Proposed Plan
North Maybe Mine
East Mill Dump

This Proposed Plan provides background information on the Site and the clean-up process, describes the cleanup alternatives that were evaluated, identifies the Forest Service’s preferred cleanup alternative, and explains the reasons for this preference.
Introduction

The U.S. Forest Service, an agency of the U.S. Department of Agriculture, is proposing a plan for the cleanup of the North Maybe Mine (NMM) East Mill Dump (EMD) (Site) in Caribou County, Idaho. It is inviting the public to review and comment on the Proposed Plan. The Site is a former phosphate mine located in the Phosphate Resource Area of Southeast Idaho (See Attachment A).

Operation of the mine resulted in the contamination of soils, surface water, vegetation, sediments/soils, and groundwater with metalloids (for example, arsenic and selenium), metals, and uranium daughter products (for example, radium and radon).

This Proposed Plan provides background information on the Site and the cleanup process, describes the cleanup alternatives that were evaluated, identifies the Forest Service's preferred cleanup alternative, and explains the reasons for this preference. A Proposed Plan is a document that the Forest Service is required to issue under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, and the regulations that implement CERCLA, known as the National Contingency Plan (NCP). The Forest Service is issuing this Proposed Plan consistent with the statutory and regulatory requirements of CERCLA § 117(a) (42 U.S.C. § 9617(a)) and the NCP § 300.430(f)(2) (40 C.F.R. § 300.430(f)(2)).

This Proposed Plan is based on information collected, evaluated, and summarized in reports prepared by NuWest Industries, Inc. (Nu-West) (a subsidiary of Nutrien, Inc.), with direction and oversight provided by the Forest Service, the lead agency, and several support agencies: Idaho Department of Environmental Quality (DEQ), the U.S. Fish and Wildlife Service (USFWS), and the Shoshone-Bannock Tribes.

This Proposed Plan highlights key information from the remedial investigation (RI) and focused feasibility study (FFS) reports. The reader should consult the RI/FFS reports and documents in the administrative record for more information regarding the proposed remedial action.

The Forest Service is inviting input from the public on all alternatives and on the rationale for the Preferred
Alternative. After considering public comments and any new information, the Forest Service, in consultation with support agencies, will issue a Record of Decision (ROD) that selects a final remedy to be implemented. Information on how to provide comments or questions to the Forest Service is presented in the inset on page 1 and on page 23. A list of environmental terms and abbreviations used in this Proposed Plan, along with referenced project Attachments A, B, and C, are provided at the end of the document.

The Superfund Process

The Superfund process is a structured process, established by CERCLA and the NCP, to guide the cleanup of contaminated sites. The process includes various steps, illustrated in Figure 1, leading from discovery of a site, through investigation, remedy selection, and implementation of a remedy.

Site Background

The Site is a former open-pit phosphate mine located in the Phosphate Resource Area of southeast Idaho. This is an area where phosphate-rich sedimentary rock units are present near the surface and have been mined for more than 70 years. There are many historical mines within the mining district, three active mines, and some future or proposed mines. The Site is located about 26 road miles northeast of Soda Springs, Idaho, in Caribou County. The NMM was operated by various operators from 1950 to 1995. NMM includes an open pit approximately 2.5 miles long and reclaimed haul roads, surrounded by 10 overburden piles, one of which is EMD.

NMM is subdivided into two Operable Units; East Mill Operable Unit (EMOU) and the West Ridge Operable Unit (WROU). NMM EMOU is further subdivided into three sub-operable units: Open Pit Sub-Operable Unit (OPSOU), EMD Sub-Operable Unit, and the Creeks Sub-Operable Unit.

No ore processing occurred at the Site. Ore was hauled by rail truck to a processing plant near the town of Soda Springs. The key features of the Site are presented in Attachment B (located at the end of this document).

In 2001, DEQ assumed leadership of an area-wide investigation of contamination from phosphate mining, with participation by other state and federal agencies and the mining companies with operations in southeast Idaho. These area-wide investigations led the agencies to conclude that site-specific investigations were warranted on the larger historic and active open-pit mines located in the mining district, including the NMM and others.

These conclusions subsequently led to negotiations with NuWest to conduct site-specific investigations at the historical mines, including the NMM. In October 2013, DEQ, U.S. Fish and Wildlife Service (USFWS),
the Forest Service, the Shoshone-Bannock Tribes, and NuWest (the latter as Respondent) entered into a mine-specific legal agreement calling for NuWest to conduct investigations and develop a Remedial Investigation (RI) and Focused Feasibility Study (FFS) reports for the NMM East Mill Operable Unit (EMOU) site. The Forest Service was designated the lead agency to oversee this work.

The majority of the area disturbed by mining is owned by United States and administered by the Forest Service. Nearby adjoining lands are privately owned ranching and farming properties and a small piece of State land.

A hydrogeological conceptual site model for NMM EMD was developed to show the relationship between the sources of contaminants at the Site, mechanisms for release of contaminants, and surface water and groundwater transport pathways to various environmental media and receptors (see Attachment C at the end of the document). The model provides a framework to assess relative risks from contaminants and develop more detailed site investigations and cleanup strategies. The following information describes elements of the conceptual site model.

**Sources of Contamination**

The nature and extent of contamination associated with the NMM EMD was investigated through review of existing Site information that confirmed characteristics of the mined materials and mining practices, and extensive sampling of the various media within and downslope of the Site. The primary source of contaminants at the Site is waste rock located in mine pits and dumps, particularly shale material from the Meade Peak Member of the Phosphoria Formation (Figure 4). This shale is enriched with selenium (a nonmetal) as well as metals, metalloids, and uranium daughter products (for example, radium and radon), and represents a significant portion of the waste rock stockpiled in EMD.

**Release and Transport**

One of the key questions of interest of the RI was to better understand the release of contaminants from source areas and transport to other media. Key contaminant release processes at NMM EMD include:

- Dissolution or leaching (from contact with rain or snowmelt) of contaminants from center waste shales present in source areas, and the subsequent migration (movement) of dissolved constituents in surface water

![Figure 2. Generalized Stratigraphic Column for the Phosphate Resource Area of Southeast Idaho](image)
(runoff and seeps) and groundwater.

- Erosion of contaminated particles from waste rock dumps, transport off the dump(s), and subsequent deposition in ephemeral and intermittent streams, resulting in impacts to both stream sediment and riparian soil downgradient of source areas.

Selenium is observed to have significant uptake into vegetation growing on waste rock dumps. Generally, this occurs through the uptake from soil or waste rock through the root system and into plant tissue.

Media influenced and affected by mine waste and associated contaminants include:

- Surface material/waste rock (12.6 million cubic yards)
- Sediment (impacted sediments in the EMD sediment control ponds)
- Surface water (East Mill Creek, sedimentation ponds, and seeps)
- Groundwater (alluvial aquifer)

The following metals were identified as contaminants of potential concern (COPC) at NMM EMD:

- Surface water – arsenic, hexavalent chromium, molybdenum, selenium, thallium, uranium, and vanadium
- Groundwater – aluminum, antimony, arsenic, cadmium, chromium, cobalt, iron, lead, manganese, molybdenum, nickel, selenium, thallium, uranium, and vanadium
- Sediment – aluminum, arsenic, cadmium, cobalt, iron, selenium, thallium, and vanadium
- Soil, vegetation, and beef – aluminum, antimony, arsenic, cadmium, cobalt, iron, manganese, nickel, selenium, thallium, uranium, and vanadium.

In addition, the calculated concentrations of uranium-238 and radium-226 exceed screening levels in soil and sediment.

**Current and Future Land Uses**

The NMM Site is located in a rural and sparsely populated area. The nearest town is Soda Springs, located about 26 miles away. Seasonal ranching is the dominant land uses in the vicinity of the Site. There are many active and inactive phosphate mines in the area. The surrounding area is also used for public recreation, including hunting on private and public lands, and fishing on the Upper Blackfoot River.

The NMM Site includes the former mine area and contaminated portions of adjacent properties. Currently, access is restricted to NMM EMD. Current land uses of the adjoining private properties include seasonal ranching (grazing of sheep and cattle). There is likely some limited recreational and Tribal use (hunting, gathering, and ceremonial use) of the lands at the Site as well. There are no residences at, or near, the NMM EMD.

The reasonably anticipated future uses of the land at the Site include seasonal ranching (grazing of sheep on EMD), recreation, and Tribal use. Residential use of the Site is unlikely because residential use is not allowed on Forest Service lands.
**Scope and Role of the Proposed Plan**

This Proposed Plan describes actions that address threats to human health and the environment posed by contaminants at the Site. This document is based on information and analyses that were prepared by NuWest pursuant to an Administrative Settlement Agreement and Order on Consent/Consent Order (2013 ASAOC/CO). This Remedial Action is being conducted as an interim measure to be followed by a final remedy for the NMM EMOU.

A separate Proposed Plan(s) and ROD(s) will be developed for remaining areas within NMM.

This approach is consistent with the Forest Service’s goal of implementing cost-effective and protective (long-term) remedies that leave the Site in a stable configuration.

**Summary of Site Risks**

Human health and ecological Screening Level Risk Assessments were conducted to evaluate the risks to people and the environment from exposure to contaminants originating from the historic mining activities at the NMM EMD. A detailed description of site risks can be found in the NMM EMD Screening Level Risk Assessments (NuWest, 2017 and NuWest 2017a).

**Human Health Risks**

Human health risks were estimated for various exposure scenarios, based on current and reasonably anticipated future land uses, including current and future Native Americans (for example, elk hunting and harvesting vegetation by the Shoshone-Bannock Tribes), current and future maintenance or Forest Service workers, current and future recreational users, and current and future members of the general population. These scenarios evaluated the exposure to mining-related contaminants in environmental media (soil, sediment, vegetation, surface water, and groundwater) at the Site.

In addition, radiological risk from exposure to uranium decay products was evaluated.

**Non-Radiological Risk Estimates**

The following chemicals exceeded their respective human health screening value for non-radionuclide contaminants (by media) at NMM EMD:

- Surface water exceedances – arsenic, chromium VI, molybdenum, selenium, thallium, uranium, and vanadium
- Groundwater exceedances – aluminum, antimony, arsenic, cadmium, chromium, cobalt, iron, lead, manganese, molybdenum, nickel, selenium, thallium, uranium, and vanadium
- Sediment – aluminum, arsenic, cadmium, cobalt, iron, selenium, thallium and vanadium
- Soil, Vegetation, and Beef exceedances – aluminum, antimony, arsenic, cadmium, cobalt, iron, manganese-
nese, nickel, selenium, thallium, uranium, and vanadium

Radiological Risk Estimates

The following chemicals exceeded their respective human health screening value for radionuclide contaminants (by media):

- Soil exceedances – U-238 and Ra-226
- Sediment exceedances – U-238 and Ra-226

Ecological Risks

Ecological risk estimates were calculated for the most plausible ecological exposure pathways based on contaminant release and transport, available habitat, biota types present, and available food sources.

The following two exposure areas at the EMD were identified and evaluated:

- EMD Upland Area
- EMD Sediment Control Structure

Risks were estimated for these exposure areas by calculating hazard quotients (HQs) for each receptor group. HQs are the ratio of the dose to a toxicity reference value appropriate for the assessment endpoint (AE). The HQ is not a predictor of risk. An HQ less than 1 suggests that there is little potential for ecological risk for a given constituent of potential ecological concern (COPEC) receptor combination, and it may be excluded from further consideration. If an HQ is equal to (unity) or greater than 1, then there is potential for ecological risk for the given receptor-AE.

EMD Upland Area

This terrestrial exposure area includes the EMD, which is a disturbed area that has undergone reclamation and is characterized as hillside/sloping terrain with grasses, herbaceous plants, and low shrubs as the predominant ground cover. Although habitat is somewhat limited relative to undisturbed native habitat in nearby areas, the presence of terrestrial ecological receptors is expected and was evaluated in the Screening Level Ecological Risk Assessment (SLERA). The SLERA concluded that ecological risk for terrestrial plants and soil invertebrates and amphibians in the EMD upland area cannot be excluded. Further, the SLERA also concludes that risk to amphibians and wildlife receptors (terrestrial and aquatic birds and mammals) in the EMD upland area cannot be excluded.

Risk to receptors at the EMD upland area is due to 17 soil COPECs: antimony, arsenic, boron, cadmium, chromium (total), copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium, and zinc.

EMD Sediment Control Structure

This perennial aquatic exposure area is located at the toe of the EMD and collects surface runoff and groundwater seepage originating from the EMD. The structure serves to control sediment release to areas downstream in East Mill Creek. The aquatic habitat in the Sediment Control Structure (SCS) is currently limited due to alterations to the control structure in 2008, but an aquatic community has been observed in the basin and is expected to develop over time. Fish are absent from the Sediment Control Structure, which is physically separated from East Mill Creek and not expected to be part of the Sediment Control Structure aquatic community. Current and expected receptors in the Sediment Control Structure are evaluated in the SLERA. The SLERA concludes that ecological risk for small to moderate ranging aquatic-feeding wildlife receptors using the Sediment Control Structure for food and water cannot be excluded.
Risks to receptors in the aquatic environment are possible from exposure to 10 surface water COPECs: aluminum, barium, boron, cadmium, chromium (total and hexavalent), selenium, silver, uranium, and vanadium.

Risks to receptors in the aquatic environment are possible from exposure to 14 sediment COPECs: aluminum, arsenic, barium, cadmium, chromium (total), copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc.

As described above, the SLERA for the Site identified several COPECs in surface soil, sediment, and surface water. Therefore, the possibility of adverse risks for ecological receptors cannot be excluded under current conditions and remediation may be warranted.

**Basis for Action**

It is the Forest Service’s judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

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**Remedial Action Objectives and Goals**

**Remedial Action Objectives (RAOs):**

For EMD materials (overburden rock, soil, and sediment), the RAOs are:

- **Human and ecological receptors.** Prevent direct contact of EMD materials to human and ecological receptors that would result in unacceptable risk.

- **COPC transport.** Reduce or eliminate erosion and transport of EMD materials to East Mill Creek that would result in unacceptable risk to human and ecological receptors.

For vegetation, the RAOs are:
• **Human and ecological receptors.** Prevent exposure of human and ecological receptors to vegetation on the EMD that would result in unacceptable risk.

For groundwater and surface water, the RAOs are:

• **COPC transport.** Minimize COPC loading from EMD materials to surface water and groundwater discharging to East Mill Creek.

• **COPC transport.** Minimize infiltration and associated COPC loading from EMD materials to groundwater.

• **Ecological receptors.** Minimize ingestion, direct contact, or food-chain exposure of EMD COPC impacted surface water by ecological receptors.

Construction and maintenance of a stable cover system will prevent exposure of human and ecological receptors to hazardous substances in vegetation on the surface of the EMD.

Segregation of EMD cover runoff from emergent flows emanating from within the EMD will be completed by capturing and isolating precipitation runoff from the EMD surface to reduce flow from within the fill. Smaller emergent flows will be easier to manage if further treatment is determined to be necessary.

Minimize infiltration on the surface of the EMD to reduce the load (concentration multiplied by volume) of selenium and other hazardous substances into East Mill Creek. The selected remedy is expected to reduce selenium loads downstream of the North Slope toe to less 5 pounds per day.

This remedial action at the EMD represents an interim measure of the North Maybe Mine Site as a whole. As such, waivers of chemical Applicable or Relevant and Appropriate Requirements (ARARs) for groundwater and surface water will be necessary until remedial actions are undertaken and compliance points are established for the North Maybe Mine Site.

### Summary of Remedial Alternatives

**Remedial Alternative Evaluation**

This section summarizes and presents the remedial alternatives evaluated in detail in the FFS. Cleanup methods and technologies were evaluated for each of the following media: soils and waste rock, vegetation, sediment, surface water, and groundwater.

A list of all the alternatives considered, and those that were retained for detailed evaluation are shown in Attachment D. For each medium-specific alternative, basic information about the components, distinguishing features, expected outcomes, cost and other information is summarized.

The first alternative is the No Further Action alternative, which is required by the NCP and is used as a baseline for comparison to other alternatives. The remaining alternatives, Alternatives 2 through 8, include options for remediation ranging from institutional controls (Alternative 2) to removal of all EMD materials (Alternative 8).

With the exception of Alternative 1 (the No Action Alternative), all other alternatives are expected to be protective of human health and the environment and to comply with ARARs, except surface water and groundwater. Surface Water and Groundwater ARARs will require a waiver as this is an Interim Action for EMD. All ARARs will be met when a final remedy is selected for NMM EMOU.
Elements Common to All Action Alternatives

Many of the remedial alternatives share basic remediation elements. While the No Further Action alternative does not include remediation and Alternative 8 involves removal of all EMD materials, the remaining alternatives have a range of institutional controls in common, and the containment-based engineered cover system remedies have additional engineered elements in common.

Specifically, before construction of any engineered cover system, the EMD will require regrading to promote drainage and constructability. The grading and surface preparation requirements may be different for each of the various engineered cover systems, which could be a significant factor in the construction activities and overall cost. Details of site grading and preparation will be established in the remedial design phase and are discussed in a qualitative manner for each alternative described below.

It is important to note that the stability analysis presented in the EMD FFS indicates a potential for small scale sloughing of the high wall and the waste material perched above into the open pit. Given this potential, it may be necessary to move overburden away from the rim of the open pit to address highwall stability issues. Collection of additional geotechnical stability data in support of the remedial design may be necessary and would be undertaken in conjunction with pre-design data collection activities. Details for any potential reconfigured rim and associated grading and/or removal of overburden, as well as any necessary road reconstruction or repair, will be developed in the remedial design. In addition, any engineered cover system (i.e., Alternatives 3-7) will eliminate the sediment exposure pathway. The design criteria for the development of the remedy design will require that the sediment in the existing SCS be consolidated under the engineered cover as noted in the EMD RI/FFS and the footprint of the removed SCS be covered by the engineered cover system.

All alternatives will require institutional controls as a component of the remedy to ensure protection of human health and the environment is maintained. Institutional controls will also be important for protecting the integrity and performance of containment-based remedies during and after construction. Additionally, institutional controls will require preparation of an Institutional Controls Implementation and Assurance Plan. The specific institutional control measures required include access and use restrictions, communication and distribution of relevant information, inspection and monitoring, and enforcement of the institutional control measures (NuWest 2020).

Operation and Maintenance

Operation and Maintenance (O&M) is an integral component of all alternatives and ensures the proper functioning and integrity of engineering controls, such as the cover system and the proper functioning of treatment facilities, and sediment control best management practices (BMP). Each alternative includes a variety of O&M requirements. The specific O&M requirements vary depending on the cleanup method or technology and will be refined during remedial design.
Long-term Monitoring

Monitoring is also an integral component of all alternatives to assess the effectiveness of the remedy. The monitoring program will include periodic inspections of engineered facilities, and sampling and analysis of groundwater, surface, sediment, vegetation, and soil.

Alternative 1 | No Action

Alternative 1 (No Further Action) is required by the NCP as a baseline for comparison against other remedial alternatives. This alternative retains the Site in its current state with no remedial action and includes continued maintenance of the SCS at the Site. The No Further Action alternative applies to all site media. Five-year site reviews would be performed, as required by CERCLA, where the remedy leaves contamination in place, to evaluate whether the remedy remains protective. Monitoring would only be performed as necessary to support 5-year reviews.

Alternative 2 | Limited Action

Alternative 2 includes institutional controls, such as access and use restrictions for the EMD and maintaining the institutional control restriction on groundwater well drilling and groundwater use. Human exposure to COPCs would be reduced by restricting human access to the Site. Exposure of ecological receptors to COPCs in surface soil, vegetation, and surface water and would not be addressed by Alternative 2. Mobility of COPCs in surface water and groundwater and control of the source of COPCs to downstream and downgradient SOUs would not be addressed by Alternative 2.

Alternative 3 | Simple Soil Cover

Alternative 3 consists of a direct contact-limiting engineered simple soil cover system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to constructing the cover, access and use restrictions, informational signage, and natural attenuation of residual COPCs in groundwater. Alternative 3 would cost more than Alternative 2 but less than Alternative 4. Alternative 3 would take approximately two years to construct.

The simple soil cover would replace existing vegetation within the North Area following placement of clean growth media, thus reducing the potential for COPC exposure from surface soil and new vegetation would grow on the clean soil cover. The simple soil cover would reduce stormwater contact with EMD materials on the North Area ground surface, thus reducing the COPC load in surface water that results from stormwater runoff. Snowmelt and stormwater that infiltrate into the simple soil cover may evaporate before reaching underlying EMD materials or infiltrate into EMD materials and continue to act as a migration mechanism for COPCs into underlying groundwater.

Alternative 4 | Simple Soil Cover Combined with Groundwater Collection and Treatment

Alternative 4 consists of a direct contact-limiting engineered simple soil cover system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to cover construction, groundwater pumping, treatment of extracted groundwater, discharge of treated groundwater, access and
use restrictions, and informational signage. Alternative 4 would cost more than Alternatives 3 & 6, but less than Alternatives 5 & 7. Alternative 4 would take approximately two years for construction and an additional three years to calibrate the groundwater collection and treatment system.

Groundwater underlying the North Area would be hydraulically captured from a network of extraction wells, impounded in a storage tank, and treated through an onsite water treatment system consisting of media filtration and RO.

The simple soil cover would replace existing vegetation within the North Area following placement of clean growth media, thus reducing the potential for COPC exposure from surface soil and new vegetation would grow on the clean soil cover. The simple soil cover would reduce stormwater contact with EMD materials on the North Area ground surface, thus reducing the COPC load in surface water that results from stormwater runoff. Snowmelt and stormwater that infiltrate into the simple soil cover may evapotranspire before reaching underlying EMD materials or infiltrate into the EMD. Groundwater impacted by COPCs underlying the North Area would be treated indefinitely.

**Alternative 5 | Evapotranspiration Cover (ET)**

Alternative 5 consists of an infiltration-limiting and direct contact-limiting engineered ET cover system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to cap construction, access and use restrictions, informational signage, and natural attenuation of residual COPCs in groundwater. Alternative 5 would take approximately three years to construct.

The ET cover would limit exposure to EMD materials, replace vegetation so that new vegetation would grow on the clean soil cover, and minimize COPC loading to underlying groundwater. The ET cover would also reduce stormwater contact with EMD materials on the North Area ground surface, Alternative 5 will reduce more COPC load in surface water than Alternatives 3 & 4, however, it will allow some infiltration and COPC loading to occur.
Alternative 6 | Clay Cap

Alternative 6 consists of an infiltration-limiting and direct contact-limiting engineered natural clay cap system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to cap construction, access and use restrictions, informational signage, and natural attenuation of residual COPCs in groundwater. Alternative 6 would cost more than Alternative 3 but less than Alternative 5. Alternative 6 would take approximately two years to construct.

The clay cap would limit exposure to EMD materials, replace vegetation so that new vegetation would grow on the clean soil cover, and minimize COPC loading to underlying groundwater by reducing the amount of infiltration that percolates through the EMD materials. The clay cap would also reduce stormwater contact with EMD materials on the North Area ground surface, thus reducing the COPC load in surface water that results from stormwater runoff.

Alternative 7 | Geosynthetic Cap

Alternative 7 consists of an infiltration-limiting and direct contact-limiting engineered geosynthetic cap system applied to the North Area, excavation of sediment from the SCS and placement within the North Area prior to cap construction, access and use restrictions, informational signage, and monitored natural attenuation (MNA) of residual COPCs in groundwater. Alternative 7 would take approximately three years to construct.

The geosynthetic cap would limit exposure to EMD materials, replace vegetation so that new vegetation would grow on the clean soil cover, and minimize COPC loading to underlying groundwater by reducing the amount of infiltration that percolates through the EMD. The geosynthetic cap would also reduce stormwater contact with EMD materials on the North Area ground surface, thus reducing the COPC load in surface water that results from stormwater runoff.

Alternative 8 | Overburden Pile Material Excavation and Disposal

Alternative 8 consists of excavation and off-site disposal of all EMD materials and vegetation, excavation and disposal of sediment from the SCS, and natural attenuation of residual COPCs in groundwater. Alternative 8 would take approximately five years to construct.

Alternative 8 would result in the removal of EMD materials and vegetation and would eliminate the surface...
water contact that results in COPC leaching. In addition, with the removal of the COPC source materials, it is anticipated that groundwater COPCs would attenuate within a predictable timeframe following source removal.

**Initial Screening of Alternatives**

Initial screening of each of the eight alternatives was completed to refine and reduce the number of alternatives that will be analyzed in detail. The initial screening of alternatives is generally based on three criteria: (1) effectiveness; (2) implementability; and (3) cost (Attachment D).

Alternatives 7 and 8 will be retained for detailed analysis based on their effectiveness at achieving RAOs for all site media. In addition, Alternative 1 does not protect human health or the environment, but will be retained per the NCP requirement to include No Further Action in the detailed analysis for reference. Although Alternative 8 would be highly effective, implementation costs are likely an order of magnitude higher than other alternatives considered and implementability must be carefully evaluated though detailed analysis described in the Comparative Evaluation of Alternatives.

**Comparative Evaluation of Alternatives**

The Superfund regulations require that alternatives be evaluated using the nine criteria presented below. As described in the inset box, the nine criteria are organized into three groups: Threshold Criteria; Primary Balancing Criteria; and Modifying Criteria.

The performance of each retained alternative was evaluated with respect to the threshold and balancing criteria. First, each alternative was compared to the threshold criteria (overall protection of human health and the environment and compliance with ARARs) to confirm that those criteria would be met by the retained alternatives. For the balancing criteria (long-term effectiveness and performance; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost), each alternative’s effectiveness at meeting the criteria was evaluated.

The following sections discuss how the alternatives will address RAOs and compares the alternatives to the threshold and balancing criteria established in the NCP. The individual performance of each alternative with respect to the threshold and balancing criteria are evaluated in Appendix D of the EMD RI/FFS. A more thorough evaluation of the alternatives in relation to each criterion is provided in the FFS.

**Overall Protection of Human Health and the Environment | Threshold Criterion**

Comparison of whether each alternative provides sufficient protection of human health and the environment is based on comparison of the anticipated remedy performance in both short- and long-term timeframes. The effectiveness of each alternative to remove, reduce, or control risks due to exposure to COPC-containing site media through treatment, engineering controls, or institutional controls are compared.

Alternative 1 is required by the NCP to provide an environmental baseline against which the effects of the remedial alternatives can be compared. Alternative 1 leaves the Site in its current condition.
As such, Alternative 1 does not address migration of COPCs from the EMD or otherwise mitigate the associated risks to human health and the environment, and the potential risks identified in the SLHHRA and SLERA (NuWest 2017 and 2017a) would not be addressed. EMD materials in the headwaters of East Mill Creek would continue to leach COPCs through contact with precipitation and infiltration waters and migration of COPCs would not be addressed. The EMD surface materials would continue to erode and potential for direct exposure to COPC impacted surface soils and vegetation would persist. Based on this analysis, Alternative 1 is not protective of human health or the environment. As a result, Alternative 1 does not meet the threshold.

**Nine Superfund Evaluation Criteria**

*Threshold Criteria (2) - Must be addressed*

1. Overall Protection of Human Health and the Environment evaluates whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the Site, or whether a waiver is justified.

*Primary Balancing Criteria (5)*

1. Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
2. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative’s use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
3. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.
4. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
5. Cost includes estimated capital and annual operations and maintenance costs, as well as present value cost. Present value cost is the total cost of an alternative over time in terms of today’s dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

*Modifying Criteria (2) —The modifying criteria will be evaluated following comments received during the public comment period and will be addressed in making the final remedy decision and discussed in the ROD.*

1. State/Tribal Acceptance considers whether the State and affected Tribes agree with EPA’s analyses and recommendations, as described in the RI/FS and Proposed Plan.
2. Community Acceptance considers whether the local community agrees with EPA’s analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.
As concluded in the SLHHRA and SLERA (NuWest 2017 and 2017a) the possibility of risks to human health and various ecological receptors cannot be excluded. Based on these findings, an active remedy is indicated to provide protection of human health and the environment. Detailed comparative analysis and scoring of each of the retained alternatives relative to this criterion are presented in the EMD RI/FFS.

Alternative 7 achieves human health and ecological risk reductions by reducing exposure to COPCs in the North Area by preventing contact with contaminated soils and vegetation. Placing a low-permeability geosynthetic cap on the North Area would also limit the amount of precipitation that contacts COPC-containing EMD materials that may runoff or infiltrate.

Alternative 8 removes the overburden piles, thus reducing human and ecological receptor exposure to OPC-impacted soils and vegetation. Furthermore, Alternative 8 removes the source of COPCs and reduces the further transport of COPCs to surface water and groundwater.

Applicable or Relevant and Appropriate Requirements (ARARs) | Threshold Criterion

Section 300.430 (e)(9)(iii)(B) of the NCP states that alternatives shall be assessed to determine whether they attain applicable or relevant and appropriate requirements (ARARs) under federal environmental laws and state environmental or facility siting laws or provide grounds for one of the waivers under paragraph (f)(1)(iii)(C) of this section and is the basis for this threshold criterion. A listing of ARARs and documentation of how each alternative would comply with the ARARs are presented in Appendix G of the EMD RI/FFS (Key ARARs for this action are presented in Attachment E). Because the EMD is part of the East Mill Operable Unit and remedial action within the EMD is considered an interim measure with regard to the larger East Mill Operable Unit, waivers for groundwater and surface water chemical-specific ARARs would be necessary until remedial actions are completed for the North Maybe Mine Site. Detailed comparative analysis of each of the retained alternatives relative to this criterion are presented in the NMM EMD RI/FFS.

Although chemical-specific ARAR waivers would be implemented for groundwater and surface water within the EMD, Alternatives 7 and 8 would act as source control measures and are important for protecting downstream and down gradient media. Alternative 7 would reduce infiltration in the North Area; therefore, long-term loading of COPCs that have historically been leaching from the EMD, migrating downgradient, and discharging to East Mill Creek would be reduced. Alternative 8 would remove EMD materials, the source of COPCs, from the Site, which would also reduce COPC loading downgradient of the Site. Alternatives 7 and 8 are capable of complying with the action- and location-specific ARARs. As a result, Alternatives 7 and 8 meet this threshold criterion.

Long-term Effectiveness and Permanence | Balancing Criterion

Comparison of the long-term effectiveness and performance of Alternatives 7 and 8 is important to evaluate the protectiveness of human health and the environment by the preferred alternative. The reduction in exposure to COPC-impacted media and reliability of controls are the basis for the long-term effectiveness and performance evaluation. This includes evaluation of two components: the
risks remaining from untreated waste or treatment residuals following the conclusion of remedial activities; and the degree of post-remedial site control activities that may be required to monitor the Site following construction of the remedial alternative to sustain the integrity of the action. Detailed comparative analysis of the retained alternatives relative to this criterion are presented in Table 17-2 of the EMD RI/FFS.

Because Alternative 8 results in the removal of COPC source materials from the Site, Alternative 8 achieves the highest degree of long-term effectiveness and permanence relative to the other retained alternatives.

Alternative 7 provides source control by preventing infiltration with a geosynthetic cap; however, it is susceptible to erosion of cover materials during significant storm events. Long-term maintenance and repairs of the caps can mitigate damage and degradation of the caps. Performance of geosynthetic barriers relies on installation quality and proper site maintenance. In cases of isolated damage (e.g., from deep-rooting trees, vandalism, burrowing animals), repairs may be necessary and can be costly.

Alternatives 7 and 8 both provide a reduction in erosion and transport of COPC-impacted EMD materials to East Mill Creek by capping the North Area. Potential remedies for contaminants that exceed acceptable risks in East Mill Creek beyond the SCS will be evaluated after implementation of the selected EMD remedial alternative.

As a result, Alternative 7 is considered moderately effective at achieving this criterion, reflecting the relatively high long-term effectiveness and performance associated with a capping remedy.

Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment | Balancing Criterion

Alternative 8 provides the maximum reduction in mobility and volume of COPCs relative to the other alternatives. Alternative 8 eliminates the COPC leaching pathway by removing the COPC source materials. The reduction in COPC concentrations in groundwater occurs through natural attenuation, which is similar for Alternatives 7 and 8.

Alternative 7 addresses the mobility and volume of COPCs that may be transported from the Site using a low-permeability geosynthetic cap. Alternative 7 achieves reduction to the volume of impacted surface water runoff and groundwater contacting the North Area by reducing the amount of precipitation and infiltration contacting EMD materials, which would similarly reduce COPC mobility through surface water and groundwater. Alternative 7 is considered to be moderately effective in achieving the elements of the criterion.

Neither Alternative 7 or 8 reduces toxicity, mobility, or volume through treatment.
Short-term Effectiveness | Balancing Criterion

Short-term effectiveness was compared between each alternative to address the protection of the community, protection of workers, and environmental impacts during the implementation phase, and the time until RAOs are achieved. The following factors are considered for each alternative:

- **Protection of the Community.** Because the EMD is located outside of a community, the potential short-term impacts on the community would primarily be related to additional traffic and roadway use in regional roads during the construction phase. The construction-related traffic for Alternative 7 would result in disruption to the community. The most disruptive alternative is Alternative 8, which includes transporting more than 700,000 truckloads of material to a disposal location, which has the potential to create more disruption to the community than the other alternatives.

- **Protection of Workers.** Alternatives 7 and 8 include significant earthwork, and the potential hazards associated with implementing these remedies are related to operation of heavy equipment, working on steep slopes, safety concerns associated with limited slope stability, and dust exposure. Alternatives 7 and 8 have risks associated with construction activities (site grading and excavation activities) that would disturb the existing soil and could result in dust exposure for site workers. Dust monitoring can be effective in identifying potential exposure and assessing the effectiveness of control measures during construction. Increases in equipment size, quantity of heavy equipment operating, and duration of heavy equipment operation are all factors in risks associated with construction using heavy equipment. These factors are directly related to the area of the remedial footprint in Alternative 7 and the volume of material to be excavated in Alternative 8, with the result being that Alternative 7 is the active remedy most protective of workers. Alternative 8 is further complicated by the significant increase in truck traffic and extended duration associated with the transport and disposal of excavated materials; this alternative presents the most hazards for workers, and therefore, is the least protective of workers.

- **Environmental Impacts.** Comparison of the potential for adverse environmental impacts that may result from implementation of the alternatives are considered. Alternatives 7 and 8 have increasingly significant short-term environmental impacts relative to each other that are associated with operation of heavy equipment for site grading, cap construction, and/or excavation activities. Additionally, the adverse environmental impacts associated with excavation of borrow material at the borrow source, trucking of borrow material to the Site, and/or hauling of EMD materials offsite would increase between Alternatives 7 and 8. Additionally, because Alternative 8 includes transport and disposal of COPC-containing materials to a new location, the potential would exist for COPC impacts to occur at the new location if proper disposal controls are not established. The potential for accidental spills of COPC-containing material during transport would also exist for Alternative 8. Alternative 8 has the highest potential for environmental impacts relative to the other alternatives.

- **Time Until RAOs are Achieved.** Alternatives 7 and 8 have similar timeframes for achieving the RAOs following the end of active construction activities for each remedy, but the active durations would increase with the level of effort included in each successive alternative. For both alternatives, the time would be contingent upon the duration required to implement the active portion of the remedial action (cap construction or material removal), estimated to range between approximately two to five construction seasons, and the time required for groundwater COPCs to attenuate through MNA following source control achieved by the active portion of the remedy.

Detailed comparative analysis of each of the retained alternatives relative to this criterion are presented in the EMD RI/FFS.
Implementability | Balancing Criterion

The implementability of each alternative is evaluated based on the technical and administrative feasibility. The feasibility considerations include the ability to construct, the ease of doing more remediation, if needed, the ability to monitor effectiveness, the ability to obtain approvals, the availability of equipment and materials, and the availability of technologies. These implementability considerations for Alternatives 7 and 8 are discussed below.

• **Technical Feasibility.** The technical feasibility of Alternative 7 is high. The major components of the alternative (site grading, geosynthetic liner construction, cover placement, MNA, and institutional controls) are frequently implemented at other regional sites. The recent successful implementation of a geosynthetic cap and soil cover at the South Maybe Canyon Mine (SMCM) Cross Valley Fill (CVF) indicates that the necessary equipment and experienced workers are available to undertake such a project, including contractors to construct geosynthetic liners. Borrow sources have been identified in the region and are sufficient for Alternative 7. Alternatives 7 and 8 would not interfere with further actions, should they be needed. While the technical feasibility for Alternative 7 is high, the technical feasibility for Alternative 8 is low relative to the other alternatives. Alternative 8 is less implementable due to excessive transport needs and limitations of nearby disposal facilities.

• **Administrative Feasibility.** Because the Site lies on public (Forest Service-administered) property, the administrative feasibility of Alternatives 7 and 8 depends on the approval of the Forest Service and adherence to conditions established in the Revised Forest Plan (Forest Service 2003a). Alternatives 7 and 8 must meet the substantive requirements of applicable permits. Alternative 7 is likely to be administratively feasible as most operations will be conducted onsite; however, Alternative 8 includes additional impacts to the community (haul trucks traveling to an offsite disposal facility), as well as the offsite disposal locations if offsite disposal is selected, and may have additional concerns with respect to administrative approvals for hauling and disposal; therefore, Alternative 8 is less administratively feasible than Alternative 7.

The technical and administrative feasibility is moderately high for Alternative 7. Alternative 8 requires excessive transport needs and includes potential impacts to the community as well as the offsite receiving locations and is considered not as effective at achieving the implementability criterion.

Cost | Balancing Criterion

Total present worth of capital and maintenance and repair (M&R) and construction cost were calculated for each remedial alternative (Appendix H of the EMD RI/FFS). The projected cost estimates include capital, construction, and M&R costs.

• **The total cost for Alternative 7 is estimated to be $14,698,600. This represents the lowest cost alternative for an active remedy.**

• **The total cost for Alternative 8 was estimated for onsite activities only (e.g., excavation) and does not include transport and offsite disposal costs. Excavation costs alone estimated for Alternative 8 exceed $100,000,000. The additional transport costs for either onsite or offsite disposal and any disposal costs would add to this estimated baseline cost, which is more than an order of magnitude higher than Alternative 7.**
State and Tribal Acceptance | Modifying Criterion

The State of Idaho (through IDEQ) has been an active participant and fully engaged throughout the remedial investigation, feasibility study process, and development of the preferred alternative. To date, State concerns have been addressed and the State agrees with the remedial action proposed for the site. IDEQ may provide additional comments on the Proposed Plan during the public comment period. Final State acceptance will be evaluated after the public comment period ends and will be described in the ROD. The Forest Service will carefully consider comments received from the State during the public comment period when selecting a final remedy in the ROD.

As a support agency, the Shoshone-Bannock Tribes have been actively engaged throughout the RI/FS. The Forest Service will carefully consider comments received during the public comment period and offered to consult with the Tribes prior to starting the comment period.

Community Acceptance | Modifying Criterion

The Forest Service will seek comments on the Proposed Plan and RI/FFS during the public comment period. Community concerns will be considered by the Forest Service during preparation of the ROD. The ROD will include a Responsiveness Summary of all comments received on the Proposed Plan.

Preferred Alternative

The preferred remedial alternative is Alternative 7, which consists of a geosynthetic cap system on the North Area, excavation of SCS sediment and placement on the North Area prior to cap construction, access and use restrictions, and MNA of residual COPCs in groundwater.

Alternative 7 achieves the RAOs in the following ways:

- Reduce exposure to COPCs through direct contact with EMD materials and ingestion of EMD vegetation by human and ecological receptors by capping North Area soil and vegetation. By maintaining existing South Area conditions and capping of the North Area, the exposure to potential ecological and human receptors to COPC-impacted media will be minimized. North Area remediation will include covering 70 acres of soil and vegetation containing the highest COPC concentrations (i.e., the average soil and vegetation selenium concentrations are 55 and 67 mg/kg, respectively). Cover soil will be sourced from unimpacted borrow areas.

- Reduce erosion and transport of COPC-impacted EMD materials to East Mill Creek by capping the North Area. Potential remedies for contaminants that exceed acceptable risks in East Mill Creek beyond the SCS will be evaluated after implementation of the selected EMD remedial alternative.

- Reduce COPC loads from EMD materials in groundwater discharging to the SCS and East Mill Creek through placement of an infiltration-limiting cap (i.e., geosynthetic cap) in the North Area.

- Reduce COPC concentrations in groundwater through MNA in conjunction with the decreased loading to groundwater achieved by placement of the infiltration-limiting cap in the North Area.
Alternative 7 complies with the requirements of the threshold and balancing criteria and achieves the RAOs while simultaneously improving implementability and minimizing costs. The geosynthetic cap applied to the North Area addresses the impacted elements of the EMD and the potential fate and transport mechanisms identified in the CSM that result in potential exposure of human and ecological receptors.

Summary

On the basis of information currently available, the Forest Service believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Forest Service expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA section 121(b):

- Be protective of human health and the environment.
- Comply with ARARs.
- Be cost effective.
- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.
- Satisfy the preference for treatment as a principal element (or explain why the preference for treatment will not be met).

Community Involvement

Submitting Comments on the Proposed Plan

Instructions for submitting comments on the Proposed Plan are found on page 1.

Who to Contact with Questions or Concerns

<table>
<thead>
<tr>
<th>U.S. Forest Service</th>
<th>U.S. Forest Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian Deeken, Remedial Project Manager</td>
<td>Sarah Wheeler, Public Affairs Officer</td>
</tr>
<tr>
<td>208.236.7516</td>
<td>208.557.5765</td>
</tr>
<tr>
<td><a href="mailto:brian.deeken@usda.gov">brian.deeken@usda.gov</a></td>
<td><a href="mailto:sarah.wheeler2@usda.gov">sarah.wheeler2@usda.gov</a></td>
</tr>
</tbody>
</table>

Public Comment Period

The Forest Service will accept written comments on this Proposed Plan beginning on June 28, 2021-July 28, 2021. The Forest Service will make its final decision on the cleanup only after considering public comments. At the end of the comment period, the Forest Service will include a responsiveness summary addressing the comments in the ROD. The Forest Service will place all written comments and the Responsiveness Summary in the Forest Service’s Administrative Record for the NMM.
Documents

The Administrative Record for the Site contains the documents that have been used to make decisions on how to clean up the Site. The documents in the Administrative Record can be viewed at:

Soda Springs Ranger District
410 East Hooper Ave.
Soda Springs, ID 83276-1496
(208) 547-4356

REFERENCES

Key Guidance Documents

- The Revised Forest Plan for the Caribou National Forest (February 2003)
- The National Contingency Plan regulations, found at 40 CFR Section 300, and the statutory requirements of CERCLA—especially Section 121 of CERCLA, 42 U.S.C. Section 9621—are the mandatory requirements that the Forest Service must follow in selecting a remedy.
- In addition, the Forest Service uses guidance as appropriate in the remedy selection process. Key guidance documents used for the North Maybe Mine are as follows:
  “Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA,” Interim Final, OSWER No. 9355.3-01 (EPA October 1988)
  “A Guide to Principal Threat and Low Level Threat Wastes,” OSWER No. 9380.3-06FS (EPA November 1991)
  “Rules of Thumb for Superfund Remedy Selection,” OSWER No. 9355.0-69 (EPA August 1997)
  “Incorporating Citizen Concerns into Superfund Decision Making,” OSWER No. 9230.0-18 (EPA January 1991)

These and other guidance documents are available at
- http://www.epa.gov/superfund/resources/remedy/index.htm

NMM EMD investigation activities and reports include:

- NuWest. 2020. Final Remedial Investigation/ Focused Feasibility Study (RI/FFS) Report, North Maybe
Understanding environmental cleanup may be confusing for the average person. The following definitions of terms commonly used will assist your understanding of this document.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Controls</td>
<td>Physical methods to discourage people from entering a site, including fencing and posting warning and informational signs.</td>
</tr>
<tr>
<td>Applicable or relevant and appropriate requirements (ARARs)</td>
<td>Any standard, requirement, criteria or limitation under federal environmental law or more stringent promulgated standard, requirement, criteria or limitation under State environmental or facility siting law that is legally “applicable to the hazardous substance (or pollutant or contaminant) concerned or is “relevant and appropriate” under the circumstances of the release.</td>
</tr>
<tr>
<td>Contaminants of Concern (COCs)</td>
<td>Contaminants, such as selenium and arsenic, that were found to exceed EPA’s risk thresholds in the human health or ecological risk assessments.</td>
</tr>
<tr>
<td>Exposure</td>
<td>The amount of pollutant present in a given environment that represents a potential health threat to living organisms.</td>
</tr>
<tr>
<td>Exposure Pathway</td>
<td>How contaminants move from sources to humans and environmental receptors via paths such as dermal contact, ingestion, or inhalation.</td>
</tr>
<tr>
<td>Feasibility Study</td>
<td>A process to screen, develop, and evaluate various alternatives being considered for selection of a remedial action.</td>
</tr>
<tr>
<td>Institutional Controls (ICs)</td>
<td>Non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.</td>
</tr>
<tr>
<td>Land Use Controls</td>
<td>LUCs typically consist of a combination of institutional controls (legal and administrative controls), access controls (physical controls) and community awareness activities to restrict access and use of contaminated areas and provide awareness of risks from exposure.</td>
</tr>
<tr>
<td>Mining-influenced Water</td>
<td>Water affected by mining activities and exposure to mineralized geologic material, that is potentially toxic to the environment, regardless of the pH.</td>
</tr>
<tr>
<td>National Priorities List (NPL)</td>
<td>EPA’s list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. A site must be on the NPL to receive money from the Trust Fund for remedial action.</td>
</tr>
<tr>
<td>Operable Unit (OU)</td>
<td>A designation based on geography or other characteristics that defines a specific area of a site and enables the Superfund process to move forward in different areas at different times, speeding up the overall cleanup process at the Site.</td>
</tr>
<tr>
<td>Operation and Maintenance (O&amp;M)</td>
<td>Activities conducted after a Superfund site action is completed to help sustain the effectiveness of the remedial action.</td>
</tr>
<tr>
<td>Periodic Costs</td>
<td>Costs that occur every few years on a scheduled basis, such as 5-year site reviews.</td>
</tr>
<tr>
<td>Present Value</td>
<td>The present worth (of a sum payable in the future) calculated by deducting interest that will accrue between the present and future date.</td>
</tr>
<tr>
<td>Remedial Action (RA)</td>
<td>The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.</td>
</tr>
<tr>
<td>Record of Decision (ROD)</td>
<td>A public document that explains which cleanup alternative(s) will be used for the final remedy at the NPL site.</td>
</tr>
</tbody>
</table>
Remedial Investigation (RI)  |  An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site; establish site cleanup criteria; identify preliminary alternatives for remedial action; and support technical and cost analyses of alternatives typically described in more detail in a co-associated Feasibility Study (FS).

Superfund  |  The program that funds and carries out EPA hazardous waste emergency and long-term removal and remedial activities. These activities include establishing the NPL, investigating sites for inclusion on the list, determining their priority and conducting and/or supervising cleanup and other remedial actions.

Watershed  |  A watershed is literally any sloping surface that sheds water, but the proper definition (Webster’s) implies a topographic divide that sheds water into two or more drainage basins. Watershed is synonymous with drainage basin or catchment.

**ATTACHMENTS**

Attachment A | Site Location Map of the NMM EMD, Caribou County, Idaho
Attachment B | Site Features NMM EMD, Caribou County, Idaho
Attachment C | Hydrogeological Conceptual Site Model Cross Section, NMM EMD Caribou County, Idaho
Attachment D | Initial Screening of Alternatives, North Maybe Mine East Mill Dump, Caribou County, Idaho
Attachment E | Key Applicable or Relevant and Appropriate Requirements (ARARs)
LEGEND

- LEASE BOUNDARY
- SPECIAL USE PERMIT BOUNDARY
- WEST RIDGE OPERABLE UNIT
- EAST MILL DUMP SUB-OPERABLE UNIT
- OPEN PIT SUB-OPERABLE UNIT

NOTES:
1. MAIN MAP BASEMAP: USGS 1:24000 TOPOGRAPHIC QUADS, SERVICED BY ESRI ARCGIS ONLINE, ACCESSED ON 8/19/2016.
2. INSET MAP BASEMAP: TOPOGRAPHIC, SERVICED BY ESRI ARCGIS ONLINE, ACCESSED ON 8/19/2016.

SITE LOCATION MAP

NU-WEST INDUSTRIES, INC./NU-WEST MINING, INC.
NORTH MAYBE MINE
EAST MILL DUMP SUB-OPERABLE UNIT
CARBOU COUNTY, IDAHO
REMEDIAL INVESTIGATION/FOCUSED FEASIBILITY STUDY REPORT

FIGURE 1-1

Attachment A | Site Location Maps of the NMM EMD, Caribou County, Idaho
LEGEND

OVERBURDEN PILE
OPEN PIT
OPERABLE/SUB-OPERABLE UNITS

- EAST MILL DUMP SUB-OPERABLE UNIT
- OPEN PIT SUB-OPERABLE UNIT
- WEST RIDGE OPERABLE UNIT
- SEDIMENT CONTROL BASIN

WEIR

NOTES:
1. STREAM SOURCE: NATIONAL HYDROGRAPHY DATASET 2012
2. AERIAL SOURCE: BING AERIAL, ACCESSED VIA ARCGIS ONLINE SERVICES ON 10/12/2017.
Table 16-3
Initial Screening of Remedial Alternatives
Remedial Investigation/Focused Feasibility Study Report
North Maybe Mine East Mill Dump Sub-Operable Unit
Caribou County, Idaho

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Description</th>
<th>Achieves RAOs?</th>
<th>Implementability Screening</th>
<th>Effectiveness Screening</th>
<th>Cost Screening</th>
<th>Initial Screening Comments (Implementability and Effectiveness)</th>
<th>Retain/Eliminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>No Further Action</td>
<td></td>
<td>High</td>
<td>Low</td>
<td>No Cost</td>
<td>Provides baseline against which other remedial technology can be compared.</td>
<td>Retain</td>
</tr>
<tr>
<td>Alternative 2</td>
<td>Limited Action</td>
<td>Institutional controls such as warning signage installed to restrict access. Public awareness program is installed, including restrictions on well drilling and water use.</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Institutional controls are easily implemented, however other limited effectiveness for human receptors and are ineffective for ecological receptors. Does not achieve RAOs.</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>Simple Soil Cover</td>
<td>Contaminated surface material (North Area) and dredged SCS sediment is covered with a vegetated soil cover, institutional controls to restrict access and usage.</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Soil cover reduces potential for erosion of COPC-impacted soil, leaching to surface water and uptake in vegetation. Does not restrict infiltration or leaching to groundwater. Does not achieve some RAOs.</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Alternative 4</td>
<td>Simple Soil Cover; Groundwater Collection and Treatment</td>
<td>Contaminated surface material (North Area) and dredged SCS sediment is covered with a vegetated soil cover. Groundwater is extracted and treated. Institutional controls to restrict access and usage.</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Soil cover reduces potential for erosion of COPC-impacted soil, leaching to surface water and uptake in vegetation. Addressed COPCs in groundwater may require multiple treatment technologies to be fully effective at treating COPCs to acceptable levels. Would require long-term operation and maintenance. May not achieve some RAOs.</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Alternative 5</td>
<td>Evapotranspiration Cover</td>
<td>Contaminated surface material (North Area) and dredged SCS sediment is covered with a vegetated soil cover. Infiltration to groundwater is reduced by evapotranspiration. Institutional controls to restrict access and usage.</td>
<td>Line</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Evapotranspiration cover reduces potential for erosion of COPC-impacted soil, leaching to surface water and uptake in vegetation. Performance of evapotranspiration is difficult to predict, may require excessive cap thickness, and may not adequately reduce infiltration. Does not achieve some RAOs.</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Alternative 6</td>
<td>Clay Cap</td>
<td>Contaminated surface material (North Area) and dredged SCS sediment is covered with a vegetated soil cover. Infiltration to groundwater is reduced by a compacted clay cap. Institutional controls to restrict access and usage.</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Locally sourced natural materials may not comply with hydraulic conductivity requirements. Exposure to these and other natural conditions may result in increases in hydraulic conductivity over time such that the cap may not adequately reduce infiltration. Does not achieve some RAOs.</td>
<td>Eliminate</td>
</tr>
<tr>
<td>Alternative 7</td>
<td>Geosynthetic Cap</td>
<td>Contaminated surface material (North Area) and dredged SCS sediment is covered with a vegetated soil cover. Infiltration to groundwater is reduced by a geosynthetic cap. Institutional controls to restrict access and usage.</td>
<td>Moderate</td>
<td>High</td>
<td>Moderate</td>
<td>Feasible to construct with demonstrable effectiveness to achieve RAOs.</td>
<td>Retain</td>
</tr>
<tr>
<td>Alternative 8</td>
<td>EMD Material Excavation and Disposal</td>
<td>Removal of contaminated soil and sediment using backhoes, bulldozers, and front-end loaders. Material is transported for offsite disposal.</td>
<td>Moderate</td>
<td>High</td>
<td>High</td>
<td>Feasible to construct with demonstrable effectiveness to achieve RAOs; however, significant logistics, health and safety, and cost considerations decrease viability.</td>
<td>Retain</td>
</tr>
</tbody>
</table>

Note: Definitions of qualitative screening categories are:
- Low = Provides limited, incomplete, unreliable, or unpredictable effectiveness and is unlikely to achieve any RAOs. May have significant barriers or challenges for implementation and/or implementation may not be possible. There are no costs or very low costs (i.e., costs associated with no action).
- Moderate = Provides partial effectiveness, which may apply to specific exposure pathways, specific COPCs, or specific areas and may partly or fully achieve some RAOs. The reliability is understood and may have specific known circumstances under which the effectiveness may fail. The cost is between the cost of a No Further Action alternative and that of the most expensive alternative.
- High = is effective at achieving all RAOs in a predictable and reliable way and is implementable using common and well-recognized methods that are known to be safe and cost result in the necessary quality. The costs are an order of magnitude or higher than other alternatives.

Acronyms and Abbreviations:
- COPC = constituent of potential concern
- CPO = concentration of potential concern
- EMD = East Mill Dump
- RAO = remedial action objective
- RD = reverse osmosis
- SCS = sediment control structure
<table>
<thead>
<tr>
<th>Standard, Limitation, or Requirement Criteria</th>
<th>Citation</th>
<th>Description</th>
<th>Applicability Determination</th>
<th>Description of Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Water Act (CWA): Water Quality Standards</td>
<td>33 U.S.C. 1342 - 1344 40 CFR 131</td>
<td>Establishes water quality criteria for surface water.</td>
<td>Potentially Applicable</td>
<td>SWQ standards are potentially applicable to actions associated with discharge of stormwater to waters of the United States. The proposed interim actions may not meet the WQS in the short-term and a waiver is requested.</td>
</tr>
<tr>
<td>WQS: Surface Water Quality Criteria for Use Classifications</td>
<td>IDAPA §58.01.02.250 to .253</td>
<td>Establishes numerical surface water quality criteria for beneficial use classifications.</td>
<td>Potentially Applicable</td>
<td>WQS, as promulgated by the state, are applicable to the site. However, this recommended alternative alone may not result in compliance with water quality standards in East Mill Creek downgradient from EMD.</td>
</tr>
<tr>
<td>Safe Drinking Water Act (SDWA): National Primary Drinking Water Regulations</td>
<td>42 U.S.C. 300f et. seq.; 40 CFR Part 141</td>
<td>Establishes health-based standards (MCLs) for public water systems.</td>
<td>Potentially Relevant and Appropriate</td>
<td>MCLs are potentially relevant and appropriate to groundwater.</td>
</tr>
<tr>
<td>Ground Water Quality Rule: Ground Water Quality Standards</td>
<td>IDAPA §58.01.11.200</td>
<td>Protects groundwater for beneficial uses, including potable water supplies, establishes use classifications, and establishes water quality criteria for groundwater.</td>
<td>Potentially Applicable</td>
<td>WQS, as promulgated by the state, are applicable to the site.</td>
</tr>
<tr>
<td>CWA: Section 404</td>
<td>33 U.S.C. 1344.33, 40 CFR Parts 320 - 330, 40 CFR 230</td>
<td>Specifies dredge or fill requirements.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements of the dredge and fill requirements are potentially applicable to alternatives that include excavation of sediment.</td>
</tr>
<tr>
<td>American Indian Religious Freedom Act</td>
<td>42 USC 1996 et seq.</td>
<td>To protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religious, including but not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements are potentially applicable to on-site actions.</td>
</tr>
<tr>
<td>Title</td>
<td>Reference</td>
<td>Description</td>
<td>Potentially Relevant</td>
<td>Substantive requirements</td>
</tr>
<tr>
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</tr>
<tr>
<td>Archaeological Resources Protection Act</td>
<td>16 U.S.C. 470(aa-ii) 43 CFR 7</td>
<td>Steps to be taken to protect archaeological resources and sites that are on public and Indian lands and to preserve data.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements are applicable to the recommended alternative.</td>
</tr>
<tr>
<td>Caribou-Targhee Land Use Management Plan (National Forest Management Act)</td>
<td>16 U.S.C. 1601 - 1614 36 CFR 219</td>
<td>Establishes multiple use goals and objectives, forest-wide management requirements, and monitoring and evaluation requirements. Establishes direction so that future decisions affecting the forest will include an interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements (e.g., for the protection of wildlife and certain plant species, establishment of roads, and success of vegetative cover) may be applicable to the recommended alternative.</td>
</tr>
<tr>
<td>Hazardous and Solid Waste Regulations: Solid Waste Facilities</td>
<td>40 CFR 257.3(1-4)</td>
<td>Location standards and restrictions for solid waste disposal facilities and for determining the probability of adverse effects on human health and the environment.</td>
<td>Potentially relevant and appropriate</td>
<td>Potentially relevant and appropriate to alternatives that involve siting a new disposal facility</td>
</tr>
<tr>
<td>Hazardous and Solid Waste Regulations: Municipal Solid Waste Facilities</td>
<td>40 CFR 258.10-15</td>
<td>Location standards and restrictions for municipal solid waste disposal facilities.</td>
<td>Potentially relevant and appropriate</td>
<td>Potentially relevant and appropriate to alternatives that involve siting a new disposal facility</td>
</tr>
<tr>
<td>Migratory Bird Treaty Act</td>
<td>16 U.S.C. 703 et seq.</td>
<td>The Act makes it unlawful to hunt, take, capture, kill, or take other various actions, migratory birds and migratory game birds.</td>
<td>Potentially Relevant and Appropriate</td>
<td>The Selection Remedy, through careful remedial design, will be implemented in a manner to avoid taking or killing of protected migratory bird species, including individual birds, their nests, or eggs</td>
</tr>
<tr>
<td>Protection of Wetlands</td>
<td>40 CFR 6.302(a) 40 CFR 6 Appendix A, implementing Executive Order 11990</td>
<td>Wetlands protection: Agencies conducting certain activities are required to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to not support construction in wetlands if a practical alternative exists.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements are applicable to the recommended alternative.</td>
</tr>
<tr>
<td>RCRA: Criteria for Municipal Solid Waste (MSW) Landfills</td>
<td>40 CFR 258.60(a)(1-3)</td>
<td>Closure criteria for capping MSW facilities.</td>
<td>Potentially Relevant and Appropriate</td>
<td>Substantive requirements may be relevant and appropriate to the design of a cap and run-on/run-off control systems.</td>
</tr>
<tr>
<td>RCRA: Criteria for Hazardous Waste TSD facilities</td>
<td>40 CFR 264.117 and 264.228(b)</td>
<td>Closure and post-closure care (maintenance and monitoring) criteria for hazardous waste disposal facilities.</td>
<td>Potentially Relevant and Appropriate</td>
<td>Substantive requirements may be relevant and appropriate to the design of a cap and run-on/run-off control systems.</td>
</tr>
<tr>
<td>CWA: Storm Water Discharges</td>
<td>40 CFR 122.26</td>
<td>Regulates erosion and sediment control and stormwater management during construction activities greater than 5 Acres.</td>
<td>Potentially Applicable</td>
<td>Substantive requirements may be applicable to onsite discharges of construction-related stormwater.</td>
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<tr>
<td>Rules for the Control of Air Pollution in Idaho: Rules for Control of Fugitive Dust</td>
<td>IDAPA §58.01.01.650 - .651</td>
<td>Requires that all reasonable precautions be taken to prevent the generation of fugitive dust.</td>
<td>Applicable</td>
<td>Relevant and appropriate for construction activities.</td>
</tr>
</tbody>
</table>