

**SEVENTH FIVE-YEAR REVIEW REPORT FOR
ANACONDA CO. SMELTER SUPERFUND SITE
ANACONDA-DEER LODGE COUNTY, MONTANA**



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LIST OF ABBREVIATIONS AND ACRONYMS

ADLC	Anaconda-Deer Lodge County
AOC	Area of Concern
AR	Atlantic Richfield Company
ARAR	Applicable or Relevant and Appropriate Requirement
ARWWS	Anaconda Regional Water, Waste and Soils
ATSDR	Agency for Toxic Substances and Disease Registry
BLM	Biotic Ligand Model
BMI	Benthic Macroinvertebrate
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CPMP	Community Protective Measures Program
DPS	Development Permit System
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
GIS	Geographic Information System
GWSWMS	Groundwater/Surface Water Management System
I&M	Inspection and Maintenance
IC	Institutional Control
ICIAP	Institutional Control Implementation and Assurance Plan
ICP	Institutional Controls Plan
IWQC	Instantaneous Water Quality Criterion
LRES	Land Reclamation Evaluation System
LTGW	Long-term Groundwater Water
LTIM	Long-term Inspection and Maintenance
MCL	Maximum Contaminant Level
MT DEQ	Montana Department of Environmental Quality
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MGS	Main Granulated Slag
µg/dL	Micrograms per deciliter
µg/L	Micrograms per liter
NPL	National Priorities List
NRDP	Natural Resource Damage Program
O&M	Operation and Maintenance
OM&M	Operation, Monitoring and Maintenance
OU	Operable Unit
POC	Point of Compliance
PRP	Potentially Responsible Party
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RDU	Remedial Design Unit
RO	Reverse Osmosis
ROD	Record of Decision
RODA	Record of Decision Amendment
RPM	Remedial Project Manager
RSL	Regional Screening Level
SHRC	Smelter Hill Repository Complex
SWMP	Surface Water Management Plan

TBC	To-Be-Considered Criteria
TI	Technical Impracticability
USGS	United States Geological Survey
UU/UE	Unlimited Use/Unrestricted Exposure
VMP	Vegetative Monitoring Plan
WMA	Waste Management Area

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency is preparing this FYR pursuant to Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the seventh FYR for the Anaconda Co. Smelter Superfund site (Site). FYR support was provided by Skeo under contract with the EPA. The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The EPA manages the Site in five operable units: the Anaconda Regional Water, Waste and Soils OU (also referred to as the ARWWS OU), the Old Works/East Anaconda Development Area OU (also referred to as the Old Works OU), the Flue Dust OU, the Mill Creek OU and the Community Soils OU. The interim action for the Mill Creek OU was to relocate residents to eliminate exposure while the long-term cleanup of the Mill Creek OU contamination was included in the Old Works OU. The EPA further divided the ARWWS OU and the Old Works OU into subareas to make cleanup and long-term site management more efficient (Appendix C, Figures C-1 and C-4). This FYR Report addresses all five OUs that have remedial RODs.

Early in the remedial investigation screening process that began shortly after the EPA listed the Site on the Superfund program's National Priorities List (NPL) in 1983, several principal threat waste sources were identified. These were identified as the Arbiter OU, Beryllium OU and Flue Dust OU. In 1991, the EPA issued a Record of Decision for the Flue Dust OU. In 1991, the EPA issued an Action Memorandum for the Arbiter and Beryllium OUs using CERCLA's removal authority and deleted these two OUs from the NPL in 2020.

Most of the requirements identified in the Flue Dust OU Record of Decision (ROD) and the Arbiter and Beryllium OUs Action Memorandum were fulfilled by September 1996. However, the final long-term operation and maintenance (O&M) requirements for these actions were deferred to the ARWWS OU. These three repositories, along with the Aspen Hills repository, were grouped together as the Smelter Hill Repository Complex (Figure 2). Long-term O&M activities for the Smelter Hill Repository Complex will be developed, approved and implemented. Together with the completion and implementation of a long-term O&M Plan, these three OUs will achieve all remedial requirements for the ARWWS OU. Specifically, the removal actions for the Arbiter and Beryllium OUs are now considered final remedial actions consistent with the ARWWS OU remedy. Therefore, for the purposes of this FYR, the Arbiter and Beryllium OUs are not specifically assessed.

Summaries of the OUs are below, listed in the order in which the responses in the OUs occurred:

- Mill Creek OU (OU15) – Former rural community located next to and downwind of the Smelter Hill Facilities.
- Flue Dust OU (OU11) – Byproduct of copper smelting containing very high levels of metals and arsenic, stockpiled at nine locations on and near the Smelter Hill facilities.
- Old Works/East Anaconda Development Area (Old Works OU) (OU7) – Historic milling and smelting areas located immediately east of Anaconda, including former smelter properties conveyed from Atlantic Richfield Company (AR) to Anaconda-Deer Lodge County (ADLC) for redevelopment. These subareas include:
 - Historic structures

- Golf course
- West Industrial Area
- East Industrial Area (includes Red Sands, Arbiter and sewage treatment facility)
- East Anaconda Yards
- Drag Strip
- Mill Creek Addition
- Aspen Hills
- Community Soils OU (OU16) – Soils and indoor dust on and in residential and commercial properties and abandoned railroads in Anaconda, the town of Opportunity and adjacent rural areas sitewide.
- Anaconda Regional Waste, Water and Soils (ARWWS OU) (OU4) – All remaining contamination and impacts to surface water, groundwater, waste source areas and non-residential soils not cleaned up under other OUs. This OU includes the following subareas also referred to as remedial design units (RDU):
 - Uplands
 - Stucky Ridge (RDU-1)
 - Lost Creek (RDU-2)
 - Smelter Hill (RDU-3) and Cashman Concentrate (RDU-11)¹
 - Mount Haggin (RDU-15)
 - West Galen RDU
 - South and North Opportunity (RDU-6 and -7)
 - Fluvial Tailings (RDU-9)
 - Anaconda Ponds (RDU-4)
 - Active Railroads/Blue Lagoon (RDU-5)
 - Opportunity Ponds (RDU-8)
 - Warm Springs Creek (RDU-10)
 - Slag (RDU-12)
 - Main Granulated Slag Pile
 - West Slag Pile
 - Anaconda Landfill Slag
 - Old Works Surface Water and Groundwater (RDU-13)
 - Surface reclamation for this area was conducted under the Old Works OU.
 - Smelter Hill Facilities (RDU-14)
 - Includes the Smelter Hill portion of the Opportunity Ponds/Smelter Hill Waste Management Area complex and the Smelter Hill Repository Complex or SHRC, which was constructed to consolidate and isolate treated flue dust, beryllium waste, Arbiter Plant waste, and Aspen Hills railroad material²
 - RDU-14 contains a high arsenic area
 - Dutchman Wetland Area RDU
 - Contains a high arsenic area

The EPA's remedial project manager Bryan Lobar led the FYR. Participants included Montana Department of Environmental Quality (MT DEQ) project manager Amber Nichols, and Hagai Nassau and Claire Marcussen from the EPA's FYR support contractor Skeo. The review began on 10/21/2024. Representatives from the potentially responsible party (PRP), AR, were notified of the initiation of the FYR. Appendix A lists the documents used to prepare this FYR Report. Appendix B provides a brief site chronology.

¹ RDU-11 was a stockpile of ores located south of the East Anaconda Rail Yard which were relocated and repurposed at an offsite facility in 2004, thus any residual contamination at this area is addressed by the RDU-3 - Smelter Hill Uplands and RDU-5 – Active Railroad.

²This area is also referred to as a Waste Management Area or WMA

Site Background

The Site covers more than 200 square miles of the southern end of the Deer Lodge Valley in Montana, at and near the location of the former Anaconda Copper Mining Company ore processing facilities, and includes the towns of Anaconda and Opportunity (Figure 1). From 1884 to 1980, AR and its predecessors conducted smelter operations and ore processing activities resulting in the release of metal contamination from smelter stack emissions and from large volumes of ore-processing wastes such as flue dust, mill tailings and furnace slag. The nearly 100 years of smelting and ore-processing resulted in airborne emissions of arsenic and metals (principally cadmium, copper, lead and zinc) into the environment over a large area. The Site releases contaminated air and soil, and contaminants in waste and soil have leached into groundwater, which discharges to nearby surface water and sediment. The Site consists of residential, commercial, agricultural (crops), pasture, rangeland, forests, riparian and wetland areas impacted by former smelter operations.

Most of the Site is in the valley, with steep slopes located in the mountainous areas at the western edge of the Site. The valley floor exhibits a gentle northeast-to-east slope direction toward the upper Clark Fork River. Five principal perennial streams (Lost Creek, Warm Springs Creek, Mill Creek, Willow Creek and Silver Bow Creek) intersect the Site and are tributaries of the Upper Clark Fork River System. It should be noted that Silver Bow Creek is part of the Silver Bow Creek/Butte Area NPL Site and, therefore, is not considered to be part of the Site. The streams in the valley are classified for use as drinkable, swimmable and fishable. However, none of the streams are currently used as sources of drinking water. A portion of surface water flow in Mill Creek, Willow Creek, Warm Springs Creek, Silver Bow Creek, Lost Creek, and the Clark Fork River is dedicated to agricultural use through ditch irrigation.

Former site operations contaminated groundwater in the alluvial and bedrock aquifers. The alluvial aquifer underlies the floor of the southern Deer Lodge basin and is bounded laterally and vertically by the bedrock aquifer. Site groundwater occurs primarily in the alluvial aquifer as valley through-flow and as groundwater recharge from the surrounding bedrock aquifer of the steep mountains next to the valley. Groundwater entering the alluvial aquifer generally flows in a direction perpendicular to the valley margin (that is, from the mountains toward the valley).

Water use in the area is controlled primarily by surface land ownership, water rights and major land use. Groundwater is used as a water supply for irrigation in portions of the Site. Consumption is limited to domestic purposes from small-capacity water wells in the Aspen Hills subdivision on the back side of Smelter Hill, the community of Opportunity and rural homes. As part of the ongoing monitoring, private wells are regularly sampled, and sampling results indicate no one is drinking contaminated water. If a well is determined to be impacted, point of use water treatment systems are installed and the well is monitored to ensure the treatment is effective. The city of Anaconda is permitted for the use of groundwater and surface water from its public water supply; the wells and reservoirs are outside of and upgradient from the Site.

Figure 1: Site Boundary Map

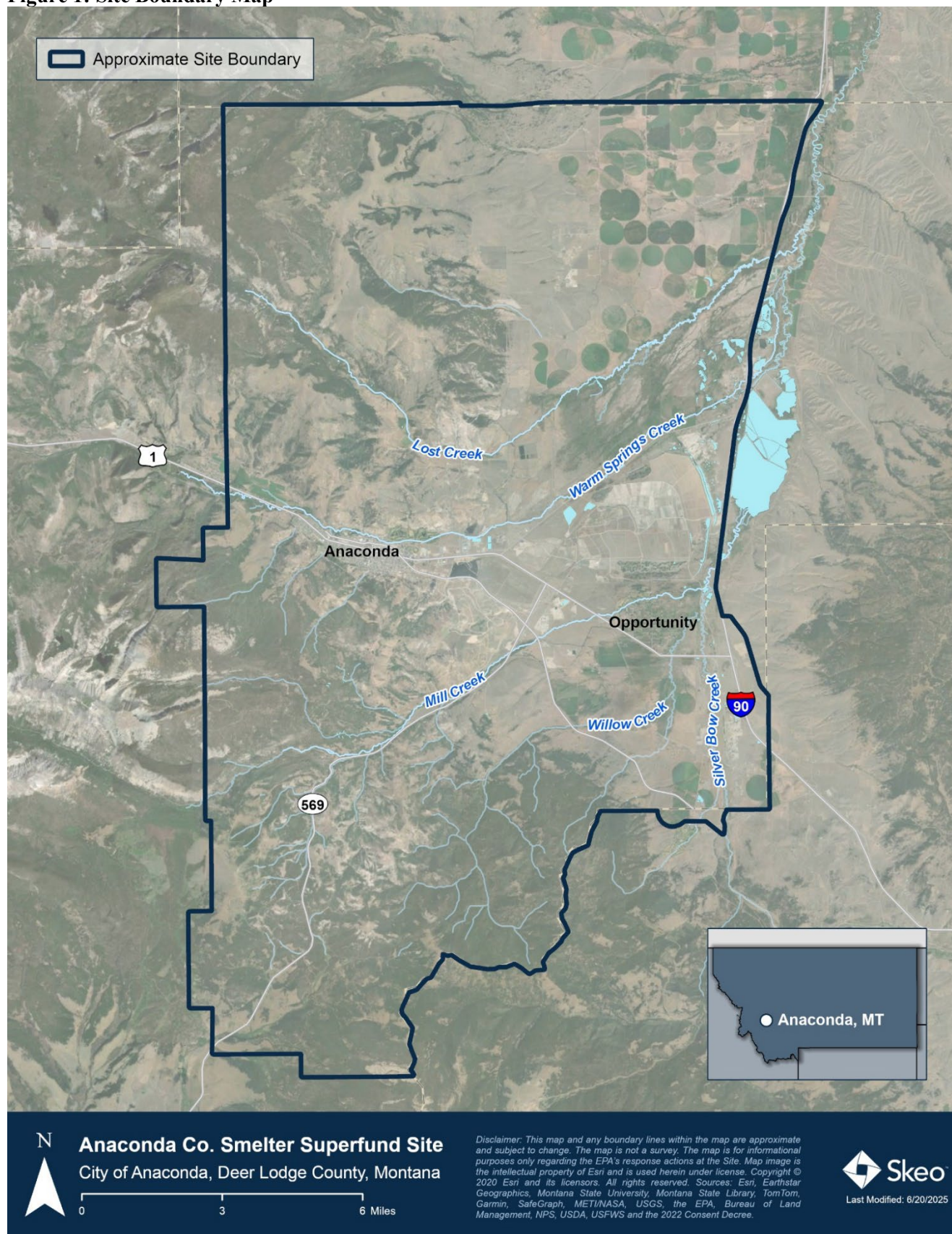
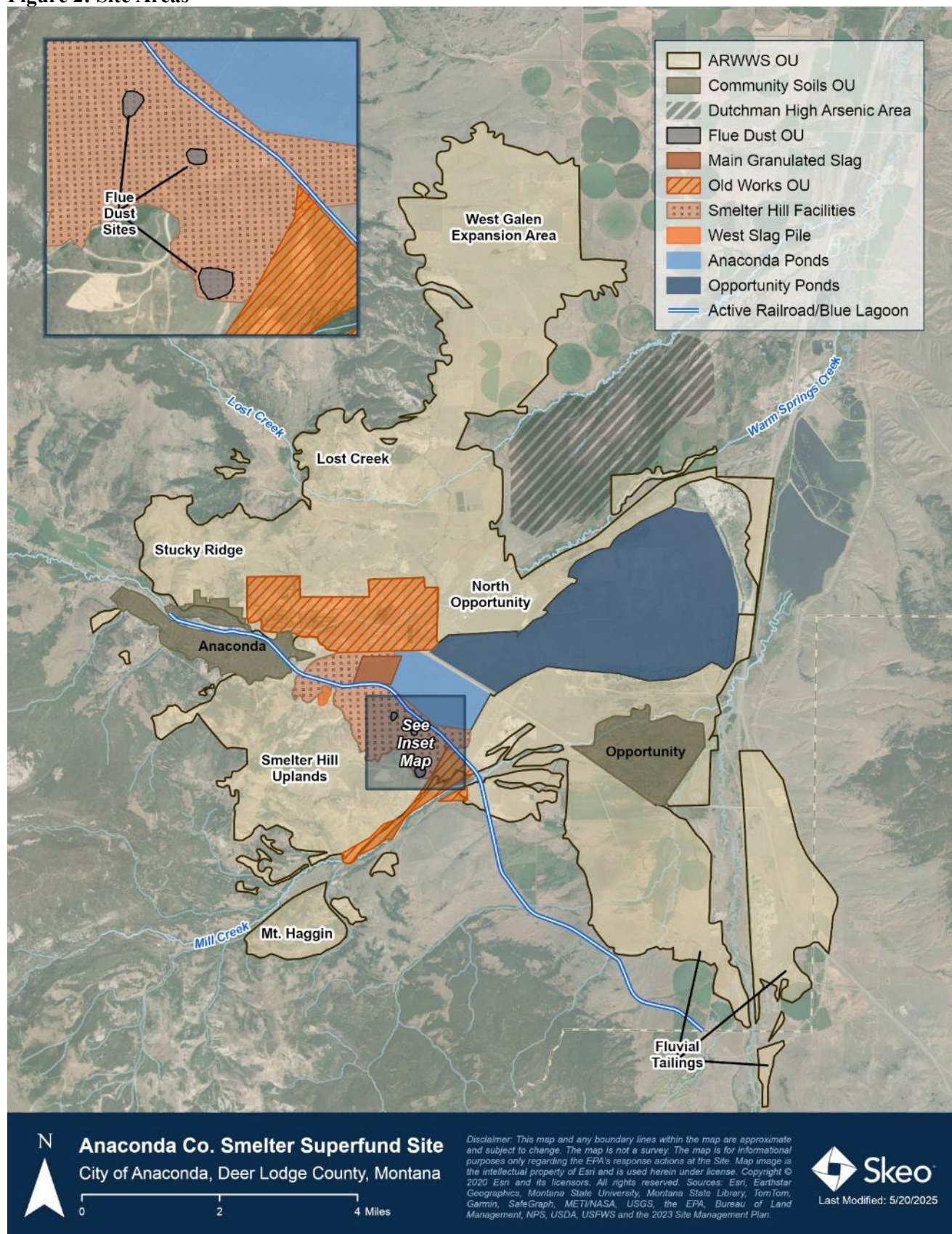


Figure 2: Site Areas



Starting in 1994, AR began reuse activities, turning 250 acres of the Site into a golf course. It opened to the public in 1997. Since 2015, dozens of new commercial developments have been created on remediated on-site properties, including a natural gas power plant, a regional prison, a campus of excellence for people with disabilities, and a landfill for nonhazardous waste such as yard trash and construction debris. Since the previous FYR, reuse activities include the construction of the Forge Hotel and Barclay II Supper Club in 2021 and Murdoch's Ranch and Home Supply Store in 2023. Other development in the East Anaconda Yards has included ADLC Search and Rescue, A&A Technical, a private school for at-risk children, Martelli Construction, Mungas Construction, Johnson storage units, Anaconda Smelter State Park, and Thompson RV Storage Facility. A condominium development is planned south of the Old Works Golf Course.

Thousands of acres of agricultural lands have been reclaimed and put back into productive use. Thousands of acres of former waste disposal sites have been capped and now provide wildlife habitat, including nearly 1,000 acres of new wetlands.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Anaconda Co. Smelter		
EPA ID: MTD093291656		
Region: 8	State: Montana	City/County: Anaconda/Anaconda-Deer Lodge
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the Site achieved construction completion? No	
REVIEW STATUS		
Lead agency: EPA		
Author name: EPA RPM Bryan Lobar		
Author affiliation: The EPA's Region 8		
Review period: 10/29/2024 - 9/8/2025		
Date of site inspection: 4/22-23/2025		
Type of review: Statutory		
Review number: 7		
Triggering action date: 9/25/2020		
Due date (five years after triggering action date): 9/25/2025		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action and Response Actions

Site Investigations and Removal Actions

In 1977, AR purchased the Anaconda Copper Company Smelter. AR ceased the Anaconda Smelter operations in 1980, and the smelter facilities were dismantled soon thereafter. Following the closure of smelting operations in September 1980, waste remained on site. The state and the EPA were concerned about possible releases of hazardous substances, primarily heavy metals, from the smelter wastes into surface water, groundwater and air. AR voluntarily entered into an agreement with the EPA and the state for a study to identify and quantify hazardous materials at the smelter. Following the sampling and analysis of the results, the EPA listed the Site on the NPL in September 1983 to address the contamination. The EPA prioritized early actions at the various OUs based on their potential risk to human health and the environment, as summarized in the following sections.

Mill Creek OU

A child exposure study conducted in 1985 by the Centers for Disease Control and an endangerment assessment completed by AR in 1986 showed unacceptable human health risks to Mill Creek residents from exposure to fugitive dusts and soil and from drinking groundwater contaminated from smelter operations. The EPA considered the Mill Creek OU as the highest-priority OU requiring a response because environmental testing of the community and biological testing of preschool children demonstrated that contamination in the soils and dust posed an imminent and substantial endangerment to the health of community residents. The EPA signed an Action Memorandum in 1986 to temporarily relocate high-risk residents of Mill Creek and eliminate exposure to arsenic-contaminated media. In 1986 and 1987, the EPA and the Federal Emergency Management Agency temporarily relocated residents of Mill Creek (Mill Creek Expansion area in Figure C-1).

Flue Dust OU

Flue dust, a byproduct of copper smelting, contains high concentrations of arsenic and heavy metals. The presence of flue dust stockpiled at nine locations on and near Smelter Hill triggered unacceptable environmental and future residential human health risks and posed a leaching concern to groundwater according to the EPA's 1990 risk assessment.

Old Works OU

The 1993 risk assessment completed for the Old Works OU showed that the current and future recreational and worker exposure to arsenic in soil could result in unacceptable risks. In addition, arsenic in soil was shown to be toxic to vegetation and wildlife, and metals in Warm Springs Creek posed risks to aquatic ecological receptors. In 1991, the EPA conducted a removal action to stabilize the Red Sands adjacent to Warm Springs Creek, repair of breaks in Warm Springs Creek levees, and the installation of fencing to limit access to certain areas of the Old Works OU.

Community Soils OU

A 1996 risk assessment and more sampling in 2002 and 2010 for the Community Soils OU showed unacceptable risks due to residential and worker ingestion of soil/interior dust containing arsenic and lead at localized hot spots.

ARWWS OU

A 1996 risk assessment evaluated current and future residents, agricultural workers, recreational users, and commercial/industrial workers potentially exposed to surface water, groundwater and soil in the ARWWS OU. In response to comments received on the ARWWS OU proposed plan, a follow-on 1998 Risk Technical Memorandum addressed a trespasser scenario for high arsenic areas. The risk assessment demonstrated potential impacts to surface water and groundwater from contaminated soils and waste sources as well as human and environmental risks associated with arsenic-contaminated soils (under residential, commercial/industrial workers, recreational and agricultural exposure scenarios) not addressed by the other OUs. A 1997 ecological risk assessment evaluated risks to plant and animal receptors from exposure to arsenic and metals. It concluded that arsenic and metal soil concentrations have a high potential for continuing phytotoxic effects in some areas of the

ARWWS OU and are risks to wildlife receptors through direct contact and through food-chain exposure. In addition, the human and ecological risk assessments showed mining wastes could impact groundwater and surface water above regulatory criteria protective of human health and the environment for arsenic and heavy metals.

Table 1 lists site contaminants of concern (COCs) by media.

Table 1: Sitewide COCs, by Media

COC	Media				
	Flue Dust	Soil and Indoor Dust	Mining Waste	Groundwater	Surface Water
Arsenic	X	X	X	X	X
Beryllium	--	--	--	X	--
Cadmium	X	--	X	X	X
Copper	X	--	X	X	X
Lead	X	X	X	X	X
Zinc	--	--	X	X	X
<i>Notes:</i> -- = is not a COC in the medium. X = is a COC in the medium. <i>Sources:</i> Media and COC were obtained from remedial goal tables for each respective OU decision document.					

Long-term Response Actions

Mill Creek OU

The EPA selected an interim remedial action for the Mill Creek OU in the Site's 1987 ROD to provide permanent relocation of all Mill Creek residents and temporarily stabilize the area by consolidating debris from demolition activities on Smelter Hill. Final disposition of the demolition debris and the contaminated soils in Mill Creek will be addressed as part of the final remedy for the Site. The EPA signed a ROD Amendment (RODA) in 1988 to correct several typographic errors in the 1987 ROD. No changes were made to the remedy selected in the 1987 ROD.

The EPA did not present formal remedial action objectives (RAOs), but the ROD and RODA identified the goal of the interim remedy as providing permanent protection for the health of current residents in the Mill Creek community and interim protection of the health of future short-term visitors in the area. The ROD and RODA did not present cleanup criteria because the remedy was an interim remedy focused on eliminating exposure to current residents of the Mill Creek area and did not address the removal or remediation of contaminated soils. The 1988 Mill Creek OU interim remedy consisted of:

- Permanent relocation of all residents.
- Demolition of homes and buried foundations.
- Consolidation and disposal of debris in the Smelter Hill Waste Management Area (WMA).
- Restoration through regrading and revegetation.
- Monitoring and maintenance of vegetative cover.
- Implementation of institutional controls to restrict access and land use.

Flue Dust OU

The EPA's 1991 interim ROD selected a cleanup plan to address flue dust at the nine discrete source areas on the Site through removal, treatment and containment.

The EPA did not present formal RAOs, but the ROD identified that the goal of the remedy was to eliminate public health threats to current residents of the area. The 1991 ROD did not present numeric cleanup criteria for flue dust. The 1991 ROD provided general remedial goals of preventing exposure to treated flue dust waste and

preventing the migration of contaminants out of the repository into underlying soils or groundwater. In addition, the 1991 ROD identified the remedial goal of treating the flue dust to render the material as nonhazardous.

The 1991 flue dust remedy consisted of:

- Removal and treatment via cement/silicate-based stabilization.
- Disposal of treated residuals in an on-site engineered repository located in the Smelter Hill WMA.
- Groundwater monitoring.
- Implementation of institutional controls to limit site use and access.

Old Works OU

The EPA signed the ROD for the Old Works OU in 1994. The OU was subdivided into six subareas based on similarities of waste characteristics and present/future land uses (their post remediation designation follows in parenthesis):

- Subarea 1 – Old Works Structural Areas (also referred to as Historic Structures)
- Subarea 2 - Heap Roast Slag, Miscellaneous Waste Piles, and a portion of the Warm Springs Creek floodplain (also referred to as the Golf Course)
- Subarea 3 - Extension of the Warm Springs Creek floodplain and the industrial park (also referred to as West Industrial Area)
- Subarea 4 - Red Sands, Arbiter Plant and the Anaconda Industrial Park (also referred to as East Industrial Area, which includes the sewage treatment facility)
- Subarea 5 - East Anaconda Yards (includes Benny Goodman Park)
- Subarea 6 - Drag Strip

The EPA selected a combination of engineered covers, soil treatment, surface water runoff controls, and engineering and institutional controls as the long-term cleanup for the OU to address arsenic in soil, waste and debris.

The EPA issued an Explanation of Significant Differences (ESD) for this OU in 1995 that expanded the boundary of the OU to include two additional subareas for remediation to the south along Mill Creek that are referred to as the Aspen Hills Addition and the Mill Creek Addition. The response action allowed economic development (i.e., construction of a golf course in the Old Works area). The Old Works Golf Course was envisioned to be a permanent dedicated development that would generate sufficient revenue to pay for monitoring, O&M of the remedy as well as golf course operations. However, golf use and revenues have not always made this a financially viable operation. As a result, the EPA modified the remedy as outlined in the 2020 ESD to describe the additional remedial actions that would need to be implemented in the event the Old Works Golf Course is no longer used as a golf course in the future. The significant changes to the remedy include the following:

1. Contingency remedy – the contingency allows the Old Works Golf Course to be converted from a golf course to another open space for recreational public use that is consistent with the waste-in-place remedy in the event that the area ceases to be utilized as a golf course. It requires the following:
 - Consolidate exposed miscellaneous waste and bunker slag on site in three waste consolidation areas located in: i) the area of the Heap Roast Slag, ii) the area of the large bunker located north of hole #15, and iii) the Red Sands area located south of Warm Springs Creek. These areas will be closed by grading slopes to promote positive drainage, installing 18 inches of cover soil to minimize surface water infiltration and establishment of vegetation.
 - Install additional riprap armoring where riprap will replace the golf course vegetation that is currently in place. Also, localized surficial wastes will be removed, if needed, to continue to protect the Warm Springs Creek corridor and floodplain from erosion during storms, up to the 100-year storm event.

- Vegetate tee boxes, green grasses and irrigated areas with native plant species more suitable for the semi-arid site conditions. Fairway surfaces may be tilled or stripped, as part of site regrading as needed to enhance drainage, and revegetated with native plant species. The current waste containment caps and underlying wastes buried beneath these caps will remain in place in their current configuration.
 - Maintain existing underdrain system or convert portions of these main lines to open stormwater channels to simplify the required operations and maintenance. The main irrigation lines will be abandoned and left in place. Other portions of the underdrain system (secondary lines) and additional golf course features and utilities that are no longer needed may either be abandoned in place or removed if they are encountered during waste removal or regrading.
 - Modify the existing golf cart path bridges to include pedestrian-rated safety rails if it is determined that the bridges will remain in place. Existing cart paths may be left in place and incorporated as part of the open space/recreational area and adjacent Historical Old Works Trail parcel.
 - Extend smooth wire fencing along the north perimeter property boundary and implement signs, public notices and additional institutional controls as necessary to control public access to historic areas.
 - Evaluate future uses to ensure that they are consistent with the remedy, and any selected amenities shall be agreed upon by AR and ADLC. A site-specific work plan consistent with these uses and amenities will be developed for the EPA's approval, in consultation with MT DEQ, prior to initiating the agreed-to conversion work.
2. Implement additional institutional controls by parties other than ADLC as warranted to protect the remedy and protect human health and the environment.

Table 2 provides a summary of the RAOs and remedy components at the Old Works OU along with the cleanup goals for arsenic.

Table 2: Old Works OU – RAOs and Remedy Components

Media	RAOs	Remedy Components
Soil	• Reduce surface soil arsenic concentrations to acceptable levels. • Prevent direct human contact with waste materials exceeding acceptable levels. • Minimize infiltration and deep percolation of metal-laden pore water to groundwater. • Minimize erosion and metal loading via transport of waste and contaminated soil to Warm Springs Creek. • Preservation, to the extent practical, of historic features at the Site.	• Construct engineered covers over waste materials in recreational and potential commercial/industrial areas exceeding arsenic levels of 1,000 milligrams per kilogram (mg/kg). • Treat soils exceeding arsenic levels of 1,000 mg/kg in recreational and potential commercial/industrial areas using innovative revegetation treatment techniques. • Cover or treat soils exceeding arsenic levels of 500 mg/kg in current commercial/industrial areas. • Remediate potential future residential or commercial/industrial areas to the appropriate soil arsenic action levels through the ADLC Development Permit System (DPS). • Construct controls to manage surface water runoff from Stucky Ridge, Smelter Hill and throughout the OU. • Upgrade or repair levees next to Warm Springs Creek to contain the 100-year peak flood event and prevent erosion of waste materials into Warm Springs Creek. • Replace bridges or culverts to ensure the safe passage of the 100-year peak flood event. • Preserve historic features. • Implement institutional controls to protect engineered controls and manage future land and water use. Implement the conversion remedy in the event the Old Works Golf Course ceases to operate. • Implement long-term monitoring.
<i>Sources:</i> The 1994 Old Works OU ROD, the 1995 Old Works OU ESD and the 2020 Old Works OU ESD.		

Community Soils OU

The EPA selected the remedy for the Community Soils OU in the 1996 ROD to address all remaining residential and commercial contaminated soils in Anaconda, Opportunity and the surrounding area. The EPA signed a RODA in 2013 that expanded on the 1996 remedy by adding a cleanup level for lead in soils and cleanup levels for arsenic and lead in accessible interior dust with a complete exposure pathway, as well as the expansion of the institutional controls to provide for a health education program through the ADLC Community Protective Measures Program (CPMP). The remedy was further expanded in the 2017 ESD to limit interior dust cleanup to attics with an obvious exposure pathway and address interior dust contamination (in portions of homes other than the attic) through a comprehensive health and education program rather than sampling and remediation, which is currently being implemented through the ADLC CPMP. In addition, the 2017 ESD modified the remediation depth for arsenic-contaminated soils.

Following the issuance of the 2017 ESD, the Agency for Toxic Substances and Disease Registry (ATSDR) conducted an exposure investigation in Anaconda in 2018 and submitted a report with its findings and recommendations, on which the EPA issued an ESD in June 2020 to further modify the remedy. The 2020 changes included developing a comprehensive long-term attic dust abatement program that provides for attic dust cleanup for residential attics at homes constructed prior to 1980 and sampling confirmation that lead or arsenic concentrations in the attic dust exceed their respective action levels.

In addition, the 2020 ESD provides alternate institutional control programs to support the remedy in the event that Anaconda-Deer Lodge County is unable to perform its institutional control programs. Table 3 provides a summary of the RAOs and remedy components and cleanup goals for arsenic and lead at the Community Soils OU.

Table 3: Community Soils OU – RAOs and Remedy Components

Media	RAOs	Remedy Components
Soil	• Reduce surface soil arsenic and lead concentrations in residential and commercial/industrial areas to acceptable levels. • Prevent direct human contact with waste materials exceeding acceptable levels.	<i>Residential Soils</i> • Remove contaminated soil with arsenic above 250 mg/kg and lead above 400 mg/kg to a depth of 12 inches for on-site disposal in a soil management area and replace with clean soil and a vegetative or other protective barrier. • Treat or use other measures (e.g., capping, tilling, liming) in areas where specific site conditions dictate that removal is not implementable. • Remediate future residential areas at the time of development exceeding the arsenic and lead action levels of 250 mg/kg and 400 mg/kg, respectively, through the ADLC DPS. • Develop an interior dust abatement program to sample and clean up interior dust exceeding the lead and arsenic concentrations of 400 mg/kg and 250 mg/kg, respectively, in all living spaces with a complete exposure pathway. ○ The 2020 ESD identifies a comprehensive long-term attic dust abatement program that would provide for attic dust cleanup. • Revise the Superfund Planning District where necessary. • Implement institutional controls to provide educational information to all residents describing potential risks and recommendations to reduce exposure to residual contaminants in soils, and to ensure the long-term viability of this remedy. ○ The 2020 ESD identifies a provision for alternate institutional control programs to support the remedy in the event that ADLC is unable to perform its institutional control programs. • Track information and data on lead concentrations/locations in the ADLC database/geographic information system for public access to be used by regulators, prospective home buyers, lenders, contractors and other interested parties.
		<i>Commercial Soils</i> • Remove soil arsenic above 500 mg/kg to a depth of 12 inches and replace with clean soil and a vegetative or other protective barrier. • Remediate future commercial or industrial areas at the time of development that exceed the arsenic action level of 500 mg/kg through the ADLC DPS.
		<i>Railroad Beds</i> • Construct engineered covers over all contaminated railroad bed material in the community of Anaconda. • Separate railbeds from residential and commercial/industrial areas with a barrier to restrict access to the railbed and to control surface runoff from the railbed using retaining walls and/or curbing. • Maintain existing institutional controls to restrict access.
		<i>Sources:</i> The Site's 1996 Community Soils ROD, the 2013 Community Soils RODA, and the 2017 and 2020 Community Soils ESDs.

ARWWS OU

The final cleanup priority for the Site was to address all remaining contamination, including large volumes of wastes, slag, tailings, debris and non-residential soil (not cleaned up under other OUs such as the Mill Creek OU and Old Work OU), and contaminated groundwater and surface water spread over 200 square miles of agricultural, pasture, rangeland, forests, riparian and wetland areas. The EPA selected the cleanup plan in the 1998 ROD, then expanded the remedy and changed several remedy components in a 2011 RODA. The 2011 RODA also added cleanup requirements for Lost Creek and California Creek. Technical impracticability (TI) zones were included in the 1998 ROD and further expanded in the 2011 RODA based on the technical impracticability of cleaning up certain groundwater and surface waters to the arsenic human health standard of 10 micrograms per liter (µg/L). In addition, the 2011 RODA required the development of a domestic well monitoring and replacement plan to ensure that domestic well users in or next to the expanded TI zones have safe drinking water. Further, the 2011 RODA expanded WMA boundaries and addressed several reclamation areas and two high-arsenic areas (soil arsenic concentrations between 1,000 mg/kg and 2,500 mg/kg) where steep slopes prevent

safe operation of conventional reclamation equipment (Smelter Hill) or where well-vegetated areas with wetlands and unique wildlife habitat are present (the Dutchman Wetland Area).

The EPA issued a RODA in June 2020 to provide for a fundamental change to the ROD consisting of an expansion of the amount of work to be completed in the upland areas north, west and south of Anaconda; a period of monitoring of surface water in that area after completion of the additional work; and waiver of certain state of Montana total recoverable surface water standards if those standards are not met after the completion of the technically practicable additional work. The 2020 RODA also required a partial soil cover over the north- and west-facing slopes of the Main Granulated Slag (MGS) Pile and determined that water quality data from the high-flow surface water sampling provides a reasonable surrogate for stormwater monitoring sampling data. The 2020 RODA also provides for a significant change consisting of an alternative institutional control program to support the remedy if ADLC is unable to perform its institutional control program, as well as four additional minor modifications to the original remedy.

Table 4 provides a summary of the RAOs and remedy components for soil and waste, surface water and groundwater in the ARWWS OU.

Table 4: ARWWS OU – RAOs and Remedy Components

Media	RAOs	Remedy Components
Soils and Waste	• Prevent direct contact with elevated arsenic concentrations. • Minimize surface water percolation and COC transport to groundwater. • Minimize surface water erosion and COC transport to surface water to meet water quality applicable or relevant and appropriate requirements (ARARs). • Minimize movement and wind erosion of COCs onto adjacent lands. • Reduce COC levels in waste and highly contaminated soils to allow the reestablishment of vegetation. • Allow final closure of WMAs to be compatible with the existing and anticipated future land use with minimal future maintenance activities. • Meet state selective mine closure reclamation ARARs.	• Clean up future residential and commercial soils at the time of development that exceed soil cleanup goals through the ADLC DPS. • Implement a soil cover or in-situ treatment to reduce surficial arsenic concentrations to below the designated arsenic action levels. • Establish vegetative covers over contaminated soil and waste. • Partially remove waste materials and place in a WMA with a soil cover and revegetate areas adjacent to streams. • Merge Old Works WMA and Old Works Wastes wastes-left-in-place areas into a larger Old Works WMA. • Merge the Smelter Hill and Opportunity Ponds WMAs and the Triangle Waste area into the Smelter Hill/Opportunity Ponds WMA. • Manage two high arsenic areas (concentrations of 1,000 mg/kg to 2,500 mg/kg) to minimize human exposure where steep slopes prevent safe operation of conventional reclamation equipment (Smelter Hill) or where well-vegetated areas with wetlands and unique wildlife habitat are present (the Dutchman Wetland Area). • Disposal of abandoned railroad wastes into a WMA. • Implement institutional controls and monitoring.
Surface Water	• Minimize source contamination to surface waters that would result in exceedances of state water quality standards. • Return surface water to its beneficial use by reducing the loading sources of COCs.	• Reclaim contaminated soils. • Conduct engineered stormwater management. • Implement selective source removal from fluvially deposited tailings and stream bank stabilization with placement within a designated WMA. • Issue a TI waiver of the arsenic human health standard for surface water. Instead, surface water will be cleaned up to the federal and state chronic and acute aquatic life standards of 150 micrograms per liter (µg/L) and 340 µg/L, respectively, within the TI zone. • Implement institutional controls and monitoring.

Media	RAOs	Remedy Components
Groundwater	- Return usable groundwaters to their beneficial uses wherever practicable - Prevent further migration of the plume. - Prevent exposure to contaminated groundwater. - Minimize COC transport to the bedrock and alluvial aquifers.	<u>Alluvial and Bedrock Aquifers</u> - Monitor domestic wells and replace them as needed for users in or next to the TI zones (Appendix C, Figure C-4) to meet standards. <u>Alluvial Aquifers Underlying Portions of the Old Works and North and South Opportunity Subareas</u> - Remove waste and cover with soil. - Implement TI waiver of the arsenic human health standard. - Remove contaminated soils from railroad embankments and the Blue Lagoon. <u>Bedrock Aquifers and a Portion of the Alluvial Aquifer in the Old Works/Stucky Ridge and Smelter Hill Subareas</u> - Implement a TI waiver of the arsenic human health standard. <u>Portions of the valley alluvial aquifers underneath the Old Works/Stucky Ridge, Smelter Hill and Opportunity Ponds Subareas</u> - Monitor points of compliance at the perimeter boundary of the designated WMA. If contamination spreads beyond the WMA boundary, implement an analysis of contingency measures. - Construct a groundwater/surface water management system (GWSWMS) along a section of the D-cell dike of the Opportunity Ponds area to passively treat impacted groundwater. - Implement institutional controls and monitoring.
<i>Notes:</i> <i>Sources:</i> The Site's 1998 ARWWS OU ROD, 2011 ARWWS OU RODA and 2020 RODA.		

The remedies for the ARWWS OU used the same soil cleanup goals established in previous OUs and, in addition, included a soil cleanup goal for arsenic on the steep slopes (Table 5). The 1998 ARWWS OU ROD identified cleanup goals for groundwater. The 2011 RODA updated them (Table 6).

Table 5: Summary of Sitewide Soil Cleanup Goals (mg/kg)

COC	Residential Land Use	Commercial/Industrial Land Use	Recreational/Agricultural	Steep Slope/Open Space ^a
Arsenic ^b	250 ^d	500	1,000	2,500
Lead ^c	400 ^d	-	-	-
<i>Notes:</i> a. The EPA determined in the 1998 ARWWS OU ROD that a 2,500 mg/kg arsenic action level would be protective under very specific circumstances. These circumstances apply only to steep and rocky topography and on limited access property such as steep open space. b. Established in the 1998 ARWWS OU ROD. c. Established in the Community Soils 2013 OU RODA. d. The 2017 Community Soils ESD indicated that this cleanup goal also applies to interior dust. - = no cleanup goal established for this land use.				

Table 6: ARWWS OU Groundwater Cleanup Goals

COC	Groundwater (µg/L)	
	State ^a	Federal ^b
Arsenic	10 ^c	10 ^c
Beryllium	4	4
Cadmium	5	5
Copper	1,000	1,300 ^d
Lead	15	15 ^d
Zinc	2,000	N/A
<i>Notes:</i> a. Standards presented in Table 3-1 of the Site's 2011 ARWWS OU RODA. b. National primary drinking water regulations for maximum contaminant levels, obtained from 40 Code of Federal Regulations Parts 141 and 142. c. This standard is waived in the surface water and groundwater within the TI zones. d. Action level for copper from 40 Code of Federal Regulations § 141.51(b) and action level for lead from 40 Code of Federal Regulations § 141.80(b). N/A = not applicable µg/L = micrograms per liter <i>Source:</i> Table 3-1 of the Site's 2011 ARWWS OU RODA.		

The surface water performance criteria in the 1998 ARWWS OU ROD were revised in the 2011 ARWWS OU RODA and again revised in the 2020 ARWWS OU RODA, which also developed replacement criteria contingent on the area covered by the TI waiver. The 2020 ARWWS OU RODA established chronic and acute surface water performance standards for the five major streams within the ARWWS OU (Lost Creek, Warm Springs Creek, Mill Creek, Willow Creek and California Creek) (Table 7 and Table 8).³ If the remedial alternatives, as constructed, do not achieve compliance with DEQ-7 standards, the replacement standards are to be adopted for those metals that do not achieve the applicable DEQ-7 standard after implementation of the alternative remedial strategies. The EPA determined groundwater and surface water restoration to be technically impracticable in certain areas and selected an alternative remedial strategy focused on exposure prevention and containment.

The plan for determining whether the performance standards are met is outlined in the Site's Surface Water Management Plan (SWMP). The SWMP follows current MT DEQ guidance (June 2019) for allowable exceedances. The allowable frequency for exceedance of an aquatic life standard (either chronic or acute) is once in three years on average for each COC. The SWMP defines a six-year window to determine if a compliance location is meeting the criteria. This window begins after all remedial action work (excluding O&M activities) within the specific watershed has been completed and the applicable performance requirements have been met. More than two exceedances in the six-year monitoring period will trigger the contingent replacement performance standard for a given contaminant of concern. No exceedances are allowable for human health standards.

Where a standard is waived, except for copper, the alternative standard will be the federal standard in place at the time of the 2020 RODA. The alternative standard for copper is the Biotic Ligand Model (BLM) in place at the time of the compliance determination (i.e., at the time the waiver is granted). The hardness-adjusted aquatic life standards for cadmium, copper, lead and zinc are calculated from the water hardness concentration measured in each discrete surface water sample.

³ The 2020 ARWWS RODA cites an acute aquatic life criteria table, but the table is not included in the RODA so the acute values in Table 8 were obtained from the final 2020 SWMP, Table 6-3.

Table 7: Chronic Performance Standards for Surface Water Compliance in ARWWS OU Streams

COC	Performance Standard ^a		Contingent Replacement Standard ^b	
	Fraction	Chronic Standard ^c (µg/L)	Fraction	Chronic Standard (µg/L)
Arsenic	Total Recoverable	150 ^d	Dissolved	None – achieving compliance
Cadmium		0.26 ^e		0.25 ^f
Copper		2.85		BLM
Lead		0.545		0.541
Zinc		37		36.5

Notes:

- Compliance standards are Circular DEQ-7 (June 2019) total recoverable chronic aquatic life standards. If compliance standards are not met at a point of compliance (POC) during the compliance monitoring period, the compliance standard will be waived to the contingent, federal dissolved metals replacement standard through the process established in the 2020 ARWWS OU RODA and the SWMP.
- Except for copper, contingent replacement standards are based on current (i.e., 2020) published federal water quality criteria issued pursuant to Section 403(a) of the Federal Clean Water Act, 33.U.S.C. Section 1314(a) accessible at: <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>.
- Standards for cadmium, copper, lead and zinc are hardness dependent. Values shown are calculated at a hardness of 25 milligrams per liter (mg/L) using the parameters in Table 4-4 of the 2020 ARWWS RODA.
- The arsenic compliance standard in lower Warm Springs Creek (at compliance station 12323770) is the arsenic human health criterion (10 µg/L).
- The 2020 ARWWS RODA updated the standard for cadmium to reflect the June 2019 DEQ-7 standard.
- The contingent replacement standard for cadmium is the federal ambient water quality criteria updated in March 2016.

Source: The Site's 2020 ARWWS RODA, Table 4-3.

Table 8: Acute Performance Standards for Surface Water Compliance in ARWWS OU Streams

COC	Performance Standard ^a		Contingent Replacement Standard ^b	
	Fraction	Acute Standard (µg/L)	Fraction	Acute Standard (µg/L)
Arsenic	Total Recoverable	340	Dissolved	None – achieving compliance
Cadmium ^c		0.49 ^d		0.49 ^d
Copper ^c		3.79		BLM IWQC ^e
Lead		13.98		14
Zinc		37		36

Notes:

- Performance standards are Montana DEQ-7 (June 2019) Total Recoverable Acute Aquatic Life Standards. If compliance standards are not met at a POC during the compliance monitoring period, the compliance standard will be waived to the replacement standard through the process established in the 2020 ARWWS OU RODA and the SWMP.
- Contingent replacement standards are based on current (i.e., 2020) published federal water quality criteria, issued pursuant to section 403(a) of the Federal Clean Water Act, 33.U.S.C. § 1314(a), which uses the a filtered “dissolved” fraction rather than the “total recoverable” DEQ-7 standard.
<https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>.
- Performance standards for cadmium, copper, lead and zinc are hardness dependent. Values shown are calculated at a hardness of 25 mg/L.
- The performance standard for cadmium is updated to reflect the April 2017 DEQ-7 standard. The contingent replacement standard for cadmium is the federal ambient water quality criteria updated in March 2016.
- The BLM criterion in place at the time of waiver to replacement standards will become the new standard. For every sample collected, the water quality parameters for BLM calculation will be input into the BLM to generate an instantaneous water quality criterion (IWQC) for compliance comparisons.

Source: The 2020 ARWWS RODA cites an acute aquatic life criteria table but the table is not included in the RODA so SWMP Table 6-3 was used to obtain the acute values in this table.

Status of Implementation

The following sections provide a summary of remedies implemented at each OU.

Mill Creek OU

The EPA entered into a Consent Decree with AR in January 1988 to implement the permanent relocation remedy for Mill Creek residents. Figure C-1 shows the location of the Mill Creek area. The permanent relocation of residents was completed in fall 1988. Completion of the home demolition and site stabilization activities finished in late 1988. Demolition debris and contaminated soils were disposed of in the Smelter Hill WMA. Foundations were buried on-site, and the area was regraded and vegetated. Fencing was installed along with signage to control access and maintain the vegetation. Adjacent contaminated soil areas (Mill Creek Triangle, Mill Creek Industrial Park, and the Aspen Hills Railroad Loop) were consolidated into the Old Works OU (Mill Creek Subarea) for further evaluation under the remedial investigation/feasibility study for that OU while final reclamation of soils in the Mill Creek Addition (town site) area was addressed as part of the ARWWS OU.⁴ Water issues (groundwater and surface water) were deferred to the ARWWS OU.

The EPA certified the Mill Creek OU remedial action as complete in July 2022. In 2023, the EPA proposed the deletion of 160 acres of surface and subsurface soil of the Mill Creek subdivision from the NPL. As described in the 1995 Old Works ESD, after completion of the permanent relocation of residents from this subdivision, most of this area was transferred to ADLC from AR for commercial and industrial use. All response activities at the Mill Creek OU have been completed and the OU poses no unacceptable risk to human health or the environment. The EPA deleted the Mill Creek OU from the NPL in August 2023. Any outstanding response action activities for the Mill Creek OU, including any O&M activities, are now being addressed as part of ARWWS OU RDU 6 – the South Opportunity Upland remedy.

Flue Dust OU

The EPA entered into a Consent Decree with AR to implement the flue dust remedy in December 1992. In December 1993, AR treated more than 500,000 cubic yards of flue dust from nine locations on and near Smelter Hill. AR placed the treated flue dust in an on-site repository meeting Resource Conservation and Recovery Act Subtitle C design requirements that include a bentonite/high-density polyethylene liner, a leachate collection and detection system, cover soil and vegetation. AR completed the closure of the repository in November 1994 (Figure C-2). The flue dust repository is part of the Smelter Hill Repository Complex, which also includes the Arbiter, Beryllium, 2004 Beryllium and Aspen Hills repositories. Following inspections of the remedial actions, the EPA approved both an Interim Post-Closure O&M Plan and the Remedial Action Construction Completion Report for the Smelter Hill Repository Complex in 1996.

The 2015 FYR Report identified the issue that large volumes of contaminated leachate continue to be generated in the flue dust repository from seasonal shallow groundwater influx to the repository. In response to this issue, AR completed upgrades to the stormwater system and constructed a leachate treatment and evaporation system in 2018 and 2019. The system underwent commissioning and trial operations in February 2020, which identified the need for two updates. These updates were completed in 2020 prior to it becoming fully functional. The Remedial Action Completion Report for the Flue Dust OU was signed on July 23, 2020.

Old Works OU

AR implemented cleanup activities in 1994 by subarea (Figure C-1). Between 1994 and 1997, AR remediated arsenic-contaminated soils, graded the area to improve runoff, constructed eight sedimentation ponds to control surface water run-on to the Site from the adjacent uplands, and placed riprap along the banks of Warm Springs Creek to protect against erosion. AR constructed a soil cover and drainage controls at the Red Sands area located

⁴ Since the anticipated land uses, site characteristics and COCs are similar to areas in the Old Works OU, the Mill Creek OU areas (Aspen Hills Addition, repositories for Old Works waste located on Smelter Hill, and Mill Creek Addition town area) were included in the Old Works OU selected remedy as part of the 1995 Old Works ESD.

adjacent to the golf course from 1996 to 1998. This construction also included the reclamation of previously excavated Arbiter removal areas. AR constructed drainage controls at the East Anaconda Yards from 1997 to 1998. In 2004, additional waste materials and beryllium were discovered, and these materials were excavated and placed in a repository at the Smelter Hill WMA. The Drag Strip soil remediation consisted of deep tilling and in-situ treatment (lime addition) and drainage controls, which AR began in late 1998 and completed in 1999. In 2007, AR covered several areas with soil and reseeded previously reclaimed areas at the Drag Strip Area due to slower than expected vegetation establishment. The Industrial Area contains privately owned properties in the Old Works OU, including the Anaconda Industrial Park and the former Arbiter Plant. AR constructed engineered covers and drainage controls at the Industrial Area between 2002 and 2007.

In June 2022, AR completed the Remedial Action Completion Report for the Old Works Golf Course, documenting the completion of remedial actions at the golf course. Most of the remediation occurred between 1994 and 1997. It included constructing engineered covers, except for certain materials (flumes, piles of bricks, and clinker-type slag) that were left uncovered for historical and/or aesthetic reasons. Most of the western part of the Old Works Golf Course received lime rock with a soil cover. Most of the eastern portion received a soil cover. Waste and existing soil were graded and consolidated in such a way that promotes surface water drainage and minimizes surface water infiltration into the waste layers. Grading and consolidation were completed to meet the aesthetic and play design of the course. All hardscaped surfaces, such as building pads and parking lots associated with the clubhouse and maintenance facilities, serve as impermeable covers. Additional construction activities were completed in 2014 and 2018 to address a liner rupture within Lake #2, and additional upgradient stormwater controls were put in place to control and contain surface and stormwater runoff from the Stucky Ridge area onto the Old Works Golf Course. In addition, between 2018 and 2020, sediment ponds were installed to contain a 10-year, 24-hour rain event, allowing sufficient time for suspended solids to settle before discharging attenuated stormwater to the underdrain system. Additional stormwater control improvements included removing waste and contaminated soil in the 100-year floodplain of the Warm Springs Creek corridor, reconstructing the channel and stabilizing the bank.

In June 2024, AR completed a Remedial Action Completion Report for a remedial action it completed in 2023 at a two-acre industrial property used by the landowner primarily for scrap iron and miscellaneous storage purposes. Remedial actions included debris removal from a prior structural fire, site grading, construction of a gravel engineered cover and associated stormwater controls, and installation of perimeter fencing,

Since 2017, over 900 acres have been cleaned up and are ready for reuse, and nearly 20 businesses have located in the Old Works OU. Additionally, the county has used the area for its operations, including a Class III landfill. AR has completed most of the land reclamation remedial action work. Reclamation of several areas inside the boundary of the Old Works OU is addressed under the ARWWS OU and the Community Soils OU for logistical reasons. In addition, the inactive railroad lines and residential areas are addressed under the Community Soils OU. The active railroad lines in the East Anaconda Yard, impacted soils along the southern portion of Stucky Ridge, and remaining impacted soils in the Aspen Hills and Mill Creek Addition are addressed under the ARWWS OU. The remaining work in the Old Works OU is limited to several properties whose owners have not granted access.

Community Soils OU

Between 2002 and 2010, AR remediated arsenic-contaminated soils from about 350 residential yards and about 40 acres of commercial property, which includes railroad beds along commercial properties (Figure C-3). Cleanup activities included contaminated soil/waste removal, backfilling with clean soil, and revegetation or installation of gravel or similar materials (depending on the use of the property). AR completed the capping of the in-town railroad line, including the west yards, in 2015. Capping of the east rail yard is ongoing. Following the signing of the 2013 RODA, more cleanup of residential soils was warranted to address lead contaminated soil as well as attic dust. AR began sampling residences in 2016 to identify areas requiring remediation. In 2017, approximately 500 yards were remediated and another 500 yards were sampled. In addition, AR began sampling properties for people living in the Superfund Overlay District (Figure J-2) who requested sampling of their yards or attic dust for arsenic and lead. AR completed attic remedial actions at properties where owners signed access agreements

for properties in the Superfund Overlay District. AR remediated attics at 39 properties between January 2019 and November 2020 and at an additional 101 properties between 2022 and 2023. Remedial activities included removing attic insulation, debris and dust, applying a surface encapsulant, and replacing attic insulation.

As of 2023, AR has remediated over 1,700 residential and commercial properties (Table 9). According to the 2022 Consent Decree Statement of Work, if a landowner within the Community Soils OU fails or refuses to request soil sampling or to provide access for remedial action activities on his or her property by the end of 2024, that property will not be eligible for future response actions until one of the following conditions are met:

- Property ownership changes.
- A member of a sensitive population group resides at the property.
- A person residing at the property is found to have a confirmed blood lead reading above 5 micrograms/deciliter target blood level.
- The landowner requests and AR agrees to perform remediation post-2025.

Table 9: Summary of Remediated Parcels at the Community Soils OU

Year	Properties		
	Sampled	Qualified for Cleanup	Cleaned Up
2012-2015	88	55	0
2016	498	480	40
2017	496	414	318
2018	312	251	325
2019	336	243	338
2020	220	152	207
2021	221	144	190
2022	222	93	186
2023	303	78	83
2024	161	64+	78
Totals:	2,629	1,832 ⁺	1,765
<i>Sources:</i> The Site's 2024 Project Update. The Site's 2023 Site Management Plan Report, Revision 1. Prepared by AR. October 2024. The Site's Draft Final 2024 Community Soils OU Residential Soils Remedial Action Construction Completion Report, dated February 2025. The Site's Draft Final 2023 Community Soils OU Residential Soils Remedial Action Construction Completion Report, dated March 2024.			

The EPA expects the sampling and yard removals to be completed by the end of 2025 for properties where access is granted. The Attic Abatement Program is planned to operate for a 25-year period starting in 2020. The county began its attic sampling and remediation program in June 2022. As of July 2024, out of 339 requests for sampling, a total of 260 properties require cleanup; 146 properties have been cleaned up or are in the process of cleanup and 114 properties are awaiting cleanup.

As remediation of the community progresses, the EPA recommends that families with children living near the Site have their children tested for lead annually; especially those families with children under six years old and if the soil at the property was not replaced previously. Additionally, the EPA recommends that community members take some simple actions to limit exposure to potential lead contamination in soils. These actions are discussed further in the institutional controls section of this FYR.

ARWWS OU

Since 2000, AR has continued to implement the selected remedy for the ARWWS OU (Figure C-4), including the closure of waste areas and treatment of over 15,000 acres of soil to support wildlife and grazing lands. Over 3

million cubic yards of waste have been removed from the community and consolidated onto AR property. In addition, over 30,000 feet of streambanks have been stabilized and restored, and over 140,000 feet of engineered stormwater controls have been constructed. Over 5,000 acres of the former smelter facility and disposal areas have been capped and revegetated. AR has also constructed about 1,000 acres of new wetlands and another 5,000 acres have been protected. Because of the size and complexity of this OU, the EPA and MT DEQ have subdivided the OU into RDUs to facilitate design and implementation of the selected remedy.

Table 10 provides a summary of remediated acres completed through 2023 that shows remedial activities are substantially complete at most of the RDUs. The GWSWMS constructed in 2014 consists of two decant structures, conveyance channels and a large retention pond, which serves as an interceptor trench to capture groundwater and allow for metals to be removed passively, resulting in minimized migration of COCs from the WMAs (Figure C-5).

Table 10: Summary of Acres in ARWWS OU Remediated Through 2023 by RDU

Area	Total Acres Requiring Remediation ^a	Acres Remediated	% Complete	Progress as of November 2024
RDU-1 - Stucky Ridge	3,868	3,957	102	Remedial activities are substantially complete. Supplemental surface water controls are on hold pending additional landowner access.
RDU-2 - Lost Creek Uplands	1,468	1,109	76	Remedial action is ongoing to address stormwater controls (e.g., construction of the Lost Creek Sediment Pond #1), organic matter application and seeding.
RDU-3 - Smelter Hill Uplands	3,354	2,945	88	Stormwater controls construction is substantially complete. Upland soils remedial action is ongoing to address stormwater controls and seeding.
RDU-4 - Anaconda Ponds WMA	678	678	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-5 - Active Railroads/Blue Lagoon	135	135	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-6 - South Opportunity Uplands	1,250	1,250	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-7 - North Opportunity Uplands	807	807	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-8 - Opportunity Ponds	7,422	7,422	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-9 - Fluvial Tailings	5,015	4,969	99	Remedial action activities are substantially complete, pending additional landowner access.
RDU-10 - Warm Springs Creek	98	98	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-11 - Cashman Concentrate	2	2	100	Remedial action activities are complete. No further remedial action activities are anticipated.
RDU-12 - Slag	197	30	15	Management of the Main Granulated slag and west Stack Slag areas is ongoing, as per approved management plans.

Area	Total Acres Requiring Remediation ^a	Acres Remediated	% Complete	Progress as of November 2024
RDU-13 - Old Works Surface Water and Groundwater ^b	1,266	1,266	100	No remedial action construction activities are required; all remedial action activities are addressed under the Old Works OU.
RDU-14 - Smelter Hill Facilities	1,367	1,367	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
RDU-15 - Mount Haggin Uplands	6,367	6,367	100	Remedial action is complete and O&M activities are the responsibility of the Montana Natural Resource Damages Program.
West Galen Expansion Area*	6,389	6,389	100	Remedial action activities are substantially complete and the area is in the monitoring and maintenance stage.
Dutchman Expansion Area	0	0	100	No remedial action is required since this area is where well-vegetated areas with wetlands and unique wildlife habitat are present. Best management practices are used to manage potential exposures and monitoring of vegetation, surface water and groundwater will continue to be required.
<i>Notes:</i> a. Number of acres where a remedial design was prepared to perform a direct remedial action. b. Administratively, there are no remedial design areas in this RDU. The remedial design for this area and remedial action implemented are areas in the Old Works OU.				
<i>Source:</i> The Site's 2020 FYR Report, July 2024 fact sheet and 2023 SMP.				

In 2020, a Partial Consent Decree for the Site replaced the 2003 Administrative Order by detailing the remedy for the Main Granulated Slag Pile. It focused on the management of slag to control off-site migration from the MGS Pile. In 2022, a site Consent Decree superseded the Partial Consent Decree in its entirety. AR agreed to perform O&M and remedial activities at the MGS Pile. In 2022, AR installed a temporary cap and vegetation on the north slope of the MGS Pile. In 2024, AR regraded and consolidated slag on the west face of the MGS Pile, followed by placement of a partial cover to control dust emissions.

AR conducted a borrow investigation in RDU-14 (Smelter Hill Facilities) in August 2023 to assess the suitability of borrow material from expansion areas next to the existing Smelter Hill Borrow Area in the RDU-14 Smelter Hill Facilities. Borrow material deemed suitable will be used as cover soil for future remedial activities only within the Smelter Hill WMA.

Sitewide

The United States District Court in Butte entered the Consent Decree for the Site in December 2022. Under this settlement, AR will finish remediating residential yards in the city of Anaconda and the community of Opportunity, clean up soils in upland areas above Anaconda, and eventually affect the closure of remaining slag piles at the Site. According to the EPA's project update following issuance of the Consent Decree, AR estimates the cost of its remaining site work, including O&M activities intended to protect remediated lands over the long term, at \$83.1 million.

In December 2022, the EPA finalized an amendment to the 1994 Prospective Purchaser Agreement with the state of Montana (through MT DEQ), and with ADLC and the Old Works Golf Course Authority Inc., as purchasers. The agreement provides certain covenants to the purchasers in exchange for implementing certain work in support of the site cleanup.

Institutional Control Review

ADLC implements a county-wide Development Permit System (DPS) partially funded by AR through the 2020 Remedy Coordination, Funding, and Settlement Agreement. The DPS tracks and monitors all construction activity through administrative development permits, major development permits, general utility street opening permits and sidewalk improvement permits. In conjunction with zoning and other compliance issues, the county's Institutional Control Program reviews the permits to monitor all soil disturbance activities that may affect the Superfund remedy. The ADLC also implements the CPMP, which provides education and outreach to the community, as well as three more programs that work in conjunction with the CPMP to further community outreach. The three programs are the Soil Swap Program, the Domestic Well Plan Coordination Program and the Interior Dust Program. The objectives of these programs are to ensure the protection of human health and the remedy and to limit exposure to any residual contamination. The CPMP also conducts coordination with the Blood Lead Monitoring Program.

Institutional controls are a component of all remedies at the Site. The decision documents for the Community Soils OU and ARWWS OU identified ADLC's comprehensive zoning ordinance, also referred to as the DPS and the Community Protective Measures Program, as institutional controls that notify, inform and educate the public about reducing people's exposure to contamination when soils are disturbed or land use changes. Since the previous FYR, the EPA worked with AR and ADLC to complete the Institutional Controls Implementation and Assurance Plan (ICIAP). The ICIAP was finalized in 2020 and approved by the EPA in June 2020 (Table 11). There are no institutional controls planned for surface water. If a developer or landowner plans to use surface water for a drinking water supply, they are required to obtain a permit from the state. In addition, bank stabilization protections and stormwater engineered controls are managed through landowner access agreements between AR and the landowners.

During the FYR site inspection in April 2025, site participants learned that land uses are occurring that are not consistent with the 2011 ARWWS RODA, such as allowing motorized recreational vehicles on high arsenic areas. The EPA is working with AR and the ADLC to improve access controls and inform residents about what types of recreation are appropriate for different site areas.

Table 11: Summary of Planned and/or Implemented Institutional Controls

Media, Engineered Controls and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater (ARWWS OU)	Yes	Yes	Domestic Well Overlay (Figure J-1)	Prevent human exposure to arsenic from drinking groundwater in and next to the TI zones that exceed human health standards.	Final Domestic Well Monitoring Program Quality Assurance Project Plan (QAPP), Revision 1 August 2016
					ADLC's DPS Ordinance Amendments July 21, 2020
Dust/Soil	Yes	Yes	Superfund Overlay (Figure J-2)	Notify, inform and educate the public about reducing their exposure to	Community Protective Measures Program February 20, 2020

Media, Engineered Controls and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
(ARWWS OU and Community Soils OU)				contamination when soils are disturbed or land use changes.	ADLC's DPS Ordinance Amendments July 21, 2020
WMA (ARWWS OU and Old Works OU)	Yes	Yes	WMA (Figure J-3)	Prohibit any actions that would affect the integrity of the remedy	Various Restrictive Covenants (Table J-1) 1994 to 2015
Soil (Flue Dusts OU and Mill Creek OU)	Yes	Yes	Superfund Overlay (Figure J-2)	Restrict access and land use.	CPMP February 20, 2020
					ADLC's DPS Ordinance Amendments July 21, 2020
					Various Restrictive Covenants (Table J-1) 1994 to 2015
Soil (Old Works OU)	Yes	Yes	Superfund Overlay (Figure J-2)	Protect engineered controls and manage future land and water use.	CPMP February 20, 2020
					ADLC's DPS Ordinance Amendments July 21, 2020

The 2020 ICIAP outlines the governmental, proprietary and informational institutional controls, as required by the site decision documents.

Governmental

The governmental institutional controls applied at the Site are ADLC's Master Plan and DPS. The Master Plan identifies the OUs in ADLC and establishes a Superfund Study Area. The Master Plan creates a Superfund Overlay District as the principal tool for establishing institutional controls. It requires all development at the Site to occur on lands only after the level of contamination poses no significant health risk. The overlay also controls access to potentially contaminated groundwater and protects the integrity of remedial measures by regulating development. ADLC's Superfund program works closely with the ADLC's Planning Department to guide developers through the DPS process to ensure they understand and adhere to Superfund protocols. In addition, new domestic wells require a permit through ADLC's Environmental Health Department.

The county implements its Master Plan through the DPS, which requires a permit for any subdivision of land, clearing, grading, excavation, construction, reconstruction, or any development or building activity, with certain exceptions. Development must be consistent with DPS requirements and approved by the county administrator. DPS requirements, or performance standards, have been identified by the development district for the permitted or special permitted uses of that district. The DPS generally requires a grading plan, an erosion and runoff control plan, and a remediation plan. The remediation plan must address where remedial structures are in place; or in unremediated areas or areas remediated to a previous land use that would now exceed the following arsenic trigger levels: residential use – 250 mg/kg, commercial/industrial use – 500 mg/kg, and recreational use – 1,000

mg/kg. Any new development activity or land use anywhere on the Site, such as drilling wells, excavation or new construction, will be regulated by the ADLC under the DPS, irrespective of land ownership.

The DPS requires soil sampling at all new residential construction within the Superfund Overlay District. Soils exceeding the 250 mg/kg soil arsenic concentration or 400 mg/kg soil lead concentration will be cleaned up through the DPS, with preference given to removal. In areas where site-specific conditions dictate that removal is not implementable, other measures (i.e., capping, tilling, institutional control implementation) will be taken to reduce concentrations to below the arsenic and lead action levels or prevent exposure. For future commercial development, final remediation of arsenic contamination in commercial/industrial areas to the action level of 500 mg/kg will be implemented through the ADLC-DPS at the time development occurs, except as otherwise determined by the EPA, in consultation with the affected property owner. The ADLC-DPS prepares annual Data Summary Reports that summarize arsenic and lead concentration data collected during the institutional controls program close-out sampling as required by the 2020 ICIAP in the Superfund Overlay for developments permitted through the DPS. The data is used to determine the nature and extent of potential arsenic and lead contamination of surface soils in disturbance areas of completed developments permitted through the DPS.

The DPS also includes an area referred to as the Superfund Domestic Well Overlay (Figure J-1). To prevent the consumption of water containing arsenic at concentrations greater than the human health standard identified in the ARWWS OU RODA, a development permit, along with a well permit, is required pursuant to the DPS for any digging or drilling of new domestic wells in the Superfund Domestic Well Overlay.

Proprietary Controls

Proprietary controls are controls (e.g., restrictive covenants and easements) on land use that are considered private in nature because they tend to affect a single parcel of property and are established by private agreement between the property owner and a second party who, in turn, can enforce the controls. Certain restrictive covenants have been imposed, through various conveyances and other instruments, on parts of the Site designated as WMAs and areas with high concentrations of arsenic. The types of restrictions included in the covenants include:

- Prohibit or restrict land uses, construction activities, access, and groundwater uses such as water well drilling
- Prohibit interference with remedial actions performed on the property
- Allow for future access by AR and the Agencies as part of investigations and monitoring activities.

A map showing the parcels with restrictive covenants at the WMAs and high arsenic areas within the ARWWS OU and Old Works OU is presented in Appendix J, Figure J-3. The specific use and development restrictions that apply to each parcel are summarized in Table J-1. As noted in Figure J-1 and visible in Figure J-3 one large property (RC0153) in the high arsenic area lacks restrictive covenants.

Informational Devices and Other Program Services

Informational devices are tools implemented by ADLC that serve to provide information and educate the community about the presence of residual contamination that remains on site and the measures to reduce risk (Table 12). Consistent with the requirements of the Community Soils OU ROD and RODA and the ARWWS OU ROD, a CPMP, an Interior/Exterior Dust Program, a Soil Swap Program and a Blood Lead Monitoring Program have been developed as primary institutional controls for the Site. The county informs the community about these programs through a website (<https://adlc.us/226/Community-Protective-Measures-Program>) and other outreach methods.

Table 12: Summary of Informational Institutional Control Components

Informational Device	Components
CPMP	• Community outreach • Community awareness and education • Public inquiries • GIS
Interior/Exterior Dust Program ^a	• Home renovation kit • Instructions to properly use the tools provided to help confine dust when renovating. • Guide to proper cleanup and disposal of materials when the work is complete. • Provide the use of a HEPA vacuum for dust removal.
Soil Swap Program	• Provide raised structures and clean soil for eligible vegetable gardens, designated play areas, or excavation areas less than 1 cubic yard in accordance with the Soil Swap Plan.
Blood Lead Monitoring Program ^b	• Provide voluntary blood lead monitoring services to people who live in the Superfund Overlay District through 2030 (Resident children ages six and under as well as expectant or nursing mothers will be particularly encouraged to participate). • Outreach through a variety of means such as community/education outreach efforts, referrals from local physicians, and the Women, Infants and Children program. • Use blood lead data to identify specific children, if any, with blood lead levels greater than 5 micrograms per deciliter and to provide general information on exposure trends over time to support the EPA's FYR remedy protectiveness evaluations.
<i>Notes:</i> a. Applicable to persons or entities engaged in eligible home renovation, remodeling or demolition for homes located in the Superfund Overlay District and constructed before 1980. b. The program will follow U.S. Department of Housing and Urban Development guidelines for collecting blood lead levels data and will adhere to state and federal requirements for obtaining informed consent of participants, maintaining confidentiality of personal and medical information, and reporting results.	
<i>Source:</i> The Site's 2020 ICIAP.	

Systems Operations/Operation and Maintenance

O&M activities include vegetative monitoring and inspection and maintenance activities of engineered stormwater controls and industrial gravel covers. In addition, there are O&M plans specific to some areas of the Site requiring groundwater, surface water and leachate monitoring to include the WMAs. For example, there are O&M plans that apply to specific areas as summarized below.

Engineering Control Inspections

Sitewide engineering control inspections are conducted according to the Site's 2023 Final Engineered Controls Inspection and Maintenance (I&M) Plan. AR inspects engineered storm water controls, engineered industrial (gravel) covers, and waste management area and high-arsenic area access controls (e.g., gates, fencing, signage, etc.) within the Site. The I&M Plan requires inspection to identify areas requiring erosion repairs, sediment removals/cleanouts and weed spraying to ensure the integrity and operations are maintained for engineered covers, stormwater runoff conveyance systems, stormwater ponds and access controls at WMAs and high-arsenic areas. The results of the 2023 Draft Final Engineered Controls I&M Report prepared by AR in 2024 indicate no significant issues or concerns beyond routine erosion repairs, sediment removals/cleanouts and weed spraying for stormwater channels, stormwater detention basins and engineered covers.

Vegetation Monitoring

AR conducts vegetation monitoring according to the Site's 2022 Vegetation Management Plan Revision 2 (VMP). The VMP describes the vegetation management process and identifies the performance targets and quantitative standards (for non-steep-slope upland areas, WMAs and steep-slope areas) used to determine when a remediated property has achieved compliance. The vegetation performance monitoring consists of observation of vegetation, erosion and best management practice (BMP) conditions. Short-term performance monitoring starts during the

second growing season following seeding to verify attainment of RAOs. Once it appears that RAOs have been achieved (expected in three to five years following seeding and no longer than 10 years after seeding), the evaluation area is assessed for compliance determination using the Land Reclamation Evaluation System (LRES) post-remediation procedure.

In general, a LRES score of 115 and a vegetation cover criterion of 30% are used in non-steep-slope upland areas and WMAs, respectively, as the performance standard indicating attainment of RAOs and allowing for transition of the area into the long-term inspection and maintenance (LTIM) phase. Compliance determination for steep-slope evaluation areas is based on achieving a U.S. Bureau of Land Management erosion score of 45 or less, which serves as the record for attainment of RAOs and allows for transition of the area into the LTIM phase. Based on the wide range of post-remedial action soil contaminant concentration levels, land ownership and the various types of anticipated land uses, the VMP further divides properties into six categories for the purposes of monitoring, maintenance, institutional controls and compliance determination.

- Category 1 – unrestricted-use properties having soil with less than 250 mg/kg arsenic, which allows for unrestricted land use with no long-term monitoring requirements.
- Category 2 – upland properties with low-to-moderate residual soil arsenic and metal levels up to 1,700 mg/kg having enhanced reclamation.⁵
- Category 3 – upland properties with moderate-to-high residual soil arsenic and metal levels ($\geq 1,701$ mg/kg) having enhanced reclamation and design.⁶
- Category 4 – upland properties with moderate-to-high residual soil arsenic and metal levels ($\geq 1,701$ mg/kg) having enhanced reclamation and a Land Management Plan where enhanced design is not feasible.⁷
- Category 5 – high arsenic concentration areas.
- Category 6 – WMAs.

A summary of the vegetative monitoring for short-term performance and long-term inspection sites is provided in annual reports. Short-term vegetation monitoring applies to remediated areas that have not yet achieved the required vegetation performance standards in accordance with the 2022 VMP and included Categories 2, 3, 5 and 6.

Sites subject to long-term monitoring include all Category 5 and 6 areas that have been approved to move into the LTIM phase. The 2023 short-term and long-term vegetation monitoring annual reports indicated that routine maintenance and repairs continue to ensure the maintenance and integrity of the vegetative covers through weed control, fertilization and mowing. Minor maintenance includes re-seeding and stockpile removal. Major maintenance includes the reevaluation of the remediation performed in an area and additional reworking of an area.

The 2023 short-term and long-term vegetation monitoring annual reports identified the following areas where major maintenance was required, which only occurred at two RDUs in the ARWWS OU:

- Stucky Ridge (RDU-1) – large bare areas requiring more remediation as part of the ongoing remedial action in this area.
- Fluvial Tailings (RDU-9) – repair of two fluvial tailings areas by reworking and reseeding.

⁵ Consists of a set of pre-construction elements that may include assessment of soil organic amendment requirements, review of lime amendment sources and tillage depth, field review of remedial boundaries, and review of seed mixtures as a final check that the approved remedial prescription provides the greatest potential for success of the remedy and vegetation establishment.

⁶ Enhanced design elements may include stripping of high contaminant-impacted areas, cover soil application, and introduction of stormwater engineered controls or special land use restrictions.

⁷ The plan identifies long-term inspection and maintenance requirements and/or institutional controls that are necessary to protect the integrity of the remedy.

Smelter Hill Repository Complex

The SHRC includes the Arbiter, Beryllium, Flue Dust, Aspen Hills and 2004 Beryllium repositories. Vegetation and engineering controls inspections for this area also include the Flue Dust OU, which are conducted according to the 2022 VMP and 2016 Engineering Controls I&M Plan. In addition, groundwater and leachate monitoring activities are conducted according to the 2020 O&M Plan to address the leachate monitoring requirements for the SHRC including O&M activities for the long-term leachate management system constructed in August 2019 near the Flue Dust OU.

AR conducts the following activities, as required by the Site's 2020 O&M Plan.

- Quarterly monitoring of repository leak detection and leachate collection risers in the Arbiter, Beryllium and Flue Dust repositories.
- Monthly water elevation measures in the Flue Dust Repository collection sump and surrounding piezometers, or as needed.
- Annual groundwater monitoring of wells MW-1, MW-2, MW-3, MW-4 and MW-65 for COCs.
- Operating and maintaining the long-term leachate management system as needed to pump, treat and evaporate leachate from the Flue Dust Repository.
- Maintaining surface water diversion structures in the SHRC area to appropriately convey stormwater runoff.
- Maintaining the function and integrity of the repository's final cap systems.

The 2023 vegetation inspection indicated that vegetative cover was between 30% and 39% for all five repositories (criteria for repositories are achieving at least 30% vegetation cover by acceptable plant species), with the best vegetative cover present on the Arbiter Repository. Infrequent occurrences of noxious weeds exist on the repositories. Overall, the vegetation compliance standards continue to be met at all five repositories (Flue Dust, Arbiter, Beryllium, 2004 Beryllium and Aspen Hills).

Leachate from the Flue Dust, Arbiter and Beryllium repositories is only pumped if the trigger levels as specified in the O&M Plan are exceeded. The Aspen Hills and 2004 Beryllium repositories do not have or require leachate management. According to the 2023 Monitoring Report, the Arbiter Repository last required pumping during the second and third quarters of 2021. No pumping of the Arbiter Repository was required in 2022 or 2023. The Beryllium Repository was last pumped during the third quarter of 2016 and has not required pumping since then. The Flue Dust repository has required routine pumping since 2016 due to seasonal shallow groundwater influx to the repository. In response, AR completed construction of the leachate collection and evaporation system; it became fully operational in 2020. The Flue Dust Repository required pumping of the leachate to the leachate collection and evaporation system in the second and third quarters of 2021 and 2022.

Anaconda Smelter Development Repositories

AR currently operates the Anaconda Smelter Development Repositories (ASDR) to dispose of waste materials generated from remedial activities on site and materials subject to ADLC DPS regulations. The repositories encompass about 42 acres and are separated into two sub-cells of the Opportunity Ponds (RDU-8). The O&M activities for these repositories are conducted according to the 2024 Final Anaconda Smelter Development Repository Operation and Management Plan, Revision 2. 2024 revisions include a new design and operations area of the ASDR for waste generated by the Attic Dust Removal Program that had previously been disposed of at an offsite landfill, but which were no longer accepted by that landfill. The plan specifies requirements for sampling of materials prior to disposal in the repository as well as consolidation, grading and management practices to minimize fugitive dusts of the material once in the repository. The results summarized in the 2022 O&M Report for this area indicate that nothing unusual was required beyond routine O&M activities.

Slag Piles

AR conducts O&M activities on the MGS Pile and the West Stack Slag Pile sites (RDU-12) as required in the 2003 Final Operation and Closure/Reclamation Plan for each of these two areas. The O&M activities are conducted according to the 2020 Main Granulated Slag Management Plan and the 2020 West Slag Management Plan. The primary O&M activities for both slag piles include:

- Inspect and maintain covers.
- Inspect and maintain stormwater controls.
- Inspect and maintain security and access.
- Conduct dust inspections to determine if best management practices (e.g., dust control) are being implemented and promptly address any problems.
- Conduct noxious weed inspections and control.

The previous FYR noted that an active gully on the east side of the MGS was most likely due to a breach in the adjacent roadside berm during a high rain event. This area was addressed in 2022 during the MGS partial cover placement by removing the access road and relocating slag from regrading of the north face of the MGS pile and consolidating it along the east side of the MGS pile between the MGS and the Anaconda Ponds, where the access road existed. Additionally, in response to the major storm events in June 2023, some repair via regrading and revegetation of the partial cover installed on the north face of the MGS took place in early 2023. Development activities in 2020/2021 in the adjacent East Anaconda Yards resulted in the construction of a new stormwater drainage channel that connects to the channel along the western perimeter of the MGS site. This channel collects storm water from the development area and directs it toward the MGS perimeter channels. No other major concerns needed to be addressed beyond the erosion repair, minor slag sedimentation removal along the northeast corner of the MGS pile, weed spraying, and wind fence/perimeter fence repairs.

No major concerns were observed as part of O&M activities for the West Stack Slag pile beyond the routine removal of noxious weeds and sediment in stormwater conveyances.

Active Railroad (RDU-5)

The Butte, Anaconda & Pacific Railway conducts O&M activities for the active railroad areas that it remediated between 2006 and 2019 to verify that the remedy remains intact and functions to limit exposure to humans or potential environmental receptors (e.g., rivers). Butte, Anaconda & Pacific Railway conducts the following O&M activities according to the Site's 2021 Active Railroad Superfund O&M Plan:

- Visual inspections of the engineered covers, surface water conveyances, stream crossings and railroad embankments.
- Corrective actions (e.g., weed spraying, repairing erosional features) pertaining to inspections completed as soon as reasonably possible to include weather considerations, equipment and resource availability.

According to the 2022 O&M Report, no major issues were identified beyond weed control and clearing culverts.

Old Works Golf Course

The Golf Course was constructed as an EPA-approved dedicated development as part of, and in conjunction with, the remedy. As such, there are certain operations and management activities that must be performed as part of Golf Course operations to maintain the effectiveness and protectiveness of the remedy. The operation and maintenance of the golf course/remedy is implemented by both ADLC and AR under the 2019 Old Works Golf Course O&M Plan. ADLC is responsible for all mowing, fertilizing, watering, aerating, vertical mowing, top dressing, weed and pest control, irrigation, and minor repairs and replacements as may be necessary to maintain the function and effectiveness of the following Golf Course remedial features.

- Vegetated grass-covered greens (course, tee boxes, driving range, nursery area, bunkers) underlain by Greensmix, different soil types as applicable and drainage gravel.
- Non-woven geotextile, a geomembrane liner, and the perforated pipe drainage system that routes infiltrating water into the underdrain system.
- Maintaining water levels and riprap in course lake features during the operational period.
- Formal bunkers (located within irrigated areas) containing 4 inches to 6 inches of slag material that is used at the Golf Course as the functional equivalent of sand.
- Minor and major repairs requiring an excavation by the golf course operator must be coordinated through the ADLC Superfund Program.
- Maintaining roads, paths and fencing.

AR is responsible for the following O&M activities:

- Placement and removal of winter fencing on the perimeter of some formal bunkers as necessary to reduce slag migration onto fairways.
- Placement and removal of winter fencing on the perimeter of the informal bunkers, as necessary.
- Inspection of the informal bunker edges on an annual basis to determine if repairs and replacements are necessary to prevent excessive slag migration into the irrigated and/or non-irrigated rough areas or into Warm Springs Creek.
- Replacement of the irrigation system's low-pressure automatic recirculation control valves installed in irrigation pipes, located near Warm Springs Creek, to prevent infiltration into groundwater and run-off and erosion of contaminated material into the creek, as required.
- Repair and replacement of the manually operated valves in lake features during the non-operational period.
- Maintenance of the lake features' water level and riprap during the non-operational period.
- Inspection and maintenance of the sediment ponds.
- Annual inspection of the Warm Springs Creek corridor for damage to the riparian vegetation or riprap erosion protection or for removal or breach of beaver dams as soon as practicable.
- Inspection of the bridge abutments and pylons after major storm events to ensure there is no debris attached to the bridges and that erosion is not releasing mine waste or contaminated soil into the creek.

The results summarized in the 2023 O&M Report for this area indicate that nothing unusual was required beyond routine O&M activities.

Dutchman Wetland Area

The Dutchman Wetland Area is the largest remaining contiguous wetland/riparian habitat in the Upper Clark Fork River Basin. It covers about 3,447 acres in the AWRRS OU. No tailings are present, but the soil has been impacted by historical emissions from the region's smelters, and the EPA has designated much of the area as a high arsenic area. The EPA did not require any remedial action at the Dutchman Wetland Area as existing vegetation was adequate to meet the performance standard for high arsenic areas. Pursuant to the high arsenic area remedy decision, AR conducts O&M activities to protect the wetlands according to the 2016 Dutchman Property Management Plan. Activities include monitoring and repairing existing perimeter fences, constructing new fencing along property boundaries, monitoring and repairing trailheads, conducting noxious weed, vegetation, and streambank inspections, and performing wildlife surveys for big game and birds. Results of the 2022 Draft Final Dutchman Wetlands Site Operation, Monitoring and Maintenance (OM&M) report prepared by AR in 2023 indicate that all routine repairs, weed control and maintenance activities were completed as needed. In addition, big game presence (e.g., moose, elk, whitetail deer, coyotes and pine marten) and over 150 bird species were identified during wildlife monitoring.

Groundwater and Surface Water O&M

AR completes O&M activities for the groundwater and surface water remedies according to the Site's 2021 Groundwater Management Plan and 2020 SWMP, respectively. The Groundwater Management Plan specifies the requirements for monitoring and evaluating groundwater quality within ARWWS OU and Old Works Waste Management Areas, TI Zones, and Areas of Concern. The Groundwater Management Plan also addresses monitoring domestic well water quality with the installation of point-of-use treatment systems or well replacement if water used for domestic consumption exceeds the water quality standard for arsenic. The SWMP specifies the long-term monitoring requirements to assess cleanup and protection of surface water resources in the ARWWS OU.

Groundwater

AR completes annual sitewide long-term groundwater monitoring to assess performance of post-remedial actions (e.g., revegetation, best management practices, engineered controls) to determine compliance with performance standards for the five COCs (arsenic, cadmium, copper, lead and zinc)⁸ at established point of compliance groundwater monitoring wells and to identify trends. In addition, the monitoring confirms safe drinking water is provided to domestic well users following provisions in the Domestic Well Monitoring Plan.

The groundwater monitoring requirements are specified in the 2022 Final Long-Term Groundwater Monitoring Program Quality Assurance Project Plan (Long-Term QAPP). They include:

- Semi-annual sampling of POC groundwater monitoring wells to ensure that contaminated groundwater is not exiting the WMAs. Sampling includes:
 - POC wells downgradient of the Old Works WMA.
 - POC wells downgradient of the Smelter Hill/Opportunity Ponds WMA.
 - POC wells upgradient of the town of Opportunity to ensure the protection of that community's water supply.
- One FYR sampling every five years during high groundwater at springs and seeps in the spring, when flow is most likely to be occurring from the groundwater expression.
- High and low water table FYR sampling every five years at 62 groundwater monitoring wells.
- One groundwater sampling at the event-driven wells if the water level in MW-213 (located within the Old Works WMA) exceeds the trigger elevation of 5,156.5 feet above mean sea level.
- Semi-annual sampling at the town of Opportunity well (MW-9), the downgradient edge of the South Opportunity TI zone, to verify that arsenic does not exit the TI zone above cleanup levels.

Surface Water

Surface water monitoring includes the following activities:

- Surface water monitoring is conducted eight times per year in the five major streams in the ARWWS OU (Lost Creek, Warm Springs Creek, Mill Creek, Willow Creek and California Creek). Surface water monitoring is conducted by the U.S. Geological Survey under an interagency agreement with the EPA at two stations each in Lost Creek, Warm Springs Creek, Mill Creek and Willow Creek. At California Creek, surface water is monitored at one station by the Natural Resource Damage Program (NRDP).
- Limited bed sediment monitoring once every three years in Warm Springs Creek at the Warm Springs monitoring station.⁹
- Surface water quality and flow monitoring eight times per year on each stream at a POC station and a remedy performance station for each stream.

⁸ The primary COC is arsenic. However, certain locations are also evaluated for cadmium, copper, lead, zinc, and/or beryllium under the Long-term Groundwater (LTGW) Monitoring Program.

⁹ Montana has adopted a more conservative set of standards, which accounts for contaminant loading to sediments, by adopting the total recoverable standard as State surface water standards.

- Biological monitoring to support the EPA's FYRs and potential future waivers to contingency performance standards. Biological monitoring is limited to annual benthic macroinvertebrate community (BMI) monitoring at one location on each stream.
- Analysis of trace-element concentrations in the whole-body tissue of aquatic benthic insects once every three years in Warm Springs Creek at the Warm Springs station.

Lower Willow Creek and Warm Springs Creek – AR initiated monitoring activities for the Lower Willow Creek project area in spring 2014 in conjunction with developing the 2015 Final Riparian Area Vegetation & Bank Stability Monitoring Plan for Willow Creek and Warm Springs Creek. This plan was developed specifically for the remedial actions required for Lower Willow Creek and Warm Springs Creek and provides the framework for monitoring remedy establishment and progress toward RAOs. Monitoring activities include assessing bank stability and erosion, collecting data to determine if the creeks are meeting the revegetation and site stability performance targets, evaluating vegetative cover of streambank vegetation for long-term channel stability, evaluating noxious weed levels, and identifying maintenance and corrective actions, as necessary. Monitoring of Lower Willow Creek was completed in 2018 as the 2018 Monitoring Report documented that performance requirements were achieved. Monitoring of two project areas in Warm Springs Creek (Section 32 and Lower Warm Springs Creek) began in 2019. The 2023 Monitoring Report for Warm Springs Creek represents the fifth year of post-construction riparian vegetation and streambank treatment monitoring information. Based on the results of this report, AR believes the remedy has achieved performance requirements and requested agency approval in July 2024 to discontinue formal monitoring of this area (RDU-10). The stream bank formal monitoring cessation has been approved and an RDU-10 remedial action completion walkthrough is scheduled for October 2025. AR proposes to conduct informal monitoring of the remediated streambanks on AR- and ADLC-owned properties following spring runoff to assess the condition/stability of the recently repaired banks and to identify weed management requirements on AR-owned properties.

Opportunity Ponds – Groundwater and surface water are monitored at the Opportunity Ponds area (RDU-8) according to the 2014 Opportunity Ponds Remedial Design Unit (RDU-8) Groundwater Surface Water Management System OM&M Plan. The objectives of the monitoring are to ensure the GWSWMS is capturing groundwater within the interceptor trench to minimize migration of COCs from the WMA and meet the performance standards for groundwater. In addition, O&M activities ensure that the integrity of the system is maintained. The 2023 Monitoring Report concluded that quarterly inspections of all structures in the GWSWMS indicated that nothing is needed, beyond routine maintenance and repairs such as addressing noxious weeds, repairing some pressure transducers, cleaning staff gauges and fish screens, and cleaning sedimentation out of flumes at the North and South Decant Structures. The Data Review section of this FYR Report provides a summary of the surface water and groundwater monitoring results.

Domestic Well Monitoring

AR samples domestic wells within the ARWWS OU domestic well area of concern (AOC) to determine if the wells meet the water quality performance standards outlined in the 2011 RODA. AR conducts monitoring activities according to the 2020 Domestic Well Monitoring Plan, and the sampling is conducted in accordance with objectives and procedures documented in the 2020 Final Revision 2 Domestic Well Monitoring Program QAPP. It includes the following activities:

- Annual sampling at previously sampled domestic wells that had total recoverable arsenic results greater than 5.0 µg/L, or parts per billion, and less than or equal to 10.0 µg/L. Once results show arsenic concentrations less than or equal to 5.0 µg/L for three consecutive years, or less than or equal to 10.0 µg/L for 10 consecutive years, scheduled sampling will be discontinued, and sampling will only be performed per domestic well owner request (see the third bullet).
- Sampling prior to use at all newly constructed domestic wells constructed under a well development permit application issued by ADLC through its DPS.

- Sampling at domestic wells within the Domestic Well AOC per the request of well owners. This excludes domestic wells that have had a reverse osmosis (RO) treatment system installed under previous domestic well programs. The requested sampling is limited to no more than once per year.
- Implementation of the Domestic Well RO and Replacement Well Installation Program at domestic wells with total recoverable arsenic results greater than 10 µg/L (including the confirmation sample). Domestic well owners with total recoverable arsenic results greater than 10 µg/L will be offered bottled water until the Domestic Well RO and Replacement Well Installation Program has been fully implemented.

The Data Review section of this FYR Report provides a summary of the monitoring results.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the 2020 FYR Report (Table 13) as well as the recommendations from the 2020 FYR Report and the status of those recommendations (Table 14).

Table 13: Protectiveness Determinations/Statements from the 2020 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
OU4 (ARWWS)	Will be Protective	The remedy will be protective of human health and the environment upon completion of the remaining remedial actions, including soil reclamation and stormwater controls for the RDUs (-1, -2, -3, -6, -7, -9, -15 and West Galen). In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas.
OU7 (Old Works)	Will be Protective	The remedy will be protective of human health and the environment upon completion of remaining remedial actions at the OU, including capping of the following parcels (McDowell, Warner and RDM), and access controls for the Historic Structure Area and capped red sand area adjacent to the golf course. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas.
OU11 (Flue Dust)	Protective	The remedy is protective of human health and the environment.
OU15 (Mill Creek)	Protective	The remedy is protective of human health and the environment.
OU16 (Community Soils)	Will be Protective	The remedy will be protective of human health and the environment upon completion of remaining remedial actions at the OU, including soil/waste removal, backfilling with clean soil, and revegetating or installing gravel or similar materials. Actions completed to date have effectively eliminated potential exposure pathways. In the interim, institutional controls are in place that notify, inform and educate people about reducing their exposure to contamination when soils are disturbed or land use changes. ADLC's Superfund program also works closely with the Planning Department to guide developers through the DPS process to ensure developers understand and adhere to Superfund protocols.

Table 14: Status of Recommendations from the 2020 FYR Report

OU#	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
4	Monitoring reports in 2016 and 2018 noted that sediment from the Main Slag Pile is being deposited below the road in the area east of the slag pile. An inactive gully on the east side of the Main Slag Pile has formed, depositing sediment below the road.	Remediate this area and evaluate the need for more best management practices.	Completed	The gully on the eastern face was filled in during the grading of the north face and placement of the interim cover.	Not Applicable ^a
4	Elevated levels of metals have been detected in areas surrounding the Main Slag Pile.	Complete the delineation of areas near the Main Slag Pile and conduct a risk assessment to determine if more actions are needed.	Completed	AR placed an interim cover followed by seeding. A risk assessment was not needed due to cover placement as a voluntary action to address this issue.	2023
4	AR noted in the slag pile monitoring reports that there is wind-blown slag identified north of the northern channel.	Implement more best management practices, as necessary, to further reduce fugitive dust migration, and include in an updated Operation and Closure/Reclamation Plan.	Completed	Interim cover placed in 2023, and AR installed a 12-inch soil cover over the face of the Main Slag Pile as an interim dust management practice to control fugitive dust from the pile.	2023 and 2024 ^b
4	Monitoring reports and site inspection observations indicate that trespassing is occurring on the Main Slag Pile.	Improve engineering controls to prevent or minimize trespassing as practicable.	Completed	AR installed an interim cover, improved fencing and increased security.	2023 and 2024
7	Monitoring reports and site inspection observations indicate that trespassing is occurring on the capped red sand area next to the golf course along a paved recreation trail.	Improve engineering controls to prevent or minimize trespassing as practicable.	Ongoing	AR installed signs and gates to deter off-trail access on the capped red sand area. However, motorbike riding continues so AR plans to build split-rail fences to discourage off-trail access.	Not Applicable

Notes:

- This issue was completed in 2023, but this completion will be documented in a CCR in 2026 with the north and west face in a single Maintenance Summary Report.
- This issue was partially addressed conceptually in the *MGS Management Plan* (Atlantic Richfield, August 2020) and then partially through a series for Requests for Maintenance: *Request for Maintenance – RDU 12 Main Granulated Slag Dust Management Interim Cover, Revision 2* (Atlantic Richfield, June 2022) (Site Document Register No. 612-09-993), a partial cover was installed over the north face in 2022 and 2023. Additional dust control work is ongoing now under *Request for Maintenance – RDU 12 Main Granulated Slag Dust Management Interim Cover No. 2* (Atlantic Richfield, July 2024) (Site Document Register No. 612-09-1101).

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by a newspaper posting in the *Anaconda Leader* on March 21, 2025 (Appendix D). It stated that the FYR was underway and invited the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site's information repository in the Anaconda-Deer Lodge County Superfund Office at 186 Landfill Road in Anaconda and on the Anaconda Site Profile Page at <https://www.epa.gov/superfund/anaconda-co-smelter>.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy implemented to date. The interviews are summarized below.

Ed Baudette (County Commissioner)

As a county commissioner, Ed is very familiar with the site issues and cleanup activities. He feels well-informed about site activities because of his position but noted that many residents do not pay attention unless it directly affects them. Meetings are appreciated so information can be discussed with the community. Ed indicated that there is a significant issue with people trespassing at the Site on 4-wheelers and dirt bikes. A connection to the trail system could help with the issue. Ed also expressed concern about regulations at the Site. There is uncertainty about what regulations will come and go, and he feels that the government wants to develop all their property. Ed suggested that informing the community more about why certain site activities happen would be beneficial. It is also important to him that the site remedy is reflective of what the community wants.

Lauren Bolton (ADLC Public Health Director)

Lauren is aware of the Site but is not as informed as she would like to be. Lauren suggested that a newsletter would be helpful. She also mentioned that it could be helpful to have the county receive regular updates about site activities.

Amber Nichols (MT DEQ)

Amber believes that the remedy remains functional throughout the Site. Most of the on-site remedial action has been completed, and multiple redevelopment projects have been successful. She mentioned that the ICs program is efficient and effective, but the document repository could benefit from an update. Amber noted that complaints from the community were very rare, but the most common were regarding unnecessary tree removal, vegetation disturbance and the quality of backfill soil in yards. MT DEQ is regularly involved in communication with the EPA and the community. Amber suggested that more frequent community meetings would be beneficial to the community by increasing credibility and transparency of the Superfund process.

Ray Vinkey (Natural Resource Damage Program)

Ray is familiar with the former environmental issues and cleanup activities. He noted that because of remediation, the Mount Haggin and Stucky Ridge areas are now used by the public for a variety of recreational activities. Ray mentioned some trespassing issues at Stucky Ridge, which have required fencing repairs and additional signage to deter motorized vehicles. Ray finds that the EPA communicates well with the Natural Resources Damage Program. He suggests that continued communication with the community through public meetings, newspapers and more would be helpful.

Benjamin Simpson (Engineer, CDM Smith)

Benjamin was impressed by the cleanup and related activities at the Site. He believes the outcome will be protective of human health while also benefiting the local economy. Benjamin mentioned that the site remedies have performed well. Sampling and removal efforts have resulted in a majority of residential soils meeting acceptable lead and arsenic values. The site remedies are regularly inspected to ensure they are well maintained.

Resident #1

The resident is quite familiar with the Site. They have been involved with activities at the Site and believe the projects have worked very well. However, they noted concern about the EPA's new lead guidance and how that could affect site activities. The resident mentioned that the EPA has been successful in keeping the community informed about site activities. They found the new website to be outstanding and appreciated the EPA's ability to take highly technical information and present it to the public.

Resident #2

The resident expressed concern about the remediation that occurred at the Site. They believe that the waste, which was covered with clean soil, could be easily disturbed by weather and changing climate. They noted that although an immense amount of soil was removed, the remaining contaminated soil still exceeds the acceptable metals content. They also raised a concern about leaving soil with high arsenic and metals concentrations in place due to the potential cancer risk from the relatively high arsenic levels. The resident suggested a better remediation strategy would be to place the low-level contaminated soil back into Berkeley Pit since there is a water treatment system there. They also mentioned that Anaconda's wastewater treatment facility was overwhelmed and building a treatment plant on Hearst Creek would provide a backup in case of emergency.

The resident contended that the remediation solution was chosen with cost in mind rather than protecting human health. They stated that responsible companies should remain in operation to pay for remediation costs because it would also benefit the community. The resident also thinks that the county should receive compensation from ARCO/BP or the Montana Department of Environmental Quality for the waste they are dumping on the county's land.

Resident #3

The resident is aware of the environmental issues at the Site. Cleanup was performed at their property, but they experienced communication challenges with the workers. The resident flagged trees they did not want to be removed by the workers, but some were removed anyway. They contacted the engineers about the problem but felt their requests were not communicated to the workers. The size of the equipment and the type of weed spray used was also a concern.

The resident noted that the EPA's responsiveness is good and feels the EPA gives effort to communicate. Overall, the resident was satisfied with the newly planted vegetation but would like everything that was dug up to be replaced. They hoped that the long-term effect of the remediation would be positive.

Data Review

Due to the potential for smelter waste and contaminated soils to create leachate and contaminate groundwater, AR conducts area-specific groundwater monitoring to assess the performance of revegetation, best management practices, and engineered controls at the SHRC (RDU-14) and the Opportunity Ponds area. In addition, to evaluate the effectiveness of remediation of ARWWS OU smelter wastes and soils on downgradient groundwater and surface water, AR conducts regional groundwater and surface water sampling to monitor regional groundwater contaminant trends. Surface water monitoring is conducted by the U.S. Geological Survey (USGS) for four major streams in the ARWWS OU where surface waters exit the OUs (Lost Creek, Warm Springs Creek, Mill Creek and Willow Creek). Also, the Site is covered by the Domestic Well Monitoring Program to determine if the wells meet the water quality performance standards outlined in the 2011 ARWWS RODA. If wells are found to be contaminated above the water quality performance standards, well owners are provided with potable water until an RO treatment system is installed. The focus of the data review is on the most current data with a discussion of historical trends.

ARWWS OU Area-Specific Groundwater Monitoring

RDU-14 – SHRC Repositories Groundwater Monitoring

AR monitors groundwater on an annual basis to evaluate the effectiveness of the repositories in containing waste. AR collected annual groundwater samples from the SHRC monitoring wells (MW-1, MW-2, MW-3, MW-4 and MW-65) (Appendix H, Figure H-1). Table H-1 summarizes the most recent groundwater results from 2023, including monitoring well water level data, pH values and analytical results. The groundwater monitoring analytical results indicate that all contaminants in all five monitoring wells were consistent with historical background levels in 2023 and consistent with the previous FYR data review results. During this FYR period, except for monitoring well MW-3, site COCs were below detection except for arsenic. The dissolved arsenic in MW-3 was detected at 12.9 µg/L, which is above the EPA's maximum contaminant level of 10 µg/L. All SHRC monitoring wells are within the Opportunity Ponds/Smelter Hill WMA (Figure C-6), and the dissolved arsenic level in MW-3 has regularly been above the federal drinking water maximum contaminant level (MCL). The monitoring results support that revegetation, best management practices and engineered controls remain effective at preventing further contamination of groundwater in the area of the SHRC.

RDU-8 – Opportunity Ponds GWSWMS Monitoring

Groundwater and surface water are monitored at the Opportunity Ponds area to ensure the GWSWMS is capturing groundwater to minimize migration of COCs from WMAs and meet the performance standards for groundwater. AR collects groundwater samples and surface water from the decant structures and retention pond twice a year, in spring and summer. A summary of the most current sampling events in March and June 2023 is provided below and discussed relative to historical trends.

Surface Water – Water continued to enter the GWSWMS through the North Decant Structure and the South Decant Structure throughout 2023 (Figure H-2). The GWSWMS passively treats arsenic-contaminated groundwater exiting the Opportunity Ponds WMA. Any residual water slowly flows through a wetland as the final polishing step. The data shows that total arsenic concentrations entering the GWSWMS from the decant structures ranged from 0.78 µg/L at the North Decant Structure (SW-003S) in June 2023 to 56.7 µg/L at the South Decant Structure (SW-002S) in March 2023 (Table H-2). Surface water exiting the GWSWMS at SW-001 had total and dissolved arsenic concentrations at much lower concentrations. Total arsenic at SW-001 was below the detection limit of 0.5 µg/L in March 2023 and detected at 0.76 µg/L in June 2023; dissolved arsenic was below the detection limit of 0.5 µg/L. Consistent with historical results, these arsenic concentrations were below human health and aquatic life criteria of 10 µg/L for human health and 150 µg/L for aquatic life, respectively. Total arsenic concentrations exiting the interceptor trench at SW-001 during both the March and June 2024 monitoring events were lower than the historic average since routine monitoring began in 2015 (1.1 µg/L). Values for total arsenic at SW-001 recorded during both the March and June 2024 monitoring events (0.68 µg/L and 1.00 µg/L, respectively) were very similar to those recorded last year during the March and June 2023 monitoring events (0.50 µg/L and 0.73 µg/L, respectively). Decreasing arsenic surface water concentrations between the North Decant and South Decant structures and SW-001 at the conveyance channel indicates that passive treatment of the waters is taking place within the GWSWMS effectively, as designed.

Groundwater Elevations and Contaminant Concentrations – Groundwater contours continue to show that the primary direction of groundwater flow is generally eastward, toward the interceptor trench. The groundwater contours were compared to the historical pre-construction water level measured in April 2003 and groundwater contours developed in March 2012. The comparison continues to demonstrate effective groundwater drawdown and capture by the GWSWMS.

The dissolved arsenic groundwater concentrations collected from the downgradient monitoring wells ranged from below the detection limit (0.5 µg/L) at MW-268 to 1.70 µg/L at MW-271 (Table H-3), with all concentrations being well below the arsenic groundwater quality standard of 10 µg/L in the dissolved fraction, per the requirements outlined in the 2011 ARWWS RODA. The groundwater sampling results from 2023 continue to

demonstrate that the GWSWMS is minimizing the migration of COCs and is meeting the long-term RAOs and performance standards for groundwater at the Opportunity Ponds RDU-8 area.

ARWWS OU Domestic Well Monitoring

Domestic well monitoring started in 2004. The domestic well monitoring for this FYR was conducted based on the 2020 Domestic Well Monitoring Plan Revision 1 and associated QAPP. AR samples domestic wells in the ARWWS OU domestic well AOC (Figure H-3) to determine if the wells meet the arsenic water quality performance standards outlined in the 2011 RODA.

AR identified 50 domestic wells to be sampled in 2023, of which 15 domestic wells were identified as having historical total recoverable arsenic results greater than 5.0 µg/L and less than or equal to 10.0 µg/L; seven wells were well-owner requests within the AOC, and 28 wells were newly installed or scheduled to be installed under the ADLC New Well Permit Program. AR added two more domestic wells by owner requests and 17 wells under the ADLC New Well Permit Program, thus expanding the 2023 well sampling list to 69 wells. AR sampled 23 of the 69 domestic wells. All 23 samples were below 10 µg/L for total arsenic (Table H-4). Forty-six wells were not sampled in 2023 due to the lack of pumps or power to pumps installed in the well, other issues preventing the sampling of the well, or access agreements unable to be obtained (access could not be obtained from 20 domestic well owners).

Between 2019 and 2023, the following changes to the annual domestic well monitoring network took place:

- 2020
 - Two wells were removed from the annual list since arsenic concentrations were < or = to 5 µg/L for three consecutive samples.
 - Three wells were added to the annual list since arsenic concentrations were > 5 µg/L.
- 2021
 - One well was removed from the annual list after arsenic concentrations were < or = to 5 g/L for three consecutive samples.
 - One well was added to the annual list after initial arsenic concentrations were > 5 µg/L.
 - An RO treatment system was installed for one landowner that had total recoverable arsenic concentrations > 10 µg/L
- 2023
 - Two wells added to the annual list after initial arsenic concentrations were > 5 µg/L.

As of 2023, there are 27 more groundwater quality samples collected from 14 previously installed RO treatment systems and 13 corresponding wells (one property has two systems). Influent and effluent water from the RO treatment systems were sampled for total recoverable arsenic in conjunction with the FYR sampling to ensure that performance standards are being met and to track groundwater concentrations. While influent samples for eight wells exceeded the 10.0 µg/L performance standard, all effluent sample results from 2023 were below the performance standard (Table H-5).

ARWWS OU-wide Long-term Groundwater Monitoring

AR completes sitewide groundwater monitoring to monitor the effectiveness of revegetation, best management practices and engineered controls on groundwater conditions downgradient of the Site. Compliance with water quality standards is evaluated at POC monitoring wells downgradient of the Old Works WMA and the Smelter Hill/Opportunity Ponds WMA. In addition to the WMAs, POC locations have been established upgradient of the town of Opportunity (the South Opportunity/Yellow Ditch area) to ensure protection of that community's water supply. AR also completes FYR sampling (every five years) during high groundwater at springs and seeps in the spring when flow is most likely to be occurring from the groundwater expression.

The most current site conditions are reflected in the 2023 Long-Term Groundwater Monitoring Summary Report, published in June 2024, and the Draft Final 2023 Five-Year Review Groundwater Interpretive Report released in

December 2024. AR conducts the sampling based on the 2022 Long-term ARWWS OU Final Long-Term Groundwater Monitoring Program Quality Assurance Project Plan (QAPP) Revision 2.

Point of Compliance Sampling Summary

Compliance with water quality standards is evaluated at POC monitoring wells downgradient of the Old Works WMA and the Smelter Hill/Opportunity Ponds WMA (Figure H-4). In addition to the WMAs, POC locations have been established upgradient of the town of Opportunity (the South Opportunity/Yellow Ditch area) to ensure protection of that community's water supply. Sample results are compared to performance standards as specified in the ARWWS OU 2011 RODA.

Opportunity Ponds/Smelter Hill WMA – AR sampled 14 of the 15 POC wells during the low water table event in the spring time frame. Monitoring well MW-212 was not sampled during the low water table event because it was dry. All 15 POC wells were sampled during the high water table event in the summer. All COC sample results were below the applicable water quality performance standards during both sampling events for dissolved arsenic, cadmium, copper, lead and zinc. Further, a majority of all the sample results in 2023 were below detection (Table H-6). Therefore, a trend analysis could not be performed.

Old Works WMA – AR monitors four POC wells in the Old Works WMA (Table H-7). In addition, AR monitors water levels in MW-213. Event-driven samples are conducted if water levels in MW-213 exceed the benchmark elevation of 5,156.5 feet above mean sea level. There are 14 event-driven wells that are located within the Old Works WMA to evaluate remedy performance during high groundwater years. When a high groundwater event is detected within the Old Works WMA, as determined by continuous monitoring of well MW-213, 10 of these wells (IW-01, MW-204, MW-206, MW-206d, MW-208, MW-209, MW-213, MW-240, MW-241 and MW-242) are monitored and located in this area to understand how periodic increases in groundwater COC concentrations are related to hydrologic conditions and waste in the WMA. A groundwater elevation greater than 5,156.5 feet above mean sea level will trigger the event-driven sampling. When such high groundwater occurs, the event-driven well sampling will begin within 3 weeks following the peak water level, with all sampling completed within a 2-week period. The remaining 4 wells identified as event-driven wells are POC wells and their scheduled sampling dates will be adjusted to meet the 2-week window for sampling event-driven wells if the trigger elevation is reached.

According to the 2022 Long-Term QAPP, if dissolved cadmium concentrations exceed 15 µg/L for any event well, that well will subsequently be sampled semi-annually, on a schedule coinciding with ongoing POC well monitoring, until the dissolved cadmium concentration is less than 15 µg/L.

The monitoring results for the POC wells show that all COC sample results were below the applicable water quality performance standards (Table H-7). However, due to MW-213 exceeding the elevation trigger level, 14 locations were sampled. The results of these wells show that cadmium concentrations exceed the performance objective of 5 µg/L at three locations (MW-206, MW-206d and MW-213) but are not above 15 µg/L for dissolved cadmium, which would trigger subsequent sampling in 2024. AR determined there was no significant trend for all analyses except for a decreasing dissolved cadmium trend at MW-209 and a decreasing dissolved copper trend at MW-213.

South Opportunity/Yellow Ditch Area – There are six POC wells in the South Opportunity/Yellow Ditch area. During the low water table event in 2023, four of the six POC wells were sampled, and all six locations were sampled during the high water table event. MW-274 and MW-264 were not sampled during the low water table event because they were dry. Samples in this AOC were analyzed for dissolved arsenic as the primary COC and the sample results showed no exceedances of the performance standard of 10 µg/L in 2023. Due to the number of results below detection, a trend analysis was not performed.

Town of Opportunity Well – AR conducts semi-annual sampling at the town of Opportunity well (MW-9) to verify that arsenic is not exiting the TI zone at the downgradient edge of the South Opportunity TI zone. Both low

and high water table, arsenic-sample-event results were below detection, and the detection limits were below the water quality performance standard of 10 µg/L in 2023, consistent with historical results (Table H-6).

FYR Monitoring

There are about 60 monitoring well locations classified as FYR monitoring locations (Figure H-5, Table H-7). The purpose of these locations is to verify the reduction of concentrations of COCs and determine if changes may be occurring within groundwater COC plumes associated with TI zones, WMAs and other AOCs. Samples are analyzed for area-specific COCs as required in the 2022 Long-term Groundwater Monitoring Quality Assurance Project Plan, including arsenic (all locations), beryllium, cadmium, copper, lead and zinc. Unlike the POC wells and event-driven wells, the FYR wells in the AOC are not required to comply with the performance standards or cadmium action levels for further monitoring. The main objective of sampling the FYR wells, seeps and springs is to evaluate how the arsenic concentrations are changing in various areas in response to remedial activities. AR samples seven areas covered by the FYR monitoring network. AR also samples springs and seeps in three of these areas.

- Stucky Ridge/Lost Creek (wells, springs and seeps)
- Mount Haggin/Smelter Hill (wells, springs and seeps)
- Smelter Hill/Opportunity Ponds WMA (wells only)
- Old Works WMA (wells only)
- South Opportunity/Yellow Ditch (wells only)
- Blue Lagoon (wells only)
- Dutchman Creek (wells, springs and seeps)

Most of the wells to be monitored on a five-year basis were sampled twice in 2023, during the low water table event in the spring and high flow during the summer. AR samples springs and seeps during the spring when flow is most likely to occur. Many of the arsenic concentrations were low, with concentrations below the MCL of 10 µg/L, and AR evaluates COC trends using 2009 to 2023 COC concentrations in a Mann-Kendall statistical analysis. During this FYR period, there was one exception; one well, A1-BR2, shows significantly higher concentrations than other areas, which is to be expected as this well is located in the Opportunity Ponds/Smelter Hill WMA (Table 15) but is exhibiting a decreasing trend. A similar increase occurred in a spring sample and a seep sample collected from the Mt. Haggin/Smelter Hill TI zone. The trends and localized areas of elevated concentrations are consistent with those of the two previous FYRs.

Table 15: Summary of FYR Sample Locations with the Highest Arsenic Concentrations, 2023

FYR Sample	Sample Type	Location	Dissolved Arsenic Concentration (µg/L)	
			2023	Arsenic Trend Analysis ^a
Stucky Ridge/Lost Creek	Groundwater	FH-2	11 (low) 11.6 (high)	No significant trend
	Spring	SP99-01	17.1	
Mount Haggin/Smelter Hill Area	Groundwater	MW-245S	921 (low) 906 (high)	No significant trend
	Spring	SP97-12	713	
Smelter Hill/Opportunity Ponds WMA	Groundwater	A1-BR2	2,630 (low) 2,710 (high)	Decreasing ^a
Old Works WMA	Groundwater	Not applicable	< 10	No trend ^b
South Opportunity/Yellow Ditch	Groundwater	MW-232	74 (low) 94.8 (high)	No significant trend
Blue Lagoon	Groundwater	Not applicable	< 10	
Dutchman Creek	Groundwater	Not applicable	< 10	No trend ^b
Notes: a. While the well exhibiting the maximum arsenic concentration shows a decreasing trend, two wells are exhibiting an increasing trend but at much lower concentrations and exceeding the arsenic performance standard of 10 µg/L (MW-31 and MW-85). These wells will continue to be monitored to determine if this trend continues. b. No trend could be calculated since wells had results of less than one-half of the performance standard. High = High water table event is in the late June/July time frame. Low = Low water table event is in the March/April/May time frame. µg/L = micrograms per liter				
Source: Draft Final 2023 5-Year Review Groundwater Interpretive Report. Table 4b and Table 4c. Prepared by Pioneer Technical Services, Inc. December 2024.				

Sitewide Long-term Surface Water and Biomonitoring

Surface Water Monitoring

Surface water monitoring is conducted eight times per year, representing different surface water flow conditions, by the U.S. Geological Survey for four major streams in the ARWWS OU, where surface waters exit the OUs (Lost Creek, Warm Springs Creek, Mill Creek and Willow Creek) and for California Creek by the NRDP where surface waters exit the Mount Haggin area (RDU-15). The data collected provide a measurement of how runoff impacts these surface waters post-remediation.

In these streams, the upstream station is used as a remedy construction performance monitoring station, and the downstream station is the POC monitoring station (Figure H-6). Tabulated surface water quality monitoring data in the form of summary tables from the U.S. Geological Survey for Lost Creek, Mill Creek, Warm Springs Creek, and Willow Creek from 2020 through the end of 2023 are provided in Table H-8. The data tables display discharge and both dissolved and total recoverable concentrations for arsenic, cadmium, copper, lead and zinc for the sampling events for each creek. A review of this data shows that only the total recoverable concentrations of copper and lead exceed the aquatic life criteria (Table 16). Copper most frequently exceeded the chronic and acute performance criteria, while lead only exceeded the chronic performance criterion.

The USGS monitoring activities will continue until the remedy is operational and functional. Then, the Site transitions from the Construction Monitoring Period to six years of monitoring under the Compliance Monitoring Period. If a performance standard(s) is exceeded more often than the allowable frequency during the Compliance Monitoring Period, AR will document this in an annual report and request that the performance standard for the COC(s) be replaced with the “contingent replacement standard” as outlined in the SWMP. If COC concentrations are determined to be in compliance for a given POC monitoring station based on the six years of compliance-monitoring data, AR will submit a compliance determination request for the EPA to prepare a close-out report. Once approved, compliance monitoring will conclude, and the EPA five-year review monitoring will begin.

Table 16: Summary of Surface Water COC Concentrations Exceeding Performance Criteria, 2020 to 2023^a

Area	Year	Total Copper		Total Lead	
		Chronic Exceedances	Acute Exceedances	Chronic Exceedances	Acute Exceedances
Lost Creek					
Upstream USGS Gage (12323840)	2020	May-2 June-1	May-2 June-1	June-1 -	- -
	2021	May-1 June-1	May-1 -	- -	- -
	2022	June-1	June-1	-	-
	2023	April-1 May-1	- May-1	- -	- -
Downstream USGS Gage (12323850)	2020	-	-	-	-
	2021	-	-	-	-
	2022	-	-	-	-
	2023	-	-	-	-
Mill Creek					
Upstream USGS Gage (12323670)	2020	May-2 June-1 July-1	May-1 June-1 -	May-1 June-1 -	- - -
	2021	May -1	-	-	-
	2022	June-1	June-1	-	-
	2023	April-1 May-2 June-1	- May-2 -	April-1 May-1 -	- - -
Downstream USGS Gage (12323700)	2020	May-2 June-1 July-1	- June-1 -	- June-1 -	- - -
	2021	June-1	June-1	June-1	-
	2022	June-1	June-1	June-1	-
	2023	April-1 May-2 June-1 July-1	- May-2 June-1 -	- May-1 June-1 -	- - - -
Warm Springs					
Upstream USGS Gage (12323760)	2020	May-1	-	-	-
	2021	-	-	-	-
	2022	-	-	-	-
	2023	-	-	-	-
Downstream USGS Gage (12323770)	2020	May-2 June-1 July-1	May-2 June-1 July-1	May-1 June-1 -	- - -
	2021	May-1 June-1	May-1 June-1	May-1 -	- -
	2022	June-1	June-1	-	-
	2023	May-1 June-1 August-1	May-1 June-1 -	May-1 - -	- - -
Willow Creek					
Upstream USGS Gage (12323710)	2020	April-1 May-2 July-1 August-1	- May-2 - -	April-1 May-2 June-1 -	- - - -
	2021	May-2	-	-	-
	2022	-	-	-	-

Area	Year	Total Copper		Total Lead	
		Chronic Exceedances	Acute Exceedances	Chronic Exceedances	Acute Exceedances
(cont.) Upstream USGS Gage (12323710)	2023	May-2	May-1	May-2	-
Downstream USGS Gage (12323720)	2020	May-2	-	May-1	-
		June-1	-	-	-
	2021	-	-	-	-
	2022	-	-	-	-
	2023	April-1	-	-	-
May-2		May-2	-	-	
June-1		-	-	-	
California Creek					
NRDP location	2023	May-1 June-1	May-1 -	May-1 -	- -
	2024	-	-	-	-
Notes:					
a. The month is followed by the number of exceedances of either the chronic or acute value.					
- Exceedance did not occur					
Sources: 2023 Site Management Plan Report, Revision 1. Table 8.1. Prepared by AR. October 2024.					
California Creek – Surface Water Sampling 2023 Annual Summary Report - RDU 15. Anaconda					
Smelter NPL Site.					
California Creek – Surface Water Sampling 2024 Annual Summary Report - RDU 15. Anaconda					
Smelter NPL Site					

There were no exceedances for arsenic, cadmium or zinc at any of the monitoring locations. Consistent with the previous FYR conclusions, metals concentrations in surface water increase during high flow conditions, with the highest flows causing some exceedances of chronic aquatic standards for copper and lead and acute standards for copper. There is no indication of increases in dissolved metals in surface water as a result of groundwater discharge.

The NRDP conducted eight surface water sampling events in California Creek from May 2023 through November 2023 and in April 2024 through November 2024 to include both base flow and seasonal high flow conditions. The sample location is shown in Figure H-7 and the data for 2023 and 2024 are presented in Tables H-9 and H-10, respectively. NRDP has been monitoring the sample location since 2019. Surface water samples were analyzed for total recoverable and dissolved metals, hardness, total suspended and total dissolved solids, flow and several other physiochemical properties. Data are used to evaluate the success of remediation and restoration work completed in the California Creek drainage.

Prior to 2023, the surface water data in California Creek were not useable as NRDP's contractor's method detection limit was higher than the hardness based DEQ-7 standard. Therefore, long-term trends for this FYR review period could not be evaluated. Table H-9 shows that surface water sample results exceeded the acute and chronic standards for total recoverable copper and slightly exceeded the chronic standard for total recoverable lead during Sampling Event 26 on May 3, 2023. In addition, total recoverable copper during Sampling Event 27 on June 6, 2023, slightly exceeded the chronic standard. The remaining six sampling events were all below standards. The 2023 data demonstrate that reporting limits were improved (i.e., lower limits) with changing laboratories.

The 2024 analytical results for the arsenic, cadmium, copper, lead, and zinc data collected at the California Creek sampling location from April 2024 through November 2024 show that none of the compliance standards were exceeded (Table H-10). These data show improvement since June 2023.

Benthic Macroinvertebrate Monitoring

AR presented the benthic macroinvertebrate monitoring data in a 2023 Data Summary and Evaluation Report and included data from 2021, 2022 and 2023 to assess temporal trends in the effectiveness of the ARWWS OU remedy and overall protectiveness to benthic aquatic life in the four ARWWS OU streams (Willow Creek, Lost Creek, Mill Creek and Warm Springs Creek). The habitat evaluations and benthic macroinvertebrate community data presented in the Data Summary and Evaluation Report represent the third year of biomonitoring for streams within the ARWWS OU. Thus, long-term trends cannot yet be determined. More biomonitoring and surface water sampling will support analysis of benthic macroinvertebrate community trends and potential influences of physical and/or chemical factors. The biomonitoring data consists of:

- Water chemistry parameters such as dissolved oxygen, specific conductance, temperature and pH.
- Benthic sampling to estimate species diversity and density to determine overall biological integrity by calculating biointegrity scores.
- Habitat assessment using physical habitat measurements (e.g., slope, substrate, bank characteristics, instream cover, riparian vegetation, human influences).

Overall, the three-year average biointegrity scores ranged from greater than 90% (“none impaired”) in Willow Creek to 73% to 86% (“slightly impaired”) in Lost Creek, Mill Creek and Warm Springs Creek. Annual variability in biointegrity scores is expected, as many factors can contribute to the increase or decrease in BMI community metrics year to year. As biomonitoring and surface water sampling continues, the additional data will provide a continuing basis for temporal analysis of BMI community trends relative to remedy construction, water quality and physical habitat conditions.

Site Inspection

The site inspection took place on April 22-24, 2025. Participants included the EPA RPM Bryan Lobar, MT DEQ Project Manager Amber Nichols, Ray Vinkey of the Montana NRDP, Benjamin Simpson of CDM Smith, and Hagai Nassau and Kade Cornelius of the EPA FYR support contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedies that have been completed to date. Site inspection participants toured the Site by vehicle and on foot. A completed site inspection checklist for each OU is available in Appendix F. Site photographs are available in Appendix G.

OU-11 Flue Dust

OU-11 consists of a repository that contains consolidated flue dust that had been stored at nine locations. The cover is vegetated and in good condition. Adjacent and downgradient of this WMA is a leachate collection and evaporation system to reduce the volume of leachate that has historically been present. A water treatment facility is also adjacent and downgradient of this WMA. Following approval from the EPA, excavation was done on the cap in this area in search of rare earth minerals. The cap liner has since been patched. The Arbiter and Beryllium repositories are also found within the same complex as this OU. Marmots and elk were reported to be in this area, but no erosion or burrows were observed. Dust suppression equipment was also present.

OU-7 Old Works OU

Several areas of this OU have been remediated with capping of waste areas to support commercial redevelopment. Several properties were observed in reuse, including the Old Works golf course and a Class III landfill. Site inspection participants observed residential condominiums under construction next to the golf course’s clubhouse. Mountain bike or motorbike tracks and a downed fence were observed on the capped Red Sands area next to the golf course along a paved recreational trail. Placement of additional engineering controls is recommended to ensure the integrity of the capped area is maintained. AR plans to install split-rail fencing and signage around the Red Sands area to protect the integrity of the capped area.

OU-16 Community Soils OU

Site inspection participants observed several residential properties where cleanup has been completed, including excavation, backfill and installation of cover. Participants observed remediation occurring at one residential property. Covers were either sod in areas where grass had existed or gravel in driveway areas.

OU-4 ARWWS OU

Site inspection participants visited most of the RDUs in OU-4; various stages of soil remediation and reclamation were observed. Depending on the depth to groundwater and slope of the area, different types of soil treatments were used such as tillage, lime application and soil stripping. Different types of reclamation included final covers that were soil caps and grass vegetation in the large low-lying areas, lime pitting along slopes and planted trees on steep slopes or along creeks. In areas along the railroad, the restoration included stabilization and gravel. Different types of engineered stormwater runoff controls were viewed, including drainage ditches lined with riprap, riprap with grout along the steep slopes and straw wattles along slopes. Site inspection participants also viewed sedimentation basins, experimental wetlands, willow tree staking for bank stabilization, rock check dams, surface water diversion structures, manmade beaver dams and beaver dam analogues, and the groundwater/surface water management system. All areas where soil treatment and reclamation have been completed appear to have well-established vegetative covers. All stormwater controls appeared to be unobstructed and areas of erosion were not observed. Any erosion or sparse vegetation areas are routinely maintained, especially following snow melt. Vandalism was reported on the heavy construction equipment in this area. Motorbike tracks were evident. Several properties have been remediated to support redevelopment. A summary of the RDUs visited included:

- RDU-1 Stuckey Ridge Uplands
- RDU-3 Smelter Hill Uplands
- RDU-4 Anaconda Ponds
- RDU-5 Active Railroad/Blue Lagoon areas
- RDU-6 South Opportunity
- RDU-7 North Opportunity Uplands
- RDU-8 Opportunity Ponds
- RDU-9 Fluvial Tailings
- RDU-10 Warm Springs Creek
- RDU-12 Slag
 - Main Granulated Slag Pile
 - West Stack Slag Pile
 - Anaconda Landfill Slag Pile
- RDU-14 Smelter Hill Facility Areas
 - Smelter Stack
 - Arbiter Repository
 - Beryllium Repository

As part of the FYR site inspection, the EPA visited the Anaconda-Deer Lodge County Superfund Office. The office is staffed with contractors who help residents find requested information related to the Anaconda Co. Smelter Superfund site. The office is stocked with loaner HEPA vacuums and a collection of supplies that residents can use when doing house maintenance projects. The office is located at 186 Landfill Road, Anaconda, Montana 59711.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

The remedies implemented to date to address smelter waste, contaminated soil and dust in all five OUs addressed in this FYR (the Mill Creek OU, Community Soils OU, Flue Dust OU, Old Works OU and ARWWS OU) are effective in eliminating direct exposure and minimizing the migration of contaminants to groundwater and downgradient surface water. Remediation was completed in 2022 at the Mill Creek OU and in 2020 at the Flue Dust OU.

Remedial actions continue for the Community Soils OU, Old Works OU and ARWWS OU through active remediation such as removal, excavation, treatment and capping of smelter waste, soil and dust, as well as the use of best management practices, engineered controls, and institutional controls to minimize contaminant migration. At the ARWWS OU, remedial activities are substantially complete for most of the RDUs except for RDU-2 (Lost Creek Uplands), RDU-3 (Smelter Hill Uplands), RDU-9 (Fluvial Tailings) and RDU-12 (Slag). For the Community Soils OU, AR began the cleanup of residential soils in the late 1980s under removal authority and continues long-term remedial actions started in 2002. During this time, through March 2024, AR has remediated 1,786 properties. The EPA expects the sampling and yard removals to be completed by the end of 2025 for properties where access is granted. The Attic Abatement Program is planned to operate for a 25-year period starting in 2020. At this time, homeowners had until December 31, 2024, to request that their yards be sampled to assess eligibility for cleanup. This last call for yard sampling does not apply to attic sampling that is ongoing. Remedial actions are being prioritized to address contamination in residential soils where young children are living. An institutional controls program to inform and educate residents on ways to reduce exposure to potentially contaminated soils and dust is already in place to minimize exposures. Remediation at the Old Works OU is nearly complete with the remaining work limited to several properties whose owners have not granted access.

The USGS continues to monitor surface water to evaluate the effects of the ongoing ARWWS remedial actions on site streams and tributaries during high flows and storm events. In addition, the Site is covered by the Domestic Well Monitoring Program to determine if the wells meet the water quality performance standards. If the well does not meet standards, well owners are provided with potable water until a treatment system is installed.

During the site inspection, participants noted that generally all remedy components were in good operational condition. No erosion or animal burrows were noted on capped areas. Site participants noted mountain bike or motorbike tracks in various areas of the Site, including in high arsenic areas. There was a downed fence on the capped Red Sands area next to the golf course. Few signs are present at the Site to inform people about what types of recreation are appropriate at various areas. AR will be installing additional engineering controls, such as fencing and signage, to ensure the integrity of the capped area is maintained.

Monitoring for the groundwater remedy indicates that arsenic, cadmium, copper, lead and zinc results were below water quality performance standards in all POC wells during sampling events in this FYR period.

Institutional controls are a component of all OUs at the Site. The site decision documents identify various programs to achieve the institutional controls, including the DPS and the CPMP, which have been and will be implemented by ADLC. The RODs for the Community Soils OU and the ARWWS OU identified ADLC's DPS and CPMP as institutional controls that notify, inform and educate people about reducing their exposure to contamination when soils are disturbed or land use changes. ADLC's Superfund program works closely with the ADLC's Planning Department to guide developers through the DPS process to ensure they understand and adhere to Superfund protocols. In addition, new domestic wells require a permit through ADLC's Environmental Health Department. In conjunction with the well installation permit, applicants are required to obtain an administrative development permit through ADLC's Planning Department. Additional institutional controls include ADLC's

Soil Swap program, which has been expanded to include the option of raised structures for residents who want a vegetable garden and/or play area (e.g., a sandbox) or want to have clean topsoil for existing gardens. Residents who would like information on their properties can contact ADLC.¹⁰ Consistent with the requirements of the Community Soils OU ROD and RODA and the ARWWS OU ROD, a CPMP, an Interior/Exterior Dust Program, a Soil Swap Program and a Blood Lead Monitoring Program have been developed as primary institutional controls for the Site. AR finalized the ICIAP in 2020. It outlines the governmental, proprietary and informational institutional controls, as required by the site decision documents.

The EPA prioritizes remedial actions to address contamination in residential soils where young children are living. For properties that are not remediated, an institutional controls program to inform and educate residents on ways to reduce exposure to potentially contaminated soils and dust is in place. ADLC maintains a database that tracks whether properties have been sampled and/or remediated. If a property has not been sampled previously, ADLC, in consultation with AR, can direct soil and interior dust sampling through the “test by request” program. This program was incorporated into the Site’s 2015 Community Soils OU Remedial Action Work Plan. The EPA works closely with ADLC on the implementation of institutional controls.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:

Changes in Standards and To-Be-Considered Criteria

This FYR completed a review of state and federal standards as identified in decision documents as the ARARs for the surface water and groundwater remedies. The EPA updated the performance standards for surface water in the ARWWS 2020 RODA (Appendix I). These standards have not changed (Table I-2). A review of the groundwater standards shows that the federal drinking water standard for lead has become more stringent than the standard in the 2011 ARWWS RODA (Table I-1). The EPA should assess whether the more stringent lead groundwater standard should be adopted, document the finding in a decision document and, if adopted, ensure ongoing monitoring uses the more stringent value.

Changes in Toxicity and Other Contaminant Characteristics

Soil cleanup goals were also reviewed to determine if they remain valid based on any changes in toxicity criteria for arsenic, copper and lead.

Arsenic: The EPA established arsenic cleanup goals based on land-use type to include residential, commercial/industrial, recreational/agricultural and steep slope/open space. The EPA finalized updates to the toxicity values for inorganic arsenic for both cancer and noncancer adverse health effects in January 2025.¹¹ For comparison, the revised oral cancer slope factor for arsenic is 21 times more potent than the previous value and the noncancer reference dose is more protective by a factor of 5. The new assessment increases the EPA’s confidence in the robust epidemiological data supporting adverse and carcinogenic effects of inorganic arsenic, as it increased the potency of the values and added new adverse endpoints, including diseases of the circulatory system, ischemic heart disease, hypertension, diabetes, bladder cancer and lung cancer. More evaluation may be needed to assess the impact of these changes on the protectiveness of the soil cleanup remedy.

¹⁰ If residents have a project that could disturb soil (such as tree planting or fence or underground sprinkler) or would like to renovate their house or have a garden, they should contact the ADLC Coordinator at (406) 563-7019. To request yard testing or to obtain information about testing, they should call (406) 563-7476.

¹¹ EPA (2025). IRIS Toxicological Review of Inorganic Arsenic.
https://ordspub.epa.gov/ords/eims/eimscomm.getfile?p_download_id=550479.

Copper: The ATSDR completed a toxicological profile that updates the reference dose from the EPA Superfund program's historical Health Effects Assessment Summary Table used in the Site's 1996 human health risk assessment. This copper reference dose value from the 2024 ATSDR assessment (<https://www.atsdr.cdc.gov/toxprofiles/tp132.pdf>) is more protective by a factor of 2. This change in toxicity is not expected to impact the remedy's protectiveness as copper is a surface water and groundwater COC and the remedies are using the most current water quality standards as performance objectives. This slight increase in toxicity is not expected to require soil remediation due to the more-stringent cleanup goals and more widespread remediation based on arsenic.

Lead: Residential lead cleanup levels set for the Site were presented in the 2013 Community Soils RODA. The lead soil action level in residential soils was based on historical EPA guidance that specified that, when quantifying lead exposures in risk assessment, there should be no more than a 5% chance that a child will have a blood lead level above 10 micrograms per deciliter (µg/dL) (EPA 1994, 1998). The sixth sitewide FYR Report noted that the EPA's lead policy was under review and acknowledged that, if the updated target blood lead level were less than 10 µg/dL, then the Site's lead action levels would need to be revisited.

In January 2024, the EPA released a new Integrated Science Assessment for Lead (2024b) that found negative health effects at lower mean blood lead levels than found in previous assessments. The Integrated Science Assessment affirmed lead exposure causes cognitive function decrements in children, externalizing behaviors (i.e., impulsivity and hyperactivity) in children, cardiovascular effects and cardiovascular-related mortality, effects on development, effects on male reproductive function, renal effects, cognitive function decrements in adults, and total mortality. Importantly, no lower threshold was found for those effects. The assessment also found lead exposure is likely to cause conduct disorders, internalizing behaviors, and motor function decrements in children; depression and anxiety in adults; as well as effects on female reproductive function, effects on pregnancy and birth outcomes, immunosuppression, musculoskeletal effects and cancer.

Also in January 2024, the EPA released the Updated Residential Soil Lead Guidance for CERCLA Sites and Resource Conservation and Recovery Act (RCRA) Corrective Action Facilities (EPA 2024a), which updates the residential soil lead Regional Screening Level and Regional Removal Management Level for the CERCLA and RCRA programs and provides additional guidance for setting residential lead preliminary remediation goals and cleanup levels. The 2024 Updated Soil Lead Guidance also recommends that the EPA Regions adjust PRGs and cleanup levels to account for uncertainty, technical limitations (i.e., detection/quantification limits) and site-specific soil lead background.

EPA is in the process of developing an approach to accelerate residential yard cleanups impacted by lead contamination. While this strategy is being developed, ongoing Superfund cleanup work at residential yards will continue and any new and future decisions regarding lead cleanup at residential yards will be made when the new, effective strategy is finalized. Based on this guidance and the anticipated, future strategy, the EPA will evaluate the risks from lead in soils to sensitive populations at the Site. This analysis will include compiling available site data to determine the potential presence and extent of lead-contaminated soils. The process to implement the Updated Lead Guidance will likely involve more planning, data gathering, risk assessment and funding requests. The EPA will coordinate with state partners and request public feedback on proposed cleanup plans before additional cleanups begin, if warranted.

Based on the January 2024 Updated Soil Lead Guidance and the anticipated future strategy, the EPA will evaluate the risks from lead in soils to sensitive populations at the Site. This analysis will include compiling available site data to determine the potential presence and extent of lead-contaminated soils. Lead can pose health risks to sensitive populations, especially children under 7 years old and pregnant or nursing women.

During the implementation of the Updated Soil Lead Guidance, which may take several years to complete, the EPA and MT DEQ will share information on planned activities and results as they become available. In the meantime, and out of an abundance of caution, the EPA recommends that families with children living near the Site have their children tested for lead annually; especially those families with children under six years old and if the soil at the property was not replaced previously. Additionally, the EPA recommends that community members

take some simple actions to limit exposure to potential lead contamination in soils. These actions are discussed further in the institutional controls section of this FYR.

Changes in Risk Assessment Methods

No other changes in risk assessment methods beyond the toxicity value changes discussed above have occurred since the previous FYR.

Changes in Exposure Pathways

Remedies for the Site include institutional controls to prevent, for example, residential development in areas that have been remediated to commercial levels for arsenic. Thus, land use could change, but as long as institutional controls are in place and enforced to ensure these areas are cleaned up to the residential standard, the remedy will remain protective.

During the site inspection, participants noted motorbike or mountain bike tracks on the capped Red Sands area near the Old Work Golf Course. Additionally, participants noted off-road vehicle tracks in the Smelter Hill High Arsenic Area where no public access, or only irregular trespasser access, is assumed in the exposure frequencies. AR is installing fencing and the EPA is working with AR and ADLC on signage to prevent trespassing on the caps and exposed waste material and on high arsenic soils.

Expected Progress Toward Meeting RAOs

The RAOs of preventing direct exposure to soil, dust and waste have been reached for those properties where the soil remedies have been completed. The remedies continue to progress toward meeting the RAOs associated with potential exposures to smelter-contaminated soils, dust and waste through remediating these media through removal, treatment or capping. Once all contaminant sources are remediated, progress can be made on achieving the groundwater and surface water RAOs, which includes minimizing the migration of source contamination to those media and restoring those media to beneficial use where practical.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has become available that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified by the FYR:	
Flue Dust OU, Mill Creek OU	

Issues and Recommendations Identified by the FYR:

OU(s): ARWWS OU	Issue Category: Site Access/Security			
	Issue: Motorbike and ATV riding occurs at various parts of the Site, including high arsenic areas and the Red Sands area.			
	Recommendation: AR should complete the access controls identified in the ARWWS ROD and the 2022 Final Waste Management Area (WMA) and High Arsenic Area (HAA) Access Control Plan Revision 1. The EPA will work with AR and the county to install signs informing residents about what types of public access/recreation are appropriate for various areas of the Site.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	9/25/2027

OU(s): ARWWS OU, Old Works OU, Community Soil OU	Issue Category: Other – Toxicity Changes			
	Issue: Since the previous FYR, toxicity values for arsenic have become more stringent and the EPA's updated lead cleanup policy for residential soil cleanup requires additional risk assessment to determine if additional lead cleanup is warranted for residential areas.			
	Recommendation: Evaluate the impact of the arsenic, copper, and lead toxicity value changes to assess the protectiveness of the current soil cleanup goal and determine if additional cleanup is warranted.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
Yes	Yes	EPA	EPA/State	9/25/2028

OU(s): ARWWS OU	Issue Category: Remedy Performance			
	Issue: A review of the groundwater standards shows that the federal drinking water standard for lead has become more stringent than the standard in the 2011 ARWWS RODA.			
	Recommendation: Conduct risk analysis or risk assessment to determine whether the more stringent lead groundwater standard should be adopted, document the finding in a decision document and ensure ongoing monitoring uses the more stringent value.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	9/25/2028

OTHER FINDINGS

One additional recommendation was identified during the FYR. This recommendation does not affect current and/or future protectiveness.

- An FYR interviewee reported that the site document repository is out of date. The EPA will have discussions with the PRP and field office to improve the central database for records repository. The EPA will evaluate the current setup and methods to ensure the repository is effective and current.
- Some FYR interviewees suggested a need for additional information and outreach. EPA and MT DEQ are considering these concerns and how best to address them.
- Data collected in California Creek does not have an EPA-approved QAPP. The EPA will work with NRDP on development of appropriate quality assurance documentation.

VII. PROTECTIVENESS STATEMENTS

Protectiveness Statement		
<i>Operable Unit:</i> ARWWS OU	<i>Protectiveness Determination:</i> Protectiveness Deferred	<i>Planned Addendum Completion Date:</i> 9/25/2028
<i>Protectiveness Statement:</i> A protectiveness determination of the remedy at the ARWWS OU cannot be made at this time until further information is obtained. Further information will be obtained by taking the following action: - Evaluate the impact of the arsenic and lead toxicity value changes to assess the protectiveness of the current soil cleanup goal and determine whether additional response actions are necessary for the remedy to remain protective. It is expected that these actions will take about three years to complete, at which time a protectiveness determination will be made. In addition to the recommendations identified above, this FYR also identified the following recommendations related to long-term protectiveness: - Work with the county to install signs informing residents about what types of recreation are appropriate for various areas of the Site. In addition, access controls should be implemented at the Red Sands area of OU7 the high arsenic area of the ARWWS OU. - Conduct risk analysis or risk assessment to determine whether the more stringent lead groundwater standard should be adopted, document the finding in a decision document and ensure ongoing monitoring uses the more stringent value.		

Protectiveness Statement		
<i>Operable Unit:</i> Old Works OU	<i>Protectiveness Determination:</i> Protectiveness Deferred	<i>Planned Addendum Completion Date:</i> 9/25/2028
<i>Protectiveness Statement:</i> A protectiveness determination of the remedy at the Old Works OU cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions: Evaluate the impact of the arsenic toxicity value changes to assess the protectiveness of the current soil cleanup goal and determine whether additional response actions are necessary for the remedy to remain protective. It is expected that these actions will take about three years to complete, at which time a protectiveness determination will be made.		

Protectiveness Statement		
<i>Operable Unit:</i> Flue Dust OU	<i>Protectiveness Determination:</i> Protective	
<i>Protectiveness Statement:</i> The remedy is protective of human health and the environment.		

Protectiveness Statement	
<i>Operable Unit:</i> Mill Creek OU	<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy is protective of human health and the environment.	

Protectiveness Statement		
<i>Operable Unit:</i> Community Soils OU	<i>Protectiveness Determination:</i> Protectiveness Deferred	<i>Planned Addendum Completion Date:</i> 9/25/2028
<i>Protectiveness Statement:</i> A protectiveness determination of the remedy at the Community Soils OU cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions: • Evaluate the impact of the arsenic toxicity value changes to assess the protectiveness of the current soil cleanup goal and whether additional response actions are necessary for the remedy to remain protective. • Apply the 2024 Updated Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities and using the lowered screening levels to determine whether further investigation is warranted and whether additional response actions are necessary for the remedy to remain protective. It is expected that these actions will take about three years to complete, at which time a protectiveness determination will be made.		

VIII. NEXT REVIEW

The next FYR Report for the Anaconda Co. Smelter Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Decision Documents and FYR Reports

Explanation of Significant Differences. Community Soils Operable Unit. Anaconda Smelter NPL Site. May 2017.

Explanation of Significant Differences. Community Soils Operable Unit. Anaconda Smelter NPL Site. June 2020.

Explanation of Significant Differences: Old Works/East Anaconda Development Area Site. Anaconda Co. Smelter. EPA ID: MTD093291656. EPA Region 8. November 1995.

Explanation of Significant Differences. Old Works/East Anaconda Development Area Site. Anaconda Smelter NPL Site. June 2020.

Fifth FYR - Anaconda Smelter Superfund Site. Prepared by EPA Region 8. Helena, Montana. September 2015.

Record of Decision Amendment, Anaconda Regional Water, Waste and Soils Operable Unit OU, Anaconda Smelter NPL Site, Anaconda, Montana. EPA Region 8 and MT DEQ. June 2020.

Record of Decision Amendment, Anaconda Regional Water, Waste and Soils Operable Unit OU, Anaconda Smelter NPL Site, Anaconda, Montana. EPA Region 8 and MT DEQ. September 2011.

Record of Decision Amendment: Anaconda Smelter/Mill Creek, MT. EPA Region 8. January 1988.

Record of Decision Amendment, Community Soils Operable Unit, Anaconda Smelter NPL Site, Anaconda, Montana. EPA Region 8 and MT DEQ. September 2013.

Record of Decision: Anaconda Smelter/Mill Creek, MT. EPA Region 8. October 1987.

Record of Decision. Anaconda Company Smelter. EPA ID: MTD093291656. EPA Region 8. September 1991.

Record of Decision, Anaconda Regional Water, Waste and Soils Operable Unit, Anaconda Smelter NPL Site, Anaconda, Montana. EPA Region 8 and MT DEQ. September 1998.

Record of Decision, Community Soils Operable Unit, Anaconda Smelter NPL Site, Anaconda, MT. EPA Region 8 and MT DEQ. October 1996.

Record of Decision: Old Works/East Anaconda Development Area Site, Anaconda, MT. EPA Region 8. July 1994.

Sixth FYR - Anaconda Smelter Superfund Site, Deer Lodge County, Montana. Prepared by EPA Region 8. Denver, Colorado. September 2020.

Site Management Plan (SMP)

2022 Site Management Plan Report. Anaconda Smelter NPL Site, Anaconda, Montana. November 2023. SEMS# 08- 2224206

2023 Site Management Plan Report – Revision 1. Anaconda Smelter NPL Site, Anaconda, Montana. October 2024. SEMS# 08-2224259

Sitewide Documents

2020 Partial Consent Decree Anaconda Smelter NPL Site Civil Action CV-89-039-BU-SEH United States of America & State of Montana Plaintiffs v. Atlantic Richfield Company Defendant United States District Court Montana Butte Division; signed, filed, ordered January 28, 2021. EPA. SEMS # 08-100010737.

2023 5-Year Review Groundwater Interpretive Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. December 16, 2024. SEMS#

2023 Domestic Well Monitoring Data Summary Report (DSR). Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 27, 2024. SEMS# 08-2224252

2023 Engineered Controls Inspection and Maintenance (I&M) Report. Draft Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 26, 2024. SEMS#08-2224251

2023 Long-Term Groundwater Monitoring Data Summary Report (DSR). Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 21, 2024. SEMS# 08- 2224248

2023 Long-Term Inspection and Maintenance Annual Report – Text, Tables, Figures and Drawings. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area and ARWWS OUs, Anaconda, Montana. Prepared by Woodard & Curran, Inc. September 2024. SEMS# 08- 2224258

2023 Short-Term Vegetation Performance Monitoring Annual Report – Text, Tables, Figures and Drawings. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area and ARWWS OUs, Anaconda, Montana. Prepared by Woodard & Curran, Inc. December 2024. SEMS# 08-2224123

AR CD Registry 100-12-934 Final Waste Management Area (WMA) and High Arsenic Area (HAA) Access Control Plan Revision 1; attached transmittal letter and response to Agency Mar. 23, 2022 comments. Atlantic Richfield. May 3, 2022. SEMS# 08-1970901.

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Consent Decree and Appendices Anaconda Smelter NPL Site Civil Action CV89-039-BU-SEH United States of America and State of Montana Plaintiffs v. Atlantic Richfield Company Defendant In United States District Court Montana Butte Division; signed and filed December 16, 2022. EPA. SEMS # 08-1970948.

Domestic Well Monitoring Plan – Revision 1. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. April 21, 2020. SEMS# 08-1970836

Final Baseline Ecological Risk Assessment Volume 1 Text, Tables and Figures (Vol. 1 of 2), Remedial Planning Activities at Selected Uncontrolled Hazardous Substances Disposal Sites in a Zone for EPA Regions 6, 7 and 8. EPA Contract (No.) 68-W5-0022. EPA. October 1, 1997. SEMS # 08-1097952.

Final Baseline Human Health Risk Assessment Anaconda Smelter NPL Site Anaconda, Montana. EPA. January 24, 1996. SEMS # 08-1098604.

Final Cultural and Historic Mitigation and Preservation Plan. Anaconda Smelter NPL Site, Anaconda, Montana. August 2022. SEMS# 08- 1970900

Final Vegetation Management Plan (Revision 2). Anaconda Smelter NPL Site, ARWWS and Old Works/East Anaconda Development Area OUs, Anaconda, Montana. February 2022. SEMS #08-100012075

Groundwater Management Plan. Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area and ARWWS OUs, Anaconda, Montana. January 2021. SEMS #08-1970837

Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children. EPA/540/R-93/081. EPA Office of Emergency and Remedial Response, Washington, D.C. EPA. 1994.

Institutional Controls Implementation and Assurance Plan (ICIAP). Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Atlantic Richfield. June 2020. SEMS# 08-1970899

Integrated Science Assessment for Lead. EPA/600/R-23/375 EPA Office of Research and Development, Washington, D.C. EPA. 2024. SEMS# 11-100003514

Long-Term Groundwater Monitoring Program Quality Assurance Project Plan (QAPP) – Revision 2. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. September 15, 2022. SEMS# 08-100012082

Surface Water Management Plan. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. August 2020. SEMS# 08-1970835

Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. EPA Office of Land and Emergency Management, Washington, D.C. EPA. 2024. SEMS# 11-100003435

ARWWS OU Documents

2023 Anaconda Smelter Development Repository Operation and Management (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. February 29, 2024. SEMS# 08-2224116

2023 Benthic Macroinvertebrate (BMI) Monitoring Data Summary and Evaluation Report (DSER). Draft Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. and Benchmark Environmental, LLC, June 25, 2024. SEMS# 08-2224250

2023 Category 3 Areas; 5-Year Review Summary Report. Draft Final. Anaconda Smelter NPL Site, Anaconda, Montana. February 2024. SEMS# 08-1973920

Active Railroad Superfund Operations and Maintenance (O&M) Plan. Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. May 10, 2021.

Anaconda Smelter Development Repository Operation and Management (O&M) Plan – Revision 2. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. February 27, 2024. SEMS# 08-2224205

Dutchman

Dutchman Wetlands Site 2020 Operation, Monitoring and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. April 20, 2021. SEMS# 08-2224057

Dutchman Wetlands Site 2021 Operation, Monitoring and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. June 2022. SEMS# 08-2224107

Dutchman Wetlands Site 2022 Operation, Monitoring and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. May 26, 2023.

RDU-1

RDU-1 – Stucky Ridge Uplands – 2023 RA Construction Completion Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard & Curran. April 2024.

Request for Change (RFC) No. RDU-1-SWC-2024-01. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. July 1, 2024.

RDU-2

RDU-2 – Lost Creek Uplands – 2023 RA Construction Completion Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard & Curran. May 2024.

Request for Change (RFC) No. RDU2-SWC-2023-01. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. July 18, 2024.

RDU-3

2023 Smelter Hill Repository Complex (SHRC) Operation, Monitoring, and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 29, 2023.

Remedial Design Unit (RDU) 3 Lapilli/Lost Horse Sediment Pond Construction Completion Report (CCR). Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 28, 2023.

RDU-3 – Smelter Hill Uplands 2022 RA Construction Completion Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard & Curran. June 2023.

RDU-3 – Smelter Hill Uplands – 2023 RA Construction Completion Report. Draft Final Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard & Curran. October 2024.

Request for Change (RFC) No. RDU30SWC-2022-01. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. April 11, 2022.

RDU-5

Active Railroad Superfund Operations and Maintenance (O&M) Plan. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. May 10, 2021.

Active Railroad Superfund 2021 Annual Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Butte, Anaconda & Pacific Railway. April 20, 2022.

Active Railroad Superfund 2022 Annual Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Butte, Anaconda & Pacific Railway. March 17, 2023.

Remedial Design Unit (RDU) 5 East Anaconda Yard Remedial Action (RA) Construction Completion Report (CCR). Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. March 13, 2023.

Remedial Design Unit (RDU) 5 Mill Creek and Willow Creek Railroad Trestle Crossings Removal and Replacement Construction Completion Report (CCR). Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. February 23, 2021.

RDU-6

Remaining Portions of RDU-6 2018 – 2020 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. September 2020.

Remaining Portions of RDU-6 2020 – 2022 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard and Curran. March 2023.

RDU-7

Anaconda – Deer Lodge County Airport RFM 2019 RA Maintenance Summary. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. July 2020.

RDU-8

2022 Anaconda Smelter Development Repositories Operation and Management (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. February 8, 2023.

Opportunity Ponds Remedial Design Unit (RDU) 8 2022 Groundwater and Surface Water Management System Operation, Maintenance, and Monitoring (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 28, 2023.

Opportunity Ponds Remedial Design Unit (RDU) 8 2023 Groundwater and Surface Water Management System Operation, Maintenance, and Monitoring (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 20, 2024.

Remedial Design Unit (RDU) 8 Anaconda Smelter Development Repository Attic Dust Disposal Area Work Plan. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 5, 2023.

Remedial Design Unit (RDU) 8 – Opportunity Ponds 2023 Vegetation Maintenance Summary Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 18, 2024.

Remedial Design Unit 8 – Opportunity Ponds 2024 Groundwater and Surface Water Management System Operation, Maintenance, and Monitoring Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 27, 2025.

Remedial Design Unit (RDU) 8 – Opportunity Ponds Vegetation Request for Maintenance (RFM) No. RDU8-2023-01. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. September 1, 2023.

RDU-9

RDU-9 – Fluvial Tailings 2018 – 2020 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. April 2021.

RDU-9 – Fluvial Tailings 2021 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. February 2022.

RDU-9 – Fluvial Tailings 2021 – 2022 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard and Curran. March 2023.

RDU-10

RDU-10 – Warm Springs Creek 2016 – 2018 RA Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. April 2020.

Warm Springs Creek 2020 Riparian Vegetation and Bank Stability Monitoring Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. March 2021.

Warm Springs Creek 2021 Riparian Vegetation and Bank Stability Monitoring Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. February 2022.

Warm Springs Creek 2022 Riparian Vegetation and Bank Stability Monitoring Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by W&C, Inc. February 2023.

Warm Springs Creek 2023 Riparian Vegetation and Bank Stability Monitoring Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Woodard & Curran, Inc. July 2024.

RDU-12

Main Granulated Slag 2019 Data Summary Report (DSR) – Slag Pile Characterization and Off-Site Migration Evaluation Study. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. June 24, 2020.

RDU-12 - Main Granulated Slag Pile and West Stack Slag Pile 2020 Annual Slag Operations Reports. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. February 9, 2021.

RDU-12 – Main Granulated Slag Pile and West Stack Slag Pile 2021 Annual Slag Operations Reports. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. March 25, 2022.

RDU-12 – Main Granulated Slag and West Stack Slag Pile 2023 Annual Slag Operations Reports. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. February 13, 2024.

RDU-12 – West Stack Slag Pile 2022 Annual Operations Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. January 20, 2023.

Remedial Action Completion Report for Arbiter Operable Unit-12 and Beryllium Operable Unit-9. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. August 2020.

Request for Maintenance No. 2 – RDU-12 Main Granulated Slag Partial Cover Installation. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. August 2, 2024.

Slag Management Plan, Remedial Design Unit-12 – Slag, Anaconda Landfill Slag. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. August 2022.

Slag Management Plan Remedial Design Unit-12 – Slag Main Granulated Slag Site. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. August 2020.

Slag Management Plan Remedial Design Unit-12 – Slag West Stack Slag Site. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. August 2020.

RDU-14

2020 Smelter Hill Repository Complex (SHRC) Operation, Monitoring, and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 28, 2021.

2021 Smelter Hill Repository Complex (SHRC) Operation, Monitoring, and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 24, 2022.

2022 Smelter Hill Repository Complex (SHRC) Operation, Monitoring, and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 29, 2023.

2023 Smelter Hill Repository Complex (SHRC) Operation, Monitoring, and Maintenance (OM&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 26, 2024.

Phase VI Smelter Hill Borrow Investigation Data Summary Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. January 26, 2024.

Phase VI Smelter Hill Borrow Investigation Data Summary Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. April 10, 2024.

Phase VI Smelter Hill Borrow Investigation Sampling and Analysis Plan. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. July 31, 2023.

Smelter Hill Facilities Area Remedial Design Unit (RDU) 14 Engineered Cover Installation Remedial Action (RA) Construction Completion Report (CCR). Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 2, 2021.

Smelter Hill Repository Complex (SHRC) Geyser Gulch Aquifer Test Work Plan. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 6, 2024.

Smelter Hill Repository Complex (SHRC) Long-Term Leachate Management System Shakedown Summary Report. Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. July 10, 2020.

Smelter Hill Repository Complex (SHRC) Long-Term Operation, Monitoring, and Maintenance (OM&M) Plan. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. July 10, 2020.

Request for Change (RFC) No. SHRC-2024-01 – SHRC Geyser Gulch Aquifer Test. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. March 6, 2024.

Request for Maintenance (RFM) No. RDU14-2023-01 – RDU 14 Walker Gulch Storm Water Modifications. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. September 1, 2023.

RDU-15

Mt. Haggin Remedial Design Unit 15 Remedial Action Complete. Anaconda Smelter NPL Site, ARWWS OU4, Anaconda, Montana. April 4, 2023.

Mount Haggin Wildlife Management Area Erosion Control and Restoration Project 2019 – 2020 Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. July 2021.

Mount Haggin Wildlife Management Area Sediment Control and Restoration Project 2018 Construction Completion Report. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 2021.

Remedial Design Unit 15 Mount Haggins Uplands Remedial Action Report. Anaconda Smelter NPL Site, ARWWS OU4, Anaconda, Montana.

California Creek – Surface Water Sampling 2023 Annual Summary Report – RDU-15. Anaconda Smelter NPL Site. ARWWS OU. Prepared by: Pioneer Technical Services, Inc. February 2024.

California Creek – Surface Water Sampling 2024 Annual Summary Report – RDU-15. Anaconda Smelter NPL Site. ARWWS OU. Prepared by: Pioneer Technical Services, Inc. January 2025.

West Galen

West Galen RFM 2019 Remedial Action Maintenance Summary. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, Montana. Prepared by TREC, Inc. August 2020.

Community Soils OU

2019/2020 Community Soils Operable Unit (CS OU) Attic Dust Remedial Action (RA) Construction Completion Report (CCR). Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. April 30, 2021.

2020 Data Summary Report (DSR). Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by TREC, Inc. December 6, 2022.

2021 Community Soils Operable Unit (CS OU) Residential Soils Remedial Action (RA) Construction Completion Report (CCR). Draft Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 17, 2023.

2022 Community Soils Operable Unit (CS OU) Residential Soils Remedial Action (RA) Construction Completion Report (CCR). Draft Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 17, 2023.

2022 Data Summary Report (DSR). Draft Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Woodard and Curran. July 18, 2023.

2022-2023 Annual Report for the Anaconda-Deer Lodge County Attic Abatement Program. Draft Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Water and Environmental Technologies, Inc. August 30, 2023.

2023 Community Soils Operable Unit Residential Soils Remedial Action Construction Completion Report. Draft Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. March 1, 2024.

2023-2024 Annual Report for the Anaconda-Deer Lodge County Attic Abatement Program. Draft Final. Anaconda Smelter NPL Site, Anaconda, Montana. Prepared by Water and Environmental Technologies, Inc. August 30, 2024.

Anaconda Smelter NPL Site, Community Soils Operable Unit, Draft 2022 Data Summary Report (DSR) Approval Letter. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. EPA Region 8. August 25, 2023.

Community Soils Operable Unit (CS OU) Remedial Action Work Plan/Final Design Report (RAWP/FDR). Final. Anaconda Smelter NPL Site, Community Soils OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 2020.

Anaconda-Deer Lodge County Attic Abatement Program Draft Final 2023-2024 Annual Report. Prepared by Water and Environmental Technologies, Inc. August 30, 2023.

Flue Dust OU

Endangerment Assessment Support for the Anaconda Smelter Site; Final Draft Baseline Risk Assessment for the Flue Dust Operable Unit (OU). EPA. November 15, 1990. SEMS ID 08-1155894.

Remedial Action Completion Report. Flue Dust Operable Unit 11. Anaconda Smelter NPL Site, Anaconda, Montana. August 2020.

Old Works OU

Baseline Risk Assessment for the Old Works/East Anaconda Development Area (OW/EADA). EPA. August 19, 1993. SEMS ID 08-1227552.

Old Works Golf Course 2020 Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. June 7, 2021. SEMS# 08-2224062

Old Works Golf Course 2021 Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, ARWWS OU, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. May 31, 2022. SEMS# 08-2224062

Old Works Golf Course 2022 Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area OU, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. June 23, 2023.

Old Works Golf Course 2023 Operations and Maintenance (O&M) Report. Draft Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area Operable Unit, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. June 4, 2024. SEMS# 08-2224223

Old Works Golf Course Area Remedial Action Completion Letter. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area OU, Anaconda, MT. EPA Region 8. July 15, 2022.

Old Works Golf Course Remedial Action (RA) Completion Report. Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area OU, Anaconda, MT. Prepared by Pioneer Technical Services, Inc. June 17, 2022.

Old Works – Industrial Area (IA) Remedial Action Work Plan/Final Design Report (RAWP/FDR), Volume IV, Addendum D, Report III – Individual Site Work Plan (ISWP) McDowell Parcel (Lot No. 4 of 6 Lot Minor Subdivision; Plat No. 179-A). Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area OU, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 5, 2023.

Old Works – Industrial Area (IA) Remedial Action Work Plan/Final Design Report (RAWP/FDR), Volume IV, Addendum D, Report III – McDowell Parcel (Lot 4 of 6 Lot Minor Subdivision; Plat No.179-A) Remedial Action (RA) Construction Completion Report (CCR). Draft Final. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area Operable Unit, Anaconda, Montana. Prepared by Pioneer Technical Services, Inc. June 24, 2024. SEMS# 08-2224249

Request for Maintenance (RFM) No. OWGC-2023-01. Anaconda Smelter NPL Site, Old Works/East Anaconda Development Area OU, Anaconda, Montana. July 20, 2023. SEMS #08-2224907

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

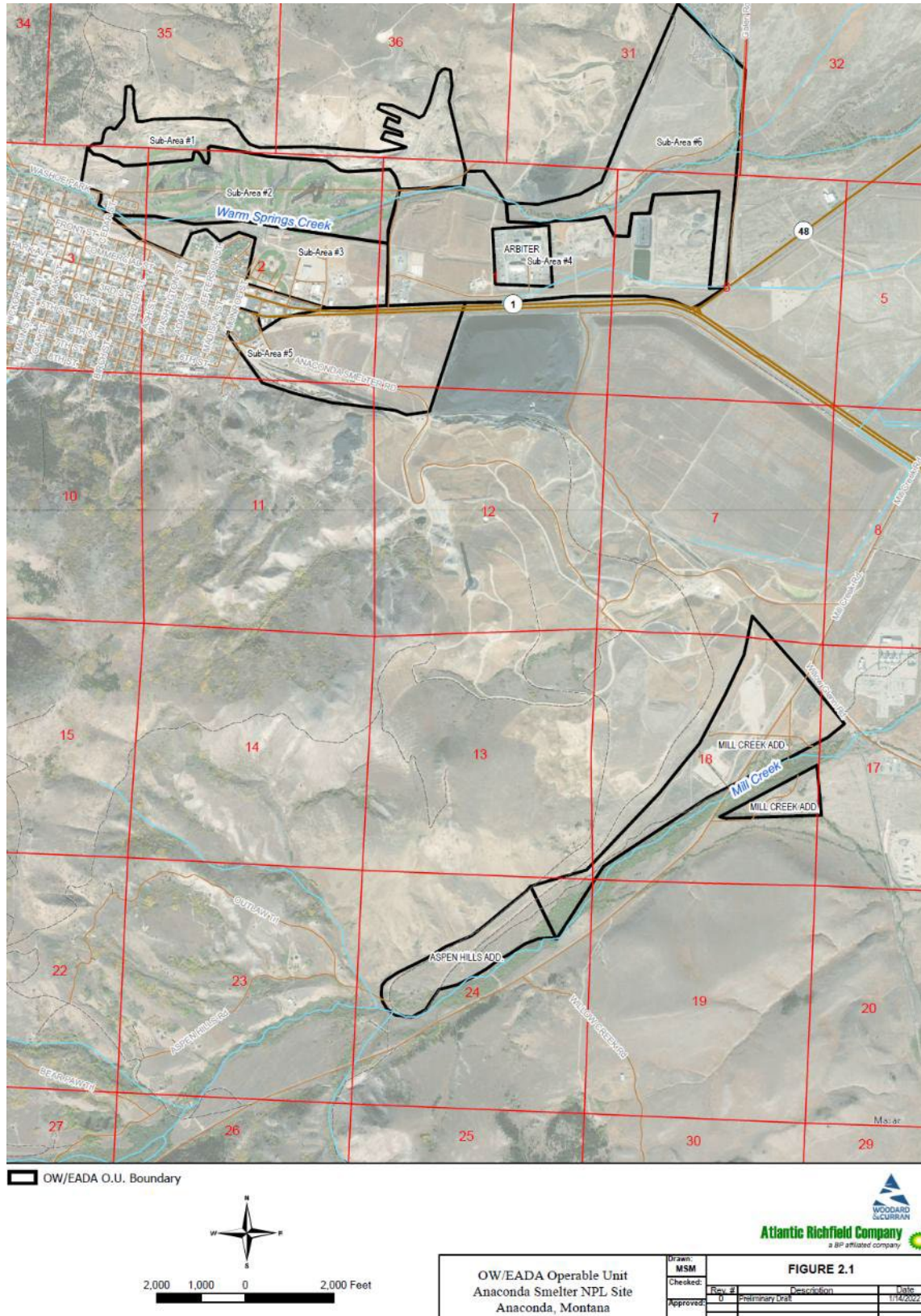
Event	Date
Smelting operations began in Anaconda	1884 - 1980
Smelter shutdown/demolition	1980 - 1986
The EPA proposed the Site for listing on NPL	1982
The EPA finalized the Site's listing on NPL	1983
The EPA and Federal Emergency Management Agency relocated Mill Creek residents and completed site demolition	1986 - 1988
The EPA signed the Mill Creek OU ROD	October 1987
The EPA signed a RODA for the Mill Creek OU	January 6, 1988
The PRP completed the Mill Creek final remedial action	1988
The EPA signed the Flue Dust OU ROD	September 1991
The PRP completed the Anaconda Yards time-critical removal action for residential soil removal	1991 - 1992
The PRP completed flue dust treatment and disposal	1992
The PRP completed the Old Works OU time-critical removal action soil stabilization	1992
The PRP completed the Beryllium non-time-critical removal action (former OU-9)	1992 - 1996
The PRP completed the Arbiter non-time-critical removal action (former OU-12)	1994
The PRP began the Stucky Ridge remedial action	1994
The EPA signed the Site's first FYR Report	1994
The EPA signed the Old Works OU ROD	March 1994
The PRP completed golf course construction in the Old Works area	1994 - 1997
The EPA signed the Old Works OU ESD	November 6, 1995
The EPA signed the Community Soils OU ROD	September 1996
The PRP completed the Red Sands remedial action	1996 - 1998
The Aspen Hills and East Anaconda Yards remedial action began	1996
The EPA signed the ARWWS OU ROD	September 1998
The PRP completed Old Works OU Drag Strip remedial action	1998 - 1999
The EPA signed the Site's second FYR Report	1999
The PRP began implementation of stormwater controls in the ARWWS OU	2000
The PRP began Smelter Hill remedial action in Nazer Gulch as part of RDU-3	2001
The PRP completed the Anaconda Ponds (RDU-4) remedial action	2002 - 2004
The PRP completed the Stucky Ridge Area 4 remedial action	2002
The PRP completed the Aspen Hills/Loop Track remedial action at the Old Works OU	2002
The PRP completed the Triangle Waste remedial action	2002
The PRP began the Opportunity Ponds reclamation remedial action	2002
The PRP began removal of contaminated community soils	2002
The PRP completed the Cashman Concentrate remedial action	2003
The PRP began the West Galen remedial action	2005
The EPA signed the Site's third FYR Report	2005
The PRP began reclamation of areas next to railroad	2006
The PRP began the South Opportunity (RDU-6) remedial action	2006
The PRP completed the A1 Lumber Area remedial action	2009
The PRP completed the Railroad Right of Way (RDU-5) West Valley Railroad Line removal	2009
The PRP substantially completed the North Opportunity (RDU-7) remedial action	2009 - 2010
The EPA signed the Site's fourth FYR Report	2010
The PRP began the Fluvial Tailings (RDU-9) remedial action	2010
The PRP completed ADLC Property remedial action in the Old Works OU	2010
The PRP completed Phase 1 of residential property remediation	2010
The EPA signed the ARWWS OU RODA	2011
The PRP began the Smelter Hill Facilities (RDU-14) remedial action	2011

Event	Date
The PRP completed remedial action for portion of Yellow Ditch (part of RDU-9)	2011
The PRP completed the Powell Vista Area remedial action	2011
The PRP completed remedial action on property adjacent to railroad property in Anaconda as part of the Community Soils OU	2011
The PRP completed Anaconda Local Development Corporation property remedial action as part of the Old Works OU	2011 - 2012
The PRP completed Arbiter Industrial Complex properties remedial action as part of the Old Works OU	2005 - 2012
The PRP completed the Lower Willow Creek remedial action (part of RDU-9)	2012 - 2013
The PRP finalized the Anaconda Site VMP	2013
The PRP completed remedial actions at multiple properties in Old Works OU	2012 - 2014
The PRP completed waste removal and reclamation at the Active Railroad/Blue Lagoon (RDU-5), including the following areas: Mill and Willow Creek trestles, Blue Lagoon, Son of Blue Lagoon, Mill Creek Flood Irrigation Area, a portion of the Yellow Ditch, a portion of the East Anaconda Yards, railroad beds in the main portion of the town of Anaconda, West Anaconda Yards, West Valley line and West Valley Historic Railroad Spurs	2010 - 2014
The EPA signed the Community Soils OU RODA	2013
The PRP began the Launderville Area remedial action	2014
The PRP substantially completed the Opportunity Ponds (RDU-8) remedial action	2004 - 2014
The EPA signed the Site's fifth FYR Report	September 25, 2015
The PRP and ADLC completed the draft Institutional Controls Plan	2017
The EPA signed the Community Soils OU ESD	June 19, 2017
The PRP completed the Final Surface Water TI Evaluation Report	2017
The PRP completed construction of the leachate collection and evaporation system at Flue Dust OU	2019
The EPA issued the Proposed Plan to amend the 1998 ROD and 2011 RODA for the ARWWS OU to expand surface water remedy	2019
Draft Remedy Coordination, Funding, and Settlement Agreement by and between ADLC and AR released for public comment	February 20, 2020
AR issued Construction Completion Report for remaining portions of RDU-10 – Warm Springs Creek	April 2020
The EPA signed the RODA for the ARWWS OU	June 12, 2020
The EPA signed the ESD for the Old Works OU	June 12, 2020
The EPA approved the ICIAP	June 12, 2020
The EPA signed the remedial action completion reports for Beryllium OU, Flue Dust OU and Arbiter OU	July 23, 2020
AR issued the Construction Completion Report for the remaining portions of RDU-6 The EPA signed the Site's sixth FYR Report	September 2020
The United States District Court in Butte entered a Consent Decree for the Site requiring AR to construct enhanced stormwater controls. Remediate two slag piles, and assure operations and maintenance of the Old Works Golf Course. (Partial Consent Decree?)	October 23, 2020
AR issued the Construction Completion Report for RDU-5 Mill Creek and the Willow Creek railroad trestle crossings removal and replacement	February 23, 2021
AR began another phase of soil and attic dust remediation in the Community Soils OU	March 2021
The EPA certified the Mill Creek OU remedial action as complete	July 15, 2022
The United States District Court in Butte entered a Consent Decree for the Site requiring AR to finish remediating residential yards in towns of Anaconda and Opportunity, clean up soils in upland areas above Anaconda, and eventually effect closure of remaining slag piles at the Site. (Consent Decree)	December 16, 2022
The EPA finalized the amendment to 1994 Prospective Purchaser Agreement with the state of Montana (through MT DEQ), and with Anaconda-Deer Lodge County and Old Works Golf Course Authority Inc., as purchasers; agreement provides certain covenants to purchasers in exchange for implementing certain work at the Site	December 19, 2022
AR issued the Construction Completion Report for portion of RDU-9 – Fluvial Tailings	March 2023
The EPA approved the Remedial Action Completion report for Mt. Haggin RDU-15	April 2023

Event	Date
The EPA deleted the Mill Creek OU from NPL	August 21, 2023
The EPA updated the Site's Community Involvement Plan	December 2023
The PRP issued the Construction Completion Report for RDU-1 Stucky Ridge	April 2024
The PRP issued the Construction Completion Report for portion of RDU-2 – Lost Creek Uplands	May 2024
The EPA established “last call” for Community Soils OU residential and commercial/industrial soil sampling work	August 1, 2024
The PRP issued the Construction Completion Report for portion of RDU 3 – Smelter Hill Uplands	October 2024
Last call issued by the EPA for residential and commercial/industrial soil yard sampling	December 31, 2024

APPENDIX C – SITE MAPS

Figure C-1: Old Works OU and Mill Creek OU



Source: 2023 Site Management Plan Report, Revision 1. October 2024.

Figure C-2: Flue Dust OU

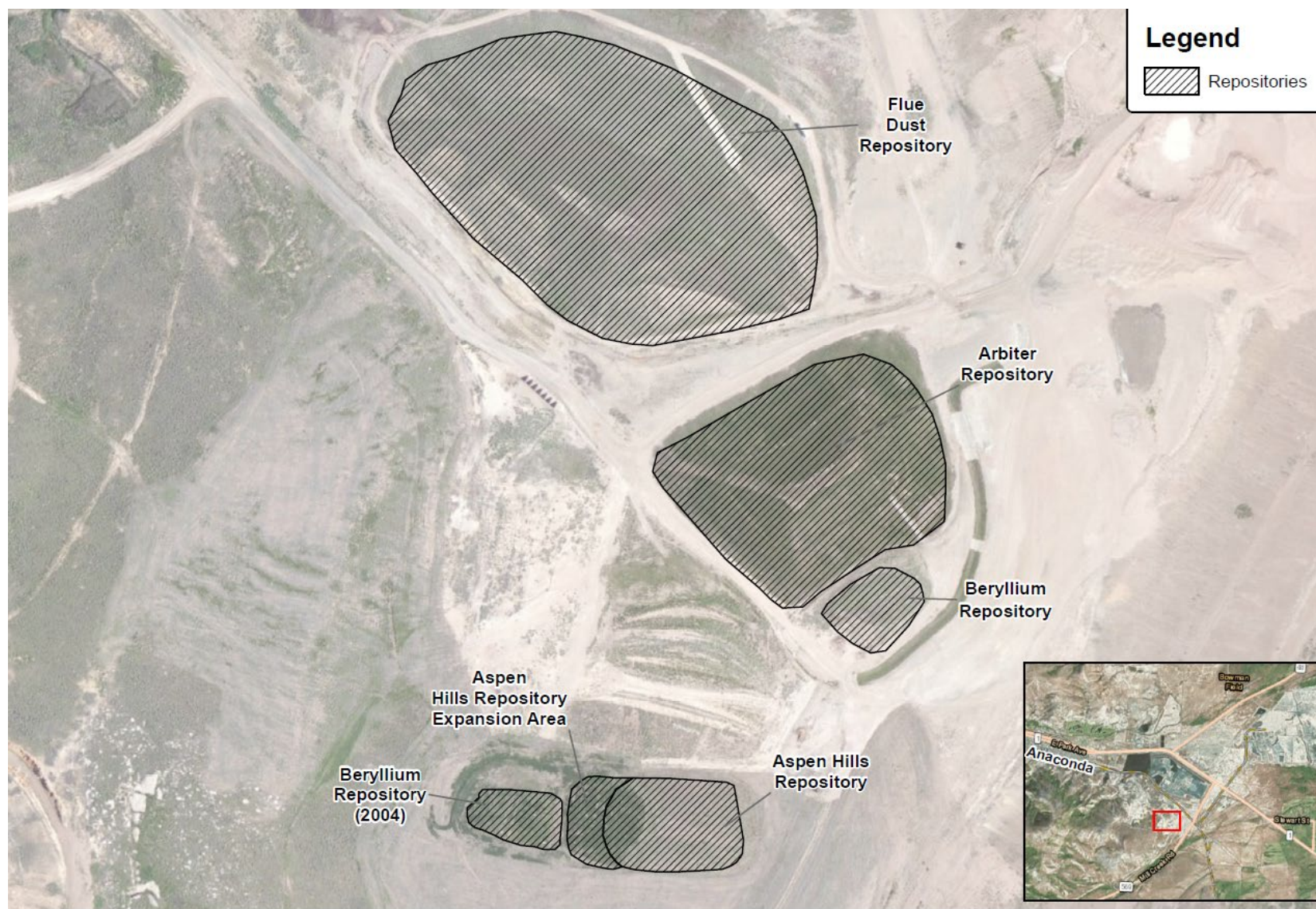
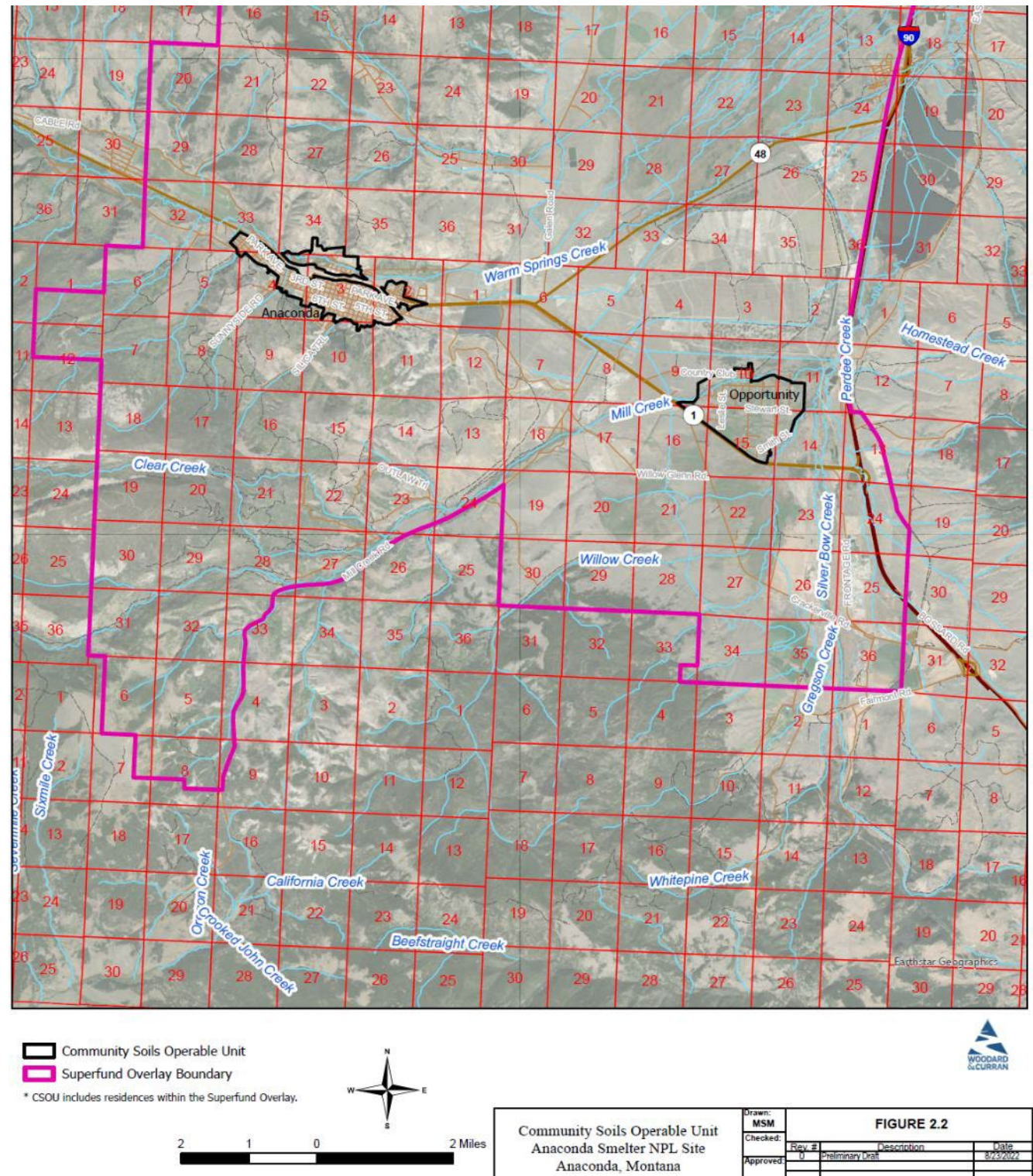


Figure 3.
Smelter Hill Repository Complex
Anaconda Smelter NPL Site, Montana

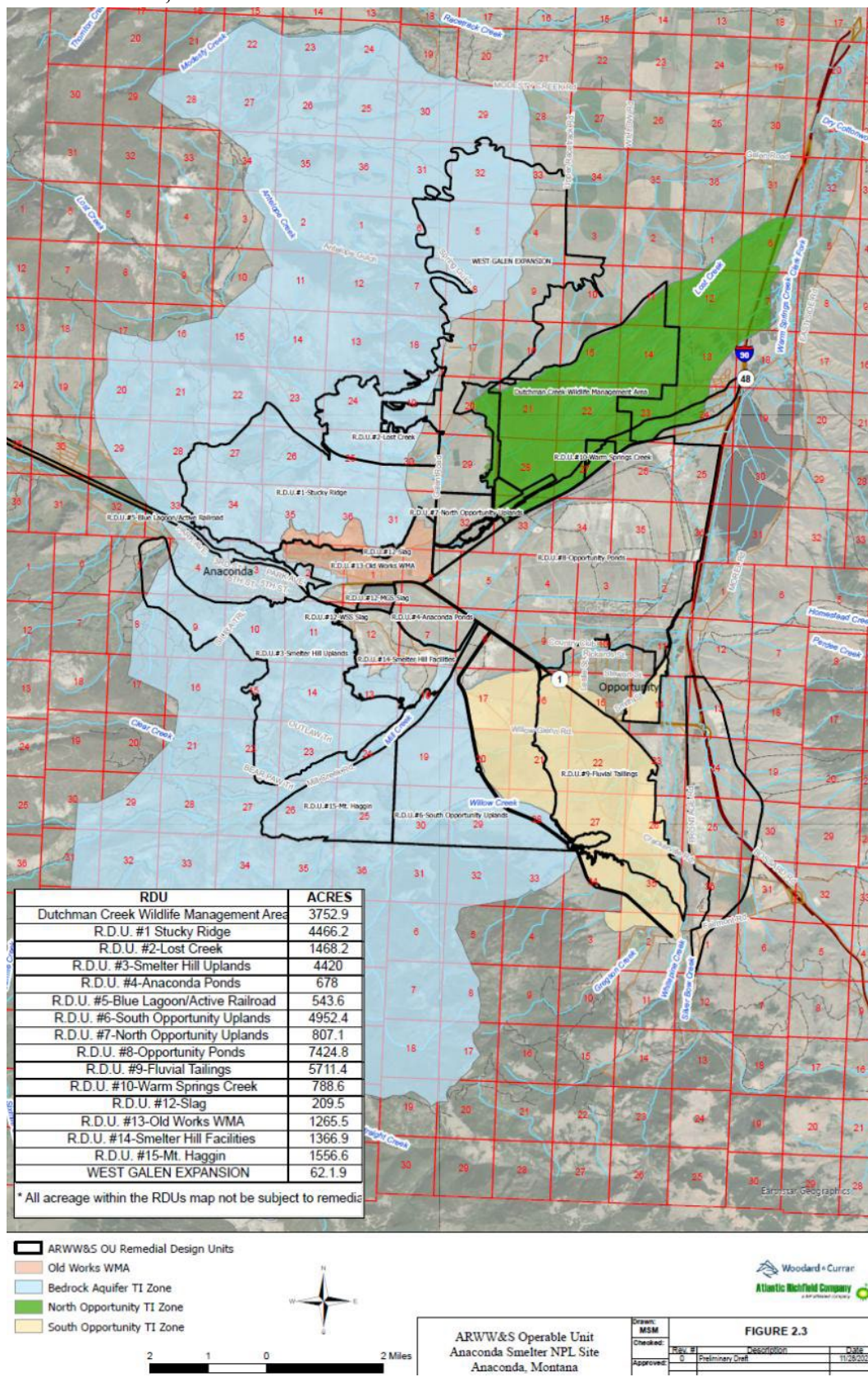
Source: Flue Dust OU Remedial Action Completion Report. 2020.

Figure C-3: Community Soils OU



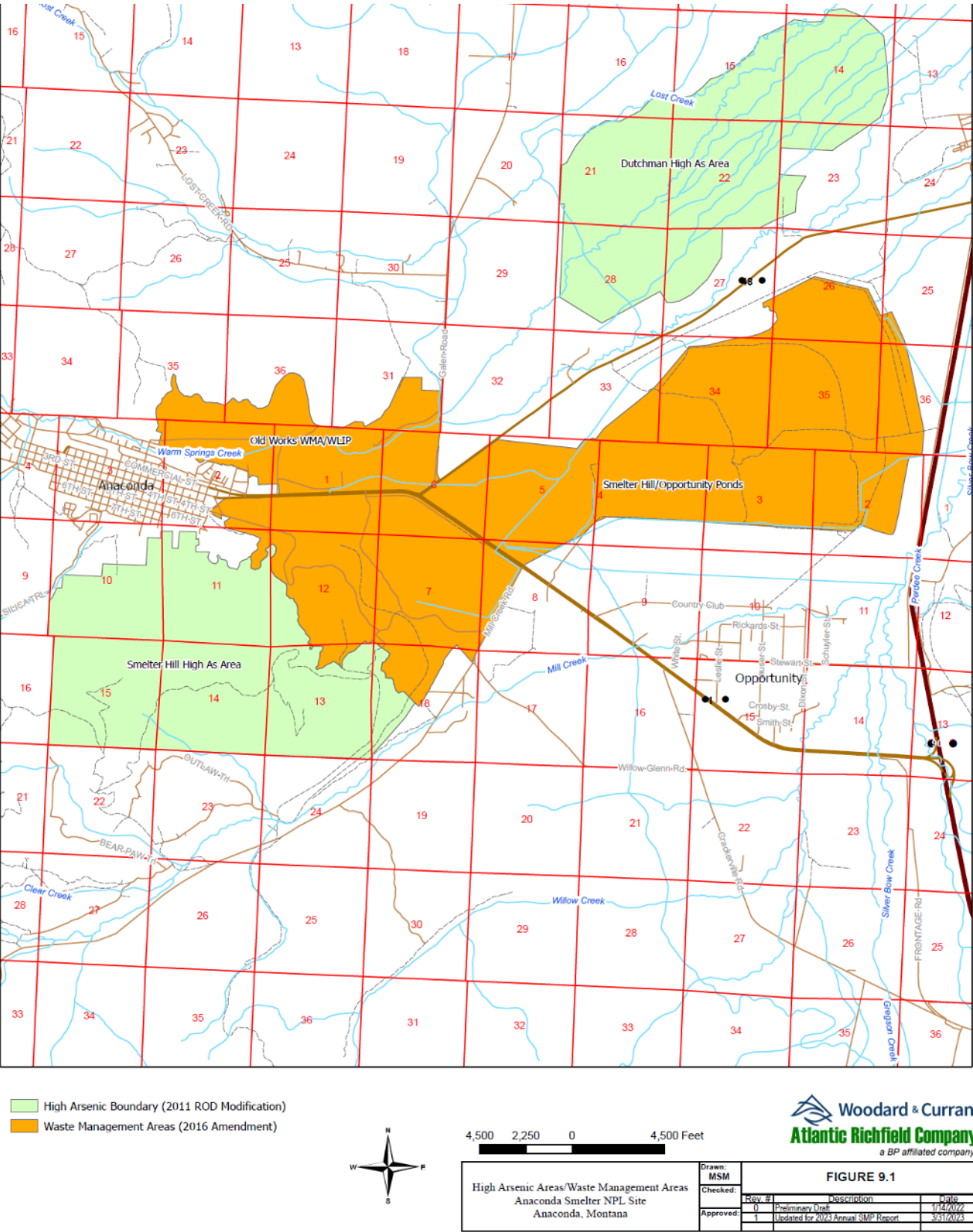
Source: 2023 Site Management Plan Report, Revision 1. October 2024.

Figure C-4: ARWWS OU, RDUs and TI Zones



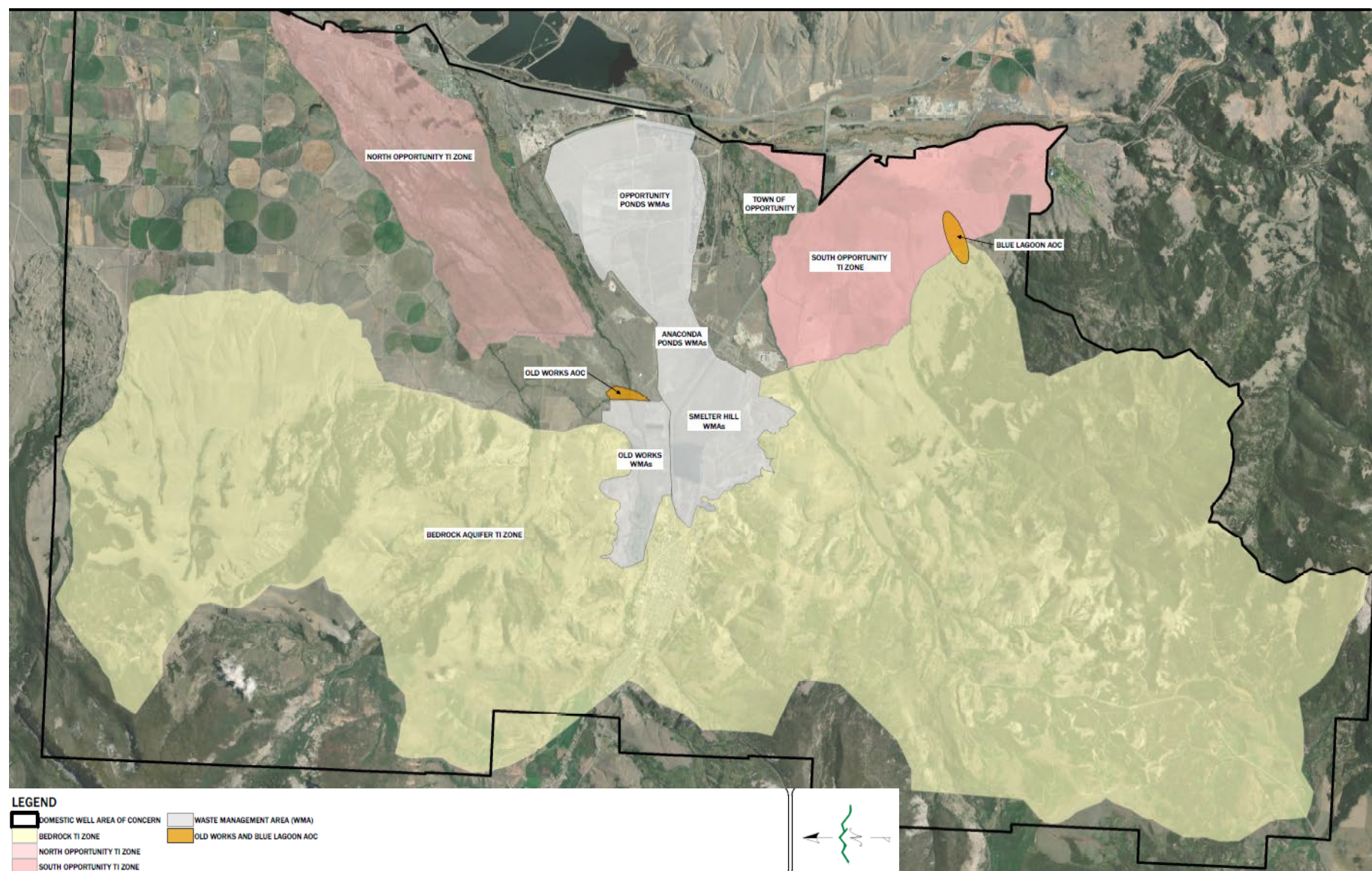
Source: 2023 Site Management Plan Report, Revision 1. October 2024.

Figure C-5: High Arsenic Areas and WMAs



Source: 2023 Site Management Plan Report, Revision 1. October 2024.

Figure C-6: ARWWS TI Zones and WMAs



Source: Draft Final 2023 5-Year Review Groundwater Interpretive Report. Figure 1. Prepared by Atlantic Richfield. December 2024.

APPENDIX D – PRESS NOTICE



The U.S. Environmental Protection Agency, Region 8 Announces the Seventh Five-Year Review for the Anaconda Co. Smelter Superfund Site in Deer Lodge County, Montana

The U.S. Environmental Protection Agency (EPA) is conducting the seventh five-year review of the Anaconda Co. Smelter Superfund Site in Deer Lodge County, Montana. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. The seventh five-year review will be completed in 2025.

The 209-square-mile site is in the southern end of the Deer Lodge Valley, and includes the towns of Anaconda and Opportunity. Smelter operations and ore processing activities from 1884 to 1980 resulted in airborne emissions of arsenic and metals into the environment over a large area. The site became a Superfund site when it was added to the National Priorities List in 1983. The Site's cleanup has included cleaning up residential and commercial properties, monitoring residents' blood lead levels, testing and cleaning up water supplies, removing and consolidating waste, covering contaminated areas with caps, building new wetlands, and relocating the residents of Mill Creek. Operation and maintenance activities are ongoing.

We want to hear from you! Community members are encouraged to share information that may be helpful in the five-year review process. Community members who have questions, would like to provide comments, or who would like to participate in a community interview, are asked to contact Mackenzie by April 15, 2025:

Mackenzie Meter
EPA Community Involvement Coordinator
Phone: 406-970-5806
Email: meter.mackenzie@epa.gov

The most current site information is available online at:
<https://www.epa.gov/superfund/anaconda-co-smelter>

APPENDIX E – INTERVIEW FORMS

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name: Mackenzie Meter	Interviewer affiliation: EPA
Subject name: Commissioner Ed Baudette	Subject affiliation: ADLC County Commissioner
Subject contact information:	
Interview date: 4/24/25	Interview time: 11:00 am
Interview location: Hearst Free Library	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Local Government	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
 - a. I am aware of the former environmental issues. I was born and raised here so I grew up here when it was a functioning industrial entity.
 - b. I was practicing law here when initial Superfund work started taking place. I was one of the members of the group the Arrowhead Foundation that got the ball rolling for the golf course. I worked with ARCO, EPA and MT DEQ on the initial process. We made a big decision that we would forego finishing the entire determination to start the incremental remediation of particular pieces of property. We started with memos of understanding, timing, what was going to be done and how. Trying to work first on those pieces of property that could, in the future, have economic value as we progressed. Focus on issues like the golf course that would stimulate economic activity versus having a park. It's a good distinction to see between the functional values of the golf course. There was lots of issues, it took its time versus the smelter site. There's a lot of elk and antelope up there for the first time in 40 years. The difference between the two is an item you have to look at. What's the value of this versus that. You have to give it a big scope view, the damage on the smelter site itself was way worse than anywhere else. The Old Works was in bad shape too. Economic and environmental issues there too. As a government, it had too many things to deal with – we only had Opportunity Ponds, no wastewater treatment plant. An open ditch that went down the highway and right into Opportunity Ponds. We had to deal with the water department. There were a lot of big transitional issues that the company took care of that all of a sudden will be our responsibility. That was the focus I had at that point in time. Roughly \$200,000,000 tax base was eliminated in a 3-year period.
 - c. Some of the things have been really good like East Yards being cleaned up and us being able to use the triangle areas for industrial development. Obviously the upslope stuff – I'm glad it's later in the process but it still needs to be done. There's potential water issues. I personally am trying to work on a project that may require or need to have access to the actual smelter site. That's something that I need to be able to focus on to see if it's possible. What can we do for industrial type purposes as opposed to leaving it as it is. Then you get into the final stages with covering the last of the slag piles out there. People are trying to make their best judgement for functional use

and best timing, but now we're at a point where it has to be matched up with everything else and allow people to move forward.

- d. We had 750 people working for the railroad, a ton of men, several shifts a day. This was a going operation. Dad worked for railroad, 1200 men, three shifts a day working on the smelter.
2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?
- a. I think I am reasonably well informed because I have to look at things that come through since I'm part of the Commission. I keep up to a certain extent with the newspaper, with the ads. It is difficult to keep up with all the things that are going on.
 - b. Part of the problem – some of the issues are so complex, long-term, difficult to understand. The average person would have no real clear understanding of why someone needs to be up on Stucky Ridge with a helicopter planting grass. As a good example, Mill Creek, it's a huge change to the visual relationship that people have had with that. Great to see trees, but then there's the berms and the equipment. It's for runoff. You don't get the concept of what it's going to look like and how much effort and time go into something. You could go through the whole process and the websites and see what's being done.
 - c. That's the problem I see and I don't know if it's solvable. A lot of people who don't pay attention to anything, let alone people who don't pay attention until it's in their backyard.
 - d. The problem as you have with anything – things of great community importance, nobody shows up. It's a difficult scenario to say what would work better. We've become so separate, we don't truly have a newspaper. It's two days a week. It's superficial – keep it moving selling advertising, no in-depth work on things. People are so individually selective towards their own bias confirmation. You're stuck with what you find on the internet. At this point in time, there's a huge portion of this population that doesn't have any idea what it was like before and after what happened. As an overall in-depth, I couldn't tell you. I appreciate people having meetings, but where are we at? What is there to discuss at this point?
 - e. I was the one that negotiated our ability to get the transferable prospective purchaser agreement. Andy and I were the last two that spent three hours on the phone with someone from the US attorney's office in Washington. Huge milestones in the way we were conceiving of what we had to do here. 750 square miles and 40% of it was owned by the company at one time. All the watershed, the infrastructure, all the parks, the water company. It's a huge change to go through that process and say, "how will we start all over again and convince people that the problem has been identified, resolved, and you're not going to be responsible if you dig under 4 feet". Some places, with 40 years fewer engineering experience, we know we may have to revisit. We had problems at the golf course with trees. How high is the aquifer? The trees die when they get to a certain depth. We know it's bad but does covering it with four feet of dirt really work? The course of time shows better perspective. The decisions made by local government at the time were good in retrospect. Could they have been better? Sure. Were we capable of doing any better than we did? I don't think so. Not to say we shouldn't have updated information. A retrospective view is what we have over time. We have a true housing boom in Anaconda! 40 years of nothing. Is that COVID or are people finally appreciating Anaconda? Is it that people are saying "hey, a nice flat piece of ground with streets and sewers". Money is a big issue from our perspective. What's our tax base, how can we maintain what we inherited? The grant money that flows from federal, to state, to local is questionable. A lot of that type of anxiety. I think people should be able to ask those questions.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
 - a. I don't think that any level of vandalism or trespassing is unexpected. There's a significant problem with people on four-wheelers and dirt bikes. They're everywhere, and it's a problem. I've seen the spread of noxious weeds and problems with the overall maintenance of the golf course. I go out every spring and scout the golf course for knapweed. ARCO was permitted to do the big swaths of it, but when they get to internal areas, they're not capable of spraying it. They don't do that, because it's not within their charge. I work with Todd and go out and scout knapweed, circle it, with an overall aerial view. Todd goes out and sprays it. Knapweed is coming from the north and the east. Weeds are a huge problem; they're being spread up to burrow pits and right of ways. People carry them from their vehicles. People jump off and head up storm lake. I worked with getting Hearst Lake to be a class-A watershed. That incorporated a huge amount of work on getting rights of access, weed control, etc. I was in Helena with MDT for years. It's huge, helpful – we're in better shape than a lot of places.
 - b. The trail going from the end of the golf course to highway 48 before Lost Creek. It was initially put in as sand material and it was nice. But then people roaring around on motorcycles and 4-wheelers have torn it up and it's in bad shape. I don't know if anyone is maintaining it. When are we going to get the connection to all the trail system? There are portions of it that are completed and are very nice, but there's a lot of those types of issues. The perpetual issue will be water.
4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?
 - a. I'm generally aware. Yes. State laws are following federal laws. Regulations are being reduced, and a lot. Senator Daines is the representative. I have tens of thousands of acres of forest managed by the Forest Service, USDA, BLM, job corps center that has hundreds of people. We have the largest Superfund site in the nation. What are you going to do? They don't have any answers. They want to develop all of our property. We don't know what regulations are going to go or come. It's all red tape. Well, not if you live here! Not if you've got arsenic dust blowing across your house. Property tax relief is a challenge, let alone dealing with the real hard questions. There's a lot of nervousness about it, there's a lot of people who are upset. Unfortunately, it seems inevitable. A lot of unanswered questions without decent answers.
5. Are you aware of any changes in projected land use(s) at the Site?
 - a. All you have to do is look at the East Yards! It was full of cars with trains every day. We used to squish pennies on the tracks. Those are the steps you like to see. It's great to have a Murdoch's and a hotel out there. I don't like some guy out there with a bunch of junked up equipment on the edge of town either.
 - b. It gets complicated when you think about what you can and can't do in certain places. It's important for us to work with the Door company and the logging guy. It's a great opportunity to have those types of things. Appreciably so, same with the area east and north of the Town Pump north of the highway. It's great things are being developed down there but what's that doing to our internal infrastructure? What good is it to have a big hardware store on the edge of town when you've got two empty hardware stores in town. How is it being managed and thought out? It's great we get industrial work. More in the triangle area is great. Unfortunately, it's the entryway to our city, but there's great strides made in getting that a little bit more acceptable. Where else will

- you put it? Can't have human habitation out there. Got to see some industrial. It would be nice to work with the railroad to relocate them possibly. It's a huge problem with connectivity of our town. When you have a railroad running up an entire length of one portion of the town, it cuts it in half, separates streets and you have to take the long way across town. A lot of those things that I think need to be addressed. We had a working railroad for 120 years. Now we've got some guys – they're making bad decisions as far as I'm concerned. From Sycamore Street to Lutheran church, there's a stretch of track 200 yards long. It doesn't go anywhere. It crosses a street and we'll have to leave that down because they won't take it out. There's some boogeyman fear that they will have problems with transportation board. For the betterment of everyone, let's move forward. It's better than everyone being stuck and making bad decisions and design. The only thing that's important is to pull the track. It would be a great amenity for us to have another portion of the walking trail. It's an impediment.
- c. I used to be a right of way attorney and we're stuck in an institutional gridlock. You can't do anything until you've got right of way secure. Buying people, forcing things around - it's the time value of money that forces things to get done. There's an incredible amount of inertia that allows people to block things they're unhappy with, uncomfortable with. They don't realize the full ramifications of it. I don't know how it relates to CERCLA other than I know there are requirements to cleaning up that railroad grit. The ability to have that changed into some level of residential or connectivity to the hospital or park. Is there a problem with it? Yeah! Here's a 200 wide stretch of stuff that has some level of remediation, but I don't know what it is because they remediated portions of it and it's hard to tell because there's an active rail line. When I was a kid, part of that whole West Yard switching lines there - I think there were four tracks. They had guys down there 24 hours a day cutting up ore carts with torches. Green clouds of smoke coming up. Was it cleaned up? I don't know.
6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
- a. Goes to the problem of people who have no idea what it's about. People who know but don't care, and then people who are attentive to what's going on.
- b. When will it be done? What have you accomplished? It's remarkable what has occurred, but there's a lot of things that have been stagnant. Things are moving forward. Getting our tax base reestablished is a huge thing. More information on quality and level of progress that's been made. It's extremely difficult to predict. Is there going to be an ending? What will the final thing look like and how many years? 100 years, 40 years, 50? What's driving progress?
- c. What's the balance? I think part of it is people's frustration with the Clark Fork restoration. Gigantic thing – not a lot of agreement necessarily on the final outcome. You've got to get a design. You have to start. Show people progress is being made, things are being done. We're not just sitting around burning up money and people's time. We have people who are engineers recalculating balances and testing results. It becomes its own industry versus being an end-result endeavor. Butte Silver Bow, as an example, people want to compare the two, but we can't. Butte Silver Bow is a PRP. We've never been a PRP. That changed our dynamic. They're still working on trying to get things figured out, but we have 40 years' worth of work done. Things are moving incrementally but still moving. Big advantage that BSB has – they didn't tear down their infrastructure. Still mining going on. All of the structures still have taxable value. We have a park. The stack is a monument. It doesn't pay any taxes. Back in the 1990s, we had a huge meeting. They were putting in a bill to change the taxable valuation of an environmentally challenged property. What's the taxable value of a remediated piece of property even though you

still can't do anything with it? For us, we're responsible for plowing the snow, keeping the parks running, keeping water and sewer operable. 40 years later, there's problems with slag in the water treatment plant. Is that going to continue? The further we get from people who were making decisions - all the people who were around at the time when things were being done and decisions being made - there's now very little historical perspective. Where are we on this journey? No one really knows where we're at. Are we halfway there, 90%, or not there at all?

7. Do you have any comments, suggestions or recommendations regarding the project?

- a. I think if there was more understanding of why certain things are being done, why it's important to have. I know that runoff from the ridge is a huge issue. The golf course for example, a mini flash flood had wiped out the huge portion of the third hole's fairway. It was a huge failure, it was an engineering failure. How would we know that 25-30 years ago? How confident can we be that these will be long-term remedies? What is that true projection? We have a bunch of dikes that look like hell. Heading out Highway One to get on the interstate, you can see a dike, and it must be 2.5 miles long and 100 feet wide. It's straight as a string. Engineers thought it was great. You couldn't put a bend in it? You couldn't help it blend into the landscape? These things need to be addressed. This is a livable community, and we want to get it away from it all being industrially based and designed from an industrial perspective. It misses the overall scope of the issue. The people who live here didn't buy into any of this. They would still want an environmentally operational smelter. Nobody wanted to put the money into it. The other side of it is greedy oil companies. There was a reason why Anaconda, Kennecott, Phelps Dodge were bought at the same time by the same people. Nobody knows that perspective. The power that those organizations have - what's the balance between those two things with the people who were left? It was easy in the early 1980s for people to say wait until that tax money disappears, the workers comp. Wait until those things start happening, and your tax base is affected. Now it's in my backyard, and it matters to people. 150 years that Anaconda dominated Montana. There's a lot that needs to be brought back to the sense of what's it going to do. Is the satisfaction for the environmental engineers in line with what the people who live here need for their satisfaction? They didn't tell the Senators they were shutting this place down until the day they did.
- b. It's important to make sure the remedy matches up with what people who live here want and will have to live with. Initially drainage ditches were put in through private property because it was all being driven through one line in the CERCLA act - you can't be required to have a permit to do "X". There's a lot of issues that come with that. They were hauling stuff into Opportunity Ponds, no approach permit, they said I don't need the permit. They can't make it ugly, they should make it in a way where people have to live here. We're trying to deal with extending our sewer system to the west. Of course, there weren't any regulations in the 1950's but now we have problems. We're not sure who's going to finish up paying for it because no one is taking away our responsibilities, just our money to deal with it. That's pretty high on the hierarchy of our problems to deal with.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

- a. Yes.

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name: Mackenzie Meter	Interviewer affiliation: EPA
Subject name: Lauren Bolton	Subject affiliation: ADLC Public Health Director
Interview date: 4/24/25	Interview time: 5:24 pm
Interview location: via email	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Local Government	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Yes, I am aware.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

I haven't been as informed as I would like, but that is partially my fault. It would be nice to be on a newsletter or have specific positions in the county that should/could get updates.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

Not that I know of.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

No.

5. Are you aware of any changes in projected land use(s) at the Site?

No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

I'm not sure.

7. Do you have any comments, suggestions or recommendations regarding the project?

No.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

That is fine, although I'm sure my responses haven't been helpful.

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name:	Interviewer affiliation:
Subject name: Amber Nichols	Subject affiliation: MT DEQ
Subject contact information: amber.nichols@mt.gov , 406-431-2253	
Interview date: 5/16/2025	Interview time: 1500
Interview location:	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: State Agency	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
 - This site has been in the remediation process since 1983. It spans 300 square miles and has three active operable units: Anaconda Regional Waste, Water, and Soils (OU4), East Anaconda/Old Works (OU7), and Community Soils (OU16). Five operable units have been deleted/consolidated. OU16 is centered around remediation of community soils – residences, commercial, and recreational property within the town of Anaconda. The majority of the work has been completed up to current standards, last call for signing up for yard remediation occurred in August 2024. Anaconda Deer Lodge County (ADLC) continues to spearhead the attic abatement program, provides equipment for dust suppression during home remediation, and actively manages the Institutional Controls (ICs) elements of OU16. OU7 refers to the cleanup of the Old Works operation on the south side of Stucky Ridge, including the Old Works Golf Course. Many stakeholders consider areas of this OU to be prime for redevelopment. OU4 captures the rest of the site, both solid and aqueous material. OU4 contains the Opportunity Ponds, the three onsite Slag Piles, waste management areas, wildlife management areas, extensive ground and surface water monitoring networks, and all upland areas slated for remediation and/or restoration. The vast majority of remedial action onsite has been completed to date. Successful redevelopment projects have included: Old Works Golf Course, the Murdochs storefront, Benny Goodman Park, and the Hotel Parcel. Future reuse/redevelopment may include the slag piles, should redevelopment be proven economically viable and protective of human health and the environment. The majority of maintenance activities occur in OU4. ADLC has successfully managed the ICs program for the site and house the superfund document repository. The agencies are working with the county to make sure the repository is up to date.
2. What is your assessment of the current performance of the remedy in place at the Site?
 - Generally, the remedy remains functional throughout the site. Atlantic Richfield (AR) and the Agencies have a strong working relationship and continue to address issues collaboratively as they arise.
3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
 - Yes. There have been a few landowner complaints regarding unnecessary tree removal/vegetation disturbance. Also residents have expressed disappointment regarding the quality of soil used to backfill yards/residential parcels. But generally, Superfund is “old hat” to the residents of Anaconda, and complaints have been few and far between. At DEQ, I tend to get the most inquiries about contaminant levels on different parcels, especially from new owners who have recently purchased or acquired land.
4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

- Yes. DEQ regularly receives information/records requests from landowners that we respond to, often in coordination with EPA. DEQ serves as the state counterpart to EPA, by providing points of contact and data to requesters as necessary. DEQ also participates in public meetings, weighs in on public outreach, actively reviews documents produced by AR and their contractors. DEQ attends site meetings with all stakeholders, and participates in legal discussions about redevelopment, protectiveness considerations, and proposals.
5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?
- Not at this time.
6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?
- Yes. The document repository could use an update, but generally the ICs program managed by ADLC seems to function efficiently and effectively. There is the occasional issue/question that arises that seems to fall in grey areas – for example, a resident in between RDU boundaries in OU4 with concerns about vegetation, grazing, and high arsenic – that the agencies have worked together with the county to address.
7. Are you aware of any changes in projected land use(s) at the Site?
- Commercial > part time residential land use change for the hotel parcel. Potential open space/agricultural > recreational on the C-Hill. Potential open space/agricultural > industrial for gravel operations in OU4 RDU8.
8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
- More frequent community meetings should be held in Anaconda. Often, I've heard that EPA is "waiting" for new information to come out (i.e. updates to inorganic toxicity tables). While I understand EPA's position -- waiting until all the information is in hand --- I think it would go a long way in increasing the credibility and transparency of the Superfund process to meet the community regularly with the information we have, even if uncertainties persist, given there will always be uncertainties to contend with.
9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?
- Yes

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name:	Interviewer affiliation:
Subject name: Ray Vinkey	Subject affiliation: Natural Resource Damage Program
Subject contact information: 406-594-7689 ray.vinkey@mt.gov	
Interview date: 4/17/2025	Interview time: 11:45 am
Interview location: Email	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Agency	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Yes. Historic smelting resulted in over a century heavy metals deposition and resulting damages to natural resources in the Anaconda area. The State of Montana pursued a claim for injuries to the Anaconda Uplands which resulted in a 2008 Consent Decree which required that BP-AR provide \$13.3 M for NRDP complete remedy and restoration on State owned lands. The NRDP lead remedy was certified as complete by EPA, with concurrence by DEQ, on April 4, 2023.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

Remedy of 480-acres of Department of Natural Resources (DNRC) lands on Stucky Ridge and 4,299 acres of Montana Fish, Wildlife & Parks (FWP) lands on the Mount Haggin Wildlife Management Area has been successful. Revegetation has become established on formally barren slopes, and numerous steep slope reclamation techniques and best management practices have been implemented to capture sediment and any heavy metals that it could transport to Mill, Willow and California Creeks.

3. What have been the effects of this Site on the surrounding community, if any?

The Mount Haggin injured area and Stucky Ridge are used by the public for a variety of recreational activities including hunting, wildlife viewing and hiking. The public is now able to recreate on lands which were once heavily impaired.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

No known problems within the Mount Haggin Injured Area. On Stucky Ridge it has been necessary to repair fences and place additional signage to deter trespass by motorized users. NRDP will in coordination with EPA continue to employ institutional controls were necessary on Stucky Ridge.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

NRDP is in routine communication with EPA regarding the status of remedy and subsequent restoration actions on both Mount Haggin and Stucky Ridge. It would be helpful for EPA to continue dialogue with the community through public meetings, newspaper stories and other outreach to make the community aware of what has been accomplished, access controls, recreational use of county lands and other issues.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

Not applicable.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

NRDP lead remedial work in the Anaconda Uplands has been completed through a successful collaboration between the EPA, DEQ, FWP, DNRC, private restoration specialists and other cooperators. The approach has been to use ecological engineering techniques to keep contaminants upslope and out of the waterways. NRDP is now working with Anaconda-Deer Lodge County to implement \$4 million of restoration activities on County lands in the Uplands near the A-Hill and C-Hills. That work will be guided by an Amendment to the 2008 Anaconda Uplands Restoration Plan which is currently under consideration by the Governor.

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name:	Interviewer affiliation:
Subject name: Benjamin Simpson	Subject affiliation: Engineer, CDM Smith
Subject contact information: (406)422-7325 Simpsonbt@cdmsmith.com	
Interview date: 5/8/25	Interview time: 12:00
Interview location: Anaconda, MT (electronic)	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: O&M Contractor	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

Given the size and complex nature of the site, I think the cleanup and related activities have been impressive. Nothing of this scale can be perfect, but I believe it is going to be protective of human health while simultaneously being an economic benefit to the community.

2. What is your assessment of the current performance of the remedy in place at the Site?

With the uplands work, the lime amendment and dilution of surface metals seems to work excellent, at least after a few years, at producing thriving grasslands. The community soils component also looks excellent following placement of sod and/or aggregate, so long as the owner takes care of them. Steep slope work, BMPs, and sediment ponds are also expected to reduce sediment loading to nearby surface water.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

The pH across the whole valley have been drastically improved, with QA points ensuring 6.5 or above post RA. Metal levels have been either diluted from high surface levels with tillage, or by removal and backfill efforts. Extensive sampling and removal efforts ensure the vast majority of soils near residential areas meet acceptable lead and arsenic values. There are also programs to monitoring ground water data, residential wells, and community blood lead levels.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

Yes, contractors inspect engineered stormwater controls yearly and perform regular maintenance to those. O&M for other remediation efforts, such as for planted vegetation and streambank repairs, last years past the initial RA. There are also extensive groundwater monitoring efforts, and county led community measures to ensure identification and safe handling of potential impacts soils not address during initial RA.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Not that I'm aware of, other than around 5 years ago the county began their attic remediation program, which was previously run by the PRP. This program includes sampling of attic dust for lead and arsenic.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

Nothing unexpected that I'm aware of.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

Not that I'm aware of. Given how long RA has been ongoing at the site, I imagine many of those efforts took place decades ago.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

No

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Yes

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name: Mackenzie Meter	Interviewer affiliation: EPA
Subject name: Resident #1	Subject affiliation: Resident
Subject contact information:	
Interview date: 4/24/25	Interview time: 10:00 am
Interview location:	
Interview format (circle one): ☒ In Person ☐ Phone ☐ Mail ☐ Email ☐ Other:	
Interview category: Resident	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
 - a. Very much so.
 - b. It's very diverse and the site is broken up into a bunch of OUs. The one I'm most familiar with is Anaconda Regional Water Waste and Soils. East Anaconda. I did a lot of work on the Old Works East Anaconda Development Area. I came here in 1990 and was doing work with a company contracted with ARCO. I put in wells in what was still the Old Works before the Old Works Golf Course. The four rivers are my main interest because they have all been affected by smelter emissions. Warm Springs Creek is unique in that it was treated like Silver Bow Creek – Upper and Lower Works just slurried their tailings into it. The only other creek in the whole Upper Clark Fork System that does.
 - c. Because of smelter emissions, there was also this broad groundwater issue and bedrock groundwater issue. Put smelter emissions on the ground and one thing that's in it is arsenic in a very soluble, mobile form. It was addressed through a technical impracticability evaluation that said we'd have to put wells on 20-foot centers over 300 square miles. They decided it was impractical to clean up the bedrock aquifer. They dealt with it by not allowing people to put wells there or by making sure the wells had safe drinking water.
 - d. That led to groundwater in the bedrock areas and recognizing that there were related surface water issues. All three streams exceeded the state's water quality standards for arsenic, cadmium, copper, lead and zinc. Lost Creek only has an arsenic problem. That [Lost Creek arsenic problem] was from the Old Works Smelter. That had very short stacks and there was a prevailing wind from the west blowing east. The smoke was falling down on the Dutchman Area. That became a human health concern because it was a high arsenic area. Smelter Hill and Dutchman are recognized as high arsenic areas. They started on a technical impracticability evaluation of Lost Creek, which included Dutchman Area. They looked at what it would take to deal with an arsenic in surface water problem such as the stream. They didn't have to look at cadmium, copper, lead or zinc because they have always met standards. They looked at what you would have to do to protect the Clark Fork from arsenic. You'd have to collect the stream water through an annual cycle which would take a tremendously huge reservoir and then treat it over time. It became technically impracticable. This is the only TI with "do no harm" in the whole Upper Clark Fork. The question was if the arsenic is in the soil, should we address the source of arsenic in the Dutchman? The decision was that we would wreck an extremely important habitat/wetland

system in order to address this. It was decided that there would be a “do no harm” waiver. One of two kinds of waivers that’s in CERCLA.

- e. I was mostly focused as a technical person here on surface water and groundwater. I tracked community soils, didn’t pay a ton of attention. I was very interested in domestic wells, specifically the Opportunity Area. That got very complex. It seemed simple when it was just Opportunity. When we sampled all the domestic wells we could find, it was found that none of them but two exceeded the arsenic standard. One of them was very shallow, right next to Mill Creek. The rest of them didn’t exceed. The solution at the time, if there was an arsenic problem, was that AR would be required to drill a deeper well into the deeper aquifer as this was clean. This expanded the search on domestic wells and it became more complicated. Crackerville had arsenic problems in deeper wells. Is this a smelter issue or is this a naturally occurring arsenic problem? ARCO paid the Montana Bureau of Mines and Geology to see if you could fingerprint the difference between natural and smelter arsenic. It was inconclusive. They came up with interesting things. One of them was that the form of arsenic in soil is absolutely completely mobile. It doesn’t take much to mobilize. How deep it goes is another question. At the time, the MBMG was doing all the monitoring for ARCO. ARCO didn’t like the results of the report. They were going to publish an interpretive report, but ARCO said no, just do a data summary report. They didn’t want to chase this to Idaho or Wyoming. Arsenic is ubiquitous.
- f. At one time a previous EPA project manager for the Anaconda site said it - the permit system under Anaconda Deer Lodge County - it makes sense to cut it off at the county boundary and we said “no, we can’t do that.” A hydrogeologist who used to work on the cleanup finally put a boundary around it. Those issues are coming up again because the West Side Soils in Butte are looking more westerly. Where do these two meet now? I wanted it more east and north. That was the domestic well part of it which is very important and I said that to MT DEQ on stream side tailings.
- g. Putting in wells is ridiculous because you’re dealing with 26 miles of stream and you’re going to be hit or miss with sampling. The way to do it is synoptic sampling along the creek to see where you’re getting inputs from groundwater. If you’ve got domestic wells on that floodplain, you better sample those.
- h. Warm Springs Creek itself, I was given broad authority by the previous EPA project manager for the Anaconda site to follow up on it. I worked with CDM and two people and both of them ended up doing Clark Fork. Some of the work that was done there was patterned exactly after Clark Fork. The upper part of Warm Springs Creek was not really a water quality issue. It was an issue for ARCO doing anything with it and losing control of it. Warm Springs Creek comes out of the valley and is on a broad alluvial fan. Without human interference, WSC would be all over the place at different times. There were maps from the past where WSC split into two different directions and into Dutchman. Dutchman became a spring creek itself. It was all confined to part of WSC as time went on. The problem was that doing work on Warm Springs Creek to address metals might interfere with its morphology. This might have allowed it to jump its channel and end up being down Dutchman again. This would have created an immense problem for ARCO. Might have had homeowners suing ARCO for loss of water. They did a lot of cleanup around the creek. They re-straightened a portion of the creek. Beyond that it was a dynamic creek. It took some important parts out of the stream system, it was graded at one point and confined into a single channel. Further down the creek is where the two people I mentioned and ARCO’s contractor were. They rebuilt one small portion of the creek and that was around an agricultural field down to Johnson’s Corner. The main problem there is that it caused a jump in metals, mainly copper. The creek had become straightened and it was running through an agricultural

field and this was eroding quickly with the fence line falling. Grass is not made to hold a stream in place. They put it back into the old channel pattern. They took out all of the old vegetation and this was exactly the format of Clark Fork.

- i. I was representing a previous EPA project manager for the Anaconda site at all these meetings. I wish we hadn't been so aggressive. It moved on from there.
 - j. Metals in three streams outside of Lost Creek - Willow Creek, Mill Creek and Warm Springs Creek. How do we address metals with all of these upland mountain streams above us? There were very barren hillsides there and we always understood there was this problem with higher slopes especially. It was barren because they had been logged, smelter smoke killed stuff, fires too. There was a lot of work done early on and we decided to go into a TI evaluation. It was the biggest one I've ever been involved with. This took care of three streams, and it looked at it from a stormwater and normal flow conditions perspective. It required ARCO to do an immense amount of additional work. They were not given a TI waiver. This huge evaluation was the basis for the Consent Decree. It was basically "what other work could you do, and then we'll look at waivers again. You'll maybe get waivers if you do this other work." It's the same as the TI waiver in Butte, it's just an agreement for work with waivers.
 - k. In Anaconda, there's a lot of work that's been done on the uplands. They're completing a lot of it and you're seeing new pieces all of the time. A lot of the dry gulches had stormwater retention dams put on them. All that work that's been done – how has water quality changed on those three creeks? It hasn't changed much. Warm Springs Creek has changed. If you do all this work, in my mind that would lead to TI waivers.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
- a. I would say being in Anaconda I became an advocate of CERCLA. The way CERCLA works is you go through all of these investigations and then we look at what we can do. You work up to the Record of Decision and this is great, you have a fixed place you can finally get traction. The ROD says who is responsible, what's going to be done and that we believe this will protect human health and the environment. As we've seen, those can be modified. ROD modifications take a lot, it's not a simple thing. It allows flexibility back into the system. That's critical. I have appreciated the work I have been involved with in Anaconda because I think it has worked really well. A previous EPA project manager for the Anaconda site was a project manager who always – it drove people crazy - but he would never move forward without buy-in from the state and the county.
 - b. It's a hindsight thing. This is what made it go. The opposite has been true in Butte. Butte is really different because the county was the PRP which changes the dynamic.
 - c. I wanted a broader one [institutional control] that would extend farther east into Butte. I know a hydrogeologist who used to work on the cleanup said there's some deeper wells with an arsenic problem and I think it really comes down to a problem with Clark Fork. It's another complexity. They're bounded in smelter smoke as it does not follow county lines, neither did tailings coming down Silver Bow Creek.
 - d. I hate dipping in and saying too much about it because I'm not a toxicologist or an epidemiologist. I've been really involved in Butte and the human health issue in arsenic and lead – it's complex. I'm glad I'm not a risk assessor too as it's hard to give definitive answers. I'm worried about the EPA's overstepping their bounds with the new lead level. It remains to be seen what ARCO is going to do. It's hard to justify what's background [in Butte] because we're

talking about living on a huge ore body with a whole lot of lead exposed at the surface. Anaconda is different. I don't know what the background is here for lead or arsenic. EPA has to make these decisions. I watched it with arsenic in drinking water. When I first started arsenic levels were different and are changing because EPA is risk assessment. 50 ppb and the state said we want to use 18. EPA said 10. It's a game of looking at risk. And EPA wants to say 10^{-4} to 10^{-6} . For arsenic, we're forced to go much lower. How do you apply that to soils in Anaconda and Butte? I think the programs where they will look at attics and yards and they do the cleanups - those are fantastic programs. In Butte, we have an even better program - we do more by testing a lot of children for lead levels. If there's a child with a problem, we try to find out why. That's my biggest issue with the new voluntary lead levels. Is there more active collective blood levels in Anaconda now? We're finding out finger pricks now have huge false positives for lead testing.

- e. The target blood lead is the target blood lead and I understand why it went there. It's bound to be over because they are still using the same risk level and Anaconda will probably continue to use the default IEUBK and I'm not sure where that puts Anaconda's blood level. I've always said that it would be better if we had a program where we tried to work with every pediatrician or OBGYNs to get more blood level testing. I think venous would be better but it's hard to get mothers to allow needles with their children. The Butte program is really strong because we all recognize these old communities have a lead paint problem and it's hard to find the balance between the paint and the lead.
 - f. It's what I assume a pretty high background level which is here too and lead is highly mobile and bioavailable. Having gone through the first two five-year reviews of blood lead data in Butte and seeing how the data goes - we could tailor the data and say let's only include the older community with older houses and lower economic communities. In that case, the trend was we were falling at a faster rate than the national and we had fallen below the national. In the next five years they hadn't done that so we were just tasked with looking at how it works. The other problem is that now everything gets down to detection limits. Higher and higher amounts of uncertainty. The better things get the more uncertainty there is and the less ability you have to truly make decisions.
3. What have been the effects of this Site on the surrounding community, if any?
 - a. ...
 4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
 - a. Not relevant.
 5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
 - a. Yes, I think EPA has done a good job keeping the public informed. It's difficult. There will always be people who think that EPA, MT DEQ, ARCO, are in bed on different things. They think they're not working fast enough, and I don't know what else you can do.
 - b. I thought the new website was outstanding. I think the EPA website was a big improvement.
 - c. The main thing is we have these main points like the ROD, amending the ROD, etc. and in all cases, the EPA has done an outstanding job of putting out a Proposed Plan. It takes highly technical information and presents it to the public which is very difficult.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
 - a. No, not relevant.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
 - a. One big one. You need a Clark Fork River OU. You have operable units that flow from one to the other and you have inconsistent ways of dealing with it. How do you put the whole upper Clark Fork together.
 - b. This site is extremely important in that there are four streams that make up the Clark Fork. The most important is Warm Springs Creek. There's still a copper problem every spring. It has the most fisheries of all and probably has the best fisheries. It's a huge Brown Trout fishery. It has Bull Trout in the Upper. It's a critical stream.

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name: Mackenzie Meter	Interviewer affiliation: EPA
Subject name: Resident #2	Subject affiliation: Resident
Interview date: 4/14/25	Interview time:
Interview location:	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

The Superfund remediation falls woefully short of protecting human health and restoring the environment. Remediation is defined as improving or correcting environmental damage. The Principle Responsible Party (PRP) for the Superfund cleanup is Atlantic Richfield (ARCO), now owned by British Petroleum (BP). ARCO/BP and the Environmental Protection Agency (EPA) agreed that mixing smelting waste materials with lime and covering it with clean soil is the only 'fix' for the problem. This widely used method leaves only a cover up (both literally and figuratively) for their responsibilities and overwhelming toxic time bomb buried here.

ARCO/BP and EPA formed a remediation goal which is protective of human health, as long as they lowered the standards far enough to comply easily. ARCO/BP argued to change the health standards so that they did not have to remediate to the agreed minimum national or state arsenic level from the wide range of approximately 0.04 ppm to 40 ppm (due to the method of the calculations the concentrations are not actually parts per million). It was raised to 250 ppm arsenic in our soils. The higher the concentration, the higher the possible incidence of cancer that could be realized. ARCO/BP and the EPA judged the residents of Anaconda and Deer Lodge County (ADLC) expendable because BP can tolerate the increased risk of cancer in Anaconda at this increased risk level.

The ARCO/BP and EPA method is twelve to eighteen inches of uncontaminated dirt on six to twelve inches of lime mixed with metallic poison contaminants. Their vision of a successful remediation (a minimum cost negotiated by their lawyers) is a lime-coated poison, buried out of sight, that is safe until they get out of town or until the surface gets disturbed, or the lime gradually reacts with the increasing carbon dioxide in the atmosphere to form limestone; or a flood incident removes the coating. If you do not think this is true, show me a list of all the ARCO/BP and EPA personnel whom agreed to this method that live here now that previously did not. They all disappear along with ARCO because they don't want to live where 'fixed' means buried in the cat's litterbox.

It's not that there have not been immense levels of work performed. A million cubic yards of severely contaminated topsoils have been removed and buried here in large hazardous waste storage sites around the county. Remaining low-level contaminated soils still exceeding the acceptable metals content have been tilled and treated with lime and capped in place. These contaminants are primarily heavy metals (arsenic, copper, lead, cadmium) that are toxic to human and other biological life at low concentration levels – in the parts per million (ppm) range. Essentially none of the objectionable contaminants were removed.

I grew up here during control of the Anaconda Copper Mining Company (The ACM Company), then left to find work thirty-five years after takeover and closure by ARCO. My great dissatisfaction is due to the minimal amount of cleanup that ARCO/BP and the kowtowed EPA rule a complete and successful Superfund remediation. I rate this as an inadequate goal after evaluation based on my background as a metallurgical engineer with over 25 years of experience in the mining industry, chemistry and environmental engineering. I view their efforts as inadequacy argued to save money at increased risk to human health.

If I wanted to protect people from a toxic material that cannot be destroyed and will always be toxic, I would remove it from the area where people live. To minimize the contamination and contaminated areas, all of the low-level contaminated soils and refractory materials should be placed back into the Berkeley Pit where they originated. ARCO argued this would render the Superfund remediation too complex.

Butte has proposed dumping their low-level metal-contaminated soils back into the Berkeley Pit, where it came from. Adding low-level solids would provide precipitation sites to coagulate solids and improve settling separation when mixed with the neutralization treatment currently treating the pit leachate. The low-level concentrations of all the low-level soils are insignificant compared to the ore body dissolving into Berkeley Lake. If the overall concentrations of metals in contact with the solution are reduced, the amount dissolved also drops. Adding all of the low-level contaminated soils would provide overall reduction of contaminant concentrations in the pit and minimize the area contaminated.

It is unfortunate (to Anaconda, the environment and scientific progress) that burying fine-sized heavy metals under lime could be defined as remediated. This is the same as saying burying waste in a cat litterbox is a permanent solution. But litter boxes do get dumped elsewhere to actually remove the waste after a brief “remediation”. (As if a litterbox was the solution for collecting a century’s worth of discharge from a monumental industrial smelter, but, I digress.) ARCO/BP argued that removing the contaminated materials would disturb them and cause airborne transport. This disturbance did not halt removing over two million cubic yards of contaminated sediments dredged from the Milltown Dam floodplain 90 miles to the opportunity Ponds floodplain and unloading all of it on Deer Lodge County. Removal is tolerable in Missoula County, but not Deer Lodge County.

Actual removal is not the case with the vast majority of Anaconda’s toxic waste accumulation. Treatment with lime is not true long-term remediation for these heavy metals. This was revealed and analyzed back in the 1980s during my work at Montana Tech. Countless tailings ponds around the world are destabilizing with the rising carbon dioxide levels in the atmosphere which change the equilibrium chemical conditions changing the lime and hydroxyl precipitates into carbonates and releasing the precipitated metals into solution. Back then the atmospheric carbon dioxide level had risen to 320 ppm. Atmospheric carbon dioxide is now over 419 ppm and rapidly rising despite oil corporations and Republican efforts to erase history and ignore scientific data.

Presently, Montana’s Department of Environmental Quality (DEQ) is dumping 130,000 cubic yards of Racetrack Ponds sediment here without review or comment or notice, even though it comes from outside of ADLC. Montana DEQ and ARCO/BP keep re-polluting our home following the same unilateral arbitration that transported the Milltown Dam sediments here for storage and eternal liability. These materials accumulated for over a century from Butte’s various mines and operations, Anaconda’s smelting products and tailings ponds, airborne transport, storm runoff, and are commingled with water and airborne transport of other natural and man-made sources of contaminants. Anaconda is now forced to be the perpetual dump for ARCO/BP, and now Governor Gianforte, without compensation? While they have it loaded on the trucks, let them take the soils another 20 miles and dump it back in the Pit.

To actually remediate the Anaconda contamination, all these low-level contaminated soils should be placed back into the Berkeley Pit. They should take all the contaminated yard soils, Milltown sediments, tailings and pond berms and deposit them in the Berkeley Pit. This idea was rejected because it was argued that mixing the low-level materials from Anaconda’s soils (and Milltown Dam dredging) would complicate the system in the Pit and make it harder to manage. Another reason to place all these contaminated materials together is that the only actual remediation treatment in the two Superfund sites in this area is a small pilot-plant treating the Berkeley Pit water in Butte.

Slag blows off of the main pile along Highway 1 faster than they can bury it and has inundated Anaconda’s wastewater treatment facility by transferring large amounts of inorganic solids containing metals toxic to the bacteria. The slag has not been contained, removed or stabilized and is causing an ongoing hazard to biological

life to the surrounding area. There is no dust suppression on the slag for 95% of the time when the workers are not present in the fall, winter and spring, and the winds frequently run 10-50 miles per hour.

EPA and ARCO ran roughshod over Anaconda. EPA absolved ARCO of restoration of the profoundly polluted areas, like the Red Sands, Smelter Hill and the groundwater plume under Anaconda itself. The Red Sands area resultant from the Old Works smelting facilities was capped with soil and lime and dubbed a recreation area to be given to Anaconda if we pay for its maintenance – forever.

The massive amounts of flue dust and contaminated hillside remain below the stack instead of removal to a centralized disposal/storage area and a possibility to be recycled for all the metal values contained (almost 38% metal by weight).

Groundwaters scattered around Anaconda are so profoundly contaminated they were ruled “technically impracticable” to fix. ARCO was absolved or remediating this or compensating the residents. Because we couldn’t see it and it was moving very slowly, it was dismissed as out of ‘site’ and out of mind.

The reason remediation is charged to a company, and is relatively expensive, is because they have chosen to shut down and stop providing jobs, income and a tax base to the area where they have consumed the resources and contaminated for their profit. The local area citizens and governments require stringent remediation and closure because they no longer share in the corporate largess. It is greatly preferred that they stay in operation, so the consequences of shutdown have always been costly so that they do not close.

My rant may present a distorted view of all the large amount of work performed. Silver Bow creek doesn’t look like a sewage ditch carved in barren clay anymore (though it is not in the Anaconda Smelter site). Great expense and effort have also gone into trying to revegetate hillsides and creek banks. We now have trees growing on hills that were barren when I grew up. There is thin soil, albeit imported, on Smelter Hill, the tailings ponds and part of the slag hill. The scope and rugged topography have made even this a gargantuan task.

The harsh truth is any company negotiating Superfund Remediation saves about \$5 in remediation costs for every \$1 they spend on lawyers as a rule of thumb. Remediation is meant to be expensive so companies have incentive to remain operating to provide an economic resource to the area. Superfund Cleanup produces such substantial changes to the area's landscape, environment and culture that should not be negotiated; it should be dictated by the affected people who live there, not based on the cheapest fix to protect the profiteers.

The EPA has been defunded and stripped of power to fine, punish or legally defend Americans against polluters, taking away much of ability to fight the corporate legal teams. They are desperate to get anything done to report any accomplishments.

ADLC is being perpetually punished by ARCO/BP by consuming our land with contaminated material dumps. These endlessly expanding hazardous waste dumps result in property devaluation, restricting use and access of the land storing waste. Yet, Anaconda receives nothing for accumulating ARCO/BP’s cleanup leftovers and liability. Why do we pick up this paycheck and perpetual liability if ARCO/BP is legally responsible?

ADLC charges a resident businessman \$150 to dispose of 1,500-gallon of municipal waste in our water treatment plant. He is also not allowed to bring in any waste from outside the county. The rate charged for municipal waste should be trivial compared to that charged for hazardous waste. Municipal waste gradually changes to fertilizer and carbon dioxide, while hazardous metals are always metals.

We (ADLC) should be compensated by collecting a fee, or tariff if you please, from ARCO/BP or Montana DEQ as a resource consumption fee, hazardous site use toll, or environmental reparation tariff that is based on axles, or weight or risk to the vicinity, and used to fund vicinity parks, wetlands and recreation sites for the citizens and tourism attractions. The Hearst Creek drainage and historic water source for Anaconda at the edge of town would be ideal.

Another opportunity to provide real reparation for uncompensated damage would be to build a surface water treatment plant (retention ponds with filtration and disinfection) on Hearst Creek for a backup domestic water supply for Anaconda. Historically, it had been Anaconda's water supply and could be again for emergencies or if the population required adding this source again. Another benefit could be to add a small part-time drinking water production facility to stand ready to assist with bottled water where emergencies strike in this country where people need water in the wake of a disaster. BP could have their name on life-saving waters delivered to a crisis.

If BP/ARCO believes the Old Works Golf Course is such a keystone asset and tourist attraction, why don't they send their executives here every year for a tournament? They should be required to send 100 of their executives here each year for a tournament golf course to capacity for 3 days. It would benefit Anaconda and the area. If these executives find any facilities or infrastructure not up to their needs and requirements for their golf vacations, that would be a sign that it has not measured up to BP/ARCO's touted benefit for Anaconda. Any lacking infrastructure should be provided by BP/ARCO and not Anaconda on speculation. All of these upscale facilities and services should be in Anaconda and not Butte, or Bozeman, or London or Houston.

In order for BP/ARCO to say they have completely remediated Anaconda, I think the reparations should be a point where they can leave and be proud of their accomplishments and not just sneak away after throwing down the minimum acceptable appearance.

P.S. I have another complete chapter to share regarding the communications provided by BP/ARCO during their remediation if you desire more complaints and suppressed data.

Flue Dust data detail¹

Anaconda Smelter Superfund Flue Dust Inventory							
	Avg. Concentration						
Constituent	mg/kg		metric tonnes	Tons	Pounds		
Arsenic	49322		32,059.3	35,265.2	70,530,460		
Bismuth	1796		1,167.4	1,284.1	2,568,280		
Cadmium	1564		1,016.6	1,118.3	2,236,520		
Cobalt	38.6		25.1	27.6	55,198		
Copper	155263		100,921.0	111,013.0	222,026,090		
Gold			0.0	0.0	0		
Iron	119056		77,386.4	85,125.0	170,250,080		
Lead	17229		11,198.9	12,318.7	24,637,470		
Magnesium	2909		1,890.9	2,079.9	4,159,870		
Mercury	73.2		47.6	52.3	104,676		
Molybdenum	597		388.1	426.9	853,710		
Nickel	59		38.4	42.2	84,370		
Silver	198		128.7	141.6	283,140		
Zinc	30811		20,027.2	22,029.9	44,059,730		
	37.89	%metal by weight					
Flue Dust total Amounts:		316,500	cubic yards	650000	metric tonnes	715000	Tons
[metric tonnes * 1000kg/mt*2.2lb/kg/2000lb/T= Tons]							
1991 EPARecord of Decision Table 2, p.24							

This table does not include weights or volume from cleanup of beryllium plants.

ANACONDA CO. SMELTER SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Anaconda Co. Smelter	
EPA ID: MTD093291656	
Interviewer name: Mackenzie Meter	Interviewer affiliation: EPA
Subject name: Resident #3	Subject affiliation: Resident
Subject contact information:	
Interview date: 4/23/25	Interview time: 3:00 pm
Interview location: Virtual, Helena MT	
Interview format (circle one): In Person Phone Mail Email Other:	
Interview category: Resident	

Purchased the property in January of last year.

8. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
 - a. The pollution from the stack, lead and arsenic. Concerns about damaging the land and potentially the water.
 - b. Yes. I suppose the main one – a number of the yards in Anaconda have been done. Have done some hiking in summer or fall between town and me, and it was really obvious where the work had been done. Grass was growing, it looked pretty artificial. Plant the grass in rows. You can tell it's planted. This is clearly reclamation work. When I drive down Lost Creek, I can see properties east of me have had work done.
9. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
 - a. I'm not impressed. There are a lot of internal problems – communications with the engineering coordinators. Total lack of coordination and carelessness by people doing the work. Them only doing about half of my property as supposed to be done.
 - b. Carelessness: I respect nature. I recognize the value of trees. I protect the land. I expressed some concern before the work began – wanted all trees, including those four feet or fewer, left behind. Don't take down trees and plant grass. We need trees for carbon dioxide, wildlife habitat. My property has trees, but it is not heavily treed. I was really clear on that. I spent a lot on flagging tape. "Mark anything you don't want – flag what you don't want taken down." They basically ignored a significant portion of it. They respected some and ignored some. What especially t-d me off were the trees that, you can see they were destroyed out of carelessness. New fence build that took trees down. Branches, fine. But totally cutting down trees that didn't need to go down. Ground juniper – pleading with the engineering guys not to touch it. Marked it with everything. You couldn't miss it. "We won't touch it." They went right over it. I called and reported it, engineer got back to me saying the driver just goofed. Marked it more heavily, they went over it again. It's half dead now. Near there, used to be a drive. They took a huge aspen tree. Engineers say they'll talk to the drivers. They're careless, they apologize for that.
 - c. They didn't offer to replace. Sometime in September of last year.
 - d. They are supposed to be doing the lower part of my property. The area down near my house. Whole areas of that they won't do because they say their equipment is too massive. How did they

do lots in town? If you're doing a farm field, use the tractors. Why can't they use hand tools? Whole northwest part of my property that they're not doing since I don't want them to take down the trees. Tillage is supposed to be done on your property. Less than half of what was supposed to be done.

- e. Noxious weed spraying – told they'll spray the whole property, then they say no, we'll only spray where we till.
- f. Have been asking since the beginning about which sprays they're going to use. Dogs and I hike on the property every day. I'm an organic gardener, I don't use chemicals. What do they use? The noxious weeds are all over my property, and areas that are marked for the AR work, but they're not tilling those areas.
- g. I really like the planting they did – I have some steep slope where they planted some trees. Planted tons and tons of trees. When I look at the map, they only did ballpark half of the area that shows on the map. Why? Areas too rocky, other areas they did not.
- h. I don't see what's happened in town, I can see the hills around town where you can see what's done. I can't tell you.

10. What have been the effects of this Site on the surrounding community, if any?

- a. Hopefully the long-term effects are going to be positive in terms of less pollution and all. When I hiked up the hill, I noticed it looks like a farm field. It's a matter of time.
- b. I moved to Southwest Montana a few decades ago. My fear [about the Superfund site] was the ground and air would be polluted, and people would have short lifespans. The fact that the work is being done, it meant I was able to move here. The overall goal of it is positive.
- c. I'm a bicyclist and a hiker. Bike trail around Rocker area, etc. Those go through the reclamation sites. Not sure if that had any reclamation. When I bike from the rest area down the road into Anaconda, there's an area there. There was a lot of reclamation work done there, left this one area undone so people could see the difference and such. The bike trail is awesome.

11. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

- a. No. Generally, people have been good.

12. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

- a. 50/50. The people I have contact with are really trying. They're quick to respond via text, they come out from time to time. Have not been able to get the info about the weed killers (what's in it).
- b. This is kind of tangential to the companies. An archeologist came out and marked a whole bunch of things, and someone reviewed the mine pits. Never heard from them again. I was told I'd see those maps. That was one of the first things done – just about a year ago. The archeologists were near retirement. Engineers said that some government requires that they do the historical research.

13. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
- a. Well was sampled last year, and it was low for arsenic. All drinking water comes from that well. Watering garden as well.
 - b. Has Lost Creek been tested? I don't wade in it, but my dogs have drunk from it a few times.
14. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
- a. Use smaller equipment. Respect trees. Be more environmentally sensitive. The guys that are doing the work could as well be bulldozing a road for an interstate. That's my overarching concern. They're supposed to be cleaning up the environment. Part of that is understanding and respecting the environment.
 - b. The tree planters were high energy and fun. They enjoyed adding trees to the environment. The regular engineers and drivers could be a little more careful.
 - c. The neighbors have been spending months – I cannot figure out why they're putting this massive pond on the back of my neighbor's property on an area that's dry, centralize runoff. Spent months and months – out there now again, adding dirt to the bottom of the pond. It looks like it's "make work" to me. It may be completely valid.
 - d. When they were doing stuff with the grasses, I asked if they could include wildflower seeds. They said no, they're more expensive. They're digging up all the good stuff and not replacing it.

APPENDIX F – SITE INSPECTION CHECKLISTS

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST OU-4: ANACONDA REGIONAL WATER, WASTE AND SOILS (ARWWS)			
I. SITE INFORMATION			
Site Name: <u>Anaconda Co. Smelter</u>		Date of Inspection: <u>04/22/2025</u>	
Location and Region: <u>Anaconda, MT 8</u>		EPA ID: <u>MTD093291656</u>	
Agency, Office or Company Leading the Five-Year Review: <u>The EPA's Region 8</u>		Weather/Temperature: <u>Sunny, Breezy, 50 degrees Fahrenheit</u>	
Remedy Includes: (check all that apply) ☒ Landfill cover/containment ☒ Access controls ☒ Institutional controls ☐ Groundwater pump and treatment ☒ Surface water collection and treatment ☒ Other: Soil treatment with lime, organic amendments, tilling; lime pitting; stream stabilization; engineered stormwater controls; TI waiver for groundwater and surface water; groundwater/surface water management system to contain stormwater runoff and groundwater contamination through sedimentation ponds; domestic well monitoring program to include well replacement or addition of treatment units, where warranted. ☐ Monitored natural attenuation ☒ Groundwater containment ☐ Vertical barrier walls			
Attachments: ☐ Inspection team roster attached ☐ Site map attached			
II. INTERVIEWS (check all that apply)			
1. O&M Site Manager			
	Name	Title	Date
Interviewed ☐ at site	☐ at office	☐ by phone	Phone: _____
Problems, suggestions ☐ Report attached: _____			
2. O&M Staff			
	Name	Title	Date
Interviewed ☐ at site	☐ at office	☐ by phone	Phone: _____
Problems/suggestions ☐ Report attached: _____			
3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.			
Agency <u>CDM Smith</u>			
Contact	<u>Benjamin Simpson</u>	<u>Engineer</u>	<u>05/08/2025</u>
	Name	Title	Date
Problems/suggestions ☐ Report attached: _____			
Agency <u>ADLC County Commissioner</u>			
Contact	<u>Ed Baudette</u>	<u>Commissioner</u>	<u>04/24/2024</u>
	Name	Title	Date
Problems/suggestions ☐ Report attached: _____			
Agency <u>ADLC Public Health</u>			
Contact	<u>Lauren Bolton</u>	<u>Public Health</u>	<u>04/24/2025</u>
	Name	<u>Director</u>	Date
Problems/suggestions ☐ Report attached: _____			
Agency <u>Natural Resource Damage Program</u>			
Contact	<u>Ray Vinkey</u>		<u>04/17/2025</u>
	Name	Title	Date
Problems/suggestions ☐ Report attached: _____			

Problems/suggestions ☐ Report attached: _____			
Agency <u>Montana DEQ</u> Contact <u>Amber Nichols</u> Name _____		<u>05/16/2025</u> Date _____ Phone _____	
Problems/suggestions ☐ Report attached: _____			
4. Other Interviews (optional) ☐ Report attached: Interviewee: Resident #1 – N/A (04/24/2025) Interviewee: Resident #2 – N/A (04/23/2025) Interviewee: Resident #3 – N/A (04/23/2025)			
III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)			
1. O&M Documents ☒ O&M manual ☒ As-built drawings ☒ Maintenance logs ☒ Readily available ☒ Readily available ☒ Readily available ☒ Up to date ☒ Up to date ☒ Up to date ☐ N/A ☐ N/A ☐ N/A Remarks: _____			
2. Site-Specific Health and Safety Plan ☒ Contingency plan/emergency response plan ☒ Readily available ☒ Readily available ☒ Up to date ☒ Up to date ☐ N/A ☐ N/A Remarks: _____			
3. O&M and OSHA Training Records ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
4. Permits and Service Agreements ☐ Air discharge permit ☐ Effluent discharge ☐ Waste disposal, POTW ☐ Other permits: ☐ Readily available ☐ Readily available ☐ Readily available ☐ Readily available ☐ Up to date ☐ Up to date ☐ Up to date ☐ Up to date ☒ N/A ☒ N/A ☒ N/A ☒ N/A Remarks: _____			
5. Gas Generation Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
6. Settlement Monument Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
7. Groundwater Monitoring Records ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
8. Leachate Extraction Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
9. Discharge Compliance Records ☐ Air ☐ Water (effluent) ☐ Readily available ☐ Readily available ☐ Up to date ☐ Up to date ☒ N/A ☒ N/A Remarks: _____			
10. Daily Access/Security Logs ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
IV. O&M COSTS			
1. O&M Organization ☐ State in-house ☐ PRP in-house ☐ Federal facility in-house ☒ Remediation is ongoing so the OU has not yet entered into the O&M phase. ☐ Contractor for state ☐ Contractor for PRP ☐ Contractor for Federal facility			
2. O&M Cost Records ☐ Readily available ☐ Funding mechanism/agreement in place Original O&M cost estimate: _____ ☐ Up to date ☒ Unavailable ☐ Breakdown attached Total annual cost by year for review period if available			

access is to be restricted, both on AR and ADLC land are currently being used for recreation.			
3.	Land Use Changes Off-Site	☒ N/A	
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads ☒ Applicable ☐ N/A			
1.	Roads Damaged	☐ Location shown on site map	☒ Roads adequate ☐ N/A
Remarks: _____			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS ☒ Applicable ☐ N/A			
A. Landfill Surface			
1.	Settlement (low spots)	☐ Location shown on site map	☒ Settlement not evident
Area extent: _____		Depth: _____	
Remarks: <u>All WMAs appeared to be well vegetated following soil treatment. Vegetation monitoring is conducted to ensure areas susceptible to erosion are covered.</u>			
2.	Cracks	☐ Location shown on site map	☒ Cracking not evident
Lengths: _____		Widths: _____	
Depths: _____		Remarks: _____	
3.	Erosion	☐ Location shown on site map	☒ Erosion not evident
Area extent: _____		Depth: _____	
Remarks: <u>WMAs are routinely monitored for vegetative cover and erosion and any issues are addressed as part of the maintenance for the closed WMAs.</u>			
4.	Holes	☐ Location shown on site map	☒ Holes not evident
Area extent: _____		Depth: _____	
Remarks: _____			
5.	Vegetative Cover	☒ Grass	☒ Cover properly established
☒ No signs of stress		☒ Trees/shrubs (indicate size and locations on a diagram)	
Remarks: <u>All the treated soil areas had a good vegetative cover. Trees are planted on the steep slopes to prevent erosion while predominantly grass is planted in the low lying areas once the soil has been treated. In some areas, soil was stripped and clean fill applied to the stripped areas followed by vegetation. Lime pitting was also observed as a form of vegetating steep slopes. The black slag piles (i.e. The Anaconda Landfill Slag (ALS), West Stack Slag (WSS), and Main Granulated Slag(MGS)) are currently uncovered with an interim grass cover established on the north face of the MGS and cover under construction on the west and south faces in the MGS – the east side of the pile abuts a tailings dike and is not exposed except atop the pile.</u>			
6.	Alternative Cover (e.g., armored rock, concrete)	☒ N/A	
Remarks: _____			
7.	Bulges	☐ Location shown on site map	☒ Bulges not evident
Area extent: _____		Height: _____	
Remarks: _____			
8.	Wet Areas/Water Damage	☒ Wet areas/water damage not evident	
☐ Wet areas		☐ Location shown on site map	Area extent: _____
☐ Ponding		☐ Location shown on site map	Area extent: _____
☐ Seeps		☐ Location shown on site map	Area extent: _____
☐ Soft subgrade		☐ Location shown on site map	Area extent: _____
Remarks: _____			
9.	Slope Instability	☐ Slides	☐ Location shown on site map
☒ No evidence of slope instability			
Area extent: _____			
Remarks: _____			
B. Benches ☐ Applicable ☒ N/A			
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			

1.	Flows Bypass Bench Remarks: _____	☐ Location shown on site map	☐ N/A or okay
2.	Bench Breached Remarks: _____	☐ Location shown on site map	☐ N/A or okay
3.	Bench Overtopped Remarks: _____	☐ Location shown on site map	☐ N/A or okay
C. Letdown Channels ☒ Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots) Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of settlement Depth: _____
2.	Material Degradation Material type: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of degradation Area extent: _____
3.	Erosion Area extent: _____ Remarks: <u>Engineered stormwater runoff controls are in place that consist of straw wattles and drainage channels diverting runoff away from Waste Management Areas through riprap-lined and riprap with grout-lined channels.</u>	☐ Location shown on site map	☒ No evidence of erosion Depth: _____
4.	Undercutting Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of undercutting Depth: _____
5.	Obstructions Type: _____ ☐ Location shown on site map Area extent: _____ Size: _____ Remarks: _____	☒ No obstructions	
6.	Excessive Vegetative Growth Type: _____ ☒ No evidence of excessive growth ☒ Vegetation in channels does not obstruct flow ☐ Location shown on site map Area extent: _____ Remarks: _____		
D. Cover Penetrations ☐ Applicable ☒ N/A			
1.	Gas Vents ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____	☐ Active ☐ Passive	
2.	Gas Monitoring Probes ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
3.	Monitoring Wells (within surface area of landfill) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
4.	Extraction Wells Leachate ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
5.	Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A Remarks: _____		
E. Gas Collection and Treatment ☐ Applicable ☒ N/A			
1.	Gas Treatment Facilities ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs maintenance		

Remarks: _____		
2.	Gas Collection Wells, Manifolds and Piping ☐ Good condition ☐ Needs maintenance Remarks: _____	
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs maintenance ☐ N/A Remarks: _____	
F. Cover Drainage Layer ☐ Applicable ☒ N/A		
1.	Outlet Pipes Inspected ☐ Functioning ☐ N/A Remarks: _____	
2.	Outlet Rock Inspected ☐ Functioning ☐ N/A Remarks: _____	
G. Detention/Sedimentation Ponds ☒ Applicable ☐ N/A		
1.	Siltation Area extent: _____ Depth: _____ ☐ N/A ☒ Siltation not evident Remarks: _____	
2.	Erosion Area extent: _____ Depth: _____ ☒ Erosion not evident Remarks: _____	
3.	Outlet Works ☒ Functioning ☐ N/A Remarks: <u>Outlets from sedimentation pond in the Opportunity Pond areas appeared to be functioning as designed. Stormwater flow diversion structures were present. No obstructions noted.</u>	
4.	Dam ☒ Functioning ☐ N/A Remarks: <u>Rock check dams are in place and functioning.</u>	
H. Retaining Walls ☐ Applicable ☒ N/A		
1.	Deformations ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement: _____ Vertical displacement: _____ Rotational displacement: _____ Remarks: _____	
2.	Degradation ☐ Location shown on site map ☐ Degradation not evident Remarks: _____	
I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A		
1.	Siltation ☐ Location shown on site map ☒ Siltation not evident Area extent: _____ Depth: _____ Remarks: _____	
2.	Vegetative Growth ☐ Location shown on site map ☐ N/A ☒ Vegetation does not impede flow Area extent: _____ Type: _____ Remarks: _____	
3.	Erosion ☐ Location shown on site map ☒ Erosion not evident Area extent: _____ Depth: _____ Remarks: _____	
4.	Discharge Structure ☐ Functioning ☒ N/A Remarks: _____	
VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A		
1.	Settlement ☐ Location shown on site map ☐ Settlement not evident Area extent: _____ Depth: _____ Remarks: _____	
2.	Performance Monitoring Type of monitoring: _____ ☐ Performance not monitored Frequency: _____ ☐ Evidence of breaching Head differential: _____ Remarks: _____	
IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A		
A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☒ N/A		
1.	Pumps, Wellhead Plumbing and Electrical	

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A Remarks: _____	
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____
B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A	
1.	Collection Structures, Pumps and Electrical ☐ Good condition ☐ Needs maintenance Remarks: _____
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____
C. Treatment System ☒ Applicable ☐ N/A	
1.	Treatment Train (check components that apply) ☒ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping ☐ Carbon adsorbers ☐ Filters: _____ ☐ Additive (e.g., chelation agent, flocculent): _____ ☒ Others: <u>use of GWSWMS to passively treat contaminated shallow groundwater and stormwater runoff in the Opportunity Pond area. Reverse osmosis units installed in residences where arsenic concentration in potable water wells exceeds the MCL.</u> ☐ Good condition ☐ Needs maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually: _____ ☐ Quantity of surface water treated annually: _____ Remarks: _____
2.	Electrical Enclosures and Panels (properly rated and functional) ☒ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____
3.	Tanks, Vaults, Storage Vessels ☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance Remarks: _____
4.	Discharge Structure and Appurtenances ☐ N/A ☒ Good condition ☐ Needs maintenance Remarks: _____
5.	Treatment Building(s) ☒ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks: _____
6.	Monitoring Wells (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☒ N/A Remarks: _____
D. Monitoring Data	
1.	Monitoring Data ☒ Is routinely submitted on time ☒ Is of acceptable quality
2.	Monitoring Data Suggests: ☒ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining
E. Monitored Natural Attenuation	

1.	Monitoring Wells (natural attenuation remedy)			
	☐ Properly secured/locked	☐ Functioning	☐ Routinely sampled	☐ Good condition
	☐ All required wells located	☐ Needs maintenance		☒ N/A
Remarks: _____				
X. OTHER REMEDIES				
If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.				
XI. OVERALL OBSERVATIONS				
A. Implementation of the Remedy				
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>The soil remedy is designed to prevent direct exposure and to minimize or eliminate contaminant movement to surface water and groundwater by consolidating waste in WMAs followed by closure of these areas with a cap and monitoring systems; excavation of soils and treatment of soils with lime or lime and tilling; stabilizing stream banks and construction of engineered stormwater controls. In addition, the Domestic Well Monitoring Program samples wells and, if necessary, replaces wells or install treatment units as needed. Multiple institutional controls are in place to prevent exposure to contaminated soil and groundwater through county ordinances.</u>				
B. Adequacy of O&M				
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>Motorbike and ATV riding occurs at various parts of the Site including high arsenic areas. The EPA is working with the county to install signs to support access controls.</u>				
C. Early Indicators of Potential Remedy Problems				
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None.</u>				
D. Opportunities for Optimization				
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None.</u>				

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST				
OU-7: OLD WORKS/EAST ANACONDA DEVELOPMENT AREA				
I. SITE INFORMATION				
Site Name: Anaconda Co. Smelter		Date of Inspection: 04/22/2025		
Location and Region: Anaconda, MT 8		EPA ID: MTD093291656		
Agency, Office or Company Leading the Five-Year Review: The EPA's Region 8		Weather/Temperature: Sunny, breezy, 50 degrees Fahrenheit		
Remedy Includes: (Check all that apply)				
☒ Landfill cover/containment				
☒ Access controls				
☒ Institutional controls				
☐ Groundwater pump and treatment				
☐ Surface water collection and treatment				
☒ Other: Soil treatment with lime; lime pitting; stormwater controls and upgrades to existing levees adjacent to Warm Springs Creek; bank stabilization with willow stakes; monitoring of vegetation, erosion.				
Attachments: ☐ Inspection team roster attached ☐ Site map attached				
II. INTERVIEWS (check all that apply)				
1. O&M Site Manager				
Name _____ Title _____ Date _____				
Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____				
Problems, suggestions ☐ Report attached: _____				
2. O&M Staff				
Name _____ Title _____ Date _____				
Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____				
Problems/suggestions ☐ Report attached: _____				
3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.				
Agency CDM Smith				
Contact Benjamin Simpson Engineer 05/08/2025 406-422-7325				
Name _____ Title _____ Date _____ Phone _____				
Problems/suggestions ☐ Report attached: _____				
Agency ADLC County Commissioner				
Contact Ed Baudette Commissioner 04/24/2025 _____				
Name _____ Title _____ Date _____ Phone _____				
Problems/suggestions ☐ Report attached: _____				
Agency ADLC Public Health				
Contact Lauren Bolton Public Health 04/24/2025 _____				
Name _____ Director _____ Date _____ Phone _____				
Title _____				
Problems/suggestions ☐ Report attached: _____				
Agency Natural Resources Damage Program				
Contact Ray Vinkey _____ 04/17/2025 _____				
Name _____ Title _____ Date _____ Phone _____				
Problems/suggestions ☐ Report attached: _____				
3. Other Interviews (optional) ☐ Report attached: _____				
Interviewee: Resident #1 – N/A (04/24/2025)				
Interviewee: Resident #2 – N/A (04/23/2025)				
Interviewee: Resident #3 – N/A (04/23/2025)				

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)				
1.	O&M Documents ☒ O&M manual ☒ Readily available ☒ Up to date ☐ N/A ☒ As-built drawings ☒ Readily available ☒ Up to date ☐ N/A ☒ Maintenance logs ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
2.	Site-Specific Health and Safety Plan ☒ Readily available ☒ Up to date ☐ N/A ☒ Contingency plan/emergency response plan ☒ Readily available ☒ Up to date ☐ N/A Remarks: <u>Records readily available in on-site work trailers</u>			
3.	O&M and OSHA Training Records ☒ Readily available ☒ Up to date ☐ N/A Remarks: <u>Records readily available in on-site work trailers</u>			
4.	Permits and Service Agreements ☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A ☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A ☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A ☐ Other permits: _____ ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
5.	Gas Generation Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
6.	Settlement Monument Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
7.	Groundwater Monitoring Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: <u>Groundwater monitoring is conducted as part of OU4.</u>			
8.	Leachate Extraction Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
9.	Discharge Compliance Records ☐ Air ☐ Readily available ☐ Up to date ☒ N/A ☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
10.	Daily Access/Security Logs ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
IV. O&M COSTS				
1.	O&M Organization ☐ State in-house ☐ Contractor for state ☐ PRP in-house ☒ Contractor for PRP ☐ Federal facility in-house ☐ Contractor for Federal facility ☐ _____			

2.	O&M Cost Records	☐ Readily available ☐ Up to date ☐ Funding mechanism/agreement in place ☒ Unavailable Original O&M cost estimate: _____ ☐ Breakdown attached Total annual cost by year for review period if available		
	From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
	From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3.	Unanticipated or Unusually High O&M Costs during Review Period	Describe costs and reasons: _____		
V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A				
A. Fencing				
1.	Fencing Damaged	☐ Location shown on site map	☐ Gates secured	☐ N/A
Remarks: <u>Fencing between the golf course and the red sands area is damaged by trespassers.</u>				
B. Other Access Restrictions				
1.	Signs and Other Security Measures	☐ Location shown on site map	☐ N/A	
Remarks: <u>Signs posted on fencing not to trespass around Golf Course. Fencing is being installed around exposed tailings in the "Red Sands" area and around through trail through the old facility without signage. EPA is working with the county and AR to place signage.</u>				
C. Institutional Controls				
1.	Implementation and Enforcement			
Site conditions imply ICs not properly implemented		☐ Yes ☒ No ☐ N/A		
Site conditions imply ICs not being fully enforced		☐ Yes ☒ No ☐ N/A		
Type of monitoring (e.g., self-reporting, drive by): _____				
Frequency: _____				
Responsible party/agency: <u>ADLC</u>				
Contact _____				
	Name	Title	Date	Phone no.
Reporting is up to date		☐ Yes	☐ No	☒ N/A
Reports are verified by the lead agency		☐ Yes	☐ No	☒ N/A
Specific requirements in deed or decision documents have been met		☐ Yes	☐ No	☒ N/A
Violations have been reported		☐ Yes	☐ No	☒ N/A
Other problems or suggestions: ☐ Report attached				
2.	Adequacy	☐ ICs are adequate	☒ ICs are inadequate	☐ N/A
Remarks: <u>The Anaconda-Deer Lodge County (ADLC) has an Institutional Controls Program in place whereby the ADLC works closely with the Planning Department to guide developers through the DPS process to ensure developers understand and adhere to Superfund protocol. In addition, construction of new domestic wells within the county requires a permit through ADLC's Environmental Health Department. Informational controls have not prevented recreational use of exposed tailings.</u>				
D. General				
1.	Vandalism/Trespassing	☐ Location shown on site map	☐ No vandalism evident	
Remarks: <u>Vandalism of fencing noted between the golf course and the Red Sands area. Also all-terrain vehicles and motorbike tracks were observed on the Red Sands area. Rocks and gates to keep vehicles off the buried tailings in the Red Sands area have been circumvented and a 2 track vehicle trail directly over the tailings cover is clearly visible</u>				

2.	Land Use Changes On Site	☐ N/A
Remarks: <u>Near the Old Works Golf Course, a land plot formally designated as commercial was changed to residential to allow for the construction of new condominiums.</u>		
3.	Land Use Changes Off Site	☒ N/A
Remarks: _____		
VI. GENERAL SITE CONDITIONS		
A. Roads ☒ Applicable ☐ N/A		
1.	Roads Damaged	☐ Location shown on site map ☒ Roads adequate ☐ N/A
Remarks: _____		
B. Other Site Conditions		
Remarks: _____		
VII. LANDFILL COVERS ☒ Applicable ☐ N/A		
A. Landfill Surface		
1.	Settlement (low spots)	☐ Location shown on site map ☒ Settlement not evident
Area extent: _____		Depth: _____
Remarks: <u>The area appeared to be well vegetated. Vegetation monitoring is conducted to ensure areas susceptible to erosion are covered.</u>		
2.	Cracks	☐ Location shown on site map ☒ Cracking not evident
Lengths: _____		Widths: _____
Depths: _____		
Remarks: _____		
3.	Erosion	☐ Location shown on site map ☒ Erosion not evident
Area extent: _____		Depth: _____
Remarks: <u>Area is included in the sitewide vegetative cover and erosion monitoring program.</u>		
4.	Holes	☐ Location shown on site map ☒ Holes not evident
Area extent: _____		Depth: _____
Remarks: _____		
5.	Vegetative Cover	☒ Grass ☒ Cover properly established
☒ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)		
Remarks: <u>The waste management areas had a good vegetative cover except for a portion of the Red Sands Area, which were left in place as a historical feature along a paved nature trail. Golf course slag and waste material is exposed by design for aesthetic reasons and to functionally replace sand in bunkers-bunker slag lost during operation is regularly replaced with slag from the Main Granulated Slag pile in OU4.</u>		
6.	Alternative Cover (e.g., armored rock, concrete)	☒ N/A
Remarks: _____		
7.	Bulges	☐ Location shown on site map ☒ Bulges not evident
Area extent: _____		Height: _____
Remarks: _____		
8.	Wet Areas/Water Damage	☒ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Area extent: _____ ☐ Ponding ☐ Location shown on site map Area extent: _____ ☐ Seeps ☐ Location shown on site map Area extent: _____ ☐ Soft subgrade ☐ Location shown on site map Area extent: _____		
Remarks: _____		
9.	Slope Instability	☐ Slides ☐ Location shown on site map
☒ No evidence of slope instability		
Area extent: _____		
Remarks: _____		
B. Benches ☐ Applicable ☒ N/A		
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench	☐ Location shown on site map ☐ N/A or okay
Remarks: _____		
2.	Bench Breached	☐ Location shown on site map ☐ N/A or okay
Remarks: _____		
3.	Bench Overtopped	☐ Location shown on site map ☐ N/A or okay

Remarks: _____			
C. Letdown Channels ☒ Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots) ☐ Location shown on site map Area extent: _____ Remarks: _____	☒ No evidence of settlement Depth: _____	
2.	Material Degradation ☐ Location shown on site map Material type: _____ Remarks: _____	☒ No evidence of degradation Area extent: _____	
3.	Erosion ☐ Location shown on site map Area extent: _____ Remarks: <u>Engineered stormwater runoff controls are in place that consist of drainage channels diverting runoff away from waste management areas through riprap-lined and riprap with grout-lined channels.</u>	☒ No evidence of erosion Depth: _____	
4.	Undercutting ☐ Location shown on site map Area extent: _____ Remarks: _____	☒ No evidence of undercutting Depth: _____	
5.	Obstructions Type: _____ ☐ Location shown on site map Area extent: _____ Size: _____ Remarks: _____	☒ No obstructions	
6.	Excessive Vegetative Growth Type: _____ ☒ No evidence of excessive growth ☒ Vegetation in channels does not obstruct flow ☐ Location shown on site map Area extent: _____ Remarks: _____		
D. Cover Penetrations ☐ Applicable ☒ N/A			
1.	Gas Vents ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
2.	Gas Monitoring Probes ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
3.	Monitoring Wells (within surface area of landfill) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
4.	Extraction Wells Leachate ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
5.	Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A Remarks: _____		
E. Gas Collection and Treatment ☐ Applicable ☒ N/A			
1.	Gas Treatment Facilities ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs maintenance Remarks: _____		
2.	Gas Collection Wells, Manifolds and Piping ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs maintenance ☐ N/A Remarks: _____		

F. Cover Drainage Layer		☐ Applicable	☒ N/A
1.	Outlet Pipes Inspected	☐ Functioning	☐ N/A
Remarks: _____			
2.	Outlet Rock Inspected	☐ Functioning	☐ N/A
Remarks: _____			
G. Detention/Sedimentation Ponds		☐ Applicable	☒ N/A
1.	Siltation	Area extent: _____	Depth: _____ ☐ N/A
☐ Siltation not evident			
Remarks: _____			
2.	Erosion	Area extent: _____	Depth: _____
☐ Erosion not evident			
Remarks: _____			
3.	Outlet Works	☐ Functioning	☐ N/A
Remarks: _____			
4.	Dam	☐ Functioning	☐ N/A
Remarks: _____			
H. Retaining Walls		☐ Applicable	☒ N/A
1.	Deformations	☐ Location shown on site map	☐ Deformation not evident
Horizontal displacement: _____		Vertical displacement: _____	
Rotational displacement: _____			
Remarks: _____			
2.	Degradation	☐ Location shown on site map	☐ Degradation not evident
Remarks: _____			
I. Perimeter Ditches/Off-Site Discharge		☒ Applicable	☐ N/A
1.	Siltation	☐ Location shown on site map	☒ Siltation not evident
Area extent: _____		Depth: _____	
Remarks: _____			
2.	Vegetative Growth	☐ Location shown on site map	☐ N/A
☒ Vegetation does not impede flow			
Area extent: _____		Type: _____	
Remarks: _____			
3.	Erosion	☐ Location shown on site map	☒ Erosion not evident
Area extent: _____		Depth: _____	
Remarks: _____			
4.	Discharge Structure	☐ Functioning	☒ N/A
Remarks: _____			
VIII. VERTICAL BARRIER WALLS		☐ Applicable	☒ N/A
1.	Settlement	☐ Location shown on site map	☐ Settlement not evident
Area extent: _____		Depth: _____	
Remarks: _____			
2.	Performance Monitoring	Type of monitoring: _____	
☐ Performance not monitored			
Frequency: _____		☐ Evidence of breaching	
Head differential: _____			
Remarks: _____			
IX. GROUNDWATER/SURFACE WATER REMEDIES		☐ Applicable	☒ N/A
A. Groundwater Extraction Wells, Pumps and Pipelines		☐ Applicable	☐ N/A
1.	Pumps, Wellhead Plumbing and Electrical		
☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A			
Remarks: _____			
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances		
☐ Good condition ☐ Needs maintenance			
Remarks: _____			
3.	Spare Parts and Equipment		
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided			
Remarks: _____			

B. Surface Water Collection Structures, Pumps and Pipelines		☐ Applicable	☒ N/A
1. Collection Structures, Pumps and Electrical ☐ Good condition ☐ Needs maintenance Remarks: _____			
2. Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____			
3. Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____			
C. Treatment System		☐ Applicable	☒ N/A
1. Treatment Train (check components that apply) ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping ☐ Carbon adsorbers ☐ Filters: _____ ☐ Additive (e.g., chelation agent, flocculent): _____ ☐ Others: _____ ☐ Good condition ☐ Needs maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually: _____ ☐ Quantity of surface water treated annually: _____ Remarks: _____			
2. Electrical Enclosures and Panels (properly rated and functional) ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____			
3. Tanks, Vaults, Storage Vessels ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance Remarks: _____			
4. Discharge Structure and Appurtenances ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____			
5. Treatment Building(s) ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks: _____			
6. Monitoring Wells (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____			
D. Monitoring Data			
1. Monitoring Data ☐ Is routinely submitted on time ☐ Is of acceptable quality			
2. Monitoring Data Suggests: ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining			
E. Monitored Natural Attenuation			
1. Monitoring Wells (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☒ N/A Remarks: _____			
X. OTHER REMEDIES			
If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			

	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>The soil remedy is designed to prevent direct exposure and to minimize or eliminate contaminant movement to surface water and groundwater by consolidating waste in waste management areas followed by closure of these areas with a cap and monitoring systems; excavation of soils and treatment of soils with lime or lime and tilling; stabilizing stream banks and construction of engineered stormwater controls. Multiple institutional controls are in place to prevent exposure to contaminated soil and groundwater through county ordinances.</u>
B.	Adequacy of O&M
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>Motorbike and ATV riding occurs at various high arsenic and waste management areas of the Site, in particular waste management and high arsenic areas owned by the county, including the Red Sands area, ALS, and Smelter Hill. EPA has been working with AR and the county to improve access controls on both AR and county land. Fencing is being installed concurrent with the writing of this report. EPA is working with AR and ADLC to reach consensus on effective signs. .</u>
C.	Early Indicators of Potential Remedy Problems
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>The portion of Red Sands left as a historical feature along the nature trail is being used by motorbikes and all-terrain vehicles. This activity may result in exposure to dust generated from such activities.</u>
D.	Opportunities for Optimization
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None noted.</u>

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST OU-11: FLUE DUST			
I. SITE INFORMATION			
Site Name: <u>Anaconda Co. Smelter</u>		Date of Inspection: <u>04/22/2025</u>	
Location and Region: <u>Anaconda, MT 8</u>		EPA ID: <u>MTD093291656</u>	
Agency, Office or Company Leading the Five-Year Review: <u>EPA Region 8</u>		Weather/Temperature: <u>Sunny, breezy, 50 degrees Fahrenheit</u>	
Remedy Includes: (check all that apply) ☒ Landfill cover/containment ☒ Access controls ☒ Institutional controls ☐ Groundwater pump and treatment ☐ Surface water collection and treatment ☒ Other: <u>Soil treatment with cement and lime; stormwater controls around the flue dust repository, leachate collection and disposal (evaporation) as needed; dust suppression equipment; monitoring of vegetation, erosion, groundwater and leachate levels.</u> ☐ Monitored natural attenuation ☐ Groundwater containment ☐ Vertical barrier walls			
Attachments: ☐ Inspection team roster attached ☐ Site map attached			
II. INTERVIEWS (check all that apply)			
1. O&M Site Manager Name _____ Title _____ Date _____ Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____ Problems, suggestions ☐ Report attached: _____			
2. O&M Staff Name _____ Title _____ Date _____ Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____ Problems/suggestions ☐ Report attached: _____			
3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply. Agency <u>CDM Smith</u> Contact <u>Benjamin Simpson</u> <u>Engineer</u> <u>05/08/2025</u> <u>406-422-7325</u> Name Title Date Phone Problems/suggestions ☐ Report attached: _____ Agency <u>ADLC County Commissioner</u> Contact <u>Ed Baudette</u> <u>Commissioner</u> <u>04/24/2025</u> _____ Name Title Date Phone Problems/suggestions ☐ Report attached: _____ Agency <u>ADLC Public Health</u> Contact <u>Lauren Bolton</u> <u>Public Health</u> <u>04/24/2025</u> _____ Name <u>Director</u> Date Phone Title Problems/suggestions ☐ Report attached: _____ Agency <u>Natural Resource Damage Program</u> Contact <u>Ray Vinkey</u> _____ <u>04/17/2025</u> _____ Name Title Date Phone Problems/suggestions ☐ Report attached: _____			
4. Other Interviews (optional) ☐ Report attached: _____ Interviewee: Resident #1 – N/A (04/24/2025) Interviewee: Resident #2 – N/A (04/23/2025) Interviewee: Resident #3 – N/A (04/23/2025)			

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)				
1.	O&M Documents ☒ O&M manual ☒ Readily available ☒ Up to date ☐ N/A ☒ As-built drawings ☒ Readily available ☒ Up to date ☐ N/A ☒ Maintenance logs ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
2.	Site-Specific Health and Safety Plan ☒ Readily available ☒ Up to date ☐ N/A ☒ Contingency plan/emergency response plan ☒ Readily available ☒ Up to date ☐ N/A Remarks: <u>Records readily available in on-site work trailers</u>			
3.	O&M and OSHA Training Records ☒ Readily available ☒ Up to date ☐ N/A Remarks: <u>Records readily available in on-site work trailers</u>			
4.	Permits and Service Agreements ☐ Air discharge permit ☐ Readily available ☐ Up to date ☒ N/A ☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A ☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A ☐ Other permits: _____ ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
5.	Gas Generation Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
6.	Settlement Monument Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
7.	Groundwater Monitoring Records ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
8.	Leachate Extraction Records ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
9.	Discharge Compliance Records ☐ Air ☐ Readily available ☐ Up to date ☒ N/A ☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A Remarks: _____			
10.	Daily Access/Security Logs ☒ Readily available ☒ Up to date ☐ N/A Remarks: _____			
IV. O&M COSTS				
1.	O&M Organization ☐ State in-house ☐ PRP in-house ☐ Federal facility in-house ☐ _____ ☐ Contractor for state ☒ Contractor for PRP ☐ Contractor for Federal facility			
2.	O&M Cost Records ☐ Readily available ☐ Up to date ☐ Funding mechanism/agreement in place ☒ Unavailable Original O&M cost estimate: _____ ☐ Breakdown attached Total annual cost by year for review period if available From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached			

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
3. Unanticipated or Unusually High O&M Costs during Review Period Describe costs and reasons: _____			
V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A			
A. Fencing			
1. Fencing Damaged	☐ Location shown on site map	☒ Gates secured	☒ N/A
Remarks: _____			
B. Other Access Restrictions			
1. Signs and Other Security Measures	☐ Location shown on site map	☐ N/A	
Remarks: <u>Signs posted at Smelter Hill Repository Complex not to trespass.</u>			
C. Institutional Controls (ICs)			
1. Implementation and Enforcement			
Site conditions imply ICs not properly implemented		☐ Yes	☒ No ☐ N/A
Site conditions imply ICs not being fully enforced		☐ Yes	☒ No ☐ N/A
Type of monitoring (e.g., self-reporting, drive by): _____			
Frequency: _____			
Responsible party/agency: <u>ADLC</u>			
Contact _____			
Name	Title	Date	Phone no.
Reporting is up to date		☐ Yes ☐ No	☒ N/A
Reports are verified by the lead agency		☐ Yes ☐ No	☒ N/A
Specific requirements in deed or decision documents have been met		☐ Yes ☐ No	☒ N/A
Violations have been reported		☐ Yes ☐ No	☒ N/A
Other problems or suggestions: ☐ Report attached			
2. Adequacy ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A			
Remarks: <u>The Anaconda-Deer Lodge County (ADLC) has an Interim Institutional Controls Program in place whereby the ADLC works closely with the Planning Department to guide developers through the DPS process to ensure developers understand and adhere to Superfund protocol. In addition, construction of new domestic wells within the county requires a permit through ADLC's Environmental Health Department. While ICs are adequate, additional funding is required for the ADLC to continue to implement them. 2022 Consent Decree settlement includes long-term funding for the county to implement the ICs.</u>			
D. General			
1. Vandalism/Trespassing	☐ Location shown on site map	☒ No vandalism evident	
Remarks: _____			
2. Land Use Changes On Site	☒ N/A		
Remarks: _____			
3. Land Use Changes Off Site	☒ N/A		
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads ☒ Applicable ☐ N/A			
1. Roads Damaged	☐ Location shown on site map	☒ Roads adequate	☐ N/A
Remarks: _____			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS ☒ Applicable ☐ N/A			
A. Landfill Surface			
1. Settlement (low spots)	☐ Location shown on site map	☒ Settlement not evident	
Area extent: _____		Depth: _____	
Remarks: <u>The area appeared to be well vegetated. Vegetation monitoring is conducted to ensure areas susceptible to erosion are covered.</u>			
2. Cracks	☐ Location shown on site map	☒ Cracking not evident	
Lengths: _____	Widths: _____	Depths: _____	
Remarks: _____			
3. Erosion	☐ Location shown on site map	☒ Erosion not evident	

Area extent: _____		Depth: _____	
Remarks: <u>Area is included in the sitewide vegetative cover and erosion monitoring program.</u>			
4.	Holes Area extent: _____ Remarks: <u>A small portion of the area was previously excavated in search of rare earth minerals, but the cover has since been patched.</u>	☐ Location shown on site map	☒ Holes not evident Depth: _____
5.	Vegetative Cover ☒ No signs of stress Remarks: <u>The repository had a good vegetative cover.</u>	☒ Grass ☐ Trees/shrubs (indicate size and locations on a diagram)	☒ Cover properly established
6.	Alternative Cover (e.g., armored rock, concrete) Remarks: _____	☒ N/A	
7.	Bulges Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ Bulges not evident Height: _____
8.	Wet Areas/Water Damage ☐ Wet areas ☐ Ponding ☐ Seeps ☐ Soft subgrade Remarks: _____	☒ Wet areas/water damage not evident ☐ Location shown on site map ☐ Location shown on site map ☐ Location shown on site map ☐ Location shown on site map	Area extent: _____ Area extent: _____ Area extent: _____ Area extent: _____
9.	Slope Instability ☒ No evidence of slope instability Area extent: _____ Remarks: _____	☐ Slides	☐ Location shown on site map
B. Benches ☐ Applicable ☒ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks: _____	☐ Location shown on site map	☐ N/A or okay
2.	Bench Breached Remarks: _____	☐ Location shown on site map	☐ N/A or okay
3.	Bench Overtopped Remarks: _____	☐ Location shown on site map	☐ N/A or okay
C. Letdown Channels ☒ Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots) Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of settlement Depth: _____
2.	Material Degradation Material type: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of degradation Area extent: _____
3.	Erosion Area extent: _____ Remarks: <u>Engineered stormwater runoff controls are in place that consist of drainage channels diverting runoff away from waste management areas through riprap-lined and riprap with grout-lined channels.</u>	☐ Location shown on site map	☒ No evidence of erosion Depth: _____
4.	Undercutting Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ No evidence of undercutting Depth: _____
5.	Obstructions ☐ Location shown on site map Remarks: _____	Type: _____ Area extent: _____ Size: _____	☒ No obstructions
6.	Excessive Vegetative Growth ☒ No evidence of excessive growth	Type: _____	

☒ Vegetation in channels does not obstruct flow ☐ Location shown on site map Area extent: _____ Remarks: _____			
D. Cover Penetrations ☒ Applicable ☒ N/A			
1.	Gas Vents ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
2.	Gas Monitoring Probes ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
3.	Monitoring Wells (within surface area of landfill) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
4.	Extraction Wells Leachate ☒ Properly secured/locked ☒ Functioning ☐ Routinely sampled ☒ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: <u>A water treatment facility was present and functioning adjacent to the leachate sump.</u>		
5.	Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A Remarks: _____		
E. Gas Collection and Treatment ☐ Applicable ☒ N/A			
1.	Gas Treatment Facilities ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs maintenance Remarks: _____		
2.	Gas Collection Wells, Manifolds and Piping ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs maintenance ☐ N/A Remarks: _____		
F. Cover Drainage Layer ☐ Applicable ☒ N/A			
1.	Outlet Pipes Inspected ☐ Functioning ☐ N/A Remarks: _____		
2.	Outlet Rock Inspected ☐ Functioning ☐ N/A Remarks: _____		
G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A			
1.	Siltation Area extent: _____ Depth: _____ ☐ N/A ☐ Siltation not evident Remarks: _____		
2.	Erosion Area extent: _____ Depth: _____ ☐ Erosion not evident Remarks: _____		
3.	Outlet Works ☐ Functioning ☐ N/A Remarks: _____		
4.	Dam ☐ Functioning ☐ N/A Remarks: _____		
H. Retaining Walls ☐ Applicable ☒ N/A			
1.	Deformations ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement: _____ Vertical displacement: _____ Rotational displacement: _____ Remarks: _____		
2.	Degradation ☐ Location shown on site map ☐ Degradation not evident Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A			

1.	Siltation Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ Siltation not evident Depth: _____
2.	Vegetative Growth ☒ Vegetation does not impede flow Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ N/A Type: _____
3.	Erosion Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ Erosion not evident Depth: _____
4.	Discharge Structure Remarks: _____	☐ Functioning	☒ N/A
VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A			
1.	Settlement Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ Settlement not evident Depth: _____
2.	Performance Monitoring Type of monitoring: _____ ☐ Performance not monitored Frequency: _____ Head differential: _____ Remarks: _____		☐ Evidence of breaching
IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A			
A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☐ N/A			
1.	Pumps, Wellhead Plumbing and Electrical ☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A Remarks: _____		
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____		
B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☐ N/A			
1.	Collection Structures, Pumps and Electrical ☐ Good condition ☐ Needs maintenance Remarks: _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____		
C. Treatment System ☐ Applicable ☐ N/A			
1.	Treatment Train (check components that apply) ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping ☐ Carbon adsorbers ☐ Filters: _____ ☐ Additive (e.g., chelation agent, flocculent): _____ ☐ Others: _____ ☐ Good condition ☐ Needs maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually: _____ ☐ Quantity of surface water treated annually: _____ Remarks: _____		
2.	Electrical Enclosures and Panels (properly rated and functional)		

	☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____
3.	Tanks, Vaults, Storage Vessels ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance Remarks: _____
4.	Discharge Structure and Appurtenances ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____
5.	Treatment Building(s) ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks: _____
6.	Monitoring Wells (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____
D. Monitoring Data	
1.	Monitoring Data ☐ Is routinely submitted on time ☐ Is of acceptable quality
2.	Monitoring Data Suggests: ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____
X. OTHER REMEDIES	
If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>The remedy is designed to prevent exposure to flue dust and minimize or eliminate contaminant movement to underlying soil and groundwater by consolidating the stabilized flue dust in a lined and covered repository. Multiple institutional controls are in place to prevent exposure to contained waste through county ordinances, proprietary controls, and informational controls. Long-term monitoring of erosion and vegetation is conducted through the SMP.</u>	
B.	Adequacy of O&M
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>None noted.</u>	
C.	Early Indicators of Potential Remedy Problems
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None noted.</u>	
D.	Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None noted.</u>	

OU-15: MILL CREEK

Site Name: Anaconda Co. Smelter	Date of Inspection: <u>10/23/2025</u>
Location and Region: Anaconda, MT 8	EPA ID: MTD093291656
Agency, Office or Company Leading the Five-Year Review: EPA Region 8	Weather/Temperature: <u>Sunny, breezy, 56 degrees Fahrenheit</u>

☒ Landfill cover/containment	☐ Monitored natural attenuation
☒ Access controls	☐ Groundwater containment
☒ Institutional controls	☐ Vertical barrier walls
☐ Groundwater pump and treatment	
☐ Surface water collection and treatment	
☒ Other: <u>Relocation of residents, home demolition, soil excavation with disposal in Smelter Hill</u>	

(OU4), regrading and restoration, monitoring and maintaining the vegetation.

II. INTERVIEWS (check all that apply)

1. O&M Site Manager			
Name _____		Title _____	Date _____
Interviewed ☐ at site ☐ at office ☐ by phone		Phone: _____	
Problems, suggestions ☐ Report attached: _____			

2. **O&M Staff**

Name	Title	Date
Interviewed ☐ at site ☐ at office ☐ by phone	Phone: _____	
Problems/suggestions ☐ Report attached: _____		

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

Agency CDM Smith

Contact	<u>Benjamin Simpson</u>	<u>Engineer</u>	<u>05/08/2025</u>	<u>406-422-7325</u>
	Name	Title	Date	Phone No.

Problems/suggestions ☐ Report attached: _____

Agency ADLC County Commissioner

Contact	<u>Ed Baudette</u>	<u>Commissioner</u>	<u>04/24/2025</u>	_____
	Name	Title	Date	Phone No.

Problems/suggestions ☐ Report attached: _____

Agency ADLC Public Health

Contact	<u>Lauren Bolton</u>	<u>Public Health</u>	<u>04/24/2025</u>	_____
	Name	<u>Director</u>	Date	Phone No.
		Title		

Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☐ Report attached: _____

Interviewee: Resident #1 – N/A (04/24/2025)
Interviewee: Resident #2 – N/A (04/23/2025)
Interviewee: Resident #3 – N/A (04/23/2025)

1.	O&M Documents			
	☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A

	☐ As-built drawings ☐ Maintenance logs Remarks: _____	☐ Readily available ☐ Readily available	☐ Up to date ☐ Up to date	☒ N/A ☒ N/A
2.	Site-Specific Health and Safety Plan ☐ Contingency plan/emergency response plan Remarks: <u>Records readily available in on-site work trailers</u>	☒ Readily available ☒ Readily available	☐ Up to date ☐ Up to date	☐ N/A ☐ N/A
3.	O&M and OSHA Training Records Remarks: _____	☒ Readily available	☒ Up to date	☐ N/A
4.	Permits and Service Agreements ☐ Air discharge permit ☐ Effluent discharge ☐ Waste disposal, POTW ☐ Other permits: _____ Remarks: _____	☐ Readily available ☐ Readily available ☐ Readily available ☐ Readily available	☐ Up to date ☐ Up to date ☐ Up to date ☐ Up to date	☒ N/A ☒ N/A ☒ N/A ☒ N/A
5.	Gas Generation Records Remarks: _____	☐ Readily available	☐ Up to date	☒ N/A
6.	Settlement Monument Records Remarks: _____	☐ Readily available	☐ Up to date	☒ N/A
7.	Groundwater Monitoring Records Remarks: _____	☐ Readily available	☐ Up to date	☒ N/A
8.	Leachate Extraction Records Remarks: _____	☐ Readily available	☐ Up to date	☒ N/A
9.	Discharge Compliance Records ☐ Air ☐ Water (effluent) Remarks: _____	☐ Readily available ☐ Readily available	☐ Up to date ☐ Up to date	☒ N/A ☒ N/A
10.	Daily Access/Security Logs Remarks: _____	☐ Readily available	☐ Up to date	☒ N/A
IV. O&M COSTS				
1.	O&M Organization ☐ State in-house ☐ PRP in-house ☐ Federal facility in-house ☐ _____			
	☐ Contractor for state ☒ Contractor for PRP ☐ Contractor for Federal facility			
2.	O&M Cost Records ☐ Readily available ☐ Funding mechanism/agreement in place Original O&M cost estimate: _____ ☐ Breakdown attached Total annual cost by year for review period if available From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached From: _____ Date To: _____ Date _____ Total cost ☐ Breakdown attached			
3.	Unanticipated or Unusually High O&M Costs during Review Period Describe costs and reasons: _____			

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A			
A. Fencing			
1.	Fencing Damaged ☐ Location shown on site map ☒ Gates secured ☐ N/A	Remarks: <u>Fencing around Mill Creek area is secured.</u>	
B. Other Access Restrictions			
1.	Signs and Other Security Measures ☐ Location shown on site map ☐ N/A	Remarks: <u>Signs posted not to trespass.</u>	
C. Institutional Controls (ICs)			
1.	Implementation and Enforcement Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A Type of monitoring (e.g., self-reporting, drive by): _____ Frequency: _____ Responsible party/agency: <u>ADLC, AR</u> Contact _____ Name Title Date Phone no. Reporting is up to date ☐ Yes ☐ No ☒ N/A Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A Violations have been reported ☐ Yes ☐ No ☒ N/A Other problems or suggestions: ☐ Report attached		
2.	Adequacy ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A Remarks: <u>The Anaconda-Deer Lodge County (ADLC) has an Institutional Controls Program in place whereby the ADLC works closely with the Planning Department to guide developers through the development permit system (DPS) process to ensure developers understand and adhere to Superfund protocol. In addition, construction of new domestic wells within the county requires a permit through ADLC's Environmental Health Department. Under the site wide consent decree the PRP provides long-term funding directly to the community hospital for blood lead testing and to the county to implement other ICs.</u>		
D. General			
1.	Vandalism/Trespassing ☐ Location shown on site map ☒ No vandalism evident		
Remarks: _____			
2.	Land Use Changes On Site ☒ N/A		
Remarks: _____			
3.	Land Use Changes Off Site ☒ N/A		
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads ☒ Applicable ☐ N/A			
1.	Roads Damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A		
Remarks: _____			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS ☒ Applicable ☐ N/A			
A. Landfill Surface			
1.	Settlement (low spots) ☐ Location shown on site map ☒ Settlement not evident Area extent: _____ Depth: _____ Remarks: <u>Area appeared to be well vegetated following soil treatment. Vegetation monitoring is conducted to ensure areas susceptible to erosion are covered.</u>		
2.	Cracks ☐ Location shown on site map ☒ Cracking not evident Lengths: _____ Widths: _____ Depths: _____ Remarks: _____		
3.	Erosion ☐ Location shown on site map ☒ Erosion not evident Area extent: _____ Depth: _____ Remarks: _____		
4.	Holes ☐ Location shown on site map ☒ Holes not evident Area extent: _____ Depth: _____		

Remarks: _____			
5.	Vegetative Cover ☒ No signs of stress Remarks: _____	☒ Grass ☒ Trees/shrubs (indicate size and locations on a diagram)	☒ Cover properly established
6.	Alternative Cover (e.g., armored rock, concrete) Remarks: _____		☒ N/A
7.	Bulges Area extent: _____ Remarks: _____	☐ Location shown on site map	☒ Bulges not evident Height: _____
8.	Wet Areas/Water Damage ☒ Wet areas/water damage not evident ☐ Wet areas ☐ Location shown on site map Area extent: _____ ☐ Ponding ☐ Location shown on site map Area extent: _____ ☐ Seeps ☐ Location shown on site map Area extent: _____ ☐ Soft subgrade ☐ Location shown on site map Area extent: _____ Remarks: _____		
9.	Slope Instability ☐ Slides ☒ No evidence of slope instability Area extent: _____ Remarks: _____	☐ Location shown on site map	
B. Benches ☐ Applicable ☒ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench Remarks: _____	☐ Location shown on site map	☐ N/A or okay
2.	Bench Breached Remarks: _____	☐ Location shown on site map	☐ N/A or okay
3.	Bench Overtopped Remarks: _____	☐ Location shown on site map	☐ N/A or okay
C. Letdown Channels ☐ Applicable ☒ N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots) Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ No evidence of settlement Depth: _____
2.	Material Degradation Material type: _____ Remarks: _____	☐ Location shown on site map	☐ No evidence of degradation Area extent: _____
3.	Erosion Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ No evidence of erosion Depth: _____
4.	Undercutting Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ No evidence of undercutting Depth: _____
5.	Obstructions Type: _____ ☐ No obstructions ☐ Location shown on site map Area extent: _____ Size: _____ Remarks: _____		
6.	Excessive Vegetative Growth Type: _____ ☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow ☐ Location shown on site map Area extent: _____ Remarks: _____		
D. Cover Penetrations ☐ Applicable ☒ N/A			
1.	Gas Vents ☐ Active ☐ Passive ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A		

Remarks: _____			
2.	Gas Monitoring Probes ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
3.	Monitoring Wells (within surface area of landfill) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
4.	Extraction Wells Leachate ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A Remarks: _____		
5.	Settlement Monuments ☐ Located ☐ Routinely surveyed ☐ N/A Remarks: _____		
E. Gas Collection and Treatment ☐ Applicable ☒ N/A			
1.	Gas Treatment Facilities ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs maintenance Remarks: _____		
2.	Gas Collection Wells, Manifolds and Piping ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs maintenance ☐ N/A Remarks: _____		
F. Cover Drainage Layer ☐ Applicable ☒ N/A			
1.	Outlet Pipes Inspected ☐ Functioning ☐ N/A Remarks: _____		
2.	Outlet Rock Inspected ☐ Functioning ☐ N/A Remarks: _____		
G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A			
1.	Siltation Area extent: _____ Depth: _____ ☐ N/A ☐ Siltation not evident Remarks: _____		
2.	Erosion Area extent: _____ Depth: _____ ☐ Erosion not evident Remarks: _____		
3.	Outlet Works ☐ Functioning ☐ N/A Remarks: _____		
4.	Dam ☐ Functioning ☐ N/A Remarks: _____		
H. Retaining Walls ☐ Applicable ☒ N/A			
1.	Deformations ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement: _____ Vertical displacement: _____ Rotational displacement: _____ Remarks: _____		
2.	Degradation ☐ Location shown on site map ☐ Degradation not evident Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A			
1.	Siltation ☐ Location shown on site map ☐ Siltation not evident Area extent: _____ Depth: _____ Remarks: _____		
2.	Vegetative Growth ☐ Location shown on site map ☐ N/A ☐ Vegetation does not impede flow Area extent: _____ Type: _____ Remarks: _____		

3.	Erosion Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ Erosion not evident Depth: _____
4.	Discharge Structure Remarks: _____	☐ Functioning	☐ N/A
VIII. VERTICAL BARRIER WALLS		☐ Applicable	☒ N/A
1.	Settlement Area extent: _____ Remarks: _____	☐ Location shown on site map	☐ Settlement not evident Depth: _____
2.	Performance Monitoring Type of monitoring: _____ ☐ Performance not monitored Frequency: _____ Head differential: _____ Remarks: _____	☐ Evidence of breaching	
IX. GROUNDWATER/SURFACE WATER REMEDIES		☐ Applicable	☒ N/A
A. Groundwater Extraction Wells, Pumps and Pipelines		☐ Applicable	☐ N/A
1.	Pumps, Wellhead Plumbing and Electrical ☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A Remarks: _____		
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____		
B. Surface Water Collection Structures, Pumps and Pipelines		☐ Applicable	☐ N/A
1.	Collection Structures, Pumps and Electrical ☐ Good condition ☐ Needs maintenance Remarks: _____		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____		
C. Treatment System		☐ Applicable	☒ N/A
1.	Treatment Train (check components that apply) ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping ☐ Carbon adsorbers ☐ Filters: _____ ☐ Additive (e.g., chelation agent, flocculent): _____ ☐ Others: _____ ☐ Good condition ☐ Needs maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually: _____ ☐ Quantity of surface water treated annually: _____ Remarks: _____		
2.	Electrical Enclosures and Panels (properly rated and functional) ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____		
3.	Tanks, Vaults, Storage Vessels ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance Remarks: _____		
4.	Discharge Structure and Appurtenances ☐ N/A ☐ Good condition ☐ Needs maintenance		

Remarks: _____			
5.	Treatment Building(s) ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks: _____		
6.	Monitoring Wells (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____		
D. Monitoring Data			
1.	Monitoring Data ☐ Is routinely submitted on time ☐ Is of acceptable quality		
2.	Monitoring Data Suggests: ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining		
E. Monitored Natural Attenuation			
1.	Monitoring Wells (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____		
X. OTHER REMEDIES			
If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
XI. OVERALL OBSERVATIONS			
A. Implementation of the Remedy			
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>The soil remedy was designed to eliminate residential exposure to contaminated soils by relocating residents; followed by excavation of soils and depositing them within Smelter Hill waste management area. The area has been rezoned for industrial use. Institutional controls are in place to prevent residential exposure to contaminated soil and groundwater through county ordinances. The sitewide Consent Decree includes an ICIAP with EPA that ensures long-term funding for the county to implement the ICs..</u>			
B. Adequacy of O&M			
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>None noted.</u>			
C. Early Indicators of Potential Remedy Problems			
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None noted.</u>			
D. Opportunities for Optimization			
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None noted.</u>			

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST				
OU-16: COMMUNITY SOILS				
I. SITE INFORMATION				
Site Name: Anaconda Co. Smelter		Date of Inspection: <u>04/22/2025</u>		
Location and Region: Anaconda, MT 8		EPA ID: MTD093291656		
Agency, Office or Company Leading the Five-Year Review: <u>EPA Region 8</u>		Weather/Temperature: <u>Sunny, breezy, 56 degrees Fahrenheit</u>		
Remedy Includes: (Check all that apply)				
☒ Landfill cover/containment ☐ Monitored natural attenuation				
☐ Access controls ☐ Groundwater containment				
☒ Institutional controls ☐ Vertical barrier walls				
☐ Groundwater pump and treatment				
☐ Surface water collection and treatment				
☒ Other: <u>Interior attic dust abatement, soil excavation. Restoration of soil excavations with clean soil, vegetation or engineered covers. Capping of intown railroad line.</u>				
Attachments: ☐ Inspection team roster attached ☐ Site map attached				
II. INTERVIEWS (check all that apply)				
1. O&M Site Manager				
Name _____ Title _____ Date _____				
Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____				
Problems, suggestions ☐ Report attached: _____				
2. O&M Staff				
Name _____ Title _____ Date _____				
Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____				
Problems/suggestions ☐ Report attached: _____				
3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.				
Agency <u>CDM Smith</u>				
Contact <u>Benjamin Simpson</u> <u>Engineer</u> <u>05/08/2025</u> <u>406-422-7325</u>				
Name _____ Title _____ Date _____ Phone No. _____				
Problems/suggestions ☐ Report attached: _____				
Agency <u>ADLC County Commissioner</u>				
Contact <u>Ed Baudette</u> <u>Commissioner</u> <u>04/24/2025</u> _____				
Name _____ Title _____ Date _____ Phone No. _____				
Problems/suggestions ☐ Report attached: _____				
Agency <u>ADLC Public Health</u>				
Contact <u>Lauren Bolton</u> <u>Public Health</u> <u>04/24/2025</u> _____				
Name _____ <u>Director</u> Date _____ Phone No. _____				
Title _____				
Problems/suggestions ☐ Report attached: _____				
Contact _____				
4. Other Interviews (optional) ☐ Report attached: _____				
Interviewee: Resident #1 – N/A (04/24/2025)				
Interviewee: Resident #2 – N/A (04/23/2025)				
Interviewee: Resident #3 – N/A (04/23/2025)				
III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)				

1.	O&M Documents	☒ Readily available	☒ Up to date	☐ N/A
	☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
	☒ As-built drawings	☒ Readily available	☒ Up to date	☐ N/A
	☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
2.	Site-Specific Health and Safety Plan	☒ Readily available	☒ Up to date	☐ N/A
	☒ Contingency plan/emergency response plan	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: <u>Records readily available in on-site work trailers</u>			
3.	O&M and OSHA Training Records	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: <u>Records readily available in on-site work trailers</u>			
4.	Permits and Service Agreements			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
5.	Gas Generation Records	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
6.	Settlement Monument Records	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
7.	Groundwater Monitoring Records	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: <u>Groundwater monitoring is conducted as part of the ARWWS OU.</u>			
8.	Leachate Extraction Records	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
9.	Discharge Compliance Records			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
10.	Daily Access/Security Logs	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
IV. O&M COSTS				
1.	O&M Organization			
	☐ State in-house	☐ Contractor for state		
	☐ PRP in-house	☒ Contractor for PRP		
	☐ Federal facility in-house	☐ Contractor for Federal facility		
	☐ _____			
2.	O&M Cost Records			
	☐ Readily available	☐ Up to date		
	☐ Funding mechanism/agreement in place	☒ Unavailable		
	Original O&M cost estimate: _____ ☐ Breakdown attached			
	Total annual cost by year for review period if available			
	From: _____	To: _____	_____	☐ Breakdown attached
	Date	Date	Total cost	
	From: _____	To: _____	_____	☐ Breakdown attached
	Date	Date	Total cost	
	From: _____	To: _____	_____	☐ Breakdown attached
	Date	Date	Total cost	
	From: _____	To: _____	_____	☐ Breakdown attached
	Date	Date	Total cost	
	From: _____	To: _____	_____	☐ Breakdown attached
	Date	Date	Total cost	

3. Unanticipated or Unusually High O&M Costs during Review Period Describe costs and reasons: _____			
V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A			
A. Fencing			
1. Fencing Damaged ☐ Location shown on site map ☐ Gates secured ☒ N/A Remarks: _____			
B. Other Access Restrictions			
1. Signs and Other Security Measures ☐ Location shown on site map ☒ N/A Remarks: _____			
C. Institutional Controls (ICs)			
1. Implementation and Enforcement Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A Type of monitoring (e.g., self-reporting, drive by): _____ Frequency: _____ Responsible party/agency: <u>ADLC</u> Contact _____ Name Title Date Phone no. Reporting is up to date ☐ Yes ☐ No ☒ N/A Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☒ N/A Violations have been reported ☐ Yes ☐ No ☒ N/A Other problems or suggestions: ☐ Report attached			
2. Adequacy ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A Remarks: <u>The Anaconda-Deer Lodge County (ADLC) has an Interim Institutional Controls Program in place whereby the ADLC works closely with the Planning Department to guide developers through the DPS process to ensure developers understand and adhere to Superfund protocol. In addition, construction of new domestic wells within the county requires a permit through ADLC's Environmental Health Department. While ICs are adequate, additional funding is required for the ADLC to continue to implement them. The EPA is working with the PRP as part of a settlement that will include obtaining long-term funding for the county to implement the ICs currently in place.</u>			
D. General			
1. Vandalism/Trespassing ☐ Location shown on site map ☒ No vandalism evident Remarks: _____			
2. Land Use Changes On Site ☒ N/A Remarks: _____			
3. Land Use Changes Off Site ☒ N/A Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads ☒ Applicable ☐ N/A			
1. Roads Damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A Remarks: _____			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS ☒ Applicable ☐ N/A			
A. Landfill Surface			
1. Settlement (low spots) ☐ Location shown on site map ☒ Settlement not evident Area extent: _____ Depth: _____ Remarks: <u>The excavated areas appeared to be well maintained. Gravelled areas also appeared to be in good condition.</u>			
2. Cracks ☐ Location shown on site map ☒ Cracking not evident Lengths: _____ Widths: _____ Depths: _____ Remarks: _____			
3. Erosion ☐ Location shown on site map ☒ Erosion not evident Area extent: _____ Depth: _____			

Remarks: _____		
4.	Holes Area extent: _____ Remarks: _____	☐ Location shown on site map ☒ Holes not evident Depth: _____
5.	Vegetative Cover ☒ No signs of stress Remarks: _____	☒ Grass ☐ Trees/shrubs (indicate size and locations on a diagram) ☒ Cover properly established
6.	Alternative Cover (e.g., armored rock, concrete) Remarks: _____	☒ N/A
7.	Bulges Area extent: _____ Remarks: _____	☐ Location shown on site map ☒ Bulges not evident Height: _____
8.	Wet Areas/Water Damage ☐ Wet areas ☐ Ponding ☐ Seeps ☐ Soft subgrade Remarks: _____	☒ Wet areas/water damage not evident ☐ Location shown on site map ☐ Location shown on site map ☐ Location shown on site map ☐ Location shown on site map Area extent: _____ Area extent: _____ Area extent: _____ Area extent: _____
9.	Slope Instability ☒ No evidence of slope instability Area extent: _____ Remarks: _____	☐ Slides ☐ Location shown on site map
B. Benches ☐ Applicable ☒ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	Flows Bypass Bench Remarks: _____	☐ Location shown on site map ☐ N/A or okay
2.	Bench Breached Remarks: _____	☐ Location shown on site map ☐ N/A or okay
3.	Bench Overtopped Remarks: _____	☐ Location shown on site map ☐ N/A or okay
C. Letdown Channels ☐ Applicable ☒ N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	Settlement (Low spots) Area extent: _____ Remarks: _____	☐ Location shown on site map ☐ No evidence of settlement Depth: _____
2.	Material Degradation Material type: _____ Remarks: _____	☐ Location shown on site map ☐ No evidence of degradation Area extent: _____
3.	Erosion Area extent: _____ Remarks: _____	☐ Location shown on site map ☐ No evidence of erosion Depth: _____
4.	Undercutting Area extent: _____ Remarks: _____	☐ Location shown on site map ☐ No evidence of undercutting Depth: _____
5.	Obstructions ☐ Location shown on site map Remarks: _____	Type: _____ ☐ No obstructions Area extent: _____ Size: _____
6.	Excessive Vegetative Growth ☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow ☐ Location shown on site map	Type: _____ Area extent: _____

Remarks: _____			
D. Cover Penetrations ☐ Applicable ☒ N/A			
1.	Gas Vents	☐ Active ☐ Passive	
	☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition		
	☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A		
Remarks: _____			
2.	Gas Monitoring Probes	☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition	
	☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A		
Remarks: _____			
3.	Monitoring Wells (within surface area of landfill)	☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition	
	☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A		
Remarks: _____			
4.	Extraction Wells Leachate	☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition	
	☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A		
Remarks: _____			
5.	Settlement Monuments	☐ Located ☐ Routinely surveyed ☐ N/A	
Remarks: _____			
E. Gas Collection and Treatment ☐ Applicable ☒ N/A			
1.	Gas Treatment Facilities	☐ Flaring ☐ Thermal destruction ☐ Collection for reuse	
	☐ Good condition ☐ Needs maintenance		
Remarks: _____			
2.	Gas Collection Wells, Manifolds and Piping	☐ Good condition ☐ Needs maintenance	
Remarks: _____			
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)	☐ Good condition ☐ Needs maintenance ☐ N/A	
Remarks: _____			
F. Cover Drainage Layer ☐ Applicable ☒ N/A			
1.	Outlet Pipes Inspected	☐ Functioning ☐ N/A	
Remarks: _____			
2.	Outlet Rock Inspected	☐ Functioning ☐ N/A	
Remarks: _____			
G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A			
1.	Siltation Area extent: _____ Depth: _____ ☐ N/A		
	☐ Siltation not evident		
Remarks: _____			
2.	Erosion Area extent: _____ Depth: _____		
	☐ Erosion not evident		
Remarks: _____			
3.	Outlet Works ☐ Functioning ☐ N/A		
Remarks: _____			
4.	Dam ☐ Functioning ☐ N/A		
Remarks: _____			
H. Retaining Walls ☐ Applicable ☒ N/A			
1.	Deformations ☐ Location shown on site map ☐ Deformation not evident		
	Horizontal displacement: _____ Vertical displacement: _____		
	Rotational displacement: _____		
Remarks: _____			
2.	Degradation ☐ Location shown on site map ☐ Degradation not evident		
Remarks: _____			
I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A			
1.	Siltation ☐ Location shown on site map ☐ Siltation not evident		
	Area extent: _____ Depth: _____		

Remarks: _____		
2.	Vegetative Growth ☐ Vegetation does not impede flow Area extent: _____ Remarks: _____	☐ Location shown on site map ☐ N/A Type: _____
3.	Erosion Area extent: _____ Remarks: _____	☐ Location shown on site map ☒ Erosion not evident Depth: _____
4.	Discharge Structure Remarks: _____	☐ Functioning ☐ N/A
VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A		
1.	Settlement Area extent: _____ Remarks: _____	☐ Location shown on site map ☐ Settlement not evident Depth: _____
2.	Performance Monitoring Type of monitoring: _____ ☐ Performance not monitored Frequency: _____ Head differential: _____ Remarks: _____	
IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A		
A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☐ N/A		
1.	Pumps, Wellhead Plumbing and Electrical ☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A Remarks: _____	
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____	
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____	
B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A		
1.	Collection Structures, Pumps and Electrical ☐ Good condition ☐ Needs maintenance Remarks: _____	
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances ☐ Good condition ☐ Needs maintenance Remarks: _____	
3.	Spare Parts and Equipment ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks: _____	
C. Treatment System ☐ Applicable ☒ N/A		
1.	Treatment Train (check components that apply) ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation ☐ Air stripping ☐ Carbon adsorbers ☐ Filters: _____ ☐ Additive (e.g., chelation agent, flocculent): _____ ☐ Others: _____ ☐ Good condition ☐ Needs maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually: _____ ☐ Quantity of surface water treated annually: _____ Remarks: _____	
2.	Electrical Enclosures and Panels (properly rated and functional) ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____	

3.	Tanks, Vaults, Storage Vessels ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance Remarks: _____
4.	Discharge Structure and Appurtenances ☐ N/A ☐ Good condition ☐ Needs maintenance Remarks: _____
5.	Treatment Building(s) ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks: _____
6.	Monitoring Wells (pump and treatment remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____
D. Monitoring Data	
1.	Monitoring Data ☐ Is routinely submitted on time ☐ Is of acceptable quality
2.	Monitoring Data Suggests: ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	Monitoring Wells (natural attenuation remedy) ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ All required wells located ☐ Needs maintenance ☐ N/A Remarks: _____
X. OTHER REMEDIES	
If there are remedies applied at the Site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.	
XI. OVERALL OBSERVATIONS	
A.	Implementation of the Remedy Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>The soil remedy is designed to prevent direct exposure by excavating contaminated soils and restoring the area with clean soil and vegetation or engineered cover. Multiple institutional controls are in place to prevent residential exposure in areas that were remediated to industrial standards.</u>
B.	Adequacy of O&M Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>None noted.</u>
C.	Early Indicators of Potential Remedy Problems Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. <u>None noted.</u>
D.	Opportunities for Optimization Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>None noted.</u>

APPENDIX G – SITE INSPECTION PHOTOS



Supplemental Stormwater Control (OU04 RDU-3)



Equipment for dust suppression and wetting (OU4 RDU-14)



Arbiter Repository (OU12)



Beryllium Repository (OU09)



Old Works Golf Course (OU7)



Old Works Golf Course (OU7)



Anaconda Landfill Slag Pile (OU4 RDU12)



Path through jig tailings “Red Sands” area (OU7)



Interior of attic abatement trailer (OU16)



Grown-in lime pits at Stucky Ridge (OU4, RDU-1)



Lost Creek North Sediment Pond under construction (OU4, RDU-2)



McCurdy sediment pond under construction (OU4, RDU-2)



Elk herd next to wattles (OU4, RDU-3)



Lime pits (OU4, RDU-3)



View of lime pits from Outlaw Trail (OU4, RDU-3)



Surface water diversion structure pipes (OU4, RDU-3)



OU4, RDU-3



Active railroads (OU4, RDU-5)



Constructed beaver dam analogues at the Mount Haggin Wildlife Management Area (OU4, RDU-15)



Wattles on the road up to Mount Haggin (OU4, RDU-3)



GWSWMS Opportunity Ponds (OU4, RDU-8)



Signage and gate to trail near Silver Bow Creek (OU4, RDU-9)



Silver Bow Creek (OU4, RDU-9)



Warm Springs Creek (OU4, RDU-10)



Warm Springs Creek at Washoe Park (OU4, RDU-10)



Bank stabilization at Warm Springs Creek (OU4, RDU-10)



Main Granulated Slag Pile (OU4, RDU-12)



Evidence of motorbikes and trespassing at Anaconda Landfill Slag Pile (OU4, RDU-12)



Anaconda Smokestack (OU4, RDU-14)



Evidence of trespassing and dirt biking on the road up to Anaconda Smokestack (OU4, RDU-14)



Locked gate to the road up to Anaconda Smokestack (OU4, RDU-14)



View of Anaconda from behind Anaconda Smokestack (OU4, RDU-14)



Dutchman Area (OU4)



Sediment Pond above Washoe Park (OU4, RDU-1)



Work being done for residential yard cleanup (OU16)



Superfund document repository, ICs program, and attic dust removal program building

Figure G-1: SHRC Monitoring Well Locations



Table H-1: SHRC Groundwater Monitoring Results, 2023

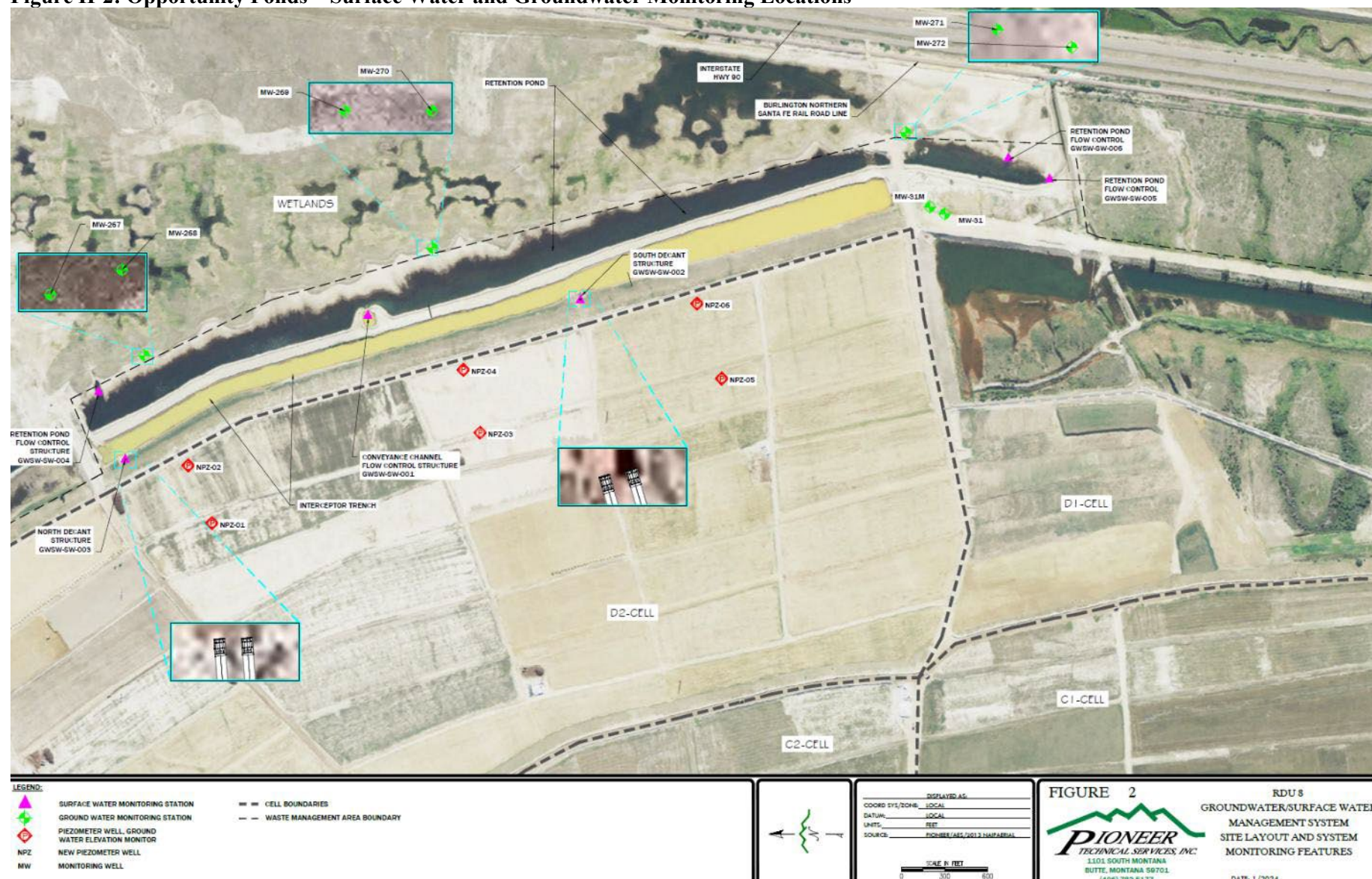
Date	Well	Field pH (SU)	Lab pH (SU)	T.O.I.C.(1) Elevation (NAD 83)	Depth to Water(2) (feet)	Water Surface Elevation(2) (NAD 83)	Approx. Depth to Well Bottom from T.O.I.C. (feet)	Well Bottom Elevation (NAD 83)	Dissolved Constituent Analysis(3)						
									Arsenic(4) (mg/L)	Beryllium(5) (mg/L)	Cadmium(6) (mg/L)	Copper(7) (mg/L)	Iron (mg/L)	Lead(8) (mg/L)	Zinc(9) (mg/L)
2/16/2023	MW-1	7.23	NM	5330.70	118.71	5211.99	156.0	5174.70	0.0069	ND	ND	ND	ND	ND	ND
2/17/2023	MW-2	7.01	NM	5334.25	118.00	5216.25	144.0	5190.25	0.0024	ND	ND	ND	ND	ND	ND
2/17/2023	MW-3	7.28	NM	5329.99	124.55	5205.44	158.0	5171.99	0.0129	ND	ND	ND	ND	ND	ND
2/16/2023	MW-4	7.19	NM	5339.41	127.35	5212.06	172.0	5167.41	0.0022	ND	ND	0.0023	ND	ND	ND
2/16/2023	MW-65	7.47	NM	5345.66 (1)	83.37	5258.45	128.0	5213.82	0.0027	ND	ND	ND	ND	ND	ND
	(990)		NM						0.0028	ND	ND	ND	ND	ND	ND
8/1/2023	MW-1	7.43	NM	5330.70	118.68	5212.02	156.0	5174.70	0.0069	ND	ND	ND	ND	ND	ND
8/1/2023	MW-2	7.52	NM	5334.25	118.17	5216.08	144.0	5190.25	0.0023	ND	ND	ND	ND	ND	ND
8/1/2023	MW-3	7.52	NM	5329.99	124.56	5205.43	158.0	5171.99	0.006	ND	ND	ND	ND	ND	ND
7/31/2023	MW-4	7.40	NM	5339.41	128.39	5211.02	172.0	5167.41	0.0019	ND	ND	ND	ND	ND	ND
	(990)		NM						0.0019	ND	ND	ND	ND	ND	ND
7/31/2023	MW-65	7.74	NM	5345.66 (1)	83.98	5257.84	128.0	5213.82	0.0025	ND	ND	ND	ND	ND	ND

Notes:

1. T.O.I.C. = Top of inside well casing. T.O.I.C. elevation surveyed by Pioneer Technical Services on December 19, 2013.
Due to engineered cover reclamation activities, MW-65 was extended on October 17, 2016 and surveyed on November 3, 2016 (formerly 5341.82).
 2. All water levels were measured with an electronic depth-to-water indicator from the mark on the T.O.I.C prior to purging.
 3. Instrument detection limits are reported (e.g., <0.0001) if the constituent was not detected above this concentration.
 4. EPA Maximum Contaminant Level (MCL) for arsenic (0.010 mg/L as of 1/23/2006).
 5. MCL for beryllium is 0.004 mg/L.
 6. MCL for cadmium is 0.005 mg/L.
 7. Treatment Technique (TT) action level for copper is 1.3 mg/L.
 8. TT action level for lead is 0.015 mg/L.
 9. National Secondary Drinking Water Regulation Standard for zinc is 5 mg/L.
- (990) = duplicate sample
 ND = Not detected at or above adjusted reporting limit.
 I = Estimated quantity above detection limit but below reporting limit.
 Value above MCL

Source: SHRC Monitoring and Maintenance Report. Anaconda Smelter NPL Site, ARWWS OU. Prepared by Pioneer Technical Services, Inc. June 2024.

Figure H-2: Opportunity Ponds – Surface Water and Groundwater Monitoring Locations



Source: Draft Final Opportunity Ponds Remedial Design Unit (RDU) 8 2023 Groundwater Surface Water Management System OM&M Report. Prepared by Pioneer Technical Services, Inc. March 2024.

Table H-2: Opportunity Ponds – Surface Water Data (2023)

Location	Date	Sample ID	Surface Water Measurements				Laboratory Analytical Data			Field Data			Average Concentration (2015-2023)		
			Height of Water Over Flume/Stop Log (ft)	Water Elevation (ft)	Flow Rate		Total Arsenic (µg/L)	Total Iron (µg/L)	Dissolved Arsenic (µg/L)	pH (SU)	Temperature (°C)	Specific Conductivity (µS/cm)	Total Arsenic (µg/L)	Total Iron (µg/L)	Dissolved Arsenic (µg/L)
					(cfs)	(gpm)									
SW-001 Conveyance Channel Flow Control Structure	3/29/2023	GWSW-SW-001-032923	0.21	4,886.51	1.28	575.33	0.5 U	6330	0.5 U	6.75	3.5	1724	1.15	2706.5	0.77
	3/29/2023	GWSW-SW-001D-032923*	0.21	4,886.51	1.28	575.33	0.5 U	6330	0.5 U	6.75	3.5	1724			
	6/20/2023	GWSW-SW-001-062023	0.25	4,886.55	1.67	747.30	0.73	1210	0.5 U	8.01	13.2	1797			
	6/20/2023	GWSW-SW-990-062023*	0.25	4,886.55	1.67	747.30	0.76	1230	0.5 U	8.01	13.2	1797			
SW-002N South Decant Structure North Flume	3/29/2023	GWSW-SW-002N-032923	0.20	4,889.02	0.02	9.98	23.80	1810	NM	7.42	7.8	2642	130.91	11635	NM
	6/20/2023	GWSW-SW-002N-062023	0.23	4,889.05	0.03	14.43	18.30	1330	NM	7.34	8.0	2571			
SW-002S South Decant Structure South Flume	3/29/2023	GWSW-SW-002S-032923	0.32	4,889.14	0.08	34.46	56.70	4300	NM	7.67	7.6	2598	74.16	5195	NM
	6/20/2023	GWSW-SW-002S-062023	0.37	4,889.19	0.11	50.52	41.50	3570	NM	7.38	7.6	2561			
SW-003N North Decant Structure North Flume	3/29/2023	GWSW-SW-003N-032923	0.43	4,890.43	0.17	75.09	11.30	2310	NM	6.86	9.3	1082	12.04	2852.78	NM
	6/20/2023	GWSW-SW-003N-062023	0.43	4,890.43	0.17	75.09	12.10	2320	NM	7.04	9.4	1063			
SW-003S North Decant Structure South Flume	3/29/2023	GWSW-SW-003S-032923	0.51	4,890.51	0.26	117.74	0.88	1680	NM	7.48	8.5	1337	1.3	1569.41	NM
	6/20/2023	GWSW-SW-003S-062023	0.50	4,890.50	0.25	111.75	0.78	1530	NM	7.30	8.5	1316			
SW-004 Retention Pond Flow Control Structure (North)	3/29/2023	No Flow, Did not Sample	No Flow, Frozen	-											
	6/20/2023		No Flow	4886.12											
SW-005 Retention Pond Flow Control Structure (South)	3/29/2023	GWSW-SW-005-032923	0.35	4886.30	1.38	618.96	3.4	405	NM	7.41	1.5	674	2.17	236.5	NM
	6/20/2023	GWSW-SW-005-062023	0.20	4886.15	0.60	267.36	2.5	50 U	NM	8.11	11.2	1083			
SW-006 Retention Pond Flow Control Structure (Southeast)	3/29/2023	No Flow, Did not Sample	No Flow, Frozen	-											
	6/20/2023		No Flow	4890.60											
Equipment Rinsate	3/29/2023	GWSW-SW-991-032923					0.5 U	50 U	0.5 U						
	6/20/2023	GWSW-SW-991-062023					0.5 U	50 U	0.5 U						
Field Blank	3/29/2023	GWSW-SW-992-032923					0.5 U	50 U	0.5 U						
	6/20/2023	GWSW-SW-992-062023					0.5 U	50 U	0.5 U						

Notes:

¹Eh - ORP measurements corrected relative to the standard hydrogen electrode (SHE). Measurements taken with Ag/AgCl, 4 M KCl.

²NM-No measurement reported by laboratory

³NT - Field parameters not taken, or meter error.

+ - results are believed to have been influenced by sediment disturbed during sampling

⁴J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

* - Duplicate Sample

⁵U - Indicates that the analyte was not detected at or above the adjusted reporting limit during laboratory analysis and the value shown in the table is the Practical Quantitation Limit⁶. ⁶ - Flow rates determined using standard wier equation - $Q(cfs)=13.32H^{1.5}$ (PQL)

Source: Draft Final Opportunity Ponds Remedial Design Unit (RDU) 8 2023 Groundwater Surface Water Management System OM&M Report. Table 1. Prepared by Pioneer Technical Services, Inc. March 2024.

Table H-3: Opportunity Ponds Groundwater Data, 2023

Location	Date	Sample ID	Arsenic Dissolved (µg/L)	Cadmium Dissolved (µg/L)	Copper Dissolved (µg/L)	Iron Dissolved (µg/L)	Lead Dissolved (µg/L)	Zinc Dissolved (µg/L)	Nitrogen, Ammonia Total (mg/L)	Nitrogen, Kjeldahl Total (mg/L)	Nitrogen, NO ₂ plus NO ₃ Total (mg/L)	Orthophosphate as P Dissolved (mg/L)	Phosphorus Total (mg/L)	Sulfate Total (mg/L)
MW-267 (NW-2D)	3/29/2023	LTGW-GW-MW267-032923	1.40	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0190	0.10 U	419**
	6/20/2023	LTGW-GW-MW267-062023	1.50	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0180	0.10 U	400
MW-268 (NW-2S)	3/29/2023	LTGW-GW-MW268-032923	0.5 U	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.11	0.010 U	0.10 U	966**
	6/20/2023	LTGW-GW-MW268-062023	0.5 U	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	881
MW-269 (NW-3D)	3/29/2023	LTGW-GW-MW269-032923	1.50	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0170	0.10 U	331**
	6/20/2023	LTGW-GW-MW269-062023	1.40	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0180	0.10 U	382
MW-270 (NW-3S)	3/29/2023	LTGW-GW-MW270-032923	0.65	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0150	0.10 U	1140**
	6/20/2023	LTGW-GW-MW270-062023	0.57	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0130	0.10 U	1010
MW-271 (NW-4D)	3/29/2023	LTGW-GW-MW271-032923	1.60	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0100	0.10 U	727**
	3/29/2023	LTGW-GW-MW990-032923	1.60	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	723**
	6/20/2023	LTGW-GW-MW271-062023	1.70	0.08 U	1 U	160	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0120	0.10 U	530
	6/20/2023	LTGW-GW-MW990-062023	1.60	0.08 U	1 U	175	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0110	0.10 U	598
MW-272 (NW-4S)	3/29/2023	LTGW-GW-MW272-032923	0.67	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0130	0.10 U	688**
	6/20/2023	LTGW-GW-MW272-062023	0.78	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.0120	0.10 U	583
Field Blank	3/29/2023	LTGW-GW-MW991-032923	0.5 U	0.08 U	1 U	50 U	0.1 U	5.3	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	1.2 U
	6/20/2023	LTGW-GW-MW991-062023	0.5 U	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	1.2 U
Equipment Rinsate	3/29/2023	LTGW-GW-MW992-032923	0.5 U	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	1.2 U
	6/20/2023	LTGW-GW-MW992-062023	0.5 U	0.08 U	1 U	50 U	0.1 U	5 U	0.10 U	0.50 U	0.10 U	0.010 U	0.10 U	1.2 U

Notes:

¹ U - Indicates that the analyte was not detected at or above the adjusted reporting limit during laboratory analysis and the value shown in the table is the Practical Quantitation Limit (PQL)

² J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

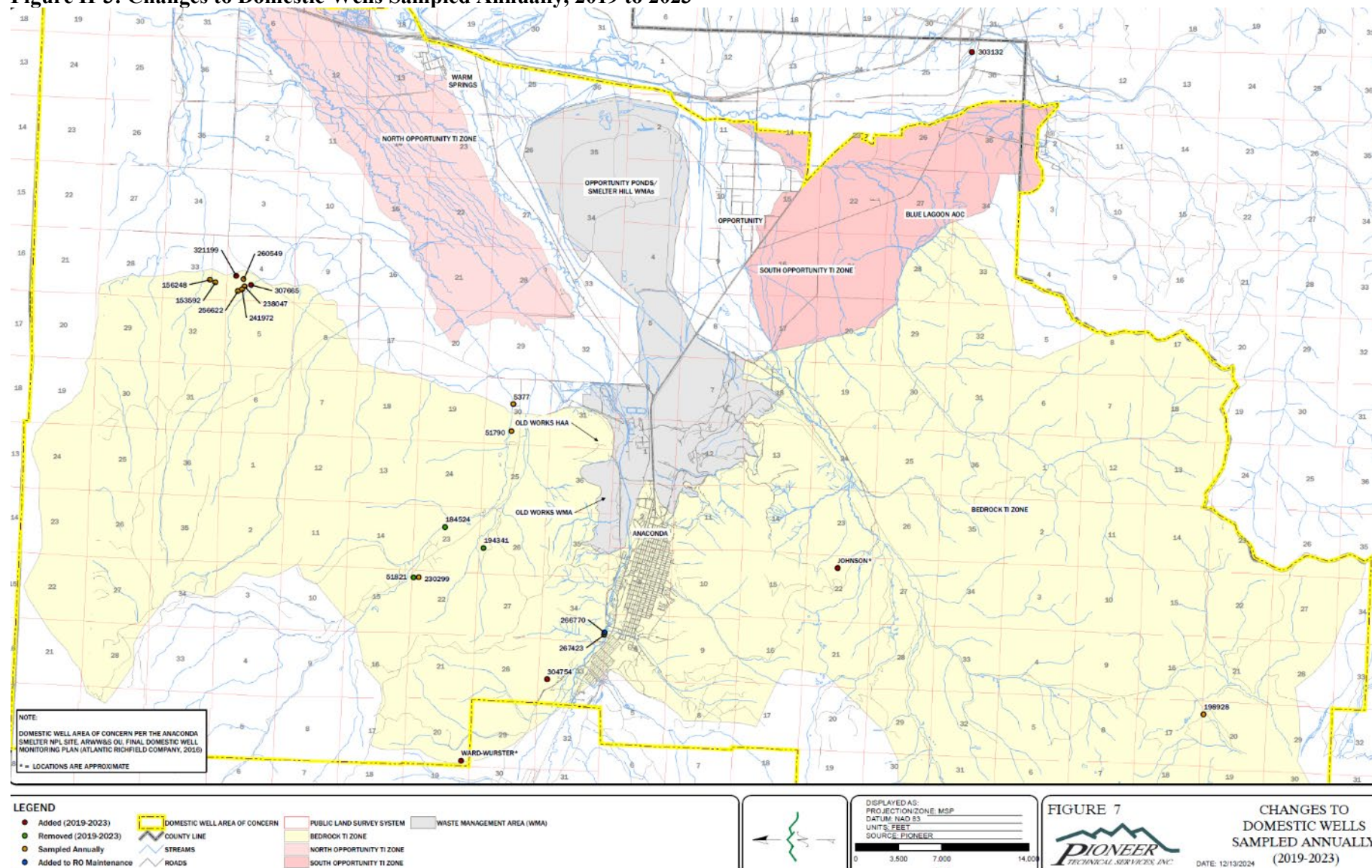
⁵ NM-No measurement reported by laboratory

* - Duplicate Sample

** - The laboratory analyzed the analyte twice, therefore the most conservative (highest) value recorded is reported in the table.

Source: Draft Final Opportunity Ponds Remedial Design Unit (RDU) 8 2023 Groundwater Surface Water Management System OM&M Report. Table 3. Prepared by Pioneer Technical Services, Inc. March 2024.

Figure H-3: Changes to Domestic Wells Sampled Annually, 2019 to 2023



Source: Draft Final 2023 5-Year Review Groundwater Interpretive Report. December 2024.

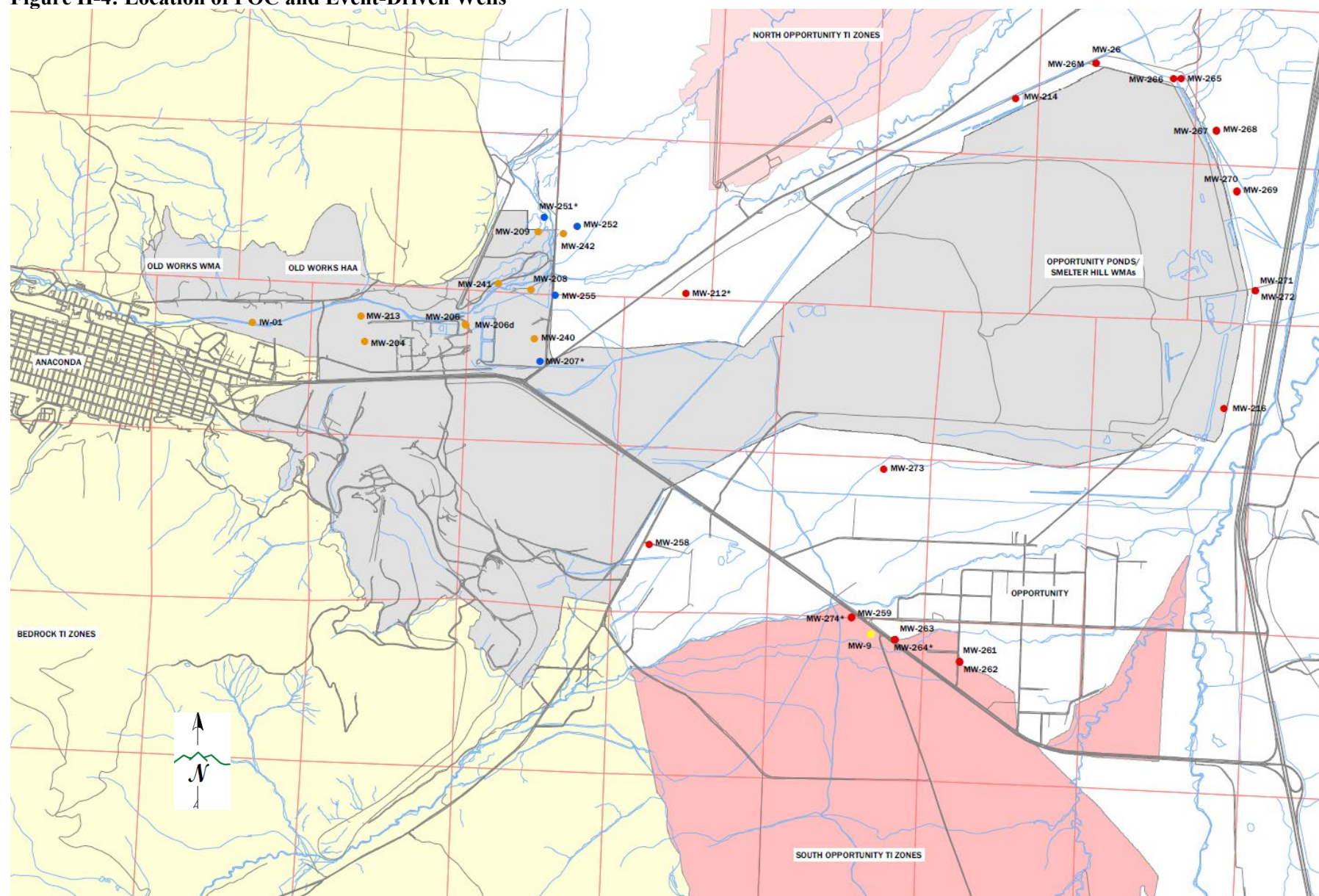
Table H-4: Domestic Well Sample Results, 2023

Sample ID	Total Recoverable Arsenic (ug/L)	Total Recoverable Arsenic Lab Flag
DW-GW-267423-062123	5.3	
DW-GW-WARDWURSTER-062123	6.4	
DW-GW-321199-062123	7.0	
DW-GW-241972-062123	5.7	
DW-GW-256622-062123	5.9	
DW-GW-307665-062123	5.6	
DW-GW-HOOVER-062823	<0.092	U
DW-GW-238047-062823	5.8	
DW-GW-156248-062823	7.7	
DW-GW-304754-062823	1.7	
DW-GW-51790-062823	7.5	
DW-GW-5377-062823	6.7	
DW-GW-303132-062823	7.8	
DW-GW-260549-102023	5.7	
DW-GW-153592-102023	8.2	
DW-GW-JOHNSON-102023	6.6	
DW-GW-198928-102023	6.7	
DW-GW-320516-121523	0.53	
DW-GW-275639-121523	<0.12	U
DW-GW-325795-121523	<0.12	U
DW-GW-ANDREWS-121523	<0.12	U
DW-GW-325958-122123	<0.12	U
DW-GW-255427-122123	<0.12	U
Source: Draft Final 2023 Domestic Well Monitoring Data Summary Report. Table 1. June 2024.		

Table H-5: Reverse Osmosis Treatment System Sampling Data Summary, 2023

Sample ID	Effluent/ Influent	Total Recoverable As (µg/L)	Total Recoverable As Lab Flag
DW-GW-153591-102023-RO-EF	Effluent	<0.092	U
DW-GW-153591-102023-RO-IN	Influent	8.6	
DW-GW-189209-102023-RO-EF1	Effluent	<0.092	U
DW-GW-189209-102023-RO-EF2	Effluent	<0.092	U
DW-GW-189209-102023-RO-IN	Influent	4.7	
DW-GW-266770-102023-RO-EF	Effluent	<0.092	U
DW-GW-266770-102023-RO-IN	Influent	10.6	
DW-GW-198927-102023-RO-IN	Influent	3.2	
DW-GW-198927-102023-RO-EF	Effluent	<0.092	U
DW-GW-256447-121423-RO-IN	Influent	21.1	
DW-GW-256447-121423-RO-EF	Effluent	0.59	
DW-GW-250294-121423-RO-EF	Effluent	<0.12	U
DW-GW-250294-121423-RO-IN	Influent	11.8	
DW-GW-259949-121423-RO-EF	Effluent	<0.12	U
DW-GW-259949-121423-RO-IN	Influent	14.4	
DW-GW-153593-121823-RO-EF	Effluent	0.56	
DW-GW-153593-121823-RO-IN	Influent	16.6	
DW-GW-156249-121823-RO-EF	Effluent	<0.12	U
DW-GW-156249-121823-RO-IN	Influent	12.5	
DW-GW-266861-121823-RO-EF	Effluent	<0.12	U
DW-GW-266861-121823-RO-IN	Influent	12.3	
DW-GW-53591-122123-RO-EF	Effluent	0.72	
DW-GW-53591-122123-RO-IN	Influent	13.4	
DW-GW-254433-122123-RO-EF	Effluent	<0.12	U
DW-GW-254433-122123-RO-IN	Influent	9.9	
DW-GW-51363-122123-RO-EF	Effluent	<0.12	U
DW-GW-51363-122123-RO-IN	Influent	6.8	
<i>Notes:</i> Bold Value – exceeds the arsenic MCL of 10 µg/L. U – indicates the value is below detection. <i>Source:</i> Draft Final 2023 Domestic Well Monitoring Data Summary Report. Table 8. June 2024.			

Figure H-4: Location of POC and Event-Driven Wells



Source: Draft Final 2023 5-Year Review Groundwater Interpretive Report. Figure 3. Prepared by Pioneer Technical Services, Inc. December 2024.

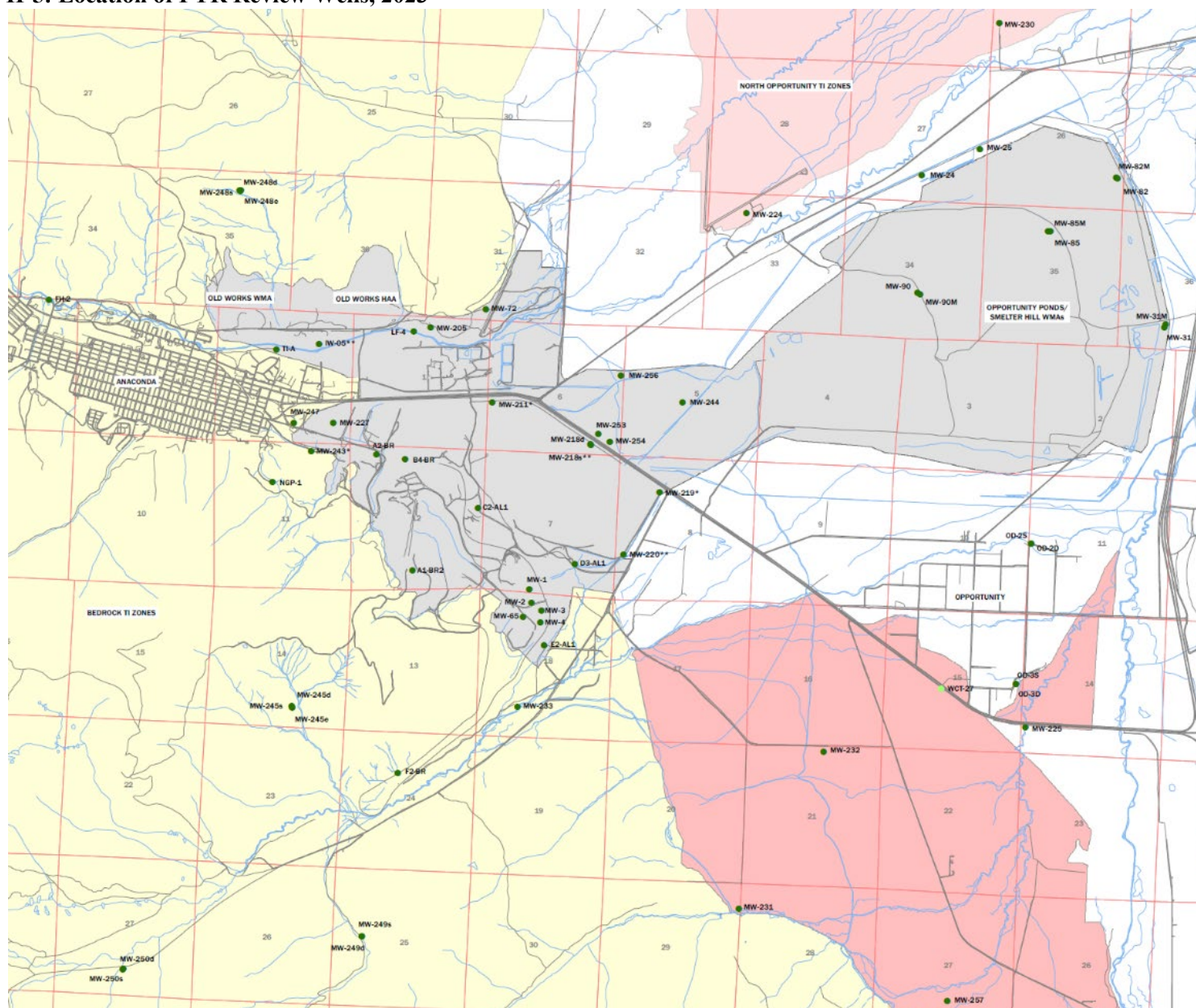
Table H-6: Summary of Sitewide POC and Event Monitoring in 2023

Well ID	Purpose	Dissolved Result (µg/L)									
		Arsenic		Cadmium		Copper		Lead		Zinc	
		Low	High	Low	High	Low	High	Low	High	Low	High
OPPORTUNITY PONDS/SMELTER HILL WMA											
MW-26	POC	0.73	0.55	< 0.022 U	0.096 J+	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-26M	POC	0.52	0.57	0.23 J+	0.25 J+	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-212	POC		0.53		< 0.022 U		< 0.42 U		< 0.056 U		< 1.9 U
MW-214	POC	0.95	1.0	0.097 J-	0.099 J+	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-216	POC	2.0	1.9	< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-258	POC	0.53	< 0.092 U	< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-265	POC	1.5	1.5	< 0.022 UJ	< 0.022 UJ	1.2	2.0	< 0.056 U	< 0.056 U	9.5	13.0
MW-266	POC	1.6	2.0	0.19 J-	0.21 J-	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-267	POC	1.4	1.5	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-268	POC	< 0.092 U	< 0.092 U	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-269	POC	1.5	1.4	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-270	POC	0.65	0.57	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-271	POC	1.6	1.7	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-272	POC	0.67	0.78	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-273	POC	< 0.092 U	< 0.092 U	< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
OLD WORKS WMA											
MW-207	POC/Event Driven		< 0.092 U		< 0.022 UJ		< 0.42 U		< 0.056 U		7.4
MW-251	POC/Event Driven		< 0.092 U		< 0.022 UJ		1.9		< 0.056 U		< 1.9 U
MW-252	POC/Event Driven	< 0.092 U	< 0.092 U	0.42	1.8	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	42.0	152
MW-255	POC/Event Driven	0.81	0.64	< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
IW-01	Event Driven		1.3		2.7		439 J		< 0.056 U		312
MW-204	Event Driven		0.63		0.88		227		< 0.056 U		224
MW-206	Event Driven		< 0.092 U		10.9		138		< 0.056 U		1840
MW-206d	Event Driven		< 0.092 U		8.8		108		< 0.056 U		1300
MW-208	Event Driven		0.90		< 0.022 U		< 0.42 U		< 0.056 U		< 1.9 U
MW-209	Event Driven		< 0.092 U		4.4		< 0.42 U		< 0.056 U		401
MW-213	Event Driven		< 0.092 U		8.5		1060		< 0.056 U		4120
MW-240	Event Driven		0.61		0.13 J+		1.1		< 0.056 U		< 1.9 U
MW-241	Event Driven		< 0.092 U		3.0		169		< 0.056 U		692
MW-242	Event Driven		< 0.092 U		0.15		< 0.42 U		< 0.056 U		21.9
SOUTH OPPORTUNITY/YELLOW DITCH AREA											
MW-9	Town of Opportunity	< 0.092 U	< 0.092 U								
MW-259	POC	0.60	0.54								
MW-261	POC	< 0.092 U	< 0.092 U								
MW-262	POC	1.8	2.6								
MW-263	POC	0.51	< 0.092 U								
MW-264	POC		4.3								
MW-274	POC		0.64								

Bold values above the performance standard

Source: 2023 5-Year Review Groundwater Interpretive Report. Table 4a. December 2024.

Figure H-5: Location of FYR Review Wells, 2023



Source: Draft Final 2023 5-Year Review Groundwater Interpretive Report. Figure 4. Prepared by Pioneer Technical Services, Inc. December 2024.

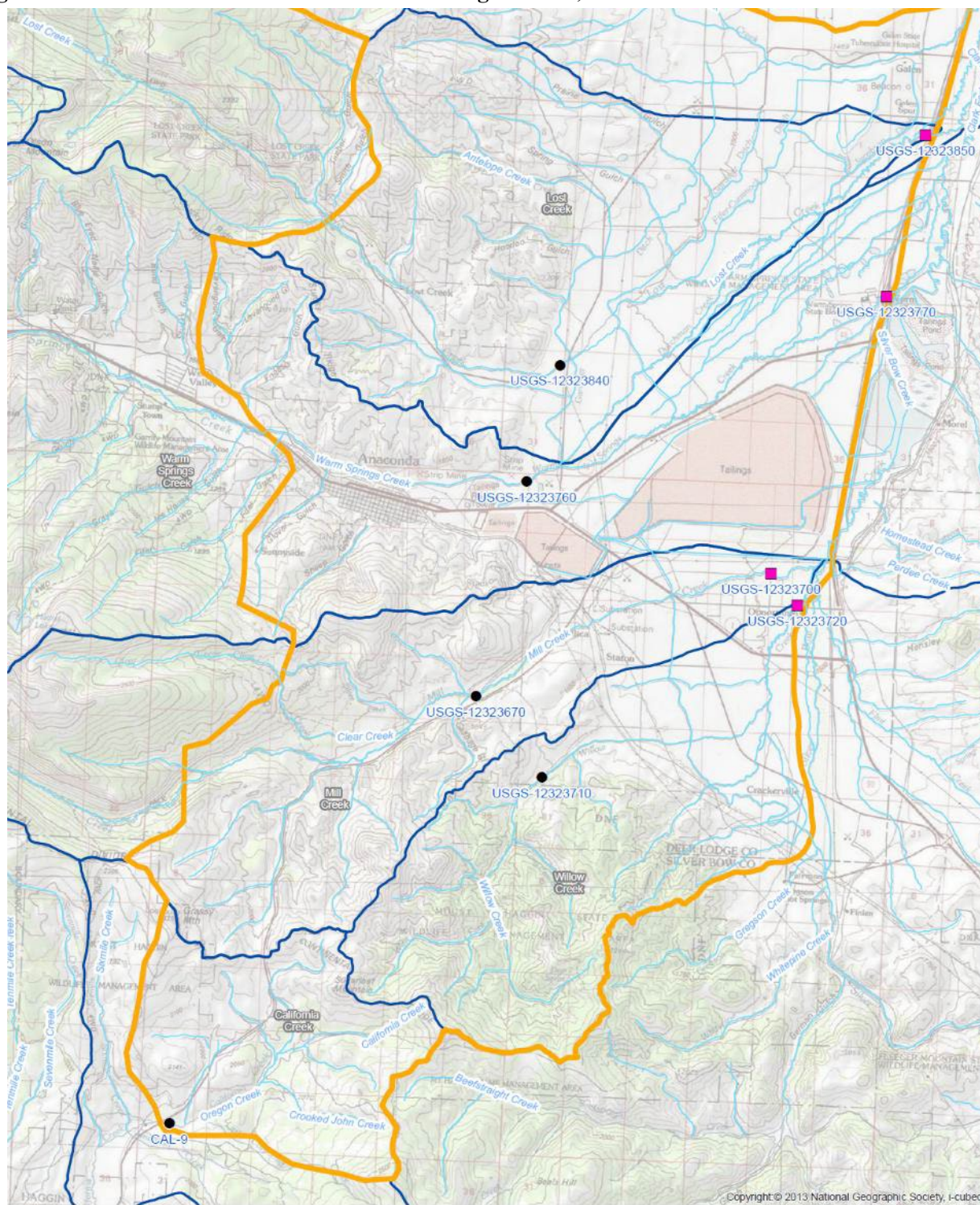
Table H-7: Summary of FYR Sampling Event, 2023

Well ID	Purpose	Dissolved Result (µg/L)											
		Arsenic		Beryllium		Cadmium		Copper		Lead		Zinc	
		Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
STUCKY RIDGE/LOST CREEK													
FH-2	5-year Review	11.0	11.6										
MW-248D	5-year Review	3.4	2.8										
MW-248E	5-year Review	3.3	2.2										
MW-248S	5-year Review	1.2	1.2										
MOUNT HAGGIN/SMELTER HILL AREA													
F2-BR	5-year Review	0.61	0.66										
MW-233	5-year Review	6.3	8.7										
MW-245D	5-year Review	7.5	5.7										
MW-245E	5-year Review	4.2	4.4										
MW-245S	5-year Review	921	906										
MW-249D	5-year Review	4.8	3.5										
MW-249S	5-year Review	39.2	100										
MW-250D	5-year Review	0.96	1.2										
MW-250S	5-year Review	32.1	38.7										
NGP-1	5-year Review	103	120										
OPPORTUNITY PONDS/SMELTER HILL WMA													
A1-BR2	5-year Review	2630	2710			0.14	0.11 J-	1.3	1.7	< 0.056 U	< 0.056 U	< 1.9 U	5.2
A2-BR	5-year Review	772	778			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
B4-BR	5-year Review	1280	1240			78.7	64.3	604	589	< 0.056 U	< 0.056 U	1210	868
C2-AL1	5-year Review	1290	1190			1.6	1.4	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	10400	10200
D3-AL1	5-year Review	58.6	58.5			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
E2-AL1	5-year Review	1.2	1.1			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-1	5-year Review	6.9	6.9	< 0.049 U	< 0.049 U	< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-2	5-year Review	2.4	2.3	< 0.049 U	< 0.049 U	< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-211	5-year Review		44.0				< 0.022 UJ		< 0.42 U		< 0.056 U		< 1.9 U
MW-218D	5-year Review	0.59	0.60			0.50	0.51	< 0.42 U	3.5	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-219	5-year Review		< 0.092 U				< 0.022 UJ		< 0.42 U		< 0.056 U		< 1.9 U
MW-227	5-year Review	26.8	28.6			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	8.6	11.2
MW-24	5-year Review	0.95	< 0.092 U			< 0.022 U	< 0.022 UJ	4.1	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-243	5-year Review		0.96				< 0.022 UJ		< 0.42 U		< 0.056 U		< 1.9 U
MW-244	5-year Review	5.5	5.3			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-247	5-year Review	0.62	< 0.092 U			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-25	5-year Review	< 0.092 U	0.93			< 0.022 U	0.18 J-	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-253	5-year Review	33.4	30.4			1.0	0.97	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	251	216
MW-254	5-year Review	0.92	0.87			0.26	0.11 J-	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	27.6	17.8
MW-256	5-year Review	0.54	< 0.092 U			< 0.022 U	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-3	5-year Review	12.9	6.0	< 0.049 U	< 0.049 U	< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-31	5-year Review	9.6	12.3			< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-31M	5-year Review	1.8	1.8			< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-4	5-year Review	2.2	1.9	< 0.049 U	< 0.049 U	< 0.022 UJ	< 0.022 UJ	2.3	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-65	5-year Review	2.7	2.5	< 0.049 U	< 0.049 U	< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-82	5-year Review	1.2	1.1			0.15 J-	0.16 J-	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-82M	5-year Review	1.4	1.2			< 0.022 UJ	< 0.022 UJ	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-85	5-year Review	82.6	80.9			0.091 J+	0.097 J+	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	32.7	31.7
MW-85M	5-year Review	1.3	1.2			< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
MW-90	5-year Review	143	150			< 0.022 U	< 0.022 U	< 0.42 U	< 0.42 U	< 0.056 U	< 0.056 U	9.3	8.7
MW-90M	5-year Review	< 0.092 U	< 0.092 U			0.74	0.77	1.2	1.1	< 0.056 U	< 0.056 U	< 1.9 U	< 1.9 U
OLD WORKS WMA													
LF-4	5-year Review	4.1	3.9			2.3	2.2	78.9	58.1	< 0.056 U	< 0.056 U	468	397
MW-205	5-year Review	5.2	4.2			1.4	1.5	52.2	45.1	< 0.056 U	< 0.056 U	181	164
MW-72	5-year Review	1.7	1.6			2.4	2.5	179	152	< 0.056 U	< 0.056 U	424	412
TI-A	5-year Review	0.92	1.0			1.4	1.5	377	405	< 0.056 U	< 0.056 U	187	207
SOUTH OPPORTUNITY/YELLOW DITCH AREA													
MW-225	5-year Review	6.0	6.0										
MW-231	5-year Review	0.55	0.71										
MW-232	5-year Review	74.0	94.8										
OD-2D	5-year Review	< 0.092 U	< 0.092 U										
OD-2S	5-year Review	3.0	3.8										
OD-3D	5-year Review	0.91	0.78										
OD-3S	5-year Review	< 0.092 U	< 0.092 U										
WCT-27	5-year Review	3.4	13.4										
DUTCHMAN CREEK AREA													
MW-224	5-year Review	0.82	0.80										
MW-230	5-year Review	1.1	1.1										
BLUE LAGOON AREA													
MW-257	5-year Review	0.78	1.4			0.16 J-	0.093 J-	1.5	2.4	< 0.056 U	< 0.056 U	3070	1560

Bold values above the performance standard

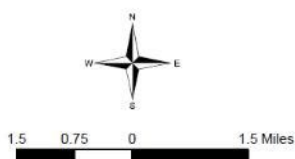
Source: 2023 5-Year Review Groundwater Interpretive Report. Table 4b. December 2024.

Figure H-6: Location of Surface Water Monitoring Stations, 2023



Legend

- Drainage
- Surface Water TI Evaluation
- Surface Water Remedy Performance Monitoring
- Surface Water Compliance Benthic Macroinvertebrate Community Monitoring Station



Source: 2023 Site Management Plan Report, Revision 1. Figure 8.3. Prepared by Atlantic Richfield. October 2023.

Table H-8: AR Surface Water Quality Monitoring Results, 2020 to 2023

Sample Date ⁷	Discharge (cfs)	Hardness (mg/L as CaCO ₃)	Arsenic		Cadmium		Copper		Lead		Zinc	
			Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)
Lost Creek Monitoring Stations												
Upstream Monitoring Location - Lost Creek near Anaconda USGS Gage (12323840)												
3/25/2020	5.5	109	2.9	3.5	<0.03	<0.03	1.1	2.2	0.062	0.21	<2.0	<2.0
4/14/2020	5.7	113	3	3.6	<0.03	0.03	1	2.7	<0.02	0.26	<2.0	<2.0
5/6/2020	15	86.5	3.4	5.2	<0.03	0.09	2.3	33.5	0.122	2.32	<2.0	7.0
5/18/2020	13	82.5	3.6	4.5	<0.03	0.06	2.5	11.8	0.034	1.07	<2.0	4.0
6/1/2020	53	56.8	5.2	7.1	<0.03	0.13	2.7	21.9	0.076	3.19	<2.0	10.0
7/14/2020	27	103	4.8	5.3	<0.03	0.03	1.4	3.5	<0.02	0.32	<2.0	3.0
8/18/2020	19	121	4.5	4.7	<0.03	<0.03	1.1	2.8	<0.02	0.29	<2.0	3.0
10/14/2020	16	109	4.3	4.7	<0.03	0.05	1.3	7.8	0.036	1.08	<2.0	4.0
3/23/2021	7.8	118	2.8	2.9	0.03	<0.03	1.0	3.4	<0.02	0.32	<2.0	2.0
4/13/2021	9.7	117	2.4	2.5	<0.03	<0.03	0.97	3.1	<0.02	0.33	<2.0	<2.0
5/5/2021	12	94.7	2.6	2.8	<0.03	0.03	1.5	4.4	0.02	0.5	<2.0	2.0
5/18/2021	22	73	2.7	4	<0.03	0.09	2.0	14.5	0.037	2.05	<2.0	7.0
6/8/2021	33	71.7	3.2	4.5	<0.03	0.05	1.4	8.1	0.03	1.26	<2.0	4.0
7/13/2021	9.5	104	3.7	3.9	<0.03	<0.03	1.3	2.4	<0.02	0.25	<2.0	<2.0
8/17/2021	11	112	4.6	4.5	<0.03	<0.03	1.3	2.9	0.041	0.26	<2.0	<2.0
10/13/2021	7.3	114	3.8	4	<0.03	<0.03	1.3	2.2	<0.02	0.15	<2.0	<2.0
3/23/2022	4.9	116	3	2.9	<0.03	<0.03	1.2	2.9	<0.02	0.26	<2.0	2.0
4/19/2022	2.9	114	2.5	3.1	0.035	0.03	1.3	4.5	<0.02	0.38	<2.0	3.0
5/4/2022	2.9	113	3.5	3.6	0.037	0.05	1.9	4.7	0.025	0.37	<2.0	3.0
5/25/2022	3.2	97.7	4.3	4.3	0.038	0.05	2.4	4.8	0.027	0.37	<2.0	3.0
6/8/2022	12	76.6	4.4	5.4	0.031	0.07	2.8	11.8	0.049	1.41	<2.0	6.0
7/13/2022	3.4	94.6	4.9	5.5	<0.03	0.03	1.9	3.4	0.024	0.26	<2.0	4.0
8/17/2022	0.22	120	6.9	7.1	0.039	0.04	2.6	7.6	0.028	0.34	<2.0	3.0
10/5/2022	1.6	117	5.2	5	<0.03	<0.03	1.5	2.2	0.023	0.14	<2.0	<2.0
3/22/2023	4.9	110	2.8	2.8	<0.03	<0.03	1.2	2.2	<0.02	0.17	<2.0	2.0
4/11/2023	8.5	102	4	5.4	<0.03	0.09	2.7	13.6	0.037	1.68	<2.0	6.0
5/10/2023	14	76.7	3.1	3.3	<0.03	0.04	3.6	5.2	0.037	0.51	<2.0	3.0
5/24/2023	28	62.2	3.6	4.4	<0.03	0.06	2.5	10.3	0.045	1.48	<2.0	6.0
6/14/2023	35	79.7	4.5	5	<0.03	0.04	2.3	6.3	0.032	0.72	<2.0	4.0
7/12/2023	20	96.8	3.6	4.2	<0.03	0.04	1.5	4.4	<0.03	0.56	<2.0	2.0
8/16/2023	11	112	5.5	6.2	<0.03	0.06	2.4	8.9	0.052	0.87	<2.0	3.0
Downstream Monitoring Location - Lost Creek near Galen USGS Gage (12323850)												
3/25/2020	49.5	279	8.9	9.8	0.032	0.07	1.1	8.5	0.036	1.02	<2.0	6.0
4/14/2020	56.4	287	7.5	9.4	0.06	0.08	1.3	10.7	0.033	1.21	4.0	7.0
5/6/2020	42.5	304	7.4	7.6	<0.03	0.06	0.97	8.7	0.037	0.87	<2.0	4.0
5/19/2020	30	337	11	12.6	<0.03	0.09	2.0	18.2	0.038	0.98	6.0	7.0
6/2/2020	28.2	258	10.6	10	0.3	0.04	1.9	6.8	0.047	0.59	<2.0	3.0
7/14/2020	60	285	7.7	8.7	<0.03	<0.03	1.6	3.8	0.023	0.25	<2.0	3.0
8/18/2020	32	276	9.6	9.5	<0.03	<0.03	1.6	5.6	0.027	0.31	<2.0	3.0
10/14/2020	64	246	9.6	9.1	<0.03	<0.03	1.7	3	0.021	0.2	<2.0	2.0
3/23/2021	51	287	7.8	9.1	<0.03	0.07	0.9	9.5	0.029	1.17	<2.0	6.0
4/13/2021	50	271	4.9	6.2	<0.03	0.08	0.64	11.5	0.022	1.37	<2.0	7.0
5/5/2021	47	296	6.4	7.5	<0.03	0.06	1.1	8.7	0.032	1.01	<2.0	5.0
5/18/2021	32	308	6.1	6.5	<0.03	0.04	1.0	5.4	0.028	0.58	<2.0	3.0
6/8/2021	22	261	7.9	8.4	<0.03	<0.03	1.6	4	0.032	0.35	<2.0	3.0
7/13/2021	2	217	7.9	7.7	<0.03	<0.03	1.7	3.2	0.044	0.19	<2.0	<2.0
8/17/2021	11	295	7.4	7.5	<0.03	<0.03	1.1	2.5	0.025	0.25	<2.0	<2.0
10/13/2021	50	264	4.6	5.2	<0.03	0.05	0.7	5.4	<0.02	0.63	<2.0	4.0
3/23/2022	39	292	6.4	8.9	<0.03	0.15	1.0	15.8	<0.02	1.78	<2.0	17.0
4/19/2022	37	294	4.8	6.1	<0.03	0.08	1.0	10.4	0.027	1.15	<2.0	6.0
5/4/2022	39	275	6.1	7.6	0.035	0.09	1.4	11.1	0.033	1.19	<2.0	8.0
5/25/2022	14	310	4.8	5.7	<0.03	0.04	1.3	3.8	0.03	0.34	<2.0	4.0
6/8/2022	18	302	6.9	7.7	<0.03	0.03	1.5	3.3	0.025	0.24	<2.0	3.0
7/13/2022	4.5	285	6.2	6.3	<0.03	<0.03	1.9	2.6	0.026	0.11	<2.0	<2.0
8/17/2022	3.8	290	7.1	7.2	0.04	<0.03	1.8	2.4	0.034	0.11	<2.0	<2.0
10/5/2022	38	310	7.8	7.7	<0.03	0.04	1.6	3.8	0.034	0.35	<2.0	4.0
3/22/2023	35	289	5.7	7	<0.03	0.05	1.2	5.5	0.021	0.5	<2.0	5.0
4/11/2023	40	284	11.5	13.4	<0.03	0.07	2.1	9.6	0.043	0.89	<2.0	6.0
5/10/2023	49	288	11.3	12	<0.03	0.06	2.1	8.6	0.044	0.86	<2.0	5.0
5/24/2023	47	249	9.1	10.9	<0.03	0.07	1.9	8.4	0.044	0.76	<2.0	5.0
6/14/2023	60	224	15.5	16.2	<0.03	0.05	3.0	6.3	0.06	0.47	<2.0	3.0
7/12/2023	26	266	12.6	13.8	<0.03	<0.03	1.9	3.8	<0.03	0.22	<2.0	<2.0
8/16/2023	14	310	11.4	11.2	<0.03	<0.03	1.7	2.6	0.041	0.14	<2.0	<2.0
11/2/2023	45	288	8.3	8.2	<0.03	<0.03	1.0	2.1	0.03	0.18	<2.0	<2.0
Mill Creek Monitoring Stations												
Upstream Monitoring Location - Mill Creek near Ananconda USGS Gage (12323670)												
3/24/2020	10	89.1	13.5	16.4	<0.03	0.04	0.86	1.4	0.034	0.18	<2.0	<2.0
4/13/2020	25	82.4	12	14.2	0.035	0.06	1.3	2.7	0.045	0.56	<2.0	3.0
5/5/2020	64	41.6	19.1	21.4	0.035	0.32	3.3	9.8	0.173	1.15	<2.0	14.0
5/18/2020	84	44.4	16.2	17.7	0.038	0.08	2.8	4.9	0.098	0.85	<2.0	4.0

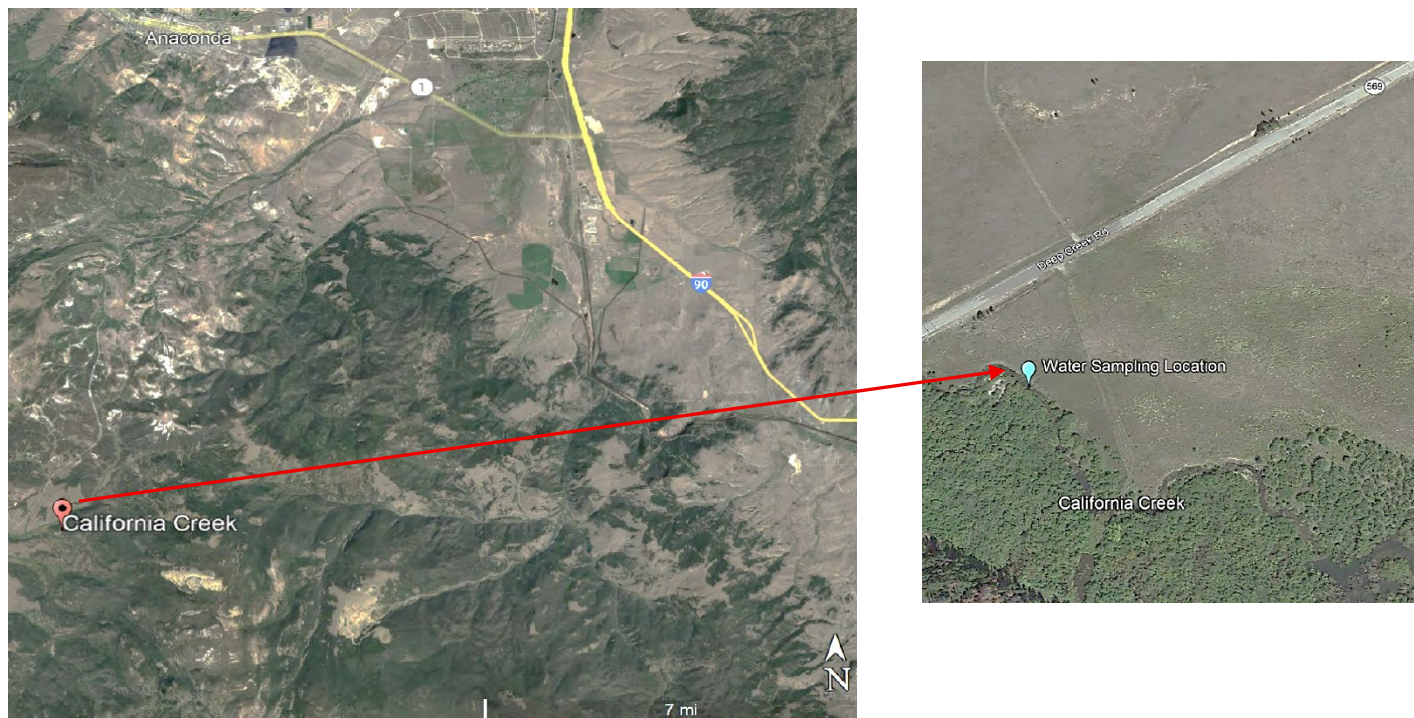
Sample Date ⁷	Discharge (cfs)	Hardness (mg/L as CaCO ₃)	Arsenic		Cadmium		Copper		Lead		Zinc	
			Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)
6/1/2020	210	26.4	9.2	11.1	<0.03	0.12	2.7	5.9	0.086	1.4	<2.0	8.0
7/13/2020	79	45.4	20.3	23	0.035	0.06	2	5	0.092	0.52	<2.0	3.0
8/17/2020	24	75.3	19.9	20.9	<0.03	0.04	1.4	1.8	0.067	0.24	<2.0	<2.0
10/13/2020	17	85.6	19.2	18.9	0.051	0.07	1.3	1.7	0.062	0.19	<2.0	<2.0
3/22/2021	12	89.7	15.2	14.8	0.065	0.05	1.1	1.5	0.035	0.18	<2.0	<2.0
4/12/2021	18	77.4	17.1	17.7	0.05	0.05	1.7	2.2	0.052	0.25	<2.0	2.0
5/4/2021	42	51.6	16.2	16.7	0.046	0.07	2.9	4.4	0.13	0.65	<2.0	3.0
5/17/2021	63	43.7	15.8	16.1	0.037	0.08	2.5	4.7	0.104	0.89	<2.0	4.0
6/7/2021	122	30.1	9.2	11.1	0.031	0.06	1.9	3.2	0.066	0.52	<2.0	3.0
7/12/2021	33	59.2	17.8	18.3	0.031	0.06	1.4	2.4	0.09	0.54	<2.0	<2.0
8/16/2021	14	84	34.9	35.8	0.036	0.06	1.5	2.2	0.118	0.29	<2.0	3.0
10/12/2021	11	89.8	20.3	21.1	0.047	0.05	1.2	1.6	0.053	0.19	<2.0	<2
3/22/2022	9.2	90.8	16.4	17.1	0.059	0.06	1.8	1.9	0.219	0.24	<2.0	<2.0
4/18/2022	8.2	84	13	14.4	0.046	0.06	1.4	1.9	0.039	0.23	<2.0	3.0
5/3/2022	18	67.5	16.2	18.1	0.054	0.09	2.5	3.5	0.066	0.54	3.9	3.0
5/24/2022	42	50.3	16.5	17	0.042	0.06	2.7	3.4	0.103	0.43	3.9	3.0
6/7/2022	129	29.5	9.8	11.5	0.043	0.07	3.2	4.5	0.099	0.66	<2.0	4.0
7/12/2022	54	42.7	11	12.2	0.038	0.06	1.7	2.9	0.07	0.46	<2.0	3.0
8/16/2022	12	75.2	37.3	38.2	0.054	0.06	1.9	2.6	0.139	0.4	<2.0	3.0
10/4/2022	16	67.6	23.8	24.2	0.059	0.08	1.7	3.2	0.122	0.57	<2.0	3.0
3/21/2023	5.5	91.6	12.2	13.2	0.053	0.06	1.1	1.5	0.04	0.26	2.0	2.0
4/11/2023	21	71.1	41.3	44.4	0.085	0.16	4.1	7.4	0.131	3.7	2.6	7.0
5/9/2023	119	35.4	25.7	25.3	0.053	0.07	4.8	6.4	0.217	0.69	3.0	5.0
5/23/2023	181	25.8	10.7	11.6	<0.03	0.1	3.1	5.8	0.095	1.09	2.1	6.0
6/13/2023	126	32.6	14.3	14	0.043	0.06	2.8	4	0.09	0.52	<2.0	3.0
7/11/2023	57	48.1	18	19.8	0.046	0.08	2.5	3.8	0.112	0.59	<2.0	3.0
8/15/2023	22	67.1	20.1	22	0.043	0.06	2	2.6	0.149	0.49	<2.0	<2.0
10/10/2023	17	71	16.3	15.6	0.031	0.05	1.6	1.8	0.082	0.25	<2.0	<2.0
11/1/2023	14	74	11.9	12.1	0.031	0.05	0.99	1.5	0.057	0.22	<2.0	<2.0
Downstream Monitoring Location - Mill Creek at Opportunity USGS Gage (12323700)												
3/24/2020	9.81	103	14.5	16.8	0.044	0.05	1	1.9	0.032	0.1	<2.0	2.0
4/13/2020	14.5	92.3	15	16.9	0.041	0.08	2.6	2.5	0.058	0.43	<2.0	3.0
5/6/2020	44.9	45.4	19.2	21.8	0.04	0.09	3.1	5.7	0.154	0.99	2.3	5.0
5/18/2020	47	49.2	19.8	22.1	0.042	0.11	3.1	6.5	0.111	1.25	<2.0	6.0
6/1/2020	139	27.6	12.1	16.1	0.045	0.33	3.3	12.4	0.138	3.15	<2.0	13.0
7/13/2020	55	47.1	23	26.6	0.035	0.1	2.4	5	0.117	0.79	<2.0	7.0
8/17/2020	7.3	83.5	31.7	31.3	0.041	0.05	1.9	2.5	0.109	0.27	<2.0	3.0
10/13/2020	14	97.2	27.6	26.4	0.066	0.09	1.9	2.7	0.095	0.27	2.8	4.0
3/22/2021	10	106	17.2	17.9	0.046	0.06	1.3	2.7	0.049	0.47	<2.0	3.0
4/12/2021	14	88.8	18.7	18.9	0.056	0.05	1.8	2.4	0.054	0.23	<2.0	2.0
5/4/2021	26	56.7	19.5	19.9	0.046	0.08	3.3	5.4	0.145	0.72	<2.0	4.0
5/17/2021	21	49.9	20.4	20.5	0.046	0.09	2.9	5	0.114	0.77	<2.0	4.0
6/7/2021	65	34.2	12.3	16.1	0.034	0.11	2.6	5.5	0.114	1.18	2.1	5.0
7/12/2021	2.2	62.8	27.7	27.9	0.051	0.06	2	3.1	0.138	0.4	<2.0	3.0
8/16/2021	0.78	93.7	27.6	28.3	<0.03	0.04	1.8	3.4	0.082	0.16	<2.0	<2.0
10/12/2021	1.3	96.7	11.4	11.8	0.041	0.05	1.4	1.4	0.048	0.07	2.3	2.0
3/22/2022	1.6	101	11.3	12.5	0.038	0.05	1.3	1.7	0.035	0.09	2.4	3.0
4/18/2022	1.4	93.3	11.1	12.6	0.05	0.06	1.4	1.8	0.028	0.1	2.3	3.0
5/3/2022	1.6	91.4	14.7	15.9	0.055	0.07	2	2.6	0.046	0.14	2.5	3.0
5/24/2022	1.6	69	18.3	18.9	0.048	0.06	2.6	3.4	0.082	0.25	2.7	3.0
6/7/2022	116	32.2	13.8	17.1	0.06	0.14	3.9	7.7	0.153	1.6	2.3	7.0
7/12/2022	31	46.5	16.7	18.8	0.057	0.1	2.2	3.6	0.15	0.62	<2.0	5.0
8/16/2022	1.1	82.3	30.6	31.6	0.042	0.05	2	2.7	0.114	0.24	<2.0	3.0
10/4/2022	0.85	86.1	23.3	23.2	0.037	0.05	2.1	2.8	0.08	0.16	<2.0	2.0
3/21/2023	0.5	95.6	5.8	7.1	0.038	0.05	1	1.5	0.024	0.09	2.8	3.0
4/11/2023	13	76.6	30.6	34.5	0.089	0.18	4.1	7.7	0.173	1.42	4.2	8.0
5/9/2023	59	40.4	26.3	25.7	0.064	0.1	5.5	7.8	0.215	0.84	3.9	6.0
5/23/2023	138	28.4	16.9	18.5	0.053	0.14	4.3	8.2	0.135	1.62	2.9	7.0
6/13/2023	115	36.2	20.9	21	0.061	0.11	3.6	6.5	0.148	1.22	2.3	5.0
7/11/2023	69	53	27.6	31.1	0.068	0.13	3.2	6.3	0.197	1.16	<2.0	5.0
8/15/2023	6.8	77.6	33.8	34.8	0.062	0.08	3.1	3.6	0.197	0.35	2.3	3.0
10/10/2023	6.1	81	26	24.3	0.049	0.06	1.9	2.4	0.101	0.19	2.5	3.0
11/1/2023	6	85	18.1	17.8	0.058	0.06	1.3	1.7	0.058	0.13	2.8	3.0
Warm Springs Creek Monitoring Stations												
Upstream Monitoring Location - Warm Springs near Anaconda USGS Gage (12323760) ⁸												
4/14/2020	64	138	2.1	1.9	<0.03	<0.03	0.82	1	<0.02	0.13	<2.0	<2.0
5/19/2020	228	91	2.2	3.7	<0.03	0.11	1.2	11.3	<0.02	1.64	<2.0	23.0
6/2/2020	457	65.8	2	2.6	0.03	0.05	1.4	4.6	0.021	1.14	3	9.0
7/13/2020	251	92.3	1.9	2.3	<0.03	0.04	1.1	2.2	<0.02	0.18	<2.0	6.0
8/18/2020	125	128	4	4.3	<0.03	<0.03	0.8	2.5	<0.02	0.13	<2.0	3.0
10/14/2020	113	134	2.1	2.1	<0.03	<0.03	0.79	1.6	<0.02	0.24	<2.0	5.0

Sample Date ⁷	Discharge (cfs)	Hardness (mg/L as CaCO ₃)	Arsenic		Cadmium		Copper		Lead		Zinc	
			Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)
4/13/2021	75	140	2	2	0.03	<0.03	0.49	1.1	<0.02	0.13	<2.0	<2.0
5/18/2021	211	85	1.3	2.5	<0.03	0.09	1.1	7.2	<0.02	1.27	<2.0	15.0
6/8/2021	244	72.3	1.6	2	<0.03	0.03	0.9	2.3	<0.02	0.3	<2.0	4.0
7/13/2021	105	116	3.3	3.3	0.036	<0.03	0.79	1.6	<0.02	0.18	<2.0	3.0
8/17/2021	128	115	2.5	2.5	<0.03	<0.03	0.73	2	<0.02	0.18	<2.0	2.0
10/13/2021	81	140	2.2	2.2	<0.03	<0.03	0.5	0.9	<0.02	0.11	<2.0	<2.0
4/19/2022	53	140	1.8	2.1	<0.03	<0.03	1.1	1.3	<0.02	0.16	<2.0	<2.0
5/25/2022	70	126	2	2.1	<0.03	<0.03	0.84	1.6	<0.02	0.23	<2.0	2.0
6/8/2022	199	73.8	1.6	1.9	0.031	0.04	1.2	3.1	<0.02	0.39	<2.0	6.0
7/13/2022	132	90.3	1.9	2.2	0.041	0.05	0.99	2.2	<0.02	0.2	3.8	9.0
8/17/2022	63	124	2.8	2.9	0.048	0.03	0.81	1.9	<0.02	0.18	<2.0	4.0
10/5/2022	67	126	2.1	2.2	<0.03	<0.03	0.57	1.2	<0.02	0.12	<2.0	3.0
3/21/2023	42	136	2.1	2.5	<0.03	<0.03	0.62	1.4	<0.02	0.17	<2.0	2.0
5/10/2023	141	98.8	1.7	1.9	<0.03	0.04	1.2	2.3	<0.03	0.21	<2.0	4.0
6/14/2023	402	71.2	2.1	2.4	0.036	0.05	1.5	3	<0.03	0.31	3.4	8.0
7/12/2023	177	94.9	1.8	2	0.04	0.04	1.2	1.8	<0.03	0.14	2.6	6.0
8/16/2023	89	121	1.9	1.9	<0.03	0.03	0.88	1.5	<0.03	0.14	<2.0	3.0
11/2/2023	86	130	1.6	1.6	<0.03	<0.03	0.47	0.8	<0.03	0.08	<2.0	3.0
Downstream Monitoring Location - Warm Springs at Warm Springs USGS Gage (12323770)												
3/25/2020	42.4	170	4.3	4.3	0.046	0.04	1.7	4.3	0.024	0.26	<2.0	2.0
4/14/2020	50.5	173	3.8	3.8	0.032	0.05	1.4	4.4	<0.02	0.49	<2.0	3.0
5/6/2020	83.3	131	3.8	5.2	<0.03	0.09	2.8	19.6	0.083	1.16	<2.0	7.0
5/19/2020	174	110	5.6	16.7	<0.03	0.39	3.7	126	0.077	11.4	<2.0	57.0
6/2/2020	316	75.7	5.4	11.2	0.032	0.15	4.0	78.7	0.106	6.44	2.7	23.0
7/14/2020	187	105	4.1	5.9	0.037	0.07	2.2	15.1	0.03	1.28	2.7	9.0
8/18/2020	78	140	6.2	6.7	<0.03	<0.03	2.2	6.1	0.028	0.41	<2.0	3.0
10/14/2020	76	148	4.7	4.9	<0.03	0.04	1.6	6.4	0.025	0.5	<2.0	4.0
3/23/2021	63	167	3	3.1	<0.03	<0.03	1.0	3.3	<0.02	0.27	<2.0	2.0
4/13/2021	64	161	2.3	2.6	<0.03	<0.03	0.91	3.5	<0.02	0.32	<2.0	2.0
5/5/2021	78	144	2.5	3.2	0.032	0.04	1.4	7.1	<0.02	0.78	<2.0	5.0
5/18/2021	143	101	3.1	9.6	<0.03	0.24	2.3	65.9	0.047	7.7	<2.0	40.0
6/8/2021	169	81.7	2.9	4.6	0.036	0.07	2.4	18.2	0.052	1.77	<2.0	8.0
7/13/2021	41	132	4.2	4.7	<0.03	<0.03	1.7	5	0.026	0.39	<2.0	3.0
8/17/2021	61	133	3.2	3.5	<0.03	<0.03	1.5	3.6	<0.02	0.26	<2.0	2.0
10/13/2021	47	159	2.8	3.1	<0.03	<0.03	1.0	3.5	<0.02	0.25	<2.0	<2.0
3/23/2022	36	170	2.6	3.1	<0.03	<0.03	1.2	4.1	<0.02	0.32	<2.0	3.0
4/19/2022	40	168	2.5	2.8	<0.03	0.03	1.2	3.7	0.02	0.29	<2.0	2.0
5/4/2022	26	170	2.9	3.2	0.04	0.05	1.4	3.7	0.02	<0.36	<2.0	<12.0
5/25/2022	31	160	3.1	3.4	<0.03	0.03	1.5	5	0.02	0.37	<2.0	3.0
6/8/2022	135	85.9	2.3	3.9	0.031	0.07	2.1	14.5	0.029	1.4	<2.0	10.0
7/13/2022	88	98.8	2.7	3.5	0.042	0.06	1.8	6.7	0.02	0.52	<2.0	7.0
8/17/2022	28	146	4.7	4.8	0.031	<0.03	2.5	5.3	0.048	0.24	<2.0	3.0
10/5/2022	32	149	3.4	3.6	0.035	0.04	1.5	4.2	<0.02	0.26	<2.0	3.0
3/22/2023	43	169	3.1	3.3	0.033	0.05	1.5	3.9	<0.02	0.28	<2.0	3.0
4/11/2023	68	148	6.7	7.8	<0.03	0.06	3.5	10.4	<0.03	0.85	<2.0	5.0
5/10/2023	118	112	2.6	3.4	0.036	0.06	1.8	8.7	<0.03	0.79	<2.0	6.0
5/23/2023	331	69.2	3.8	8.4	<0.03	0.15	3.9	38.4	0.055	3.57	<2.0	19.0
6/14/2023	342	77.3	3.8	5.5	0.041	0.07	3.4	16.1	0.038	1.31	3.0	11.0
7/12/2023	143	100	3	3.8	0.034	0.06	1.8	7.5	<0.03	0.61	<2.0	9.0
8/16/2023	49	132	4.1	4.7	<0.03	0.04	3.2	16.4	0.053	0.44	<2.0	3.0
10/11/2023	74	140	4	4.3	0.041	0.04	1.8	6.1	<0.03	0.33	<2.0	4.0
11/2/2023	78	142	3.1	3.2	0.034	0.05	1.4	4.6	<0.03	0.34	2.2	5.0
Willow Creek Monitoring Stations												
Upstream Monitoring Location - Willow Creek near Anaconda USGS Gage (12323710)												
3/24/2020	1.7	51.9	9.2	12.6	<0.03	0.06	2.1	2.6	0.074	0.53	<2.0	3.0
4/13/2020	3.4	46.1	12.5	19.1	0.037	0.16	2	6	0.168	2.44	2.1	8.0
5/5/2020	20	27.3	16.3	16.6	0.045	0.07	3.9	5.2	0.853	1.47	3.7	5.0
5/18/2020	23	26.6	12.9	13.4	<0.03	0.07	2.7	4.8	0.175	1.38	<2.0	5.0
6/1/2020	24	31.8	12.9	12.6	<0.03	0.06	2.2	3.5	0.174	0.86	<2.0	3.0
7/13/2020	17	36.5	15.2	16.7	0.062	0.05	3.1	4	0.268	0.57	2	3.0
8/17/2020	4.3	45.4	31.2	33.2	0.063	0.08	4.9	6.3	0.349	0.64	<2.0	2.0
10/13/2020	1.2	48.5	25.9	25.4	0.049	0.07	2.5	3.3	0.228	0.42	<2.0	2.0
3/22/2021	3.2	51.4	15.8	16.2	0.035	<0.03	1.6	2	0.127	0.26	<2.0	3.0
4/12/2021	1.5	46.4	15.8	16.8	<0.03	0.04	2.1	2.8	0.196	0.51	<2.0	2.0
5/4/2021	8.7	35	19.3	19.1	0.03	0.06	3.3	4.2	0.326	0.8	2.2	4.0
5/17/2021	12	32.2	17.3	17.7	<0.03	0.05	2.3	3.6	0.208	0.67	<2.0	3.0
6/7/2021	15	31.7	14.4	17.1	<0.03	0.05	1.8	3	0.177	0.63	<2.0	3.0
7/12/2021	3.1	38.9	24.3	25.3	<0.03	0.04	1.9	2.6	0.19	0.38	<2.0	<2.0
8/16/2021	1.3	44.2	35.8	38.4	<0.03	0.06	2.4	3.2	0.345	0.59	<2.0	<2.0
10/12/2021	1.6	46	19.2	21.7	<0.03	0.05	1.5	2.2	0.164	0.45	<2.0	2.0
3/22/2022	2.5	47.2	12.1	13.3	<0.03	<0.03	1.5	1.6	0.134	0.21	<2.0	<2.0
4/18/2022	2.2	44.7	11.3	13.0	<0.03	<0.03	1.4	2	0.11	0.29	<2.0	3.0

Sample Date ⁷	Discharge (cfs)	Hardness (mg/L as CaCO ₃)	Arsenic		Cadmium		Copper		Lead		Zinc	
			Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)	Dissolved (ug/L)	Total Recoverable (ug/L)
5/3/2022	5.8	37.2	15.3	16.9	<0.03	0.05	2.7	3.5	0.229	0.71	<2.0	3.0
5/24/2022	10	27.4	13.1	13.2	<0.03	0.03	2.2	2.9	0.23	0.49	<2.0	3.0
6/7/2022	19	26.7	10.8	12.1	<0.03	0.04	2.1	2.7	0.196	0.54	<2.0	3.0
7/12/2022	3.5	37.2	14.7	16	<0.03	0.03	1.6	1.9	0.096	0.38	<2.0	2.0
8/16/2022	1.2	41.7	27.3	26.7	<0.03	0.05	1.9	2.3	0.214	0.46	<2.0	2.0
10/4/2022	1.2	44.8	25.2	24	<0.03	0.04	2.5	3	0.164	0.31	<2.0	2.0
4/11/2023	7.8	45.5	13.1	13.7	<0.03	0.06	2.2	3.3	0.155	0.71	<2.0	4.0
5/9/2023	24	25.4	16.7	17.1	<0.03	0.05	3.7	5.2	0.381	1.07	2.3	5.0
5/23/2023	23	24.5	13.2	13.1	<0.03	0.04	2.9	2.9	0.205	0.59	<2.0	2.0
6/13/2023	15	36	14.7	14.5	<0.03	0.04	2.4	2.9	0.184	0.48	<2.0	<2.0
7/11/2023	7.8	38.6	15.3	16.9	<0.03	0.04	1.6	2.5	0.079	0.47	<2.0	2.0
8/15/2023	2.3	42.1	20.3	19.4	<0.03	0.04	1.7	1.8	0.157	0.37	<2.0	<2.0
10/10/2023	1.8	45.7	20.3	18.3	<0.03	<0.03	1.7	1.7	0.129	0.23	<2.0	<2.0
Downstream Monitoring Location - Willow Creek at Opportunity USGS Gage (12323720)												
3/24/2020	6.62	127	17	19.5	<0.03	0.04	1.4	2.7	0.136	0.62	2.7	5.0
4/13/2020	10.2	137	18.7	21.1	0.05	0.08	2.6	5.9	0.124	1.65	3.3	9.0
5/5/2020	15.3	65.1	26	25	<0.03	0.1	4.4	9.3	0.368	2.06	3.1	10.0
5/18/2020	21	75.3	29.2	31	0.034	0.12	4.4	10.4	0.294	2.14	2.8	11.0
6/1/2020	20.1	75.2	29.4	32.1	<0.03	0.09	2.8	8.0	0.227	1.84	2.2	9.0
7/13/2020	19	113	53.1	58	<0.03	0.04	6.4	4.5	0.143	0.56	2.5	5.0
8/17/2020	11	129	17.4	17.7	<0.03	<0.03	1.8	2.9	0.054	0.29	<2.0	<2.0
10/13/2020	5.3	121	12.7	12.2	<0.03	<0.03	1.2	1.9	0.064	0.38	<2.0	2.0
3/22/2021	5.3	141	20.7	22.6	<0.03	0.04	3.3	5.2	0.196	0.58	4.2	6.0
4/12/2021	6.5	119	13.6	14.4	0.034	0.04	1.7	3.1	0.102	0.6	2.9	4.0
5/4/2021	12	83.2	21.3	22.9	<0.03	0.07	3.3	6.4	0.193	1.27	2.3	6.0
5/17/2021	10	90.3	22.5	23.1	<0.03	0.05	2.8	5.1	0.188	1.13	<2.0	5.0
6/7/2021	17	84.9	41.6	43.7	0.037	0.07	4.1	7.1	0.336	1.51	3.1	7.0
7/12/2021	5.2	117	23.3	24.3	<0.03	<0.03	1.9	2.9	0.128	0.55	<2.0	<2.0
8/16/2021	4.4	124	14.5	15.3	<0.03	<0.03	1.3	2.4	0.079	0.53	<2.0	2.0
10/12/2021	4.8	124	10.8	11.9	<0.03	0.05	0.9	3.8	0.066	1.3	<2.0	6.0
3/22/2022	6.1	133	16.9	18.5	<0.03	<0.03	2.0	2.9	0.071	0.38	<2.0	3.0
4/18/2022	6.5	135	13.5	15.6	<0.03	0.03	2.0	3.9	0.091	0.63	<2.0	4.0
5/3/2022	7.6	116	22.9	24.7	<0.03	0.05	3.2	4.6	0.11	0.72	<2.0	4.0
5/24/2022	13	98.1	37.9	36.3	<0.03	0.05	4.2	6.5	0.17	0.95	2.8	6.0
6/7/2022	25	120	76	84.4	0.045	0.09	7.0	10.1	0.209	1.14	4.8	9.0
7/12/2022	11	134	48.2	50	<0.03	0.03	3.3	4.1	0.151	0.46	<2.0	4.0
8/16/2022	5	122	21.8	22.5	<0.03	0.04	2.4	3.4	0.092	0.57	<2.0	4.0
10/4/2022	5	116	24.5	24.6	<0.06	<0.06	2.4	4.5	0.091	0.75	4.0	6.0
3/21/2023	3.8	140	20.7	22	0.03	0.04	3.2	4.5	0.154	0.35	3.7	4.0
4/11/2023	7.1	149	85.6	82.7	0.066	0.09	9.9	13.3	0.354	0.7	6.5	8.0
5/9/2023	18	83	48.1	49.1	0.035	0.09	9.4	15.9	0.378	1.65	4.3	10.0
5/23/2023	18	68.4	41.6	45.5	<0.03	0.08	6.0	10.6	0.279	1.42	3.5	9.0
6/13/2023	33	134	114	120	0.049	0.12	8.0	13.1	0.361	1.63	4.8	11.0
7/11/2023	18	115	51.8	55.7	<0.03	0.05	3.2	4.9	0.224	0.91	<2.0	5.0
8/15/2023	9.8	116	30.4	34.6	<0.03	0.03	3.4	4.8	0.108	0.85	<2.0	3.0
10/10/2023	8.6	123	28	30.2	<0.03	<0.03	2.6	3.5	0.089	0.52	<2.0	3.0
11/1/2023	8.6	154	23.9	23.6	<0.03	0.04	2.2	4	0.091	0.91	2.4	6.0
¹ Bolded values represent concentration exceeding chronic performance standards presented in the 2020 ARWW&S OU ROD Amendment. ² Red font text values represent concentrations exceeding acute performance standards presented in the 2020 ARWW&S OU ROD Amendment. ³ Compliance standards are Montana DEQ-7 (August 2010) Total Recoverable Chronic Aquatic Life Standards. ⁴ The arsenic compliance standard in lower Warm Springs Creek (USGS Station 12323770) is the arsenic human health criterion of 10 ug/L. Exceedances of this standard are italicized. ⁵ Values exceeding performance standards presented in the 2020 ARWW&S OU ROD Amendment are for comparison/trend evaluation only; compliance evaluation is not applicable during the Remedy Construction Monitoring Period. ⁶ Samples were not collected at Warm Springs near Anconda (12323760) during the March nor one of the May sampling events each year. ⁷ Table 8.1 presents surface water quality data which USGS has collected and made available as of 2/28/2024. Missing or unavailable data will be provided once USGS makes the data available and will be included in subsequent SMP Reports. Data Source: USGS												

Source: 2023 Site Management Plan Report, Revision 1. Table 8.1. Prepared by Atlantic Richfield. October 2023.

Figure H-7: NRDP's California Creek Vicinity Map and Surface Water Sampling Location Map



Source: California Creek – Surface Water Sampling 2024 Annual Summary Report – RDU-15. Anaconda Smelter NPL Site. ARWWS OU. Prepared by: Pioneer Technical Services, Inc. January 2025

Table H-9: NRDP Surface Water Quality Monitoring Results, 2023

Sampling Event	Sample ID	Sample Date	Parameter ¹	Results	Qualifier	RL	Units	Method	ND	Chronic_MDEQ2019 µg/L	Acute_MDEQ2019 µg/L	HARDNESS mg/L	Chronic_CR	Acute_CR
26	AUES-SW-CC-050323	5/3/2023	Arsenic, Total Recoverable	14.6		0.5	µg/L	E200.8		150	340	31.7	0.09733	0.04294
26	AUES-SW-CC-050323	5/3/2023	Arsenic, Dissolved	12.6		0.5	µg/L	E200.8		None - in compliance	None - in compliance	31.7	--	--
26	AUES-SW-CC-050323	5/3/2023	Cadmium, Total Recoverable	0.15		0.08	µg/L	E200.8		0.316036937	0.617169485	31.7	0.47463	0.24305
26	AUES-SW-CC-050323	5/3/2023	Cadmium, Dissolved	0.12		0.08	µg/L	E200.8		0.302468404	0.612273246	31.7	0.39674	0.19599
26	AUES-SW-CC-050323	5/3/2023	Copper, Total Recoverable	11.9		1	µg/L	E200.8		3.495311866	4.742391654	31.7	3.40456	2.50928
26	AUES-SW-CC-050323	5/3/2023	Copper, Dissolved	9.5		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	31.7	--	--
26	AUES-SW-CC-050323	5/3/2023	Lead, Total Recoverable	1.3		0.5	µg/L	E200.8		0.737043132	18.91378715	31.7	1.76380	0.06873
26	AUES-SW-CC-050323	5/3/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	0.706384484	18.12703382	31.7	0.70783	0.02758
26	AUES-SW-CC-050323	5/3/2023	Zinc, Total Recoverable	10.8		5	µg/L	E200.8		45.26513655	45.26513655	31.7	0.23859	0.23859
26	AUES-SW-CC-050323	5/3/2023	Zinc, Dissolved	7.2		5	µg/L	E200.8		44.63142464	44.26930355	31.7	0.16132	0.16264
27	AUES-SW-CC-060623	6/6/2023	Arsenic, Total Recoverable	19		0.5	µg/L	E200.8		150	340	47.3	0.12667	0.05588
27	AUES-SW-CC-060623	6/6/2023	Arsenic, Dissolved	18.4		0.5	µg/L	E200.8		None - in compliance	None - in compliance	47.3	--	--
27	AUES-SW-CC-060623	6/6/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.434890181	0.913143651	47.3	0.18395	0.08761
27	AUES-SW-CC-060623	6/6/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.40893738	0.890610299	47.3	0.19563	0.08983
27	AUES-SW-CC-060623	6/6/2023	Copper, Total Recoverable	6.1		1	µg/L	E200.8		4.920391239	6.914384836	47.3	1.23974	0.88222
27	AUES-SW-CC-060623	6/6/2023	Copper, Dissolved	4.8		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	47.3	--	--
27	AUES-SW-CC-060623	6/6/2023	Lead, Total Recoverable	0.6		0.5	µg/L	E200.8		1.226712229	31.47953355	47.3	0.48911	0.01906
27	AUES-SW-CC-060623	6/6/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	1.104151621	28.33441876	47.3	0.45284	0.01765
27	AUES-SW-CC-060623	6/6/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	63.53692121	63.53692121	47.3	0.07869	0.07869
27	AUES-SW-CC-060623	6/6/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	62.64740432	62.13910895	47.3	0.07981	0.08046
28	AUES-SW-CC-062223	6/22/2023	Arsenic, Total Recoverable	17.9		0.5	µg/L	E200.8		150	340	58.0	0.11933	0.05265
28	AUES-SW-CC-062223	6/22/2023	Arsenic, Dissolved	15.4		0.5	µg/L	E200.8		None - in compliance	None - in compliance	58.0	--	--
28	AUES-SW-CC-062223	6/22/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.511716453	1.114903287	58.0	0.15634	0.07176
28	AUES-SW-CC-062223	6/22/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.47681288	1.07787867	58.0	0.16778	0.07422
28	AUES-SW-CC-062223	6/22/2023	Copper, Total Recoverable	4.4		1	µg/L	E200.8		5.857064576	8.379174527	58.0	0.75123	0.52511
28	AUES-SW-CC-062223	6/22/2023	Copper, Dissolved	3		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	58.0	--	--
28	AUES-SW-CC-062223	6/22/2023	Lead, Total Recoverable	0.55		0.5	µg/L	E200.8		1.590333834	40.81068574	58.0	0.34584	0.01348
28	AUES-SW-CC-062223	6/22/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	1.384186378	35.5205895	58.0	0.36122	0.01408
28	AUES-SW-CC-062223	6/22/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	75.52119632	75.52119632	58.0	0.06621	0.06621
28	AUES-SW-CC-062223	6/22/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	74.46389957	73.85973	58.0	0.06715	0.06770
29	AUES-SW-CC-072623	7/26/2023	Arsenic, Total Recoverable	34.0		0.5	µg/L	E200.8		150	340	73.2	0.22667	0.10000
29	AUES-SW-CC-072623	7/26/2023	Arsenic, Dissolved	29.8		0.5	µg/L	E200.8		None - in compliance	None - in compliance	73.2	--	--
29	AUES-SW-CC-072623	7/26/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.616117238	1.400191478	73.2	0.12985	0.05714
29	AUES-SW-CC-072623	7/26/2023	Cadmium, Dissolved	0.12		0.08	µg/L	E200.8		0.568092926	1.340057861	73.2	0.21123	0.08955
29	AUES-SW-CC-072623	7/26/2023	Copper, Total Recoverable	3.3		1	µg/L	E200.8		7.145876573	10.43378111	73.2	0.46180	0.31628
29	AUES-SW-CC-072623	7/26/2023	Copper, Dissolved	2.3		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	73.2	--	--
29	AUES-SW-CC-072623	7/26/2023	Lead, Total Recoverable	0.5		0.5	µg/L	E200.8		2.138784701	54.88487287	73.2	0.23378	0.00911
29	AUES-SW-CC-072623	7/26/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	1.789007656	45.90899576	73.2	0.27948	0.01089
29	AUES-SW-CC-072623	7/26/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	91.98490433	91.98490433	73.2	0.05436	0.05436
29	AUES-SW-CC-072623	7/26/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	90.69711567	89.96123643	73.2	0.05513	0.05558
Sampling Event	Sample ID	Sample Date	Parameter ¹	Results	Qualifier	RL	Units	Method	ND	Chronic_MDEQ2019 µg/L	Acute_MDEQ2019 µg/L	HARDNESS mg/L	Chronic_CR	Acute_CR
30	AUES-SW-CC-091423	9/14/2023	Arsenic, Total Recoverable	25.2		0.5	µg/L	E200.8		150	340	85.4	0.16800	0.07412
30	AUES-SW-CC-091423	9/14/2023	Arsenic, Dissolved	23.4		0.5	µg/L	E200.8		None - in compliance	None - in compliance	85.4	--	--
30	AUES-SW-CC-091423	9/14/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.696733694	1.628252084	85.4	0.11482	0.04913
30	AUES-SW-CC-091423	9/14/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.637932111	1.547822836	85.4	0.12541	0.05169
30	AUES-SW-CC-091423	9/14/2023	Copper, Total Recoverable	2.1		1	µg/L	E200.8		8.151950658	12.06476832	85.4	0.25761	0.17406
30	AUES-SW-CC-091423	9/14/2023	Copper, Dissolved	1.6		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	85.4	--	--
30	AUES-SW-CC-091423	9/14/2023	Lead, Total Recoverable	0.5		0.5	µg/L	E200.8	1	2.602497566	66.78453798	85.4	0.19212	0.00749
30	AUES-SW-CC-091423	9/14/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	2.118428608	54.36250071	85.4	0.23602	0.00920
30	AUES-SW-CC-091423	9/14/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	104.8191361	104.8191361	85.4	0.04770	0.04770
30	AUES-SW-CC-091423	9/14/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	103.3516682	102.5131151	85.4	0.04838	0.04877
31	AUES-SW-CC-100423	10/4/2023	Arsenic, Total Recoverable	17.3		0.5	µg/L	E200.8		150	340	81.8	0.11533	0.05088
31	AUES-SW-CC-100423	10/4/2023	Arsenic, Dissolved	16.3		0.5	µg/L	E200.8		None - in compliance	None - in compliance	81.8	--	--
31	AUES-SW-CC-100423	10/4/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.673203214	1.561031177	81.8	0.11883	0.05125
31	AUES-SW-CC-100423	10/4/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.617600566	1.486735788	81.8	0.12953	0.05381
31	AUES-SW-CC-100423	10/4/2023	Copper, Total Recoverable	2.2		1	µg/L	E200.8		7.857393256	11.58498681	81.8	0.27999	0.18990
31	AUES-SW-CC-100423	10/4/2023	Copper, Dissolved	1.6		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	81.8	--	--
31	AUES-SW-CC-100423	10/4/2023	Lead, Total Recoverable	0.5		0.5	µg/L	E200.8	1	2.463652318	63.22153148	81.8	0.20295	0.00791
31	AUES-SW-CC-100423	10/4/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	2.020869829	51.85897562	81.8	0.24742	0.00964
31	AUES-SW-CC-100423	10/4/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	101.0630024	101.0630024	81.8	0.04947	0.04947
31	AUES-SW-CC-100423	10/4/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	99.64812037	98.83961635	81.8	0.05018	0.05059
32	AUES-SW-CC-102423	10/24/2023	Arsenic, Total Recoverable	15.2		0.5	µg/L	E200.8		150	340	87.4	0.10133	0.04471
32	AUES-SW-CC-102423	10/24/2023	Arsenic, Dissolved	14.3		0.5	µg/L	E200.8		None - in compliance	None - in compliance	87.4	--	--
32	AUES-SW-CC-102423	10/24/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.709719177	1.665570708	87.4	0.11272	0.04803
32	AUES-SW-CC-102423	10/24/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.649134296	1.581684936	87.4	0.12324	0.05058
32	AUES-SW-CC-102423	10/24/2023	Copper, Total Recoverable	1.8		1	µg/L	E200.8		8.314809642	12.33080565	87.4	0.21648	0.14598
32	AUES-SW-CC-102423	10/24/2023	Copper, Dissolved	1.3		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	87.4	--	--
32	AUES-SW-CC-102423	10/24/2023	Lead, Total Recoverable	0.5		0.5	µg/L	E200.8	1	2.680331537	68.78189078	87.4	0.18654	0.00727
32	AUES-SW-CC-102423	10/24/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	2.172744265	55.75633337	87.4	0.23012	0.00897
32	AUES-SW-CC-102423	10/24/2023	Zinc, Total Recoverable	5		5	µg/L	E200.8	1	106.8953858	106.8953858	87.4	0.04677	0.04677
32	AUES-SW-CC-102423	10/24/2023	Zinc, Dissolved	5		5	µg/L	E200.8	1	105.3988504	104.5436873	87.4	0.04744	0.04783
33	AUES-SW-CC-110923	11/9/2023	Arsenic, Total Recoverable	12.6		0.5	µg/L	E200.8		150	340	87.4	0.08400	0.03706
33	AUES-SW-CC-110923	11/9/2023	Arsenic, Dissolved	10.9		0.5	µg/L	E200.8		None - in compliance	None - in compliance	87.4	--	--
33	AUES-SW-CC-110923	11/9/2023	Cadmium, Total Recoverable	0.08		0.08	µg/L	E200.8	1	0.709719177	1.665570708	87.4	0.11272	0.04803
33	AUES-SW-CC-110923	11/9/2023	Cadmium, Dissolved	0.08		0.08	µg/L	E200.8	1	0.649134296	1.581684936	87.4	0.12324	0.05058
33	AUES-SW-CC-110923	11/9/2023	Copper, Total Recoverable	2.4		1	µg/L	E200.8		8.314809642	12.33080565	87.4	0.28864	0.19463
33	AUES-SW-CC-110923	11/9/2023	Copper, Dissolved	1.8		1	µg/L	E200.8		BLM IWQC ²	BLM IWQC ²	87.4	--	--
33	AUES-SW-CC-110923	11/9/2023	Lead, Total Recoverable	0.5		0.5	µg/L	E200.8	1	2.680331537	68.78189078	87.4	0.18654	0.00727
33	AUES-SW-CC-110923	11/9/2023	Lead, Dissolved	0.5		0.5	µg/L	E200.8	1	2.17274				

Table H-10: NRDP Surface Water Quality Monitoring Results, 2024

Event	Laboratory	Date	Parameter	Results	RL	Units	ND	Chronic MDEQ2019, µg/L ¹	HARDNESS (mg/L)
34	Pace Analytical	4/10/2024	Arsenic, Total Recoverable	13.4	0.5	µg/L		150	69.2
34	Pace Analytical	4/10/2024	Arsenic, Dissolved	12.8	0.5	µg/L		None - in compliance	69.2
34	Pace Analytical	4/10/2024	Cadmium, Total Recoverable	0.03	0.08	µg/L	1	0.59	69.2
34	Pace Analytical	4/10/2024	Cadmium, Dissolved	0.03	0.08	µg/L	1	0.54	69.2
34	Pace Analytical	4/10/2024	Copper, Total Recoverable	3.7	1	µg/L		6.81	69.2
34	Pace Analytical	4/10/2024	Copper, Dissolved	3.8	1	µg/L		BLM IWQC ²	69.2
34	Pace Analytical	4/10/2024	Lead, Total Recoverable	0.18	0.5	µg/L	1	1.99	69.2
34	Pace Analytical	4/10/2024	Lead, Dissolved	0.18	0.5	µg/L	1	1.68	69.2
34	Pace Analytical	4/10/2024	Zinc, Total Recoverable	2	5	µg/L	1	87.71	69.2
34	Pace Analytical	4/10/2024	Zinc, Dissolved	2	5	µg/L	1	86.48	69.2
35	Pace Analytical	5/18/2024	Arsenic, Total Recoverable	17.1	0.5	µg/L		150	50.8
35	Pace Analytical	5/18/2024	Arsenic, Dissolved	16.8	0.5	µg/L		None - in compliance	50.8
35	Pace Analytical	5/18/2024	Cadmium, Total Recoverable	0.03	0.08	µg/L	1	0.46	50.8
35	Pace Analytical	5/18/2024	Cadmium, Dissolved	0.03	0.08	µg/L	1	0.43	50.8
35	Pace Analytical	5/18/2024	Copper, Total Recoverable	3.1	1	µg/L		5.23	50.8
35	Pace Analytical	5/18/2024	Copper, Dissolved	4.7	1	µg/L		BLM IWQC ²	50.8
35	Pace Analytical	5/18/2024	Lead, Total Recoverable	0.18	0.5	µg/L		1.34	50.8
35	Pace Analytical	5/18/2024	Lead, Dissolved	0.18	0.5	µg/L	1	1.20	50.8
35	Pace Analytical	5/18/2024	Zinc, Total Recoverable	2	5	µg/L	1	67.50	50.8
35	Pace Analytical	5/18/2024	Zinc, Dissolved	2	5	µg/L	1	66.55	50.8
36	Pace Analytical	6/13/2024	Arsenic, Total Recoverable	25.8	0.5	µg/L		150	49.6
36	Pace Analytical	6/13/2024	Arsenic, Dissolved	21.8	0.5	µg/L		None - in compliance	49.6
36	Pace Analytical	6/13/2024	Cadmium, Total Recoverable	0.03	0.08	µg/L	1	0.45	49.6
36	Pace Analytical	6/13/2024	Cadmium, Dissolved	0.03	0.08	µg/L	1	0.42	49.6
36	Pace Analytical	6/13/2024	Copper, Total Recoverable	3.5	1	µg/L		5.12	49.6
36	Pace Analytical	6/13/2024	Copper, Dissolved	2.6	1	µg/L		BLM IWQC ²	49.6
36	Pace Analytical	6/13/2024	Lead, Total Recoverable	0.51	0.5	µg/L		1.30	49.6
36	Pace Analytical	6/13/2024	Lead, Dissolved	0.18	0.5	µg/L	1	1.16	49.6
36	Pace Analytical	6/13/2024	Zinc, Total Recoverable	2	5	µg/L	1	66.15	49.6
36	Pace Analytical	6/13/2024	Zinc, Dissolved	2	5	µg/L	1	65.22	49.6
37	Pace Analytical	7/31/2024	Arsenic, Total Recoverable	35.3	0.5	µg/L		150	79.0
37	Pace Analytical	7/31/2024	Arsenic, Dissolved	32.5	0.5	µg/L		None - in compliance	79.0
37	Pace Analytical	7/31/2024	Cadmium, Total Recoverable	0.03	0.08	µg/L	1	0.65	79.0
37	Pace Analytical	7/31/2024	Cadmium, Dissolved	0.03	0.08	µg/L		0.60	79.0
37	Pace Analytical	7/31/2024	Copper, Total Recoverable	2.2	1	µg/L		7.63	79.0
37	Pace Analytical	7/31/2024	Copper, Dissolved	1.9	1	µg/L		BLM IWQC ²	79.0
37	Pace Analytical	7/31/2024	Lead, Total Recoverable	0.18	0.5	µg/L	1	2.36	79.0
37	Pace Analytical	7/31/2024	Lead, Dissolved	0.18	0.5	µg/L	1	1.95	79.0
37	Pace Analytical	7/31/2024	Zinc, Total Recoverable	2	5	µg/L	1	98.12	79.0
37	Pace Analytical	7/31/2024	Zinc, Dissolved	2	5	µg/L	1	96.75	79.0
38	Pace Analytical	8/23/2024	Arsenic, Total Recoverable	34.1	0.5	µg/L		150	78.7
38	Pace Analytical	8/23/2024	Arsenic, Dissolved	29.4	0.5	µg/L		None - in compliance	78.7
38	Pace Analytical	8/23/2024	Cadmium, Total Recoverable	0.08	0.08	µg/L	1	0.65	78.7
38	Pace Analytical	8/23/2024	Cadmium, Dissolved	0.08	0.08	µg/L	1	0.60	78.7
38	Pace Analytical	8/23/2024	Copper, Total Recoverable	1.6	1	µg/L		7.60	78.7
38	Pace Analytical	8/23/2024	Copper, Dissolved	1.3	1	µg/L		BLM IWQC ²	78.7
38	Pace Analytical	8/23/2024	Lead, Total Recoverable	0.5	0.5	µg/L	1	2.35	78.7
38	Pace Analytical	8/23/2024	Lead, Dissolved	0.5	0.5	µg/L	1	1.94	78.7
38	Pace Analytical	8/23/2024	Zinc, Total Recoverable	5	5	µg/L	1	97.81	78.7
38	Pace Analytical	8/23/2024	Zinc, Dissolved	5	5	µg/L	1	96.44	78.7
39	Pace Analytical	10/2/2024	Arsenic, Total Recoverable	18.9	0.5	µg/L		150	82.7
39	Pace Analytical	10/2/2024	Arsenic, Dissolved	17.2	0.5	µg/L		None - in compliance	82.7
39	Pace Analytical	10/2/2024	Cadmium, Total Recoverable	0.08	0.08	µg/L	1	0.68	82.7
39	Pace Analytical	10/2/2024	Cadmium, Dissolved	0.08	0.08	µg/L	1	0.62	82.7
39	Pace Analytical	10/2/2024	Copper, Total Recoverable	1.2	1	µg/L		7.93	82.7
39	Pace Analytical	10/2/2024	Copper, Dissolved	1.1	1	µg/L		BLM IWQC ²	82.7
39	Pace Analytical	10/2/2024	Lead, Total Recoverable	0.5	0.5	µg/L	1	2.50	82.7
39	Pace Analytical	10/2/2024	Lead, Dissolved	0.5	0.5	µg/L	1	2.05	82.7
39	Pace Analytical	10/2/2024	Zinc, Total Recoverable	5	5	µg/L	1	102.00	82.7
39	Pace Analytical	10/2/2024	Zinc, Dissolved	5	5	µg/L	1	100.58	82.7
40	Pace Analytical	10/24/2024	Arsenic, Total Recoverable	13.7	0.5	µg/L		150	81.0
40	Pace Analytical	10/24/2024	Arsenic, Dissolved	12.3	0.5	µg/L		None - in compliance	81.0
40	Pace Analytical	10/24/2024	Cadmium, Total Recoverable	0.087	0.08	µg/L		0.67	81.0
40	Pace Analytical	10/24/2024	Cadmium, Dissolved	0.08	0.08	µg/L	1	0.61	81.0
40	Pace Analytical	10/24/2024	Copper, Total Recoverable	1.2	1	µg/L		7.79	81.0
40	Pace Analytical	10/24/2024	Copper, Dissolved	1	1	µg/L	1	BLM IWQC ²	81.0
40	Pace Analytical	10/24/2024	Lead, Total Recoverable	0.5	0.5	µg/L	1	2.43	81.0
40	Pace Analytical	10/24/2024	Lead, Dissolved	0.5	0.5	µg/L	1	2.00	81.0
40	Pace Analytical	10/24/2024	Zinc, Total Recoverable	5	5	µg/L	1	100.22	81.0
40	Pace Analytical	10/24/2024	Zinc, Dissolved	5	5	µg/L	1	98.82	81.0
41	Pace Analytical	11/7/2024	Arsenic, Total Recoverable	11.3	0.5	µg/L		150	86.1
41	Pace Analytical	11/7/2024	Arsenic, Dissolved	8.7	0.5	µg/L		None - in compliance	86.1
41	Pace Analytical	11/7/2024	Cadmium, Total Recoverable	0.08	0.08	µg/L	1	0.70	86.1
41	Pace Analytical	11/7/2024	Cadmium, Dissolved	0.08	0.08	µg/L	1	0.64	86.1
41	Pace Analytical	11/7/2024	Copper, Total Recoverable	1.2	1	µg/L		8.21	86.1
41	Pace Analytical	11/7/2024	Copper, Dissolved	2.7	1	µg/L		BLM IWQC ²	86.1
41	Pace Analytical	11/7/2024	Lead, Total Recoverable	0.5	0.5	µg/L	1	2.63	86.1
41	Pace Analytical	11/7/2024	Lead, Dissolved	0.5	0.5	µg/L	1	2.14	86.1
41	Pace Analytical	11/7/2024	Zinc, Total Recoverable	5	5	µg/L	1	105.55	86.1
41	Pace Analytical	11/7/2024	Zinc, Dissolved	5	5	µg/L	1	104.07	86.1

NOTES:

1 = Performance standards for cadmium, copper, lead, and zinc are hardness dependent.

2 = BLM IWQC - The Biotic Ligand Model (BLM) criterion in place at the time of waiver to replacement standards will become the new standard. For every sample collected, the water quality parameters for BLM calculation will be input into the BLM to generate an Instantaneous Water Quality Criterion (IWQC) for compliance comparisons (Atlantic Richfield Company, 2020. Anaconda Smelter NPL Site Anaconda Regional Water, Waste & Soils Operable Unit. Final Surface Water Management Plan. August 2020.)

RL = Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
µg/L = micrograms per Liter; mg/L = milligrams per Liter

ND = Not Detected at or above adjusted reporting limit. If ND = 1, the laboratory reporting limit is used as the result.

MDEQ2019 = DEQ, 2019. Circular DEQ-7, Montana Numeric Water Quality Standards. June 2019.

Chronic_CR = ratio of chronic result and standard. Ratio greater than 1 denotes a result exceeding the standard.

Acute_CR = ratio of acute result and standard. Ratio greater than 1 denotes a result exceeding the standard.

Qualifiers: J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit. B = Compound was found in the blank and sample

Source: California Creek – Surface Water Sampling 2024 Annual Summary Report - RDU 15. Anaconda Smelter NPL Site.

APPENDIX I – DETAILED ARARS REVIEW TABLES

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain “a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.” The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

The EPA did not develop numeric cleanup criteria in the 1987 OU ROD and 1988 RODA for the Mill Creek OU or the 1991 ROD for the Flue Dust OU. The Mill Creek OU remedy was an interim remedy to eliminate current exposures for residents of the Mill Creek area. The Flue Dust OU remedy was to remove principal threat waste. Residual soil contamination at these OUs is being addressed as part of the ARWWS OU. None of the sitewide soil cleanup goals are ARARs.

The EPA selected the sitewide groundwater remedy in the 1998 ARWWS ROD. The groundwater performance objectives were revised in the 2011 ARWWS OU RODA (Table I-1), which shows the current federal groundwater standard for lead has become more stringent. The EPA should review if the more stringent lead groundwater standard should be adopted and document the change in a decision document.

Table I-1: ARWWS OU Groundwater Standards Review

COC	2011 RODA ARAR State/Federal (µg/L) ^a	Current Standard State ^b /Federal ^c (µg/L)	Standard Changed?
Arsenic	10/10	10/10	No
Beryllium	4/4	4/4	No
Cadmium	5/5	5/5	No
Copper	1,000/1,300	1,300/1,300	State value less stringent
Iron	-	-	No
Lead	15/15	15/10	Federal value more stringent
Zinc	2,000/NA	2000/NA	No
<i>Notes:</i> a. Table 3-1 in the 2011 ARWWS OU RODA. b. Current state ARARs are based on Montana Numeric Water Quality Standards – Circular DEQ-7. June 2019 (http://deq.mt.gov/Portals/112/Water/WQPB/Standards/PDF/DEQ7/DEQ-7.pdf, accessed 3/19/25). c. Federal standards are based on national primary and secondary drinking water MCLs (https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations, accessed 3/19/25). - = value not established. µg/L = micrograms per liter			

The EPA established surface water performance objectives in the 1998 ARWWS ROD and then in the 2011 and the 2020 ARWWS OU RODAs (Table I-2 for the chronic performance objectives and Table I-3 for the acute performance objectives). The 2020 updated surface water performance objectives remain valid as the values have not changed. However, if the replacement standards are to be used, then the standard for cadmium has become more stringent based on the revised hardness dependent formula. Evaluate if the replacement standard needs to be revised for cadmium due to updates to the federal standard. The replacement standard stems from conditional TI waiver of the state surface water quality ARAR written into the 2020 ARWWS ROD Amendment.

Table I-2: Chronic Performance Standards for Surface Water Compliance in ARWWS OU Streams

COC	2020 ARWWS RODA Performance Standard ^{a,b}	Current Standard	2020 ARWWS RODA Contingent Replacement Standard ^{a,c}	Current Standard
	Chronic Standard ^d (µg/L)		Chronic Standard (µg/L)	
Arsenic ^e	150	150	None – achieving compliance	None – achieving compliance
Cadmium	0.25 ^f	0.25	0.25	0.25
Copper	2.85	2.85	BLM ^g	BLM ^g
Lead	0.545	0.545	0.541	0.54
Zinc	37	37	36.5	36.5

Notes:

- Values from Table 4-3 of the 2020 ARWWS RODA.
- According to the 2020 ARWWS RODA, the performance standards are from Circular DEQ-7 (June 2019) based on total recoverable metals (accessed at <https://deq.mt.gov/files/Water/WQPB/Standards/PDF/DEQ7/DEQ-7.pdf>). More than two exceedances in the six-year monitoring period will trigger the contingent replacement performance standard for a given COC.
- Except for copper, contingent replacement standards are based on current (i.e., 2020) published federal water quality criteria based on dissolved fraction issued pursuant to Section 403(a) of the Federal Clean Water Act, 33.U.S.C. Section 1314(a) (accessed at <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>).
- Total recoverable standards for cadmium, copper, lead and zinc are hardness dependent. Values shown are calculated at a hardness of 25 mg/L using the parameters in Table 4-4 of the 2020 ARWWS RODA.
- The arsenic compliance standard in lower Warm Springs Creek (at compliance station 12323770) is the arsenic human health criterion (10 µg/L).
- The 2020 ARWWS RODA listed the criterion of 0.26 µg/L based on a hardness of 25 mg/L. However, this value should be 0.25 µg/L.
- Based on the Biotic Ligand Model, which is a metal bioavailability model that uses receiving water body characteristics (temperature, pH, dissolved organic carbon, major cations and anions, alkalinity and sulfide) and monitoring data to develop site-specific water quality criteria.

Source: ARWWS 2020 RODA, Table 4-3.

Table I-3: Acute Performance Standards for Surface Water Compliance in ARWWS OU Streams^a

COC	Performance Standard		Contingent Replacement Standard	
	Acute Standard ^b (µg/L)	Current Standard ^b (µg/L)	Acute Standard ^c (µg/L)	Current Standard (µg/L)
Arsenic	340	340	None – achieving compliance	None – achieving compliance
Cadmium ^c	0.49 ^d	0.49	0.49 ^d	0.49
Copper ^c	3.79	3.79	BLM IWQC ^e	BLM IWQC
Lead	13.98	13.98	14	14
Zinc ^c	37	37	36	36

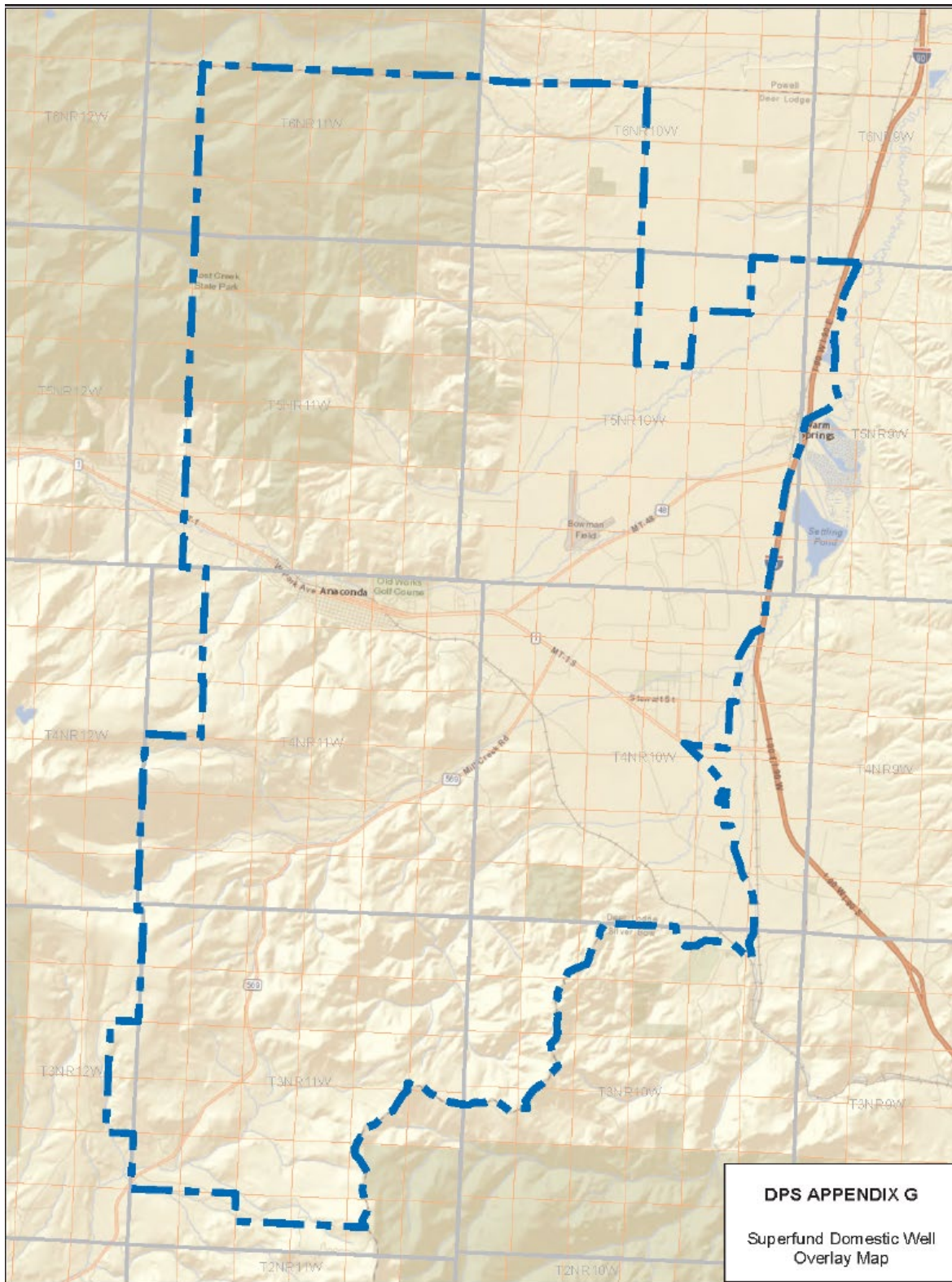
Notes:

- Performance standards for cadmium, lead and zinc are hardness dependent using 25 mg/L of hardness.
- ARWWS 2020 RODA performance standards were from Montana DEQ-7 (June 2019) Total Recoverable Acute Aquatic Life Standards and this regulation has not been updated since the previous FYR.
- ARWWS contingent replacement standards were based on current (i.e., 2020) published federal water quality criteria, issued pursuant to section 403(a) of the Federal Clean Water Act, 33.U.S.C. § 1314(a).
- The performance standard for cadmium is updated to reflect the April 2017 DEQ-7 standard. The contingent replacement standard for cadmium is the federal ambient water quality criteria updated in March 2016.
- The Biotic Ligand Model criterion in place at the time of waiver to replacement standards will become the new standard. For every sample collected, the water quality parameters for Biotic Ligand Model calculation will be input into the Biotic Ligand Model to generate an instantaneous water quality criterion (IWQC) for compliance comparisons.

Source: The 2020 AWRWS RODA cites an acute aquatic life criteria table but the table is not included in the RODA so 2020 SWMP Table 6-3 is included herein.

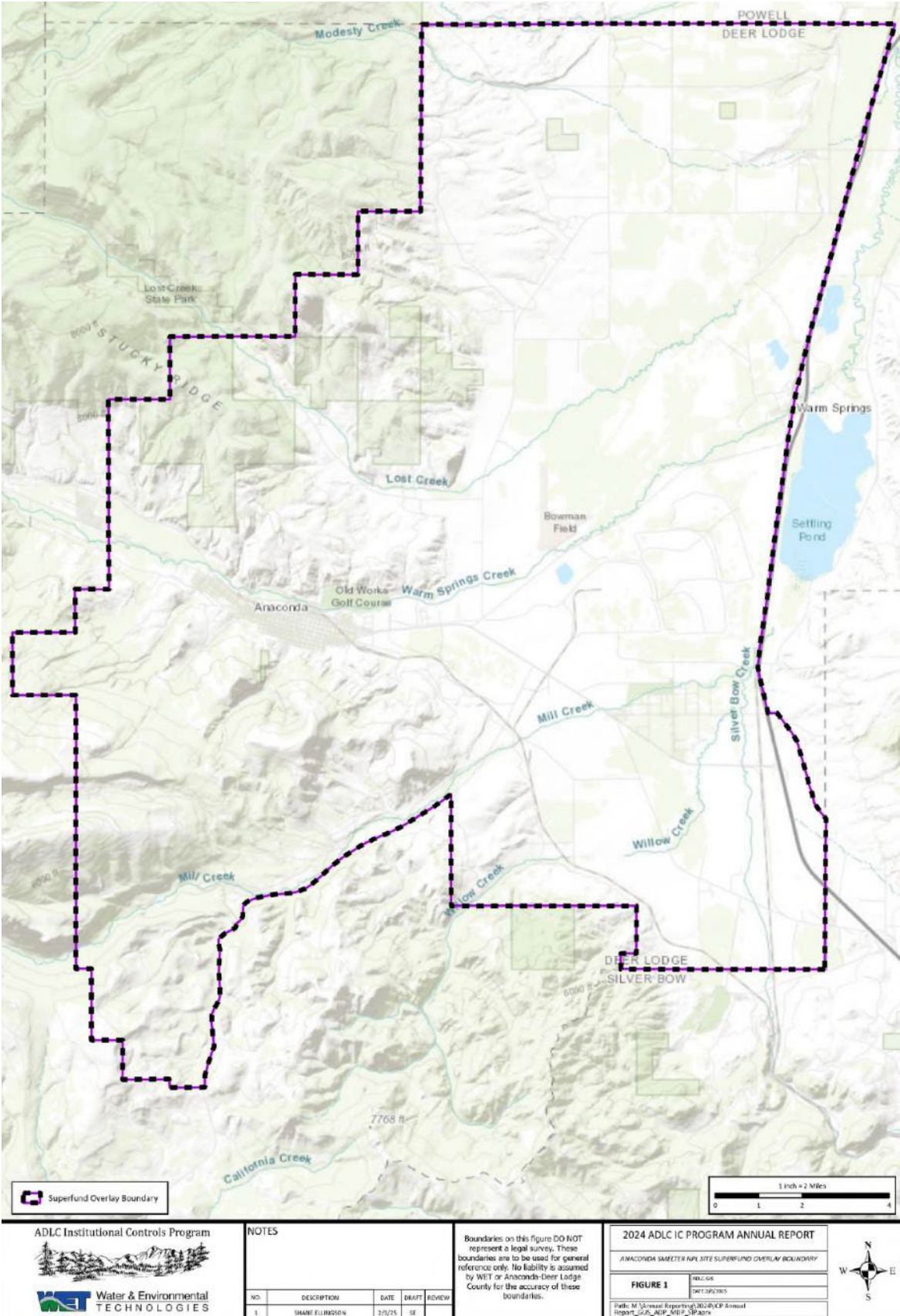
APPENDIX J – INSTITUTIONAL CONTROLS

Figure J-1: ARWWS OU Domestic Well Overlay Map



Source: Anaconda-Deer Lodge County Ordinance Amendments. Chapter 24 Development Permit System. Appendix H. July 2020.

Figure J-2: Community Soils OU Overlay District



Source: Anaconda-Deer Lodge County Institutional Controls Program 2024 Annual Report. Anaconda-Deer Lodge County February 2024.

J-3

Table J-1: Restrictive Covenants for Parcels within the WMAs (see Figure J-3)

GEOCODE	RC_ID	Sub_RC_ID	Book1	Page1	DeedDate 1	Book2	Page2	DeedDate 2	Book3	Page3	DeedDate 3	IRP	FA	IP	CP	RUP	REC	AP	WP	PUB	WIM	HP	IRR	PND	BM	DU	PM	RM	WED	FM	DEV	DRA	LMP	ARC	3PN	COMMENTS	
30128501102010000	RC0001	RC0001	116	588	1/14/98	96	146	5/5/94				X	X			X				X		X	X			X	X					X	X				
30128501102020000	RC0002	RC0002	96	167	5/5/94	96	146	5/5/94				X	X			X				X		X	X			X	X					X	X				
30128501103010000	RC0003	RC0003-01	96	230	5/5/94	96	146	5/5/94				X	X			X			X	X		X	X			X	X					X	X				
30128501103050000	RC0003	RC0003-02	96	230	5/5/94	96	146	5/5/94				X	X			X			X	X		X	X			X	X					X	X				
30128501304010000	RC0006	RC0006-04	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X				
30128502402110000	RC0006	RC0006-07	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402070000	RC0006	RC0006-09	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402160000	RC0006	RC0006-10	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402050000	RC0006	RC0006-11	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402040000	RC0006	RC0006-12	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402020000	RC0006	RC0006-13	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402030000	RC0006	RC0006-14	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502402010000	RC0006	RC0006-15	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502401030000	RC0006	RC0006-16	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502401050000	RC0007	RC0007-01	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128502401060000	RC0007	RC0007-02	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128501304030000	RC0007	RC0007-03	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
30128501304020000	RC0007	RC0007-04	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			
NA	RC0007	RC0007-05																																		X	RARUS
30128502401010000	RC0007	RC0007-06	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			Stack Viewing Parcel
30128502401040000	RC0007	RC0007-07	96	246	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X					X	X	X			Puccinelli Storage
30137834201010000	RC0008	RC0008-02	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30137833101010000	RC0008	RC0008-03	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30137835101010000	RC0008	RC0008-04	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30137836101010000	RC0008	RC0008-05	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30137834101010000	RC0008	RC0008-06	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128606101010000	RC0008	RC0008-08	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128605101020000	RC0008	RC0008-09	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128607301030000	RC0008	RC0008-10	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128607301020000	RC0008	RC0008-11	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128608301010000	RC0008	RC0008-12	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128606301010000	RC0008	RC0008-13	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128607101020000	RC0008	RC0008-14	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128512101010000	RC0008	RC0008-15	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128608101020000	RC0008	RC0008-16	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30137834401010000	RC0008	RC0008-17	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128602101020000	RC0008	RC0008-18	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128604101010000	RC0008	RC0008-19	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128603101010000	RC0008	RC0008-20	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128606401010000	RC0008	RC0008-21	113	112	1/7/97	158	370	5/2/03				X				X				X		X					X	X	X								
30128501401010000	RC0008	RC0008-22	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128608202010000	RC0008	RC0008-25	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128607301010000	RC0008	RC0008-29	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128618101020000	RC0008	RC0008-31	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128610101020000	RC0008	RC0008-34	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128513101020000	RC0008	RC0008-35	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								
30128618201010000	RC0008	RC0008-36	113	112	1/7/97							X				X	X	X	X	X	X						X	X	X								

GEOCODE	RC_ID	Sub_RC_ID	Book1	Page1	DeedDate 1	Book2	Page2	DeedDate 2	Book3	Page3	DeedDate 3	IRP	FA	IP	CP	RUP	REC	AP	WP	PUB	WIM	HP	IRR	PND	BM	DU	PM	RM	WED	FM	DEV	DRA	LMP	ARC	3PN	COMMENTS
30128501401250000	RC0008	RC0008-38	113	112	1/7/97							X		X	X	X			X									X	X	X						
30128606401100000	RC0008	RC0008-42	113	112	1/7/97							X				X				X								X	X	X						
30137827401010000	RC0008	RC0008-45	113	112	1/7/97							X	X	X	X				X									X	X	X						
30137826101010000	RC0008	RC0008-46	113	112	1/7/97							X	X	X	X				X									X	X	X						
30137825101010000	RC0008	RC0008-47	113	112	1/7/97							X	X	X	X				X									X	X	X						
30128511101030000	RC0008	RC0008-48	113	112	1/7/97							X		X	X	X	X	X	X	X	X							X	X	X						
30128514101020000	RC0008	RC0008-49	113	112	1/7/97							X		X	X	X	X	X	X	X	X							X	X	X						
30128501101060000	RC0008	RC0008-50	113	112	1/7/97							X		X	X	X	X	X	X	X	X							X	X	X						
30128501101070000	RC0008	RC0008-51	113	112	1/7/97							X		X	X	X	X	X	X	X	X							X	X	X						
30128502101010000	RC0009	RC0009	96	198	5/5/94	96	146	5/5/94				X	X		X				X	X	X	X	X	X		X	X	X		X	X	X				
30128502101020000	RC0010	RC0010	96	936	5/5/94	96	146	5/5/94				X	X			X			X			X	X			X	X			X	X					
30128606202010000	RC0033	RC0033	53	181	6/30/84																					X										
30128618101150000	RC0064	RC0064-01	98	232	8/24/94	96	146	5/5/94				X	X			X			X			X	X				X	X			X	X				
3013773530101DLC1	RC0099	RC0099	96	182	5/5/94	96	146	5/5/94				X	X	X	X	X		X	X	X		X	X		X	X	X		X	X	X					
30137736301010000	RC0100	RC0100	96	182	5/5/94	96	146	5/5/94				X	X	X	X	X		X	X	X		X	X		X	X	X		X	X	X					
30137831301020000	RC0122	RC0122	96	182	5/5/94	96	146	5/5/94				X	X	X	X	X		X	X	X		X	X		X	X	X		X	X	X					
30137831401010000	RC0123	RC0123-01	116	588	1/14/98							X				X			X			X	X			X	X			X	X					
30137831404040000	RC0123	RC0123-02	116	588	1/14/98	96	146	5/5/94				X	X			X			X			X	X			X	X			X	X					
30128515101010000	RC0153	RC0153																																	X	C Hill
30128501101020000	RC0157	RC0157																																	X	RDM
30128501101200000	RC0161	RC0161	96	230	5/5/94	96	146	5/5/94				X	X			X			X	X		X	X			X	X			X	X					
30128501101130000	RC0162	RC0162	178	963	8/8/05							X	X			X			X								X	X	X	X	X	X				
30128501101100000	RC0163	RC0163	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128502406110000	RC0164	RC0164	223	794	4/13/10							X	X			X			X								X	X	X		X	X				
30128501101040000	RC0165	RC0165	191	839	10/4/06							X	X			X			X								X	X	X		X	X	X			
30137822101011000	RC0166	RC0166	335	406	12/15/15														X		X										X				Dutchman	
30128501101050000	RC0167	RC0167																																	X	DiFrancesco
30128502406100000	RC0168	RC0168	223	794	4/13/10							X	X			X			X								X	X	X		X	X				
30128501101080000	RC0169	RC0169	202	180	9/11/07							X	X			X			X								X	X	X		X	X	X			
30128510401010000	RC0170	RC0170																																	X	C Hill
30128502207010000	RC0171	RC0171	96	198	5/5/94	96	146	5/5/94	149	01	4/5/02	X	X			X			X	X		X	X	X		X	X	X		X	X	X			Hotel Parcel	
30128501101170000	RC0172	RC0172	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101110000	RC0173	RC0173	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101120000	RC0174	RC0174	178	963	8/8/05							X	X			X			X								X	X	X		X	X	X			
30128502406130000	RC0175	RC0175	223	794	4/13/10							X	X			X			X								X	X	X		X	X				
30128501101030000	RC0176	RC0176																																	X	DiFrancesco
30128501101190000	RC0179	RC0179	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101090000	RC0180	RC0180	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101150000	RC0181	RC0181	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101160000	RC0182	RC0182	197	624	4/20/07							X	X			X			X								X		X		X	X	X			
30128501101010000	RC0183	RC0183	317	145	5/11/12							X	X			X											X				X					
30128501101180000	RC0185	RC0185	207	603	4/8/08							X	X			X			X								X	X	X		X	X	X			
30128502406120000	RC0186	RC0186																																	X	ALDC
30137736101010000	RC0189	RC0189																																	X	State of Montana
3013773640101MINE	RC0191	RC0191																																	X	Stuckey Ridge
30137831301010000	RC0192	RC0192																																	X	DiFrancesco
30128502406090000	RC0193	RC0193	223	794	4/13/10							X	X			X			X								X	X	X		X	X				
30128502411040000	RC0194	RC0194																																	X	KANA
30128501201010000	RC0196	RC0196	178	974	9/2/05							X	X			X			X								X	X	X		X	X	X			

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30128501201020000	RC0197	RC0197																																	X	ALDC
30128501303030000	RC0198	RC0198																																	X	McDowell
30128501303020000	RC0199	RC0199	317	153	9/10/03							X	X			X			X								X	X			X	X	X			
30128501303010000	RC0200	RC0200										X	X																		X					
30128615101010000	RC0202	RC0202	98	232	8/24/94	96	146	5/5/94				X	X			X			X			X		X			X	X			X	X				
30128503128010000	RC0203	RC0203																																	X	Shanklin
30128503127050000	RC0204	RC0204																																	X	ADLC Owned
30128502406140000	RC0205	RC0205	96	921	5/5/94							X						X				X		X			X					X				ALDC Owned A-1 parcel

Covenant	Description
IRP	Interference with remedy prohibited
FA	Future access granted to AR and Agencies
IP	Industrial use limited or prohibited
CP	Commercial use limited or prohibited
RUP	Residential use limited or prohibited
REC	Recreational use limited or prohibited
AP	Agricultural use limited or prohibited
WP	Wells limited or prohibited
PUB	Public access limited or prohibited
WIM	Wildlife management limited or prohibited
HP	Hazardous generation prohibited or limited to "small waste generator"
IRR	Irrigation prohibited or restricted (or specific to sprinkler only)
PND	Unlined ponds prohibited
BM	Best management practices required (grazing, etc)
DU	Property restricted to specific use (e.g., sewage treatment lagoons or open space)
PM	Property owner responsible for property maintenance
RM	Property owner responsible for Operation and Maintenance of remedy
WED	Property owner responsible for controlling weeds
FM	Property owner responsible for maintenance of remedy fencing
DEV	Future development prohibited or allowed only per applicable laws, reg's and covenants
DRA	Remedial action resulting from development, responsibility of property owner
LMP	Owner Responsible for implementation of Land Management Plan
ARC	AERL or AR owned property with no existing covenants
3PN	Property owned by parties other than AR with no existing covenants

Source: Final ICIAP. Appendix B. 2020.