1079353 - R8 SDMS

YAHOO! MAIL Classic

Print - Close Window

Subject: RE: Lower Silver Creek Documents

Date: Wed, 12 Mar 2008 07:33:55 -0700

From: "Longwell, Daryl" <Daryl.Longwell@tetratech.com>

To: "Jessie Goldfarb" [redacted] "Marshall, Bruce" <Bruce.Marshall@tetratech.com>

CC: "Craig, John" <john.craig@tetratech.com>, "Kathryn Hernandez" <hernandez.kathryn@epa.gov>, "Ludwig, Jon" <jon.ludwig@tetratech.com>

Jessie - Attached is the text of the Site Summary Document we prepared for Kahty earlier this year. I will put together a complete copy of this report including all tables and figures this morning for delivery. I will also have a copy of the 2002 State Assessment report for you.

I am in Boulder, would you like us to courier a package to your home, or meet somewhere to deliver?

Thanks. Daryl

Daryl L. Longwell, P.E. | **Senior Project Manager**
Tel 303.447.1823 | Fax 303.447.1836
Cell 303.588.0902 | Email daryl.longwell@tetratech.com

Tetra Tech
4900 Pearl East Circle, Suite 300W | Boulder, CO 80301

From: Jessie Goldfarb [redacted]
Sent: Tuesday, March 11, 2008 11:14 PM
To: Marshall, Bruce
Cc: Craig, John; Longwell, Daryl; EPAKathrynHernandez@tmo.blackberry.net
Subject: RE: Lower Silver Creek Documents

Thanks so much everyone.

Bruce--Thanks for e-mailing the documents in the AM. I'll be home all day in Boulder. Just give me a call at [redacted] before you deliver the copies so I know when to expect you.

Many thanks,
Jessie

"Marshall, Bruce" <Bruce.Marshall@tetratech.com> wrote:

> Yes. We'll email first.
>
> Bruce
>
> ----Original Message----
> From: Kathryn Hernandez [mailto:EPAKathrynHernandez@tmo.blackberry.net]
> Sent: Tuesday, March 11, 2008 8:41 PM
> To: Marshall, Bruce; hernandez.kathryn@epa.gov; Jesse Goldfarb
> Cc: Craig, John; Longwell, Daryl

Subject: Re: Lower Silver Creek Documents

Can you email her the documents without maps first thing and then get her the documents as soon as they are copied?

Kathy
Sent from my BlackBerry wireless handheld.

----Original Message----
From: "Marshall, Bruce"

Date: Tue, 11 Mar 2008 18:17:58
To:hernandez.kathryn@epa.gov,"Jesse Goldfarb"
Cc:"Craig, John" ,"Longwell, Daryl"
Subject: RE: Lower Silver Creek Documents

Kathy - It will take a little while to get things copied in the morning.

Jessie - how late will you be in Boulder in the morning?

Bruce Marshall

----Original Message----
From: Kathryn Hernandez [mailto:EPAKathrynHernandez@tmo.blackberry.net]
Sent: Tuesday, March 11, 2008 6:36 PM
To: Longwell, Daryl; Marshall, Bruce
Cc: Jesse Goldfarb; Craig, John
Subject: Fw: Lower Silver Creek Documents
Importance: High

Hi Guys;

I am in Libby, so I was hoping you could get copies of the Listing Package for Lower Silver Creek and the 2002 State Assessment to Jessie Goldfarb our site attorney. Her address is below. Please let me know if there is any problem getting this to her early tomorrow (7203527497)

Thanks,

Kathy
Sent from my BlackBerry wireless handheld.

----Original Message----
From: Jessie Goldfarb

Date: Tue, 11 Mar 2008 17:25:42
To:hernandez.kathryn@epa.gov
Subject: Lower Silver Creek Documents

Thanks again for arranging to have the UDEQ Assessment figures and the Listing Package delivered to me tomorrow ASAP.

My address is [redacted]. The easiest way to get to me is [redacted]

Be a better friend, newshound, and know-it-all with Yahoo! Mobile. Try it now.

Never miss a thing. Make Yahoo your homepage.

Attachments

Files:

Lower_Silver_Creek_Site_Summary_012908.doc (90k) [Preview]

Lower Silver Creek Site Summary

Name of Site: Lower Silver Creek Tailings

EPA Region: Region VIII

County, State: Summit County, Utah

General Location in the State: The Lower Silver Creek Tailings Site is located in north-central Utah near Park City. The site surrounds Lower Silver Creek from Highway 248 on the southern end of the site to Interstate 80 on the northern end.

Topographic Map: Park City East

Latitude: 40°43'7.19'' North

Longitude: 111°28'14.69'' West

SOURCE IDENTIFICATION

Description and Location of Source: The Lower Silver Creek Tailings extend along Silver Creek from Highway 248 on the southern end of the site to Interstate 80 on the northern end. Mine tailings cover much of the site. Tailings deposits were left behind from the Big Four Mill and/or washed onto the site from upstream milling operations. Lower Silver Creek has been placed on the 303(d) list of impaired water bodies for both zinc and cadmium and a Total Maximum Daily Load (TMDL) analysis has been completed (UDEQ-WQD, 2004).

In the fall of 2001, the Utah Department of Environmental Quality (UDEQ) collected over 200 surface soil samples primarily within the tailings deposition area (UDEQ – DERR, 2002). These samples were analyzed by XRF and the XRF Lead Concentration Map presented in this report is presented as Attachment A.

To further investigate the nature and extent of contamination, Tetra Tech conducted field investigations of the Lower Silver Creek Tailings Site during the summer and fall of 2007. Data collection included surface soil, subsurface soil, surface water, and groundwater sampling as well as waste volume quantification. The Tables and Figures listed below, accompanying this report, present a summary of the data collected through these efforts.

Tables	Title
1a	Phase I Surface Sampling Results
1b	Phase II Surface Sampling Results
2a	Phase I Subsurface Sampling Results
2b	Phase II Subsurface Sampling Results
2c	Phase II Test Pit Sampling Results
3a	Phase I Groundwater Sampling Results
3b	Phase II Groundwater Sampling Results
4	Surface Water Sampling Results (USGS, 2004 High Flow Event)

Figures	Title
1 (A, B & C)	Surface Soil Sampling Results
2 (A, B & C)	Subsurface Soil Sampling Results
3 (A, B & C)	Groundwater Sampling Results
4 (A, B & C)	Surface Water Sampling Results
5 (A & B)	Preliminary Tailings Volume Estimate
6	Lower Silver Creek Zoning Map

Source Sample Information: Phase I sampling was conducted along six transects established at the Site. During the Phase I investigation, 50 surface soil samples were collected and borings were advanced at 25 locations using a direct push geo-probe drill rig. Seventy-two subsurface soil samples were collected from these borings and

piezometers were installed at 21 of these boring locations. Phase I soil samples were analyzed by X-Ray Fluorescence in Tetra Tech's Fort Collins laboratory.

To further delineate the extent of tailings material within the primary floodplain (tailings depositional) area and to evaluate the presence of metals contamination in the upland areas adjacent to the floodplain, a second phase of investigation was conducted. Phase II activities consisted of the collection of: 269 surface soil samples (0- to 6-inch depth); 30 soil samples from the 6- to 12-inch depth interval at selected surface soil sample locations; excavation of 19 test pits, resulting in an additional 66 soil samples; and the installation of an additional 8 piezometers at 5 locations. The Phase II soil samples were analyzed by a Contract Laboratory Program (CLP) facility using the ILM05.3 Statement of Work (SOW) which defines the analytical methods accepted by the CLP for the isolation, detection, and quantitative measurement of 23 target analyte metals (including mercury) in both water and soil/sediment samples. Analyses were performed using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and/or Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

Hazardous Waste Volume: Based on the results of the Phase I and Phase II investigations described above, Tetra Tech estimated the quantity of tailings deposited within the site to be approximately 1,479,000 cubic yards. Figures 5A and 5B, present the average depth of tailings material by area used to estimate this quantity.

Wetland Delineation: Tetra Tech has also conducted a wetland delineation survey of the area as part of recent site investigations. The majority of the tailings deposition area within the floodplain has been preliminarily characterized as jurisdictional wetlands. Other wetland areas have also been identified outside of the floodplain area, consisting of both natural and irrigation-induced wetlands. The boundaries of the delineated wetlands are presented on the series of figures presenting sampling results.

Land Use: The majority of the property within the Site boundaries is undeveloped and much of it is currently being used for livestock grazing. The pasture areas used for grazing are irrigated with water from Silver Creek through a series of irrigation ditches, which carry water along the east side of the natural creek channel. A fire station is present within the Site boundary (parcel # SS-51-C-1-X) and a recreational trail passes through the entire length of the Site. Current zoning for the Site and surrounding areas is depicted on Figure 6. As indicated much of the Site is zoned Rural Residential which allows for a base residential density of 1 unit per 20 acres on 'Developable Lands' and 1 unit per 40 acres on 'Sensitive Lands'. Pivotal Promontory is currently developing a very large residential community adjacent to the Site along the southeast boundary and owns the majority of the land all along the eastern boundary of the Site. Another developer has purchased parcels SS-22, SS-27, SS-27A, and SS-28 within the northeast portion of the Site and is pursuing residential development. Several other developers hold options to develop several other large tracts of property within the site.

GROUND WATER MIGRATION PATHWAY

Groundwater samples were collected from the piezometers installed as part of the Tetra Tech Phase I and Phase II investigations described above. These results are presented in Tables 3a and 3b and Figures 3A, 3B, and 3C. These results are representative of the shallow groundwater within the Lower Silver Creek area. No uses of this shallow groundwater were identified in the area, although it is likely that this shallow groundwater interacts with the surface water in Lower Silver Creek.

In a March 20, 2002 report (Appendix 3 of the Richardson Flat Tailings Site Focused Remedial Investigation Report prepared for UPCM dated September 2, 2004), MWH concluded:

- "...no wells develop water from the [Silver Creek] alluvium...due to the low productivity of these unconsolidated aquifers."
- "...all [water supply] wells are deeper than 150 feet and develop water stored in the Keetley and deeper aquifers."
- "...hydraulic communication between the shallow and deeper water bearing intervals is poor."

SURFACE WATER OVERLAND/FLOOD MIGRATION PATHWAY

Observed Release: The USGS performed a mass-loading tracer test to quantify metals loading to Lower Silver Creek from the upstream Site boundary to the downstream Site boundary (USGS, 2004). Sampling methods and procedures are described in the USGS report. Hazardous substances attributable to the Site were detected at concentrations greater than three times the upstream and benchmark concentrations.

Hazardous Substance	Upgradient Sample (µg/L) SQ1-0000	Downgradient Sample (µg/L) SQ3-127	Aquatic Life Standard (µg/L)	Drinking Water Standard (µg/L)
Cadmium	2.69	47.5	0.6[1]	5[2]
Zinc	1,300	9,310	380[1]	5,000[2]
Lead	1.62	40.0	11[1]	15[2]

[1] The value shown is for dissolved metals (UDEQ-DWQ, 2008).
[2] (EPA – ODW, 2003)

Surface Water Loading: Annual surface water loading rates are presented in the TMDL report (UDEQ-WQD, 2004). The cadmium loading for the site was determined as the difference in loading between the upstream station at Richardson and the downstream station at Above Atkinson (near the wastewater treatment plant). The load calculation is shown below.

25.8 lb/yr (Above Atkinson) – 10.3 lb/yr (Richardson) = 15.5 lb/yr (generated by the Site)

Drinking Water Threat

Nearest Intake: Echo Reservoir is one of eight reservoirs in the Weber River Basin supplying drinking water to 193,500 residents (UDNR- DWR, 2000). Echo Reservoir is located 12.5 miles ("as the crow flies") downstream of the Lower Silver Creek Site.

Average annual flow in the Weber River (downstream of confluence with Silver Creek and upstream of Echo Reservoir) is approximately 175 cfs (USGS gauge station 10130500, "Weber River near Coalville, UT). Water quality data from the Echo Reservoir intake were not evaluated.

Resources: Surface water on the Site is used for commercial stock watering.

Human Food Chain & Environmental Threat

Stream Classification: Silver Creek is classified as a Class 3A cold water species of game fish and aquatic life segment.

Lower Silver Creek Site Summary

Sensitive Environment: The entire stretch of Lower Silver Creek flowing through the Site (approximately 4.5 miles of stream reach) is bordered by wetlands (Tetra Tech, Inc., 2008) as defined in 40 CFR 230.3. The results of the preliminary wetlands delineation indicate that approximately 494 acres of wetlands are present within the Site boundaries.

SOIL EXPOSURE PATHWAY

Observed Release: Lead, arsenic, and cadmium contamination have been observed within 200 feet of a terrestrial sensitive environment (wetlands), commercial livestock grazing and production, and a workplace area. Analytical results for these contaminants, at the Phase II surface sample location with the highest lead concentration, are shown below along with screening levels.

Hazardous Substance	Evidence of Observed Release		Screening Level (mg/kg)
	Sample Name/No.	Concentration (mg/kg)	
Lead	UW15-56A1-0.5	23,700	400 [1,2]
Arsenic	UW15-56A1-0.5	745	0.39 [1]
Cadmium	UW15-56A1-0.5	119	37 [2]

[1] (EPA – Region 9, 2004)
[2] (EPA – Region 3, 2007)

Hazardous waste quantity: The hazardous waste quantity was calculated based on Tetra Tech's Phase I and Phase II investigations. The volume of waste on Site is estimated to be 1,479,000 cubic yards (Figures 5a and 5b).

Resident Individuals: At this time, there are no resident individuals within the Site.

Workers: It is estimated that 1 to 100 workers are present on or within 200 feet of the area of contamination on a full-time or part-time basis (e.g., Summit County Fire House).

Resources: Commercial livestock graze on the Site.

Terrestrial Sensitive Environment: Wetlands, which are critical to the maintenance of unique biotic communities, are present on the Site.

Nearby Population Threat

Attractiveness/Accessibility: A designated recreational area exists within the site boundaries. A former rail line through the site has been converted to a recreational rail trail currently owned by the Utah Department of Natural Resources/Parks. The right-of-way for the rail trail varies in width from approximately 100 to 250 feet.

Population within 1 mile: Several residences within the Pivotal Promontory development are within 1 mile of known areas of contamination. Zoning maps show 45 lots within ¼ to ½ mile of the Rail Trail and 60 lots within ½ to 1 mile of the Rail Trail. The average persons per household in Summit County are 2.87 persons (USCB, 2000).

AIR MIGRATION PATHWAY

Particulate Potential to Release: An observed release was not documented through direct observation or chemical analysis at the Site. However, given the presence of exposed tailings material throughout the Site, the potential for particulate release exists. Lead is considered to be the driving particulate threat to maintain consistency with the Soil Exposure Pathway.

Waste Quantity: As presented previously, the area of contamination extends over 400 acres.

Nearest Individual: The Summit County Fire House (parcel # SS-51-C-1-X) is located within the Site and is regularly occupied.

Potential Population: Exact population numbers for residents, students, and workers within 4 miles distance were not readily available. Given the local land uses, the estimated population within 4 miles of the Site is:

Distance from Site (miles)	Population Range (persons)
0 to ¼	31 – 100
¼ to ½	301 – 1000
½ to 1	301 – 1000
1 to 2	301 – 1000
2 to 3	301 – 1000
3 to 4	301 - 1000

Resources: The Rail Trail, a designated recreational area, is located on Site.

Sensitive Environment: Approximately 494 acres of wetlands are present within the Site.

REFERENCES

1. EPA – Office of Water, 2003. National Primary and Secondary Drinking Water Standards. EPA 816-F-03-016.

2. EPA, 2004. Superfund Chemical Data Matrix, Hazardous Substance Reference Table.

3. EPA – Region 9, 2004. Region 9 Preliminary Remediation Goals Table. http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf

4. EPA – Region 3, 2007. Region 3 Risk Based Concentration Table. http://www.epa.gov/reg3hwmd/risk/human/rbc/RBCoct07.pdf

5. Tetra Tech, Inc. 2008. Lower Silver Creek Wetland Delineation Park City, Utah.

6. U.S. Census Bureau, 2000. U.S Census Bureau: State and County QuickFacts.

7. USGS, 2004. Principal Locations of Metal Loading from Floodplain Tailings, Lower Silver Creek, Utah, 2004.

8. Utah Department of Environmental Quality – Division of Environmental Response and Remediation (UDEQ – DERR), 2002. Innovative Assessment Analytical Results Report, Lower Silver Creek, Summit County, Utah.

9. Utah Department of Environmental Quality – Division of Water Quality (UDEQ-DWQ), 2004. Silver Creek: Total Maximum Daily Load for Dissolved Zinc and Cadmium.

10. UDEQ-DWQ, 2008. Utah Administrative Code Rule R317-2 - Standards of Quality for Waters of the State.

11. Utah Department of Natural Resources – Division of Water Resources (UDNR-DWR), 2000. Municipal and Industrial Water Supply and Uses in the Weber River Basin.