100013917

THIRD FIVE-YEAR REVIEW REPORT FOR RICHARDSON FLAT TAILINGS SUPERFUND SITE SUMMIT COUNTY, UTAH

Prepared by

U.S. Environmental Protection Agency
Region 8
Denver, Colorado

BEN BIELENBERG
Digitally signed by BEN BIELENBERG
Date: 2023.09.26 08:25:58 -06'00'

Ben Bielenberg, Acting Director
Superfund and Emergency Management Division

Table of Contents

Tables

Figures

LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
IC	Institutional Control
LHM	Larry H Miller
µg/dL	micrograms per deciliter
mg/kg	Milligrams per Kilogram
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCV	Park City Ventures
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
UPCM	United Park City Mines
UDEQ	Utah Department of Environmental Quality
UU/UE	Unlimited Use and Unrestricted Exposure

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, if any, found during the review and document recommendations to address them.

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

This is the third FYR for the Richardson Flat Tailings Superfund site (Site). The triggering action for this statutory review is the completion date of the previous FYR. This 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 Site consists of four operable units (OUs) (Figure 1). This FYR addresses OU1, the Richardson Flat tailings impoundment (Figure 2). Remedial action has occurred at OU1, as discussed in Section II below. Site characterization investigations are ongoing at the remaining OUs. OU2 encompasses approximately 1,216 acres along Lower Silver Creek north and east of Highway 40. OU3 encompasses approximately 856 acres east of Park City in areas along Silver Creek. These two OUs are comprised of mine tailings that have come to be located in the Lower Silver Creek floodplain. Investigations to determine the nature and extent of contamination in the floodplain and upland areas are ongoing. OU4 is an ongoing discharge known as Prospector Drain. Investigations to determine the nature and extent of contamination at OU4 are ongoing.

EPA remedial project manager (RPM) James Hou led the FYR. Participants included EPA community involvement coordinator Katherine Jenkins, then Utah Department of Environmental Quality (UDEQ) project manager Doug Bacon, UDEQ community involvement coordinator Dave Allison, and Ryan Burdge from Skeo (EPA FYR support contractor). The review began on 7/14/2022.

Appendix A includes a list of documents reviewed as part of this FYR. Appendix B provides a site chronology of events.

The EPA has determined in the five-year review that the cleanup at Operable Unit 1 of the Richardson Flat Tailings Superfund site is protective in the short term. This means the remedy is currently protective of human health and the environment. In order for the remedy to be protective in the long term, restrictions on future use and development of the waste area are needed, as well as a documented plan for long-term maintenance of the waste area.

Site Background

The Site is located in and around Park City in Summit County, Utah, in the Silver Creek watershed (Figure 1). OU1 consists of approximately 258 acres of land, including a 160-acre tailings impoundment, and is located southeast of the junction of U.S. Highway 40 and Utah Highway 248 (Figure 2). The OU1 area is part of a 650-acre property previously owned by United Park City Mines (UPCM) Company.

Mining activities began in the upgradient mining district in the late 1860s. In total, approximately seven million tons of tailings lie within OU1. The OU1 impoundment was a mine tailings reservoir created prior to 1950. In 1970, with renewed mining activity in the area, Park City Ventures (PCV) entered into a lease agreement with UPCM allowing PCV to deposit additional mine tailings at the OU1 impoundment. To accommodate additional tailings, PCV built a large embankment along the western edge of the impoundment and containment dike structures along the southern and eastern borders. PCV also created a diversion ditch system along the higher

slopes north of the impoundment and outside of the containment dikes, along the east and south perimeters of the impoundment, to collect surface runoff. Over the course of PCV's use of the Site, about 450,000 additional tons of tailings were deposited at OU1. From 1979 to 1982, Noranda Mining, Inc. leased the mining and milling operations and placed an additional 70,000 tons of tailings at OU1.

Most of OU1 is a covered tailings impoundment bounded by containment dikes with the main embankment to the northwest (Figure 2). A parking area, Richardson Flat Park and Ride, and bus stop are at the east end of OU1. The parking area is subject to a 99-year lease to Park City. A recreation trail crosses the Site along Silver Creek.

Most of the land around OU1 is undeveloped open space, although there is development interest in the Silver Creek valley in the general area of OU1. Surface water features at OU1 include the south diversion ditch, the wetlands area below the embankment, and a pond (Figure 2). All the surface water and shallow groundwater at OU1 eventually discharges to Silver Creek. Silver Creek flows along the northwest border of OU1 and is classified by the state of Utah (State) as a potential drinking water source, a recreational use feature, a cold-water fishery and a potential irrigation source.

The shallow groundwater at OU1 is generally associated with the alluvial system of Silver Creek. The Silver Creek alluvial aquifer is high in total dissolved solids and is often contaminated due to water quality in Silver Creek and tailings that are present along the creek in many areas. The OU1 remedial investigation (RI) found the soil cover protects groundwater and other media at the Site from becoming heavily contaminated. On the surface, the soils used to cover the tailings function as a nearly impermeable cap, effectively preventing infiltration of surface water into the tailings. The tailings are effectively encapsulated, above and below, by low-permeability, clay-rich soil.

A diversion ditch serves as a barrier to both surface water and shallow groundwater and captures water that flows toward the impoundment. The captured water is channeled around the impoundment, through a small retention pond, and into the small wetland at the foot of the main embankment where it mixes with water from Silver Creek and the small amount of water seeping through the embankment. All of this water is eventually used by plants in the wetland or flows north away from the Site as surface water or shallow groundwater in the alluvium of Silver Creek. Flow in the alluvial groundwater system mimics the local topography. Groundwater flow is generally toward the wetlands south of the tailings impoundment. Groundwater beneath the clay-rich topsoil moves from northeast to southwest and is eventually captured by the south diversion ditch. Groundwater stored in the tailings impoundment moves northwesterly toward the embankment under a relatively flat hydraulic gradient.

A 12-square-mile downgradient groundwater well inventory conducted during the RI determined that area drinking-water wells are finished in the deeper consolidated sedimentary rocks (deeper than 150 feet) and there are no known wells located within a half-mile of OU1. The shallow groundwater at OU1 is generally associated with the alluvial system of Silver Creek. This water is very high in solids and is also often contaminated due to water quality in Silver Creek and tailings that are present along the Creek in many areas. There are no known uses for the shallow aquifer.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Richardson Flat Tailings		
EPA ID: UTD980952840		
Region: 8	State: Utah	**City/County:** Park City/Summit

SITE STATUS	
NPL Status: Proposed	
Multiple OUs? Yes	**Has the Site achieved construction completion?** No

REVIEW STATUS
Lead agency: EPA
Author name: James Hou with contractor support provided by Skeo
Author affiliation: EPA Region 8 and Skeo
Review period: 10/18/2022 - 8/10/2023
Date of site inspection: 10/12/2023
Type of review: Statutory
Review number: 3
Triggering action date: 8/10/2018
Due date *(five years after triggering action date)*: 8/10/2023

Figure 1: Site Vicinity Map

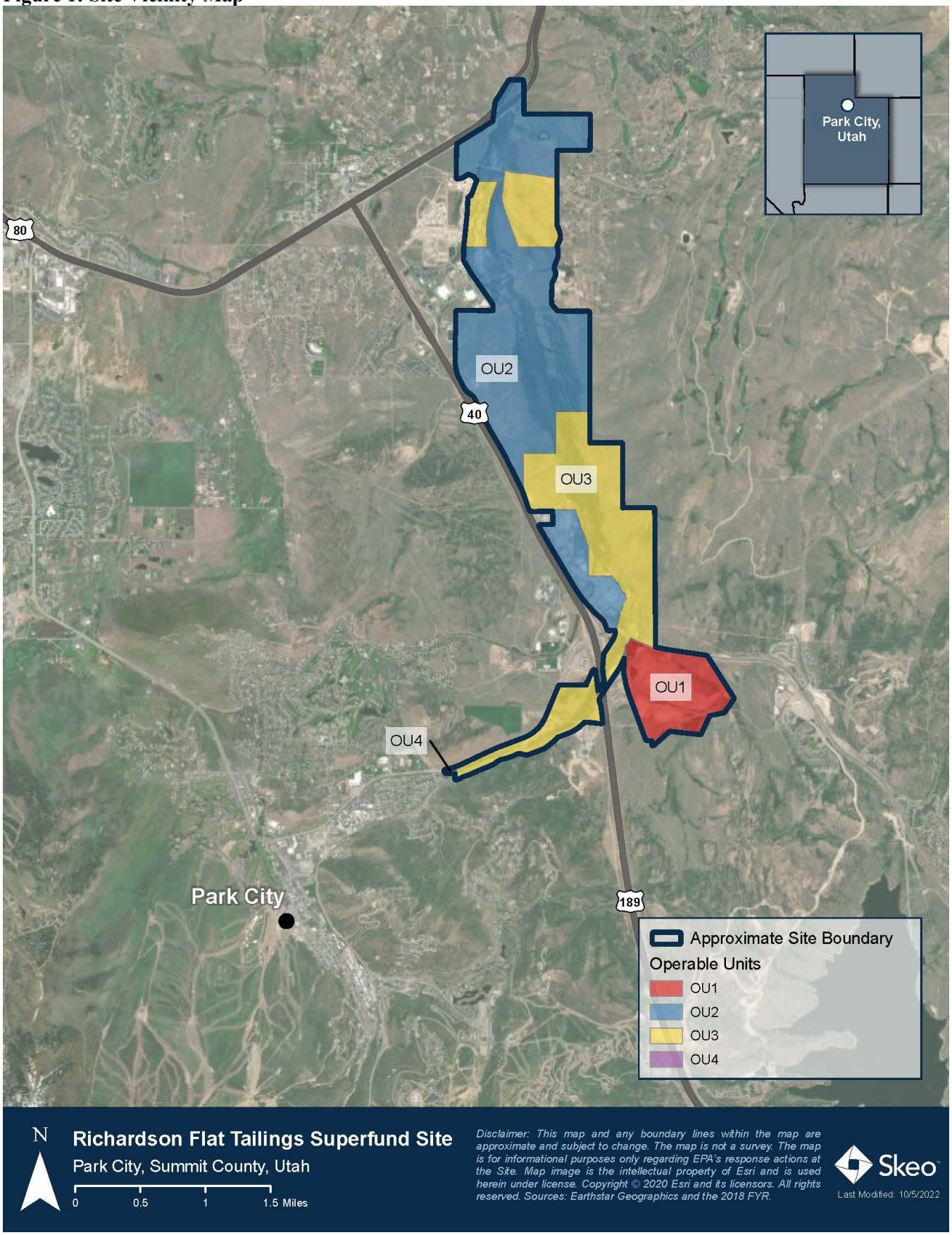
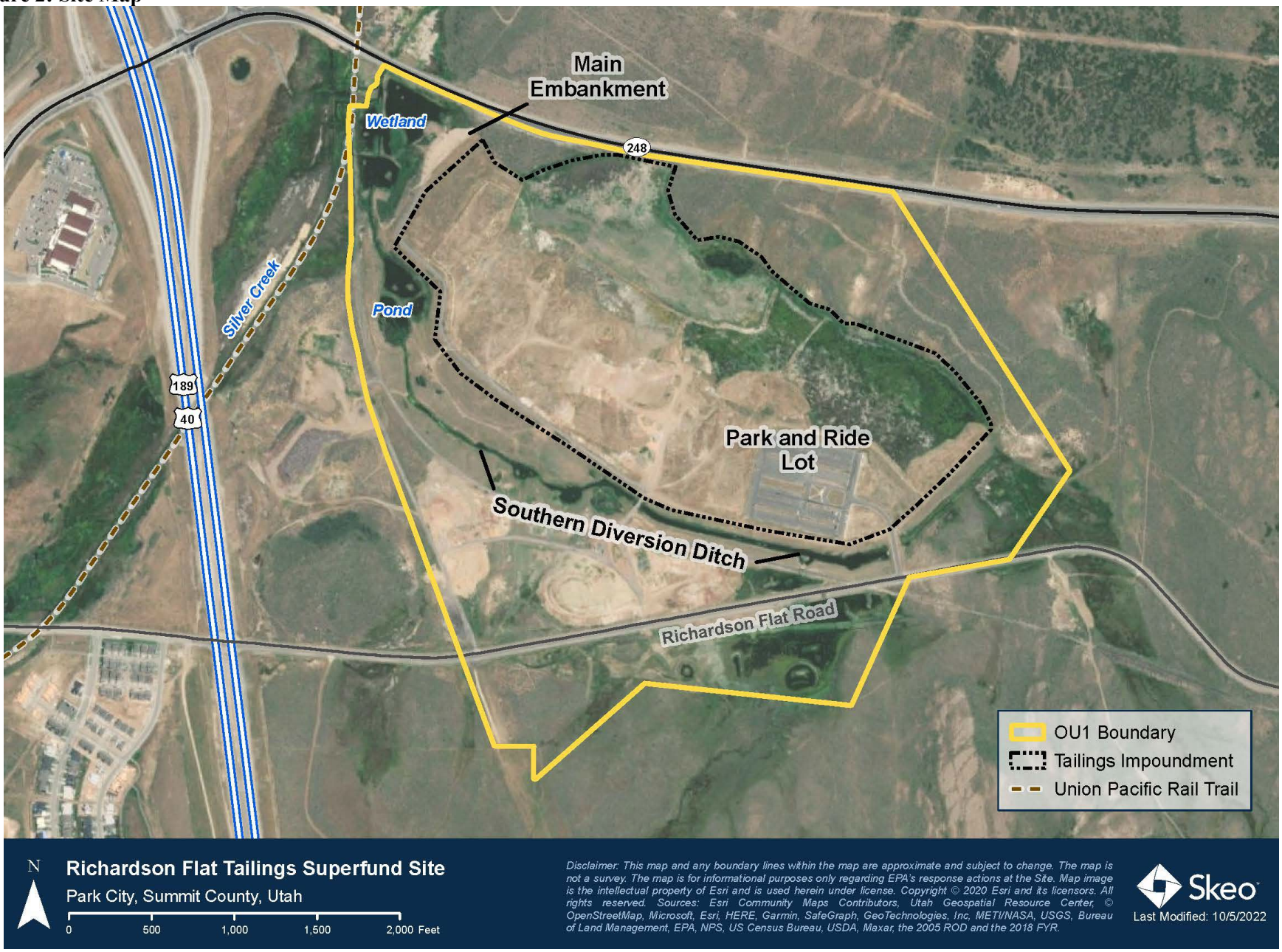


Figure 2: Site Map



II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The EPA began initial site assessments in 1984. High-volume air sampling at OU1 in 1986 found that wind-borne arsenic, cadmium, lead and zinc had been released to the air from the tailings. The EPA originally proposed the Site for listing on the National Priorities List (NPL) in 1988. After considering public comment, the EPA revised the hazard ranking score for the Site, and removed the Site from NPL consideration in 1991. By 1992, the Hazard Ranking System had been revised, and the EPA again proposed the Site for listing on the NPL. The Site remains proposed for NPL listing.

During the 1990s, UPCM completed voluntary work at OU1, including covering most of the tailings pile with clean, low-permeability soil and reseeding the Site and improving the diversion ditch. In September 2000, the EPA and UPCM signed an Administrative Order on Consent requiring UPCM to conduct an RI and focused feasibility study for OU1. Sampling confirmed contamination with heavy metals, primarily zinc, lead and arsenic in the sediments and surface water of the south diversion ditch, the on-site wetland, and Silver Creek.

OU1's 2003 baseline human health risk assessment characterized the risk to low and high intensity recreational users through exposure to the COCs at the Site. Lead exposure in surface soils was evaluated using the Integrated Exposure, Uptake and Biokinetic model for children and the Bower's model for adult receptors. Both models predicted blood lead levels below the EPA's health-based goal of a 5% probability of exceeding a blood lead level of 10//g/dL for all recreational use scenarios. The EPA deemed remedial action was necessary to maintain and improve the soil cover placed on the tailings and to prevent disturbances to the soil cover that could allow for exposure to the underlying tailings.

The ecological risk assessment identified substantial risks to ecological receptors at OU1 from exposure to zinc, cadmium, lead and arsenic. Exposure pathways included direct contact with the sediments in the south diversion ditch and the wetlands area. These exposure areas also presented risks to ecological receptors through contact or ingestion of surface water and sediment porewater found at the Site.

Response Actions

The EPA selected the final OU1 remedy in the Site's 2005 Record of Decision (ROD). To address existing and potential risks, as well as to accommodate the anticipated future recreational and ecological use of OU1, the EPA developed nine remedial action objectives (RAOs):

- Reduce risks to wildlife receptors in the wetland area and south diversion ditch such that hazard indexes for lead are less than or equal to 1.
- Ensure that recreational users, including children, continue to have no more than a five percent chance of exceeding a blood lead level of 10 micrograms per deciliter (µg/dL) from exposure to lead in soils.
- Ensure that recreational users, including children, continue to have no more than 1×10^{-4} chance of contracting cancer from exposure to arsenic in soils.
- Eliminate the risk of catastrophic failure of the tailings impoundment.
- Ensure that surface water discharged from the Site meets applicable Utah water quality standards.
- Eliminate the possibility of future groundwater use and withdrawal at the Site.
- Allow for a variety of future recreational uses.
- Allow for future disposal of mine tailings from the Park City area within the tailings impoundment until the remedy is complete.
- Minimize post-cleanup disturbance of tailings and contaminated soil. Provide controls that ensure any necessary disturbance at the Site follows prescribed methods.

The selected remedy addressed mine tailings located in several areas of OU1, including the main impoundment, a section south of the diversion ditch, and the wetlands below the embankment. Other media addressed through the selected remedy were sediments and surface water within the OU1 boundary.

Major components of the remedy include:

- Excavating tailings in critical areas outside the impoundment and placing tailings inside the impoundment.
- Augmenting the soil cover to achieve a depth of at least 18 inches of soil above tailings. As an additional measure, no soils with concentrations greater than 500 milligram per kilogram (mg/kg) of lead will be left exposed. The 500 mg/kg level is below any calculated preliminary remediation goals for recreational uses.
- Allowing for placement of additional mine waste from the Silver Creek watershed within the impoundment that, upon completion, will require 18 inches of cover.
- Covering sediments in diversion ditch with clean fill.
- Excavating contaminated sediments and soils in the wetland below the embankment and place sediments inside the impoundment. A sediment remediation goal of 310 mg/kg lead was established.
    - The 310 mg/kg value is an ecological goal based on a low-end threshold toxicity reference value from the species sensitivity distribution for all birds. The EPA expected that attainment of this numerical level would reduce hazard indices for lead in sediment to less than 1.0.
- Fortifying the existing embankment to prevent catastrophic failure.
- Implementing institutional controls (easements and land-use restrictions) to protect soil cover and prevent groundwater use.
- Monitoring surface water.

The OU1 RI Report concluded that OU1 does not present a risk to off-site groundwater due to a confining layer below contaminated groundwater that limits migration to deeper aquifers. Groundwater use at the Site will be restricted through institutional controls to ensure no unacceptable exposures.

Status of Implementation

UPCM initiated the OU1 remedial design in August 2007 and completed it in October 2007. Remedial action began in February 2008. Remedy construction at OU1 performed by UPCM, with EPA oversight, included consolidating tailings material within the main impoundment, installing a wedge buttress to support the main embankment, and removing sediments in the wetland area. The remedial activities occurred in a phased approach based on the tasks described in the remedial design (Figure C-1 in Appendix C). In 2011, UPCM completed planned construction activities for OU1 except for the additional cover material in certain locations where there is currently only a temporary cover.

The main embankment fortification consisted of constructing a wedge buttress in 2008 in accordance with a 2001 slope stability evaluation. From 2008 to 2011, all tailings in critical areas outside the impoundment were excavated and moved inside the impoundment (see Appendix C for maps of removal areas). Approximately 46,000 cubic yards of contaminated material were removed from the embankment wetland. Wetland restoration consisted of grading and revegetation with appropriate plant species. As required by the Site's Remedial Design/Remedial Action Plan, confirmation sampling verified that soils remaining in each source removal area and soils placed as cover contain less than 500 mg/kg lead and 100 mg/kg arsenic. Sediment sampling results from 23 source removal lead confirmation samples collected in the embankment wetland area averaged 43.1 mg/kg and ranged from 33 mg/kg to 126 mg/kg.

Post-construction measurements of the impoundment indicated that all areas measured contain at least 18 inches of clean fill material with the exception of areas F-2 and F-3, which are covered with a temporary 6-inch soil cover (Figure C-1 in Appendix C). Due to the presence of tailings in other OUs, the ROD contemplated the consolidation of mine wastes at OU1 from other cleanup locations in the Silver Creek watershed. Therefore, certain areas of OU1, including F-2 and F-3, have a temporary 6-inch soil cover to facilitate further consolidation while the EPA continues OU2 and OU3 site characterization to determine if more material will be brought to these areas prior to placement of the full 18-inch cover material.

As required by the ROD, UPCM collected surface water samples annually from 2008 to 2013 and again in 2015 as part of OU2 and OU3 investigations to determine the effects of remediation on surface water quality. Surface water samples were collected primarily from the main flow of the embankment wetland, as well as at various points of the southern diversion ditch. The results of all samples were consistently below the surface water standards for the Silver Creek watershed. Since the 2018 FYR, no monitoring or response actions have taken place at OU1, and no Operation and Maintenance (O&M) Plan has been developed.

In 2022, following bankruptcy, UPCM entered into a Consent Decree with the EPA to make a cash payment: (1) to EPA to resolve alleged civil CERCLA liability; and (2) to DOI and the State to resolve alleged natural resource damage liability.

In January 2022, the OU1 property was sold to a third party in a Sheriff's sale. The OU1 property is now owned by the LHM DEV RIH LLC (LHM). Subsequently, Park City annexed 1,200 acres, including the OU1 property, from Summit County into Park City on July 14, 2022. The EPA and LHM are in negotiations to finalize a Work Plan and an Administrative Order on Consent for LHM to assume long-term responsibility for stewardship and O&M activities for OU1 areas.

Institutional Control (IC) Review

The ROD states that two primary institutional controls will be implemented to mitigate potential risks and ensure the long-term protectiveness of the remedy:

- Groundwater use restrictions within the site boundary: the goal is to preclude any use of shallow groundwater, as well as eliminate any significant alteration of the existing hydrogeologic system, such as mixing of aquifers. This institutional control will be in the form of a deed restriction and will be the responsibility of the owner of the Site.
- Land use restrictions within the site boundary: the goal is to preclude non-recreational uses and to ensure that the soil cover, or similar protections, are maintained. This institutional control will be in the form of an Environmental Covenant and will be the responsibility of the owner of the Site.

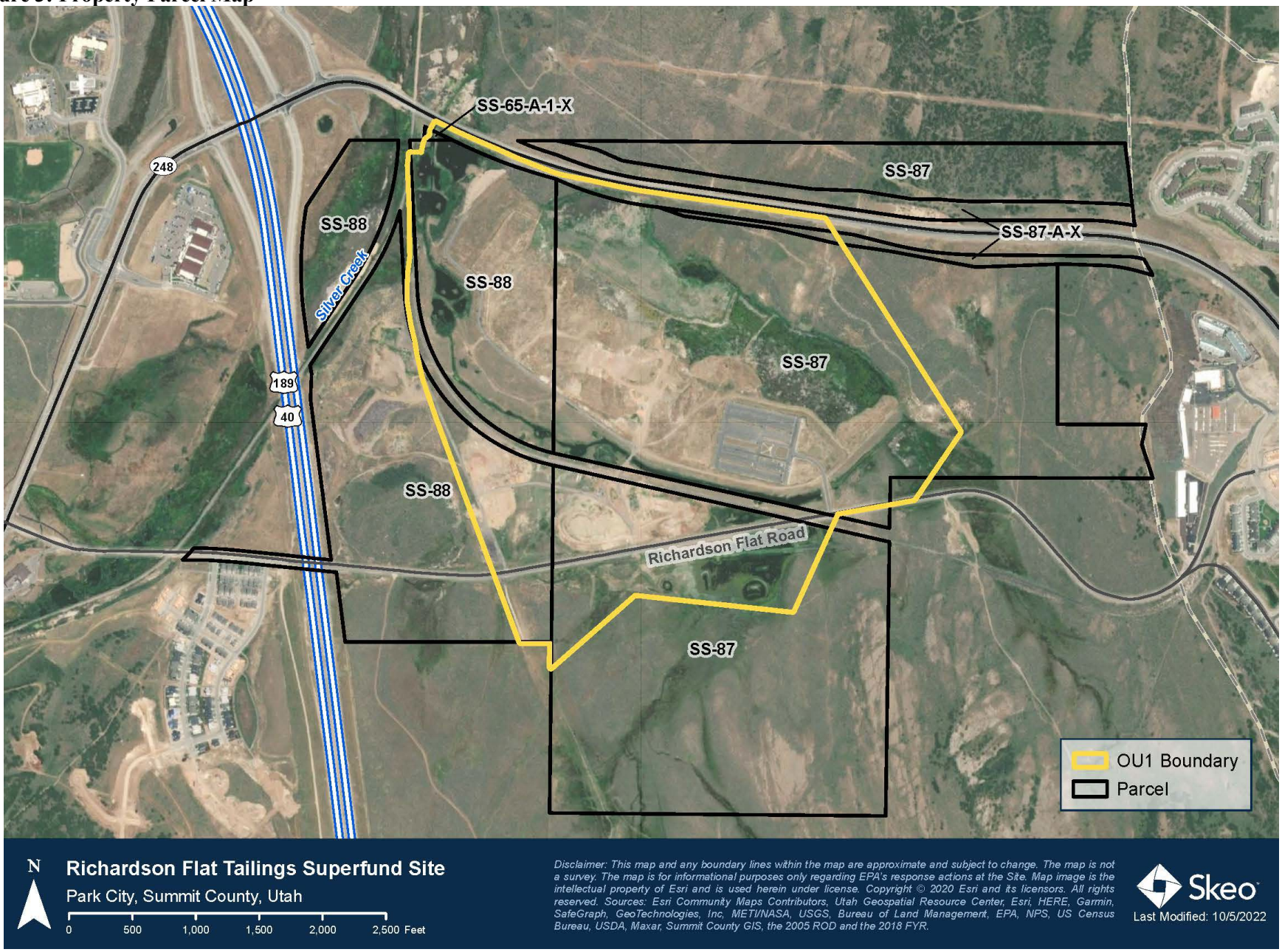
Institutional controls called for in the ROD were not recorded by UPCM (Table 1). The properties had been zoned as "rural residential" by Summit County prior to annexation by Park City in 2022 (Figure 3). The properties are currently zoned by Park City as "recreation open space." The EPA will pursue proprietary controls as called for in the ROD, which will ensure the OU1 is protected permanently from activities that could compromise the remedy.

Table 1: Summary of Planned and/or Implemented Institutional Controls (ICs)

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[a]	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently restrict new groundwater well installation and use of shallow groundwater within the impoundment area.	To be determined
Soils	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently limit the land use to open space with wildlife habitat and non-motorized recreational use. Permanently preserve the low-permeability tailings cap and specify the ongoing erosion control and maintenance requirements. Permanently prohibit unauthorized excavation at the Site and of the cap material.	To be determined

a. As stated in the Site's 2018 FYR Report.

Figure 3: Property Parcel Map



Systems Operations/Operation and Maintenance (O&M)

OU1 is still in remedial action pending additional cover material in areas where future consolidation from OU2 and OU3 may occur. A formal O&M Plan has not been developed and maintenance has been limited. Prior monitoring activities included monitoring of site conditions, erosion, vegetation condition, water runoff and invasive plant management, as needed. The EPA anticipates that LHM, the new OU1 property owner, will develop and implement an O&M Plan.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the last FYR Report as well as the recommendations from the last FYR Report and the status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2018 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings are contained through capping with clean soil, and surface waters exiting the Site are below water quality standards. However, for the remedy to be protective in the long term, the following action needs to be taken: implement institutional controls that include restrictions on future land and groundwater use.

Table 3: Status of Recommendations from the 2018 FYR Report

Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Institutional controls called for in the ROD are not yet in place.	Implement necessary institutional controls to ensure the soil cover is protected and the shallow groundwater is not used.	Ongoing	Institutional controls in the form of environmental covenants are not yet in place. The EPA will work with the new property owner to assess potential uses of OU1 areas and will record appropriate restrictions in an instrument that is part of the land title.	NA

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by a newspaper posting in the *Park Record*, on 6/17/2023 (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, Park City Public Library, located at 255 Park Avenue, Park City, Utah 84060. The report will also be placed on the EPA Site Profile Page at http://www.epa.gov/superfund/richardson-flat.

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.

Doug Bacon, UDEQ: Mr. Bacon is satisfied with the OU1 remedy, but noted the lack of adequate institutional controls. He is aware of the property transfer to LHM and was actively engaged in discussions about future land uses and LHM's responsibilities for OU1.

Greg Flint, LHM and Anna Rasmussen, Tetra Tech: Mr. Flint has recently learned about the Site following LHM's acquisition of the OU1 property and is engaging Tetra Tech for technical support regarding the OU1 remedy, site characterization and potential engineering needs.

Ryan Blair, Park City Environmental Regulatory Program Manager: Mr. Blair is aware of the Site and the OU1 status regarding property transfer to LHM and the annexation by Park City. He did not express any concerns with the current OU1 remedy.

Data Review

No monitoring data were collected during this FYR period.

Site Inspection

The site inspection took place on 10/18/2022. Participants included EPA RPM James Hou, Doug Bacon from UDEQ, and Ryan Burdge from Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. The site inspection checklist and photographs are included in Appendix F and Appendix G, respectively.

Site inspection participants drove and walked OU1, including the parking area, stormwater diversion features and wetlands areas, covered areas within the tailings impoundment, and the embankment buttress. The gate into the impoundment area was not secured. Vegetation in the cover areas appeared to be well established. However, piles of soil and/or rubble of unknown origin were observed, as well as areas of recent soil disturbance. In addition, a trespasser residing in a well-established trailer was observed behind mounded material, unobservable from the roadway. The new property owner has since removed the trespasser.

V. TECHNICAL ASSESSMENT

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

The OU1 remedy is performing as intended. Tailings outside of the impoundment have been excavated and placed under clean fill in the impoundment, and the main embankment has been stabilized. Post-construction measurements of the impoundment indicated that all areas measured contain at least 18 inches of clean fill material with the exception of areas F-2 and F-3. Areas F-2 and F-3 are covered with a temporary 6-inch soil cover while the EPA continues OU2 and OU3 site characterization to determine the volume of additional material to be brought to these areas prior to placing the full 18-inch cover material. In addition, the site inspection noted multiple piles of unknown materials in the vicinity of F-2 and F-3. The EPA intends for the new property owner to characterize these piles and sample areas F-2 and F-3 to confirm the condition of the temporary 6-inch soil cover.

During construction, monitoring had been performed as required by the ROD, but no O&M Plan has been prepared for OU1. Monitoring and maintenance activities have been limited. The EPA anticipates the new property owner will assume responsibility for O&M activities for OU1.

Institutional controls to protect the soil cover and restrict groundwater use have not yet been implemented. The ROD states that two primary institutional controls will be implemented to mitigate potential risks and ensure the long-term protectiveness of the remedy:

- Groundwater use restrictions within the site boundary. The goal is to preclude any use of shallow groundwater, as well as eliminate any significant alteration of the existing hydrogeologic system such as mixing of aquifers. It is anticipated that the institutional control will be in the form of a deed restriction and will be the responsibility of the owner of the Site.
- Land-use restrictions within the site boundary. The goal is to preclude non-recreational uses and to ensure the soil cover, or similar protections, are maintained. This institutional control will be in the form of an Environmental Covenant and will be the responsibility of the owner of the Site.

The EPA is working with the new property owner to determine potential uses of OU1 areas and will ensure appropriate restrictions in an instrument that is part of the land title. Recorded and legally-enforceable restrictions as called for in the ROD are necessary to ensure no potential exposures in the future. The property is zoned by Park City as "open space recreational," and public access to the repository is restricted through fencing and signage.

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

The exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the OU1 remedy selection are still valid. The remedy anticipated a future recreational use, and public access to OU1 is currently restricted to the paved parking area.

Lead exposure in surface soils was evaluated using the Integrated Exposure, Uptake and Biokinetic model for children and the Bower's model for adult receptors. Both models predicted blood lead levels below the EPA's health-based goal of a 5% probability of exceeding a blood lead level of 10/g/dL for all recreational use scenarios. All soil contamination within the impoundment and a few small areas outside of the impoundment are covered with at least 18 inches of clean soil to eliminate appreciable residual human health risk due to incidental exposure except for cells F-2 and F-3, which remain partially covered.

The human health cleanup levels for the Site were based on EPA guidance that recommended 10 µg/dL as the blood lead level of concern. EPA Region 8 will continue to use the current EPA policy, until the Agency finalizes and updates its policy.

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

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

Issues and Recommendations Identified in the FYR:

OU(s): 1	Issue Category: Institutional Controls			
	Issue: The proprietary restrictions called for groundwater and land use in the ROD are not yet recorded for the OU1 site property.			
	Recommendation: Finalize and implement appropriate proprietary restrictions with LHM, the new OU1 property owner.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	Other – LHM	EPA	9/30/2025

OU(s): 1	**Issue Category: Operations and Maintenance**			
	Issue: No O&M Plan was developed by UPCM. LHM, the new OU1 property owner, has yet to submit an O&M Plan.			
	Recommendation: Finalize and implement an O&M Plan for the OU1 repository.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	Other – LHM	EPA	9/30/2024

OTHER FINDINGS

Several additional recommendations were identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- The site inspection noted multiple piles of unknown materials in the vicinity of F-2 and F-3. The EPA intends for the new property owner to characterize these piles and sample areas F-2 and F-3 to confirm the condition of the temporary 6-inch soil cover.
  The site inspection noted a trespasser residing in a well-established trailer, behind mounded material and unobservable from the roadway. The new property owner has since removed the trespasser.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: 1	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings are contained through capping with clean soil, and surface waters exiting the Site are below water quality standards. For the remedy to be protective over the long term, the following actions need to be taken: 1) finalize and implement appropriate proprietary restrictions with LHM; and 2) finalize and implement an O&M Plan for the OU1 repository.	

VIII. NEXT REVIEW

The next FYR Report for the Richardson Flat Tailings Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

2005. United States Environmental Protection Agency, Record of Decision, Richardson Flat Tailings., EPA ID UT980952840.

2007. Resource Management Consultants, Inc., Remedial Design/Remedial Action Plan (RD/RA), Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Field Construction Plan for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Task Completion Report, Richardson Flat, Site ID Number: UT980952840.

2008. Resource Management Consultants, Inc., Phase 2 Task Completion Report for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2009. Resource Management Consultants, Inc., Phase 3 Task Completion Report for 2009 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2010. Resource Management Consultants, Inc., Phase 4 Task Completion Report for 2010 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Phase 5 Task Completion Report for 2011 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Task Area Map, Richardson Flat, Site ID Number: UT980952840.

2012-2017. United Park City Mines Quarterly Status Reports, Richardson Flat, Site ID Number: UT980952840.

2013. United States Environmental Protection Agency, Five-Year Review, Richardson Flat Tailings, EPA ID UT980952840.

2018 United States Environmental Protection Agency, Five-Year Review, Richardson Flat Tailings, EPA ID UT980952840.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
EPA discovered contamination	October 1, 1984
UPCM initiated the Site's RI and focused feasibility study for OU1	September 29, 1989
EPA proposed the Site for listing on the NPL	February 7, 1992
UPCM completed the Site's RI and focused feasibility study for OU1	July 1, 1992
The EPA signed the Site's ROD for OU1	July 6, 2005
UPCM initiated the Site's remedial design for OU1	August 7, 2007
UPCM completed the Site's remedial design for OU1 UPCM initiated the remedial action for OU1	February 7, 2008
UPCM and the EPA signed an administrative settlement agreement and order on consent for an RI and focused feasibility study for OU2	September 29, 2009
EPA approved completion of construction activities outlined in the Site's remedial design	November 2011
EPA signed the Site's first FYR Report	March 14, 2013
EPA signed the Site's second FYR Report	August 10, 2018
EPA and UPCM finalized a Consent Decree to resolve CERCLA liability	October 17, 2022
LHM purchased the OU1 property	January 2022
Park City annexed the OU1 property into the municipality	July 14, 2022

APPENDIX C – SITE MAPS

Figure C-1: Remedial Design Task Areas

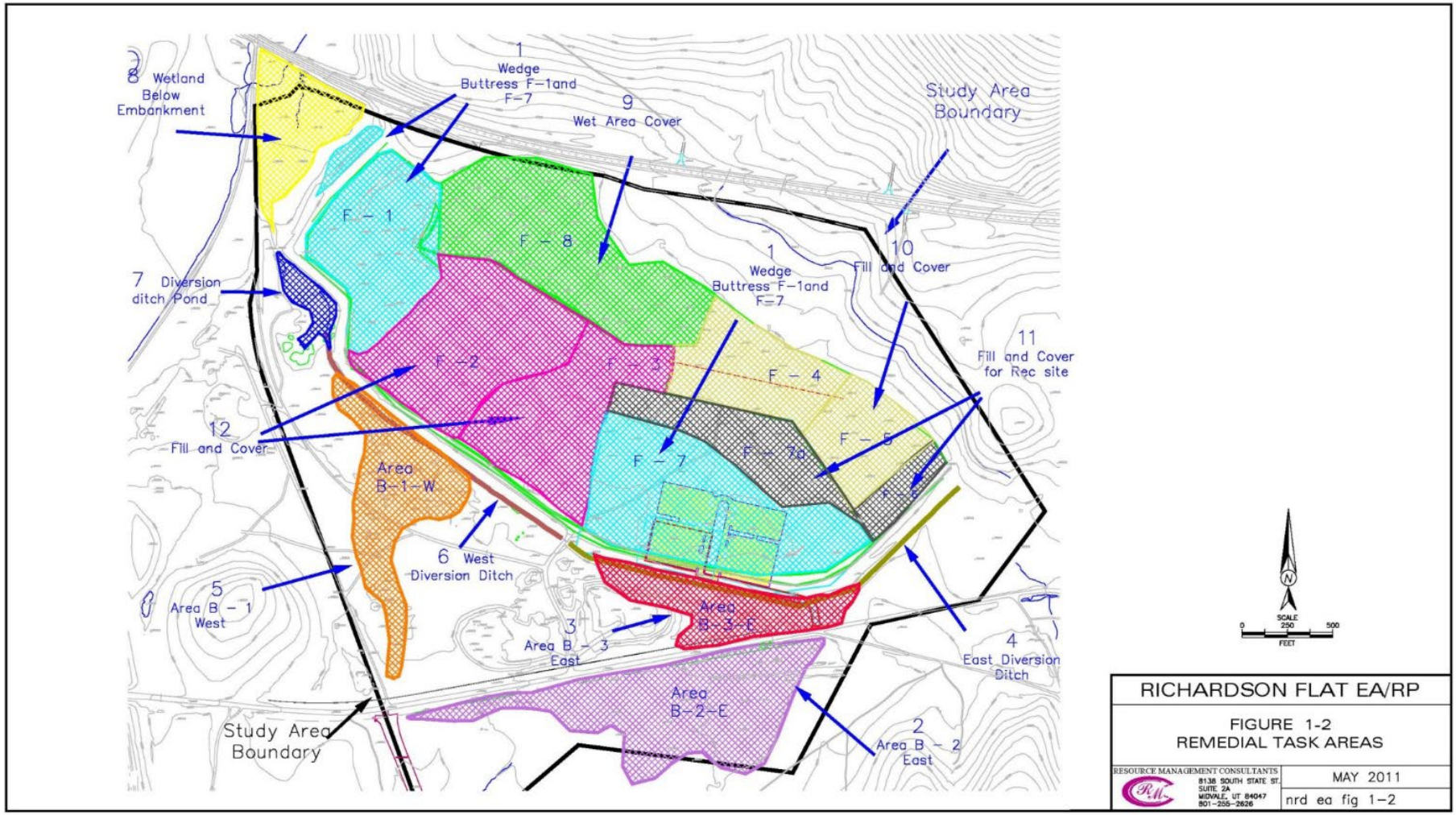


Figure C-2: Phase 2 Completion Map, 2008

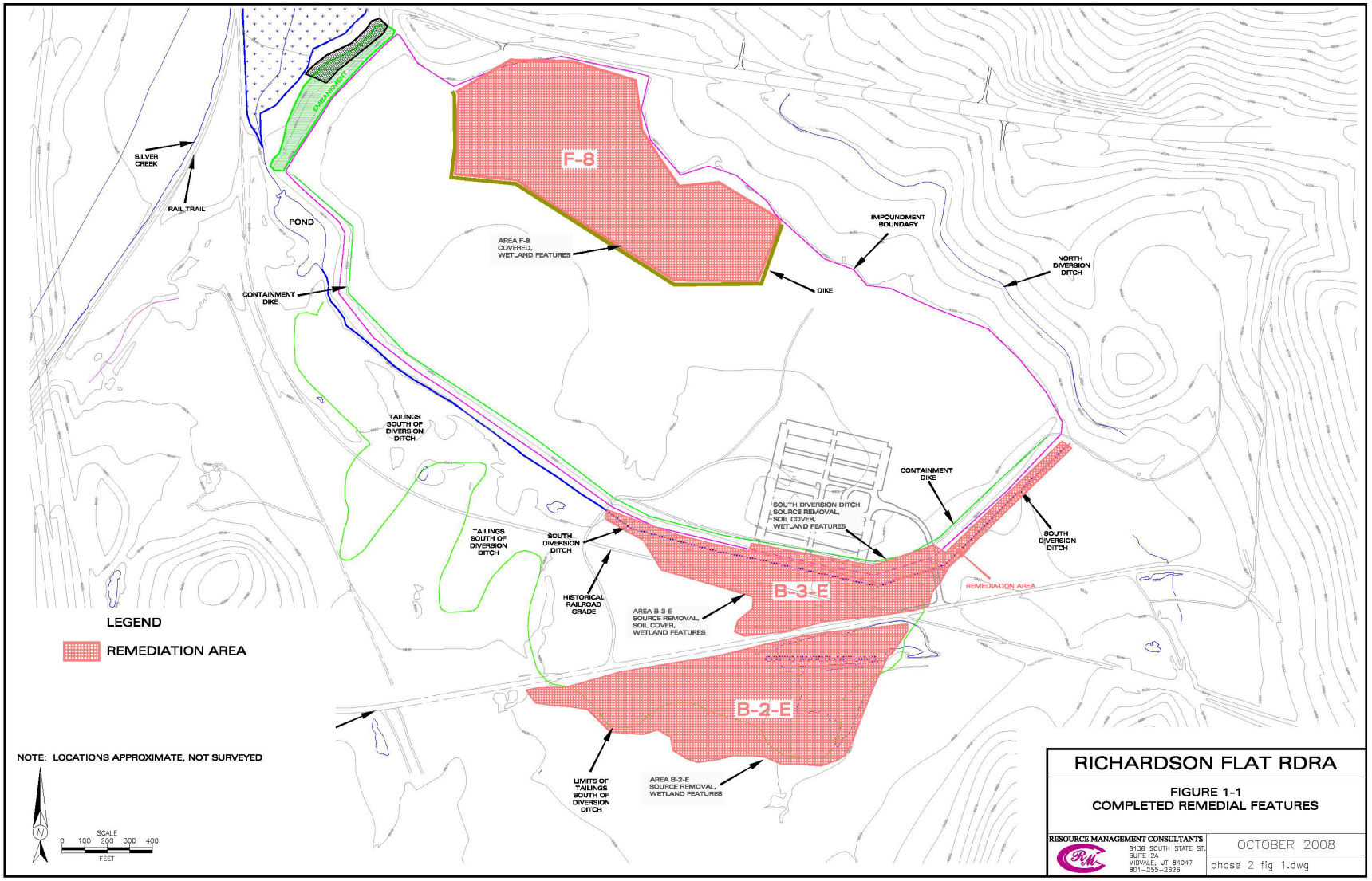


Figure C-3: Phase 3 Completion Map, 2009

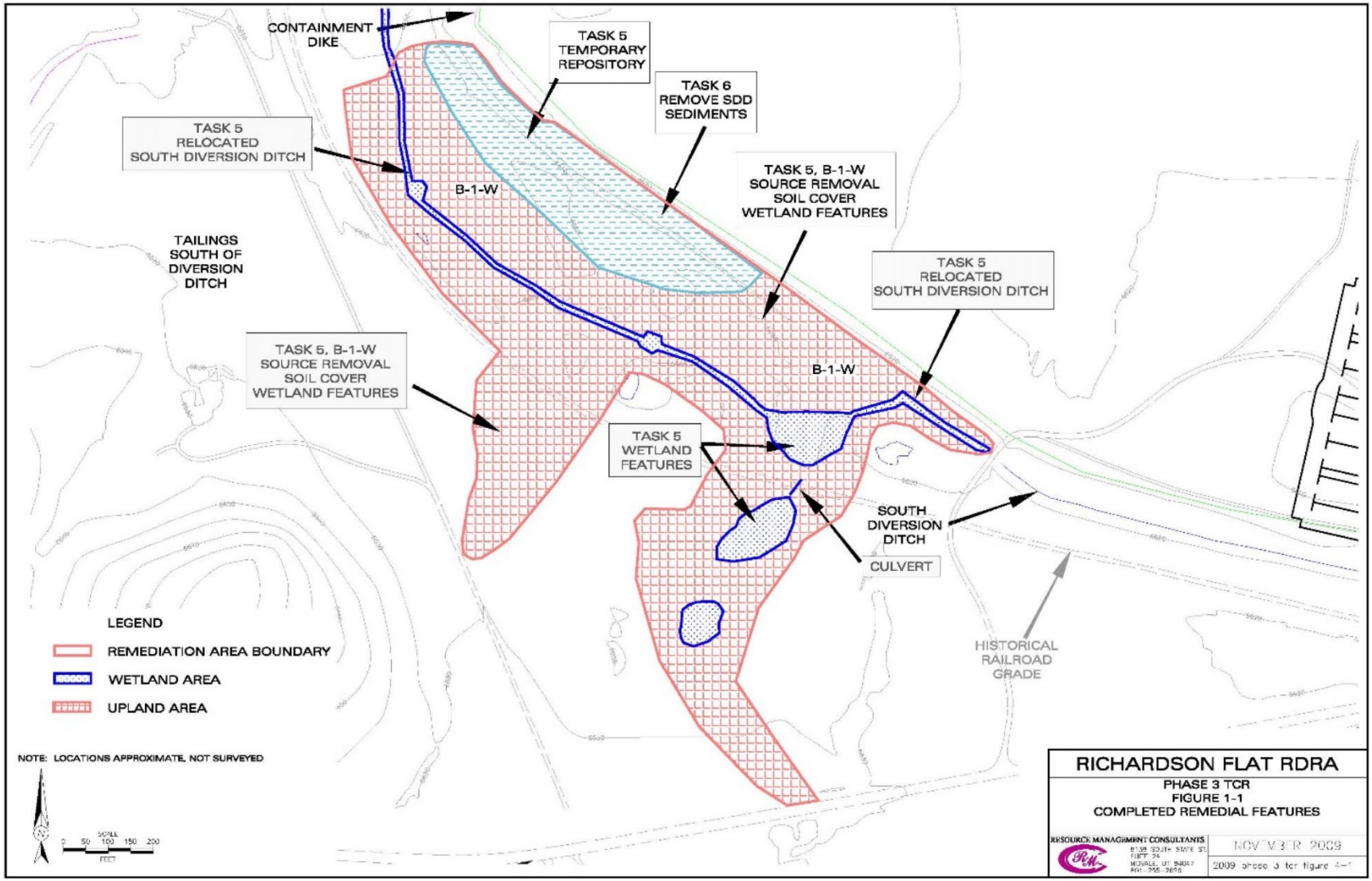


Figure C-4: Phase 4 Completion Map, 2010

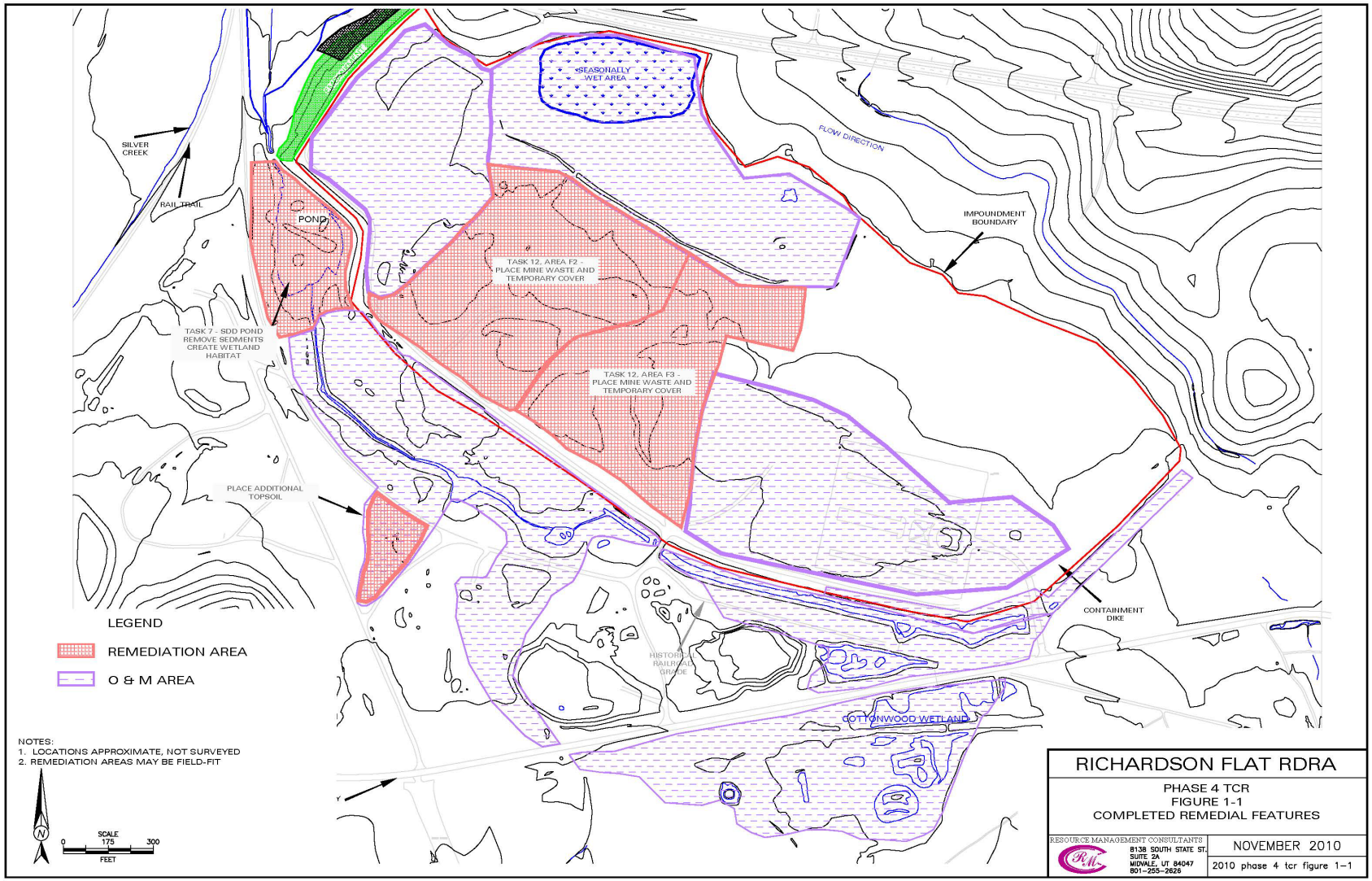
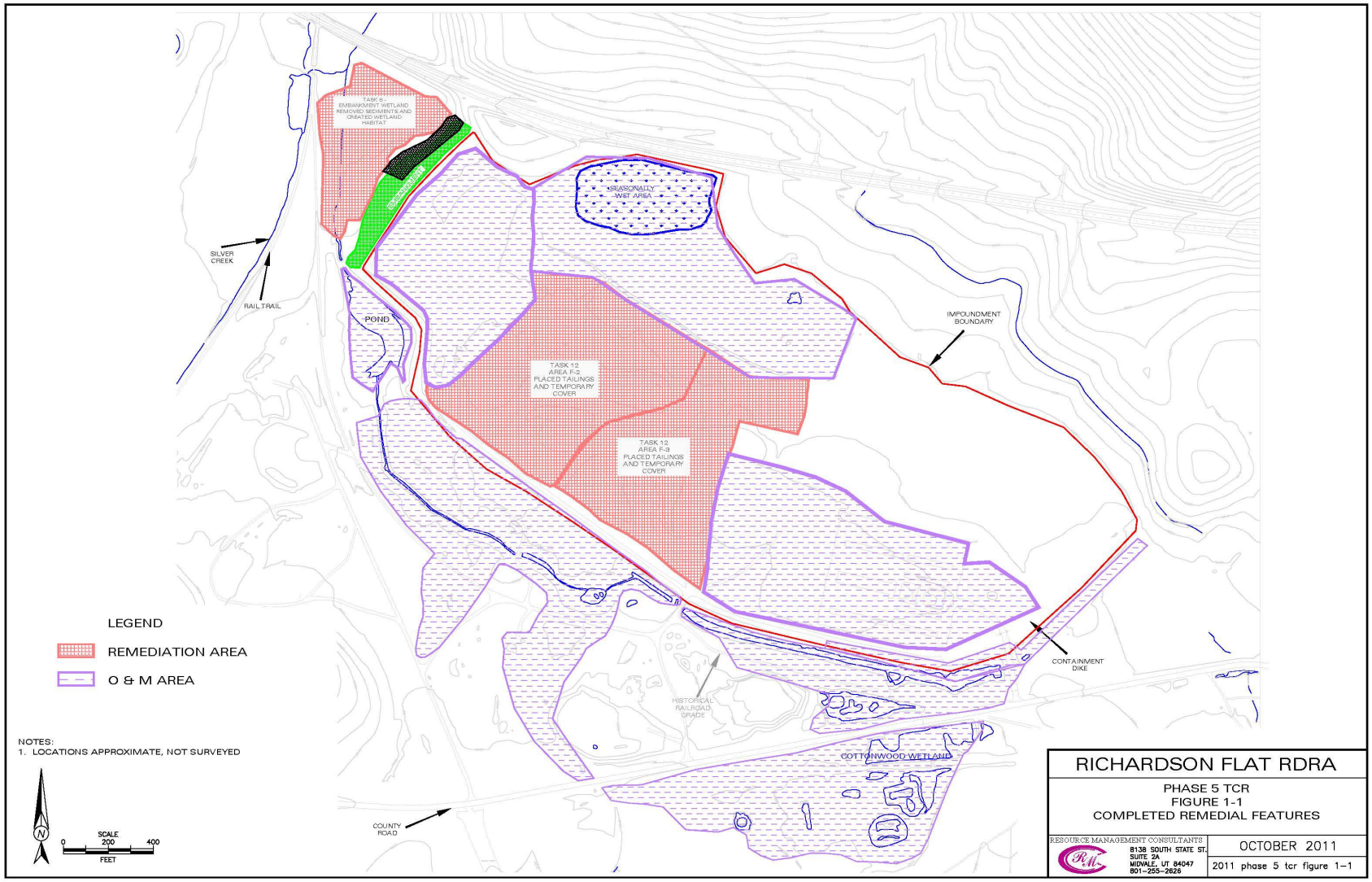


Figure C-5: Phase 5 Completion Map, 2011



APPENDIX D – PRESS NOTICE

— Loss is also in the DNA of the new album by multi-instrumentalist, singer-songwriter Meshell Ndegeocello. "The Omnichord Real Book" is an album made after she lost her parents. "This album is about the way we see old things in new ways," Ndegeocello says. First single "Clear Water" is a soul-searching Sly Stone-inspired song featuring Jeff Parker's bluesy guitar lines and vocals by Justin Hicks. The album was produced by Josh Johnson and also features Jason Moran, Ambrose Akinmusire, Joel Ross, Jeff Parker, Brandee Younger, Julius Rodriguez, Mark Guiliana, Cory Henry, Joan As Police Woman and Thandiswa.

— Only one band can make fonts sound cool and that's Queens of the Stone Age, who are out Friday, with the 10-track studio album "In Times New Roman…" On the spiky, off-kilter "Emotional Sickness," frontman Josh Homme sings "Use once and destroy/ Single servings of pain/A dose of emotion sickness I just can't shake." But on "Carnavoyeur," he has a smooth, distant cool: "Flying high, realize/ There are no more mountains to climb."

— AP Entertainment Writer Mark Kennedy

NEW SERIES TO STREAM

— The new "The Wonder Years" about a middle-class Black family in Montgomery, Alabama, in the 1960s, returns for its second season on Wednesday on ABC. The show is told from the point of view of 12-year-old Dean Williams (played by Elisha "EJ" Williams) with Don Cheadle narrating as the adult version of Dean. It's already been announced that season two will feature several guest stars including Donald Faison, Bradley Whitford, Phoebe Robinson, Malcolm-Jamal Warner and Patti LaBelle.

— Season two of "Star Trek: Strange New Worlds" arrives on Paramount+ on Thursday. If you haven't watched yet, the show takes place about a decade before "Star Trek: The Original Series," so it features younger versions of some of the "Star Trek" characters viewers know and love. "Strange New Worlds" stars Anson Mount as Captain Christopher Pike when he led the USS Enterprise, with a crew that includes Ethan Peck as Spock, Rebecca Romijn as Una Chin-Riley (otherwise known as Number One), and Celia Rose Gooding as Nyota Uhura. The season one finale introduced Paul Wesley in the role of James T. Kirk and the actor reprises the role in this new season.

— Caitriona Balfe and Sam Heughan are star-crossed lovers in the time-traveling romance drama, "Outlander." It begins with a British nurse named Claire visiting Scotland after World War II who accidentally falls back in time to the 18th century when Scotland and England are at war. Claire has left her husband behind in the future, and feels like she will never get back there, so she begrudgingly marries a Highland warrior named Jamie. The two end up falling in love and embark on an epic romance. Season seven, premiering Friday on Starz, take place during the American Revolution. The story is based on the book series by Diana Gabaldon.

— "Gold Rush" fan favorite Todd Hoffman is trying to turn his fortune around by rehabilitating a rundown mine in Alaska in Discovery Channel's "Hoffman Family Gold." In season two, Todd has a small crew to help him including his father, Jack, and son, Hunter, but even with the familial assist, it's a major task and success is not guaranteed. On top of the pressure, Todd and Hunter are very competitive and no one pushes your buttons quite like family. "Hoffman Family Gold" season two debuts Friday.

— Alicia Rancilio

NEW VIDEO GAMES TO PLAY

— Formula One racing has been booming in America lately, thanks in large part to the popular Netflix documentary series "Drive to Survive." It's gotten so big that EA Sports, which bailed out early in the century, got back on the track in 2021. The publisher is billing F1 23 as "a fresh start," though longtime developer Codemasters is still behind the wheel. It includes 20 drivers and 10 teams from the real-life circuit, as well as a fictional story mode and a career-building "F1 World" series of races. There are also new courses in Las Vegas and Qatar, and a 35% race distance option that offers a quick challenge if you're short on time. Get your motor running Friday on PlayStation 5/4, Xbox X/S/One and PC.

— Lou Kesten

LOMA VISTA RECORDINGS, CLOCKWISE FROM TOP LEFT, BLUE NOTE RECORDS, MATADOR RECORDS, REPUBLIC RECORDS VIA AP

This combination of album cover images shows, clockwise from top left, "Michael" by Killer Mike, "The Omnichord Real Book" by Meshell Ndegeocello, "In Times New Roman…" by Queens of the Stone Age and "Strictly a One-Eyed Jack," by John Mellencamp.

EPA United States Environmental Protection Agency

The U.S. Environmental Protection Agency, Region 8 Announces the Third Five-Year Review for the Richardson Flat Tailings Site, Park City, Utah

The U.S. Environmental Protection Agency (EPA), in cooperation with the Utah Department of Environmental Quality (UDEQ), is conducting the third five-year review for operable unit 1 (OU1) of the Richardson Flat Tailings site in Park City, Utah. The purpose of the five-year review is to make sure that the cleanup actions completed to date are adequately protecting human health and the environment. The five-year review for OU1 is scheduled to be completed by August 2023.

The 160-acre site is located southeast of the intersection of State Highway 248 and U.S. Highway 40 approximately 2 miles northeast of Park City, Utah. EPA proposed the Site for listing on the National Priorities List (NPL) in 1992. A tailings dam and impoundment on site were used to capture and hold mill tailings from 1953 until 1981, resulting in contamination of soil, groundwater, surface water and air.

EPA, with the concurrence of UDEQ, selected a remedy in a 2005 Record of Decision. (ROD). Cleanup activities at OU1 include excavation, consolidation, and containment of mine tailings.

We want to hear from you! Community members are always encouraged to share information that may help EPA and UDEQ make determinations regarding the protectiveness and effectiveness of the remedies at the site. Please contact Project Manager James Hou:

James Hou, EPA Remedial Project Manager
Phone: 303-312-6210 Email: hou.james@epa.gov
Mailing Address: U.S. EPA Region 8 (EPR-SR)
1595 Wynkoop Street, Denver, CO 80202-1129

Additional site information is available at:

EPA Superfund Records Center
1595 Wynkoop Street
Denver, CO 80202-1129
303-312-7273

Or online at: https://www.epa.gov/superfund/richardson-flat

APPENDIX E – INTERVIEW FORMS

RICHARDSON FLAT TAILINGS SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Richardson Flat Tailings	
EPA ID: UTD980952840	
Interviewer name: Katherine Jenkins	**Interviewer affiliation: EPA Region 8**
Subject name: Doug Bacon	**Subject affiliation: UDEQ**
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)?
   Overall, OU1 looks good. The State would like to see more of a holistic look at the mine waste. There are additional mine sites around beyond Richardson Flat, and a holistic approach would ensure what happening above and upstream does not impact downstream work already done. UPCM is gone, so the more collaboration and thinking of all mining waste in the area is important for Richardson Flat as it is furthest downstream. The State has high interest in the repository.

2. What is your assessment of the current performance of the remedy in place at the Site?
   I think the OU1 remedy is protective. There is renewed interest in the park and ride, and the property attracts wildlife, including waterfowl, kingfishers and raptors. It will be good to see any potential changes in land use in the area.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   I know the community does not want another repository and have expressed interest in OU1 being reopened. I have heard concerns about land development around the repository. I have not heard of concerns directly linked to protectiveness.

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.
   No, we have not done anything on our own.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?
   No. State ARARs will be considered for any additional work by LHM and future placement of materials from other OUs.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?
   I have concerns about institutional controls not being successful. Institutional controls work when parties are informed. Local ordinances are not failproof and when staff turn over, institutional knowledge is lost.

7. Are you aware of any changes in projected land use(s) at the Site?
   Yes, I am aware of the new owner, LHM, and its potential plans for future land development outside of the repository.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   I would encourage continued outreach to the stakeholders and let them know what is changing. Transparency is helpful. News spreads quickly in this community, so it is important to keep sharing information.

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

RICHARDSON FLAT TAILINGS SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Richardson Flat Tailings	
EPA ID: UTD980952840	
Interviewer name: Katherine Jenkins	**Interviewer affiliation: EPA Region 8**
Subject name: Greg Flint and Anna Rasmussen	**Subject affiliation: LHM and Tetra Tech**
Interview format (circle one): [In Person] Phone Mail Email Other:	
Interview category: Larry H Miller Group and Tetra Tech (contractor)	

1. What is your overall impression of the remedial activities at the Site?
   We are still getting up to speed on the Site but have developed an understanding of the OU1 remedy and the expectation of additional material from other OUs being placed at OU1. Communication with EPA and the State has been great.

2. What have been the effects of the Site on the surrounding community, if any?
   The property has been in the news, most recently about the annexation into Park City. The discussions seem to be more about the land use and less about environmental concerns. LHM will continue to work with EPA, the State and the city regarding potential land uses.

3. What is your assessment of the current performance of the remedy in place at the Site?
   We are happy with the remedy based on available information. LHM and Tetra Tech are developing a work plan for EPA review that will likely include additional characterization of on-site soils. We will work with EPA for any future remedial needs.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
   No, we are not aware of anything.

5. 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?
   Yes, communication has been great. This meeting and interview is one more example of that.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   No.

7. Do you consent to have your name included along with your responses to this questionnaire in the FYR Report?
   Yes.

RICHARDSON FLAT TAILINGS SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: Richardson Flat Tailings	
EPA ID: UTD980952840	
Interviewer name: Katherine Jenkins	**Interviewer affiliation: EPA Region 8**
Subject name: Ryan Blair	**Subject affiliation: Park City, Env Reg Program Manager**
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 have reviewed some documents. The EPA webpage is great, and I have contact with EPA.

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?
   Yes, the webpage and maps are really good.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   No, not that I am aware 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, I am not aware of any new regulations that would affect the remedy.

5. Are you aware of any changes in projected land use(s) at the Site?
   I am aware of the current land use and that the property was recently annexed by Park City. My understanding is there is a conservation easement limiting land use to open space and the parking lot.

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?
   Yes, but there is room for improvement. Recently, there was a draft settlement agreement that was up for public comments, but the city was not informed. We would have liked to have been informed.

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?
   Yes.

APPENDIX F – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Richardson Flat Tailings	**Date of Inspection:** 10/18/2022
Location and Region: Park City, Utah, EPA Region 8	**EPA ID: UTD980952840**
Agency, Office or Company Leading the Five-Year Review: EPA Region 8	**Weather/Temperature:** 30 degreees, sunny

Remedy Includes: (check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other: _____
- ☐ 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 UDEQ
   Contact Doug Bacon (Name) Project Manager (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

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

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: _____

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

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 ☐ Contractor for state

☐ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☒ LHM Group

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: _____
Contact _____ _____ _____ _____
Name Title Date Phone
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: Long-term land use and groundwater restictions are called for in the ROD. However, they are not yet implemented.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks: An apparent squatter was observed during the site inspection.

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: Native vegetation is well established.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Arial extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Arial extent: _____ Depth: _____

Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident

Arial extent: _____ Depth: _____

Remarks: _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established

☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)

Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A

Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident

Arial extent: _____ Height: _____

Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas ☐ Location shown on site map Arial extent: _____

☐ Ponding ☐ Location shown on site map Arial extent: _____

☐ Seeps ☐ Location shown on site map Arial extent: _____

☐ Soft subgrade ☐ Location shown on site map Arial extent: _____

Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map

☒ No evidence of slope instability

Arial 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 ☐ No evidence of settlement

Arial extent: _____ Depth: _____

Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation

Material type:_____ Arial extent: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion

Arial extent: _____ Depth: _____

Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting

Arial extent: _____ Depth: _____

Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions

☐ Location shown on site map Arial 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 Arial 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). Construction specified in the remedial design has been completed. Vegetation is well established and erosion is not an issue. Areas of the impoundment received regionally sourced mine waste and were covered with a temporary 6-inch soil cover while EPA determines if more material will be brought to these areas prior to placing the full 18-inch fill material.
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. O&M actitivities have not been performed during this FYR period.
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. None noted.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. None noted.

APPENDIX G – SITE INSPECTION PHOTOS

The diversion ditch and parking area, northwest-facing view from the parking lot entrance

Signage at the entrance to the parking lot

Toe of the main embankment

Pile of material of unknown origin

Piles of material of unknown origin

The diversion ditch and cottonwood trees

The wetland area west of the impoundment