

Explanation of Significant Differences For the Captain Jack Mill Superfund Site Ward, Colorado

October 2011

Colorado Department of Public Health and Environment
Denver, Colorado

&

United States Environmental Protection Agency
Region 8, Denver, Colorado

Approved by:



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10/6/11
Date

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EXPLANATION OF SIGNIFICANT DIFFERENCES
CAPTAIN JACK MILL SUPERFUND SITE

I. INTRODUCTION

A. Site Name and Location

Site Name: Captain Jack Mill Superfund Site
Site Location: Ward, Boulder County, Colorado
Site ID: COD981551427

B. Lead and Support Agencies

The Colorado Department of Public Health and Environment (CDPHE) is the lead agency. The United States Environmental Protection Agency (EPA) is the support agency.

C. Legal Authority for Explanation of Significant Differences (ESD)

Under Section 117 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), 42 U.S.C. §9617(c), EPA is required to publish an Explanation of Significant Differences (ESD) when significant, but not fundamental, changes are proposed to a previously selected site remedy. The National Contingency Plan (NCP) §300.435(c)(2)(ii) sets forth the criteria for issuing an ESD and requires that an ESD be published if the remedy is modified in a way that differs significantly in either scope, performance, or cost from the remedy selected in the Record of Decision (ROD) for the Captain Jack Mill Superfund Site.

D. Summary of Basis and Purpose

The ROD for the Captain Jack Mill Superfund Site (Site) was signed by CDPHE and EPA on September 29, 2008.

This ESD provides a brief history of the Site, describes the original remedy selected in the ROD, and explains how modifications developed during the remedial design process differ from the original remedy. It also discusses the modified remedy's compliance with all legal requirements and provides details on how the reader may obtain more information on this modified remedy.

E. Administrative Record

This ESD and its supporting documentation will be incorporated into the Administrative Record as directed in NCP §300.825(a)(2). The Administrative Record file is available for public review at the following locations:

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Ward Public Library

Post Office/Town Hall Building
Ward, CO 80481

Boulder Public Library

1000 Canyon Blvd.
Boulder, CO 80481
303-441-3100

CDPHE Records Center

4300 Cherry Creek Drive, South
Denver, CO 80246
303-692-3331; toll-free 1-888-569-1831, x3331

EPA Records Center

1595 Wynkoop Street
Denver, CO 80202
303-312-6473; toll-free 1-800-227-8917

II. Site History, Contamination and Selected Remedy

A. Site History and Contamination

The Captain Jack Mill Superfund Site (Site) is located near the headwaters of the Left Hand Creek Watershed in a narrow valley about 1.5 miles south of Ward in Boulder County, Colorado. Mining for gold and silver began in this region in 1861 and continued intermittently until 1992. The Site is divided into five areas of contamination:

- Big Five Mine area, consisting of a discharging adit (tunnel), large waste rock pile and settling pond;
- Big Five to Captain Jack area, including contaminated roadway, the wetland area below the settling pond, and the section of Left Hand Creek that receives the adit discharge via the settling pond;
- Captain Jack Mill (CJM) area, including two filled tailings ponds, the Black Jack adit, a residence and other buildings;
- White Raven area, including a waste pile and adit; and
- White Raven to Sawmill area, which encompasses the remainder of the gulch from the White Raven waste pile to the turnoff from Left Hand Canyon.

The Site was added to the National Priorities List (NPL) on September 29, 2003. CDPHE and EPA completed a Remedial Investigation/ Feasibility Study (RI/FS) in June 2008. A Record of Decision (ROD) was completed in September 2008. The selected remedy consists of two components; one to clean up surface contamination and one to clean up subsurface contamination.

The contaminants of most concern at the Site are lead, arsenic, and thallium. These metals are found in surface soils located at the Site and pose a risk to human health through ingestion or inhalation of

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particulate dust, especially by nearby residents. Additional contaminants of concern including zinc, manganese, copper, cadmium, aluminum, and iron are present in soils and/or surface water. These contaminants pose a risk to the local environment and adversely impact aquatic life. The Left Hand Water District, which provides service to over 15,000 residents in rural Boulder and Weld Counties, uses water from Left Hand Creek as a drinking water source. Their water intake has not yet been impacted by the Site, but the potential for contamination exists in the future.

B. Summary of the Original Remedy, as Presented in the ROD

The alternatives selected in the ROD include Alternative 2C to address the surface contamination, and Alternative 3B to address subsurface contamination. The following paragraphs summarize the planned remedy as described in the ROD.

Alternative 2C: Onsite Consolidation Cells for Contaminated Soils

Estimated Construction Cost presented in the ROD: \$741,537

In Alternative 2C, contaminated surface material will be excavated and contained in onsite capped consolidation cells. Contaminated material remaining in place after reaching the design excavation depth for surface contamination will be treated to reduce mobility; backfilled with clean fill; and covered with a vegetated soil cap.

The excavated material will be placed in several onsite consolidation cells. The estimated quantity of material that will be consolidated is 85,000 cubic yards (cy), from the following locations:

- 90 cy of waste from the Big Five area;
- 620 cy of waste from the Big Five to Captain Jack Mill (CJM) area;
- 17,500 cy from the CJM area;
- 15,500 cy from the White Raven area;
- 260 cy from the White Raven to Sawmill area; and
- 51,000 cy of contaminated material in place at the CJM area.

The 51,000 cy of contaminated material in place at the CJM area from the list above was generated and deposited during previous mining and milling activities. It is located within the proposed CJM consolidation cell area. Therefore, this volume of material will not require excavation and will remain in place within the proposed consolidation cell.

The onsite consolidation cells will be located at the CJM area along the escarped slope bordering the former tailings ponds on the northeast, and at the White Raven Mine area. The contaminated material currently in the former tailings ponds at the CJM area will not be excavated since it will become part of the consolidation cell. Waste material from all five areas of contamination at the Site will be placed in the consolidation cells and compacted. Waste remaining in place at the Big Five waste pile will be capped in place.

The ROD specified that the cap for the consolidation cells will consist of six inches of topsoil on top of 12 inches of select fill, overlaying a geosynthetic clay liner. Before the clay liner is placed,

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caustic material will be mixed into the top six inches of the waste material to neutralize the waste and minimize leaching of acidic material. The liner will provide a barrier between the waste material and the upper cap layers and prevent clean water from infiltrating into the underlying waste material. A vegetated cap is expected, however, a crushed-rock apron or cap layer also will be considered to keep rodents from burrowing into the cap. Vegetation on top of the cover will require annual maintenance. This may require reseeding several times within the first few years until a self-supporting vegetative cover is established.

Surface water will be diverted around the consolidation cells and capped areas of the Site. Surface water controls will include swales and rip-rap-lined channels to provide erosion protection and control run-on/run-off.

Capping and erosion-protection materials are expected to be available within a three- to four-acre borrow area on or near the Site. The specific location for the borrow area will be fully evaluated during the design phase, including evaluation of areas adjacent to the CJM. If on- or near-site borrow locations do not contain sufficient volumes of needed material, the balance of capping material may need to be imported.

The remedy will require various site improvements. Because the Site access is via a single-lane vehicle road, road improvements will be required. There will need to be excavation around existing structures to remove contaminated material, provide access for construction of the consolidation cell and capping, and improve site drainage. Related work will include design and oversight, mobilization of personnel and equipment, site grading, installation of drainage systems and erosion control, and demobilization. Access controls will be needed during construction which will include fencing, signage, and other restrictions to vehicles and people moving through the site. The construction contractor will need to communicate closely with onsite residents to minimize health and safety issues while implementing the work.

Alternative 3B: Big Five Adit Bulkhead and Mine Pool Mitigation with Phased Successive Biochemical Reactor Treatment as Required

Phase One: Estimated Construction Cost presented in the ROD: \$1,494,400

Phase Two: Estimated Construction Cost presented in the ROD: \$1,269,638

Alternative 3B was selected and is intended to treat mine water “in-situ”. The principal subsurface sources are the acid generating materials associated with the underground mine-workings and tunnel(s) of the Big Five mine. The “in-situ” remedial objective is to submerge (to the extent safely practicable) source materials in order to minimize contact with oxygen, and to implement active neutralization of impounded mine-pool waters in order to treat continuing long-term acid water inflows. If needed, a second phase of remedial operations will be to design and install an ex-situ biochemical reactor for further treatment of mine-discharge waters.

A bulkhead will be installed in the tunnel at a location approximately 470 to 675 feet from the Big Five adit portal. In order to be able to draw down and sample water behind the bulkhead, it will contain stainless steel through-piping and valves. The annular space between the plug and the mine

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tunnel will be grouted to seal off the mine impacted water when the valves are closed. Implementing the bulkhead will require additional studies during the design phase including surveys, geotechnical evaluations, hydrostatic and hydrodynamic loading, and other engineering design aspects.

Mine-pool mitigation will be implemented “upstream” of the bulkhead. Treatment options are anticipated to include a neutralization loop with an injection and extraction well drilled into the tunnel reservoir approximately 2,400 feet up-gradient from the tunnel bulkhead. In addition, a secondary treatment access point – where, if necessary, additional neutralization could be added – may be installed at another mid-point location upstream of the bulkhead, west of the Peak to Peak highway. Current assumptions are that the injection and extraction wells will be approximately 450 feet deep, and will introduce a caustic agent such as sodium hydroxide (NaOH). Ongoing operational adjustments to the dosing rate are anticipated to adequately buffer the flooded workings. If emerging science and remedial technology developments associated with sulfide-reduction bioreactor-processes warrant it, consideration may be given to implementing carbon-loading within the mine-pool.

If a second phase of mine-water treatment is necessary, water from behind the bulkhead valve will be routed out of the Big Five adit and into an ex-situ biochemical reactor(s). The biochemical reactor(s) may be located on top of the Big Five pile or below the pile in the adit collection pond area at the toe of the Big Five pile. The size of the biochemical reactor(s) will depend on a variety of design factors, including the substrate chosen (i.e., solid or liquid substrate). Additional neutralization may be required prior to entry into the biochemical reactor(s) and could be accomplished through gravity drip systems within the discharge piping and/or neutralization ponds.

III. Basis for the ESD

In March 2010, an engineering firm was placed under contract to the CDPHE to design the surface contamination remedy, Alternative 2C. During design development, additional data was collected and several options were explored to ensure design of the best possible remedy. Three significant changes were developed during this design.

During development of the design for the consolidation cells, the distribution and volume of contaminated materials was refined. In the 2008 ROD, three onsite consolidation cells were contemplated; one at the White Raven area and two at the CJM area. During design, it was determined that all the contaminated material planned to be excavated could be placed into a single cell, located at the CJM area. The cell could be shaped to tie into the existing hillside, and would blend into the natural topography of the area.

Various types of covers for the consolidation cell were evaluated during design development. This included the impervious cover with geosynthetic clay liner as described in the ROD, a simple soil and vegetated cover, and a rock cover. A table presenting the cover alternatives is included as Attachment A. A simple soil cover system, consisting of a subsoil layer, a topsoil layer, and vegetation, was identified as the preferred option.

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The 2008 ROD indicates that the Big-Five waste rock pile will be capped in place by the single statement “Except for the small upper-layer of contaminated surface material, the Big-Five waste rock dump will be capped in place” (ROD page 19-3). However, no provisions for a cap were included in the estimated volume of cover material required. Further, this cover was not included in the cost estimate for the remedy. Including the costs for capping of this waste pile, as well as other refinements to the construction cost estimate, results in an increase of the estimate from \$741,537 to approximately \$1,881,427.

IV. Description of Significant Differences

As a result of the information gathered in the design phase, described in Section III, there are three significant differences between the surface remedy as written in the ROD (Alternative 2C) and the current proposed actions. This includes:

1. The configuration of the consolidation cell(s);
2. The cover type for the consolidation cell; and
3. The cost of the surface remedy.

The subsurface remedy detailed in the ROD, Alternative 3B: Big Five Adit Bulkhead and Mine Pool Mitigation with Phased Successive Biochemical Reactor Treatment as Required, is not changed by this ESD.

A. Consolidation Cells

Instead of constructing and maintaining three separate consolidation cells, two at the Captain Jack Mill (CJM) area and one at the White Raven area, as described in the ROD, the contaminated material can be placed into a single cell. This is possible by reconfiguring the layout of the consolidation cell at the CJM location.

The configuration of the consolidation cells described in the ROD allowed for approximately 11,000 cubic yards (cy) of excavated material to be consolidated. The updated consolidation cell design includes removal of the dilapidated Captain Jack Mill structures and extension of the portal of the Black Jack Mine to allow waste material to be deposited on top of the extension. This allows for the formation of one contiguous consolidation cell which ties into the natural hillside. This revised cell can consolidate approximately 38,200 cy in addition to the 51,000 cy of mine waste material already in place at the CJM area, for a total capacity of 89,200 cy. This volume is sufficient to contain the anticipated volume of planned excavated waste materials from all areas of the Site. Constructing only one consolidation cell is preferable for several reasons including reduced quantity of cover material required and reduced future maintenance. This change will allow the materials at the White Raven area to be consolidated into the consolidation cell at the CJM area eliminating the previously planned consolidation cell at the White Raven area. These changes will result in only one consolidation cell located at the CJM area (approximate total capacity up to 89,200 cy), rather than the two cells that were described in this area in the ROD.

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Demolition of the mill structures and associated debris is required to construct the consolidation cell at the CJM area because the structures are located within the planned footprint of the cell. Initial investigation indicates that waste material generated from demolition can be disposed of in a solid waste landfill or recycled as appropriate. Remaining concrete foundations will be incorporated into the consolidation cell. Additionally, since there are residences in close proximity of areas that require excavation and of the planned consolidation cell, the residents will require temporary relocation for their personal safety and protection of their property during the remedy construction. In accordance with applicable policies, EPA and CDPHE will provide temporary relocation for the impacted residents.

B. Consolidation Cell Cover

The 2008 ROD specified a complex cap for the consolidation cell, consisting of six inches of vegetated topsoil on top of 12 inches of select fill overlaying a geosynthetic clay liner.

Although the ROD identified a specific cover system; overall cover performance criteria such as a maximum infiltration rate or allowable leaching rate, was not identified. Given that the Site repositories will be unlined, there are other cover configurations that are anticipated to be as effective in achieving the surface contamination remedial action objectives as the ROD configuration.

During the design process a comparison of three different cover designs was developed and presented in the schematic design:

1. Low permeability cover system as prescribed by the ROD
2. A simple soil cover system, consisting of a subsoil layer, a topsoil layer, and vegetation
3. A hardened rock cover system, consisting of a subsoil layer over the mine waste, a geotextile filtration layer, and a rock layer

All of these cover systems provide an exposure barrier that protects human health and the environment from incidental ingestion or inhalation exposure. And all cover systems evaluated include amendment of caustic material into the uppermost layer of contaminated material as indicated in the ROD. Advantages and disadvantages for each cover option were evaluated and are summarized in Attachment A. Based on the evaluation, CDPHE and EPA have selected the simple soil cover with vegetation, as the preferred design. This alternative cover will achieve the goals intended by waste consolidation while balancing the material availability at the Site, durability, constructability and future land use.

Since contaminated material will be left in place, Institutional Controls (IC) that follow the guidelines of the State of Colorado will be implemented at the Site with the goal of preventing disturbance of the cap remedy.

C. Remedy Cost

Previously, the estimated construction cost developed for Alternative 2C in the ROD was \$741,537.

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A more inclusive, refined cost estimate was developed during remedial design. The design engineer used the United States Army Corps of Engineers (USACE) Micro Computer Aided Cost Engineering System Second Generation software to develop the updated revised cost estimate. The revised cost estimate is approximately \$1,881,427. This cost estimate is solely for the anticipated construction work that will be bid out to construction contractors. This cost estimate does not include contract administration, construction oversight, operations and maintenance, implementation of future ICs nor EPA or CDPHE oversight, public outreach and administration costs.

The increase in anticipated construction cost compared to those in the ROD is due to several factors; greater detail, accuracy and inclusion of unit costs and quantities, escalation of costs over time, and, most significantly, inclusion of the grading and capping of the Big Five waste pile that was identified in the ROD but not included in the ROD cost evaluation.

Details of the cost estimate available at the time of writing of this ESD are included in Attachment B.

D. Comparison of ESD to ROD

The significant changes to the remedy as described in the ROD are presented below.

Alternative 2C – Surface Contamination Remedy	
ROD	ESD
Three consolidation cells; two located at the Captain Jack Mill area and one at the White Raven area.	One larger consolidation cell located at the Captain Jack Mill area
Low permeability cover for the consolidation cells, including a geosynthetic clay liner	Simple soil cover for the CJM area consolidation cell and the Big-Five waste pile
Estimated construction cost of \$741,537	Estimated construction cost of \$1,881,427

V. Support Agency Comments

CDPHE is the lead agency for the Captain Jack Mill Site. The United States Environmental Protection Agency has reviewed the revised remedy and has provided comments to CDPHE. These comments have been incorporated into this ESD to the maximum extent practicable. EPA supports implementation of the revised remedy as presented in this ESD.

VI. Statutory Determinations

The changes to the 2008 ROD remedy were made in accordance with all applicable regulatory and statutory requirements as required by Section 121 of CERCLA. Considering the new information that has been developed and the changes that have been made to the selected remedy, CDPHE and EPA believe that the revised remedy is protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and

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appropriate to this remedial action at the time the original ROD was signed, and is cost effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

VII. Public Participation Compliance

A notice of availability of this ESD will be published in the Weekly Register Call. A copy of the notice is provided in Attachment C. A copy of this ESD will be placed in the Administrative Record file and in the information repositories. The requirements set out in NCP §300.435(c)(2)(i) have been met.

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Attachment A

Cover Options Assessment Summary

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**Table 3-2
Cover Options Assessment Summary**

Cover Option		Effectiveness	Implementability	Relative Cost	Durability
Earthen Covers	Simple Soil Cover	<ul style="list-style-type: none"> ■ Minimal reduction of precipitation infiltration outside of the growing season. ■ Effective erosion protection on slopes shallower than 3H:1V once vegetation is established. Minimal erosion protection prior to vegetation establishment ■ Suitable for various slope conditions ■ May require admixture neutralization treatment within cover soils to prevent contaminant wicking and uptake by vegetation. 	Generally easy to install; however initial establishment of vegetation may require additional O&M.	Low cost given minimal amount of soil needed and ease of installation. Moderate cost if soil needs to be imported.	Moderate to high; good durability following vegetation establishment; may require additional O&M prior to establishment.
	Hardened Cover	<ul style="list-style-type: none"> ■ Minimal reduction of precipitation infiltration outside of the growing season; ■ Effective erosion protection upon installation. Suitable for various slope conditions 			
Low-Permeability Covers	GCL	<ul style="list-style-type: none"> ■ The components in this cover type provide a low-permeability barrier to significantly reduce infiltration of snowmelt and stormwater into the underlying waste materials. ■ Provides a barrier with a typical hydraulic conductivity of 1×10^{-9} to 5×10^{-9} cm/sec.¹ ■ Can be used on slopes up to a maximum of 3H:1V. ■ Effective erosion protection on slopes shallower than 3H:1V once vegetation is established. Minimal erosion protection prior to vegetation establishment. ■ GCL may be susceptible to cation exchange (Ca for Na) if bentonite comes into contact with a calcium source such as lime, resulting in increased permeability. ■ GCL may be susceptible to freeze/thaw conditions resulting in increased permeability if thermal barrier layer is compromised. 	Easy to difficult to install, depending on slope. Additional QA/QC required for seaming, anchoring, limiting penetration during installation. Initial establishment of vegetation may require additional O&M.	Moderate cost due to imported materials and potentially difficult installation effort.	Moderate; good durability following vegetation establishment; may require additional O&M prior to establishment. However periodic O&M may be needed to remove woody growth and burrowing animals that could damage GCL over time.

Notes:

¹Source: Koerner and Daniel, Final Covers for Solid Waste Landfills and Abandoned Dumps, 1997, p.73.

cm/sec = centimeters per second

GCL = geosynthetic clay liner

H:V = horizontal to vertical slope

O&M = operation and maintenance



Attachment B

Cost Comparison between 2008 ROD (Alternative 2C) and Remedial Action Cost Estimate

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**ATTACHMENT B
CAPTAIN JACK SUPERFUND SITE**

COST COMPARISON BETWEEN 2008 ROD (ALTERNATIVE 2C) AND REMEDIAL ACTION COST ESTIMATE

Record of Decision Cost Estimate (Appendix B, Alternative 2C)					Pre-Final (90%) Remedial Action Cost Estimate									
Construction Cost Estimate					Pre-Final (90%) Estimate of Probable Construction Cost									
Item No.	Description	Quantity	Unit	Unit Cost	Total Cost	Item No.	Description	Quantity	Unit	Unit Cost	Total Cost			
Mobilization and General Site Preparation														
1	Mobilization, Bonding, Insurance	5	%	---	\$26,900.00	0001.00	All Costs for Bonding Requirements	1	LS	\$24,900.00	\$24,900.00			
						0002.00	All Work to Mobilize Onsite	1	LS	\$10,323.00	\$10,323.00			
											Subtotal:	\$35,223.00		
2	Construction BMPs (E&S Controls)	2	%	---	\$10,800.00	0010.03	Erosion and Sediment Control	1	LS	\$23,944.00	\$23,944.00			
4	Clear and Grub Repository Area	1.96	ACR	\$2,500.16	\$4,900.00	0003.01	Clearing and Grubbing	1	ACR	\$2,352.00	\$2,352.00			
						0003.02	Tree Cutting	50	EA	\$110.42	\$5,521.00			
											Subtotal:	\$7,873.00		
NA	Not included in ROD.	NA	NA	\$0.00	\$0.00	0003.04	Project Sign	1	EA	\$1,987.00	\$1,987.00			
						0003.06	Disposal Fee	1	EA	\$815.00	\$815.00			
						0004.00	All Work to Remove Electric Pole and Equipment	1	LS	\$6,095.00	\$6,095.00			
						0007.01	Demolition of Structures within Big Five Area	1	LS	\$4,482.00	\$4,482.00			
						0007.02	Demolition of Structures within White Raven Area	1	LS	\$7,027.00	\$7,027.00			
						0007.03	Demolition of Structures within Captain Jack Mill Area	1	LS	\$13,240.00	\$13,240.00			
						0007.04	Abandon Monitoring Well	64	VLF	\$59.86	\$3,831.00			
						0010.02	Protection of Cultural Resources	1	LS	\$1,307.00	\$1,307.00			
											Subtotal:	\$38,784.00		
5	Cleanup and Demobilization	1	LS	\$22,000.00	\$22,000.00	0016.00	All Work to Demobilize from Site	1	LS	\$10,323.00	\$10,323.00			
						0015.08	Preparation of Final Closure Report	1	LS	\$26,661.00	\$26,661.00			
											Subtotal:	\$36,984.00		
											Total Cost:	\$142,808.00		
Access Road Construction														
4	Labor Crew	3	DY	\$986.74	\$3,000.00	0003.05	Install Access Road and Stream Crossing	1	LS	\$14,271.00	\$14,271.00			
5	Dozer	24	HR	\$102.91	\$2,500.00									
6	Excavator	24	HR	\$117.76	\$2,800.00									
7	Wheel Loader	80	CY	\$2.34	\$200.00									
8	Road Base	80	CY	\$6.72	\$500.00									
9	Tandem Dump	3	DY	\$346.49	\$1,039.47									
												Total Cost:	\$10,000.00	
												Total Cost:	\$14,271.00	
Removal/Excavation¹														
10	Excavation of Waste Material	27,188	CY	\$1.49	\$50,500.00	0009.00	All Work to Excavate, Haul, and Consolidate Contaminated Materials, First 30,800 BCY	30,800	BCY	\$11.45	\$352,617.00			
11	Haul to Repository Location	27,188	CY	\$2.59	\$70,400.00	0017.00	All Work to Excavate, Haul, and Consolidate Contaminated Materials, Over 30,800 Up To 40,000 BCY	9,200	BCY	\$11.64	\$107,053.00			
12	Compaction at Repository Location	27,188	CY	\$1.91	\$51,900.00									
												Total Cost:	\$459,670.00	
Repository														
13	Surveying	1	LS	\$6,500.00	\$6,500.00	0015.01	Post Survey of Consolidation at Captain Jack Repository	2	ACR	\$940.00	\$1,692.00			
						0015.02	Post Survey of Cover at Captain Jack Repository	2	ACR	\$940.00	\$1,692.00			
												Subtotal:	\$3,384.00	
14	Grade Subgrade	9,500	SY	\$0.67	\$6,300.00	Grading costs for the subgrade are included under Bid Items 0009.00 and 0017.00. Amendment costs for the cover systems are included under Bid Item 0011.00.								
15	Compact Subgrade	6,320	CY	\$1.91	\$12,100.00									
16	Lime Amendment	317	CY	\$50.00	\$15,800.00									
													Subtotal:	\$34,200.00
17	Geosynthetic Clay Liner	85,536	SF	\$1.04	\$88,900.00	NA	Not included in remedy design.	NA	NA	\$0.00	\$0.00			
18	Gravel (Crushed Rock Apron)	283	CY	\$15.44	\$4,400.00	NA	Not included in remedy design.	NA	NA	\$0.00	\$0.00			
19	Final Cover System - Rooting/Seed Bed Layer	3,167	CY	\$0.76	\$2,400.00	0005.00	All Work to Excavate, Screen, Amend, and Stockpile Overburden from Captain Jack Borrow Area, Up To 21,000 BCY	21,000	BCY	\$6.23	\$130,795.00			
20	Final Cover System - Topsoil	1,584	CY	\$35.33	\$56,000.00	0006.00	All Work to Excavate, Screen, Amend, and Stockpile Overburden and Development Rock/Fill from Big Five Area, Up To 1,600 BCY	1,600	BCY	\$6.15	\$9,834.00			
						0011.00	All Work to Provide Permanent (2-Foot) Cover at Captain Jack Repository	5,900	BCY	\$7.25	\$42,757.00			
												Subtotal:	\$183,386.00	
21	Final Seeding	1.96	ACR	\$1,136.44	\$2,200.00	0012.00	All Work for Seeding and Vegetation Establishment at Captain Jack Repository	2	ACR	\$31,442.78	\$56,597.00			
22	Providing Erosion Control Blankets	9,500	SY	\$2.84	\$27,000.00									
													Subtotal:	\$29,200.00
23	Installing Lysimeter (2)	2	EA	\$2,272.87	\$4,500.00	NA	Not included in remedy design.	NA	NA	\$0.00	\$0.00			
NA	Not included in ROD.	NA	NA	\$0.00	\$0.00	0008.00	All Work to Install Adit Portal Box Culvert Extension and Gates	1	LS	\$92,204.00	\$92,204.00			
						0010.01	Interceptor Trench	681	LF	\$24.74	\$16,846.00			
						0013.00	All Work to Provide Permanent (2-Foot) Cover at Big Five Mine Dump	6,900	BCY	\$52.07	\$359,294.00			
						0014.00	All Work for Seeding and Vegetation Establishment at Big Five Mine Dump	2	ACR	\$31,186.19	\$65,491.00			
						0015.03	Post Survey of Cover at Big Five	2	ACR	\$940.00	\$1,974.00			
						0015.04	Post Survey of Restoration at CJ Mill Area	2	ACR	\$939.58	\$2,255.00			
						0015.05	Post Survey of Restoration at White Raven Area	1	ACR	\$940.00	\$1,034.00			
						0015.06	Post Survey of Restoration at Big Five to CJ Mill Area	0	ACR	\$940.00	\$188.00			
						0015.07	Post Survey of Restoration at Big Five Area	2	ACR	\$939.58	\$2,255.00			
												Subtotal:	\$541,541.00	
												Total Cost:	\$784,908.00	
Surface Water Controls														
24	Surface water Control System Grading	3	DY	\$3,735.45	\$11,200.00	Surface water control costs for the cover systems are included under cost for Site Restoration. No other surface water control structures are included in the remedy design.								
25	Surface Water Control Structures	6	EA	\$568.22	\$3,409.32									
26	Permanent Surface Water Control Grading	3	DY	\$3,735.45	\$11,200.00									
27	Permanent Surface Water Structures	6	EA	\$1,704.65	\$10,227.90									
													Total Cost:	\$36,037.00
Site Capping and Reclamation														
28	Providing Decon Area and Subsequent Removal	1	LS	\$27,000.00	\$27,000.00	0003.03	Decontamination Pad	1	LS	\$3,628.00	\$3,628.00			
29	Final Grading Excavated Areas	36,111	SY	\$0.67	\$24,100.00	0010.04	Restore Big Five Waste Rock Pile Area	1	LS	\$56,407.00	\$56,407.00			
30	Revegetation	15	ACR	\$1,704.65	\$25,600.00	0010.05	Restore Big Five to Captain Jack Mill Area	1	LS	\$4,605.00	\$4,605.00			
						0010.06	Restore White Raven Area	1	LS	\$48,556.00	\$48,556.00			
						0010.07	Restore Captain Jack Mill Area	1	LS	\$197,799.00	\$197,799.00			
												Subtotal:	\$307,367.00	
												Total Cost:	\$310,995.00	
												Subtotal for Construction:	\$1,687,752.00	
31	Additional Line Item Allowance	10	%	\$58,623.70	\$58,600.00	Not Applicable								
												Subtotal for Construction Without Contingency:	\$1,687,752.00	
32	Contingency	15	%	\$96,725.55	\$96,700.00	Contingency		10	%	\$168,775.20	\$168,775.00			
						0001.00	All Costs for Bonding Requirements	1	LS	\$24,900.00	\$24,900.00			
												Subtotal for Construction With Contingency:	\$1,881,427.00	

Note:

¹ROD cost under "Item No. 10" incurred a math error of \$10,000; the total cost for Item No. 10 should be \$40,500.00.

%: Percentage
ACR: Acres
BCY: Bank Cubic Yard
CY: Cubic Yard
DY: Day
EA: Each
HR: Hour
LCY: Loose Cubic Yard

LF: Linear Feet
LS: Lump Sum
NA: Not Applicable
SF: Square Feet
SY: Square Yard
VLF: Vertical Linear Feet
YR: Year

Attachment C

Public Notice of Availability of the ESD

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Colorado Department
of Public Health
and Environment

Opportunity for Public Comment Captain Jack Mill Superfund Site

Explanation of Significant Differences to 2008 Record of Decision

The Colorado Department of Public Health and Environment (CDPHE) and the U.S. Environmental Protection Agency (EPA) announce the availability of the Explanation of Significant Differences (ESD) for the surface remedy at the Captain Jack Mill Superfund Site in Ward, Colorado. The proposed ESD modifies the 2008 Record of Decision (ROD).

Modifications in this ESD result from information gathered during the design phase for the surface remedy at the site. There are three significant differences between the surface remedy as written in the ROD and the current proposed actions:

1. The configuration of the consolidation cell(s);
2. The cover type for the consolidation cell; and
3. The cost of the surface remedy.

NOTE: The subsurface remedy detailed in the ROD is not changed by this ESD.

Documents available at:

Ward Public Library

Post Office/Town Hall Building
Ward, CO 80481

CDPHE Records Center

4300 Cherry Creek Drive South
Denver, CO 80246
303-692-3331; toll-free 1-888-569-1831, x3331

Boulder Public Library

1000 Canyon Blvd.
Boulder, CO 80481
303-441-3100

EPA Records Center

1595 Wynkoop Street
Denver, CO 80202
303-312-6473; toll-free 1-800-227-8917

On-line: <http://www.cdphe.state.co.us/hm/captjack/index.htm>

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