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Ref: 8SEM-EMR

ACTION MEMORANDUM

SUBJECT: **Approval and Funding for a Time-Critical Removal Action for the Silver Dyke Tailings Impoundment at the Carpenter-Snow Creek Mining District Site, Neihart, Cascade County, Montana.**

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THRU: Deirdre Rothery, Chief
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TO: Betsy Smidinger, Director
Superfund and Emergency Response Management Division

Site ID#: 089X – OU3

I. PURPOSE

The purpose of this Action Memorandum (AM) is to request and document approval of the removal action described herein for the Silver Dyke Tailings Impoundment (Site), located within Operable Unit 3 (OU3) of the Carpenter-Snow Creek Mining District National Priorities List Site (CSCMD) near Neihart in Cascade County, Montana. This time-critical removal action (TCRA) is to address the surface soil contaminated with elevated concentrations of lead and repair the significant erosion

damage at the Silver Dyke Tailings Impoundment. The proposed removal activities for the Site discussed herein are intended to be protective of human health and the environment and consistent with any future remedial action at OU3. The Record of Decision for OU3, which addresses solid source media, is anticipated to be finalized in 2022.

Conditions existing at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR 300.415(b)(2). This removal action involves no nationally-significant or precedent-setting issues. This TCRA will not establish any precedent for how future response actions will be taken and will not commit the United States Environmental Protection Agency (EPA) to a course of action that could have a significant impact on future responses or resources.

Because the Silver Dyke adit is located approximately 600 yards on the opposite side of the hill, all of the removal activities will be conducted on the dry hill side, and No Name Creek is not impacted by any mines, the Site is a sub-category "1N" site. That is, "planned activities at the Site will not create a fluid release hazard" as described in Attachment 1 of the April 4, 2017 Woodford-Cheatham Memorandum (Appendix 1 - Site Category Determination for Fiscal Year 2020).

II. SITE CONDITIONS AND BACKGROUND

Site Name:	Silver Dyke Tailings Impoundment
Superfund Site ID (SSID):	089X
Operable Unit	Carpenter-Snow Creek Mining District NPL Site, OU3
NRC Case Number:	
CERCLIS Number:	MT0001096353
Site Location:	Cascade County, Montana
Lat/Long:	46.983297° North, 110.695494° West
Potentially Responsible Party:	
NPL Status:	Final on 9/13/2001
Planned Removal Start Date:	09/2020

A. Site Description

The Silver Dyke Mine is in Operable Unit 3 (OU3) of the Carpenter Snow Creek Mining District Site. The mine operated from 1921 to 1929 and included both a mine and mill. Tailings from the milling operations were disposed via gravity into a coulee approximately 600 yards from the Silver Dyke Mine portal entrance on the opposite side of the hill and an earthen dam was constructed at the mouth of the coulee to impound the tailings. This coulee contains an unimpacted creek (No Name Creek) that flows year-round. The dam was built using pine trees laid end to end. As more tailings were disposed in the coulee, the earthen dam was built up. Approximately every ten feet along the face of the dam and between the trees, there were fastened smaller trees at right angles and facing the dam. By 1925, the dam was about 90 feet high and 200 to 300 feet across.

In 1925, the tailings impoundment (Silver Dyke Tailings Impoundment) located in No Name Creek collapsed, releasing a large volume of tailings into Carpenter Creek. After this breach, tailings were no longer disposed of in the Silver Dyke Tailings Impoundment, and the tailings were left to degrade. A significant volume of tailings has eroded from the impoundment since

1925 during spring runoff and episodic rain events. The periodic flush of mine tailings has affected streamside soil past the confluence of Carpenter Creek with Belt Creek to the Town of Monarch, approximately 12 miles downstream.

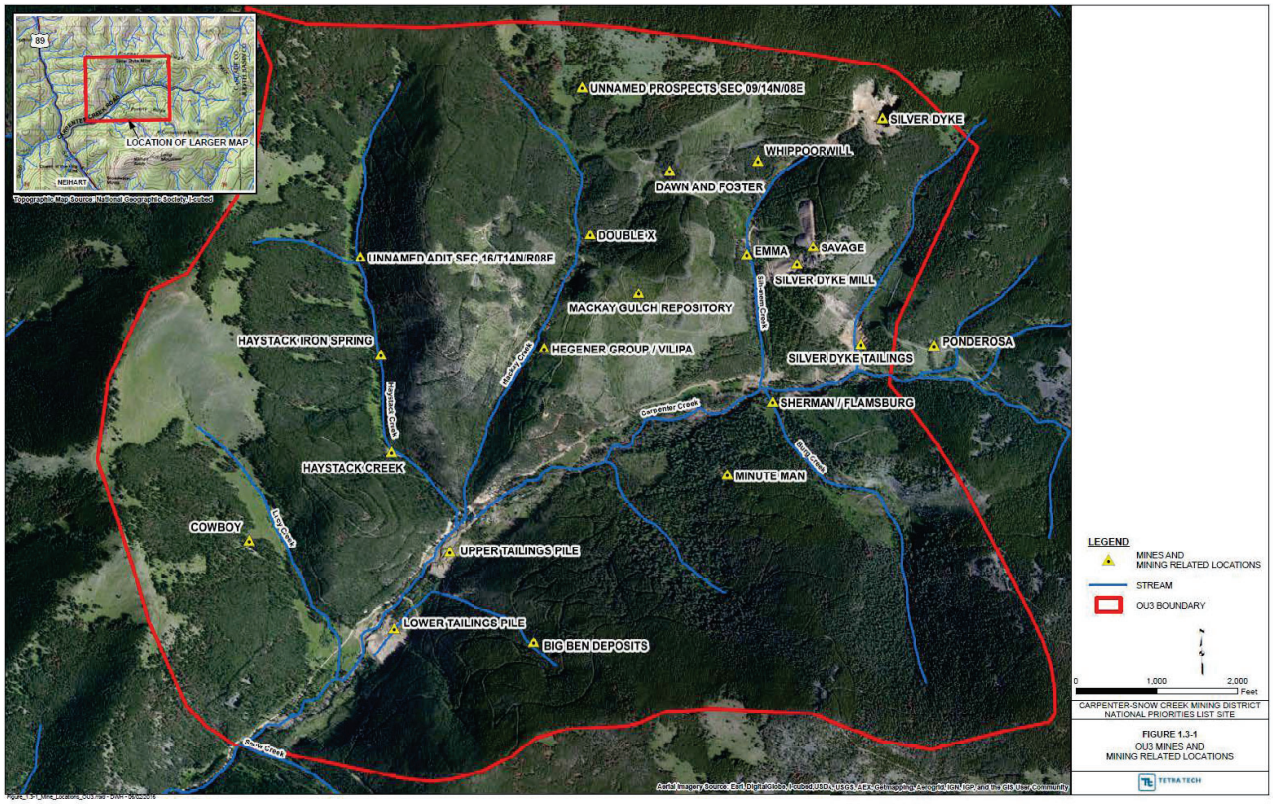

Figure 1: Silver Dyke Impoundment located in OU3 of the NPL Site.

The EPA is the lead agency conducting site-wide activities, in consultation with the Montana Department of Environmental Quality (MDEQ) and the United States Forest Service (USFS).

1. Removal Site Evaluation

As described in the original Action Memorandum (AM), the completed response actions included stabilization of the Silver Dyke and upper and lower Carpenter Creek tailings impoundments. The subsequent Action Memorandum Amendment 1 (AMA1) approved placement of a portion of the Silver Dyke tailings in the MacKay Gulch repository. See the original June 11, 2013, TCRA Memorandum and September 2, 2014 TCRA Memorandum Amendment, Attachment 2.

Since the removal action was completed in 2014, the upper and lower removal areas of the Silver Dyke impoundment have experienced significant erosion damage from summer storms and spring runoff. Based on the Tetra Tech Report, *Site Control Visits Report (June – October 2016)*, rill erosion is quite evident and is cutting into previously reclaimed areas (see Figures 2-4). A large gully has cut through the center of the erosion blanket, threatening to discharge sediment into No Name Creek. Rill erosion is also evident in the western removal area, particularly just below the tree line area.

Figure 2: Surface impoundment contaminated with mine waste shows no vegetation establishment and is severely eroded into No Name Creek.

In August 2020, soil samples collected on the surface of the reclaimed areas found that lead concentrations ranged from 750 mg/Kg to 4,900 mg/Kg and arsenic ranged from 26 mg/Kg to 119 mg/Kg.

On March 19, 2020, the Remedial Program requested support from the Emergency Response Program in repairing the compromised restoration at the Silver Dyke Impoundment that was conducted during the 2014 TCRA (See Attachment 3 – Request for Assistance Memorandum). A second TCRA for the removal of mine waste from the Sih-mem Creek Channel and a Former Foreman Residential Yard is scheduled to be conducted concurrently with this Site.

Figure 3: Displaced wattles and initiation of gully erosion at the base of the impoundment erosion control.

Figure 4: Reinforced silt fencing, straw bales, and wattles temporarily used to prevent sediment from reaching No Name Creek (Photos taken in 2016).

2. Physical Location

The NPL Site is in west-central Montana in the Little Belt Mountains in Township 14N, Range 8E, Section 15, 16, and 21. The Silver Dyke impoundment (46.983297º North and 110.695494º West) is located within OU3 and approximately 2 ½ miles northeast of the town of Neihart in the Carpenter Creek watershed. The Site's elevation is approximately 6280 feet. As of the 2020 census, Neihart's population was 81 individuals. There are numerous seasonal and year-round residents within a one-mile radius of the Site.

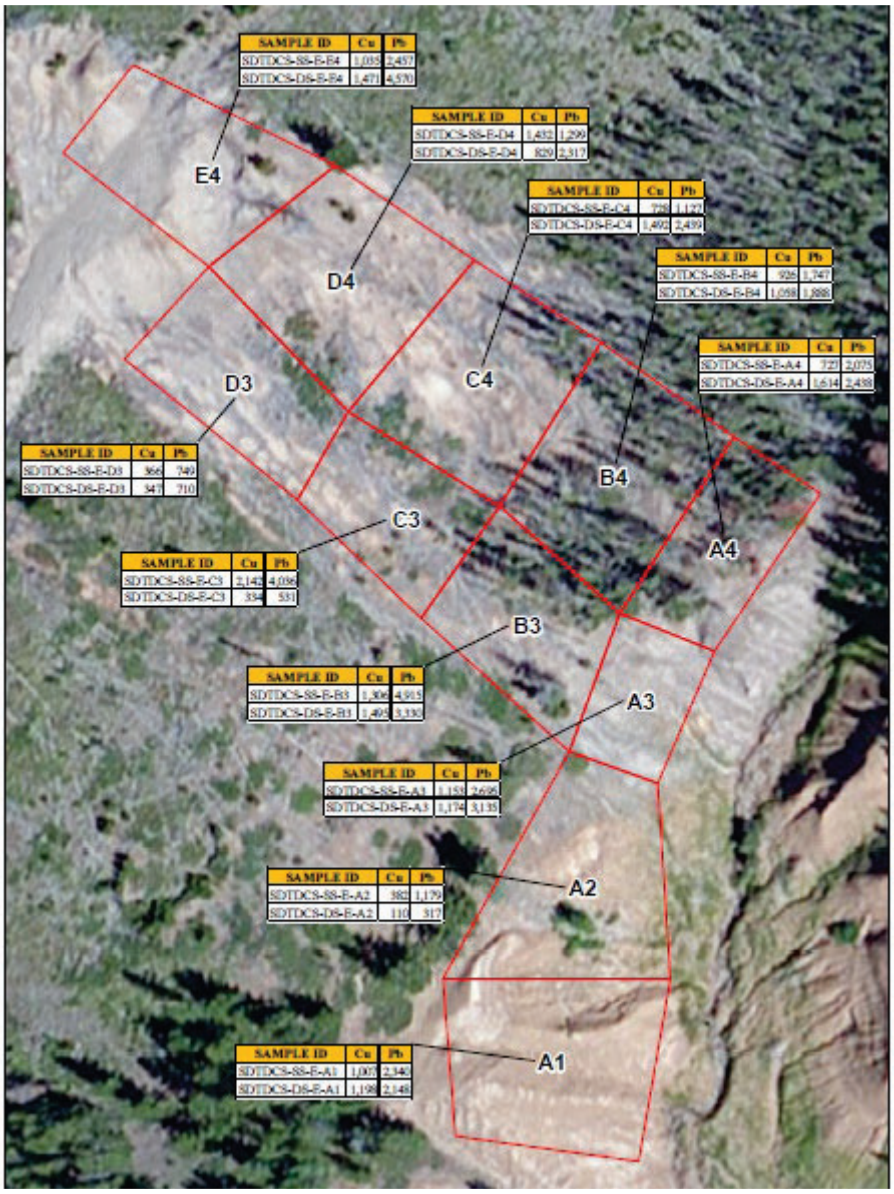

Figure 6: Surface soil sample results at Silver Dyke Tailings Impoundment

3. Site Characteristics

The Silver Dyke Impoundment has minimal vegetative cover and is composed of clay to fine sand tailings. This tailings impoundment lies within the Carpenter Creek floodplain and is

threatening to release contaminated sediment and soil into No Name Creek during storm events and spring runoff.

4. Release or Threatened Release into the Environment of Hazardous Substances, Pollutants or Contaminants

The presence of lead and arsenic in the surface soils of the Silver Dyke Tailings Impoundment constitutes a release of a hazardous substance, as defined by Section 101 (22) of CERCLA. Lead and arsenic are listed as hazardous substances in 40 CFR §302.4.

Lead can affect almost every organ and system in the body. Elevated blood lead levels in children can result in behavioral and learning problems, lower IQs and hyperactivity, slowed growth, hearing problems and anemia. In rare cases, the ingestion of lead can cause seizures, coma and even death. During pregnancy, elevated lead in the blood can result in serious effects to the mother and her developing fetus, including reduced fetal growth and premature birth. Lead is also harmful to adults and can cause cardiovascular effects, elevated blood pressure, incidences of hypertension, decreased kidney function and reproductive problems. (source: www2.epa.gov/lead/learn-about-lead#effects)

Arsenic is found throughout the environment, the result of both naturally occurring and industrial processes. Industrial operations that process or otherwise alter minerals and ores can lead to higher concentrations of arsenic in the environment. Acute inhalation exposure to arsenic dust can cause gastrointestinal effects (nausea, diarrhea, and abdominal pain) and central and peripheral nervous system disorders. In addition, inorganic arsenic exposure, via inhalation is strongly associated with lung cancer. (source: U.S. EPA, www.epa.gov/sites/production/files/2016-09/documents/arsenic-compounds.pdf)

5. NPL Status

The CSCMD was listed on the NPL on September 13, 2001.

B. Other Actions to Date

1. Previous Actions

In 2014, a removal action was initiated to address the unsecured tailings that remained in the No Name Creek drainage. The goal of this action was to prevent continued releases of tailings from the estimated 35,000 cubic yards of solid waste that remained at the Silver Dyke Tailings Impoundment within the No Name Creek drainage area. The action included the following elements: (a) Removing the tailings from the hillside slopes and staging for disposal; (b) Constructing an onsite repository; (c) Placing the tailings in the onsite repository; and (d) Reclaiming/restoring removal area slopes.

In 2015 and 2016, Tetra Tech implemented several temporary erosion mitigation measures to encourage vegetative growth and prevent migration of eroded tailings. These measures, described below, were designed to be temporary erosion control and not intended to be a permanent solution.

- Installed water bars and wattles throughout the removal area.
- Applied seed mix and nitrogen-phosphorus-potassium (NPK) fertilizer in the lower and upper removal areas.
- Limed the barren area with agricultural lime (94 percent CaCO3).
- At the base of the hill, a reinforced silt fence was installed to prevent sediment from reaching No Name Creek.

2. Current Actions

There are no current on-site activities at the Silver Dyke Impoundment. A second TCRA is scheduled to be conducted concurrently with this TCRA at the Sih-mem Creek Channel and a Former Foreman Residential Yard Site, which is also located within OU3 of the NPL Site. The concurrent removal action is to redirect the Sih-mem Creek back to its historic channel to eliminate migration and infiltration of mine adit water to a nearby residence and to address the lead-contaminated soil and mine waste piles at the former foreman's residential property.

C. Federal, State and Local Authorities' Roles

1. Federal, State and Local Actions to Date

MDEQ is directly assisting the EPA with various portions of OU3 and has been extensively involved in planning and coordinating this removal action. The design for this removal action is being developed by MDEQ's contractor, Tetra Tech, Inc.

2. Potential for Continued State/Local Response

Neither the state nor the local authorities have the resources to conduct the proposed removal action at the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions existing at the Site meet the criteria for initiating a removal action under 40 CFR 300.415 (b) (2) of the NCP. The levels of contamination found on the surface soil of the reclaimed areas at the Silver Dyke Tailings Impoundment, in conjunction with the unconfined nature of the on-going releases during storm events and spring runoff support the decision to perform a TCRA. EPA has considered all the factors described in 40 CFR section 300.415(b)(2) of the NCP and determined that the following factors apply at the Site.

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

High levels of hazardous substances found at the Site, largely at the surface, may migrate. Sampling conducted at the surface of the reclaimed impoundment areas found that lead concentrations ranged from 750 mg/Kg to 4,900 mg/Kg. The visible dust emissions by the high wind has been observed from this unvegetated area, which results in the continuous release of total suspended solids containing heavy metals concentrations. Numerous residences are located within one-half mile downgradient of the impoundment.

(ii) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate;

Hazardous substances including lead and arsenic are present at the surface of the reclaimed areas. They are at concentrations that may pose a threat to human health and aquatic life. Investigation results show evidence of heavy metals from tailings eroding from the Site during runoff events.

(iii) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

The visible dust emissions by the high wind has been observed from this un-vegetated area, which results in the continuous release of total suspended solids containing heavy metals concentrations. A large volume of tailings has eroded from the UTP and LTP and continues to erode during spring runoff and episodic rain events. The periodic flush of mine tailings affects streamside soil past the confluence of Carpenter Creek with Belt Creek to the Town of Neihart, approximately 5 miles downstream. The Silver Dyke adit also discharges poor quality water to Sih-mem Creek. Sih-mem Creek discharges into Carpenter Creek, where it degrades water quality so severely that fish are no longer present in the affected stream reach of Carpenter Creek in OU3. These events also contribute to deposition of tailings near downstream residences.

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release;

Local and state governments do not have the capability to conduct this removal action in a timely manner.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

1. Proposed Actions

- Removal of the lead-contaminated soil on the surface of the reclaimed areas and disposal at McKay repository;
- Reconstruction of surface run-on and run-off ditches and a diversion channel to reduce rain and snowmelt runoff from the upper area;
- Installation of terraces and armoring with riprap material, wood debris generated from logging, and erosion mat on the steep slope of the reclaimed areas; and
- Restoration with backfill/topsoil materials and Cascade County-certified seed mix.

Post-Removal Site Control as part of future Operation and Maintenance at the Site will be managed by the Remedial Program to sustain the integrity of this removal action following its conclusion and incorporated into the final remedy selected for OU3 of the CSCMD.

2. Contribution to Remedial Performance

This effort will, to the extent practical, contribute to any future remedial effort at the Site. However, no further federal action is anticipated at this time. The ROD for OU3 is expected to be finalized in 2022.

3. Engineering Evaluation/Cost Analysis

An engineering evaluation/cost analysis (EE/CA) is not required for a time critical removal action.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

Removal actions conducted under CERCLA are required, to the extent practicable considering the exigencies of the situation, to attain ARARs. In determining whether compliance with an ARAR is practicable, the lead agency may consider appropriate factors, including the urgency of the situation and the scope of the removal action to be conducted. Attachment 4 contains the ARARs for this proposed removal action.

5. Project Schedule

The planned start for this removal action is in September 2020 with completion by the end of October 2020.

B. Estimated Costs*

Contractor Costs	**Totals**
ERRS Construction	$88,000
START 4 Sampling and Removal Support	$3,000
SUBTOTAL	$91,000
Contingency 10%	$9,000
Total Silver Dyke Removal Project Ceiling	**$100,000**
Concurrent Removal Action Costs at Sih-Mem Creek Channel and Former Foreman Residential Yard	$420,000
2013 & 2014 Removal Action Costs (OU3)	$1,473,000
Total Removal Project Ceiling/All Actions to Date	**$1,993,000**

*EPA direct and indirect costs, although cost recoverable, do not count toward the removal ceiling for this removal action. Liable parties may be held financially responsible for costs incurred by the EPA as set forth in Section 107 of CERCLA.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delay in action or no action at this Site would increase the actual or potential threats to public health and/or the environment. Should this ceiling increase not be approved, the on-going erosion at the Silver Dyke Impoundment will continue and pose an ongoing threat to the public health, welfare and environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

A separate Enforcement Addendum has been prepared providing a confidential summary of current and potential future enforcement activities.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Silver Dyke Impoundment Site which is part of OU3 of the CSCMD near the Town of Neihart in Cascade County, Montana, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP 40 section 300.415(b)(2) criteria for a removal action, and I recommend your approval of the proposed removal action. The total cost ceiling for the Site, if approved, is $100,000; this amount will be funded from the Removal Allowance account. The cumulative cost ceiling for removal actions at OU3 of the CSCMD will be $1,993,000.

APPROVE

BETSY SMIDINGER Digitally signed by BETSY SMIDINGER
Date: 2020.09.13 07:44:49 -06'00'

Betsy Smidinger, Director — Date
Superfund and Emergency Management Division

DISAPPROVE

Betsy Smidinger, Director — Date
Superfund and Emergency Management Division

Attachment 1: Site Category Determination for Fiscal Year 2020
Attachment 2: June 11, 2013 Time-Critical Removal Action (TCRA) Memorandum and September 2, 2014 TCRA Memorandum Amendment
Attachment 3: Request Memorandum for Removal Support 2020
Attachment 4: ARARs

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in the report may be found in the administrative record file located at:

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Great Falls Public Library
301 2nd Ave North
Great Falls, MT 59401
406-453-0181
Hours: Tues-Thu 10 a.m. to 8 p.m.
Fri-Sat 10 a.m. to 6 p.m.

Belt Creek Ranger Station
c/o Neihart, Montana 59465
406-236-5309