment from other past and present activities are also of particular concern in these watersheds.

5.7.2 Introduction

Fisheries and aquatic resources are affected by surface water quality, which is discussed above in **Section 5.3**. Activities affecting water resources within the CESA, and consequently, fisheries and aquatic habitat, include: mining; farming; ranching; livestock grazing; wildfires; fire suppression activities; road building; and development of domestic, commercial, and industrial land parcels. These activities impact fisheries and aquatic habitat through temporary reductions of runoff contribution to local streams and increased sedimentation from surface disturbing activities. Mining activities can increase the mobilization of selenium, other COPCs, and sediments. Many of these activities also affect the volume and timing of surface runoff, directly altering aquatic habitat. Cumulative effects to fisheries and aquatic resources in the CESA can result from a combination of these impacts.

5.7.3 Past and Present Actions

Past activities within the CESA that have affected streams, riparian areas, and watersheds are described in **Section 5.3.3**, and include logging, livestock grazing, fire management, road construction, ATV use, and phosphate mining (**Table 5.3-1**). These activities have altered storm runoff volumes and peaks flows, increased erosion and sediment loading, and increased concentrations of selenium in surface waters.

Removal of trees and vegetation and associated timber harvest activities increase the potential for sedimentation into nearby aquatic environments through runoff and decreasing infiltration. Logging roads can alter water flow on the soil surface, creating impervious surfaces that concentrate runoff and increase erosion. The primary effect of these activities on the aquatic systems is increased erosion with the secondary effect of increased sediment loading in downstream surface waters.

The livestock industry has been an integral part of the CESA since human settlement of the area. Following years of grazing, livestock stocking levels have been recently decreased in order to bring numbers in line with forage production. Livestock grazing would continue to be a major land use activity within the CESA but is not expected to increase above current rates. The effect of grazing near aquatic habitats is well documented (USFS 2003b) and can have detrimental effects towards fisheries.

In 2014, the USGS released a report summarizing data on selenium levels in streams across the Upper Blackfoot River Watershed from 2001-2014 (Mebane et al. 2015). The evaluation found that the Idaho CCC for selenium of 5 micrograms per liter was exceeded in most samples collected during spring runoff. No exceedances occurred later in the year than June. The study also showed that most selenium load could be attributed to a single tributary at East Mill Creek which enters the Blackfoot River through Spring Creek. As described in **Section 3.8.1.5**, the EPA recommended criterion, that could be adopted in Idaho, would be fish tissue-based. The recommended national criterion is 8.5 mg/kg dw (whole-body). Thresholds specific to salmonids could also be adopted,

such as the YCT thresholds (>15 mg/kg dw) or brown trout thresholds described in USEPA (2016a).

5.7.4 Reasonably Foreseeable Future Actions

As described in **Section 5.3.4**, the reasonably foreseeable future actions that may affect aquatic habitat, fisheries, and other aquatic organisms include future phosphate mining on areas that have not been developed, currently operating phosphate mines, remediation of inactive mines, agricultural and livestock range land uses, road construction, and ATV use. Approximately 4,100 acres (**Table 5.1-2**) of phosphate mining-related disturbances can be expected in the reasonably foreseeable future (50 years) within the CESA. These include continued mining at the Blackfoot Bridge Mine, the East Smoky Panel at the Smoky Canyon Mine, the recently approved Rasmussen Valley Mine, the proposed Caldwell Canyon Mine, and the Husky/North Dry Ridge Mine (currently on hold, although the application has not been withdrawn).

5.7.5 Cumulative Activities

The past, present, and reasonably foreseeable actions described have the potential for cumulative effects due primarily to the combination of streamflow alterations, introduction of sediment to aquatic habitat, and selenium-related water quality changes. The Proposed Action or Action Alternatives are not expected to increase selenium concentrations within the CESA. However, other future mining activities may increase selenium loading to some streams within the CESA. This may be balanced out by reduced loading in other streams due to reclamation of past mines and/or mitigation activities at existing mines. Because regulation under the CWA would continue, with regulatory requirements likely to be fish tissue-based, it is assumed that although selenium concentrations may increase in some streams and decrease in others, the levels are expected to remain below fish tissue-based toxicity thresholds.

The primary effects of the Proposed Action or Action Alternatives on surface water and, subsequently, the fisheries and aquatic resources in the CESA would be a reduction in stream flow. The reduction in streamflow would likely increase sediment levels in stream substrates. Past and present agricultural has reduced streamflow in certain areas by diverting water for the watering of pastures or other agricultural fields. Sediment levels have also increased due to the lack of streamflow, impacts to riparian vegetation by livestock, and streambank trampling. Because water rights in the CESA are fully allocated, water diversion would continue at the same levels (i.e., no increase) into the foreseeable future. Improved grazing practices would reduce sediment-related impacts, and sediment introductions from grazing are likely to decrease slightly. Mining has also reduced streamflow through mine water management (e.g., runoff capture, etc.) and the interception of groundwater. These impacts would continue at current or slightly higher levels as new mines are developed in the CESA, but others are reclaimed.

5.7.6 Cumulative Effects

Effects to the Georgetown Canyon portion of the CESA would be limited to negligible sediment-related effects in Left Hand Fork Georgetown Canyon. In the Blackfoot River portion of the CESA, streamflow alterations due to the Proposed Action or Action Alternatives would be too small to be measurable outside of the Slug Creek watershed. For example, mean flow in the Blackfoot River

in September for the period from 1914-2016 is 72 cfs. A decrease of at least 0.0005 cfs but less than 0.2 cfs due to the Proposed Action and Action Alternatives would be a decrease in Blackfoot River baseflow of somewhere between 0.0007 and 0.3 percent. Because potential flow losses are so small, the Proposed Action and Action Alternatives would not result in cumulative effects in the majority of the CESA, but could contribute to future cumulative effects in the Slug Creek watershed.

Within the Slug Creek watershed, the effects of decreased streamflow in combination with other past and present actions were described in **Section 4.8.1.1**. As described in **Section 5.10.5**, future impacts due to agriculture are expected to remain at or below existing levels. As a result, any cumulative impacts would likely be due to future mining activity. As described in **Section 2.3.7.5**, the tailings dam would be constructed to potentially allow use by future mines adjacent to the Dairy Syncline Mine. Although future plans are not available, it is assumed that any future mines in the areas could have effects similar to the Proposed Action and Action Alternatives. This could include further streamflow alterations, or, depending on geology, possibly effects to water quality (i.e., selenium), and result in cumulative effects.

5.8 Land Use and Special Designations

5.8.1 Cumulative Effects Study Area Boundary

The CESA for land use is the Project Area, and includes the land sale disposal parcels, the donation parcel, and the land exchange parcels (**Figure 5.8.1**). This CESA was selected because activities under the Proposed Action or Action Alternatives would affect the land use of the specific parcel upon which those activities would occur. It covers approximately 6,506 acres.

5.8.2 Introduction

Impacts to uses of the land are innately tied to a given location, and except in the cases of physically overlapping activities, do not present site-specific cumulative effects. Past exploration activities have occurred in the CESA, along with current uses such as grazing and limited recreation, which are described in separate sections. Most land in the CESA is administered by federal agencies (**Table 5.8-1**).

Table 5.8-1 Land Ownership in the Land Use and Special Designations CESA

OWNERSHIP	AREA (ACRES)	PERCENT OF CESA
BLM	1142	18
USFS	4135	63
State of Idaho	7	<1
Private	1248	19

5.8.3 Past and Present Actions

Extensive exploration activities have occurred throughout the lease areas on NFS lands and smaller exploration activities have occurred on a portion of BLM land within the Project Area, disturbing less than 1 percent of the CESA. In addition, baseline data collection activities from well drilling and air quality monitoring have also occurred. The majority of these previously disturbed areas have been reclaimed. However, the predominant current and historical uses of these lands are grazing and recreation activities.

5.8.4 Reasonably Foreseeable Future Actions

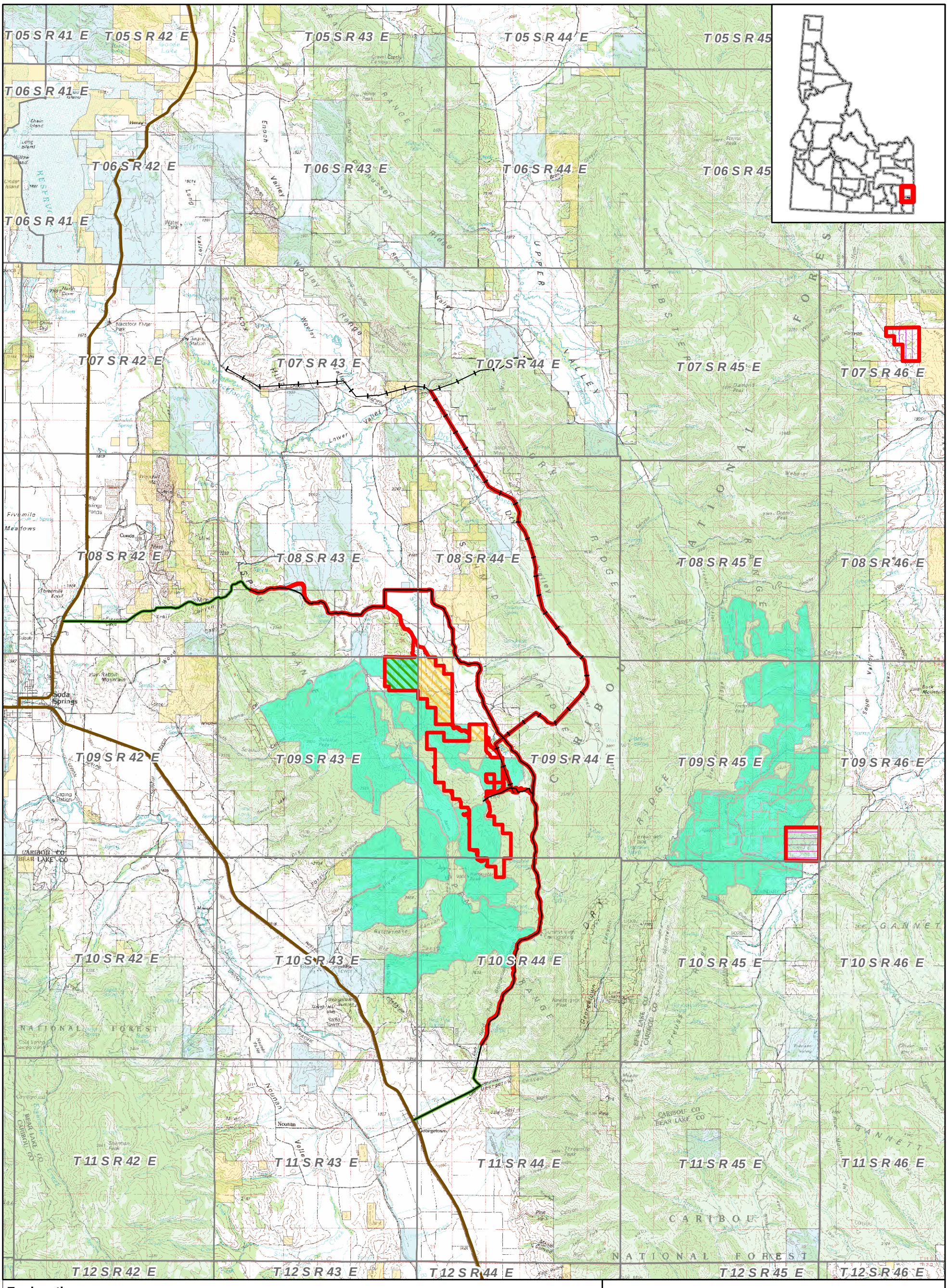
The Crow Creek pipeline is a reasonably foreseeable future action in the vicinity of the offered land exchange parcel portion of the CESA. There are no other reasonably foreseeable future actions in the CESA other than the Proposed Action or Action Alternatives, besides ongoing grazing and recreation activities.

5.8.5 Cumulative Activities

The Crow Creek pipeline ROW would at most clip the offered land exchange parcel portion of the CESA so would represent a negligible cumulative effect to land use. There are no other cumulative activities in the CESA other than the Proposed Action or Action Alternatives (2,830 acres). This commits about 43 percent of the CESA to phosphate mining land use. If approved, Simplot would purchase the proposed disposal parcels from the BLM at fair market value and voluntarily donate a 440-acre parcel of land (i.e., the donation parcel) that would potentially be added to the existing Stump Creek Ridge ACEC. Further, there would be an exchange of parcels between USFS and Simplot and as a result, these actions would increase acres under federal management in the areas of these parcels under the Agency Preferred Alternative. Also, it would increase lands under private ownership within the KPLAs.

5.8.6 Cumulative Effects

These administrative land transfer actions would cumulatively increase federal management of lands in the areas of these parcels.



DAIRY SYNCLINE MINE PROJECT

Access, Inventoried Roadless, Land Use, Realty, Transportation, and Solid and Hazardous Wastes CESA

Figure 5.8.1

5.9 Recreation

5.9.1 Cumulative Effects Study Area Boundary

The CESA for recreation includes the Upper Blackfoot River Watershed and the Georgetown Canyon Watershed (**Figure 5.3.1**), the donation parcel, and the offered parcel. This CESA (246,542 acres) was selected because any potential effects to recreation resources would generally be within the watersheds.

5.9.2 Introduction

Impacts to recreation are innately tied to a given location, and except in the cases of physically overlapping activities, do not present site-specific cumulative effects.

The principal recreation activity in the CESA is hunting, primarily big game hunting, and to a lesser extent, upland game birds. Cumulative effects to hunting occur from alteration of the habitat by mining or timber harvesting and from interruption of migration routes by new roads.

Camping, hiking, OHV use in the summer and fall months, and snowmobiling in the winter months are also common recreation activities that occur within the CESA.

5.9.3 Past and Present Actions

Past and present disturbances in the CESA have been previously described in **Section 5.3.3** and are from previous mining and exploration operations (**Table 5.3-1**), timber harvest, roads, agriculture, and limited development. Active mining acres within the CESA are off limits to public motorized access and recreation for the duration of mining and reclamation activities. Non-motorized access and recreation is allowed across existing mine leases and mining areas except for active mine operation areas that might present a safety hazard to visitors. Timber harvesting causes a short-term disruption in the distribution of big game populations, but also creates attractive clearings with new growths of forage. Exploration for mining has resulted in past disturbance in the area. Private land is typically unavailable for recreation opportunities, unless permission from the landowner is granted.

5.9.4 Reasonably Foreseeable Future Actions

The Project Area does not offer unique recreational opportunities that are not also found elsewhere in the immediate vicinity. Reasonably foreseeable future actions within the CESA have been previously described in **Section 5.3.4**. Implementation of the Proposed Action or Action Alternatives would restrict access to areas of public land in this area for hunting and other dispersed recreation. However, public land in the Project Area is comparatively small, currently has limited access, and does not offer unique recreational opportunities that are not also found elsewhere in the general area.

During the Proposed Action or Action Alternatives, all disturbed areas would be open to non-motorized access except those areas where active mining operations may present a safety concern to visitors. In addition, motorized access along existing public roads would not be prohibited.

The majority of foreseeable future activities, namely the Proposed Action or Action Alternatives, would be continuations of activities that are currently taking place in the CESA, but would be in a new location. It is presumed that usable public and private land in the CESA would continue to be grazed. This also represents a continuation of current activities in the CESA.

5.9.5 Cumulative Activities

Cumulative disturbance to recreational opportunities would be mainly from active and unreclaimed disturbance from mining activities and directly affect approximately 2,800 acres (1.1 percent of the CESA), although the disturbance would not occur all at once. Depending upon the Action Alternative selected for the Project, certain snowmobile routes would be closed and would need to be mitigated. Recreation activities would be displaced into adjacent areas within the CESA.

5.9.6 Cumulative Effects

During mining activities, big game would likely move to other areas with less disturbance or activity. The effect of this on recreation would be a temporary re-distribution of hunter use in the general area. Roads and trails used for recreation activities impacted by the Project would be unavailable or mitigated and moved to other areas. Upon successful reclamation of the mining disturbed areas, all disturbed areas would be available for recreation, although actual use may differ from past use based upon factors such as habitat composition and user preference. Upon the successful completion of reclamation and revegetation efforts, deer and elk are likely to return to previously mined areas, mostly on the forest edge (forest to grassland) to forage.

Cumulative effects to the amount of land available for recreation could occur within the CESA, as small areas of land affected by the Proposed Action or Action Alternatives may not be reclaimed and made available again for recreation. However, lands previously under private ownership and unavailable to recreationists would become open to public use after transfer to federal management. This would offset areas of federal land that would become private and depending upon the Action Alternative selected could result in actually increasing the net amount of federal land available for recreation opportunities.

5.10 Grazing

5.10.1 Cumulative Effects Study Area Boundary

The CESA for grazing management includes the BLM grazing allotments and USFS grazing units that cover the areas associated with the Proposed Action and the Action Alternatives, including the donation parcel and the offered parcel (**Figure 5.10.1**). This CESA was selected because all Project activities would occur within these allotments and units. The four BLM grazing allotments include Dry Valley – Chicken Creek, North Petterson Ranch, South Petterson Ranch, and Unit 4 Slug Creek. The six USFS grazing units include Johnson Creek, North Sulphur S&G, Kendall Canyon, Dry Valley, Slug Creek, and Redpine. The two state grazing units are Manning Creek and Sage Valley. The BLM land sale donation parcel and the offered exchange parcel are also included within the CESA. The CESA covers 49,487 acres.

5.10.2 Introduction

Impacts to uses of the land, including grazing, are innately tied to a given location, and except in the cases of physically overlapping activities, do not present site-specific cumulative effects.

Cumulative effects to grazing in the CESA occur primarily from mining and, to a lesser extent, from timber harvesting. In general, grazing is not allowed on active mine areas, livestock trailing is limited, and no watering is allowed in water control ponds or water flowing from mine overburden seeps. Depending on the reclamation methods, renewed grazing may not be allowed on a reclaimed mine site for several years after closure.

5.10.3 Past and Present Actions

Past and present activities include the approval and management of grazing within the CESA. Grazing permits have 10-year terms. Disturbances in the CESA occur primarily from past exploration and mining activities, baseline data collection activities associated with this Project, recreation, roads, and timber harvesting. There are no active disturbances in the CESA associated with phosphate mining activities, but there are approximately 1,400 acres (about 3 percent of the CESA) associated with inactive phosphate mining activities. There has been limited timber harvesting in the CESA. Timber harvesting impairs grazing in the short-term, but typically opens more extensive areas suitable for grazing in the long-term.

5.10.4 Reasonably Foreseeable Future Actions

Grazing within the allotments would continue. No reasonably foreseeable future disturbances were identified within the grazing CESA except for the Proposed Action or Action Alternatives. Ongoing recreation activities would continue, and there would be the potential for natural disturbances affecting grazing resources such as wildfire and noxious weed invasions. Noxious weed abatement efforts on NFS and BLM lands would continue.

5.10.5 Cumulative Activities

Mining disturbance can affect a grazing allotment by directly removing forage within the mining area. Within this footprint area, all forage vegetation is removed until reclamation and successful revegetation of the disturbed area restores the forage resource. Grazing on the reclaimed areas is restricted until the agencies accept the reclamation as being ready for grazing. In addition to this temporary restriction on grazing within the mine footprint, mining disturbances and mine roads can also restrict movement of livestock within an allotment. In many cases, the change from a pre-mine forested environment to reclamation grasslands can be a beneficial change for grazing animals. Over the long-term, the replacement of forest by grasses could increase the amount of suitable forage for cattle and sheep, although the formal evaluation of AUMs available for grazing would not typically change.

CTNF (USFS 2003a) requires that grazing, recreation, OHV travel, timber harvest, and mining activities minimize introduction of noxious weeds, but continued grazing and mining-related use of the CESA have the potential for further encroachment by noxious weeds on grazing lands.

The Proposed Action or Action Alternatives would disturb approximately 2,800 acres (about 6 percent of the CESA), the majority of which occur within existing allotments. Livestock grazing in the areas impacted would be temporarily displaced to adjacent parts of the affected allotments. The removal of the currently suitable grazing acres within the areas to be disturbed may also result in the agencies decreasing the permitted stocking rates in the affected allotments.

The Proposed Action or Action Alternatives within the CESA would conform to BMPs proposed to prevent bioaccumulation of selenium in reclamation. Any future phosphate mining in the CESA would also incorporate measures to prevent the uptake of selenium by reclamation vegetation.

5.10.6 Cumulative Effects

There are no other past, present, or reasonably foreseeable activities in the CESA that result in restricting livestock grazing. The Proposed Action or Action Alternatives would cumulatively impact available forage and movement within the allotment, increasing mining disturbed areas to about 9 percent of the CESA.

5.11 Visual Resources

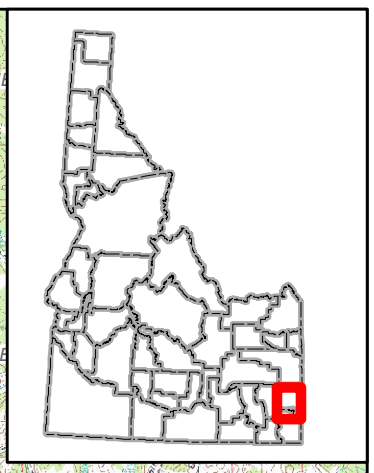
5.11.1 Cumulative Effects Study Area Boundary

The CESA for visual resources includes the local watersheds that cover the Project Area, as well as the donation and offered parcels (**Figure 5.5.1**). This CESA is the same as for Vegetation Resources and was selected because any potential visual effects for the Project would occur within these watersheds, as represented by KOPs on public lands administered by the BLM and View Points on NFS lands administered by the USFS, based on where the effects of the Project could be viewed relative to cumulative activities.

5.11.2 Introduction

The CESA is within a region of generally north- to northwest-trending mountain ranges and broad valleys. The area is generally undeveloped other than for mining; however, man-made features that have resulted in visual modifications to the landscape include: mining and exploration activities; roads; powerlines; pipelines; range improvements; and rural residences. Although scenic variety exists in the densities, arrangements, and colors of vegetation, the landscapes are typical of those found in the CESA.

Cumulative effects to visual resources from other planned or foreseeable development activities within the CESA would result from historical, existing, and future phosphate mining in the area. Often, phosphate mining does not result in major impacts to visual resources because the disturbance areas are not readily visible to the general public. Most of the past, present, and foreseeable future phosphate mining activities in the CESA are located within relatively remote areas, and are not readily visible from sensitive viewing areas, such as roads, recreation sites, or rural residences.



BLM DRY VALLEY - CHICKEN CREEK

USFS NORTH SULPHUR S&G

USFS DRY VALLEY

USFS JOHNSON CREEK

BLM NORTH PETTERSON RANCH

USFS DRY VALLEY

PRIVATE LAND

USFS JOHNSON CREEK

BLM SOUTH PETTERSON RANCH

USFS SLUG CREEK

BLM UNIT 4 SLUG CREEK

USFS JOHNSON CREEK

USFS SLUG CREEK

STATE MANNING CREEK

USFS DRY VALLEY

USFS SLUG CREEK

STATE SAGE VALLEY

USFS REDPINE

Explanation

- Proposed Action and Alternatives Boundary
- Grazing CESA
- BLM Pasture / USFS / State Grazing Allotments
- USFS Land Exchange Selected Parcel
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- BLM Land Sale Disposal Parcel
- Access Road
- Paved County Road
- Powerline

0 2 4 Miles

N

DAIRY SYNCLINE MINE PROJECT

Grazing Management CESA

Figure 5.10.1

5.11.3 Past and Present Actions

Past and present developments in the CESA are primarily from rural land uses and management activities on USFS and BLM lands as previously described in **Section 5.5.3**. The CESA is largely undeveloped other than for mining; visual modifications to the federal lands in the area have been in the form of timber cuts, roads, mining operations, range improvements, fence lines, powerlines, recreation sites (campgrounds), and pipelines. Other visible modifications to the existing characteristic landscape on private lands include road construction, vegetation management and fuels treatments, powerline and utility corridors (water and gas lines), communication sites, campgrounds, day use facilities, trailheads, hiking trails, fuel wood gathering, agricultural use, and private residences. Current management and private activities, which are taking place at the present time, are a continuation of existing uses.

Most of the land surface in the CESA, including the majority of the previously approved and existing mine areas, is federal land managed for the visual objectives for the USFS VQO Modification and the BLM VRM Class III and IV. Areas designated as VQO Modification or VRM Class III and IV areas allow for considerable modification of the characteristic landscapes and typically are compatible with phosphate mining activities. With mitigation, mining activities can generally meet the VQOs for VQO Modification and VRM Class III and IV areas.

5.11.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions (including the Proposed Action or Action Alternatives) were previously described in **Section 5.5.4**. Development of areas would result in effects to visual resources similar to past and present disturbances but would include a larger area of affected landscape. Foreseeable future effects to the visual resources of the CESA are also likely to occur as a result of non-mining activities on public land administered by the USFS and BLM, and could include future roads, powerlines, pipelines, timber cuts, range improvements, and development of recreation sites. There would also be cumulative effects to visual resources from other types of planned or foreseeable activities, including development of rural residences or various other improvements on private lands.

5.11.5 Cumulative Activities

The potential new disturbance from the Proposed Action (2,830 acres) would increase the total phosphate mining-related surface disturbance within the CESA from approximately 5 percent to 7 percent; however, all new mining activities would comply with the objectives of the USFS VQOs and the BLM VRMs.

5.11.6 Cumulative Effects

Reclamation of mined areas in the CESA would reduce the visual contrast of bare earth in the disturbed areas with adjacent forest vegetation. The reclaimed areas would be revegetated primarily with grass and forbs and patches of shrubs and trees. The reclaimed areas would still be visible but would not be as obvious a visual impact as the mining activities themselves. As activity shifts from currently active mining areas to others, and the disturbances are sequentially reclaimed, the landform and color contrast as well as the obvious presence of mining would be lessened for

those traveling the secondary roads or recreating in the area. Over time, the landscape views inclusive of reclaimed mining areas, would become a more acceptable part of the landscape. As natural succession occurs throughout the reclaimed areas, a setting more similar to the original landscape over time would be restored.

5.12 Native American Concerns and Treaty Rights Resources

5.12.1 Cumulative Effects Study Area Boundary

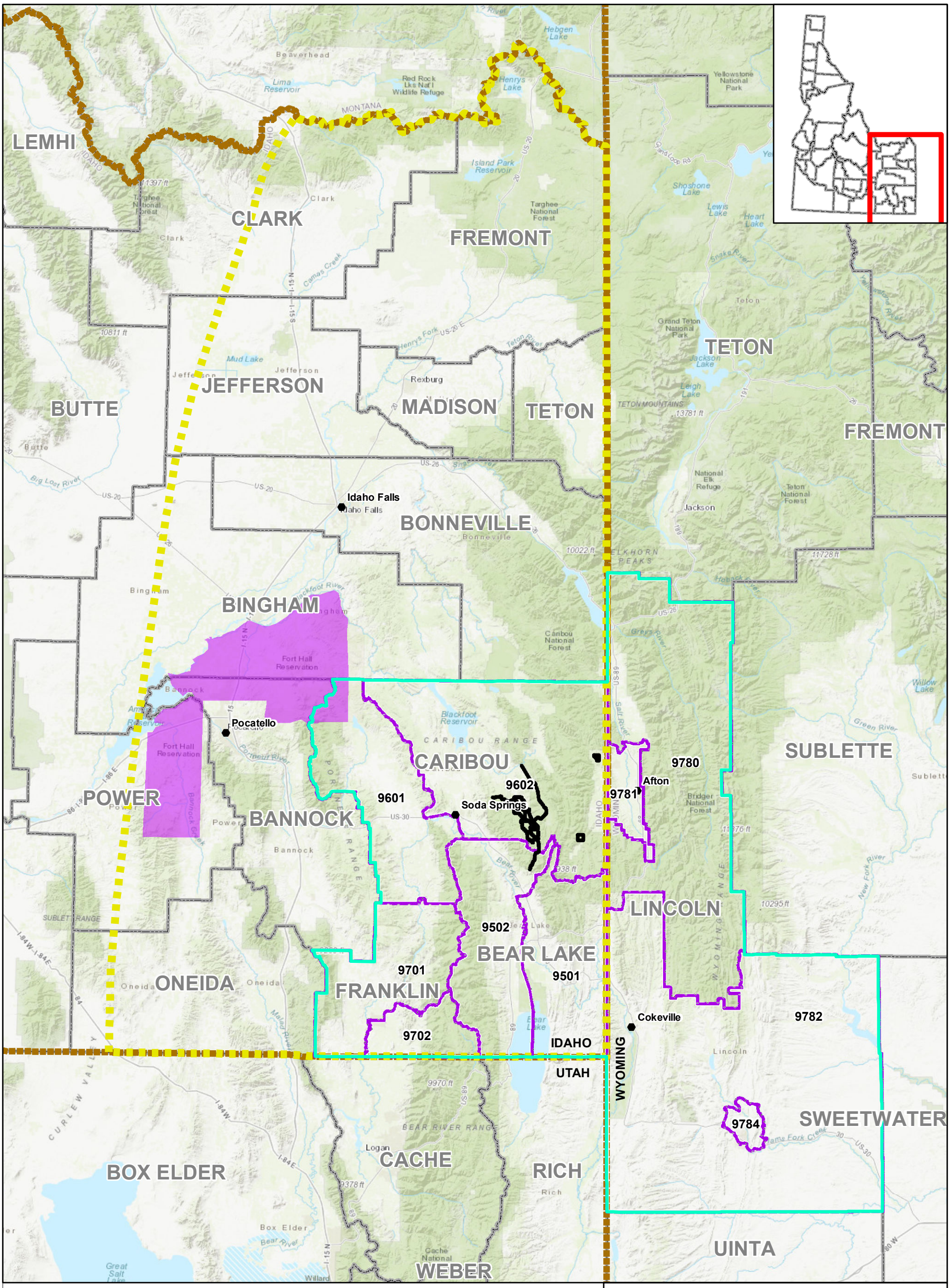
The CESA for Native American concerns and treaty rights is southeastern Idaho, was defined using input from the tribes and was chosen because it encompasses the majority of the area currently used by tribal members (**Figure 5.12.1**). It covers approximately 5 million acres, approximately 3 million (59 percent) of which are NFS lands and other federally managed lands.

5.12.2 Introduction

Federal land managers have a responsibility to consider effects on resources essential for the Tribes to exercise their treaty rights on unoccupied federal lands and a responsibility to manage and maintain the habitat of traditionally utilized natural resources in a viable and sustainable condition. Over the years, the ability of the Tribes to practice their traditional culture as assured in the Fort Bridge Treaty and related statutes on these lands has been reduced by loss of unoccupied lands through homesteading, Idaho statehood, and other statutes that allowed federal land to be converted to non-federal ownership. In addition, the loss or conversion of vegetation and wildlife habitat to phosphate mining and degradation of the resources valued by the Tribes has tended to reduce land and resource productivity in some cases. The CESA includes a relatively small area of occupied federal land in comparison to the extent of NFS and BLM lands in the region. Nevertheless, the incremental loss of lands constitutes a cumulative impact.

5.12.3 Past and Present Actions

Past and present impacts to traditional resources include access restrictions and land disposals or exchanges that have reduced the availability of unoccupied lands for exercising treaty rights. Fire suppression, mining, grazing, and timber harvest have altered or restricted access to areas of unoccupied public lands, have changed the vegetation, and in some areas, have affected water quality. In southeast Idaho, past mining alone has disturbed approximately 15,000 acres since 1947. Within the CESA, there are an estimated approximately 6,500 acres of active phosphate mining disturbances and 8,800 acres of disturbance associated with past phosphate mining, less than 1 percent of the CESA. A large portion of these lands has been revegetated by reclamation activities. However, much of the vegetation reclaimed prior to 2000 has tested high in selenium, and some water bodies have been affected by contamination. Upon further investigation, the Idaho DEQ concluded that regional human health and population-level ecological risks are unlikely to occur in the area. The assessment noted that ecological subpopulation risks are evident in localized areas, particularly aquatic and riparian environments, impacted by historic mining operations and ongoing releases (IDEQ, Areawide Risk Management Plan, 2004). In addition, wildlife habitats have been altered or otherwise changed, by large scale open pit phosphate mining and reclamation activities affecting Tribal hunting and gathering activities. The full impact to natural resources utilized by Indian Tribes is not known at this time.



DAIRY SYNCLINE MINE PROJECT

Socioeconomics and Native American CESA

Figure 5.12.1

5.12.4 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions in the CESA would result from the Proposed Action or Action Alternatives and associated activities. Additional mining plans currently being processed could result in additional disturbance in southeast Idaho. As noted in **Table 5.1-2**, 4,100 acres of phosphate mining are reasonably foreseeable. During mining, many natural resources traditionally utilized and accommodated by the Treaty would be destroyed, and access to others would be impeded for a time by the mine. Mining would continue until the approved ore reserves are depleted, and although reclamation of the mined areas is undertaken concurrently with mining operations, final reclamation of all affected acreage in the CESA would take over 30 years. Unique or non-renewable traditional resources have not been identified in the CESA. The mined areas would be reclaimed, and there would not be a permanent loss of access to resources and the ability to exercise treaty rights.

Other applications in the CESA could affect land tenure and potentially affect access to unoccupied federal lands. Currently, the CTNF is not processing any applications in the CESA that affect land tenure. The BLM has a variety of applications. There is one land exchange, one land donation, and three land acquisitions at various stages of processing. All of these lands projects are discretionary decisions on the part of the applicable federal agency and have a net benefit to the public or to a particular natural resource. These are often, but not always, a treaty resource. In total there is a net increase in federal acres.

5.12.5 Cumulative Activities

In recent years, the cumulative impacts to natural resources on unoccupied federal lands have slowed, and more coordinated efforts have been directed to reclamation and restoration of the resources. Since the discovery of selenium and other contamination associated with phosphate mining in the late 1990s, new operational and reclamation practices have been developed to reduce contamination potential. Federal and state agencies are enhancing native fish and wildlife habitat, and these collective efforts to improve the condition of natural resources contribute to the protection and restoration of treaty rights. Appropriate mitigation measures and EPMs (such as reclamation, stormwater and sediment control, groundwater and surface water sampling/monitoring), which are protective of natural resources, are required and implemented for ongoing and future mining projects. These would continue.

5.12.6 Cumulative Effects

The ability to exercise treaty rights is important to the Shoshone and Bannock Tribes and potentially affects all Tribal members. Mining activities do affect the ability of Tribal members to access affected lands and to exercise treaty rights. Reclamation practices, BMPs, and EMPs are being implemented for new phosphate mining projects that help minimize impacts of new mines and to restore vegetation resources and wildlife habitat sooner to allow productive activities under the Tribes' treaty rights.

The EIS can generally assign a quantification (context, duration, and intensity), as required by CEQ, to the impacts to resources such as wildlife or water quality. However, it is difficult to quantify the impact of a temporary loss of a right. Consultation that has occurred to date with the

Shoshone and Bannock Tribes is described in **Chapters 1** and **6**. During past consultations for similar projects in the area, the Shoshone and Bannock Tribes stated that any loss of treaty rights is significant to them and could potentially affect all Tribal members.

By Simplot voluntarily providing the donation parcel as part of the Project, this would reduce the cumulative impact of the Dairy Syncline Mine's effect of reducing access to federal lands. Although the Proposed Action results in a net loss of federal acres, the Agency Preferred Alternative results in a net gain in federal acres. Thus, the Agency Preferred Alternative would not result in a net loss of reduced access or reduced ability to exercise treaty rights. When combined with the future foreseeable lands actions there would not be a cumulative negative impact to access of federal lands.

5.13 Transportation and Access and Traffic Noise

5.13.1 Transportation and Access

5.13.1.1 Cumulative Effects Study Area Boundary

The CESA for transportation and access is the Project Area (including the donation and offered parcels) and the Project Access roads (**Figure 5.13.1**). This CESA was selected because all Project-related transportation would occur on these routes. The access to the land sale and land exchange parcel is not included in the CESA because the Proposed Action or Action Alternatives would not result in any transportation activities to these parcels.

5.13.1.2 Introduction

Cumulative effects to transportation and access would be influenced by the roads built and maintained for mining and those that are left in place after closure and reclamation. During mining and reclamation, these roads may be closed to public access, but some may be opened by surface owners or government agencies over time.

5.13.1.3 Past and Present Actions

Several federal, state, and county roads provide access to the CTNF including Interstate 15, and U.S. 89 and U.S. 30. Access to the Project Areas from the southeast is provided by U.S. 30 traveling north from southwest Wyoming to Montpelier and then north to Georgetown, which is south of the Project Areas. Alternative access from the southwest to Montpelier is provided by U.S. 89 traveling north from Utah then to U.S. 30 north to the Study Areas. U.S. 30 accesses the main arterial route in the Study Areas of Slug Creek Road (NFS Road 51095), which transects the Study Areas on the east side.

5.13.1.4 Reasonably Foreseeable Future Actions

No foreseeable future disturbances, other than the proposed Project and ongoing activities in the CESA, would alter access and transportation in the CESA.

5.13.1.5 Cumulative Activities

The Project would result in disturbance to access and transportation in the CESA for the life of the mine.

5.13.1.6 Cumulative Effects

Cumulative effects on transportation in the CESA would occur from Project traffic added to existing and current traffic that would use the same roads.

5.13.2 Traffic Noise

5.13.2.1 Cumulative Effects Study Area Boundary

The CESA for traffic noise is the area one-half mile from the access routes for the Project (**Figure 5.13.1**). This CESA was selected because the only appreciable noise from the Proposed Action or Action Alternatives that would be discernible by the public would be from travel on the transportation routes. Noise from mining is attenuated by vegetation and topography to levels that are not discernible for long distances to the public. Noise related to access traffic and haul roads is of importance to persons along nearby public roads and in nearby residences.

5.13.2.2 Introduction

Within the noise impacts CESA, there are no other operating mines that may overlap in time with the Proposed Action or Action Alternatives.

5.13.2.3 Past and Present Actions

Past and present actions contributing to noise include vehicular traffic on U.S. 30, U.S. 89, Slug Creek Road, South Trail Canyon Road, and haul roads. Noise from vehicular traffic is short-term and intermittent.

5.13.2.4 Reasonably Foreseeable Future Actions

Foreseeable noise contributions include continued vehicular traffic in the CESA, including an increase in noise from vehicular traffic associated with the Project.

5.13.2.5 Cumulative Activities

Past and present, noise activities in the CESA have been minimal and local. Reasonably foreseeable noises would be predominantly associated with noise localized to the mining areas. Cumulative activities for the Proposed Action or Action Alternatives would increase noise levels within the CESA for the life of the Project.

5.13.2.6 Cumulative Effects

Mining-related noise within the CESA, if the Proposed Action or Action Alternatives were selected, would increase noise levels in the surrounding areas and noise would occur more frequently. These cumulative effects would occur for the life of Project.

5.14 Social and Economic Resources

5.14.1 Cumulative Effects Study Area Boundary

The CESA for social values is defined by the census tracts within Caribou, Franklin, and Bear Lake Counties, Idaho, and Lincoln County, Wyoming (**Figure 5.12.1**). The CESA for economics is the entirety of all four counties, as economic information is not available in the census tract level (4,861,942 acres). The majority of employees working at the Project would most likely live in Caribou and Bear Lake Counties. Most of the phosphate mines and processing facilities in the

Southeast Idaho Phosphate District are in Caribou County, Idaho with one mine in Bear Lake County; however, employees are located within the four-county area. Most of the employees at the existing Smoky Canyon Mine live in Lincoln County, Wyoming and eastern Caribou County, Idaho. It is expected that the workforce would transfer from the Smoky Canyon Mine to the Dairy Syncline Mine. Similar residential patterns are typical of the phosphate mine workforce for all mines in the Southeast Idaho Phosphate District.

5.14.2 Introduction

The types of cumulative effects that could occur to social and economic resources in the CESA would primarily be from a loss of economic activity under the No Action Alternative. Since the Proposed Action or Action Alternatives constitute continuation of activities that are currently taking place in the CESA, but would be in new locations, it is not anticipated that there would be any increases in the populations of the CESA counties as a result of the Proposed Action or Action Alternatives; therefore, there would be no additive cumulative effect to housing, community services, and infrastructure from the Proposed Action or Action Alternatives.

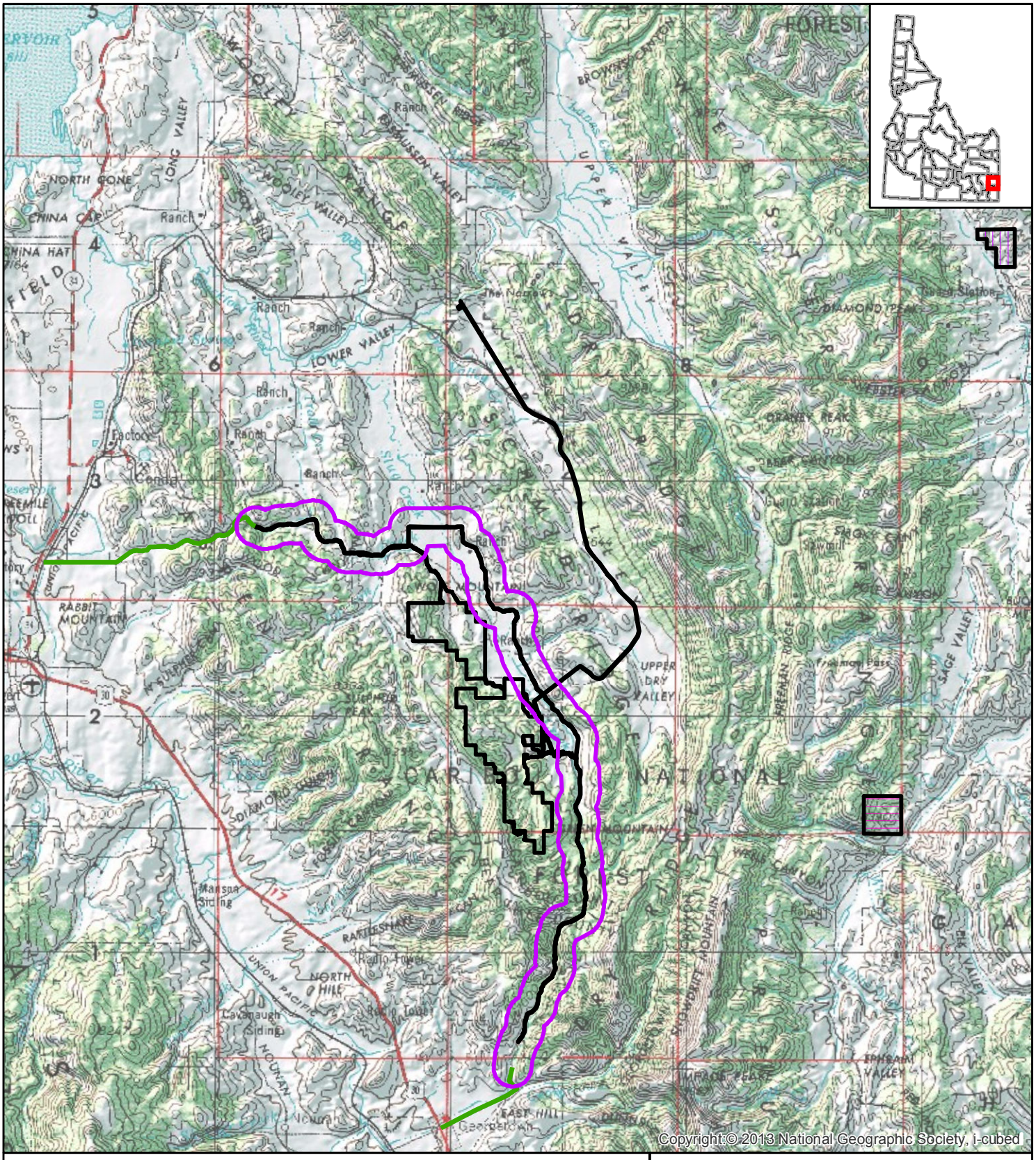
Local economic activity has increased and diversified in recent years, and such diversification may continue into the future. However, phosphate mining and ore processing would likely continue to anchor the economies of Caribou and Lincoln Counties.

5.14.3 Past and Present Actions

The contribution of past and present phosphate mining and related processing plants to local economies within the CESA has been major in terms of employment and revenues earned from tax collections, purchasing, and value-added phosphorus products. The active phosphate mines, as well as previously approved mines, are part of the economic base of the CESA that stimulates the growth of other economic sectors through a multiplier effect as described in **Chapter 4**. Contributions to local economies from increased employment and addition of workforce payroll to local economies have benefitted Bannock and Lincoln Counties; however, no phosphate mines are located in these counties. Therefore, revenues earned from tax collections and equipment purchases have occurred primarily in Caribou and Bear Lake Counties.

5.14.4 Reasonably Foreseeable Future Actions

Continued phosphate mining would result in future private and public income at levels approximately the same as past and present conditions. Other incoming industry or developments proposed in the CESA or large scale economic issues would be more likely to affect socioeconomics. The Crow Creek pipeline project, described in **Section 5.1.4**, would benefit populations within the CESA and provide a more reliable transfer of natural gas. Minor gold, geothermal, and/or Oil & Gas prospecting activities are expected to continue but the development of minerals or energy in the CESA is unlikely.



Explanation

- Proposed Action and Alternatives Boundary
- Noise CESA
- USFS Land Exchange Offered Parcel
- BLM Land Sale Donation Parcel
- Paved County Road
- Access Road

0 2.5 5 Miles

N

DAIRY SYNCLINE MINE PROJECT

Traffic Noise CESA

Figure 5.13.1

Several new phosphate mines have been approved or proposed within the CESA (**Section 5.1.4**). These include the Blackfoot Bridge Mine, the Caldwell Canyon Mine, the Rasmussen Valley Mine, the East Smoky Panel at the Smoky Canyon Mine, the Husky/North Dry Ridge Mine, and possibly Stonegate Agricom Ltd.'s Paris Hills phosphate project (currently curtailed). Phosphate exploration drilling has also been proposed outside of those mines including Dry Ridge, Trail Creek, and Freeman Ridge/Husky 2. These proposed exploration projects could lead to future additional mine development. The majority of foreseeable future actions previously discussed, like the Proposed Action or Action Alternatives, would be continuations of activities that are currently taking place in the CESA, but would be in new locations.

5.14.5 Cumulative Activities

The land sale would serve to further the economic development in the region because the mine would support jobs and associated economic benefits.

Cumulative activities include all activities currently being conducted in the CESA, all activities conducted in the recent past whose effects may still be realized, and all foreseeable future activities as described above.

5.14.6 Cumulative Effects

Cumulative effects on the social and economic structure within the CESA have occurred and would occur from past, present, and reasonably foreseeable development activities. These effects have occurred primarily in Caribou County in terms of tax revenues and purchases of equipment and other services; however, all CESA counties have and may continue to benefit from employment. The cumulative effects (both negative and positive) have been substantial and have the potential to continue.

The Proposed Action or Action Alternatives, in addition to other existing and reasonably foreseeable phosphate mining projects, would prolong the economic benefits associated with phosphate mining and ore processing as described in **Chapter 4**. BLM estimates that these annual economic benefits when added to all other current eastern Idaho phosphate mining and processing operations would total $130 million in annual salaries, $335 million in total annual purchasing, $6.5 million in property taxes, $11 million in state and federal mineral lease royalties (most of which is returned to the Idaho state governments, primarily for funding schools), around 2,000 direct employees and contract employees (with a total induced employment of around 4,500 in the cumulative effects area).

There is a trend to the development of low-density residential areas, sometimes on privately owned agricultural lands. This has a cumulative effect on the lands outside population centers. However, this land use change is not related to the Proposed Action or Action Alternatives. It is not anticipated that there would be any increases in the populations of the CESA counties as a result of the Proposed Action or Action Alternatives; therefore, there would be no additive, cumulative effect to housing, community services, and infrastructure from the Proposed Action or Action Alternatives.

The land exchange and the land sale are not likely to result in additional social or economic cumulative effects beyond those of the Project itself, because of the inherent required equity in the exchange and sale processes.

CHAPTER 6
CONSULTATION AND COORDINATION

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6.0 CONSULTATION AND COORDINATION

6.1 Public Participation

Initial issues and indicators to be considered in the EIS are identified through public and agency scoping.

6.1.1 Public Scoping Process

Public scoping for the Project was conducted in May 2010 to identify issues and concerns with the Proposed Action to be analyzed in the Draft EIS. The 30-day public scoping period for the Draft EIS formally began on April 13, 2010 and ended May 13, 2010. The NOI to prepare this EIS was published April 13, 2010 in the Federal Register (Vol. 75, No. 70 page 18875). The BLM and USFS scheduled four scoping meetings. Legal notices were published April 16, 2010 and April 21, 2010, posters were displayed at the post offices in Georgetown and Montpelier, a press release was made by the BLM, and the local radio station aired announcements about the meetings. Meeting details are provided in **Section 6.2**.

Prior to formal scoping, Enviroscientists, Inc. prepared and sent a postcard to all parties on the list, either through the postal service or by email. A total of 1,667 postcards and 97 emails were sent to individuals on the mailing list with a series of questions including asking them if they wanted to remain on the list. A total of 520 people responded by sending the cards back to the BLM and ten people responded by email. A determination was made by the management team to remove the majority of people who did not respond to the postcard as well as those people not interested in remaining on the mailing list. This revised list was then reviewed by the Agencies and Simplot to determine if additional names needed to be added. Once the additions were made, the list became the base for the original scoping mailing list. A total of 332 scoping letters were sent to the individuals or agencies listed in the scoping mailing list. A news release was prepared by the BLM to inform the public about the Project and the scheduled scoping meetings. A Legal Notice was also prepared and submitted to local papers. Following the scoping meetings held for the Project, some additional individuals asked to be added to the list. This list will form the basis for distribution of the Draft EIS (**Section 6.1.3**).

6.1.2 Agency Scoping Process and Public Scoping Meetings

The CEQ regulations (40 CFR part 1500) require that certain topics be addressed in every EIS. If issues of concern are not identified in a topic area, then discussion of that topic can be minimized or omitted in the EIS.

The identification of issues of concern started when the Agencies decided to prepare an EIS for the Project. The Agencies identified several major issues that would have to be addressed in the EIS. The public scoping comment letters also identified issues of concern in several topics.

On July 6, 2010, the BLM, USFS, IDEQ, and EIS contractor participated in a discussion of the issues identified in the scoping comments and how those comments would guide the list of resources and associated issues to be addressed in the Draft EIS. The resource specialists then reviewed the issues and indicators that resulted from this discussion and provided comments for

finalization. No issues were identified for the elements or resources shown in **Table 1.7-1**. Consequently, these elements or resources are not analyzed in this Draft EIS because they are not present or do not occur near the Project Area.

Table 1.7-2 outlines the full list of resources addressed in the Draft EIS, how they are addressed in the EIS, and what issues and impacts (indicators), if any, are associated with each resource. The issues are presented under each resource and the indicators are the criteria that are used to judge the significance of the impact. Indicators are based on regulatory requirements, baseline data, trends, and best management technology.

Public Scoping Meetings

Four public scoping meetings were held from 7:00 PM to 9:00 PM, each an open house forum. The open houses included poster displays explaining the Project and a forum for commenting on the Project. The meetings dates, locations, and number of attendees are shown in **Table 6.1-1**. The list of attendees for each meeting is included in the Final Scoping Report and the scoping comment form (Enviroscientists, Inc. 2011; Appendices G and H).

Table 6.1-1 Scoping Meetings for the Dairy Syncline Project

DATE	LOCATION	ATTENDEES
May 3, 2010	U.S. Forest Service, Soda Springs Ranger District – 410 Hooper Avenue, Soda Springs, Idaho	10
May 4, 2010	Georgetown Elementary School – 142 Stringtown Road, Georgetown, Idaho	23
May 5, 2010	Fort Hall Indian Reservation – Tribal Business Center, Fort Hall, Idaho	1
May 6, 2010	Bureau of Land Management – 4350 Cliffs Drive, Pocatello, Idaho	23

During the official scoping period, 51 comment letters were received. Two additional comment letters were received after May 13, 2010 and have been included in the scoping summary for a total of 53 comments. One comment was received during the BLM Notice of Realty Action (land sale) comment period and two comments were received during the NOEP comment period on the USFS land exchange. One standardized email and postcard with the same comment was received from 1,046 individuals. This standardized comment was treated as one comment. Some of the standardized letters had additional comments beyond the standard message and each of these letters was treated as separate submittals.

Georgetown Informational Meeting

The residents of Georgetown communicated to the BLM that they would like to have an additional informational meeting for a greater number of the members of the community, beyond those that attended the scoping meeting, could learn more about the Project. The BLM scheduled the meeting for August 5, 2010, at the Georgetown School. Prior to the meeting, six large scale posters showing various stages of reclamation at the Smoky Canyon operation were prepared for use at the meeting. A flyer was placed at the post office, an announcement was run on the local radio station, a notice of the meeting was placed in the Montpelier newspaper, and on the local Georgetown website. Representatives from Simplot, the BLM, USFS, USACE, and Enviroscientists, Inc. were at the meeting. Four people attended the meeting and the majority of those people were at the original scoping meeting. To date, no additional comments on the Project have been received.

6.1.3 Distribution of Draft EIS

Due to the length of time between the public scoping and the distribution of the Draft EIS, a postcard was sent in January 2018 to update the Project mailing list that had been generated from responses to public scoping. The list consisted of 1,455 individuals, agencies, and/or organizations. Based upon the responses to the postcard, the original mailing list was substantially decreased. The mailing list now consists of those individuals, agencies, and/or organizations that responded to the postcard, in addition to a few addresses that the Agencies added from the original mailing list based upon known interest in the Project. The current mailing list for notification of the Draft EIS is provided in **Section 6.4**.

A 90-day Draft EIS review period was initiated by publication of the Notice of Availability (NOA) for the Draft EIS in the Federal Register.

The Draft EIS was distributed as follows:

- An NOA was published in the Federal Register specifying dates for the comment period and provided information on how other public involvement would be managed.
- A news release was provided by the Agencies at the beginning of the 90-day comment period on the Draft EIS. Legal notices and news releases were submitted to the same news organizations as for the initial public scoping announcement.
- The Draft EIS was distributed to interested parties identified in the updated EIS mailing list, as previously described, and made available via the BLM and CTNF websites.

Public meetings will be held to obtain comments on the Draft EIS and to answer questions that the public has regarding the Project or the EIS process.

6.1.4 Final EIS Distribution

The Final EIS distribution will be completed after consideration is given to comments received on the Draft EIS. The Final EIS will contain appeal, protest, and objection information specific to each BLM and FS decision. The Final EIS will be released as follows:

- The NOA will be published in the Federal Register.
- Copies of the Final EIS will be sent to addresses on the updated mailing list and made available via the BLM and CTNF websites.

Legal notices and news releases will be issued to the same media sources used for previous Project announcements.

6.1.5 Record of Decision

The USFS will release a draft ROD with the Final EIS and begin a 60-day objection period for their decisions. The USFS can take up to 90 days to respond to any objections. The BLM will not issue a draft ROD but will issue a final ROD concurrent with the USFS final ROD, after

considering the Final EIS and public comment. Both the BLM's ROD and the USFS's Final ROD will be distributed to people and organizations identified in the updated EIS mailing list. BLM will post its ROD on its ePlanning web site. The USFS will post its Final ROD on the CTNF Schedule of Proposed Actions website. The BLM ROD and FS ROD will each contain appeal language specific to each decision.

6.2 Consultation with Others

The BLM Pocatello Field Office and the USFS CTNF Soda Springs District are the primary agencies involved with this EIS. BLM is the lead agency and USFS is the joint lead agency. Their respective roles were described in **Section 1.2**.

6.2.1 Consultation with Idaho Department of Environmental Quality

Based upon their jurisdiction and expertise, primarily with water quality concerns, IDEQ is a cooperating agency for the EIS. They were consulted through the NEPA process in regard to the Project's relationship to EPHA, the Idaho Water Quality Act, the Idaho Ground Water Quality Rule, and the Federal Water Pollution Control Act through the Idaho Water Quality Standards and Wastewater Treatment Requirements.

6.2.2 Consultation with Idaho Department of Lands

IDL is the State of Idaho's agency charged with regulating mine reclamation on all lands in the state, regardless of ownership. They are another cooperating agency for the EIS and were consulted on mine reclamation and other aspects of the Project. They were also consulted on issues related to the Idaho Surface Mining Act; Rules Governing Exploration, Surface Mining, and Closure of Cyanidation Facilities (IDL 2017a); and Title 47 Mines and Mining Chapter 15 Surface Mining (IDL 2017b).

6.2.3 Shoshone-Bannock Tribes Consultation and Coordination

Federal agencies acknowledge the federal trust responsibility arising from treaties, statutes, executive orders, and the historical relations between the U.S. and American Indian Tribes. The federal government has a unique trust relationship with federally-recognized American Indian Tribes, including the Shoshone-Bannock Tribes. Tribal consultation for this Project has been undertaken on a Government to Government basis between the United States and the Shoshone-Bannock Indian Nation.

The Fort Bridger Treaty of 1868 between the U.S. and the Shoshone and Bannock Tribes reserves the Tribes' right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone and Bannock Tribes have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall Reservation that were ceded to the federal government under the Agreement of February 5, 1898 (ratified by the Act of June 6, 1900).

The BLM, USFS, and USACE have a responsibility and obligation to consider and consult on potential effects to tribal rights, uses, and interests. Government-to-government consultation with

the Shoshone-Bannock Tribal Council is required on land management activities and land uses that could affect the exercise of these rights. A formal government-to-government consultation process is ongoing between the Agencies and the Tribes. To ensure a thorough assessment of issues and potential impacts to American Indian tribal rights and interests, including reserved treaty rights, coordination with the tribes continue throughout the EIS process.

As managers of unoccupied federal lands, the USFS managers are responsible for managing resources that are essential for the Tribes to exercise their treaty rights. The USFS consultation procedures and intergovernmental agreements with the Tribes to guide future cooperative efforts shall comply with the protocols set forth in the CNF RFP (USFS 2003a).

The BLM and USFS have consulted with the Shoshone-Bannock Tribal Council and have coordinated with the tribal staff regarding the Proposed Action. The USACE is coordinating with the BLM and USFS on tribal consultation and is using this tribal consultation to satisfy their responsibilities instead of conducting a separate consultation. The goal of this consultation and coordination is to assure the tribal government, that the Native American community and those individuals whose interests might be affected will have sufficient opportunity for productive participation in BLM resource management decision making as set forth in BLM Manual Section 8160. **Table 6.1-2** lists the consultation and coordination that have occurred to date.

Table 6.1-2 Tribal Consultation and Coordination

DATE	TYPE OF CONTACT	DESCRIPTION
March 12, 2009	Meeting	Tribal notification of Dairy Syncline MRP
May 27, 2009	Government to Government Consulting	Briefing on EIS
August 31, 2009	Field Visit	Site visit
February 11, 2010	Staff-to-Staff Meeting	Meeting covering relevant BLM projects affecting Tribes
November 29, 2010	Preliminary Scoping Comments	Letter with comments regarding proposed Project
December 2, 2010	Staff-to-Staff Meeting	Discussion of pertinent EIS issues
January 2011	Staff-to-Staff Meeting	Discussion of proposed mitigation lands
February 9, 2012	Staff-to-Staff Meeting	Update on status of exploration, baseline studies, and anticipated date for Draft EIS
February 20, 2013	Staff-to-Staff Meeting	Update on EIS and pertinent EIS issues
December 2, 2013	Staff-to-Staff Meeting	Meeting covering relevant BLM projects affecting Tribes
November 18, 2014	Staff-to-Staff Meeting	Update on EIS and pertinent EIS issues
November 20, 2015	Staff-to-Staff Meeting	Update on EIS and pertinent EIS issues
August 9, 2017	Staff-to-Staff Meeting	Discussion on proposed realty adjustments in EIS
March 12, 2018	Government to Government Consulting	Update on EIS and pertinent EIS issues

6.3 List of Preparers and Reviewers

This Draft EIS was prepared jointly by the BLM, Pocatello Field Office and the USFS CTNF, in cooperation with the IDEQ, the Walla Walla District of the USACE, OEMR, and IDL. Cooperating agencies have other permitting authorities for the Proposed Action. Participating agencies include the IDFG, USEPA, IDWR, and USFWS. Participating agencies have the opportunity to comment during the development of the document to ensure that their interests in resources are addressed. **Tables 6.1-3** through **6.1-12** list the interdisciplinary team and technical specialists that have been involved with the Project and/or with preparation and review of the Draft EIS.

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Joint Lead Agency: USFS, CTNF

Cooperating Agencies: IDEQ, USACE, OEMR, IDL

Participating Agencies: IDWR, IDFG, USFWS, USEPA

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Table 6.1-8 Idaho Office of Energy and Mineral Resources

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Table 6.1-9 Idaho Department of Fish and Game

NAME	PROJECT RESPONSIBILITY
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CHAPTER 7
REFERENCES, ACRONYMS, ABBREVIATIONS, GLOSSARY, AND INDEX

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7.1 References

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7.2 Acronyms

$\delta^{13}C$	carbon-13
$\delta^{18}O$	oxygen 18
$\delta^{2}H$	hydrogen 2
°C	Celsius
°F	Fahrenheit
µg/g	micrograms per gram
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µS/cm	microsiemens per centimeter
^{14}C	carbon-14
^{3}H	tritium
AADT	Annual Average Daily Traffic
ABA	Acid-Base Accounting
ACEC	Area of Critical Environmental Concern
ACGIH TLV	Advancing Occupational and Environmental Health threshold limit value
AES	atomic emission spectroscopy
AGP	acid generating potential
AIRFA	American Indian Religious Freedom Act
AIZ	Aquatic Influence Zones
amsl	above mean sea level
ANFO	Ammonium Nitrate/Fuel Oil
ANP	acid neutralizing potential
AOP	Aquatic Organism Passage
APE	Area of Potential Effect
ARD	Acid Rock Drainage
AQCR	Air Quality Control Region
ARMPA	Approved Resource Management Plan Amendment
ASQ	Allowable Sale Quantity
ATV	all-terrain vehicle
AUM	animal unit month
BA	Biological Assessment
BATFE	Bureau of Alcohol, Tobacco, Firearms, and Explosives
BBS	Breeding Bird Survey
BCP	Bird Conservation Plan

BCR	Backcountry/Restoration
BCSD	Bannock County Sheriff's Department
BCSO	Bingham County Sheriff's Office
BCY	Bank Cubic Yard
BE	Biological Evaluation
BEA	Bureau of Economic Analysis
bgs	below ground surface
BLCSO	Bear Lake County Sheriff's Office
BLM	Bureau of Land Management
BLRC	Bear Lake Regional Commission
BLS	Bureau of Labor Statistics
BMPs	Best Management Practices
BPA	Bonneville Power Administration
BPD	Blackfoot Police Department
BURP	Beneficial Use Reconnaissance Program
CAA	Clean Air Act
Ca-HCO_3	calcium-bicarbonate
CCC	criteria continuous concentration
CCSO	Caribou County Sheriff's Office
CEMPP	Comprehensive Environmental Monitoring Program Plan
CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane
CHC	Criteria Human Consumption
cm	centimeter
cm^2	square centimeter
cm^3	cubic centimeter
CMC	Criteria Maximum Concentration
CNEL	Community Noise Equivalent Level
CNF	Caribou National Forest
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CO_3^{2-}	Carbonate

COPCs	Contaminants of Potential Concern
COT	Conservation Objectives Team
Court	United States District Court in Idaho
CPD	Chubbuck Police Department
CTNF	Caribou-Targhee National Forest
CWA	Clean Water Act
dBA	decibel
DEIS	draft EIS
DFCs	Desired Future Conditions
DHS	Department of Homeland Security
DNAs	Determinations of NEPA Adequacy
DPS	distinct population segment
DSAY	Discounted Service Acre Year
dw	dry weight
EAs	Environmental Assessment
EIS	Environmental Impact Statement
EIUSGLWG	East Idaho Uplands Sage-Grouse Local Working Group
EO	Executive Order
EOM	End of mining
EPHA	Environmental Protection and Health Act
EPM	Environmental Protection Measures
ERDC	Engineer Research and Development Center
ESA	Endangered Species Act
FCAA	Federal Clean Air Act
FCFD	Franklin County Fire District
FCSD	Franklin County Sheriff's Department
FFG	Functional Feeding Groups
FHWA	Federal Highway Administration
FLAG	Federal Land Managers' Guidance
FLPMA	Federal Land Policy and Management Act of 1976
FR	Federal Register
ft/mo	feet per month
G&G	Garrett & Gould
GFRG	General Forest, Rangeland, and Grassland
GHGs	greenhouse gases
GHMA	general habitat management areas

GIS	Geographic Information System
GMWL	Global Meteoric Water Line
GPD	Georgetown Police Department
gpm	gallons per minute
GRSG	Greater Sage-grouse
GWQ	Groundwater Quality
GYC	Greater Yellowstone Coalition
GYRG	Greater Yellowstone Resource Guide
H	horizontal
ha	hectare
HAF	Habitat Assessment Framework
HAP	Hazardous Air Pollutants
HBI	Hilsenhoff Biotic Index
HBIRA	Huckleberry Basin Inventoried Roadless Area
HEA	Habitat Equivalency Analysis
HM	head month
HQT	Habitat Quantification Tool
HUC	Hydrologic Unit Code
HUs	hydrostratigraphic units
H:V	horizontal:vertical
ICP	inductively coupled plasma
IDAPA	Idaho Administrative Procedures Act
IDC	Idaho Department of Commerce
IDCDC	Idaho Conservation Data Center
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDPR	Idaho Department of Parks and Recreation
IDT	Idaho Transportation Department
IDWR	Idaho Department of Water Resources
IFWIS	Idaho Fish and Wildlife Information System
IHMA	important habitat management areas
IM	Instruction Memorandum
IMA	Idaho Mining Association
IMGSGRMPA	Idaho and Southwestern Montana Greater Sage-Grouse Approved Resource Management Plan Amendment

in	inch
IPCC	Intergovernmental Panel on Climate Change
IRA	Inventoried Roadless Area
ISB	Intermountain Seismic Belt
ISDA	Idaho State Department of Agriculture
ISDE	Idaho State Department of Education
ISP	Idaho State Police
ISTC	Idaho State Tax Commission
IWI	Index of Watershed Indicators
IWJV	Intermountain West Joint Venture
JBR	JBR Environmental
kg	kilogram
kg/ha	kilogram per hectare
km	kilometer
KOPs	Key Observation Points
KPLA	Known Phosphate Lease Area
kV	kilovolt
kW	kilowatt
lbs	pounds
LCPHD	Lincoln County Public Health Department
LCSO	Lincoln County Sheriff's Office
LCY	loose cubic yards
L_{dn}	Average Sound Level
L_{eq}	Equivalent Sound Level
LEDPA	Least Environmentally Damaging Practicable Alternative
LMWL	Local Meteoric Water Line
LOM	Life-of-mine
LVE	Lower Valley Energy
LWD	large woody debris
M	Modified
m/s	meters per second
MBTA	Migratory Bird Treaty Act
MCY	million cubic yards
MDEQ	Montana Department of Environmental Quality
mg	milligram
mg/kg	milligram per kilogram

mg/L	milligram per liter
mg/m^3	milligram per cubic meter
mL/g	milliliter per gram
Mg-HCO_3	magnesium-bicarbonate
mi^2	square miles
MLA	Mineral Leasing Act of 1920
mm	millimeter
MM	Maximum Modification
MMt	Million metric tons
MOU	Memorandum of Understanding
MPD	Montpelier Police Department
mph	miles per hour
MPL	Lower Meade Peak
MPM	Middle Meade Peak
MPU	Upper Meade Peak
MRP	Mine and Reclamation Plan
MS	mass spectrometry
MSGP	Multi-sector General Permit for Industrial Activities
MSHA	Mine Safety and Health Administration
N_2O	nitrous oxide
NA	Not available
NAAQS	National Ambient Air Quality Standards
Na-HCO_3	sodium-bicarbonate
NAICS	North American Industry Classification System
NASS	National Agricultural Statistics Service
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOx	nitrogen oxides
NOEP	Notice of Exchange Proposal
NOI	Notice of Intent
NORA	Notice of Realty Action
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NTT	National Technical Team
NTUs	nephelometric turbidity units
NVUM	National Visitor Use Monitoring
NWCC	National Weather and Climate Center
NWI	National Wetland Inventory
O_3	ozone
ODA	overburden disposal area
OEMR	Office of Energy and Mineral Resources
OHV	off-highway vehicle
ONRR	Office of Natural Resources Revenue
P	Preservation
Pb	lead
PCSO	Power County Sheriff's Office
PFYC	Potential Fossil Yield Classification
PHMA	priority habitat management areas
PIF	Partners in Flight
PJD	Preliminary Jurisdictional Determination
PM_{10}	Particulate matter less than or equal in diameter to ten microns
$PM_{2.5}$	Particulate matter less than or equal in diameter to 2.5 microns
pMC	percent modern carbon
PNC	Potential Natural Community
POC	Point of compliance
POS	Plan of Study
ppb	parts per billion
PPD	Pocatello Police Department
ppm	parts per million
PR	Partial Retention
Project	Dairy Syncline Phosphate Leases I-28115 and I-0258
PSB	Passerine and Small Birds
PSD	Prevention of Significant Deterioration
PTC	Permit to Construct
QAPP	Quality Assurance Project Plan
R	Retention
R&PP	Recreation and Public Purposes
R4	Region 4

RACR	Roadless Area Conservation Rule
RCRA	Resource Conservation and Recovery Act
RFFAs	reasonably foreseeable future actions
RFP	Revised Forest Plan
RGL	Regulatory Guidance Letter
RM	Roaded Modified
RMPA	Resource Management Plan Amendment
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
RPW	relatively permanent waterway
RSD	relative standard deviation
SCIRA	Sage Creek Inventoried Roadless Area
SCORTP	Statewide Comprehensive Outdoor Recreational and Tourism Plan
SeAWAC	Selenium Area Wide Advisory Committee
SHI	Stream Habitat Index
SIC	Standard Industrial Classification
Simplot	J.R. Simplot Company
SIPHD	Southeastern Idaho Public Health District
SLF	Salt Lake Formation
SMA	Surface Mining Act
SMI	Stream Macroinvertebrate Index
SO_2	sulfur dioxide
SO_4^{2-}	sulfate
SPCC	Spill Prevention Control and Countermeasures
SPLP	synthetic precipitation leaching procedure
SPM	semi-primitive motorized
SPNM	semi-primitive non-motorized
SRI/CSE	Stream Reach Inventory/Channel Stability Evaluation
SSPD	Soda Springs Police Department
Stantec	Stantec Consulting Services
SUAs	Special Use Authorizations
SVAP	Stream Visual Assessment Protocol
SWPPP	Storm Water Pollution Prevention Plan
SWS	Schlumberger Water Services

TCP	Traditional Cultural Property
TDS	Total Dissolved Solid
TEOM	tapered element oscillating microbalance
TEPC	Threatened, Endangered, Proposed, or Candidate
TMDL	total maximum daily load
TNW	traditionally navigable waterway
TPY	tons per year
TSS	total suspended solids
TU	Tritium Units
U.S.	United States
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Services
USGCRP	U.S. Global Change Research Program
USGS	United States Geological Survey
V	Vertical
VFD	Volunteer Fire Department
VMS	Visual Management System
VOC	volatile organic compounds
VQOs	Visual Quality Objectives
VRM	Visual Resource Management
VWP	vibrating wire piezometer
WCF	Watershed Condition Framework
WDE	Wyoming Department of Education
WDFPES	Wyoming Department of Fire Prevention and Electrical Safety
WDWS	Wyoming Department of Workforce Services
WEAD	Wyoming Economic Analysis Division
WHP	Wyoming Highway Patrol
WoUS	Waters of the United States
WPPA	wet process phosphoric acid
WRAM	Wetland Rapid Assessment Methodology

WSR	Wild and Scenic River
ww	wet weight
XRF	x-ray fluorescence
YCT	Yellowstone cutthroat trout

7.3 Glossary

Acid Rock Drainage (ARD). Water with pH less than 5, elevated TDS, SO4, and trace metal concentrations that result from the oxidation of acid generating sulfide minerals with subsequent dissolution and transport of the oxidation products.

Alluvial. Pertaining to material or processes associated with transportation or deposition of soil and rock by flowing water (e.g., streams and rivers).

Alluvium. Soil and rock deposited by flowing water (e.g., streams and rivers); consists of unconsolidated deposits of sediment, such as silt, sand, and gravel.

Ambient. Surrounding, existing, background conditions.

Animal Unit Month (AUM). A unit used in federal and state livestock grazing permits to mean the amount of forage (i.e., food) required for one animal unit. An animal unit refers to the equivalent of one mature cow.

Anticline. An arch of stratified rock in which the layers bend downward in opposite directions from the crest.

Anthropogenic. Of, relating to, or resulting from the influence of human beings on nature.

Aquatic Influence Zones (AIZs). Defined by the National Forest as the areas between streams or water bodies and the adjacent upland area that have an influence on water quality.

Best Management Practices (BMPs). Methods that have been determined to be the most effective and practical means of preventing or reducing non-point source pollution to help achieve water quality goals. They may also include vegetative and structural methods to control erosion and sedimentation.

Biological Assessment. Information prepared by or under the direction of the federal agency concerning listed species that may be present in the action area and the evaluation of potential effects of the action on such species and habitats. The purpose of the biological assessment is to evaluate the potential effects of the action on listed or proposed species or designated or proposed critical habitat and determine whether any such species and habitats are likely to be adversely affected by the action. Biological Assessments are conducted for major federal construction projects requiring an EIS.

Bird Conservation Plan (BCP). Plans initiated by Partners In Flight to guide conservation and for birds.

Beneficial Use Reconnaissance Program (BURP). A surface water monitoring program to monitor trends in water quality.

Carbon Dioxide Equivalent (CO2e). A quantity that describes the amount of CO2, when measured over a specific time, that would have an impact on global warming potential.

Cubic Feet per Second (cfs). Metric of water flow that describes a cubic foot of water that passing over a given point on a water body (i.e., stream or river).

Chert. A hard, dense microcrystalline or cryptocrystalline sedimentary rock, consisting chiefly of interlocking crystals of quartz; it may contain amorphous silica (opal). It has conchoidal fracture and may be white or variously colored. Chert occurs principally as nodular or concretionary segregations, or nodules in limestone and dolomite, and less commonly as layered deposits, or bedded chert; it may be an organic or inorganic precipitate or a replacement product.

Contaminants of Potential Concern (COPCs). A contaminant which may cause risk or adverse effects to humans or other plants and animals.

Contrast (visual). The effect of a striking difference in form, line, color, or texture of the landscape features within the area being viewed.

Critical (Crucial) Habitat/Range. Habitat that is present in minimum amounts and is a determining factor for population maintenance and growth.

Damage Zone. The volume of deformed wall rocks around a fault surface that results from the initiation, propagation, interaction and build-up of slip along faults.

Decibel-A Weighted (dBA). The sound pressure levels in decibels measured with a frequency weighing network corresponding to the A-scale on a standard sound level meter. The A-scale tends to suppress lower frequencies (e.g., below 1,000 Hz).

Decibel (dB). One-tenth of a Bel is a measure on a logarithmic scale that indicates the ratio between two sound powers. A ratio of 2 in power corresponds to a difference of 3 decibels between two sounds. The decibel is the basic unit of sound measure.

Deterministic model. A numerical model that is based on a single set of model parameters and predicts a single outcome; used for groundwater modeling as well as other subjects.

Discounted Service Acre Year (DSAY). The basic unit of measurement for using the Habitat Equivalency Assessment is typically a discounted-service-acre-year (DSAY). A DSAY used in this EIS represents the value of all of the wildlife habitat services provided by one acre of the habitat in one year. Services for future years are discounted, placing a lower value on benefits that will take longer to accrue. Therefore, additional acres of habitat must be restored when restoration is delayed.

Disposal Parcel. Phrase used to refer to a public land parcel currently managed by BLM, but which BLM would sell to Simplot depending upon the Action Alternative analyzed and the Alternative chosen.

Dissolution. The process of dissolving.

Distinct Population Segment (DPS). The designation of a taxonomic division of a species, as used under the Endangered Species Act.

Donation Parcel. Phrase used to refer to a land parcel currently owned by Simplot and which Simplot has committed to donate to BLM or USFS, depending upon the Action Alternative analyzed and the Alternative chosen.

Environmental DNA (eDNA). Genetic material obtained directly from environmental samples (soil, sediment, water, etc.) without any obvious signs of biological source material, which in the case of determining presence or absence of a fish species. It can improve upon traditional electrofishing, which may have poor capture efficiency for non-game fish species.

Electrical Conductivity (or Specific Conductance). The ability of a water or a soil-water paste to transmit electrical current, used to estimate ion concentration.

Embeddedness. The extent to which rocks (gravel, cobbles, and boulders) are buried by silt, sand, or mud on a stream bottom, used to assess aquatic habitat quality.

Endangered Species. Species in danger of extinction throughout all or a significant portion of its range.

Environmental Impact Statement (EIS). A document prepared under the National Environmental Policy Act that describes environmental effects of an action that may result in significant impacts.

Environmental Protection Measures (EPMs). Standards used to protect the environment.

Equivalent Sound Level (Leq). A term that describes the noise in the environment, as a value of sound for a specific duration.

Fahrenheit (F). A metric of temperature.

Fate and Transport. Description of the movement of a contaminant through a groundwater system which may include the effects of dilution, dispersion, attenuation and various chemical reactions.

Floodplain. The low and relatively flat areas adjacent to rivers and streams. A 100-year floodplain is that area subject to a 1 percent or greater chance of flooding in any given year.

Forage. Vegetation used for food by wildlife, particularly big game wildlife and domestic livestock.

Forbs. Any herbaceous plant other than a grass.

Functional Acres. The Habitat Quantification Tool Credit System measures habitat value in units of functional acres. In this context, function refers to the role of the habitat in providing life history requirements for greater sage-grouse, and includes the direct and indirect effects of anthropogenic disturbances. Function is expressed as a percent function in relation to fully-functioning habitat for greater sage-grouse. Functional acres are the product of percent function and acres within the relevant area assessed.

Game Species. Animals commonly hunted for food or sport.

Geographic Information Systems (GIS). A system that presents spatial geographic data.

Graminoid. Grasses, or more technically graminoids, are monocotyledonous, usually herbaceous plants with narrow leaves growing from the base. They include the "true grasses", of the family Poaceae, as well as the sedges and the rushes.

Greenhouse Gases (GHGs). An atmospheric gas such as water vapor, CO2, methane, and ozone, that absorb and emits radiation.

Habitat Equivalency Analysis (HEA). A quantitative ecological model used in this EIS to assess and disclose amounts of positive and negative impacts to wildlife habitat including, elimination of habitat by mining, restoration of habitat achieved through reclamation, benefits to habitat from any related mitigation proposed, and the final residual impacts that will occur to overall wildlife habitat after consideration of the positive and negative impacts to the habitat over time.

High Density Polyethylene (HDPE). A product commonly used in the production of plastic bottles, piping, and geomembranes because of its high strength to density ratio.

Hydraulic Conductivity. A coefficient of proportionality describing the rate at which water can move through a permeable medium.

Hydrologic Unit Code (HUC). A number that is used to identify a watershed.

Instruction Memorandum (IM). Supplementary documents used by the BLM to provide specific policy guidance, interpret policies, and provide immediate instruction.

Intermittent Stream. Stream that flows only part of the time or during part of the year; some segments of the stream may flow year-round.

Intermountain West Joint Venture (IWJV). A partnership to conserve bird habitats in the western United States.

Kilometer (km). A unit that measures length equivalent to 0.621 miles.

Known Phosphate Leasing Area. A land area known to contain phosphate minerals subject to competitive leasing for federally owned phosphate under authority and direction of the Mineral Leasing Act.

Land Use Plan. The organized direction or management of the use of lands and their resources to best meet human needs over time, according to the land's capabilities. Under the Federal Land Policy and Management Act (FLPMA) and the Multiple Use Sustained Yield Act of 1960, BLM and USFS prepare land use plans that direct management of local public lands and resources for "multiple use and sustained yield".

Limestone. A sedimentary rock consisting chiefly of the mineral calcite (calcium carbonate), with or without magnesium carbonate. Common impurities include chert and clay. Limestone is the most important and widely distributed of the carbonate rock and is the consolidated equivalent of limy mud, calcareous sand, and/or shell fragments. It yields lime on calcination.

Macroinvertebrate. Organisms without backbones, which are visible to the eye without the aid of a microscope, and in this case are the aquatic larval stages of insects found in stream bed substrate.

Management Indicator Species (MIS). Species used to represent

Mesic. Moist habitats associated with springs, seeps, and riparian areas.

Memorandum of Understanding (MOU). A document describing an agreement of interaction between two or more parties.

Milligrams per kilogram (mg/kg). A commonly used measure of concentration; equivalent to parts per million.

Milligrams per liter (mg/L). A unit of mass in volume measurement.

Migratory Bird Treaty Act (MBTA). A law that makes it unlawful to pursue, hunt, take, capture, kill, or sell birds such raptors and songbirds.

Mine and Reclamation Plan (M&RP). A plan that describes the mining and reclamation activities of a mine.

Mitigation. Actions to avoid, minimize, reduce, eliminate, replace, or rectify the impact of a management practice.

Notice of Intent (NOI). A formal announcement from the federal government that an Environmental Impact Statement will be prepared.

Offered Parcel. Phrase used to refer to a land parcel currently owned by Simplot, that, as part of the USFS land exchange, Simplot would relinquish, in a footprint determined to be of equivalent value to the value of the selected parcel, depending upon the Action Alternative analyzed and the Alternative chosen.

Off Highway Vehicle (OHV). Any vehicle that can drive off a paved or gravel road.

Overburden. Sub-economic or waste rock or soil that must be removed in order to recover the ore associated with a mineral deposit.

Overburden Disposal Area (ODA). An area where overburden is placed and stored.

Oxidation. A geochemical process involving chemical and mineralogic changes to rock or soil materials to atmospheric oxygen and water. The process occurs naturally but is accelerated by mining activity.

Peak Flow. The greatest flow attained during melting of winter snowpack or during a large precipitation event.

Percolation Rate. Movement of water through soil or similar material.

Perennial Stream. A stream that flows throughout the year and from source to mouth.

Permeability. The capacity of porous rock, sediment, or soil to transmit a fluid.

pH. The negative log10 of the hydrogen ion activity in solution; measure of acidity or alkalinity of a solution.

Particulate Matter (PM). Small particles or liquid droplets that are in the air. Can also be known as Particle Pollution.

PM2.5. Particulate matter less than 2.5 microns in aerodynamic diameter.

PM10. Particulate matter less than 10 microns in aerodynamic diameter.

Pore Volume (PV). The total volume of very small openings in a bed of adsorbent particles, in this case the volume of void in broken rock or soil that can be occupied by leachate.

Prevention of Significant Deterioration (PSD). A permit program to prevent environmental impacts from large sources of air pollution.

Raptor. A bird of prey (e.g., eagles, hawks, falcons, and owls).

Riparian. Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to plants of all types that grow along streams, rivers, or at spring and seep sites.

Record of Decision (ROD). An official record that explains why a federal action was approved, based on alternatives and public comment assessed in a Final Environmental Impact Statement.

Recreation Opportunity Spectrum (ROS). A system for managing opportunities for recreation, often on federal lands.

Revised Forest Plan (RFP). A Plan that has been updated to reflect changes to an existing Forest land use plan. In this EIS it is the federal land use plan governing activities within the Caribou portion of the Caribou-Targhee National Forest.

Resource Management Plan (**RMP).** Document that establishes direction for the use of resources to best meet the needs of humans over time, according to the resource potential or capability. In this EIS it is the federal land use plan governing activities within the BLM Pocatello Field Office.

Roadless Area. Natural or federal lands that are without roads.

Run-of-Mine (ROM) Overburden. Sub-economic rock mined from the phosphate deposit, which is and placed in surface dumps or as pit backfill.

Salinity. Measure of solute concentration, in grams per kilogram; "saltiness".

Scenic Integrity Objective (SIO). Scenic integrity is how visually intact people perceive the landscape to be**.** A SIO is an objective that defines how visually intact the landscape should be.

Scoping. Procedures by which agencies solicit input from the public, other agencies, and Indian tribes, to determine the extent of analysis necessary for a proposed action, (i.e., the range of actions, alternatives, and impacts to be addressed; identification of significant issues related to a proposed action; and the depth of environmental analysis, data, and task assignments needed).

Sediment Load. The amount of sediment (sand, silt, and fine particles) carried by a stream or river.

Selected Parcel. Phrase used to refer to a public land parcel currently managed by USFS, but which USFS would give up in exchange to receiving an equivalent parcel currently owned by Simplot, depending upon the Action Alternative analyzed and the Alternative chosen.

Seleniferous. In the context of this EIS, this term describes a material, most generally shale, that contains selenium or other contaminants of potential environmental concern that may pose a risk of release to the environment, primarily to water and reclamation vegetation resources.

Semi-primitive Motorized (SPM). Areas that are managed for a natural-looking environment, but vehicle assess is allowed on low standard roads and trails.

Sensitive (as in Species). Those plant or animal species that are susceptible or vulnerable to activity impacts or habitat alterations.

Shale. A fine-grained detrital sedimentary rock, formed by the compaction of clay, silt, or mud. It has a finely laminated structure, which gives it a fissility along which the rock splits readily, especially on weathered surfaces. Shale is well indurated, but not as hard as argillite or slate. It may be red, brown, black, or gray.

Significant. As used in NEPA, requires consideration of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, and the affected region, interests, and locality. Intensity refers to the severity of impacts (40 CFR 1508.27).

Sinuosity (of a stream). A stream channel's tendency to move back and forth across its floodplain in an S-shaped pattern, over time.

State Implementation Plan (SIP). A Plan created by a state for compliance with the Clean Air Act at sites that are polluted.

Stochastic Model. A numerical model type whose approach is one where model parameters that are not well defined are varied randomly within a reasonable range based on known conditions, and the results from multiple model runs are analyzed statistically.

Sodium Adsorption Ratio (SAR). Ratio of dissolved sodium to calcium and magnesium in water; provides a prediction of cation exchange reaction potential.

Special Use Authorization (SUA). A permit that authorizes the use of or action on National Forest System lands.

Storm Water Pollution Prevention Plan (SWPPP). A plan that is used to reduce pollutants entering waterbodies during storm (i.e., rain) events. Includes sources of pollution and control measures.

Stream Habitat Index (SHI). An aquatic habitat index that includes 10 habitat measures indicative of water quality conditions.

Stream Macroinvertebrate Index (SMI). An aquatic habitat index that includes 9 metric measures indicative of macroinvertebrate habitat.

Swell. The increase in volume exhibited by certain soils and rocks on absorption of water; an enlarged place in an orebody.

Threatened Species. Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Thrust Fault. A low-angle reverse fault produced in rocks subjected to thrust.

Total Suspended Particulate/Particles (TSP). Particulates less than 100 microns in diameter (Stokes equivalent diameter).

Total Dissolved Solids (TDS). Total amount of dissolved material, organic or inorganic, contained in a sample of water.

Visual Quality Objective (VQO). A desired level of excellence based on physical and sociological characteristics of an area. Refers to degree of acceptable alteration of the characteristic landscape.

Watershed. Drainage basin for which surface water flows to a single point.

Wetlands. Areas inundated by surface water or groundwater with a frequency sufficient to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wolman Size Classes. Particle size range classifications in millimeters for sand, fine sand, gravel, coarse gravel and the like, as used in the Wolman Pebble Count procedure, primarily used to characterize stream bed particles.

7.4 Index

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APPENDICES

APPENDIX 2A
CONCEPTUAL ENVIRONMENTAL MONITORING PLAN

Dairy Syncline Mine Project
Conceptual Environmental Monitoring Plan

Table of Contents

1.0 INTRODUCTION

This conceptual document presents the general environmental monitoring requirements associated with the J.R. Simplot Company (Simplot) Dairy Syncline Mine operations and describes a mine-wide monitoring program that incorporates monitoring activities required through various regulatory programs.

Environmental monitoring data collected under this plan will be routinely compiled and reported to the appropriate regulatory agencies with oversight for different elements of the mine's operations. Simplot will utilize a central environmental monitoring database that incorporates data from all the various monitoring activities implemented under this plan; that database may also include any additional data collected at the mine to support non-routine investigations of environmental conditions. The central database will be used to generate data tables and data analyses for monitoring reports provided to appropriate regulatory agencies.

The BLM ROD will require Simplot to develop an Environmental Monitoring Plan (EMP) for the Dairy Syncline Mine that is consistent with the final selected alternative.

1.1 PURPOSE

The purpose of this conceptual plan is to generally describe environmental monitoring activities for the Dairy Syncline Mine. Specifically, this plan:

- Documents the environmental monitoring activities that Simplot would perform at the Dairy Syncline Mine to meet the requirements of their mine plan and associated permits for mining activities on federal and private lands;
- Provides a reference document for mine personnel to use in performing environmental monitoring and a tool for agency staff to use in confirming that Simplot meets all their requirements over time;
- Provides the methods to ensure proper construction of EMPs and Best Management Practices (BMPs) that are being implemented as well as the data necessary to determine the effectiveness of EMPs and BMPs in use and make changes to their use as determined necessary by Simplot or regulatory agencies.
- Identifies the data that will be routinely reported to the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) and other appropriate regulatory agencies.

1.2 MINE LOCATION AND ENVIRONMENTAL SETTING

The Dairy Syncline Mine is located in Caribou County, Idaho, approximately 14 miles east of Soda Springs. The mine's components; including five open pits, tailings facility, topsoil stockpiles, a mill/shop/ore stockpile area, office/security building, access and haul roads, an industrial water

well, a culinary water well, powerline corridors, an electrical substation, pipelines (for conveying ore concentrate, tailings, and return water), overburden disposal areas (ODAs), and runoff/sediment control facilities; are located on federal (USFS and BLM) and private lands. The federal phosphate leases I-28115 and I-0258 are located entirely on National Forest System land. Access to the mine is via the Georgetown Canyon Road. The tailings facility is located approximately 1.25 miles northwest of the mine leases.

2.0 MINE OPERATIONS AND RECLAMATION

2.1 OPERATIONS

This section briefly summarizes the operations at the Dairy Syncline Mine. The Mine and Reclamation Plan (Simplot 2008, 2013) provides a description of mine operations and reclamation.

Operations include drilling, blasting, loading, and hauling of ore and overburden using a shovel and truck fleet. Mining proceeds sequentially by opening individual mining pits along the trend (strike length) of the Phosphoria Formation outcrop.

The development of the Dairy Syncline Mine requires the removal and handling of over 310 million bank cubic yards (pre-excavation material) of overburden. There is concurrent mining of pits as the sequencing progresses. Excess overburden not used to backfill and reclaim the pits is permanently placed in external ODAs.

Ore is hauled in trucks from pit areas to the ore stockpile area and concentrated in the mill facility. Ore concentrate from the mill is transported to the Don Plant in Pocatello, Idaho, via an underground slurry pipeline segment that connects the mill with the slurry pipeline system, located north of the tailings facility. Mill tailings are deposited in the tailings facility.

The mine operates 24 hours per day throughout the year with crews working overlapping shifts. Hard rock overburden is drilled with blast hole drills, with each blast hole loaded with a mixture of ammonium nitrate/fuel oil. The loaded blast holes are detonated three to four days per week, resulting in an average of 400 blast hole detonations per week. Softer overburden is ripped with dozers. Several shovels load the ore and overburden into off-road type haul trucks. These trucks deliver the material to one of the mill ore stockpiles, external ODAs, or previously mined pits as backfill. Water trucks are used to water haul roads, ancillary roads, and the active pit floors to control dust, and roads are maintained with motor graders.

2.2 RECLAMATION

Reclamation consists of measures performed both to return the land to productive uses and to mitigate for potential release of contaminants of potential concern (COPCs) following mining. Reclamation of the mine area starts with backfilling of an area and continues through cover placement, regrading, topsoil handling, and reestablishing drainage patterns and vegetation. All disturbed areas, including parking lots and the mill area, will receive at least 1.5 feet of topsoil and will be seeded. If sufficient soil is salvaged to allow more than that amount, all available soil will be used during reclamation (i.e., none would be wasted, disposed, or remain stockpiled). In addition to these steps, facilities reclamation includes demolition and disposal of facilities.

Approximately 95 percent of the acres associated with mining will be reclaimed. Stormwater management features such as sediment ponds and ditches will be left unreclaimed and allowed to function as intended. The tailings facility, mine access, and the security/office areas are not planned for reclamation at this time as it is reasonably foreseeable that these features may be utilized in support of other Simplot leases once the Dairy Syncline ore reserves are exhausted subject to regulatory approvals. However, if there are no reasonably foreseeable proposed mining actions at the end of the mine life that could utilize these features, they will be reclaimed as required.

3.0 MONITORING REQUIREMENTS

3.1 AIR RESOURCES

Simplot will be required to acquire air quality permits from the State of Idaho associated with the operation of the Mill. Simplot will conduct air quality monitoring consistent with the requirements of those permits.

3.2 SURFACE WATER AND GROUNDWATER

The objectives of surface water and groundwater monitoring at the Dairy Syncline Mine are to:

- measure changes to surface water and groundwater that directly or indirectly result from mine operations and/or reclamation;
- assess compliance with applicable water quality standards; and
- assess the effectiveness of approved mitigation measures.

This section provides a compilation of surface water and groundwater monitoring tasks at the Dairy Syncline Mine.

3.2.1 Surface Water

The purpose of this plan is to provide a monitoring approach to fulfill the mine's surface water monitoring requirements. Implementation of this plan achieves the overall surface water monitoring objectives for Dairy Syncline Mine operations and provides the data needed to track surface water quality both upstream and downstream of the mine, identify any changes in water quality associated with mining operations and reclamation, and support evaluations of BMPs and other mitigation measures.

Each monitoring task is designed to address one or more of the following objectives:

- Provide an early warning of impacts to surface water quality and allow for corrective action; measure environmental impacts associated with the mine; and assess compliance with applicable water quality standards.
- Provide data that can be used to evaluate trends in surface water quality over time and for early detection of changes in surface water quality associated with mining operations.
- Provide data to describe water quality in the vicinity of the tailings facility.
- Provide data from storm water in catch basins and seeps associated with ODAs to evaluate the potential transport of COPCs leached from overburden to surface water and assess the effectiveness of mitigation measures and mining practices in protecting surface water resources.

Surface water sampling will occur at designated and approved sites and at regular intervals to be determined. These sites would be located down gradient of the mine and include seeps and springs with potentially impacted flows, along with Slug Creek. All surface water sampling activities will be conducted by implementing approved Standard Operating Procedures (SOPs). Flow measurements at each site will be taken, as applicable. At each sampling site, a variety of field parameters will be recorded and for each sample collected, a variety of laboratory analysis parameters will be analyzed. Monitoring will continue at the locations and frequencies to be determined during active mineral extraction and mine reclamation activities. Future revisions to the locations, parameters, frequencies, and methods used for the routine monitoring task may be warranted as active mining and reclamation activities are completed in distinct areas of the mine and/or to address any changes in environmental conditions. Discontinuance of monitoring at any location at the site will be determined by the appropriate regulatory agency. While Simplot may propose changes to this plan, it is up to that regulatory agency to determine what factors will be considered when granting such discontinuance.

The concentrations of monitored constituents in surface water will be compared to surface water quality standards to demonstrate compliance with those standards and protection of surface water resources at those locations. Results from surface water sample analyses will be reported to BLM and USFS, and any non-compliance with standards will be identified at the time that the data are reported. The concentrations of monitored constituents will also be tracked over time and any

temporal trends will be identified in the mine's Annual Environmental Monitoring Reports (AEMRs).

3.2.2 Groundwater

3.2.2.1 Routine Groundwater Monitoring

Groundwater monitoring includes groundwater sampling at the locations to be determined throughout the period of mining and reclamation and for additional years to be determined beyond that. Groundwater monitoring will likely occur at a quarterly frequency for the first year after monitoring well installation and semiannually (i.e., two times each year) thereafter.

The objectives of the Dairy Syncline Mine groundwater monitoring program are to:

- provide for early detection of changes in groundwater quality;
- demonstrate compliance with state and federal groundwater quality standards;
- measure the effectiveness of mitigation measures implemented to protect groundwater quality.

In addition, any well used as a potable water supply is to be monitored in accordance with Idaho Department of Health and Welfare (IDHW) regulations for drinking water systems.

Water levels will be measured at all wells prior to collection of groundwater samples. Field measurements of temperature, conductivity, pH, and dissolved oxygen will be recorded at the time of sampling.

Samples collected for routine groundwater monitoring will be analyzed for a variety of parameters including the following:

- Cadmium, total and dissolved;
- Chromium, total;
- Manganese, total and dissolved;
- Selenium, total and dissolved;
- Zinc, total;
- Sulfate;
- Total dissolved solids; and
- Total suspended solids.

Groundwater samples will be submitted to a laboratory for analysis and analyses will be performed in accordance with approved procedures. Laboratory methods will provide quantitative data for direct comparison to Idaho's groundwater quality standards. These methods will also

provide useful data for tracking concentration trends at individual monitoring locations, if any are observed.

Routine groundwater quality monitoring will be performed during active mining and reclamation operations and will continue for some time into the future. Individual monitoring locations may be discontinued, with the consent of USFS, BLM, and IDEQ, earlier if continued monitoring does not serve regulatory data needs or any of the other groundwater monitoring objectives identified herein. New monitoring locations may be added over time depending on ongoing environmental investigation and remediation activities. Simplot will consult with USFS, BLM, and IDEQ before adopting changes to the routine groundwater monitoring locations.

Groundwater sampling locations will be selected to measure impacts in the regional, Wells Formation groundwater system down-gradient of the mine. In addition, other smaller or less extensive groundwater systems may also be targeted. The locations will be selected in the State of Idaho Point of Compliance determination process and coordinated with any other federal requirements.

3.2.2.2 Tailings Facility Groundwater Monitoring

Groundwater monitoring will be performed in the tailings facility area to meet Idaho Department of Water Resources (IDWR) requirements for assessment of the impoundment and the IDEQ's Point of Compliance process. The state requirements will be coordinated with any federal requirements at the tailings pond facility. Groundwater monitoring will likely occur quarterly for the first year after monitoring well installation and semiannually (i.e., two times each year) thereafter. If any piezometers are installed, water levels will likely be measured on a quarterly basis.

Groundwater samples will typically be analyzed for total and dissolved cadmium, total and dissolved selenium, dissolved sodium, and chloride. The groundwater monitoring data will be reported with AEMRs but will also be provided separately to IDEQ and IDWR. The tailings facility monitoring requirements apply as long as the tailings facility is being used and until it is closed in accordance with Idaho Department of Lands (IDL).

Approved SOPs for implementing groundwater monitoring will be implemented. Routine inspection and maintenance activities will be performed during each sampling event and will include the following:

- Inspection of wells to note any damage or problem associated with the well;
- Replacement and/or maintenance of above-ground casing and completion elements (locks, caps, etc.);
- Replacement and/or maintenance of surface seals around each well; and
- Maintenance of well development including removal of excess solids from down-hole casing, as needed to ensure performance of the well.

Simplot will be responsible for performing routine inspection and necessary maintenance of the monitoring network included in this plan.

3.3 SOILS

At a minimum, on an annual basis Simplot will track the volume of soil salvaged for reclamation and make comparisons to the volume of soil predicted to be salvaged and the volume of soil needed for reclamation. These soil volumes will be reported annually to the BLM and USFS. If a shortfall of soil is identified, then the BLM and USFS will be notified.

3.4 RECLAMATION AND VEGETATION

Vegetation monitoring to determine reclamation success on reclaimed sites will be conducted annually and reported to the USFS and BLM by Simplot until reclamation is accepted and the reclamation bond is released. Monitoring is required to assure that reclamation accomplishes the goals required for bond release and the return of the affected lands to multiple use. Monitoring will include measurements of vegetation success as well as concentration of COPCs in vegetation tissue. If progress is not indicative of potential success, recommendations for improvements will be made.

Simplot would implement monitoring for and controlling noxious weed infestations on all lands disturbed during mine operations. Simplot will acquire any permits necessary to use herbicides on NFS lands. Noxious weed control activities will be reported annually to the BLM and USFS.

3.5 WILDLIFE

This section presents the plan for monitoring terrestrial wildlife at the Dairy Syncline Mine.

3.5.1 Monitoring Activities Related to Vehicle Travel

Vehicle collisions with large-game wildlife (primarily mule deer, whitetail deer, elk, and moose) caused by vehicle travel associated with mine operations or reclamation will be recorded at the accident site and reported verbally (i.e., by phone) to the local Idaho Department of Fish and Game (IDFG) office, as soon as practicable. Incident reports will also be provided in writing to the BLM and USFS as soon as practical following the incident and summarized in an annual environmental monitoring report. If certain areas are identified as having high occurrences of collisions, mitigation measures will be developed for those areas.

3.6 FISHERIES AND AQUATIC RESOURCES

Fisheries monitoring activities would work in conjunction with surface water monitoring (**Section 3.2**) and would include monitoring of flow in Slug Creek and seeps and springs that feed Slug Creek, and concentrations of selenium in various media.

The overarching objective for monitoring is to provide data to evaluate the effectiveness of the environmental protection and mitigation measures. From these data, potential impacts in area streams due to mining at the Dairy Syncline Mine can be characterized.

3.7 CULTURAL AND PALEONTOLOGICAL RESOURCES

3.7.1 Cultural Resources Monitoring

Simplot is responsible for locating known archeological sites within the mine area and constructing exclusion areas for each of the sites. At present, no pre-historic sites are located within the active mining boundaries. If Simplot discovers any physical disturbance of documented sites in the future, Simplot will report and describe the disturbance in writing to the BLM and USFS immediately and the State Historic Preservation Office within 30 calendar days of discovery. Simplot will curtail activities in the vicinity of the discovery until BLM or USFS determined the appropriate mitigation actions that should be taken.

If a previously unknown archeological site is discovered during mine operations Simplot, will notify BLM and USFS immediately and avoid the site until appropriate measures are determined by the agencies.

3.7.2 Paleontological Resources Monitoring

Sedimentary rocks of southeastern Idaho have paleontological resources consisting of vertebrate fossils, including fish and shark remains, and invertebrate and paleo-botanical fossils.

In the event vertebrate fossils are exposed during mining activities, the locations would be recorded and, if possible, the fossil may be tentatively identified. Notification would be provided to the BLM and USFS at the time the fossil(s) is discovered.

3.7.3 Reporting Requirements

Findings of potential cultural or paleontological significance will be summarized in AEMRs (**Section 4.0**). The observation locations and dates will be provided with a brief description of any actions taken by Simplot and appropriate regulatory agencies.

3.8 WETLANDS

Wetlands and riparian areas were avoided to the extent possible during Project design; however, the mine construction and mining of the Dairy Syncline leases would require disturbing some wetland areas. Required Clean Water Act 404 permit applications would include evaluation of wetland mitigation opportunities with the guidance and support of the appropriate regulatory agencies. Wetland mitigation and monitoring will be determined by the U.S. Army Corps of Engineers through the 404 permit.

3.9 STORMWATER

This section presents the mine's storm water monitoring program. The overarching goal of the various monitoring requirements is to demonstrate that 1) episodic storm water runoff from the site does not degrade surface water or groundwater quality and 2) storm water runoff does not transport overburden solids from the construction, mining, and ODAs. Storm water monitoring requirements will be identified in the Dairy Syncline Mine's USEPA National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Storm Water Discharges Associated with Industrial Activities (MSGP), and associated Storm Water Pollution Prevention Plan (SWPPP). The SWPPP specifies mitigation measures necessary to comply with the NPDES storm water permit requirements. The SWPPP will be periodically updated to keep pace with the mine's progression. As the single comprehensive and site-specific document for compliance with the permits and certifications, the SWPPP serves as the primary source of the existing storm water monitoring requirements. The SWPPP provides data describing any storm water discharges from catch basins to evaluate if the discharge is impacting surface water quality in the receiving streams.

Because the USEPA storm water program regulates monitoring requirements associated with storm water permits, changes to the monitoring plan may occur in response to new or revised requirements from USEPA. Any changes will be communicated to the regulatory agencies through the mine's AEMR (**Section 4.0**).

3.9.1 Routine Facility Inspections

The SWPPP typically specifies regular visual inspections and maintenance of storm water controls and other facilities. These inspections offer opportunity to discover conditions such as cracks, slow leaks, or blocked drainage channels that could cause breakdowns or failures and result in discharges to surface water.

Inspections are conducted at the locations identified in the SWPPP. Storm water management related issues and inspection results will be recorded and reported to the Environmental Manager. These reports will be stored on the mine site and will be made available to the BLM and USFS as requested.

Inspections of storm water controls are conducted as necessary for the conditions that exist (i.e., at least quarterly during winter months but up to weekly during snowmelt or rainy seasons) and include assessments of the integrity of the storm water diversions, conveyance systems, sediment control and collection systems, vegetation, slopes, material handling and storage areas, storm water catch basins and check dams.

Inspection findings are recorded and maintained with the SWPPP. Any necessary maintenance or repair actions are also reported to the Mine Superintendent and recorded in the SWPPP files.

3.9.2 Quarterly Visual Examination and Sampling and Analysis of Storm Water Quality

The SWPPP, typically requires routine inspections of storm water controls and the collection of samples of any discharges from storm water outfalls for visual examination and analytical testing. The catch basins are strategically located throughout the mining area to collect, settle, infiltrate, and evaporate storm water runoff from the land disturbed by the mining operations. Quarterly sampling of the storm water catch basin discharges is typically specified to provide samples for visual examination of storm water contamination and appropriate analytical testing. Water overtopping a catch basin or other storm water control is not a "discharge" unless that water enters a nearby stream channel.

Visual examination of storm water discharge (i.e., storm water entering a stream channel) from any outfall (i.e., downstream catch basins) is typically performed at least once during any calendar quarter in which qualifying storm events take place; a qualifying storm event is defined as greater than 0.5 inch of rainfall in a 72-hour period.

Quarterly Visual Sampling Forms (from Simplot SOPs) will be completed and maintained at the mine in the SWPPP. The reports shall include: examination date and time, examination personnel, the nature of the discharge, observed quality of discharge, and any probable sources of storm water contamination.

3.9.3 Annual Comprehensive Compliance Evaluation

Annual comprehensive compliance evaluations of the storm water control systems will be performed each summer by the personnel responsible for implementing the SWPPP. Ore stockpiles, reclaimed areas, haul roads, material handling and storage areas and other potential pollutant sources will be visually inspected for evidence of actual or potential pollutant discharges. All control structures will also be inspected.

The SWPPP may be revised based on the results of the annual compliance evaluation. A summary of any changes made to the SWPPP will be documented and recorded in the SWPPP at the mine office. Implementation of any on-the-ground changes must be accomplished in a timely manner.

Results of the annual comprehensive evaluations are documented in a written report that is signed by a company official. The reports are submitted to the Mine Manager and filed in the SWPPP records. These evaluations will be summarized annually for transmittal to the regulatory agencies within the AEMR.

3.10 BMP CONSTRUCTION MONITORING

3.10.1 Visual Inspections and Monitoring

Mine Production Supervisors and Site Supervisors perform inspections of constructed BMPs on an on-going basis. These evaluations are based on monthly, or more frequent, visual inspections performed during operation. The inspection information assists the Mine Production Supervisor in identifying if timely corrective action is needed to remedy improper construction or physical failures of the BMPs.

Visual inspections of BMPs conducted by Simplot include assessments of the integrity of the storm water diversions, storm water catch basins and check dams, conveyance systems, sediment control and collection systems, slopes, material handling and storage areas, overburden and other construction fills, reclamation, snow removal, rip-rap and gabions, culverts, haul road, and soil salvage.

Inspections of the following potential BMPs to determine their ongoing effectiveness would be evaluated.

- Overburden Fill Grading
- Haul Road Run-off Controls
- Construction of Fills for Roads and Facilities (outside of mine pits)
- Snow Removal
- Concurrent Reclamation
- Soil Salvage and Reuse
- Soil Stabilization
- Capping Seleniferous Overburden
- Pit Backfilling
- Riprap and Gabions
- Culverts
- Run-on Collection/Runoff Control (Control of Surface Water)
- Sediment Controls
- Seeding and Revegetation (Reclamation and Revegetation)
- Range Management
- Avoid Perennial Drainage Channels
- Avoid Ephemeral Drainage Channels
- Characterization and Selective Handling of Seleniferous Overburden

- Modification or Elimination of Low Permeability Foundation Material from Seleniferous External ODA's
- Sediment Controls around Overburden Disposal Sites

3.10.2 Reporting Procedures

Routine BMP monitoring is recorded consistent with the reporting of storm water inspections. The results of these inspections are documented on an inspection form, and the completed forms filed on site to maintain a record of the inspections; the inspection forms are also available to the managing agencies upon request.

4.0 ANNUAL ENVIRONMENTAL MONITORING REPORTS

Simplot will prepare and submit an annual environmental monitoring report to provide the results of each year's monitoring efforts.

Copies of the report will be submitted to the BLM Pocatello Field office, USFS Caribou-Targhee National Forest office, and IDEQ Pocatello office. Other copies are provided to the agencies as requested. One hard copy shall remain on file at the Dairy Syncline Mine.

5.0 PROCEDURES FOR FUTURE MODIFICATIONS OF MONITORING PLANS

The Monitoring Plan may be improved or modified to address changes in the current Mine and Reclamation Plan or site conditions and may also be revised to reduce or eliminate monitoring elements that no longer apply or no longer provide useful data.

APPENDIX 4A
CNF RFP AND BLM ARMP CONSISTENCY

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APPENDIX 4A CNF RFP AND BLM ARMP CONSISTENCY

4A.1 INTRODUCTION

Chapter 4 presents the results of environmental impact analyses for the various resources that may be affected by the Project and Action Alternatives and described and disclosed direct and indirect changes in the human environment. The significance, intensity, and duration of effects are also disclosed.

This appendix is a continuation of assessing impacts. Specifically, it contains information related to compliance of the Project and Action Alternatives to the CNF RFP and the BLM ARMP. The relationship of this EIS to federal land management agency plans, including the RFP and ARMP, was described in **Section 1.4.1** of the EIS.

The CNF RFP (USFS 2003a) establishes forest-wide requirements that apply to - and regulate - future management activities. The USFS evaluates all proposed activities against these requirements (i.e., standards and guidelines). According to the RFP:

- *Standards are used to promote the achievement of the desired future condition and objectives and to assure compliance with laws, regulations, Executive Orders or policy direction established by the Forest Service. Standards are binding limitations on management activities that are within the authority of the Forest Service to enforce. A standard can also be expressed as a constraint on management activities or practices.*

- *Guidelines are used in the same way as standards but tend to be operationally flexible to respond to variations, such as changing site conditions or changed management circumstances. Guidelines are a preferred or advisable course of action, and they are expected to be carried out, unless site-specific analysis identifies a better approach.*

In addition to NFS lands, the Project also involves lands managed by the BLM and would need to be in compliance with certain BLM ARMP goals, objectives, and actions for these lands. The Pocatello Field Office ARMP (BLM 2012) provides management decisions consisting of these three main components, defined as follows:

- *Goals—Broad statements of desired outcomes that are usually not quantifiable;*
- *Objectives—Specific desired outcomes that are usually, but not always, quantifiable and measurable and may have established timeframes for achievement (objectives are identified as means to achieve goals); and*
- *Management Actions—Anticipated actions to achieve desired outcomes, including actions to maintain, restore, or improve land health.*

The focus in the following tables apply to the Project and all Action Alternatives, unless noted otherwise. This is not an exhaustive list of every Goal, Objective, and Management Action listed in the BLM ARMP or every standard and guideline in the CNF RFP, but instead focuses on the resources that would most likely be impacted by the Project. **Section 1.1.4** provides detailed descriptions of the two federal land management plans that guide land use developments and activities in the Project Area and subsequent compliance with those plans. All acquired lands would be managed consistent with the applicable BLM and USFS plan if and when they come into federal ownership.

4A.2 RESOURCES

RFP and ARMP compliance information is presented below in tables organized by resource and/or topic, by order in which resources appeared in **Chapter 4**. The relevant RFP standards and guidelines are presented, along with a discussion of whether or not the Project would be in compliance with the particular standard or guideline. The standards and guidelines for Drastically Disturbed Lands, including prescriptions in Category 8.2 that are specific to phosphate lease areas are also included in the tables for the applicable resource. Some resources do not have standards and guidelines that are relevant to the Project; only those that do are included in the following sections. Similarly, tables are presented to address compliance on BLM lands for various resources.

4A.2.1 Soil Resources

Table 1 summarizes compliance with applicable standards and guidelines from the BLM ARMP with regard to soil resources under the Project.

Table 1 Compliance with Applicable BLM ARMP Goals, Objectives, and Actions for Soil Resources

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Action SW-1.1.1. Appropriate management techniques, guidelines or practices (Appendix A) will be implemented to limit soil loss to an amount, generally 5 tons per acre per year (5 ton/acre/yr) (Schertz 2006 as cited in BLM 2012) that will not affect its long-term quality, productivity or hydrological function.	Soil stockpiles would be protected from erosion by seeding and establishment of short-term vegetation cover. Incorporation of slash and vegetative materials into the growth medium during stripping would increase the organic matter content of the material and elevate the production potential. Reclamation would entail using topsoil and revegetating disturbed areas. This would return topsoil to a productive resource use, and along with the accompanying grading and reestablishment of drainage patterns would conserve soil by reducing erosion potential. Standard BMPs to prevent or minimize soil loss would be incorporated on an as needed basis.
Action SW-1.1.2. Reclamation of disturbed sites will be done as soon as conditions (e.g., soil moisture, weather) will support or promote success.	Under the Project, reclamation of disturbed areas that are no longer required for active mining operations would be conducted concurrent with other mining operations.

4A.2.2 Vegetation Resources

Table 2 summarizes compliance with applicable standards and guidelines from the CNF RFP (USFS 2003a) with regard to vegetation resources under the Project.

Table 2 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Vegetation Resources under the Project

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Vegetation Standard 2: In each 5th code HUC which has the ecological capability to produce forested vegetation, the combination of mature and old age classes (including old growth) shall be at least 20 percent of the forested acres. At least 15 percent of all the forested acres in the HUC are to meet or be actively managed to attain old-growth characteristics (RFP 3-19).	In a landscape level analysis comprised of 26,949 acres both in and surrounding the Project Area within the 5th level HUC Upper Blackfoot River watershed, approximately 96 percent of the forested acres are in the mature/old age classes. Under the Project, approximately 93 percent of the forested areas impacted by Project activities are in the mature/old age classes. An on-site inventory concluded that no acres that currently meet the USFS Intermountain Region 4 (R4) definition of old-growth will be impacted on USFS lands (Beck 2012). Therefore, the Project would be in compliance with this standard.
Vegetation Guideline 1: Manage to reduce the decline of aspen and promote aspen regeneration and establishment. Provide protection from grazing where needed and consistent with management objectives.	The Project would likely result in the long-term loss of 535 acres of aspen community (including 501 acres of USFS land) and 1,012 acres of aspen/mixed conifer forest (including 956 acres of USFS land). The Project would not be in compliance with this guideline. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Vegetation Guideline 3: For aspen and conifer types, acres classified as mature and old growth should be in blocks over 200 acres in size unless the natural patch size is smaller (a block can consist of a combination of mature and old-growth forest types). Within these blocks: • Maintain the dead and down woody material guidelines for wildlife. • Silvicultural techniques may be used to maintain or improve old-growth and mature forest characteristics. If a catastrophic event (such as fire) reduces the acres of old-growth and mature forest below 20 percent of the forested acres in a principal watershed, identify replacement forested acres. When necessary, use silvicultural techniques to promote desired characteristics in the replacement acres.	The Project would likely result in the long-term loss of approximately 1,839 acres of mature/old class forests (Beck 2012). However, an on-site inventory concluded that no acres that currently meet the USFS Intermountain Region 4 (R4) definition of old-growth would be impacted on USFS lands (Beck 2012). The loss of 1,839 acres of mature/old class forest could reduce the size of mature/old class forest blocks within the Project Area and the availability of mature/old class forests for wildlife habitat management. The Project may not be in compliance with this guideline. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Plant Species Diversity Standard 1: Projects and activities shall be managed to avoid adverse impacts to sensitive plant species that would result in a trend toward federal listing or loss of viability.	There are no identified plant species listed as Threatened, Endangered, or Proposed under the ESA in Caribou County (USFWS 2015). No CNF Sensitive plant species or rare plant species on the CNF Forest Watch have been documented in the baseline biological surveys for the Project. The Project is in compliance with this guideline.
Plant Species Diversity Guideline 1: Native plant species from genetically local sources should be used to the extent practical for erosion control, fire rehabilitation, riparian restoration, road rights-of-way seeding, and other revegetation projects.	Native plant species from genetically local sources would be used to the extent practicable. The Project is in compliance with this guideline.
Plant Species Diversity Guideline 2: Where practical, disturbed sites should be allowed to revegetate naturally where the seed source and soil conditions are favorable (e.g., low erosion potential, deeper soils) and noxious weeds are not expected to be a problem.	All disturbed sites within the Project Area would be reclaimed with plant growth medium and seed mix applications.
Plant Species Diversity Guideline 3: Known occurrences or habitat for rare plants on the "Forest Watch" list and rare or unique plant communities on the Forest should be maintained.	No CNF Sensitive plant species or rare plant species on the CNF Forest Watch List were documented during the baseline biological surveys for the Project. The Project is in compliance with this guideline.
Plant Species Diversity Guideline 4: Maintain, and where possible, increase unique or difficult-to-replace elements such as areas of high species diversity aspen, riparian areas, tall forbs, rare plant communities, etc.	The Project would likely result in the long-term loss of 535 acres of aspen community (including 501 acres of USFS land) and 1,012 acres of aspen/mixed conifer forest (including 956 acres). The Project would not be in compliance with this guideline. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Plant Species Diversity Guideline 5: The Forest Botanist or Ecologist should review seed mixes used for revegetation to insure no adverse impacts to threatened, endangered, sensitive species; other species at risk; and the overall native flora within the analysis area.	A Forest Botanist or Ecologist would review the proposed seed mixes for revegetation, and any changes required for the approval of the seed mixes would be made. The Project is in compliance with this guideline.
Drastically Disturbed Lands Standard 7: Reclamation vegetation shall be monitored for bioaccumulation of hazardous substances prior to release for multiple-use management.	**Section 2.5** and the Monitoring Plan (Appendix 2A) identifies the environmental monitoring activities that would be undertaken at the mine to ensure the effectiveness of BMPs and mitigation measures. The Project would be in compliance with this standard.
Drastically Disturbed Lands Standard 10: Within mine areas, native vegetation shall be retained undisturbed when disturbance of the site is not necessary for minerals development or safety.	Existing vegetation would be protected to the extent practicable by limiting surface disturbance to those areas needed for operation. The Project is in compliance with this guideline.

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Drastically Disturbed Lands Guideline 2: Selection of plant species for establishment should reflect the surrounding ecosystem and post-remedial land use. Plant materials used should be adapted to the climate of the site. Consideration and preference should be given to promoting natural succession, native plant species, and structural diversity.	Agency-approved seed mixes containing native seeds that are endemic to the climate of the mine site would be applied. Large climatic variations within the site would be addressed with the creation of additional seed mixes. The Project is in compliance with this guideline.
Drastically Disturbed Lands Guideline 3: Prescribe reclamation plant species known to reduce the risk of bioaccumulation of hazardous substances, if such risk is present.	Under the Project, seed mixes would be developed to encourage the uptake of water from the upper soil horizon and would avoid the use of selenium accumulator species. The seed mixes that would be developed and used in the reclaimed areas would not contain any tree, legume, or deep-rooted species, which typically accumulate selenium to a greater extent than grasses and shrubs (Mackowiak and Amacher 2003; Mackowiak et al. 2004). The Project is in compliance with this guideline.
Prescription 8.2.2 Goal 4: Emphasize the use of native plant species in reclamation but allow the use of non-natives when natives will not achieve reclamation goals.	Agency-approved seed mixes containing native seeds and, if necessary, nonnative seeds that promote reclamation (e.g., erosion control/soil stability and wildlife and livestock forage and cover). The Project is in compliance with this guideline.

Noxious Weeds

Table 3 summarizes applicable CNF RFP Standards and Guidelines for Noxious Weeds. The Project would be in compliance with these standards and guidelines by use of a native seed mix that would be applied to complement the existing plant communities and reclaimed areas and by actively controlling identified noxious weeds. Appropriate BMPs, in compliance with the standards and guidelines listed in **Tables 3**, **4**, and **5** would be implemented to control invasive and noxious species throughout the life of proposed mining activities. Examples of these BMPs include treatment of identified invasive species, using state-certified noxious weed free hay/straw when needed, use of a seed mix that is certified as weed-free, and monitoring for noxious weeds. There is a low occurrence of noxious weeds in the Project Area, and BMPs would be implemented to minimize their potential spread.

Table 3 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Noxious Weeds

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Noxious Weeds and Invasive Species Standard 1: Only weed-free hay, straw, pellets, and mulch shall be used on the Forest.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.
Noxious Weeds and Invasive Species Standard 2: All seed used shall be certified to be free of noxious weed seeds from weeds listed on the current *All States Noxious Weeds List*.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.
Noxious Weeds and Invasive Species Standard 3: Gravel or borrow material sources shall be monitored for noxious weeds and other invasive species. Sources infested with noxious weeds shall be closed until the weeds are successfully controlled.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.
Noxious Weeds and Invasive Species Standard 4: Noxious weeds shall be aggressively treated throughout the Forest, unless specifically prohibited, following the Caribou Noxious Weed Strategy. Using Integrated Weed Management, methods of control, and access shall be consistent with the goals of each prescription area.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.
Noxious Weeds and Invasive Species Guideline 1: Weed treatment projects, especially those using herbicides, should be timed to achieve desired effects on target vegetation, while having minimal effects on non-target vegetation.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.
Noxious Weeds and Invasive Species Guideline 3: Monitor, as needed, disturbed areas, such as landings, skid trails, roads, mines, burned areas, etc., for noxious weeds or invasive species and treat where necessary.	The Project would be in compliance with this guideline by the use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds. All reclamation areas would be monitored for noxious weeds and invasive species, so that that as necessary, they can be treated.
Noxious Weeds and Invasive Species Guideline 4: Evaluate the potential for invasion by noxious weeds into proposed vegetation units and wildland fire use plan areas and modify units or mitigate where necessary.	The Project would be in compliance with the standards and guidelines by use of seed mixture(s) that would be applied to complement the existing plant communities and the reclaimed areas and by actively controlling identified noxious weeds.

Table 4 Compliance with Applicable BLM ARMP Goals, Objectives, and Actions for Vegetation Resources

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Action ME-2.1.4. Applicable Idaho Standards for Rangeland Health (BLM 1997) will be employed to determine the success of reclamation, rehabilitation, or restoration activities following major surface disturbances on public lands.	The Project would be consistent with this action because proposed reclamation activities are designed to be in compliance and the seed mixtures selected for reclamation contain a variety of native grass, forb, and shrub species that could provide forage for livestock and wildlife. All reclamation areas would be monitored for success. Additional native species are predicted to colonize reclaimed areas over time through natural successional processes. Weed control would also be undertaken.
Action ME-2.2.1. Reclamation Plans for mineral development operations will be designed to attain and final reclamation will meet applicable standards (BLM 1997) consistent with the rehabilitation potential of the disturbed site.	The Project would be consistent with this action because proposed reclamation activities are designed to be in compliance and the seed mixtures selected for reclamation contain a variety of native grass, forb, and shrub species that could provide forage for livestock and wildlife. Additional native species are predicted to colonize reclaimed areas over time through natural successional processes. Weed control would also be undertaken.
Action ME-2.2.2. Operational Standard 9: Within development areas, soils and native vegetation will be retained undisturbed when disturbance of the site is not necessary for minerals development or safety.	This standard would be met for the Project as disturbance would be limited to the minimum area necessary, and areas would be reclaimed and revegetated when no longer needed for mining.
Action ME-2.2.2. Operational Guideline 1: Selection of plant species for establishment will reflect the surrounding ecosystem and post-development land use. Plant materials selected for reclamation use will be adapted to the climate of the site. Consideration and preference will be given to promoting natural succession, native plant species, and structural diversity.	This guideline would be met by the Project as areas would be reclaimed with a variety of predominantly native plant species that are adapted to the local climate. The seed mixes include bunchgrasses, forbs, and shrubs for structural diversity. Reclaimed areas would also be subject to natural succession over time.
Action ME-2.3.5. In reclamation activities, plant species known to reduce the risk of bioaccumulation of hazardous substances, such as selenium, will be used if such risk is present.	The Project would be consistent with this Action. Seed mixes were designed to include predominantly shallow-rooted species, and no selenium accumulator species were included in seed mixes. The cover system is designed to eliminate adverse bioaccumulation of selenium.
Action ME-2.3.6. Prior to release of any performance bond or relinquishment of a mineral lease/permit, reclamation vegetation will be monitored for bioaccumulation of hazardous substances for a period of time to be determined appropriate by the Authorized Officer.	The Project would be consistent with this Action. Simplot would conduct monitoring as given in **Sections 2.4** and **2.5** and Section 3.4 of the Monitoring Plan.

Table 5 Compliance with Applicable BLM ARMP Goals, Objectives, and Actions for Noxious Weeds and Invasive Species

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Action VE-2.1.3. When authorizing new permitted/authorized activities, stipulations will be incorporated for the prevention and treatment of invasive species/noxious weeds as applicable. Examples of such stipulations to consider will promote: • The replacement of invasive species/noxious weeds by perennial plant cover which includes purchasing and • planting of desirable seeds or plants. • The use of perennial green fire breaks when emergency stabilization and rehabilitation (ES&R) or restoration efforts are planned/implemented. • Invasive species/noxious weed management being integrated into any new or renewal of permitted/authorized activities resulting in major surface disturbance.	The Project would be consistent with this action because proposed reclamation activities are designed to comply, and the seed mixtures selected for reclamation contain a variety of native grass, forb, and shrub species that could provide forage for livestock and wildlife. Additional native species are predicted to colonize reclaimed areas over time through natural successional processes. The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.4. As appropriate, chemical, biological, mechanical, and manual methods will be used in treating invasive species/noxious weeds. The use of biological control agents will be promoted when reasonable as identified through current BLM policy.	The Project would comply with this action as Simplot implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.5. Herbicide use will be consistent with current BLM policy (e.g., Record of Decision. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States. Programmatic Environmental Impact Statement. US Department of the Interior, Bureau of Land Management. September 2007.)	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.6. Projects involving the application of herbicides, pesticides and insecticides that may affect Special Status Species will be analyzed at the project level and designed such that applications will support species conservation and recovery and minimize risks of exposure.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.7. Control of invasive species/noxious weeds will be coordinated with adjacent land owners and local governments through cooperative management programs.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.8. Fuels and restoration projects will be coordinated with other programs to reduce the risk of invasive species/noxious weeds.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.
Action VE-2.1.9. Suppression equipment will be washed for invasive species/noxious weeds at designated sites.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Action VE-2.1.11. Where hay or straw will be used on public lands for permitted/authorized and internal BLM activities, state-certified noxious weed free hay/straw will be required.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine. Simplot would comply with this action by using only certified weed-free mulch, straw bales, etc.
Action VE-2.1.12. Integrated weed management strategies will be coordinated and developed with Tribal, Federal, and State agencies and local governments at appropriate scales to restore affected BLM-administered public lands. Such strategies or actions may include but are not limited to: • coordination of treatment efforts; • identification of priority areas; • promote public awareness; and • develop educational material regarding control, prevention, etc.	The Project would comply with this action as Simplot would implement a noxious weed program similar to that already approved by the BLM for the nearby Smoky Canyon Mine.

Table 6 summarizes compliance with the BLM Pocatello ARMP with regard to wetland and riparian resources under the Project.

Table 6 Compliance with Applicable BLM Pocatello ARMP Goals, Objectives, and Actions for Wetland and Riparian Resources

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Action ME-2.3.7. Phosphate mine site plans will be designed to meet the following goals as identified in the Interagency Area-Wide Investigation of Phosphate Mine Contamination and Final Risk Management Plan (IPMP) (2004). Protect southeast Idaho's surface water resources. Protect wildlife habitat and ecological resources in southeast Idaho. Maintain and protect multiple beneficial uses of the southeast Idaho phosphate mining resource area. Protect southeast Idaho's ground water resources.	In regard to protecting wildlife habitat and ecological resources, the Project would be consistent with this action over the long term, because the majority of disturbed areas would be reclaimed through plant growth medium and seed mix applications. After reclamation, the treated areas would then be allowed to progress through succession in order to recover to the baseline conditions of sagebrush, aspen, and mixed conifer communities. Over the short term, the Project would result in reduced habitat and forage for big game and other species.
Action ME-2.3.8. In order to achieve the goals identified in Action ME-2.3.7, the following action level for vegetation surface waters and groundwater as identified in the current IPMP (Appendix F) and/or future updates or revisions will be used to design mine and reclamation plans. In addition, these levels will be used in determining the success of phosphate mine reclamation, rehabilitation, or restoration activities.	EMPs identify the environmental monitoring activities that would be undertaken at the mine to assure the effectiveness of BMPs and mitigation measures. COPCs are not predicted to accumulate in plant tissue. The Project is in compliance with this action.

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Goal VE-1. Provide for the proper functioning condition (PFC) of riparian areas.	The Project would result in the long-term removal of small areas of riparian habitat and appropriately-sized culverts would be installed in these areas. A 404 permit would be required to mitigate for impacts to wetland areas, which are also associated with the riparian areas that would be impacted, so the PFC of the impacted riparian areas might not be affected.
Objective VE-1.1. Maintain properly functioning riparian areas and restore or improve those areas that are not at PFC.	The Project would result in the long-term removal of small areas of riparian habitat and appropriately-sized culverts would be installed in these areas. A 404 permit would be required to mitigate for impacts to wetland areas, which are also associated with the riparian areas that would be impacted, so the PFC of the impacted riparian areas might not be affected.
Action VE-1.1.1. Appropriate management guidelines, techniques or practices will be implemented to control erosion, stabilize streambanks, shade/reduce water temperature, and encourage a diversity of desirable riparian vegetation.	This action would be partially met under the Project. BMPs would be used to control erosion and combat streambank degradation. However, no steps would be taken to shade/reduce water temperature or encourage a diversity of desirable riparian vegetation.
Action VE-1.1.2. Idaho Standards for Rangeland Health (BLM 1997) will be implemented to maintain or improve riparian areas.	The Project would result in the long-term removal of small areas of riparian habitat and appropriately-sized culverts would be installed in these areas. A 404 permit would be required to mitigate for impacts to wetland areas, which are also associated with the riparian areas that would be impacted.
Action VE-1.1.4. Stream crossings, if necessary, will be designed to minimize adverse impacts on soils, water quality, and riparian vegetation.	This action would be met under the Project. Culverts would be approximately sized and placed such that they would minimize impacts at stream crossings. The CWA Section 404 permit would include the mitigation of these impacts.

4A.2.3 Wildlife Resources

The CNF manages forest wildlife resources and their uses according to the CNF RFP (USFS 2003a). The DFCs and objectives for wildlife resources are achieved through the implementation of the forest-wide standards and guidelines as well as the standards and guidelines for biological elements specified in the management prescriptions of the CNF RFP. CNF uses the planning process and ongoing monitoring, evaluation, and adjustment of fish, wildlife, and rare plant standards to prevent listing of species under the ESA and to avoid the extirpation of species (USFS 2003a).

Management Prescription 8.2.2(g) of the CNF RFP lists specific standards and guidelines for wildlife in phosphate mine areas (USFS 2003a).

Bald Eagle

CNF RFP (2003a) contains a number of standards and guidelines for occupied nesting zones and home ranges. The Project would be consistent with these standards and guidelines given that no occupied nesting zones or home ranges are known to occur in or near the Study Area (**Table 7**).

Table 7 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Bald Eagle

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Activities and developments should be designed to minimize conflicts with bald eagle wintering and migration habitat	The Project would be consistent with this guideline, as impacts to bald eagle wintering and migration habitat, in addition to winter foraging and roosting impacts, would be minimal relative to the species' home range size and dispersal capabilities.

Boreal Owl

The CNF RFP (USFS 2003a) contains one guideline specific to boreal owls (**Table 8**).

Table 8 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Boreal Owl

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Within a 3,600-acre area around all known boreal owl nest sites, maintain over 40 percent of the forested acres in mature and old age classes	This guideline would be met under the Project, because there are no known boreal owl nest sites within the Study Area, and even if there were, the Project would not impact enough forested habitat to change the distribution of forest age classes within the Project Area.

Columbian sharp-tailed

Compliance with applicable USFS management directions for Columbian sharp-tailed grouse is summarized in **Table 9**. Additionally, the following management direction from the CNF RFP was reviewed and determined to not be applicable to a phosphate mine project (USFS 2003a), since the Project is not for proposed sagebrush treatments:

- Guideline 1

Table 9 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Columbia Sharp-tailed Grouse

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Standard 1: Cooperate with other states and federal agencies and private landowners to survey, inventory, and manage habitats for sage grouse and Columbian sharp-tailed grouse.	The Project would not hinder efforts by the USFS to cooperate on surveying, inventorying, and managing habitats for Columbian sharp-tailed grouse.
Guideline 2: Management activities should consider proximity to active lek locations during site-specific project planning. Those within two miles of active Columbian sharp-tailed grouse leks should be considered further for suitability as grouse habitat.	As there are no active Columbian sharp-tailed grouse leks within two miles of the Project, there is no applicable USFS management direction specific to this grouse species.
Guideline 3: If management activities would impact courtship, limit physical, mechanical, and audible disturbances in the breeding complex during the breeding season (i.e., March to May) within three hours of sunrise and sunset each day.	The Project would be consistent with this guideline. No occupied Columbian sharp-tailed grouse leks would be impacted by the Project.
Guideline 4: Where management actions will disturb nesting grouse, avoid manipulations or alteration of vegetation during the nesting period (i.e., May to June).	The Project would be consistent with the guideline as the Project would not disturb any nesting grouse.

Greater Sage-Grouse

Compliance with applicable USFS management directions for greater sage-grouse is summarized in **Table 10**. Additionally, the following management direction from the CNF RFP was reviewed and determined to not be applicable to a phosphate mine project (USFS 2003a), since the Project is not for proposed sagebrush treatments:

- Guideline 1

Table 10 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Greater Sage Grouse

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Standard 1: Cooperate with other states and federal agencies and private landowners to survey, inventory, and manage habitats for sage grouse and Columbian sharp-tailed grouse.	The Project would not hinder efforts by the USFS to cooperate on surveying, inventorying, and managing habitats for greater sage-grouse.
Guideline 2: Management activities should consider proximity to active lek locations during site-specific project planning. Those within ten miles of an active sage-grouse lek and two miles of active sharp-tailed grouse leks should be considered further for suitability as grouse habitat.	The Project would be consistent with this guideline. Greater sage-grouse leks within ten miles of the Project were considered for impacts, and there is one occupied lek approximately 5.6 miles northwest of the Project (IDFG 2012; BLM and USFS 2015), which would not be impacted by the Project, due to Project activities not being located within close proximity.
Guideline 3: If management activities would impact courtship, limit physical, mechanical, and audible disturbances in the breeding complex during the breeding season (i.e., March to May) within three hours of sunrise and sunset each day.	The Project would be consistent with this guideline. No occupied greater sage-grouse leks would be impacted by the Project.
Guideline 4: Where management actions will disturb nesting greater sage-grouse, avoid manipulations or alteration of vegetation during the nesting period (i.e., May to June).	The Project would be consistent with the guideline. The nearest occupied lek is approximately 5.6 miles northwest of the Project (IDFG 2012; BLM and USFS 2015), and, although portions of the Project Area are considered suitable brood-rearing habitat, greater sage-grouse are unlikely to utilize the Project Area for nesting due to the limited suitable habitat in the Project Area and the more suitable habitat in adjacent areas. In addition, if construction cannot be avoided during the nesting/brood rearing season, a survey would be conducted to demonstrate that sage grouse are not present before construction begins.

Flammulated Owl

The CNF RFP (USFS 2003a) contains one guideline specific to flammulated owls (**Table 11**).

Table 11 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Flammulated Owl

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Do not allow timber harvest activities within a 30-acre area around all known flammulated owl nest sites.	This guideline would be met under the Project because there are no known nest sites in the Study Area.

Great Gray Owl

The CNF RFP (USFS 2003a) contains the following guidelines (**Table 12**) specific to great gray owl habitat.

Table 12 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Great Gray Owl

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 1: Within a 1,600-acre area around all known great gray owl nest sites, maintain over 40% of the forested acres in mature and old age classes.	The Project would be consistent with this guideline, as there are no known great gray nest sites within the Study Area, and even if there were, the Project would not impact enough forested habitat to change the distribution of forest age classes within the Project Area.
Guideline 2: Restrict the use of strychnine poison to control pocket gophers within a ½ mile buffer around all active great gray owl nest sites	Simplot would not use strychnine poison to control pocket gophers under the Project.

Northern Goshawk

The CNF RFP (USFS 2003a) provides standards and guidelines for management of forest habitat within active and historical northern goshawk nesting territories. The Study Area has one known active nesting territory and the nest was found to be active in 2017. The active nest is located within the footprint of one of the proposed pits and thus, the standards and guidelines described in Table 3.5 of the CNF RFP relative to impacts on northern goshawks (USFS 2003a) would not be met.

The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.

Peregrine Falcon

The CNF RFP (USFS 2003a) contains the following standard and guideline specific to peregrine falcon habitat (**Table 13**).

Table 13 Compliance with Applicable CNF RFP Standards and Guidelines for Peregrine Falcon

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Standard 1: Within 15 miles of all known nest sites, prohibit all use of herbicides and pesticides which cause egg shell thinning as determined by risk assessment.	The Project would be in compliance with this standard because Simplot would use only agency-approved herbicides and pesticides.
Guideline 1: For proposed projects within two miles of known peregrine falcon nests, minimize such items as: (1) human activities (rock climbing, aircraft, ground and water transportation, high noise levels, and permanent facilities) which could cause disturbance to nesting pairs and young during the nesting period between March 15 and July 31; (2) activities or habitat alterations which could adversely affect prey availability.	This guideline would be met because there are no known peregrine falcon nests within 2 miles of the Project.

Trumpeter Swan

The CNF RFP (USFS 2003a) contains the following standard and guideline specific to the trumpeter swan (**Table 14**).

Table 14 Compliance with Applicable CNF RFP Standards and Guidelines for Trumpeter Swan

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Standard 1: Maintain suitable trumpeter swan nesting habitat conditions in Elk Valley Marsh and other sites.	Since there is no known trumpeter swan nesting habitat in the Study Area, the Project would be in compliance with this standard.
Guideline 1: Change livestock grazing through management or fencing when grazing is adversely affecting trumpeter swan use or productivity.	Since there is no known trumpeter swan use or habitat in the Study Area, this guideline does not apply.

Harlequin Duck

The CNF RFP (USFS 2003a) contains the following guideline specific to harlequin duck habitat (**Table 15**).

Table 15 Compliance with Applicable CNF RFP Standards and Guidelines for Harlequin Duck

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 1: Avoid establishing new trails, roads, or facilities within 300 feet (on each side) of any stream reach with documented harlequin duck breeding activity.	Since there are no streams with documented harlequin duck breeding habitat in the Study Area, the Project would be in compliance with this standard.

General Wildlife Resources

Table 16 summarizes compliance with the CNF RFP with regard to wildlife resources and sensitive species for the Project. The following standards and guidelines were also reviewed but do not apply to the effects of mining on wildlife resources:

- Dead and Down Material Guideline 1 (applies only following forested vegetation treatments)

Table 16 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Wildlife Resources

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Snag/Cavity Nesting Habitat Standards 1 through 3 and Guidelines 1 through 5	Retaining existing snags and live trees for future snag recruitment within areas proposed for mining activities would not be possible. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Wildlife, Sensitive Species, Guideline 1: Survey for the presence of sensitive species if suitable habitats are found within a project area a minimum of once prior to or during project development.	Baseline surveys for sensitive species were conducted for the Project throughout suitable habitats.
Big Game Guideline 1: Provide for vegetation buffers of at least one sight distance (Thomas 1979) around big game concentration/use areas, such as wallows and mineral licks. Sight distance is the distance at which 90 percent of a deer or elk is hidden from an observer. This will vary depending on site specific stand conditions.	No big game concentration areas, such as wallows or mineral licks, have been identified in the Study Area.

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Big Game Guideline 2: Provide for security or travel corridors near created openings.	Over the short term, this guideline would not be met under the Project. As a result of noise and human presence, it is likely that wildlife such as big game would avoid a larger area than the actual disturbance footprint, reducing the amount of security habitat and potentially disrupting local travel corridors in the vicinity of the Project. However, only a portion of the mine would be active or disturbed at any one time. The phased approach to the mine and concurrent reclamation could help provide for travel through and/or adjacent to the Project Area if big game are not deterred by human activity. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Big Game Guideline 3: Where summer or fall habitat conditions, including security areas, are identified as a factor in not meeting State population objectives, work with State wildlife management agencies to address the issue(s).	For Elk, the Statewide Report for Fall 2016 states that the reason elk populations are not meeting objectives is due to limited winter range. It says "Although GMU 76 could support a higher wintering population, it would be at the expense of significant depredation concerns and increases in elk occupying mule deer winter range." The Report does not mention fall or summer range as being a factor for not meeting objectives. For deer, the most recent Statewide Report is for 2015-2016 and it appears that winter range is again the issue and summer or fall habitat conditions are not mentioned. Although certain State population objectives for elk and deer are not being met, summer and fall habitat conditions have not been identified as a factor. In addition, the USFS is working with IDFG to address some habitat issues through planning projects with aspen restoration components to address habitat issues, closing illegal routes where that is an issue, etc. The Project Area is also intended to be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Prescription 8.2.2 Wildlife Guideline 1: Mining operations should be designed to accommodate big game migration.	No major big game migration corridors have been identified within the Project Area; however, due to the presence of fawning and calving habitat and winter range habitat within and near the Project Area, the Project would likely disrupt big game movements, at least during the period of active mining. Following the final reclamation and cessation of human activity, big game would be expected to repopulate the Project Area.

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Prescription 8.2.2 Wildlife Guideline 2: Reclamation should be designed to minimize wildlife exposure to hazardous substances.	Reclamation activities for the Project would be designed to prevent the bioaccumulation of selenium and other COPCs by vegetation growing on reclaimed landscapes.
Prescription 8.2.2 Wildlife Guideline 3: Consider vegetation species that contribute to wildlife habitat needs when developing reclamation plans and create wildlife structures (slash piles, logs, rock piles) using native vegetation and materials to provide habitat diversity in created opening, where possible.	This guideline would be met under the Project. A variety of native and desirable nonnative forb and grass species would be used in the seed mixes applied during reclamation to promote post-reclamation use by wildlife. Reclamation plans do not specifically incorporate the use of wildlife structures (e.g., slash piles, logs and rock piles). However, these structures may be used when appropriate in accordance with this guideline.
Prescription 8.2.2 Wildlife Guideline 4: Encourage construction of ledges on suitable pit walls to accommodate cliff-dwelling species.	Pit walls or ledges would largely be reclaimed upon the completion of the Project; however, there would be some areas of pit highwalls that would be left unreclaimed and available for cliff-dwelling species accommodation.

Amphibians

Table 17 summarizes compliance with the CNF RFP with regard to amphibians for the Project.

Table 17 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Amphibians

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 1: Ensure habitats in the Tincup Creek Drainage and other known toad breeding locations are managed to maintain or improve the existing population and distribution of western toads.	This Project is not within the Tincup Creek drainage, nor is the Project anticipated to impact any known breeding locations of western toads.
Guideline 2: Ensure habitats in the Toponce area and other known northern leopard frog breeding locations are managed to maintain or improve the existing population and distribution of the frogs.	This Project is not within the Toponce area. Although there are not any known northern leopard frog breeding locations within the Project Area, potentially suitable breeding habitat could be impacted by the Project, although the best potential habitat associated with Slug Creek would be spanned by the proposed transmission line.

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 3: Maintain amphibian habitats when developing and modifying springs and wetlands.	The Project would result in impacting springs and wetlands and thus amphibian habitats would be impacted. Mitigation of these impacts, through the CWA 404 permit, would be required but would likely occur on private land. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.

Migratory Birds

Table 18 summarizes compliance with the CNF RFP with regard to migratory birds for the Project. Additionally, the following management direction from the CNF RFP was reviewed and determined to not be applicable to a phosphate mine project (USFS 2003a):

- Land birds Guideline 4 (Applies to grazing implementation)

Table 18 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Migratory Birds

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 1: Stands of mature trees (including snags and dead-topped trees) should be maintained next to wet meadows.	The wetland area in Green Basin could be considered a wet meadow, but no mature trees occur next to this area.
Guideline 2: Where feasible, maintain 30 to 50 percent of the sagebrush habitat in a 5th code HUC in contiguous blocks greater than 320 acres to support sagebrush obligate species.	The 5th code HUC containing the Project Area comprises approximately 139,500 acres and there are numerous acres of sagebrush habitat within this HUC. Only one contiguous sagebrush community measuring more than 320 acres occurs within the Project Area and approximately 140 acres of this contiguous community would be disturbed by the Project. . The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.
Guideline 3: Practices which stabilize or increase native grass and forbs cover in sagebrush habitats with 5% to 25% sagebrush canopy cover should be implemented.	The Project would be consistent with this guideline over the long term (however, approximately 760 acres of sagebrush habitat would be removed during the activities associated with the Project). A variety of native and desirable nonnative forb and grass species would be used in the reclamation seed mixes.

Gray wolf

The CNF RFP includes the following management guidance (**Table 19**) for gray wolves.

Table 19 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Gray Wolves

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Standard 1: Restrict intrusive human disturbances (motorized access, vegetation management, livestock grazing, etc.) within one mile around active den sites and rendezvous sites between April 1 and June 30 when there are five or fewer breeding pairs of wolves in the Yellowstone Nonessential Experimental Population Area (applies to the portion of the Forest east of Interstate 15) or the Central Idaho Nonessential Experimental Population Area (applies to the portion of the Forest west of Interstate 15). After six or more breeding pairs become established in each experimental population area, land use restrictions will not be necessary.	The Project would be consistent with this guidance as there are no known den sites within the Study Area.
Standard 2: If and when wolves are de-listed, they will be managed in accordance with approved state management plans.	The Project would be consistent with this guidance as currently wolves have been delisted and are managed by the State of Idaho under the currently approved wolf management plan.

Canada lynx

The CNF RFP (USFS 2003a) provides management direction which will maintain linkages for Canada lynx. However, due to the nature of the Project and the result of mining impacts, much of the management direction for the Canada lynx would not be met.

The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.

Townsend's big-eared bat

The CNF RFP (USFS 2003a) includes the following guideline (**Table 20**) for sensitive bat species.

Table 20 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Townsend's Big-eared Bat

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 1: All abandoned underground mines should be evaluated as bat habitat prior to closure. As an alternative to collapsing mine entrances, gate abandoned mines to retain roosting and hibernation habitat for bats. (Idaho Conservation Effort, 1995, M-1)	The Project is in compliance as no mines or caves known to be occupied by bats would be closed or otherwise impacted.

STANDARD OR GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Guideline 2: Gating of mines should be considered where human disturbance is disturbing/displacing bats. Where gates are used, they should be designed in accordance with published literature (i.e., Tuttle and Taylor, 1994). (Idaho Conservation Effort, 1995, Appendix B)	The Project is in compliance as no mines or caves known to be occupied by bats would be closed or otherwise impacted.
Guideline 3: Discourage or restrict entry to mines and caves known to be occupied by hibernating bats or bats with young. Exceptions include surveys conducted by qualified personnel (Idaho Conservation Effort, 1995, I-3,4).	The Project is in compliance as no mines or caves known to be occupied by bats would be closed or otherwise impacted.
Guideline 4: Prior to closure of inactive or abandoned underground mines, surveys for cave-dependent species should be completed and mitigation measures implemented	The Project is in compliance as no mines or caves known to be occupied by bats would be closed or otherwise impacted.

North American wolverine

Compliance with applicable USFS management directions for North American wolverine is summarized in **Table 21**.

Table 21 USFS Management Direction for the North American Wolverine

MANAGEMENT DIRECTION	COMPLIANCE UNDER THE PROJECT
Guideline 1: Restrict intrusive disturbance within one mile around known active den sites, March 1 to March 15.	The Project would be consistent with this guideline, as there are no known active wolverine den sites (or suitable denning habitat) within one mile of the Study Area.

The BLM ARMP has numerous applicable goals, objectives, and actions for specific wildlife species, as follows in **Tables 22**, **23**, and **24**. For greater sage-grouse, the ARMPA establishes Objectives, Management Decisions, Buffers, and Required Design Features to protect and restore sage-grouse habitat. Idaho uses a conformance review form to document how each project proposal conforms to the ARMPA. The completed conformance review is located in the Project Record. The conformance review determined that the Project, including any Action Alternatives, would be in conformance with the ARMPA. Specifically, the review noted that the Project already includes many required design features which would aid in conformance, such as nest avoidance, infrastructure siting, facility compactness, and reclamation techniques.

Table 22 Bald Eagle BLM Management Guidance

MANAGEMENT DIRECTION	COMPLIANCE UNDER THE PROJECT
In cooperation with IDFG, USFWS, and others: • Continue to cooperate in determining the distribution of populations and suitable habitats. • Following current monitoring protocols, continue to cooperate in conducting systematic nest surveys and monitoring. • Cooperate in the management of nest sites and communal roost sites to promote species conservation. • Cooperate in the maintenance and improvement of habitat in key foraging areas, for example, mule deer winter range, and aquatic and riparian habitat for fish and waterfowl, where a need exists. • Cooperate to maintain and develop nesting and roosting habitat for future use by bald eagles.	The Project would be consistent with this management direction, because the Project would not preclude coordination with other agencies or species habitat conservation.
Ensure that ongoing Federal actions support or do not preclude species conservation.	The Project would be consistent with this management direction, because the Project would not preclude species habitat conservation.
Protect bald eagles from disturbance that might result in displacement during critical periods.	The Project would be consistent with this management direction, as impacts to bald eagles are not anticipated.
Implement adaptive management as needed to achieve conservation objectives.	The Project would be consistent with this management direction, because adaptive management would be implemented as needed (**Section 2.5**).
Support conservation easements, cooperative management efforts, and other programs on adjacent non-Federal lands to support conservation of the bald eagle.	The Project would be consistent with this management direction, because the Project is not anticipated to preclude supporting conservation of bald eagles on adjacent non-Federal lands.
Approve development of saleable or leasable minerals so as not to preclude species habitat conservation. This includes management of physical facilities, as well as disturbances to the species resulting from human uses (BLM 2012).	The Project would be consistent with this management direction, because the Project would not preclude species habitat conservation.

Table 23 Columbian Sharp-tailed Grouse BLM Management Guidance

MANAGEMENT DIRECTION	COMPLIANCE UNDER THE PROJECT
As appropriate, based upon a site-specific habitat assessment, maintain vegetation in suitable condition for nesting and brood rearing for two miles from known leks. Any manipulation of habitats must not be greater than ten percent of the two-mile radius.	As there are no active Columbian sharp-tailed grouse leks within two miles of the Project Area, the Project is in compliance with this management direction.

MANAGEMENT DIRECTION	COMPLIANCE UNDER THE PROJECT
As appropriate, based upon a site-specific habitat assessment, maintain availability of deciduous shrubs (e.g., serviceberry and chokecherry) within four miles of leks to protect winter habitat.	The Project would likely remove some deciduous shrubs, although since there are no known active Columbian sharp-tailed grouse leks within four miles of the Project Area, the Project should be in compliance this management direction.
Coordinate with IDFG as population targets and monitoring locations are established for Columbian sharp-tailed grouse. Monitoring will be conducted for populations in key or source areas and restorations areas in that order.	The Project would be in compliance with this management direction as it would not preclude coordination with IDFG.
In areas where Columbian sharp-tailed grouse habitats are fragmented by land ownership patterns, cooperate with IDFG and local working groups to identify and maintain long-term habitat by acquiring conservation easements or bringing crucial habitats into public ownership.	The Project would be in compliance with this management direction as it would not preclude coordination and cooperation with IDFG related to sharp-tailed grouse habitats.
In cooperation with IDFG, identify areas where application of pesticides for grasshopper or Mormon cricket control may negatively affect Columbian sharp-tailed grouse broods. Identify a cooperative strategy to review requires for pesticide application in these identified locations.	The Project would be in compliance with this management direction as it would not preclude coordination and cooperation with IDFG related to application of pesticides for grasshopper or Mormon cricket control.
As appropriate, based upon a site-specific habitat assessment, protect Columbian sharp-tailed grouse leks from disturbance from permitted activities for 0.6 mile from March 1 to May 31.	As there are no active Columbian sharp-tailed grouse leks within two miles of the Project Area, the Project is in compliance with this management direction.

Table 24 Gray Wolf BLM Management Directions

MANAGEMENT DIRECTION	COMPLIANCE UNDER PROJECT
In cooperation with the IDFG, USFWS, and others: Determine the distribution of wolves and key gray wolf habitat areas (e.g., dens, rendezvous sites, and crucial big game winter ranges). Cooperate in maintaining and improving gray wolf habitat by focusing on reducing human/wolf interactions and improving big game winter range.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.
Ensure that ongoing Federal actions support or do not preclude species recovery.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.

MANAGEMENT DIRECTION	COMPLIANCE UNDER PROJECT
Protect gray wolves from disturbance that might result in displacement during critical periods.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.
Support conservation easements, cooperative management efforts, and other programs on adjacent non-Federal lands to support recovery of the gray wolf.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.
Approve development of saleable or leasable minerals so as not to preclude species habitat conservation and recovery. This includes the management of physical facilities, as well as disturbances to the species resulting from human uses.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.
Action SS-1.2.6: Gray wolf habitat (e.g., reproductive and rearing habitats) will be conserved/managed in the following manner by: Analyzing habitat characteristics of public lands adjacent to the CNF in conjunction with the planned CNF evaluation to determine if suitable wolf habitat exists. Activities on public lands within the Yellowstone Nonessential Experimental Population Area (east of Interstate-15) or the Central Idaho Nonessential Experimental Population Area (west of Interstate-15), which will disturb within one mile of active gray wolf den sites and rendezvous sites between April 1 and June 30 when five or fewer breeding pairs are present, will not be allowed. Coordinate habitat management with the IDFG.	The Project would be consistent with these management directions, as the Project would not preclude maintenance, improvement, or conservation of gray wolf habitat or preclude or hinder the recovery of gray wolves.

Further, the BLM ARMP has several general wildlife resources goals, objectives, and actions as shown in **Table 25**.

Table 25 Compliance with BLM ARMP Goals, Objectives, and Actions for Wildlife Resources

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Goal FW-1. Manage wildlife habitats so vegetation composition and structure assures the continued presence of fish and wildlife as part of an ecologically healthy system.	The Project would be consistent with this goal, because the majority of the disturbance would be reclaimed to grasslands and shrublands as succession after reclamation progresses. However, losses of aspen, aspen/mixed conifer, mixed conifer, and wetland/riparian habitats within the Project footprint would likely be long-term and should be considered permanent, as these vegetation communities would likely require decades to centuries to regenerate to their pre-disturbance conditions.

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Objective FW-1.1. Maintain and improve wildlife habitats to support IDFG management objectives.	The Project would be consistent with this objective over the long term, because the majority of disturbance would be reclaimed to grasslands and shrublands as succession after reclamation progresses. Over the short term, the Project would result in reduced habitat and forage for big game and other wildlife species.
Action FW-1.1.1. As appropriate and practical, elk and deer habitat on public lands will be managed as identified below in order to generally support IDFG management objectives for southeast (SE) Idaho management units. Riparian areas will be managed for habitat and population linkage areas by applying appropriate management techniques that may include but are not limited to: • Fencing, • Providing adjacent cover strips, and • Controlling noxious weeds. Aspen will be treated by applying appropriate management techniques that may include but are not limited to: • Removing encroaching conifer in Aspen clones. • Slashing old age aspen clones while leaving snags and some live trees. • Fencing degraded aspen clones. • Pursuing the use of prescribed fire. • Plowing Aspen roots to release clones. Degraded riparian areas will be restored.	The Project would not result in maintaining/improving riparian and aspen habitats as it is a mining Project and is not designed for those objectives. The Project would impact some aspen on BLM lands as a result of the powerline/pipeline corridor and the tailings pond. No riparian areas are expected to be impacted on BLM lands from the Project. As part of the Project, BLM land would be sold and become private land. A parcel of private land would be donated and become BLM land and the donated parcel contains suitable elk and deer habitat offsetting the impacts to aspen habitat.
Goal FW-2. Provide for the diversity of native and desired non-native species as part of an ecologically healthy system.	The Project would be consistent with this goal, because the majority of disturbance would be reclaimed with a mixture of native and desirable nonnative forb and grass species. Plant species richness on reclaimed landscapes is anticipated to be similar to baseline species richness. Over the long term, reclaimed areas are predicted to recover to baseline habitat quality of sagebrush communities on the mine site. However, the Project may result in localized declines in the abundance of wildlife species that are dependent on aspen, aspen/mixed conifer, mixed conifer, and wetland and riparian communities, as it would result in the long-term loss of these habitats within the Project footprint.

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER THE PROJECT
Objective FW-2.1. Maintain or improve native and desired non-native species habitat and the connectivity among habitats.	The Project would be consistent with this objective, because the majority of the disturbance would be reclaimed with a mixture of native and desirable nonnative forb and grass species. Reclaimed areas would eventually recover to baseline levels of wildlife habitat service similar to that in the sagebrush communities on the mine site. While wildlife may avoid the Project during active mining, the habitats within the Study Area are naturally patchy, and the Project is not anticipated to significantly disrupt habitat connectivity over the long term.

4A.2.4 Fisheries and Aquatics

Table 26 summarizes compliance with the CNF RFP with regard to AIZs for the Project. **Table 27** lists the applicable BLM ARMP goals, objectives, and actions for fisheries and aquatics.

Table 26 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for AIZs

MANAGEMENT DIRECTIONS	COMPLIANCE UNDER THE PROJECT
Prescription 2.8.3 Minerals/Geology Guideline 1: Locate new structures, support facilities, and roads outside AIZs. Where no alternative to siting facilities in AIZs exists, locate and construct the facilities in ways that avoid or reduce impacts to desired AIZ attributes. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity.	There would be 111 acres of direct disturbance to AIZs. The majority of this disturbance would be in intermittent drainages, and with the exception of a very small area near Slug Creek where a transmission line corridor would occur, AIZs associated with perennial streams would be avoided.
Prescription 2.8.3 Minerals/Geology Guideline 4: Do not locate debris, mine overburden, excess material, leaching pads, and other facilities within Aquatic Influence Zones, unless no other alternatives are available. If no other alternative exists, ensure that safeguards are in place to prevent release or drainage of toxic or other hazardous materials onto these lands.	There would be 111 acres of direct impacts to AIZs. The majority of this would be direct impacts to intermittent drainage for the placement of mine facilities. These intermittent drainages do not provide aquatic habitat themselves, but may contribute to flow in downstream (unconnected) areas. Measures would be implemented to reduce COPC transport throughout the Study Area.
Prescription 2.8.3 General Riparian Area Management Guideline 1: Felled trees should remain on site when needed to meet woody debris objectives and desired AIZ attributes.	Felled trees would likely not remain on site, but would be removed. However, the AIZs impacted are intermittent drainages without defined channels or aquatic habitat and woody debris objectives are not applicable.
Prescription 2.8.3 General Riparian Area Management Guideline 2: Use herbicides, pesticides, and other toxicants and chemicals only as needed to maintain desired AIZ attributes.	There would be no herbicide, pesticide, toxicants, or chemicals used within AIZs.

MANAGEMENT DIRECTIONS	COMPLIANCE UNDER THE PROJECT
Prescription 2.8.3 General Riparian Area Management Guideline 3: Avoid storage of fuels and other toxicants or refueling within AIZs unless there are no other alternatives. Any refueling sites within an AIZ should have an approved spill containment plan.	There would be no storage of fuels or toxicants, and no refueling within AIZs.
Prescription 2.8.3 Roads and Trails Guideline 1: Avoid constructing roads within the AIZ unless there is no practical alternative.	All USFS roads and trails created as a result of the Project would be constructed to minimize, to the extent feasible, impacts to desired AIZ attributes. Measures would be implemented to reduce erosion and sedimentation. Road placement would minimize impacts to all surface resources to the extent practical.
Prescription 2.8.3 Roads and Trails Guideline 2: Culverts (permanent and temporary) should be sized so that the probability of flow exceedance is 50 percent or less during the time the culvert is expected to be in place. Consider bedload and debris when sizing culverts.	Culverts would be designed to accommodate 100-year, 24-hour.
Prescription 2.8.3 Roads and Trails Guideline 3: When feasible, use bridges, arches, and open-bottom culverts in fish-bearing streams.	No fish bearing streams would be crossed by any USFS roads and trails created as a result of the Project.
Prescription 2.8.3 Roads and Trails Guideline 4: Avoid placing ditch relief culverts where they may discharge onto erodible slopes or directly into streams.	Ditch relief culverts would be avoided where they may discharge onto erodible slopes or directly into streams. All culverts will be designed to minimize erosion.
Prescription 2.8.3 Roads and Trails Guideline 5: Where feasible, install cross-drainage above stream crossings to prevent ditch sediments from entering streams.	Where feasible, cross-drainage would be installed above stream crossings. Further, ditches and sediments and erosion associated with any other area of impact would be mitigated.
Prescription 2.8.3 Roads and Trails Guideline 6: New or reconstructed roads and trails should cross the AIZ riparian areas as perpendicular as possible.	No riparian areas are present in the mapped AIZs that would be impacted. However, where culverts are necessary, they would be placed perpendicular to the area to be crossed if possible.
Prescription 2.8.3 Roads and Trails Guideline 7: Avoid making channel changes on streams or drainages.	Several intermittent drainages would be changed or removed due to construction of the pit and associated facilities.
Prescription 2.8.3 Roads and Trails Guideline 8: Design and install drainage crossings to reduce the chances of turning stream flows down the road prism in case of a blocked or overflowing culvert.	Culverts would be installed to reduce the chances of turning stream flows down the road prism in case of a blocked or overflowing culvert.
Prescription 2.8.3 Roads and Trails Guideline 9: Road drainage patterns should avoid disruption of natural hydrologic flow paths.	Roads have been designed such that drainage patterns would not disrupt natural hydrologic low paths.

Table 27 Compliance with Applicable BLM ARMP Goals, Objectives, and Actions for Fisheries and Aquatic Resources

GOAL/OBJECTIVE/ACTION	COMPLIANCE UNDER PROJECT
Action SW-2.1.4. Stream crossings, if necessary, will be designed to minimize adverse impacts on soils, water quality, and riparian vegetation and provide for fish passage, as appropriate.	Culverts would be installed to conform to the natural streambed and slope so that a minimum depth of water is always available in the culvert for fish passage. Thus, the Project would comply with BLM's action.
Action SW-2.1.5. As appropriate, new or existing roads and trails adjacent to streams or riparian areas that impact water quality may be redesigned, repaired, maintained, or re-located to a location not impacting the water quality.	Roads constructed for the Project are not anticipated to impact water quality to streams and riparian areas from new or existing roads because of the implementation of EMPs and BMPs to control sedimentation and runoff.
Action ME-2.2.2. The following operation standards and guidelines would be applied as appropriate to reduce environmental impacts from mineral exploration and development operations: Operational Standards: 1. Locate surface disturbing activities, including support facilities, outside riparian zones (e.g., riparian habitat conservation areas (RHCAs) or areas where surface disturbance will impact the PFC of the riparian areas) and fish bearing waters. Cutthroat trout guidance will be considered as identified in Appendix C of the ARMP. Where no feasible alternative site exists, operate and construct facilities in ways that will avoid or reduce impacts on riparian zone attributes.	The Project would result in the long-term removal of small areas of riparian habitat and appropriately-sized culverts would be installed in these areas. A 404 permit would be required to mitigate for impacts to wetland areas, which are also associated with the riparian areas that would be impacted, so the PFC of the impacted riparian areas might not be affected. The mine plan is specifically designed to avoid and reduce impacts to surface resources, including riparian areas, to the extent feasible. Fish bearing waters would not be impacted by surface disturbing activities for the Project, thus compliance with this action would be met.

4A.2.5 Land Use

The Project would comply with CNF RFP standards and guidelines for grazing management (**Table 28**) and recreation (**Table 29**).

Table 28 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Grazing Management Action

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Range Resources Guideline 3: Seeding or establishment of monocultures should be avoided, and efforts should be made to establish and/or maintain a variety of desirable grass, forbs, and shrub species.	This guideline would be met for the Project. Areas no longer needed for mining would be reclaimed with a variety of predominantly native plant species that are adapted to the local climate. The seed mix includes bunchgrasses, forbs, and shrubs for structural diversity.
Forage Utilization Guideline 1: Apply upland forage utilization levels to all allotments as shown in Table 3.6 in the CFP RFP, unless determined through development of site-specific standards in the allotment management.	This guideline would be met for the Project through issuance of Annual Operating Instructions as applicable.

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Livestock Grazing Permits Guideline 1: Permittees may be allowed motorized access to maintain or develop range improvements assigned in their grazing permits or for other authorized administrative activities. AMPs and Annual Operating Instructions should include direction to comply; travel permits should be issued to authorize this use.	This guideline would be met for the Project through issuance of Annual Operating Instructions as applicable.
Prescription 2.7.2(d)/Livestock Grazing Guideline 1: Livestock grazing use in the uplands should not exceed the utilization levels below unless site specific analysis shows that higher levels are appropriate: 20 percent of the current year's growth of key browse species. 45 percent of the current year's growth of key herbaceous species.	This guideline would be met for the Project through issuance of Annual Operating Instructions as applicable.
Prescription 8.2.2/Livestock Grazing Guideline 1: These areas may be opened to grazing after meeting the restoration criteria identified in the mine reclamation plan.	This guideline would be met for the Project following successful restoration.

Table 29 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Recreation

STANDARD/GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Transportation/Access Guideline 1: The construction of new or maintenance of existing, motorized and non-motorized access routes should be consistent with the ROS class in which they are located.	This guideline would be met; the construction of any new ATV trails following active mining operations would be consistent with the ROS class in which they are located, although none are anticipated for the Project.
Transportation/Trails Guideline 1: Protection measures for forest system trails should be included in management activity plans and authorizations.	Forest system trails would be obliterated and impacted by the Project. However, mitigation measures would be implemented to allow connectivity of certain trails within the Project Area. These roads and trails would be constructed to Forest Service specifications. The Project Area is intended to also be managed under Prescription 8.2.2, Phosphate Mine Areas, which applies to Federal Phosphate leases where mining is taking place and allows for the exploration or development of existing leases.

4A.2.6 Visual Resources

Table 30 describes the CNF RFP standard for scenic resources.

Table 30 Compliance with Applicable Caribou Forest Plan Standards and Guidelines for Visual Resources

STANDARD AND GUIDELINE (FOREST-WIDE DIRECTION)	COMPLIANCE UNDER THE PROJECT
Scenic Resources Guideline 1: Opportunities to improve scenic integrity should be considered in proposed vegetative treatments.	Project design features, BMPs, and the MRP are the elements of the Project designed to reduce environmental impacts to visual resources. Existing vegetation would be protected to the extent practical by limiting surface disturbance to those areas needed for operations. Reclamation would include providing final soil cover and replanting native vegetation. Phasing the mining and limiting the amount of disturbance at any one time would also provide opportunities to improve scenic integrity during mining activities.

APPENDIX 4B
HBIRA WORKSHEETS

WORKSHEET 1 – Wilderness Qualities or Attributes

Evaluating the Effects of Project Activities on Wilderness Attributes
Proposed Dairy Syncline Mine and Reclamation Plan WORKSHEET 1 – Wilderness Qualities or Attributes
Evaluating the Effects of Project Activities on Wilderness Attributes
Proposed Dairy Syncline Mine and Reclamation Plan

Date:	September 2018
Roadless Area:	Huckleberry Basin

Description of Project Activity or Impact to Roadless Area:

(Note – describe the activity that is affecting the roadless area, i.e. miles of road construction, timber acres harvested, acres treated by fire, etc…)

Under the Proposed Action a portion of the Project would occur within the Huckleberry Basin Inventoried Roadless Area (HBIRA) both on and off existing federal phosphate leases I-28115 and I-0258. The proposed mining activities consist of five open pits (Northeast Pit, North Pit, West Pit, South Pit, and Southeast Pit), topsoil, stockpiles, mine equipment parking and service areas, access and haul roads, a mill and tailings pond facility, an industrial water well, a culinary water well, an ore stockpile area, a power distribution line extension from the Hooper Springs loop near the Blackfoot River narrows, water and ore concentrate pipeline(s), permanent external overburden disposal areas (ODAs), and runoff/sediment control facilities.

The Proposed Action includes an estimated 1,179 acres of disturbance within the HBIRA. Disturbance would occur both on and off-lease and result from the proposed mining activities described above and would also include surface use and occupancy within the HBIRA.

The areas of proposed disturbance in the HBIRA are of the General Forest, Rangeland, and Grassland (GFRG) management theme. According to the Idaho RACR, those areas of the GFRG theme within an existing lease or KPLA, or within a 0.5-mile buffer, would be available and allow for phosphate development activities. The on and off lease portions of the Project are within or within a 0.5-mile buffer of the lease and are therefore available for phosphate development activities.

It should be noted that the Agency Preferred Alternative that includes a reduced land exchange with the USFS, entails exchanging a 160-acre parcel within the HBIRA that would contain a portion of the tailings pond, for a 640-acre parcel currently owned by Simplot surrounded by the Sage Creek Inventoried Roadless Area (SCIRA). This exchange parcel is situated along Crow Creek Road, approximately 9 miles to the east and would create a benefit to the SCIRA, however under Alternative 4 (no land exchange), this benefit to the SCIRA would not be realized.

Effect to Wilderness Quality or Attributes			
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.
Untrammeled This quality monitors modern human activities that directly control or manipulate the components or processes of ecological systems inside wilderness. In summary, *wilderness is essentially unhindered and free from modern human control or manipulation.* A measure of the actions taken to hinder, manipulate, or control the long-term natural ecological processes of the area. Address this attribute by describing the management actions included in your project activities that would alter the natural processes in the area.	Yes	Degrading	The function of ecological systems within the HBIRA has been impacted by the following physical or human-caused impacts that have occurred in the recent past or are occurring: approved and unimproved roads, timber harvest activities, exploration activities, grazing, and recreation. The Project would alter the ecological systems of several different existing vegetation communities within the IRA. Portions of these ecological systems would be changed to barren mined lands and would include other disturbances related to the mining process. After mining, reclamation of the lands would occur. Areas that were mined would be recontoured to conditions similar to those that existed prior to the Project. The areas would be seeded with native vegetation and allowed to grow and revegetate to match former vegetation communities through natural succession over many years, although forested areas would likely never return to pre-existing conditions. However, some permanent ODAs and runoff/sediment control features would remain.
Natural This quality monitors both intended and unintended effects of modern people on ecological systems inside wilderness since the time the area was designated. In summary, *wilderness ecological systems are substantially free from the effects of modern civilization.* A measure of past and proposed activities on the natural conditions of the area. It describes the extent to which human influences alter natural processes and conditions away from what one would otherwise expect. This is a measure of the degree of environmental modification that will occur because of your project. Address this attribute by describing the extent of modification that will occur in the wilderness area. Consider existing scenic integrity and ROS layers.	Yes	Degrading	The HBIRA has been impacted by the construction of roads, timber harvests, exploration activities, grazing, and recreation. These activities have altered or reduced the function of ecological systems within the HBIRA. Disturbance from these activities is also visible to the casual observer in the form of roads and road cuts, areas of reduced timber cover, cattle presence, and the presence of recreation users and recreational vehicles. However, some of these disturbances (particularly roads, exploration activities, and areas of timber harvest) are in various stages of both natural and designed reclamation and some of these areas are beginning to return to a more natural state. The Project would alter the ecological systems of several different existing vegetation communities within the IRA. Portions of these ecological systems would be changed to barren mined lands and would include other disturbances related to the mining process. During the construction, operations, and reclamation phases of the Project, new disturbance would be visible to the casual observer by way of large quantities of mined materials, stormwater drainages, ponds, haul access roads, a power line, and pipelines. Disturbed areas would have a reduced appearance of naturalness relative to areas within the HBIRA that have not been disturbed or that have been reclaimed. Once reclamation is complete, the disturbed areas would have an appearance similar to other reclaimed areas within the HBIRA; however, even reclaimed areas would be noticeably modified from the surrounding topography.

Effect to Wilderness Quality or Attributes				
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)		**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.
Undeveloped This quality monitors the presence of structures, construction, habitations, and other evidence of modern human presence or occupation. In summary, w*ilderness is essentially without permanent improvements or modern human occupation.* A measure of the present day physical indicators such as the presence and development level of trails, campsites, structures and facilities as well as the use of motorized equipment, mechanical transport, landing of aircraft, etc. used for administrative purposes. It is an indicator of what the visitor will experience in a setting that is removed from the sights and sounds of civilization and mechanization located inside the wilderness. Address this attribute by describing the extent of modification (i.e. structures required, motorized equipment use, etc.) that will occur during the projects duration or resulting after the project is finished. Consider using ROS maps layers.		Yes	Degrading	During the construction, operations, and reclamation phases of the Project, the people, vehicles, equipment, structures, dust, and noise would be evident in the disturbance area associated with the Project. The majority of disturbances associated with the mining activities would be reclaimed and revegetated, and upon reclamation and natural succession over many years would help return the area back to similar conditions within the surrounding IRA. However, some permanent ODAs and runoff/sediment control features would remain permanently. In addition, reclaimed areas would be noticeably modified from the surrounding topography. Reclaimed areas would be contoured but would not match natural topography. Reclaimed vegetation would take decades of growth to resemble surrounding vegetation communities. These areas may be identifiable as man-made rather than natural occurrences and may be a noticeable contrast from the undeveloped appearances of the natural surroundings.
Outstanding opportunities for solitude or a primitive and unconfined type of recreation This quality monitors conditions that affect the opportunity for people to experience solitude or primitive, unconfined recreation in a wilderness setting, rather than monitoring visitor experiences *per se*. In summary,	**Solitude -** Described as opportunities to experience solitude, or the isolation from the sights and sounds of management activities inside wilderness, the presence of others. Solitude is measured by considering the presence of screening, distance from impacts to the rest of the area, mitigation measures such as the timing of disturbances. Address solitude by discussing how the project activities affect the ability of a	Yes	Operations Phase – Degrading Reclamation – Stable	Noise and human activity associated with construction, operations, and reclamation phases of the Project would impact the sense of solitude of the immediate area; that effect would diminish with distance, but the effects may be noticeable from several miles away. Project activities may be noticeable in other portions of the HBIRA, through distant noises, lights, glow, or dust columns in areas, where the Project is not directly visible. Additionally, traffic would increase along roadways in the vicinity the Project, creating a more congested and noticeable approach to primitive areas. Recreational opportunities in the immediate Project Area and affected HBIRA are managed under two of the seven Recreational Opportunity Spectrum (ROS) classes; Roaded Modified (RM) and Semi-Primitive Motorized (SPM). The RM area is a natural environment that has been substantially modified by development of structures and characterized by vegetative manipulation. All forms of access and travel modes may occur, although roads are generally not well-suited to highway-type vehicles. OHV use only on designated routes or areas is encouraged. Use by high clearance vehicles is common. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. Moderate user densities are present

Effect to Wilderness Quality or Attributes				
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)		**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.
wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge	visitor to escape project impacts on solitude within the area. Consider linking to ROS mapping for size and remoteness criteria for Primitive and SPMN.			away from developed sites. The SPM area has a mostly natural landscape with few management controls. Activities include hunting, climbing, vehicle trail riding, backcountry driving, mountain biking, hiking, and snowmobiling. The experience provides for isolation from human civilization, a high degree of interaction with the natural environment, and a moderate degree of personal risk and challenge. Expectations of solitude are reduced under these classes. Recreation in the Project Area mainly occurs on the CTNF and is primarily limited to dispersed recreation activities such as hunting, camping, and use of trails by OHV riders, snowmobilers, mountain bikers, hikers, and horseback riders. Portions of the HBIRA outside the Project Area, but that are fragmented or spatially removed by the Project, would have reduced opportunities for solitude or a primitive and unconfined type of recreation as the fragmented portions of the HBIRA would be smaller and less isolated. Upon completion of the Project, the noise and human activity associated with the construction, operations, and reclamation phases of the Project would generally return to previous conditions. The HBIRA area would still offer the RM and SPM recreational opportunities.
	Opportunities for Primitive Recreation - A measure of the experiences available without the developments and to feel a part of nature, with a high degree of challenge and reliance on outdoor skills rather than facilities. Address this attribute by describing how the project activities might affect, the number and type of opportunities available, the	Yes	Degrading	Recreation in and around the Project and on the CTNF is primarily limited to dispersed recreation activities such as hunting, camping, and use of trails by OHV riders, snowmobilers, mountain bikers, hikers, and horseback riders. Implementation of the Project would restrict access in the HBIRA in this area for hunting and other dispersed recreation. Disturbance activities associated with the Project would directly impact approximately 2,324 acres of ROS classes, not all situated within the HBIRA, including approximately 1,966 acres of the SPM class and approximately 358 acres of the RM class. Given the industrial nature of the Project, recreation would be restricted or prohibited on these lands during the duration of the Project. The acreage lost to recreational use under the Project is approximately six percent within the HBIRA, although a larger percentage might actually be indirectly impacted due to adjacent lands being undesirable as well. Under the land exchange, an additional 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, would be converted to private land, thus further reducing the available acres for recreation opportunities, and

Effect to Wilderness Quality or Attributes				
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)		**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.
	challenge of the opportunities, and the addition or absence of facilities.			reducing the overall size of the HBIRA. Following cessation of the Project, including reclamation, both direct and indirect impacts to recreation may be realized. While approximately 95 percent of the area disturbed by the Project would be reclaimed and re-opened for recreation, these areas may not be desirable for some recreational uses because of the altered topography and vegetation. Conversely, other recreationists (for instance, hunters) may find these areas desirable, as the revegetated areas may provide better forage or cover for game species than the original habitat.
Special Features (Ecological, Geologic, Scientific, Educational, Scenic or Historical Values) An attribute that recognizes that wilderness may contain other values of ecological, geologic, scientific, educational, scenic or historical or cultural significance. Unique fish and wildlife species, unique plants or plant communities, potential or existing research natural areas, outstanding landscape features, and significant cultural resource sites should all be considered as types of values that might exist. Identify any of these values that exist within the project area. Address this attribute by describing the effect proposed activities would have on these values.		Yes	Degrading	The USFWS identified one Threatened species, Canada lynx (*Lynx Canadensis*) as having the potential to occur in the Project Area. The Montpelier and Soda Springs Ranger Districts, which include the Project Area, have been identified as potential linkage habitat. This potential linkage habitat does not contain boreal forest and would likely be used for movement only. The year-round noise and human activity associated with the construction and active mining phases of the Project would likely influence Canada lynx to travel around the periphery of the Project Area rather than directly through it. If Canada lynx were to move through the Project Area during the construction and/or active mining phases, they could be at risk of vehicle collisions along proposed roads during periods of heavy traffic. Furthermore, upon the completion of the mining activities, much of the disturbance would be reclaimed, and the human presence in the area would be minimal. If the lynx was influenced to avoid the area during mining it could return to the area after mining. There are 21 special status species of birds and mammals that have the potential to occur in or around the Project Area. These species may use the area for foraging, nesting, or migrating. During the construction and/or active mining phases, they could be at risk of vehicle collisions along proposed roads during periods of heavy traffic; forced to forage on areas outside the Project Area; and could avoid the Project Area during migration times because of activities. Upon the completion of the mining and reclamation activities, the human presence in the area would be lower and return to normal activity. The species may then return and continue to use the area. However, changes to the habitats that some of these species may depend on, due to the mining and reclamation outcomes, may cause some species to use other areas of undisturbed habitat. The Project Area in the HBIRA has potentially suitable habitat for four special status

Effect to Wilderness Quality or Attributes			
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.
			species of amphibians and reptiles: The northern leopard frog, western toad, boreal toad, and common garter snake. Individuals of these less mobile species, if present in the Project Area, may be killed from Project activities. Upon the completion of the proposed mining and reclamation activities, the human presence in the area would be lower and return to normal activity. These species may then return and continue to use the area. However, changes to the habitats that some of these species may depend on, due to the mining and reclamation outcomes, may cause some species to use other areas of undisturbed habitat. Wetlands (less than three acres) associated with springs, wet meadows, and/or drainages are located in the Project Area within the HBIRA and would be impacted. The loss of wetlands would require off-site mitigation to offset wetland impacts under the CWA. Additionally, while some of the wetland areas would be reclaimed to baseline elevation and similar hydrologic conditions, which may allow portions of certain wetland areas to reestablish, it is anticipated that the wetland functions and values would be different from those of the original wetland, thus the wetland would be lost from the Project Area in the HBIRA.
Manageability (as Wilderness) A measure of the ability to manage an area to meet the size criteria (5,000 + acres), the resulting configuration of the potential wilderness, and the interaction of the other elements above. Changes in the shape of the Inventoried Roadless Area may have significant consequences to its wilderness potential. Consider also boundary management impacts such as changing wilderness boundaries to different terrain features or for how access would be provided if project activities cause adjustments in the Inventoried Roadless Area. Address this attribute by discussing how the proposed activities may affect the boundary location, the size, the shape, and the access to the area. Consider ROS mapping.	Yes	Degrading	Disturbance activities associated with the Project would impact approximately 1,179 acres of land in the HBIRA. The HBIRA is comprised of approximately 20,200 acres of land. The Project would affect approximately six percent of the HBIRA. A small portion of the HBIRA would be bisected and would contain less than the 5,000+ acre criteria. The acres of the HBIRA affected are classified as GFRG, which allows for phosphate development activities. These portions of the HBIRA are located along the fringe and do not affect the large tracts of land in the HBIRA. Following cessation of the Project, including reclamation, both direct and indirect impacts to recreation may be realized. While approximately 95 percent of the area disturbed by the Project would be reclaimed and re-opened for recreation, these areas may not be desirable for some recreational uses because of the altered topography and vegetation. Conversely, other recreationists (for instance, hunters) may find these areas desirable, as the revegetated areas may provide better forage or cover for game species than the original habitat.

Effect to Wilderness Quality or Attributes					
Wilderness Quality or Attribute (Note: delete attribute descriptions after data is entered to save space if desired.)		**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. May use GIS layers (ROS, SMS, Roads, etc…) to quantify effects.	
Summary	Will the proposed project affect the areas suitability for wilderness designation?	No	Yes	If Yes, explain how the project would affect wilderness suitability	
			Yes	The portions of the HBIRA that would be disturbed by this Project may not be suitable for future wilderness designation due to the noticeably modified nature of the area after reclamation.	

WORKSHEET 2 – Roadless Area Characteristics

Evaluating the Effects of Project Activities on Roadless Area Characteristics

Date:	September 2018
Roadless Area:	Huckleberry Basin

Description of Project Activity or Impact to Roadless Area:

(Note – describe the activity that is affecting the roadless area, i.e. miles of road construction, timber acres harvested, acres treated by fire, etc…)

Under the Proposed Action a portion of the Project would occur within the Huckleberry Basin Inventoried Roadless Area (HBIRA) both on and off existing federal phosphate leases I-28115 and I-0258. The proposed mining activities consist of five open pits (Northeast Pit, North Pit, West Pit, South Pit, and Southeast Pit), topsoil, stockpiles, mine equipment parking and service areas, access and haul roads, a mill and tailings pond facility, an industrial water well, a culinary water well, an ore stockpile area, a power distribution line extension from the Hooper Springs loop near the Blackfoot River narrows, water and ore concentrate pipeline(s), permanent external overburden disposal areas (ODAs), and runoff/sediment control facilities.

The Proposed Action includes an estimated 1,179 acres of disturbance within the HBIRA. Disturbance would occur both on and off-lease and result from the proposed mining activities described above and would also include surface use and occupancy within the HBIRA.

The areas of proposed disturbance in the HBIRA are of the General Forest, Rangeland, and Grassland (GFRG) management theme. According to the Idaho RACR, those areas of the GFRG theme within an existing lease or KPLA, or within a 0.5-mile buffer, would be available and allow for phosphate development activities. The on and off lease portions of the Project are within or within a 0.5-mile buffer of the lease and are therefore available for phosphate development activities.

It should be noted that the Agency Preferred Alternative that includes a reduced land exchange with the USFS, entails exchanging a 160-acre parcel within the HBIRA that would contain a portion of the tailings pond, for a 640-acre parcel currently owned by Simplot surrounded by the Sage Creek Inventoried Roadless Area (SCIRA). This exchange parcel is situated along Crow Creek Road, approximately 9 miles to the east and would create a benefit to the SCIRA, however under Alternative 4 (no land exchange), this benefit to the SCIRA would not be realized.

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
Soil, water and Air resources Identify any unique or critical watershed resources. Describe how the project will affect these key resources areas and the habitats that depend on them.	Yes	Degrading	**Surface Water:** The Slug Creek watershed encompasses the portions of the Project located within the HBIRA. Resources associated with the watershed are important for typical ecosystem values but are not otherwise unique or critical. Most of the Slug Creek watershed is currently rated as *Functioning at Risk* in the USFS's Watershed Condition Framework analysis. Idaho Department of Environmental Quality (IDEQ) considers Slug Creek and two of its primary tributaries to be impaired because they currently do not meet relevant aquatic life beneficial uses. The Project would result in direct impacts to three Hydrologic Unit Code (HUC) 6 watersheds comprising the Slug Creek watershed, including portions of the HBIRA. This would include an estimated overall short-term runoff reduction of around 8 percent in Slug Creek (based on areal reduction relationship), due to stormwater management during operations. Slug Creek itself is primarily outside of the HBIRA. Flow in several springs located near, but outside of, the HBIRA would be decreased or eliminated long term or permanently, resulting in a long term or permanent reduction in Slug Creek flows. There would also be a potential for sediment loading due to ground disturbances. This would be minimized due to best management practices (BMPs) and other environmental protection measures (EPMs). Predicted impacts to groundwater quality from percolation of precipitation through backfill, external ODA waste rock, and the tailings pond facility would not reach surface water resources in or outside of the HBIRA. **Soils:** Available and suitable topsoil resources in the proposed mining disturbance areas have been described with baseline surveys. The Project would disturb approximately 2,800 acres of topsoil, about one third of which would be in the HBIRA. All suitable topsoil would be salvaged during pre-stripping from proposed disturbed areas for use in reclamation. Topsoil would be protected from compaction and erosion while stockpiled and after placement during reclamation. BMPs including revegetation, run-on controls, mulch, swales, terraces, and silt fences would preserve soil quantity and quality to the extent feasible. However, physical and chemical changes, soil compaction, and decreased soil productivity would occur. Approximately 82 acres of

Effect to Roadless Characteristics			
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			land (most of which are outside of the HBIRA) where topsoil would be removed would be left unreclaimed. Under the land exchange, an additional 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, would be converted to private land, thus soils on those acres would no longer be managed under the HBIRA. **Air:** Air quality data (particulate matter) were collected in the Project Area and supplemented with data collected from additional nearby sites to assess current conditions in the Project Area. These data showed compliance with all applicable National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. Ambient air quality and the emission of air pollutants are regulated under both federal and state laws and regulations. The federal and state ambient air quality standards are the minimum standards of quality for ambient air. The State of Idaho has adopted NAAQS into the Idaho Air Rules for control of air pollution in the state. IDEQ is the administering state agency for issuing air quality permits in Idaho to ensure control of air pollution. The Project would result in impacts to air quality in the HBIRA because of construction activities, and mining and milling operational activities. Impacts to air quality would include fugitive dust and gaseous emissions that would occur during blasting, drilling, excavation, material handling, ore crushing and screening, and vehicle operations. An initial assessment of regional meteorological conditions suggest that low-level emissions introduced by the Project would primarily be constrained by higher terrain in the area. This would be true in all but the most well mixed periods. Consequently, during periods when emissions impacts would be the worst, i.e. during tranquil periods with little vertical mixing, the impacts would be constrained to the region surrounding the facility and bounded by the higher regional terrain. Regardless, the Project would implement proper BMPs required by IDEQ relative to fugitive dust and other emissions. Greenhouse Gas (GHG) emissions from the Proposed Action and Action Alternatives have a potential to introduce additional GHG emissions into the HBIRA and surroundings, but at amounts considered less than significant compared to the

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			expected statewide quantities. The conversion of 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, to private land under the land exchange, would have no effect on air quality or GHG.
Sources of public drinking water Identify any public drinking water systems or sources within the project area or that would be affected by the project. Describe how the project would affect water quality and quantity of the public drinking water source.	No	N/A - Stable	According to IDEQ's Source Water Assessment Database, there are no public drinking water systems or sources in the Project Area, nor are there any that would be affected by the Project.
Diversity of plant and animal communities Discuss the diversity of plant and animal communities. Identify any unique plant and animal communities within the area. Describe effects to the diversity of plant and animal communities.	Yes	Degrading	The Project Area includes the following vegetation communities: sagebrush; aspen; aspen/mixed conifer; riparian; and wet meadow/mesic. There are also small areas that are or have been disturbed, in clearcut or regeneration, or under agriculture or pasture. Sagebrush, aspen, and mixed conifer are the most prevalent vegetation types in the Project Area and in the areas of the HBIRA that would be disturbed. All the currently present plant communities are common and typical of the region. The Project would have long-term direct impacts on approximately 2,810 acres due to changing species composition and vegetation community succession and structure after reclamation; about one third of these acres would be in the HBIRA. The areas would be seeded with native vegetation and allowed to grow and revegetate to match former vegetation communities through natural succession over many years. Reclaimed vegetation would take decades of growth to resemble surrounding vegetation communities. Forested areas would likely never return to pre-existing conditions. Less than three acres of wetlands associated with springs, wet meadows, and/or drainages are in the Project Area within the HBIRA and would be impacted. The loss of wetlands would require off-site mitigation, likely out of the HBIRA, to offset wetland impacts. Animal communities are present and dependent upon the available habitat. Terrestrial wildlife populations include big game and other common species. Winter range for big game is generally located to the east of the Project Area, outside of the HBIRA. Mule deer and elk summer range overlaps with most of the Project Area, including the

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
			HBIRA. Under the Project, there could be: mortality of individuals due to vehicles, equipment, or the powerline; disturbance and/or displacement due to human presence, noise, and activity, causing stress, behavior modifications, and/or competition for resources. The Project would also cause indirect effects to terrestrial wildlife populations from habitat alteration and reclamation. It would result in the loss and fragmentation of forested and shrubland wildlife habitat within the HBIRA. These landscapes include upland habitats and wetland and riparian habitats, which are particularly high-value wildlife habitats. Although reclamation would reestablish grassland and shrubland vegetation communities, aspen, aspen/mixed conifer, and mixed conifer forests are not anticipated to regenerate in the foreseeable future, because the post-disturbance successional patterns of these communities likely require decades or centuries to develop into their pre-disturbance conditions. Mule deer are dependent on shrublands for browse and cover; thus, the initial loss of shrubland habitat from the Project within the HBIRA would likely cause mule deer to seek forage in nearby shrubland habitat over the short term. Over the long term, the Project Area would return to suitable mule deer foraging habitat, as reclamation promotes vegetative succession and the development of shrublands. Elk primarily inhabit mountainous forests where mature timber provides protective security and calving areas. Within and near such forested communities, elk graze on a wide variety of shrubs, forbs, and grasses to fulfill their nutritional requirements. Thus, the initial loss of native shrubs, forbs, and grasses under the Proposed Action within the HBIRA would likely cause elk to seek forage in nearby forested communities over the short term. The loss of forested habitat would likely cause elk to establish ranges in the short-term foraging ranges, established during the Project operations, over the long term. Under the land exchange, an additional 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, would be converted to private land, thus vegetation communities and animal habitat on those acres would no longer be managed under the HBIRA.

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
Habitat for TES and species dependent on large undisturbed areas of land Identify any TES or sensitive species within the Roadless area. Describe how the project would affect the habitats or populations and whether this effect is significant across the normal range and distribution of these habitats and populations.	Yes	Degrading	There are no special status plant species in the Project Area that could be impacted. Numerous special status wildlife species were determined to have the potential to occur in the Study Area for the Project, some or all of which could also occur in the HBIRA. The USFWS identified one Threatened species, Canada lynx as having the potential to occur in the Project Area. The Montpelier and Soda Springs Ranger Districts, which include the Project Area, have been identified as potential linkage habitat. This potential linkage habitat does not contain boreal forest and would likely be used for movement only. The year-round noise and human activity associated with the construction and active mining phases of the Project would likely influence Canada lynx to travel around the periphery of the Project Area rather than directly through it. If Canada lynx were to move through the Project Area during the construction and/or active mining phases, they could be at risk of vehicle collisions along proposed roads during periods of heavy traffic. Furthermore, upon the completion of the mining activities, much of the disturbance would be reclaimed, and the human presence in the area would be minimal. If the lynx was influenced to avoid the area during mining it could return to the area after mining. There are 21 special status species of birds and mammals that have the potential to occur in or around the Project Area, including in the HBIRA. These species may use the area for foraging, nesting, or migrating. During the construction and/or active mining phases, they could be at risk of vehicle collisions along proposed roads during periods of heavy traffic; forced to forage on areas outside the Project Area; and could avoid the Project Area during migration times because of activities. Upon the completion of the mining and reclamation activities, the human presence in the area would be lower and return to normal activity. The species may then return and continue to use the area. However, changes to the habitats that some of these species may depend on, due to the mining and reclamation outcomes, may cause some species to use other areas of undisturbed habitat. The Project Area in the HBIRA has potentially suitable habitat for four special status species of amphibians and reptiles: The northern leopard frog, western toad, boreal toad, and common garter snake. Individuals of these less mobile species, if present in the Project Area, may be killed from Project activities. Upon the completion of the proposed mining and reclamation activities, the human presence in the area would be

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
			lower and return to normal activity. These species may then return and continue to use the area. However, changes to the habitats that some of these species may depend on, due to the mining and reclamation outcomes, may cause some species to use other areas of undisturbed habitat outside the Project Area. The conversion of 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, to private land under the land exchange, would have no particular effect on any special status species or their habitats, although USFS management for these species would no longer exist.
Primitive and semi-primitive classes of recreation Describe current recreation opportunities within the Roadless area. Identify the effects of your project of the area and these activities. Describe the effect in terms of availability for similar experiences in surrounding areas or within the region of use. Consider link to ROS mapping.	Yes	Degrading	Recreation in and around the Project and on the CTNF is primarily limited to dispersed recreation activities such as hunting, camping, and use of trails by OHV riders, snowmobilers, mountain bikers, hikers, and horseback riders. Recreational opportunities in the immediate Project Area and affected HBIRA are managed under two of the seven Recreational Opportunity Spectrum (ROS) classes; Roaded Modified (RM) and Semi-Primitive Motorized (SPM). The RM area is a natural environment that has been substantially modified by development of structures and characterized by vegetative manipulation. All forms of access and travel modes may occur, although roads are generally not well-suited to highway-type vehicles. OHV use only on designated routes or areas is encouraged. Use by high clearance vehicles is common. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. Moderate user densities are present away from developed sites. The SPM area has a mostly natural landscape with few management controls. Activities include hunting, climbing, vehicle trail riding, backcountry driving, mountain biking, hiking, and snowmobiling. The experience provides for isolation from human civilization, a high degree of interaction with the natural environment, and a moderate degree of personal risk and challenge. Expectations of solitude are reduced under these classes. Disturbance activities associated with the Project would directly impact approximately 2,300 acres of ROS classes, not all situated within the HBIRA, including approximately 1,966 acres of the SPM class and approximately 358 acres of the RM class. Given the industrial nature of the Project, recreation would be restricted or prohibited on these lands during the duration of the Project. The acreage lost to

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
			recreational use under the Project is approximately six percent within the HBIRA, although a larger percentage might be indirectly impacted due to adjacent lands being undesirable as well. Under the land exchange, an additional 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, would be converted to private land, thus further reducing the available acres for recreation opportunities, and reducing the overall size of the HBIRA. During the duration of the Project, recreational access either would be restricted or prohibited on Project lands, including in the HBIRA. In addition, portions of the HBIRA outside the Project Area, but that are fragmented or spatially removed by the Project, would have reduced opportunities for solitude or a primitive and unconfined type of recreation as the fragmented portions of the HBIRA would be smaller and less isolated. Noise and human activity associated with construction, operations, and reclamation phases of the Project would impact the sense of solitude of the immediate area; that effect would diminish with distance, but the effects may be noticeable from several miles away. Project activities may be noticeable in other portions of the HBIRA, through distant noises, lights, glow, or dust columns in areas, where the Project is not directly visible. Additionally, traffic would increase along roadways in the vicinity the Project, creating a more congested and noticeable approach to primitive areas. Upon completion of the Project, the noise and human activity associated with the construction, operations, and reclamation phases of the Project would generally return to previous conditions. While approximately 95 percent of the area disturbed by the Project would be reclaimed and re-opened for recreation, these areas may not be desirable for some recreational uses because of the altered topography and vegetation. Conversely, other recreationists (for instance, hunters) may find these areas desirable, as the revegetated areas may provide better forage or cover for game species than the original habitat. The HBIRA area would still offer the RM and SPM recreational opportunities, except for the 632 acres or 160 acres (Agency Preferred Alternative) that would no longer be within the HBIRA.

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
Reference landscapes for research study or interpretation Describe the landscape that is present. Describe any unique reference landscapes that exist within the Roadless area. Describe how the project activities might affect the reference landscape values of the Roadless area. Consider how the landscapes within the Inventoried Roadless area fits within the broader landscape and if the project creates any overall change. Consider landscape character descriptions in SMS.	No	N/A	There are no reference landscapes in the Project Area.
Landscape character and integrity Describe the current scenic quality and character of the area. Describe project effects to the scenic integrity of the area and changes to the character of the area. Consider existing scenic integrity.	Yes	Degrading	Landscape in the HBIRA portion of the Project Area is primarily topographically variable with hills, slopes, and high valleys. The rolling ridges are covered with a mixture of vegetation. The northern aspects, along higher ridges, are vegetated with conifer-aspen, and the foothills are vegetated with sagebrush interspersed with aspen. The valley bottoms are a mix of sagebrush and grass. The existing landscape character does not contain landforms that are unique to the region. The vegetation patterns are also common to the region. While mostly natural in character, the landscape exhibits some modification from past mineral exploration. The Project would cause some degree of visual change, including in the HBIRA, because some Project components and areas cleared of vegetation would be visible from publicly accessible locations; however, the area is remote and seen by a relatively small number of people. The tailings pond facility would create a moderate visual impact, but only a small portion of the facility would be within the HBIRA. Nighttime lighting of Project facilities could impact visibility of the nighttime sky. The conversion of 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, to private land under the land exchange, would have no direct effect on landscape character, except that due to the tailings pond facility as described in the previous paragraph.

Effect to Roadless Characteristics			
Roadless Characteristics	**Is there an effect? Yes or No**	**Which direction is the effect? Improving, Stable or Degrading?**	**Describe the actual effect.** Use descriptive terms that discuss the effect, not the activity. Explain if the proposal would Alter or Modify the landscape.
Traditional cultural properties and sacred sites Identify generically any significant cultural resources within the Roadless area and describe the effect of the project on these resources. Typically mitigation will be designed to prevent significant effects to these resources.	No	Degrading	Tribal consultation to date has not identified culturally unique resources in the Project Area, including any sacred sites. For most of the Project Area, potential impacts to traditional uses or treaty rights that have been identified include short-term interruption of access to the lands to exercise treaty rights and traditional uses. No specific impacts to traditional resources or uses that are not available in other areas have been identified. If adverse impacts to traditional resources or uses were identified, mitigation measures specific to that resource would be developed through consultation among the Tribes and the Agencies. However, under the land exchange, an additional 632 acres or 160 acres (Agency Preferred Alternative), or approximately three percent of the HBIRA, would be converted to private land, reducing the overall size of the HBIRA, and eliminating that area from consideration of providing traditional uses or treaty rights. Although as part of the land exchange, a 640-acre parcel of private land would be exchanged and added to the SCIRA and would be available traditional uses and treaty rights.
Other locally unique characteristics Identify any locally unique characteristics and describe how the project would affect these values.	No	N/A	There are no locally unique characteristics in the Project Area.

APPENDIX 4C
TRAVEL MANAGEMENT, CRITERIA FOR DESIGNATION OF ROADS AND TRAILS

Travel Management, Criteria for Designation of Roads and Trails

Dairy Syncline Mine and Reclamation Plan

Designations of motor vehicle use on trails and roads requires the consideration of effects on resources, with the objective of minimizing those effects for the resources and uses listed as 36 CFR 212.55 (b).

"Minimization", as used in the regulations and the underlying Executive Order (EO) 11644 (dated 1972) as amended by EO 11989 (dated 1977) is not defined. However, the EO states a clear purpose focusing on the outcomes of protection of resources, safety of users and minimization of conflicts. The EO's clear outcome-based purpose is states as follows:

> *"Section 1: Purpose: It is the purpose of this order to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands."*

The Ninth Circuit Court of Appeals, "assumes that the Travel Management Rule requires the Forest Service to comply with the minimization criteria in a manner that is feasible, prudent, and reasonable in light of the agency's multiple use mandate" and does not impose an "absolute, discernible limit" on off road motorized use (WildEarth Guardians v. USFS, 9th Cir. 2015, No. 12-35434). To that end, the following discussions provide important contexts for understanding what minimization means, here and now, on the Caribou-Targhee National Forest.

Congress has established the purposes for which National Forests are to be managed. "National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes" and these surface resources are to be administered for, "multiple use and sustained yield" (Multiple-Use Sustained-Yield Act of 1960).

> *"Multiple use" means: The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output." (16 U.S.C. §531).*

Except for the comparatively limited focus on the EO, there are only nominal differences in practice between the EO's purpose to "minimize conflict among the various uses of those lands" and the responsibility to integrate and manage the "various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people. This dual integration requirement is a daunting task. However, the EO, the Multiple-Use Sustained-Yield Act, Forest and Rangeland and Renewable Resources Planning Act,

and National Forest Management Act neither require nor anticipate that the current decision be the ultimate answer for all time. Each anticipate periodic adjustment as conditions and needs change.

Access management is one of the most controversial issues currently facing federal land managers. The Forest Service approaches access and travel management with the recognition that it affects every program and every person served. The overarching aim is to seek a mix of access opportunities on NFS lands while considering physical conditions, resource needs, user conflicts, and user safety. Providing a "fair" allocation between different forest users is a challenging task and is recognized that it cannot equally meet the needs of all recreation groups.

When designating public off-road motor vehicle use on NFS trails and areas on NFS lands, the 2005 Travel Management Rule requires Forests to consider effects on NFS natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of NFS lands, the need for maintenance and administration of roads, trails and areas that would arise if the roads, trails, and areas are designated.

To meet the intent of 36 CFR 212.55 (b) the ID team reviewed the details of the CFR and reviewed the proposed alternatives in respect to the criteria provided (see list below) and the condition and characteristics of the Project Area.

As described in Section 2.4 of the EIS, the Project includes a variety of Environmental Protection Measures and Best Management Practices that would be implemented with the objective of minimizing effects to resources for the criteria for designation of roads and trails.

General Criteria For Designation Of National Forest System Roads, Trails, And Areas On National Forest System Lands

Regulations direct that when designating trails on National Forest System (NFS) lands for motor vehicle use, the responsible official shall consider effects on natural and cultural resources, public safety, provision of recreational opportunities, access needs, conflicts among uses of NFS lands, the need for maintenance and administration, and the availability of resources for that maintenance and administration. The analysis for this Project included the effects to these criteria and can be found in the Chapter 4 of this EIS.

Specific Criteria For Designation Of Trails And Areas

In addition to the information listed above, 36 CFR 212.55 (b), requires that the responsible official also consider effects on the following, with the objective of minimizing (**Table 1**):

1. Damage to soil, watershed, vegetation, and other forest resources;
2. Harassment of wildlife and significant disruption of wildlife habitats;
3. Conflicts between motor vehicle use and existing or proposed recreational uses of NFS lands or neighboring federal lands;
4. Conflicts among different classes of motor vehicle uses of NFS lands or neighboring federal lands; and,
5. Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.

Specific Criteria For Designation Of Roads

In addition to the information listed above, 36 CFR 212.55 (c), requires that the responsible official also consider effects on the following, with the objective of minimizing (**Table 2**):

1. Speed, volume, composition, and distribution of traffic on roads; and
2. Compatibility of vehicle class with road geometry and road surfacing.

As a general rule, the level of acceptable effects to demonstrate compliance with 36 CFR 212.55 (b) and (c) is defined by the Forest Plan, Endangered Species Act, Clean Water Act, and other resource laws, regulations, and policy. If the project analysis demonstrates compliance with these standards, effects have been minimized to an acceptable level. Generally, a route will not be designated if applicable standards cannot be met. It is acknowledged that effects are mitigated to a lower threshold than what is required by the Forest Plan Standards (the minimizing threshold). Minimizing effects does not mean eliminating all effects. To eliminate all effects to zero would mean to eliminate roads and trails and this prevents us from meeting our purpose and need.

These minimization criteria were considered during the development of newly proposed roads and trails under all action alternatives. New roads and trails were proposed to minimize the impacts of motorized vehicles on resources by locating new roads and trails in areas as close as possible to existing roads and trails and where possible, utilizing existing road prisms that were still intact from past roads no longer in use.

Simplot's proposed Dairy Syncline mine, if approved would be mainly located, on NFS land. The mine as it develops would encompass or obliterate numerous existing FS roads and trails. This region is popular for hunting and recreating, including motorized and non-motorized travel. Because the mine project would impact recreational travel in the area, Simplot has agreed to off-set some of the anticipated impacts by re-routing, connecting existing roads and trails, and constructing new roads and trails in order to maintain recreational travel as much as possible. Chapter 4 of the EIS analyzes the impacts of the proposed mine to a variety of resources including recreation.

The Proposed Action and all Action Alternatives would result in the elimination (obliteration/reclamation/closure) of approximately 19.3 miles of existing roads (9.5 miles) and trails (9.8 miles) as a result of the Project and following mining, reestablishment of impacted roads and trails is not anticipated as a result of required reclamation activities (**Figure 4.10.1**). However, approximately 1.5 miles of existing road (Road #187) that would be obliterated and closed during the Project, would eventually be replaced after the Project within almost the identical location as it would be the main access road for the Project, thus this portion of road is not considered, and a total of approximately 17.8 miles of existing roads (8 miles) and trails (9.8 miles) would essentially be eliminated as a result of the Project.

Using an average width of 8 feet for existing roads and trails that would be eliminated results in approximately 17 acres of past disturbance from roads and trails. Impacts to various resources (i.e. soils, vegetation, fisheries, etc.) from these existing roads and trails have occurred in the past and in some cases are continuing. Following reclamation, connectivity between Big Basin and Slug Creek would be reestablished by Simplot either via the construction of new segments of roads and trails and/or the use and improvement of segments of old roads and/or trails where a past road prism is still intact, but that requires some level of improvement and can be connected to existing roads or trails to be unimpacted.

All of the action alternatives include the construction of approximately 5.3 miles of new roads and trails (approximately 5 acres using an average width of 8 feet wide) which would be adding essentially the bare minimum needed to provide the desired connectivity between Slug Creek and Big Basin and the desired recreational opportunities.

In summary, approximately 17.8 miles or approximately 17 acres of existing roads (8 miles) and trails (9.8 miles) would be eliminated by the Project and approximately 5.3 miles or approximately 5 acres of new roads and trails would be constructed as a result of the Project. This is a net of 12.5 miles or approximately 12 acres of existing roads and trails that would be eliminated by the Project.

The tables below summarize impacts related to each criterion and explains how impacts would be minimized for any of the action alternatives.

Table 1. Minimization Criteria Summary for Designation of Trails and Areas

CRITERIA	SUMMARY OF EFFECTS1
1. SOIL WATERSHED VEGETATION OTHER RESOURCES	*Soils:* All action alternatives would ultimately remove approximately 17.5 miles (17 acres) of existing roads and trails that have already impacted soil resources when the road or trail was developed. All action alternatives would create approximately 5.3 miles (disturbance of approximately 5 acres) of new roads and trails. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project. This includes new road construction on approximately 2 miles where an old road prism is still intact, further reducing overall impacts to soils. *Vegetation:* All action alternatives would result in approximately 5 acres of new disturbance from road and trail construction, thus impacts to vegetation resources in these areas. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project, thus decreasing the potential for noxious weed establishment along these areas. This includes new road construction on approximately 2 miles where an old road prism is still intact. *Watershed and Fisheries:* Two segments of proposed new trail would cross very small (< 3 foot-wide average) unnamed streams that do not contain fisheries. Actual disturbance to these streams from construction of the trails might not be needed, thus limiting potential impacts to water quality and the same amount of impacts to AIZs (less than .11 acre maximum, likely much less if any) would occur from the trail segments. No impacts to fisheries resources are anticipated. *Other Resources:* *Roadless Areas and Recommended Wilderness Areas:* Under all action alternatives, 0.83 miles of new trail construction would occur within the Huckleberry Basin Roadless Area, within the General Forest Theme. This would be a very short segment connecting Trail 200 and Trail 218, and a longer segment connecting Trail 215 and 213 (Figure 4.10.1). Roadless characteristics and wilderness qualities would be minimally affected by the construction of less than 1 mile of new trail, especially occurring immediately adjacent to existing roads and trails and next to mining activities. Through the life of the mine project and continuing on after reclamation, there would be an overall reduction in trails in the Huckleberry Roadless Area. There would be no affect to any areas suitable for wilderness designation by any action alternative or the No Action alternative.

CRITERIA	SUMMARY OF EFFECTS1
2. HARASSMENT OF WILDLIFE SIGNIFICANT DISRUPTION OF WILDLIFE HABITATS	*Harassment of Wildlife:* Motorized roads and trails contribute to harassment and disturbance of wildlife; the impacts to wildlife from motorized roads and trails is correlated to the miles of roads and trails in an area. Less motorized road and trail construction would result in less disturbance and harassment to wildlife. All action alternatives would create approximately 5.3 miles (disturbance of approximately 5 acres) of new roads and trails. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project, thus minimizing potential wildlife harassment from roads and trails in the area, although the Project Area would be disturbed by mining activities as described in Chapter 4. *Significant Disruption of Wildlife Habitats:* Additional miles of motorized roads and trails would result in impacts to wildlife. The impacts known to occur as a result of motorized roads and trails include: habitat fragmentation, displacement, avoidance of the road and trail corridor, and disturbance. All action alternatives would create approximately 5.3 miles (disturbance of approximately 5 acres) of new roads and trails. However, there would be a net reduction of approximately 12 miles of roads and trails as a result of the Project, thus minimizing potential disruption of wildlife habitats from roads and trails, although the Project Area would be disturbed by mining activities.
3. CONFLICTS BETWEEN MOTOR VEHICLE USE AND EXISTING OR PROPOSED RECREATIONAL USES OF NFS LANDS OR NEIGHBORING FEDERAL LANDS	All action alternatives have the potential to displace hunters and non-motorized users of the area who would find they no longer have a quiet area to hunt or recreate in, this is mainly due to the overall Project and not the creation of new roads and trails. New roads and trails constructed as a result of the Project would route recreational users around the outside and edges of the Project Area to provide for some connectivity between Slug Creek and Big Basin and to help minimize some recreational use loss from the Project. Although the Project itself would reduce overall recreational uses of NFS lands within the Project Area, the development of new roads and trails is not anticipated to result in conflicts between motor vehicle us and existing recreational uses outside the Project Area. The removing of approximately 17.5 miles of existing roads and trails is likely to displace non-motorized users and affect visitor satisfaction, although the proposed new roads and trails would be available for both motorized and non-motorized use. The degree of use conflict depends on the individual, the group they identify with, their experience, and the recreational setting of the particular road, trail, or area. If the presence of the mine deters recreational use in the area, then it is likely that there would be less potential for conflicts. However, if the mine does not deter recreational use in the area, then there would be greater potential for conflicts as there would be the same number of users on less roads; the user density would increase.

CRITERIA	SUMMARY OF EFFECTS1
4. CONFLICTS AMONG DIFFERENT CLASSES OF MOTOR VEHICLE USES OF NFS LANDS OR NEIGHBORING FEDERAL LANDS	Idaho Statutes Sections 49 and 67 (Idaho State legislature 2007a, b) contain requirements for ATV and motorbike registration and use on and off highways in Idaho, including use on paved and unpaved Forest roads. All designated motorized roads and trails/areas require compliance with Idaho State law. No conflicts are anticipated among different classes of motor vehicle uses of NFS lands or neighboring federal lands.
5. COMPATIBILITY OF MOTOR VEHICLE USE WITH EXISTING CONDITIONS IN POPULATED AREAS, TAKING INTO ACCOUNT SOUND, EMISSIONS, AND OTHER FACTORS	All action alternatives would ultimately remove approximately 17.5 miles (17 acres) of existing roads and trails and would create approximately 5.3 miles (disturbance of approximately 5 acres) of new roads and trails. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project. This net reduction would minimize the overall sound impacts from roads and trails within the Project Area. The new roads and trails would occur within close proximity to existing roads and trails that would be obliterated, thus the sound impacts in these areas would be similar to existing conditions. The perceptions of these sounds are subjective based on an individual user and may impact some individuals more than others. Measurable impacts to air quality under all action alternatives are not likely.

1 Information in this column is supported by the information and analysis that is included in Chapter 4 of the EIS.

Table 2. Minimization Criteria Summary for Designation of Roads

CRITERIA	SUMMARY OF EFFECTS
1. SPEED, VOLUME, COMPOSITION, AND DISTRIBUTION OF TRAFFIC ON ROADS	All action alternatives would create approximately 2.3 miles (disturbance of approximately 2.2 acres) of new roads. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project. The majority of new road construction (2 miles) would occur where an old road prism is still intact. The speed, volume, composition, and distribution of traffic on these new roads is not proposed to change from current conditions on existing roads in the area. However, with an overall net reduction of roads and trails from the Project, one could presume that use of the area would be greatly reduced and the volume on these newly constructed roads might also be reduced.
2. COMPATIBILITY OF VEHICLE CLASS WITH ROAD GEOMETRY AND ROAD SURFACING	All action alternatives would create approximately 2.3 miles (disturbance of approximately 2.2 acres) of new roads. There would be a net reduction of approximately 12 miles of roads and trails as a result of the Project. The majority of new road construction (2 miles) would occur where an old road prism is still intact. No changes are proposed in relation to the compatibility of vehicle class with road geometry and road surfacing as the proposed new roads would be constructed to match the current conditions of existing roads in the area.

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