Dewey Mine Site
Site Inspection
Owyhee County, Idaho
TDD: 99-07-0011

Contract: 68-W6-0008
September 2000

Region 10

START

Superfund Technical Assessment and Response Team

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DEWEY MINE SITE
SITE INSPECTION REPORT
OWYHEE COUNTY, IDAHO

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LIST OF ACRONYMS

Acronym	Definition
%R	percent recovery
bgs	below ground surface
CRQL/CRDL	Contract Required Quantitation/Detection limit
DQOs	Data Quality Objectives
DUP	duplicate
E & E	Ecology & Environment, Inc.
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
GPS	Global Positioning System
IDFG	Idaho Department of Fish and Game
IDW	investigation-derived waste
MEL	Manchester Environmental Laboratory
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MS	matrix spike
PPE	probable point of entry
QA	quality assurance
QC	quality control
RPD	relative percent difference
SI	site inspection
SQAP	sampling quality assurance plan
SQL	sample quantitation limit
START	Superfund Technical Assessment and Response Team
TDL	Target Distance Limit
yd^3	cubic yards

DEWEY MINE SITE
SITE INSPECTION REPORT
OWYHEE COUNTY, IDAHO

1. INTRODUCTION

The United States Environmental Protection Agency (EPA) has tasked Ecology and Environment, Inc. (E & E) with provision of technical support and completion of a site inspection (SI) at the Dewey Mine site located in Owyhee County, Idaho. E & E completed the SI activities under Technical Direction Document No. 99-07-0011 issued under EPA, Region 10, Superfund Technical Assessment and Response Team (START) Contract No. 68-W6-0008. The primary goals of SI activities are:

- Collect and analyze samples to characterize the potential sources discussed in Section 2.6;
- Determine off-site migration of contaminants;
- Provide EPA with adequate information to determine whether the site is eligible for placement on the National Priorities List; and
- Document any threat or potential threat to public health or the environment posed by the site.

Completion of this SI included reviewing site information, determining regional characteristics, collecting receptor information within the site's range of influence, conducting a site visit, executing a site-specific sampling plan, and producing this report.

This document includes site background information (Section 2), field sampling activities and analytical protocols (Section 3), quality assurance/quality control (QA/QC) criteria (Section 4), analytical results reporting and background sampling (Section 5), potential sources (Section 6), migration/exposure pathways and targets (Section 7), summary and conclusions (Section 8), and references (Section 9).

2. SITE BACKGROUND

This section describes the site location (Section 2.1), site description (Section 2.2), site ownership history (Section 2.3), site operations and waste characteristics (Section 2.4), site characterization (Section 2.5), and summary of investigation locations (Section 2.6).

2.1 SITE LOCATION

Site Name:	Dewey Mine
CERCLA ID No.:	IDSFN1002157
Location:	Owyhee County, Idaho
Latitude:	45°02'26" N
Longitude:	116°45'50" W
Legal Description:	Sections 25 and 36, Township 4S, Range 4W, Boise Meridian
Site Owners:	Idaho Department of Land 954 West Jefferson Boise, Idaho 83720 (208) 334-0232 Chipmunk Grazing Association P.O. Box 175 Marsing, Idaho 83639 (208) 466-8801
Site Contacts:	Eric Wilson Idaho Department of Land 954 West Jefferson Boise, Idaho 83720 (208) 334-0232 Elias Jaca, President Chipmunk Grazing Association P.O. Box 175 Marsing, Idaho 83639 (208) 466-8801

James Gillespie
Attorney representing Chipmunk Grazing Association
512 West Bannock
P.O. Box 2337
Boise, Idaho 83701
(208) 344-8400

The Dewey Mine is located in northwestern Owyhee County in southwestern Idaho, approximately 60 miles southwest of Boise, Idaho. The Dewey Mine is approximately 2 miles northwest of Silver City, an old mining town located near the headwaters of Jordan Creek (Figure 2-1; USGS 1986). An unimproved gravel road provides access to the site and is open seasonally between late June and October (Figure 2-2; USGS 1990a).

2.2 SITE DESCRIPTION

Dewey Mine is a former silver and gold mine, which has been inactive since 1920. The property encompasses approximately 60 acres of land located at the foot of Florida Mountain. Jordan Creek flows through the property. Elevation at the mine site is approximately 5,600 feet above mean sea level.

Based on a review of historical photographs, a number of commercial and residential buildings, including a three-story hotel and a few houses, were located on the north side of Jordan Creek. A large mill building and a few smaller auxiliary buildings were located on the south side of Jordan Creek. These buildings no longer exist; however, foundations of the structures remain. Historical photographs also show that a large pile, covered with a patch of vegetation at its midsection, was located east of the former mill building (Figure 2-3; ISHS 2000).

The pile is still at the same location, with little change other than growth of additional vegetation (Wilson 1999). The pile may contain waste rock and mill tailings. The pile is estimated to be 12,410 cubic yards (yd^3) in volume. Further, a spring is percolating through the pile and draining into Jordan Creek. The spring (hereafter called Dewey Spring) is 6 feet long and 4 feet wide, and the spring bed is covered with whitish deposits (Wilson 1999). There are no open mine adits at the site (Wilson 1999). A suspected tailing pile is located to the northwest of the former mill building (Figure 2-3). The pile is estimated to be 3,436 yd^3 in volume (approximately 0.7102 acre). Historical photographs, circa 1929, do not illustrate the presence of the pile (ISHS 2000). It is unknown when the pile was deposited.

2.3 SITE OWNERSHIP HISTORY

The mineral vein at the Dewey Mine was first discovered in 1865. It was worked by a number of small enterprises from 1865 to 1889. Approximately 1.3 million ounces of silver and 19,000 ounces of gold were produced in this period. Production of ore was relatively small compared to later activity at the mine. In 1881, E. W. Dewey found silver ore on the north slope of Florida Mountain (Figure 2-1; Welch 1982). He promoted and developed several mines on Florida Mountain, built a large stamp mill called Dewey Mill, and established a new town called Dewey where the Dewey Mill and a three-story hotel were built. He then (the date is unknown) sold his claims to bigger enterprises, including the Florida Mountain Mining and Milling Company and the Trade Dollar Mining and Milling Company. Between 1895 and 1897, the Dewey Mill was owned by the Florida Mountain Mining and Milling Company, which also operated the nearby Booneville Mine at this time. Ore was mined from the Booneville Mine and shipped to the Dewey Mill for processing. Booneville Mine included several mineral claims located on the north slope of Florida Mountain, on the south side of Jordan Creek, and later became a part of the Dewey Mine.

Concurrently, 7,000-foot-long Dewey Tunnel was built through Florida Mountain under the ownership of the Trader Dollar Mining and Milling Company. In 1899, Florida Mountain Mining and Milling Company was consolidated with Trader Dollar Mining and Milling Company to form Trader Dollar Consolidated Mining Company (Lindgren 1899; Piper 1926). Trader Dollar Consolidated Mining Company operated at the Dewey Mine for the next 10 years. In 1910, Trade Dollar Consolidated Mining Company ceased operations at Dewey Mine due to declining ore reserves. Dewey Mine was subsequently idle for nearly a decade. In 1917, Dewey Tunnel was reopened by a new company, Florida Mountain Mines Company. However, activity was limited to extracting and milling the low-grade workings, and the enterprise failed in 1920 (Lindgren 1899; Piper 1926). No mining activity is known to have occurred since that time.

In 1929, Dewey Mill was sold to Mr. Jim Daly (ISHS 2000). Currently, the property is owned by Chipmunk Grazing Association which bought the property from the Sheep Company in 1967 for livestock grazing (Jaca 1999). The history of the property transaction(s) between the ownerships of Mr. Jim Daly and the Sheep Company is unknown.

2.4 SITE OPERATIONS AND WASTE CHARACTERISTICS

Major operations at Dewey Mine included mining the silver and gold mineral veins in Florida Mountain, transporting ore through Dewey Tunnel at the base of Florida Mountain, and milling at the

Dewey stamp mill on the south bank of Jordan Creek. The ore minerals from Florida Mountain contain finely disseminated gold-and-silver-bearing chalcopyrite and argentite in quartz gangue, with gold contained chiefly in chalcopyrite and silver in the argentite. The gangue consists of quartz and valencianite.

Dewey Mill was equipped with 20 stamps, each stamp weighing 850 pounds. The stamps were used to crush ore through a 30-mesh screen. Crushed ore, classified by a hydraulic separator, was loaded to vanners (a type of ore classifier) on which as much of the gold- and silver-bearing minerals were collected as possible. Under normal conditions, 63 percent of silver and 83 percent of gold were recovered in the concentrates from vanners. The tailings from the vanners were transported to thickening cones and then to amalgamating pans in which they were combined with mercury, copper sulphate, salt, and a small amount of lye. In a typical process, silver and gold were recovered by subjecting the amalgam to heat and evaporating the mercury. Re-condensed mercury was collected and reused. It is not clear how this process was applied at the Dewey Mine. The silver and gold recovered from the amalgam was equivalent to 28.5 percent and 11.5 percent of the total silver and gold recovered, respectively. The concentrates were shipped directly to off-site smelters (Lindgren 1899; Piper 1926). Tailings from the amalgamation process were probably discharged to piles at the mill site or directly into Jordan Creek (Wilson 1999). From 1865 to 1910, approximately 14 million ounces of silver and 113,000 ounces of gold were produced from the Dewey Mine (Piper 1926).

Currently, the on-site waste from historical mining and milling operations includes a large pile covered with a patch of vegetation at its midsection located east of the former mill building, a suspected tailing pile located west of the former mill building, and potentially contaminated soil at the mill site due to mercury use during mill operation.

2.5 SITE CHARACTERIZATION

2.5.1 Previous Investigations

In 1988, an Environmental Baseline Study, covering an area of approximately 6,400 acres, was conducted by CH2M Hill at Florida Mountain. The study was conducted in support of possible development of a gold mine in the area. As part of the study, surface water quality in Jordan Creek and its tributaries near the site was characterized, and fish tissue samples were collected. The study indicated that the water quality of Dewey Spring near the waste rock pile was impacted by historic mining activities. Results indicated high concentrations of iron, manganese, zinc, aluminum, and sulfate, as well as a pH between 5.0 and 6.5, a result of oxidation of pyrite in exposed rocks. Trace metal analysis of

surface water in Jordan Creek near the site indicated that the concentrations of copper and zinc exceeded the EPA Ambient Water Quality Criteria for copper (0.012 milligrams per liter [mg/L]) and zinc (0.011 mg/L) in water for the protection of freshwater aquatic life. Fish muscle tissue analysis indicated that cadmium (0.11 mg/kg), copper (1.22 mg/kg), mercury (0.66 mg/kg), selenium (0.8 mg/kg), and zinc (16.6 mg/kg) were present in redband trout collected from Jordan Creek near the Dewey Mine site (CH2M Hill 1988).

In 1994, an Environmental Impact Statement (EIS) was conducted at Florida Mountain in a study area similar to that investigated in the 1988 study by CH2M Hill. The purpose of the study was to evaluate possible environmental impacts from the development of a gold mine in the area. This study investigated the geology, hydrogeology, water and groundwater use, aquatic environment, botanical resources, wildlife, historical resources, and recreational use of the study area (CH2M Hill 1994). Wherever applicable, the information contained in the EIS is referenced in this report.

A mine reconnaissance and inventory was conducted by the BLM in 1995. The major cluster of mined areas was found to be in the DeLamar Mountain, Silver City, War Eagle Mountain, and South Mountain areas, and to a lesser extent in the Flint Creek area. The inventory revealed that over 90 percent of mine sites on public lands are inactive. These sites are typically less than 5 acres in area and consist of an adit or shaft with a small tailing/waste rock pile. One third of the adits observed had some form of water ponding or drainage associated with them. (E & E 1999)

At the height of mining activity in the Silver City area, hundreds of mines and eight mills were in operation. Because the milling operations required large quantities of water, the historic mills were generally located immediately adjacent to perennial streams, including Jordan Creek. At Silver City, a type of milling known as the Washoe pan process is believed to have resulted in the discharge of large quantities of elemental mercury (quicksilver) into Jordan Creek. The Idaho Historical Society estimated that one mill in Silver City contributed 2.5 tons of elemental mercury to Jordan Creek between 1866 and 1868. It is also estimated that between 0.25 ounce and 1.5 pounds of elemental mercury per ton of gold ore processed were discharged into the wastewater. (E & E 1999)

Between 1863 and 1865, 250 mining locations were recorded in the Silver City area (Adams 1969). Hundreds of mines and prospects exist along Jordan Creek upstream from Dewey Mine. Major mines include Ruby City mines, Silver City mines, Morning Star Mine, Trade Dollar Mine, Erdman Mine, and Banner Mine (Figure 2-4). A high density of mines are located in Ruby City and Silver City located 1 mile and 2 miles southeast of Dewey Mine, respectively. The history of mines along Booneville Gulch upstream from Dewey Mine is unknown (USGS 1990a, 1990b).

Between 1998 and 1999, an SI was conducted for the Jordan Creek Watershed by the START on behalf of the EPA. Sediment samples were collected in Jordan Creek and its tributaries near the site, as well as upstream and downstream from the site. The sediment sample collected in Jordan Creek just below the waste rock pile contained elevated concentrations of copper (126 mg/kg) and zinc (510 mg/kg). Mercury was not detected at this location. The sediment sample collected in Jordan Creek, approximately 0.5 mile downstream from the site, indicated elevated concentrations of mercury (3.7 mg/kg). Mercury was also detected in a sediment sample collected in Jordan Creek approximately 0.8 mile upstream from the site. In total, mercury was detected in five out of 11 sediment samples collected in Jordan Creek upstream from the site and two out of 12 sediment samples collected in Jordan Creek downstream from the site (E & E 1999).

2.5.2 START Site Visit

On June 12, 2000, the START conducted an SI reconnaissance visit at the Dewey Mine site. During the visit, the START observed waste rock throughout the site, especially along the bank of Jordan Creek. Water discharging from Dewey Spring into Jordan Creek, which flowed underneath the waste rock pile before exiting into the creek, measured a pH of 3.59. The roof of the mill was collapsed and not stable for the START to assess the contents of the building. To the northwest of the former mill foundation a suspected tailing pile was identified (Figure 2-3; E & E 2000a).

2.6 SUMMARY OF SI INVESTIGATION LOCATIONS

Sampling during the SI was conducted at those areas considered potential contamination sources and at areas that may have been contaminated by the migration of hazardous substances from sources on site.

Based on a review of historical and background information which was supplemented by the site reconnaissance visit, the following areas or features were identified for investigation under the SI (Figure 2-3):

Potential Sources:

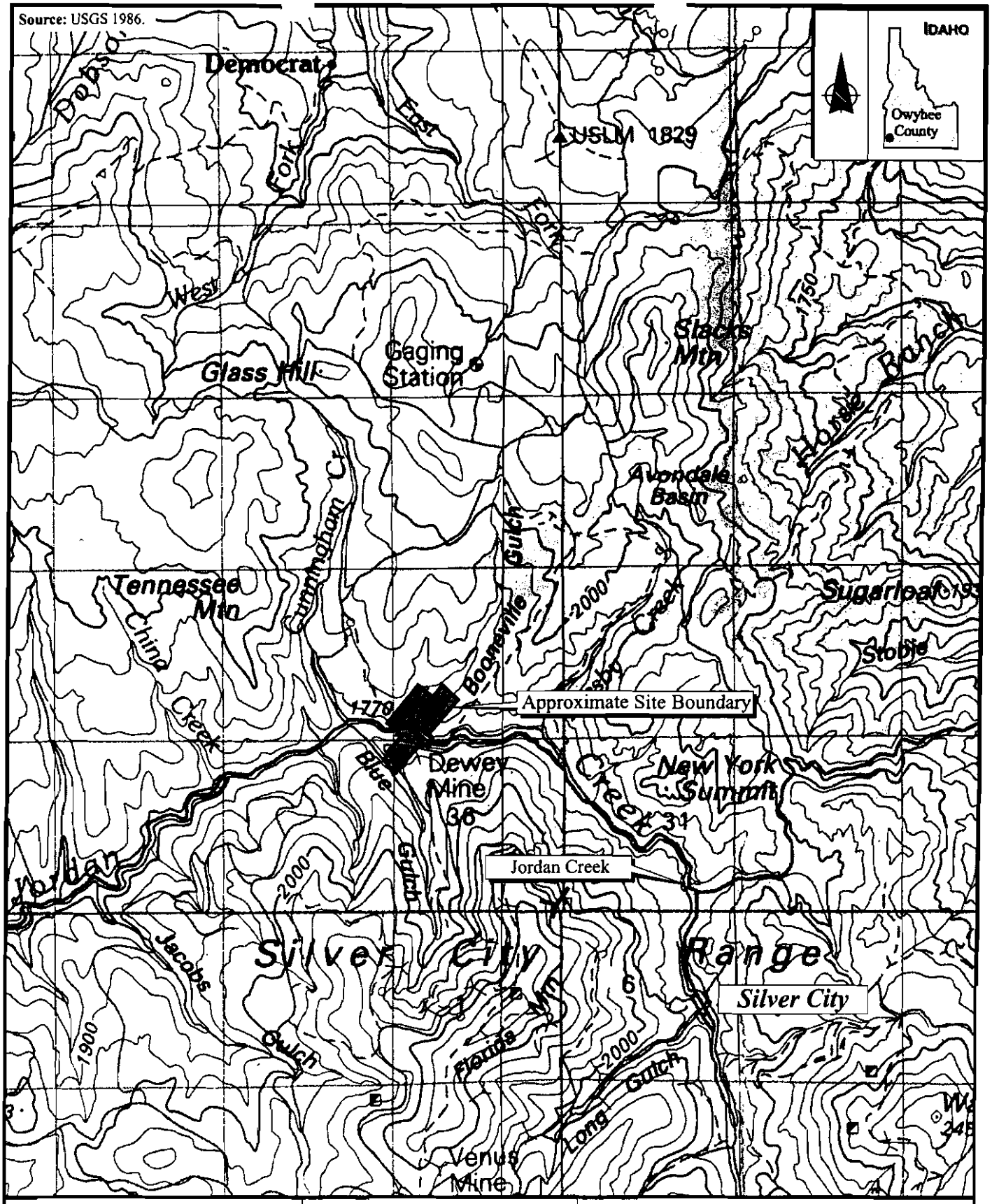
- **Tailing Pile.** A large tailing pile was deposited (date unknown) to the northwest of the former mill building. The potential contaminant of concern is mercury.
- **Waste Rock Pile.** A large waste rock pile is located on the south side of Jordan Creek, east of the former mill building foundation. The pile may contain waste rock and mill

tailings. Dewey Spring percolates through the pile and flows into Jordan Creek. The potential contaminant of concern is mercury.

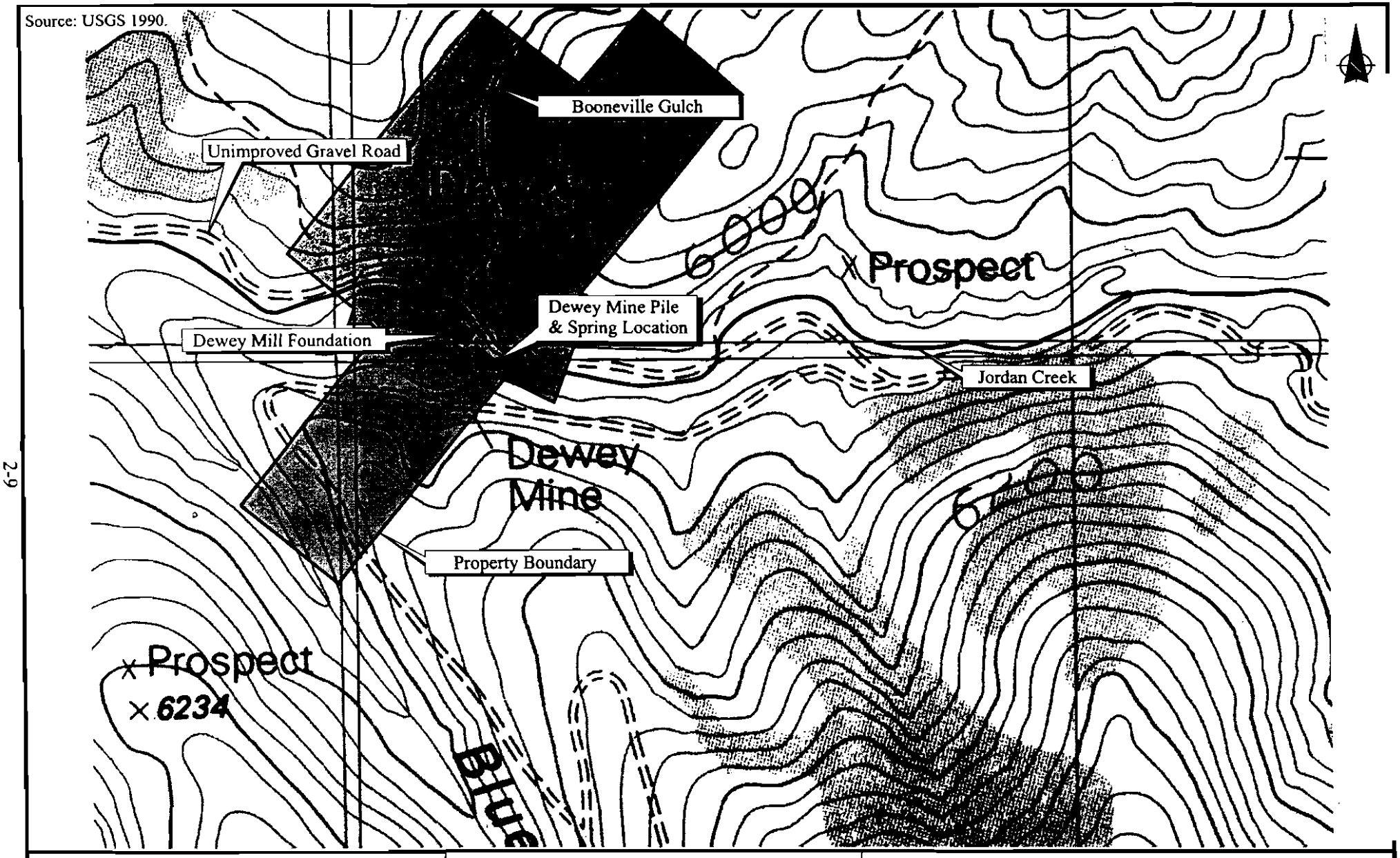
- **Source Soil.** The former Dewey Mill was located on the south side of Jordan Creek. Mercury was used at the mill to concentrate gold and silver from the vanner tailing. On-site soil may be contaminated from possible mercury spills during site operations. The potential contaminant of concern is mercury.

Potential Receptors:

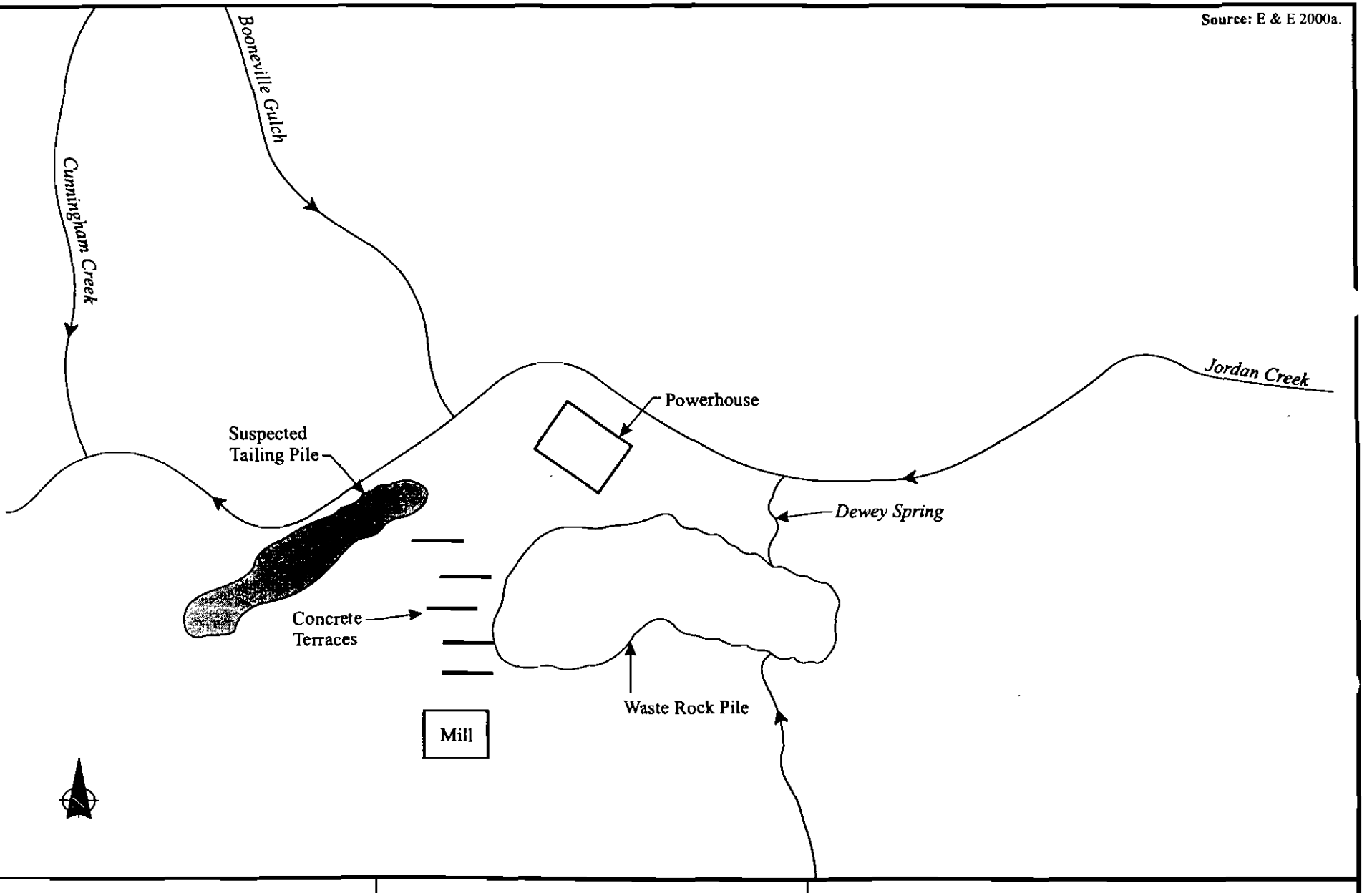
- **Jordan Creek.** Jordan Creek is located approximately 20 feet below the Dewey Mine site. Jordan Creek may be impacted by the migration of potential contaminants from sources at the Dewey Mine site.
- **Dewey Spring.** Dewey Spring flows underneath the waste rock pile and exits approximately 575 feet east of the mill foundation and may be impacted by the migration of acid rock drainage and mercury from the waste rock pile. The START recorded the pH at 3.59 in June 2000.
- **Booneville Gulch.** Booneville Gulch flows southwest and joins Jordan Creek approximately 150 feet north-northwest of the powerhouse on site. Bonneville Gulch may be contributing mercury contamination to Jordan Creek from other off-site sources not related to Dewey Mine.



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	DEWEY MINE Owyhee County, Idaho	Figure 2-1 SITE VICINITY MAP				
	0 .5 1 Approximate Scale in Miles	Drawn: AES	DATE: 9/12/00	JOB NO. DG1101SIT0	Dwg. No. DG1101 2-1	Pubs No. S553

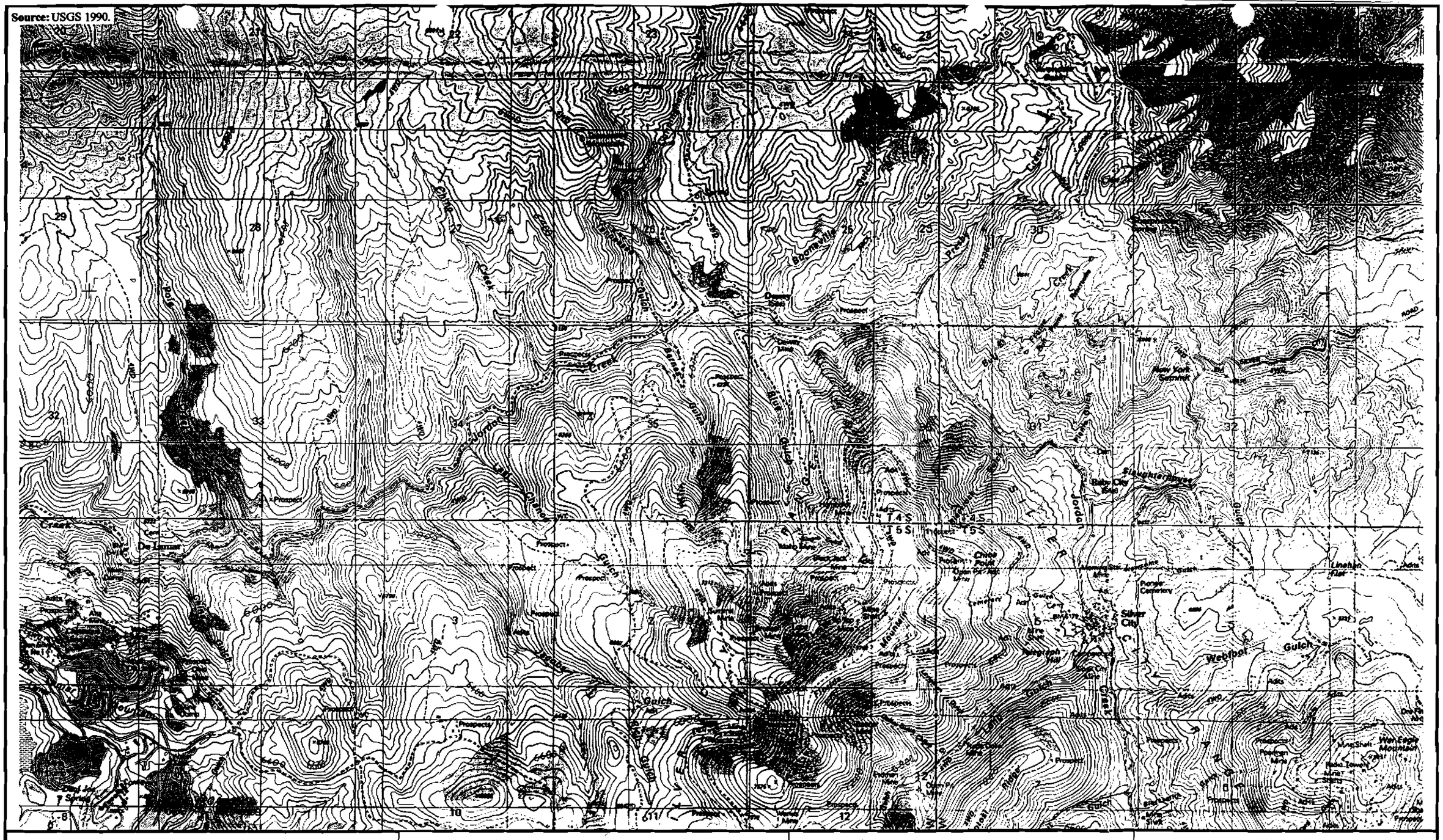


ecology and environment, inc. International Specialists in the Environment Seattle, Washington	DEWEY MINE Owyhee County, Idaho	Figure 2-2 SITE LOCATION MAP				
	0 500 1000 Approximate Scale in Feet	Drawn: AES	Date 9/12/00	Job No. DG1101SIT0	Dwg. No. DG1101 2-2	Pubs. No. S553



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	DEWEY MINE Owyhee County, Idaho	Figure 2-3 SITE MAP				
	Not to Scale	Drawn: AES	Date 9/12/00	Job No. DG1101SIT0	Dwg. No. DG1101 2-3	Pubs. No. S553

Source: USGS 1990.



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International Specialists in the Environment
Seattle, Washington

0 2000 4000
Approximate Scale in Feet

DEWEY MINE
Owyhee County, Idaho

Figure 2-4
MINE SITES UPSTREAM FROM BOONEVILLE GULCH AND JORDAN CREEK

Date:	Drawn by:	Job No.:	Dwg.No.:
9/13/00	AES	DG1101SIT0	DG1101 2-4

3. FIELD ACTIVITIES AND ANALYTICAL PROTOCOL

A sampling and quality assurance plan (SQAP) was developed by the START prior to field sampling (E & E 2000b). The SQAP was based upon a review of background information and interviews with site representatives. The SQAP describes the sampling strategy, sampling methods, and analytical program to investigate potential hazardous substance sources and potential targets. With few exceptions, the SI field activities were conducted in accordance with the approved SQAP. Deviations from the SQAP were approved by the EPA and are described when applicable in the sampling location discussions in Section 6 (source areas) and Section 7 (target areas).

The SI field sampling event was conducted from June 12 to 14, 2000. Including background samples, a total of 23 samples (11 subsurface soil samples and 12 sediment samples) were collected from on- and off-site locations. Sample types and methods of collection are described below. A summary of all samples collected for laboratory analysis under the SI is contained in Table 3-1. Photographic documentation of SI field activities is contained in Appendix A.

In addition to the EPA-assigned regional tracking number, samples were tracked with a field sample code system designed to allow easy reference to the sample's origin and type. The field sample codes applied by the START to each sample location are used in this report. Table 3-2 summarizes the field sample code. Sample locations are provided in Figures 3-1 and 3-2.

This section describes sampling methodology (Section 3.1), analytical protocol (Section 3.2), global positioning system (Section 3.3), and investigation-derived waste (IDW; Section 3.4).

3.1 SAMPLING METHODS

In general, grass, leaves, and other vegetative material; rocks; and other debris unsuitable for analysis were removed from samples before being placed into sample containers. Sample material for mercury analysis was homogenized in dedicated plastic bowls prior to containerization. Dedicated plastic scoops were used to extract, homogenize, and place sampled material into sample containers. Sampling tools (shovels) were used to remove the upper 12 inches of soil from each subsurface sample location. Decontamination of the shovels was not required as only dedicated sampling equipment was

used to collect each sample. Samples were stored on ice in coolers continuously maintained under the custody of the START personnel.

3.1.1 Subsurface Soil Samples

A total of 11 subsurface soil samples, including one background subsurface soil sample, was collected from the Dewey Mine site. The soil samples were discrete-located grab samples collected from potential on-site source areas. Subsurface soil samples were collected from 12 to 18 inches below ground surface (bgs); as discussed above, a shovel was used to remove the upper 12 inches of soil, and then a dedicated plastic scoop was used to extract the sample from the bottom of the hole. The sample was then placed into a plastic bag, where it was agitated and homogenized, and then placed into a pre-labeled sample container. After collection of the subsurface soil sample, the hole was backfilled.

3.1.2 Sediment Samples

A total of 12 sediment samples (including one background sample) were collected from Jordan Creek, Dewey Spring, Booneville Gulch, and an upstream background location on Jordan Creek. All samples were collected using dedicated plastic scoops and bowls. The transect samples were collected on the north and south sides of Jordan Creek at a depth of 0 to 6 inches. The sample collected at Dewey Spring was collected at a depth of 0 to 6 inches at the junction with Jordan Creek. The sample collected at Booneville Gulch was collected at a depth of 0 to 6 inches approximately 400 feet north of Jordan Creek. Booneville Gulch may be impacting Jordan Creek by the migration of potential contaminants from off-site sources not related to Dewey Mine. All sediment samples were homogenized in dedicated plastic bowls with excess water decanted off before the samples were placed into prelabeled sample containers. The START obtained physical parameters of the surface water at each sample location with a water quality meter that measures pH, conductivity, dissolved oxygen, salinity, and temperature. Parameters were noted in the sampling logbook.

3.2 ANALYTICAL PROTOCOL

Analytical methods applied to SI samples include Contract Laboratory Program Analytical Services ILM04.1 for mercury. This analytical suite was applied to all samples based on the sample location and expected contaminants at each location. Analysis of samples collected during the SI for mercury were performed by the EPA, Region 10, laboratory (Manchester Environmental Laboratory [MEL]) located in Port Orchard, Washington.

3.3 GLOBAL POSITIONING SYSTEM

A Trimble Pathfinder Professional global positioning system (GPS) survey unit was used by the START personnel to approximate the sample location coordinates of the SI subsurface soil and sediment samples. GPS coordinates for the subsurface soil and sediment samples were plotted onto a site map (Figures 3-1 and 3-2). Recorded GPS coordinates by sample point including horizontal precision in meters and position dilution of precision are listed in Appendix B.

3.4 INVESTIGATION-DERIVED WASTE

IDW generated during the SI sampling effort consisted of solid disposable sampling equipment. The IDW will be disposed of as non-hazardous waste at a municipal landfill by the START. No IDW generated by the START remains on site.

Table 3-1

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
DEWEY MINE SITE INSPECTION
OWYHEE COUNTY, IDAHO

EPA Regional Tracking Number	Field Number	Matrix	Sample Collection		Depth (feet bgs)	Analysis	Description
			Date	Time		Mercury	
00244451	JC01	Sediment	06/12/00	1120	0-0.5	X	Sediment sample collected on the south side of Jordan Creek approximately 100 feet northwest of the tailing pile. Gravelly sand, sub- to well-rounded.
00244452	JC02	Sediment	06/12/00	1130	0-0.5	X	Sediment sample collected on the north side of Jordan Creek approximately 100 feet northwest of the tailing pile. Light-brown gravelly sand, sub- to well-rounded.
00244453	JC03	Sediment	06/12/00	1145	0-0.5	X	Sediment sample collected on the south side of Jordan Creek approximately 200 feet northeast of the tailing pile and 375 feet north of the former mill foundation. Light-brown gravelly sand, sub- to well-rounded.
00244454	JC04	Sediment	06/12/00	1150	0-0.5	X	Sediment sample collected on the north side of Jordan Creek approximately 200 feet northeast of the tailing pile and 375 feet north of the former mill foundation. Light-brown gravelly sand, sub- to well-rounded.
00244455	JC05	Sediment	06/12/00	1205	0-0.5	X	Sediment sample collected on the south side of Jordan Creek collected upgradient from vehicle crossing and approximately 300 feet north of the waste rock pile. Light-brown gravelly sand, sub- to well-rounded.
00244456	JC06	Sediment	06/12/00	1215	0-0.5	X	Sediment sample collected on the north side of Jordan Creek collected upgradient from vehicle crossing and approximately 300 feet north of the waste rock pile. Light-brown gravelly sand, sub- to well-rounded.
00244457	JC07	Sediment	06/12/00	1310	0-0.5	X	Sediment sample collected on the south side of Jordan Creek and approximately 20 feet downstream from Dewey Spring. Light-brown gravelly sand, sub- to well-rounded.
00244458	JC08	Sediment	06/12/00	1325	0-0.5	X	Sediment sample collected on the north side of Jordan Creek and approximately 20 feet downstream from Dewey Spring. Light-brown gravelly sand, sub- to well-rounded.
00244459	DS01	Sediment	06/12/00	1330	0-0.5	X	Sediment sample collected at the entrance from Dewey Spring to Jordan Creek. Dark-brown gravelly sand, sub-angular to angular.

Key is at the end of the table.

Table 3-1 (CONTINUED)

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
DEWEY MINE SITE INSPECTION
OWYHEE COUNTY, IDAHO

EPA Regional Tracking Number	Field Number	Matrix	Sample Collection		Depth (feet bgs)	Analysis	Description
			Date	Time		Mercury	
00244460	BK01	Sediment	06/12/00	1400	0-0.5	X	Sediment sample collected on the south side of Jordan Creek approximately 1 mile upgradient from the mine site. Light-brown gravelly sand, sub- to well-rounded.
00244461	BK02	Sediment	06/12/00	1410	0-0.5	X	Sediment sample collected on the north side of Jordan Creek approximately 1 mile upgradient from the mine site. Light-brown gravelly sand, sub- to well-rounded.
00244462	BG01	Sediment	06/12/00	1446	0-0.5	X	Sediment sample collected on Booneville Gulch approximately 400 feet north of Jordan Creek. Light-brown gravelly sand, sub- to well-rounded.
00244463	PH01	Subsurface	06/12/00	1530	1-1.5	X	Four-point subsurface composite soil sample collected at all four sides of the powerhouse 12 to 18 inches bgs. Gravelly sand with cobbles.
00244464	DP01	Subsurface	06/13/00	1635	1-1.5	X	Subsurface soil sample collected at the top of the waste rock pile approximately 40 feet northeast of the former mill foundation. Gravelly sand with trace silt.
00244465	DP02	Subsurface	06/13/00	0840	1-1.5	X	Subsurface soil sample collected at the waste rock pile on the east side. Brown, loose, silty sand.
00244466	DP03	Subsurface	06/13/00	0845	1-1.5	X	Subsurface soil sample collected at the center of the waste rock pile base. Brown, loose, silty sand (dry).
00244467	DP04	Subsurface	06/13/00	0855	1-1.5	X	Subsurface soil sample collected on the west side of the waste rock pile. Loose, gravelly sand with silt (dry).
00244468	MF02	Subsurface	06/13/00	0910	1-1.5	X	Subsurface soil sample collected at the first terrace were small metal balls were located. Brown, loose, silty sand (dry).
00244469	MF01	Subsurface	06/13/00	0920	1-1.5	X	Subsurface soil sample collected at the base of the former mill foundation at suspected location of conveyor belt. Tan to light-brown, micaceous, silty sand.
00244470	MF03	Subsurface	06/13/00	0935	1-1.5	X	Subsurface soil sample collected at the base of all terraces, approximately 100 feet west of the powerhouse. Brown, loose, micaceous silty sand (dry).

Key is at the end of the table.

Table 3-1 (CONTINUED)

SAMPLE COLLECTION AND ANALYTICAL SUMMARY
DEWEY MINE SITE INSPECTION
OWYHEE COUNTY, IDAHO

EPA Regional Tracking Number	Field Number	Matrix	Sample Collection		Depth (feet bgs)	Analysis	Description
			Date	Time		Mercury	
00244471	TP01	Subsurface	06/13/00	1015	1-1.5	X	Five-point composite subsurface soil sample collected at the suspected tailing pile. Light-brown, loose, micaceous sand with gravel, trace silt.
00244472	TW01	Subsurface	06/13/00	1055	1-1.5	X	Subsurface soil sample collected at the base of the waste rock pile approximately 75 feet south of Jordan Creek. Loose, micaceous, gravelly sand, coarse gravel (dry).
00244473	BK03	Subsurface	06/13/00	1250	1-1.5	X	Subsurface background soil sample located on the north side of the site approximately 800 feet upgradient and north of the mine site. Brown, loose, loess-like sandy silt with clay, slight plasticity (dry).

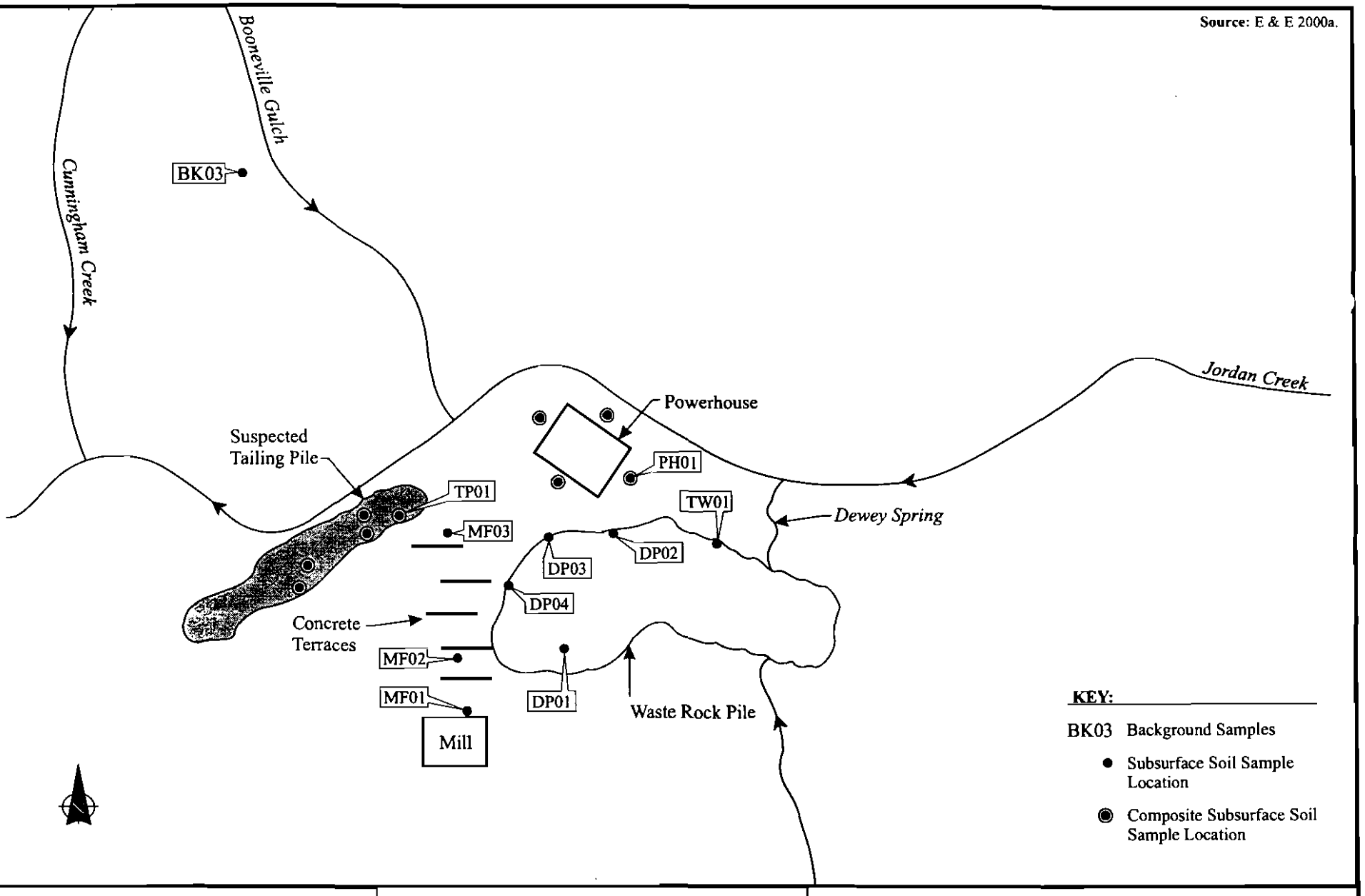
Key:

BG = Booneville Gulch.
bgs = Below ground surface.
BK = Background.
DP = Dewey Pile.
DS = Dewey Spring.
JC = Jordan Creek.
MF = Mill foundation.
PH = Powerhouse.
TP = Tailing pile.
TW = Waste rock wall.

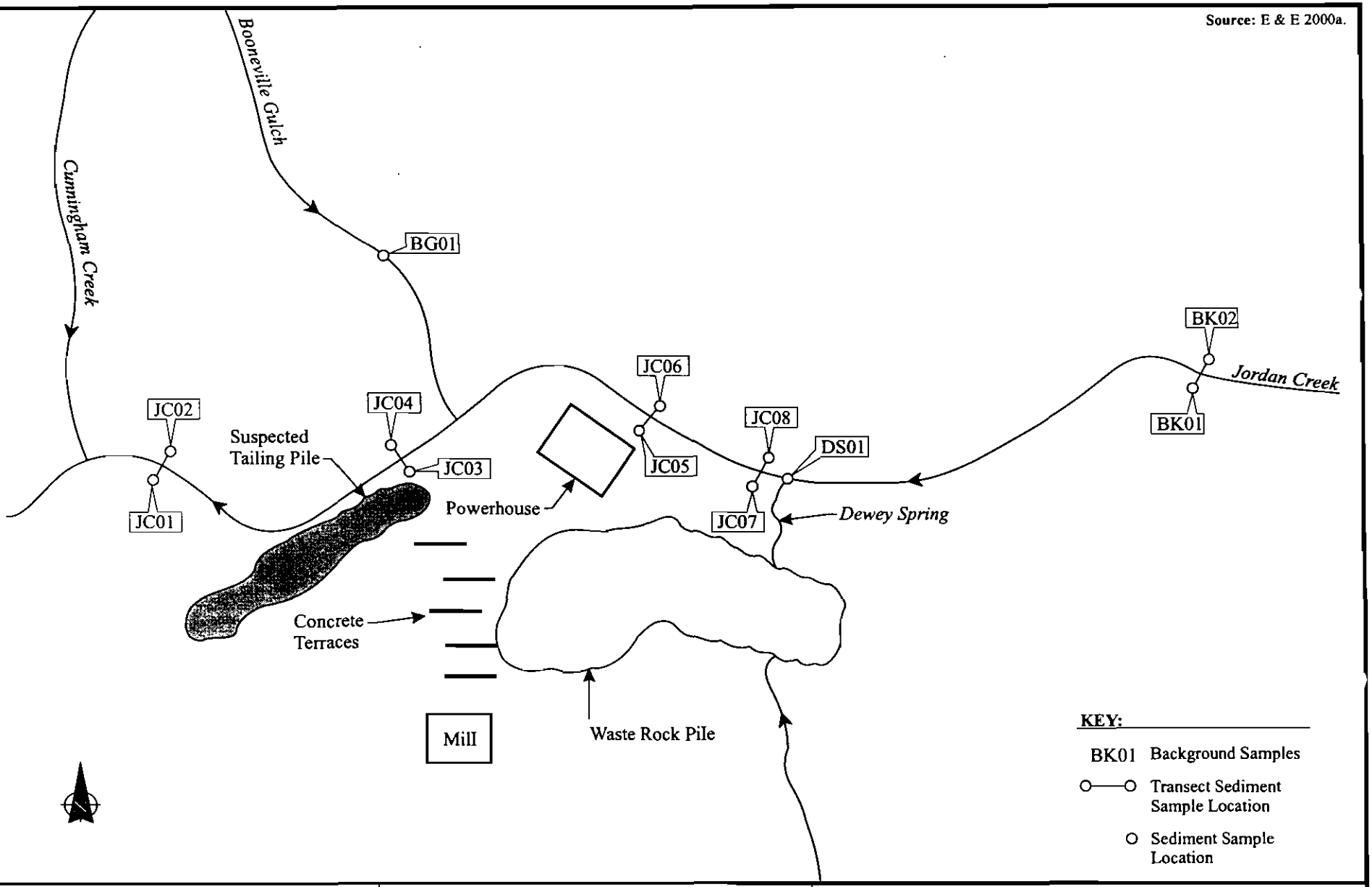
Table 3-2

SAMPLE CODING
DEWEY MINE SITE
OWYHEE COUNTY, IDAHO

Digits	Descriptions	Code Example
1,2	Source Code	BG (Booneville Gulch) BK (Background) JC (Jordan Creek) DP (Dewey Pile, Waste Rock Pile) DS (Dewey Spring) MF (Mill Foundation) PH (Powerhouse) TP (Tailing Pile) TW (Tailing Wall)
3,4	Consecutive Sample Number	01 (First Sample of Source Code)
5,6	Matrix Code	SB (Subsurface Soil) SD (Sediment)



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	DEWEY MINE Owyhee County, Idaho	Figure 3-1 SUBSURFACE SOIL SAMPLE LOCATION MAP				
	Not to Scale	Drawn: AES	Date 9/12/00	Job No. DG1101SIT0	Dwg. No. DG1101 3-1	Pubs. No. S553



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	DEWEY MINE Owyhee County, Idaho	Figure 3-2 SEDIMENT SAMPLE LOCATION MAP				
	Not to Scale	Drawn: AES	Date 9/12/00	Job No. DG1101SIT0	Dwg. No. DG1101 3-2	Pubs. No. S553

4. QUALITY ASSURANCE/QUALITY CONTROL

QA/QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of sampling equipment, glassware, and reagents. Specific QC requirements for laboratory analyses are incorporated in the *USEPA Contract Laboratory Program Statement of Work for Inorganics Analyses, Multi-Media, Multi-Concentration* (EPA 1991). These QC requirements, or equivalent requirements, were followed for analytical work on the Dewey Mine SI. This section describes the QA/QC measures taken for the SI and provides an evaluation of the usability of data presented in this report.

All samples were collected following the guidance of the SQAP (E & E 2000b) for the field activities. Soil/sediment mercury analyses were performed at the MEL following EPA Method 245.5-M.

All data from analyses performed at the MEL were reviewed and validated by EPA chemists. Data qualifiers were applied as necessary according to the following EPA (1994) guidance:

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.*

When necessary, MEL-specific QC criteria were applied to the data. Copies of the data QA memoranda are included in Appendix C.

4.1 SATISFACTION OF DATA QUALITY OBJECTIVES

The following EPA (1993) guidance document was used to establish data quality objectives (DQOs) for this SI:

- *Data Quality Objectives Process for Superfund, Interim Final Guidance,* EPA 540-R-93-071.

The EPA Task Monitor determined that definitive data without error and bias determination would be used for the sampling and analyses conducted during the field activities. The data quality achieved during fieldwork produced sufficient data that meet the DQOs stated in the SQAP (E & E 2000b).

A detailed discussion of the SI objectives that were accomplished is presented in later sections.

4.2 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

QA samples (trip and rinsate blanks) were not required for this project. Trip blanks are not required for inorganic analyses, and because all sample collection equipment was dedicated, rinsate blanks were not required. QC samples included matrix spike(MS)/duplicate(DUP) samples at a rate of one MS/DUP per 20 samples per matrix.

4.3 PROJECT-SPECIFIC DATA QUALITY OBJECTIVES

The laboratory data were reviewed to ensure that DQOs for the project were met. The laboratory and the field team were able to meet DQOs for the project. The following describes the laboratory's ability to meet project DQOs for precision, accuracy, and completeness and the field team's ability to meet project DQOs for representativeness and comparability.

4.3.1 Precision

Precision measures the reproducibility of the sampling and analytical methodology. Laboratory and field precision is defined as the relative percent difference (RPD) between duplicate sample analyses. The laboratory duplicate samples measure the precision of the analytical method.

The RPD values were reviewed for all laboratory duplicate samples. All RPD results were within QC limits. The DQO for precision was met.

4.3.2 Accuracy

Accuracy measures the reproducibility of the sampling and analytical methodology. Laboratory accuracy is defined as the MS percent recovery (%R). All matrix spike %R values were within QC limits. Overall, the project DQO for accuracy was met.

4.3.3 Completeness

Data completeness is defined as the percentage of usable data (usable data divided by total possible data). All laboratory data were reviewed for usability and all data (100 percent) were determined to be usable. The project DQO for completeness of 90 percent was met.

4.3.4 Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or environmental condition. The number and selection of samples were determined in the field to account accurately for site variations and sample matrices. The DQOs for representativeness were met.

4.3.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this site followed applicable field sampling techniques and specific analytical methodology. The DQOs for comparability were met.

4.4 LABORATORY QUALITY ASSURANCE/QUALITY CONTROL PARAMETERS

The laboratory data also were reviewed for holding times and laboratory blank samples. These QA/QC parameters are summarized below. In general, the laboratory QA/QC parameters were considered acceptable.

4.4.1 Holding Times

All samples were analyzed within holding time limits.

4.4.2 Laboratory Blanks

All laboratory blanks met the frequency criteria. Mercury was not detected in the laboratory blanks.

5. ANALYTICAL RESULTS REPORTING AND BACKGROUND SAMPLES

This section describes the reporting and methods applied to analytical results presented in Sections 6 and 7 of this report, and discusses background locations and sample results. Table 3-1 lists all samples collected for laboratory analysis.

5.1 ANALYTICAL RESULTS EVALUATION CRITERIA

Analytical results presented in the summary tables in Sections 6 and 7 show all compounds detected above laboratory detection limits (DL) in bold type. Analytical results indicating significant concentrations of contaminants in source samples (Section 6) with respect to background concentrations are shown underlined and in bold type. Similarly, analytical results indicating elevated concentrations of contaminants in target samples (Section 7) with respect to background concentrations also are shown underlined and in bold type. For the purposes of this investigation, significant/elevated concentrations are those concentrations that are:

- Equal to or greater than the sample's contract required quantitation limit/contract required detection limit (CRQL/CRDL) or the sample quantitation limit (SQL) when a non-Contract Laboratory Program laboratory was used; and
- Equal to or greater than the background sample's CRQL/CRDL or SQL when the background concentration is below detection limits; or
- At least three times greater than the highest background concentration when the background concentration equals or exceeds the detection limits.

The analytical summary tables present all detected compounds, but only those detected analytes at potential sources or in targets meeting the significant/elevated concentration criteria are discussed in this report. All detected concentrations also are discussed for background samples.

All hazardous substances detected at target locations and meeting evaluation criteria can be used to document an observed release from the site to the target.

5.1.1 Sample Results Reporting

When mercury is detected or is significant/elevated in Sections 6 and 7, the concentration ranges are given.

5.2 BACKGROUND SAMPLES

Background samples were collected for each of the naturally occurring media (subsurface soil and sediment) from which SI samples were collected. Results for the appropriate background sample(s) are shown in the first column(s) in the analytical results summary tables in Section 6 and 7 for comparison against source or target results.

5.2.1 Background Subsurface Soil

5.2.1.1 Sample Locations

One off-site background subsurface soil sample (BK03) was collected at 12 to 18 inches bgs. Sample BK03SB was collected from native soil located approximately 775 feet north of the site (Figure 3-1). The background soil type matched those of samples collected on site and was used when evaluating release sample results.

5.2.1.2 Sample Results

Mercury was detected in background sample BK03 at 0.110 mg/kg. The result of the background subsurface soil sample is included in Table 6-1 presented in Section 6.

5.2.2 Background Sediment

5.2.2.1 Sample Locations

Two background sediment transect samples (BK01 and BK02) were collected approximately one mile upstream from Dewey Mine on Jordan Creek (Figure 3-2). The samples were collected from a depth of 0 to 6 inches bgs and the matrix matched the sediment samples collected on site. BK01 was collected on the south side of Jordan Creek and BK02 was collected on the north side of Jordan Creek.

5.2.2.2 Sample Results

Mercury was detected in BK01 at 0.656 mg/kg and in BK02 at 4.44 mg/kg. The results of the background sediment samples are included in Tables 7-1, 7-2, and 7-3.

6. POTENTIAL SOURCES

This section describes sample locations and analytical results of SI samples obtained from potential sources. The sampling locations, sampling rationale, and analytical results are summarized in the following sections; Tables 6-1 and 6-2 summarize analytes detected at each potential source location investigated. Laboratory data sheets of analytical results for all samples are provided in Appendix C.

6.1 TAILING PILE

6.1.1 Sample Locations

One five-point composite subsurface soil sample (TP01) was collected from the suspected tailing pile area located northwest of the former mill foundation to determine potential contaminants associated with this source (Figure 3-1). The subsurface soil appeared to be sandy with gravel. There was trace silt and the soil was dry and micaceous. The volume of the pile is estimated to be 3,436 yd^3 (0.7102 acre).

6.1.2 Sample Results

The sample result is summarized in Table 6-1. Mercury was detected at 17.9 mg/kg.

6.2 WASTE ROCK PILE

6.2.1 Sample Locations

Five subsurface soil samples (DP01, DP02, DP03, DP04, and TW01) were collected from the waste rock pile area located east of the former mill foundation extending approximately 500 feet to the east and 75 feet down towards Jordan Creek (Figure 3-1). The samples were collected to determine potential contaminants associated with this source. The samples appeared to be a gravelly sand with silt. No odor was noted during sample collection. The pile is estimated to be 12,410 yd^3 in volume.

6.2.2 Sample Results

Sample results are summarized in Table 6-1. Mercury was detected at concentrations in the samples ranging from 0.636 mg/kg to 34.3 mg/kg.

6.3 SOURCE SOIL

6.3.1 Sample Location

Three subsurface soil samples (MF01, MF02, and MF03) were collected from soil in front of the former mill foundation and two terraces (Figure 3-1). The samples were collected to determine if mercury may have migrated. The subsurface soils appeared to be sandy silt and micaceous. No odor was noted during sample collection. One four-point composite subsurface soil sample (PH01) was collected from each side of the powerhouse building located northeast of the former mill foundation. The sample was collected to determine if mercury may have migrated. The soils appeared to be gravelly sand with cobbles. No odor was noted during sample collection. The area of this source is assumed to be 1 square foot.

6.3.2 Sample Results

Sample results are summarized in Table 6-1. Mercury was detected at concentrations in the samples ranging from 1.08 mg/kg to 247 mg/kg.

Table 6-1

SOURCE TAILINGS, WASTE ROCK, AND SOIL SAMPLES
ANALYTICAL RESULTS SUMMARY
DEWEY MINE
OWYHEE COUNTY, IDAHO

EPA Sample ID	00244473	00244463	00244464	00244465	00244466	00244467	00244468	00244469	00244470	00244471	00244472
Sample Station ID	BK03	PH01	DP01	DP02	DP03	DP04	MF02	MF01	MF03	TP01	TW01
Depth	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5
	BACKGROUND	SOURCE									
Mercury (mg/kg)	**0.11**	**6.35**	**34.3**	**3.01**	**7.68**	**1.92**	**67.3**	**1.08**	**247**	**17.9**	**0.636**

Note: **Bold** type indicates a sample concentration above the detection limit. Underlined type indicates a sample concentration that is significant as defined in Section 5.

Key

BK = Background.
DP = Dewey pile waste rock
ID = Identification.
MF = Mill foundation.
mg/kg = Milligrams per kilogram
PH = Powerhouse.
TP = Tailing pile.
TW = Waste rock wall.

7. MIGRATION/EXPOSURE PATHWAYS AND TARGETS

The following sections describe migration/exposure pathways and potential targets within the site's range of influence (Figure 7-1). Analytical data QA forms from laboratory analyses are provided in Appendix C. This section discusses the groundwater migration pathway (7.1), surface water migration pathway (Section 7.2), soil exposure pathway (Section 7.3), and air migration pathway (Section 7.4).

7.1 GROUNDWATER MIGRATION PATHWAY

The upper Jordan Creek watershed is underlain by a Cretaceous batholith composed primarily of granodiorite. The batholith is covered by flood basalts and a series of basaltic and rhyolitic flows and tuffs of the Snake River Plain. These rock units reportedly occur up to 2,000 feet in thickness in the site vicinity. Between some of the basalt flow units are discontinuous sedimentary units that formed between eruption episodes. These sedimentary units are composed of coal and clayey lake deposits. The best developed sedimentary units overlie the initial flood basalt units covering the granitic batholith. The area has been extensively faulted and jointed from tectonic events associated with the formation of the Basin and Range province. Post-volcanic deposition in the site vicinity includes undifferentiated fan and terrace gravels, colluvium, and alluvial deposits resulting from the weathering of local basaltic flows. These unconsolidated units are most significant at the base of mountain slopes and within the perennial stream valleys (CH2M Hill 1994).

In the site area, groundwater occurs in fractures and joints in the basaltic flows and may exist in porous zones of the flows created as the rock cooled. Shallow groundwater zones may also exist in the near-surface weathered rock and in colluvial and alluvial deposits in the stream valleys. Previous studies in the area have documented that bedrock groundwater flow direction closely follows surface topography. Typical hydraulic conductivities for groundwater in the bedrock units near the site range from 10^{-4} to 1 foot per day. There is significant interaction between groundwater and surface water in the Jordan Creek Valley. Jordan Creek and many of its tributaries are spring-fed, thus constituting groundwater discharge areas. Most of these springs are located along faults within the basaltic rocks underlying the site area (CH2M Hill 1994). The average annual precipitation and the two-year, 24-hour rainfall event recorded at the nearest station (Silver City) are approximately 22.3 inches and 2.75 inches, respectively (WRCC 1998).

Two domestic wells are located within a 4-mile radius of the site (Table 7-1; IDWR various dates). These two domestic wells are located in Silver City, approximately 2.1 and 2.6 miles southeast of the site, respectively. The well depths could not be determined from the well construction logs. The population served within each distance ring is provided in Table 7-2. Within a 4-mile radius of the site, groundwater is used for commercial crop irrigation and livestock watering (IDWR 1999). The site is not located in a wellhead protection area (EPA 1999). On average, there are approximately three people per household (2.84; DOC 1990).

7.2 SURFACE WATER MIGRATION PATHWAY

This section presents the pathway description, targets, sample locations, and sample results for the surface water migration pathway.

7.2.1 Pathway Description

Jordan Creek is a perennial stream which originates from springs in the Owyhee Mountains of southwest Idaho. From the headwaters, the creek flows northward approximately 4 miles to Silver City, then further northwest, approximately 3 miles to the Dewey Mine site. It then continues westward, approximately 6 miles through De Lamar, where it turns south and then west through Jordan Valley in Malheur County, Oregon, and ultimately flows into the Owyhee River in southwestern Oregon, approximately 60 miles downstream from the site. The flow rate of Jordan Creek in March 1986 was 17 cubic feet per second measured approximately 0.5 mile downstream from the site (CH2M Hill 1994).

The site is located approximately 20 feet above Jordan Creek. Surface water runoff occurs mainly in the form of snowmelt which discharges to Jordan Creek through overland flow. The upland drainage area of the site is estimated to be 10 acres (USGS 1990a). The surficial soil type consists of 0 to 4 inches of brown, bouldery, coarse sandy loam; 4 to 15 inches of brown and pale-brown, gravelly, coarse sandy loam; and 15 to 18 inches of pale-brown, very gravelly, coarse sandy loam (Johnson 1999). The permeability of the soil is moderate to moderately high.

The probable point of entry (PPE) exists in Jordan Creek directly in front of the waste rock pile and the mill site. The site's 15-mile surface water target distance limit (TDL) encompasses 15 miles of Jordan Creek downstream from the PPE (Figure 7-1). Flood frequency data are not available for this area, although it appears possible that Jordan Creek may have the capacity to flood its banks and the adjacent road during high flow, based on its shallow banks (approximately 1 foot in height) and the relatively flat terrain between the river and the road.

7.2.2 Targets

Jordan Creek is not used for domestic drinking water within the 15-mile TDL. Local residents outside the 4-mile radius draw drinking water either from groundwater or springs (IDWR 1999). Occasionally, campers or hunters may obtain drinking water from the creek (E & E 1999). Transient population values are not known. Within the 15-mile TDL, Jordan Creek is used for commercial livestock watering and commercial food crop irrigation (IDWR 1999).

Sport fishing is conducted in Jordan Creek in the vicinity (within 1 mile) of the site since the location is very suitable for fishing (CH2M Hill 1994). Redband trout (*Oncorhynchus mykiss gairdneri*) and hatchery rainbow trout (*Oncorhynchus mykiss*) make up the majority of the catch. Each year, the Idaho Department of Fish and Game (IDFG) stocks Jordan Creek with approximately 2,000 hatchery-reared rainbow trout. Virtually all of the hatchery trout are caught each year, along with a large number of redband trout. The catch ratio is approximately three redband trout to one hatchery rainbow trout for an approximate catch of 6,000 redband trout (CH2M Hill 1994). Assuming a weight of 1 pound per fish, the total sport fishing catch of hatchery-reared and resident redband trout would be approximately 8,000 pounds per year.

No federally listed threatened or endangered species are present in Jordan Creek within the 15-mile TDL. Redband trout is the most abundant species in Jordan Creek within the 15-mile TDL. Redband trout have been designated a sensitive species by the Bureau of Land Management, a species of concern by IDFG, and were proposed to be listed federally as a threatened species in 1999 (CH2M Hill 1994). No ruling has been made. The segment of Jordan Creek near the site is a spawning and rearing area critical for the maintenance of redband trout (Flatter 1999).

According to National Wetland Inventory maps, at least 8 miles of scrub/shrub palustrine wetland frontage is located along Jordan Creek within the 15-mile TDL. The nearest wetland frontage is located approximately 8 miles downstream from the site (USFWS 1991, 1992).

7.2.3 Sample Locations

Twelve sediment samples were collected from Jordan Creek, Dewey Spring, and Booneville Gulch (Figure 3-2). The sediment samples were collected from locations downstream, adjacent to, and upstream from Dewey Mine in Jordan Creek, Dewey Spring, and Booneville Gulch. The Jordan Creek sediment samples were collected on transects perpendicular to the shore of the creek; each transect contained two sample locations. The samples were collected at the creek bank on each transect.

The Dewey Spring sediment sample (DS01) was collected at the junction of Jordan Creek. The Booneville Gulch sediment sample (BG01) was collected approximately 400 feet north of Jordan Creek.

7.2.4 Sediment Sample Results

Sample results are summarized in Table 7-4. Mercury was not detected at elevated concentrations.

7.3 SOIL EXPOSURE PATHWAY

The site is not fenced and is accessible by an unimproved gravel road. No residence, schools, or day care centers are located within 200 feet of the site. No workers are present at the site (Wilson 1999). The nearest resident is located between 0.5 and 1 mile from the site (E & E 1999). The area in the vicinity of the site is popular for recreational use, including camping, hiking, horseback riding, hunting, and fishing. Visitors' interests are centered around Silver City, approximately 2 miles from the site (CH2M Hill 1994). Commercial livestock grazing occurs at the site (Gillespie 2000). No terrestrial sensitive environments are located on the mine site (IDFG 1999). The residential population within a 1-mile travel distance is provided in Table 7-2.

Soil containing elevated concentrations of mercury has been documented within 0 and 2 feet bgs at source areas at the site.

7.4 AIR MIGRATION PATHWAY

Nine individuals reside within 4 miles of the site (Table 7-2), and the resident closest to the site is located between 0.5 and 1 mile of the site. The area in the vicinity of the site is popular for recreational use, including camping, hiking, horseback riding, hunting, and fishing. Visitor's interests are centered around Silver City, approximately 2 miles from the site (CH2M Hill 1994). No terrestrial sensitive environments or wetland acreage are located within the 4-mile TDL of the mine site (IDFG 1999). The resident population within the 4-mile radius of the site is provided in Table 7-2. Commercial livestock grazing occurs within the 4-mile TDL and within a 0.5 mile radius of Dewey Mine (CH2M Hill 1994).

Table 7-1

GROUNDWATER DRINKING WATER POPULATION WITHIN A 4-MILE RADIUS
DEWEY MINE SITE
OWYHEE COUNTY, IDAHO

DISTANCE (MILES)	NUMBER OF WELLS	NUMBER OF PEOPLE PER HOUSEHOLD*	POPULATION SERVED
0.5 to 1	0	2.84	0
1 to 2	2	2.84	6
2 to 3	0	2.84	0
3 to 4	0	2.84	0
TOTAL	**2**	-	**6**

Source: IDWR various dates.

* Persons per household is based on an average of 2.84 in Owyhee County, Idaho (DOC 1990).

Table 7-2

RESIDENT POPULATION WITHIN 1-MILE TRAVEL DISTANCE
DEWEY MINE
OWYHEE COUNTY, IDAHO

DISTANCE (MILES)	POPULATION
0 - 0.25	0
0.25 to 0.5	0
0.5 to 1	1
Total	1

Source: EPA 1999.

Table 7-3

RESIDENT POPULATION WITHIN 4-MILE RADIUS
DEWEY MINE
OWYHEE COUNTY, IDAHO

DISTANCE (MILES)	POPULATION
0 - 0.25	0
0.25 to 0.5	0
0.5 to 1	1
1 to 2	2
2 to 3	3
3 to 4	3
Total	9

Source: EPA 1999.

Table 7-4

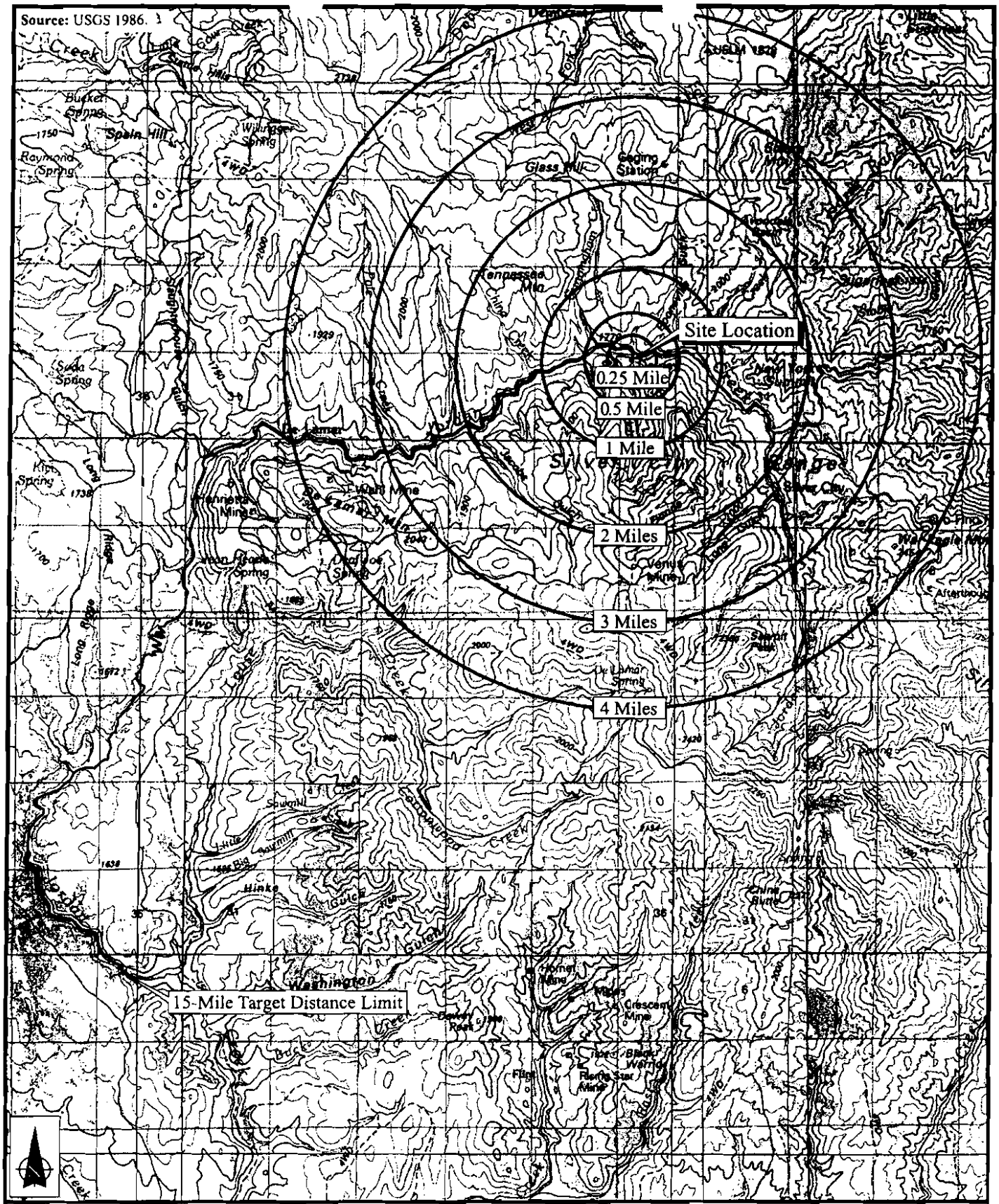
JORDAN CREEK AND DEWEY SPRING SEDIMENT SAMPLES ANALYTICAL RESULTS SUMMARY
DEWEY MINE
OWYHEE COUNTY, IDAHO

EPA Sample ID	00244460	00244462	00244451	00244453	00244461	00244462	00244452	00244454	00244460	00244455	00244457	00244459	00244461	00244456	00244458
Sample Station ID	BK01	BG01	JC01	JC03	BK02	BG01	JC02	JC04	BK01	JC05	JC07	DS01	BK02	JC06	JC08
Location of Sample	South Side JC	BG	South Side JC		North Side JC	BG	North Side JC		South Side JC	South Side JC		South Side JC at DS	North Side JC	North Side JC	
Depth	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
	BACKGROUND	BOONEVILLE GULCH CONTRIBUTION	RELEASE		BACKGROUND	BOONEVILLE GULCH CONTRIBUTION	RELEASE		BACKGROUND	RELEASE			BACKGROUND	RELEASE	
Mercury (mg/kg)	**0.656**	**0.03**	**1.38**	**1.22**	**4.44**	**0.03**	**0.431**	**1.1**	**0.656**	**0.579**	**1.94**	**1.51**	**4.44**	**0.876**	**0.716**

Note: Bold type indicates a sample concentration above the detection limit. Underlined type indicates a sample concentration that is significant as defined in Section 5.

Key.

BG = Booneville Gulch
BK = Background
DS = Dewey Spring.
ID = Identification
JC = Jordan Creek.
mg/kg = Milligrams per kilogram.



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Seattle, Washington

DEWEY MINE
Owyhee County, Idaho

Figure 7-1
4-MILE RADIUS AND 15-MILE DOWNSTREAM MAP

0 1 2
Approximate Scale in Miles

Drawn:	DATE:	JOB NO.	Dwg. No.	Pubs No.
AES	9/12/00	DG1101SIT0	DG1101 7-1	S553

8. SUMMARY AND CONCLUSIONS

In June 2000, the START conducted SI sampling activities at the Dewey Mine site located in Owyhee County, Idaho.

The SI involved the collection of samples from potential hazardous substance sources on site and from target areas potentially impacted through contaminant migration. A total of 23 samples were collected for the SI, including background samples. Samples were collected from on-site soil and from sediments in target areas. Samples were analyzed by the MEL. Section 8.1 summarizes the potential source analytical sample results for the soil exposure pathway. Section 8.2 summarizes the target analytical sample results for the surface water pathway. Section 8.3 presents the conclusions of the SI.

8.1 SOURCES

Samples were collected from three on-site soil source areas including the tailing pile, waste rock pile, and soil surrounding the former mill foundation and powerhouse.

Mercury was present in all of the source soil/tailing/waste rock samples at significant concentrations. The highest mercury concentration detected in the SI sampling event was present at the lowest terrace in front of the former mill foundation (MF03), approximately 100 feet west of the powerhouse. The waste rock pile contained significant concentrations of mercury, indicating that contaminated tailings are also present in the waste rock pile.

8.2 TARGETS

Samples were collected from suspected targets along potential surface water migration pathways, including Jordan Creek, Dewey Spring, and Booneville Gulch.

The sediment samples collected at Jordan Creek did not contain mercury at elevated concentrations. The sediment sample collected in Dewey Spring did not contain mercury at elevated concentrations; however, the pH was documented at 3.59.

A contribution sediment sample was collected in Booneville Gulch to determine if off-site source mercury contamination was contributing to Jordan Creek. The sample (BG01) was compared, in addition to the Jordan Creek background samples (BK01 and BK02), to four sediment samples (JC01, JC02, JC03, and JC04) which were collected downgradient from Booneville Gulch. The Booneville Gulch sediment sample did not contain mercury at elevated concentrations.

One sediment sample was collected at the junction of Jordan Creek and Dewey Spring (DS01). Mercury was not detected at an elevated concentration.

8.3 CONCLUSIONS

Results of the SI indicate that the Dewey Mine site is a source of mercury. The SI documented that significant levels of mercury were present in all on-site soil samples. There were no elevated mercury detections in the surface water pathways. Although the human population in the area is small, the unsecured tailing pile, waste rock pile, former mill foundation, and powerhouse which contain elevated levels of mercury are fully accessible.

Due to the presence of hundreds of mine and prospect sites upstream from Dewey Mine on Jordan Creek and possibly Booneville Gulch, there exists the potential that the background samples collected in these two water pathways are being impacted by mercury from off-site sources. These numerous mine and prospect sites may have adopted mercury methods in their mining operations which may be contributing to the mercury contamination found along Jordan Creek.

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APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPH IDENTIFICATION SHEET

Camera Serial No.: 4176236 **TDD No.: 99-07-0011**
Lens Type: PENTAX Zoom 90-WR **Site Name: Dewey Mine**

Photo	Date	Time	By	Direction	Description
1-1	6/12/00	1120	LD	NE	Sample 00244451, location JC01 on south side of Jordan Creek approximately 100 feet northwest of the tailing pile.
1-2	6/12/00	1130	LD	NE	Sample 00244452, location JC02 on north side of Jordan Creek 100 feet northwest of the tailing pile.
1-3	6/12/00	1145	LD	N	Sample 00244453, location JC03 on south side of Jordan Creek approximately 200 feet northeast of the tailing pile and 375 feet north of the former mill foundation.
1-4	6/12/00	1150	LD	N	Sample 00244454, location JC04 on north side of Jordan Creek approximately 200 feet northeast of the tailing pile and 375 feet north of the former mill foundation.
1-5	6/12/00	1205	LD	NW	Sample 00244455, location JC05 on south side of Jordan Creek collected upgradient from vehicle crossing and approximately 300 feet north of the waste rock pile.
1-6	6/12/00	1215	LD	NW	Sample 0024456, location JC06 on north side of Jordan Creek collected upgradient from vehicle crossing and approximately 300 feet north of the waste rock pile.
1-7	6/12/00	1310	LD	N	Sample 00244457, location JC07 on south side of Jordan Creek and approximately 20 feet downstream from Dewey Spring.
1-8	6/12/00	1325	LD	N	Sample 00244458, location JC08 on north side of Jordan Creek and approximately 20 feet downstream from Dewey Spring.
1-9	6/12/00	1330	LD	SE	Sample 00244459, location DS01 at entrance from Dewey Spring to Jordan Creek flowing at approximately 2 gpm.
1-10	6/12/00	1335	LD	S	Uphill view of Dewey Spring underneath waste rock.
1-11	6/12/00	1336	LD	W	View west of Jordan Creek from Dewey Spring entrance into Jordan Creek.
1-12	6/12/00	1337	LD	down	View of white froth by sample JC07.
1-13	6/12/00	1400	LD	NE	Sample 00244460, location BK01 on south side of Jordan Creek approximately 1 mile upgradient of the mine site. Location noted as background, no stained soil or stressed vegetation were noted.
1-14	6/12/00	1410	LD	NE	Sample 00244461, location BK-02 on north side of Jordan Creek approximately 1 mile upgradient from the mine site. Location noted as background, no stained soil or stressed vegetation were noted.
1-15	6/12/00	1415	LD	down	Photo of soda can in Jordan Creek to document the presence of human activity.
1-16	6/12/00	1430	LD	N	Possible adit belonging to Prospect approximately 80 feet north of Jordan Creek.
1-17	6/12/00	1435	LD	S	Dilapidated building up 100 feet and east of the Dewey Mine with weathered rock staged around it.
1-18	6/12/00	1440	LD	SW	Panoramic view of Dewey Mine site.
1-19	6/12/00	1440	LD	W	Panoramic view of Dewey Mine site.
1-20	6/12/00	1440	LD	NW	Panoramic view of Dewey Mine site.

Key is at the end of the table

PHOTOGRAPH IDENTIFICATION SHEET (CONTINUED)

Camera Serial No.: 4176236 **TDD No.: 99-07-0011**
Lens Type: PENTAX Zoom 90-WR **Site Name: Dewey Mine**

Photo	Date	Time	By	Direction	Description
1-21	6/12/00	1440	LD	N	Panoramic view of Dewey Mine site.
1-22	6/12/00	1440	LD	NE	Panoramic view of Dewey Mine site.
1-23	6/12/00	1440	LD	E	Panoramic view of Dewey Mine site.
1-24	6/12/00	1445	LD	N	Remnants of buildings, only concrete foundations remain on the north side of Jordan Creek and directly across from the mine site.
2-1	6/12/00	1446	LD	NE	Sample 00244462, location BG01 of Booneville Gulch approximately 400 feet north of Jordan Creek and flowing at approximately 2 gpm.
2-2	6/12/00	1455	LD	N	View of clay pigeons documenting human activity on the site.
2-3	6/12/00	1510	LD	down	View of concrete bottom of trenches inside suspected powerhouse.
2-4	6/12/00	1530	LD	down	View of composite PH01 from every side of the suspected powerhouse on the west side of the building 12 to 18 inches bgs, sample 00244463 gravelly sand with cobbles.
2-5	6/12/00	1540	LD	S	View of composite PH01 from north side of the suspected powerhouse 12 to 18 inches bgs, sample 00244463 gravely sand with cobbles.
2-6	6/12/00	1545	LD	SW	View of composite PH01 from east side of the suspected powerhouse 12 to 18 inches bgs, sample 00244463 gravelly sand with cobbles.
2-7	6/12/00	1550	LD	N	View of composite PH01 from south side of the suspected powerhouse 12 to 18 inches bgs, sample 00244463 sandy silt containing organics.
2-8	6/12/00	1554	LD	down	View of unnamed spring flowing past the southeast side of the suspected powerhouse. The spring ends and likely seeps back into the ground on the east or northeast side of the suspected powerhouse. Note moss.
2-9	6/12/00	1556	LD	SE	View inside suspected powerhouse. Note mattress springs, trenches, burnt wood, and vegetation growing.
2-10	6/12/00	1635	LD	N	Sample 00244464 at location DP01 Dewey Pile, at top of the pile and approximately 40 feet northeast of the former mill foundation.
2-11	6/12/00	1700	LD	down	View inside former mill building of railroad grate, railings, and metal plate used for possible mercury amalgamation.
2-12	6/12/00	1701	LD	down	Another view inside former mill building of suspected adit and/or conveyor system.
2-13	6/12/00	1703	LD	N	Perspective view of former mill building, waste pile and suspected powerhouse in the background.
2-14	6/13/00	0840	LD	SE	Sample 00244465, location DP02 on the east-side base of Dewey Pile
2-15	6/13/00	0845	LD	S	Sample 00244466, location DP03 in the center of the base of Dewey Pile on the north side.

Key is at the end of the table.

PHOTOGRAPH IDENTIFICATION SHEET (CONTINUED)

Camera Serial No.: 4176236 **TDD No.: 99-07-0011**
Lens Type: PENTAX Zoom 90-WR **Site Name: Dewey Mine**

Photo	Date	Time	By	Direction	Description
2-16	6/13/00	0855	LD	E	Sample 00244467, location DP04 on west side of Dewey Pile at the base.
2-17	6/13/00	0910	LD	down	Sample 00244468, location MF02, START sampling at the first terrace where small metal balls were located.
2-18	6/13/00	0912	LD	NW	Sample 00244468, location MF02 at the middle of the terraces. There are four walls and five levels.
2-19	6/13/00	0920	LD	S	Sample 00244469, location MF01 at the base of the mill foundation at suspected location of the conveyor belt.
2-20	6/13/00	0935	LD	S	Sample 00244470, location MF03 at the base of all terraces, approximately 100 feet west of the suspected powerhouse.
2-21	6/13/00	1015	LD	W	Sample composite 00244471, location TP01 at suspected tailing pile at the far east side.
2-22	6/13/00	1020	LD	W	Sample composite 00244471 at location TP01 at southeast side of the suspected tailing pile.
2-23	6/13/00	1025	LD	N	Sample composite 00244472 at location TP01 at northeast side of the suspected tailing pile.
2-24	6/13/00	1030	LD	N	Sample composite 00244473 at location TP01 at the northwest side of the suspected tailing pile.
3-1	6/13/00	1035	LD	SW	Sample composite 00244471 at location TP01 at the southwest side of the suspected tailing pile.
3-2	6/13/00	1055	LD	N	Sample 00244472, location TW01 at base of tailing wall approximately 75 feet south of Jordan Creek.
3-3	6/13/00	1105	LD	S	View of tailing wall adjacent to the Dewey Pile which extends 500 feet in length and 75 feet downhill to the base, and an estimated 3 feet in depth.
3-4	6/13/00	1127	CS	SW	View from Dewey site across the access road looking at Dewey Mine which matches the historical photo Neg. No. 73-75.12 titled "Dewey, ID Freighting" from the Idaho Historical Society.
3-5	6/13/00	1128	CS	SW	View from Dewey site across the access road looking at Dewey Mine which matches the historical photo Neg. No. 73-75.12 titled "Dewey, ID Freighting" from the Idaho Historical Society.
3-6	6/13/00	1137	CS	SW	View from behind Dewey site, due east of the former hotel, looking across Dewey site and Dewey Mine. The view matches the historical photo Neg. No. 3231 titled "Dewey ID, Florida Mountain Mill" from the Idaho Historical Society.
3-7	6/13/00	1138	CS	S	View from behind Dewey site, due east of the former hotel, looking across Dewey site and Dewey Mine. The view matches the historical photo Neg. No. 3231 titled "Dewey ID, Florida Mountain Mill" from the Idaho Historical Society.
3-8	6/13/00	1143	CS	S	View from Dewey site looking across to Dewey Mine.
3-9	6/13/00	1154	CS	SE	View from the hillside looking across Jordan Creek to Dewey Mine. View matches the historical photo Neg. No. 61-40.2 titled "Dewey ID, Trade Dollar Mill" from the Idaho Historical Society.

Key is at the end of the table.

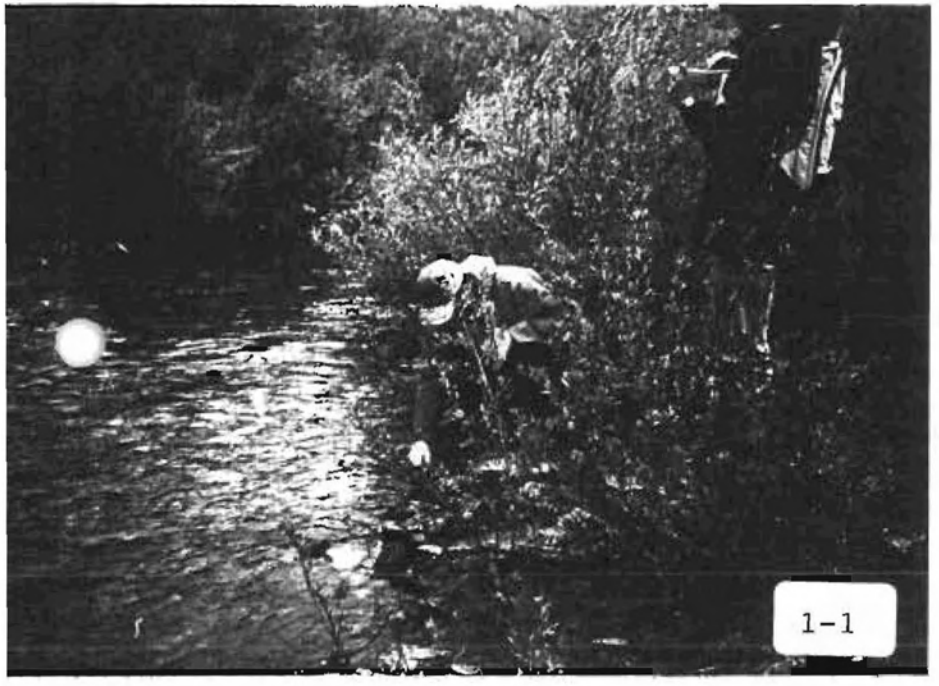
PHOTOGRAPH IDENTIFICATION SHEET (CONTINUED)

Camera Serial No.: 4176236 **TDD No.: 99-07-0011**
Lens Type: PENTAX Zoom 90-WR **Site Name: Dewey Mine**

Photo	Date	Time	By	Direction	Description
3-10	6/13/00	1155	CS	SE	View from the hillside looking across Jordan Creek to Dewey Mine. View matches the historical photo Neg. No. 61-171 4 titled "Dewey ID" from the Idaho Historical Society.
3-11	6/13/00	1156	CS	E	View from the hillside looking across Jordan Creek to Dewey Mine. View matches the historical photo Neg. No. 61-171.4 titled "Dewey ID" from the Idaho Historical Society.
3-12	6/13/00	1250	LD	S	Sample 00244473 at BK03, background sample located on the north side of the site approximately 800 feet upgradient and north of the mine site.
3-13	6/13/00	1253	LD	S	View of mine site from the background sample BK03.

Key:

bgs = Below ground surface.
CS = Craig Scola
E = East.
gpm = Gallons per minute.
LD = Leatta Dahlhoff.
N = North.
NE = Northeast.
NW = Northwest.
S = South
SE = Southeast.
SW = Southwest
W = West.


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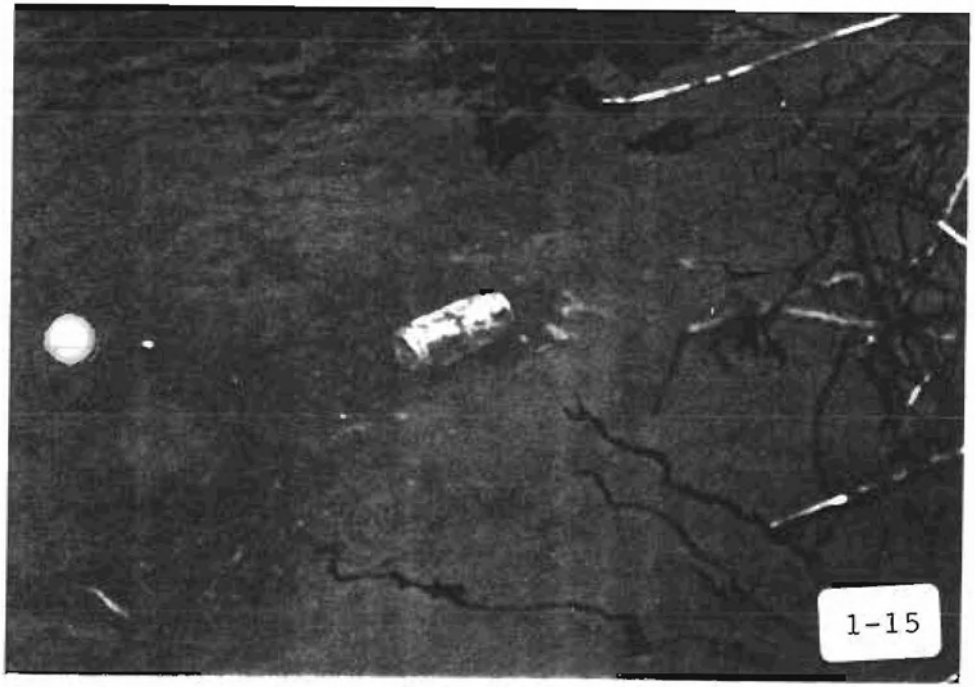
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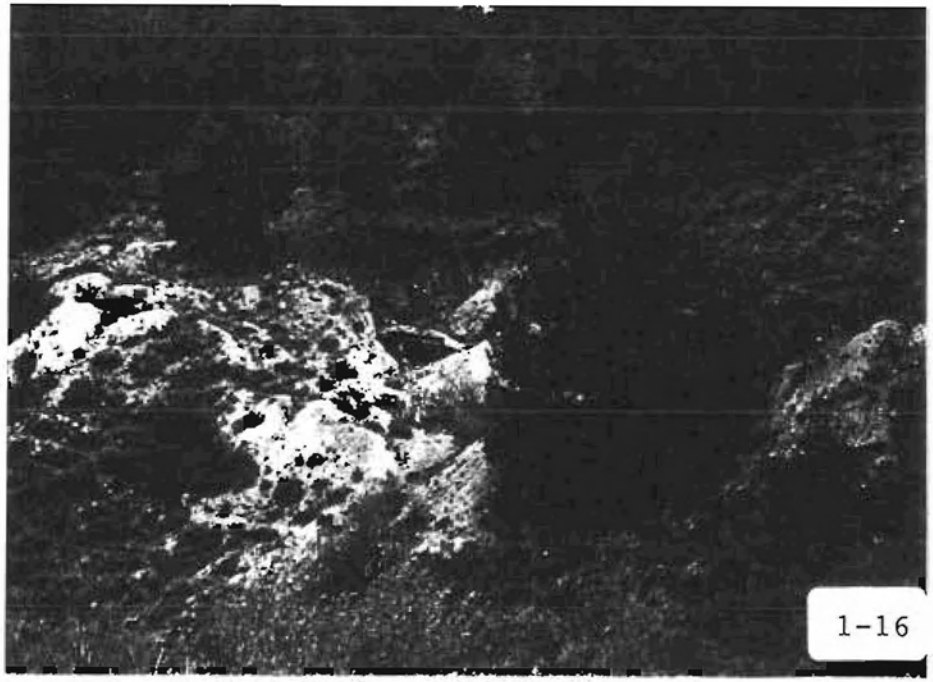
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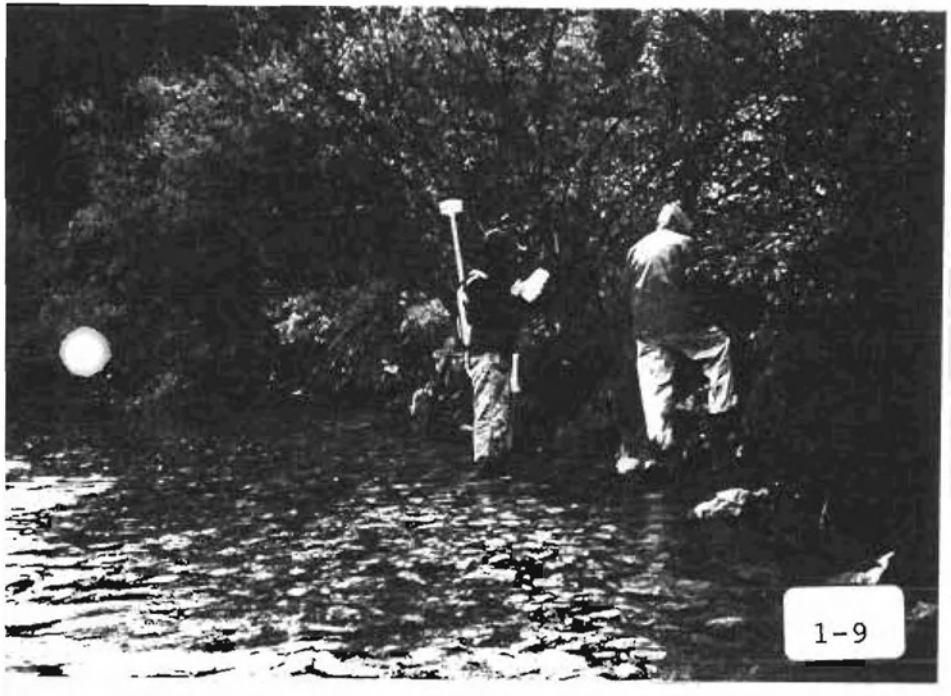
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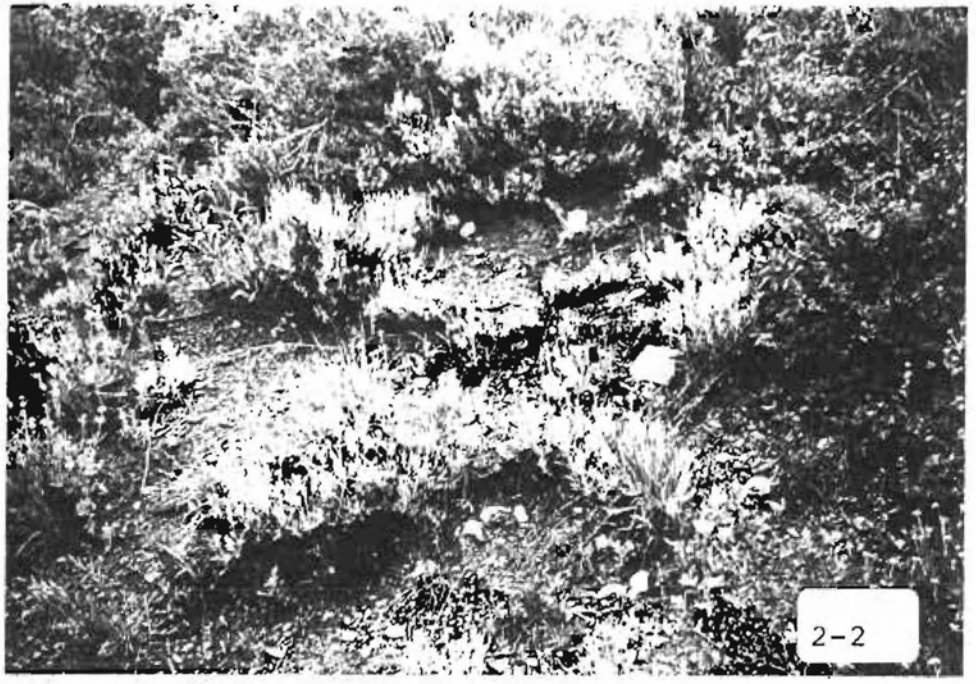

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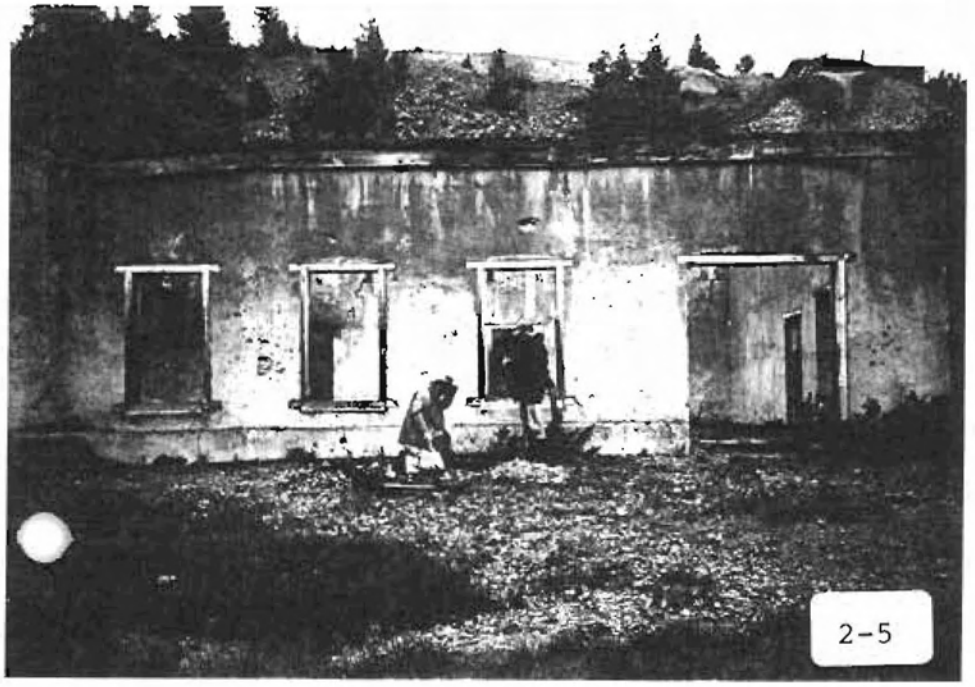

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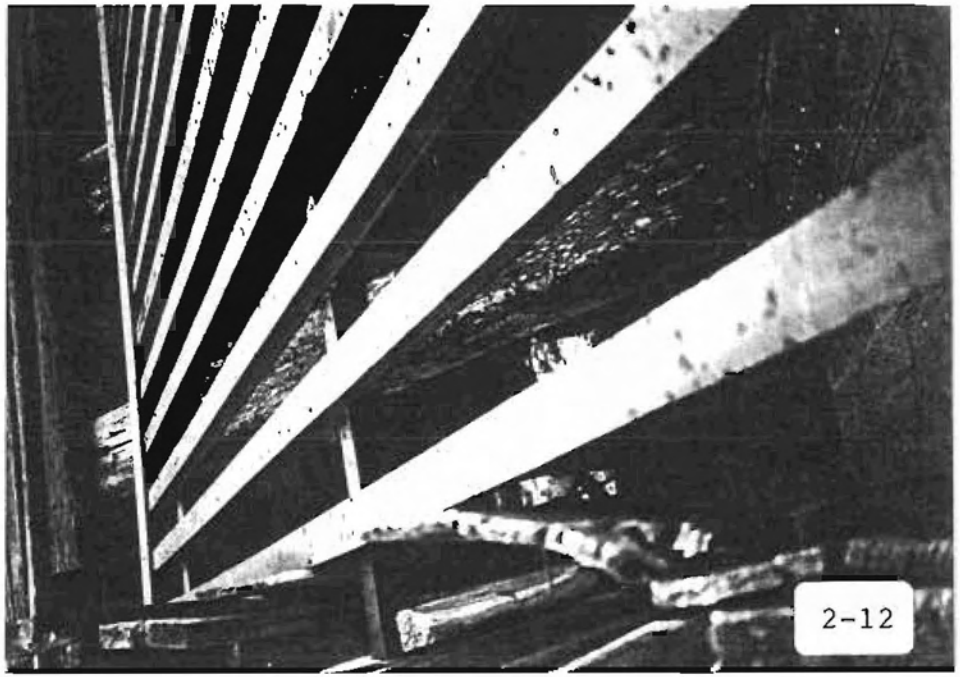

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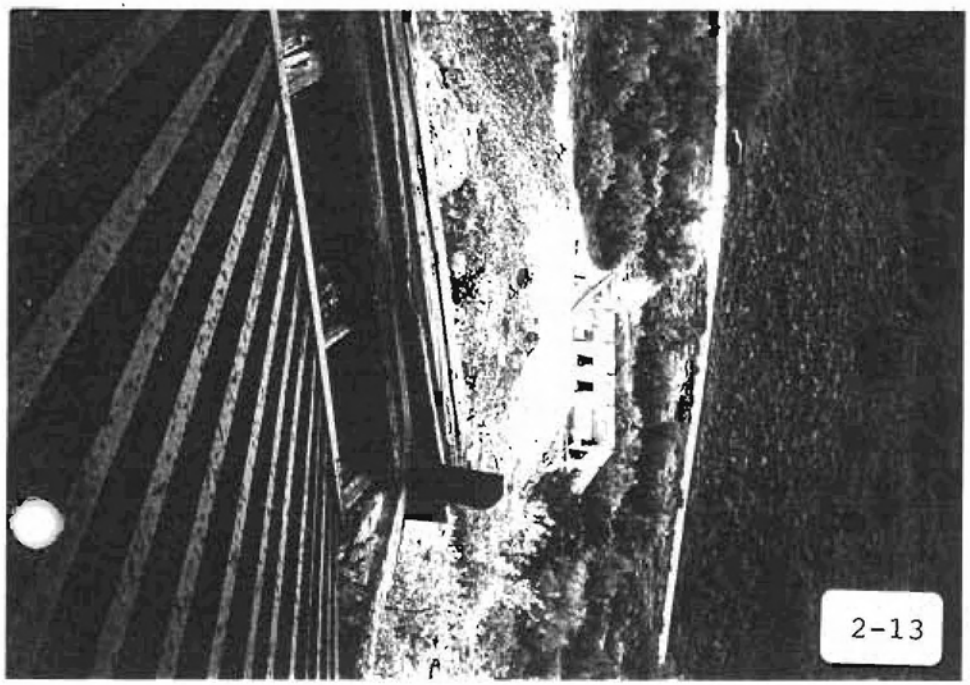

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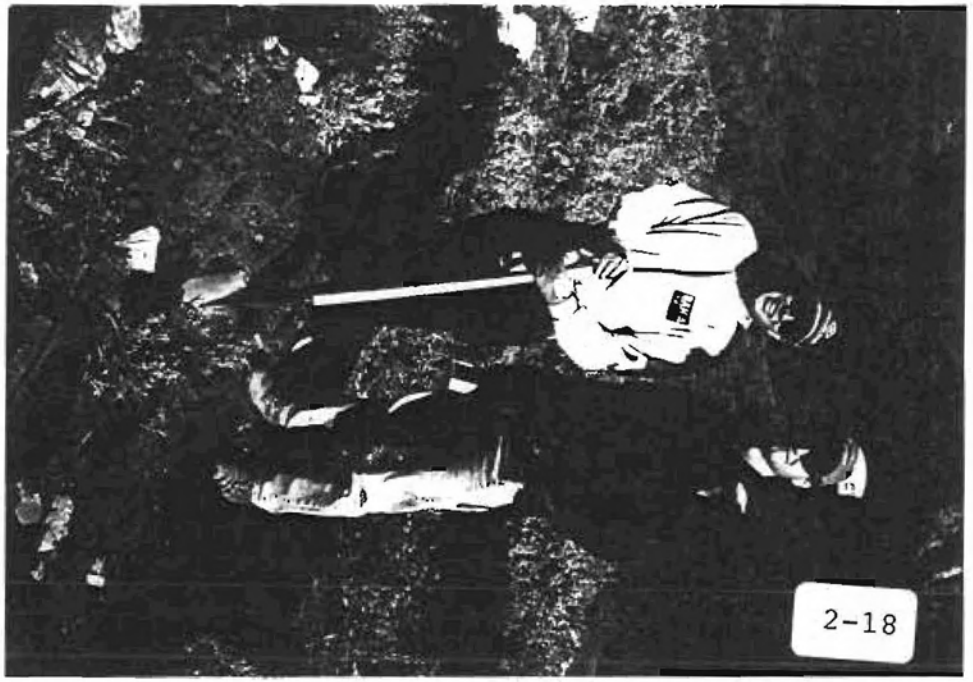

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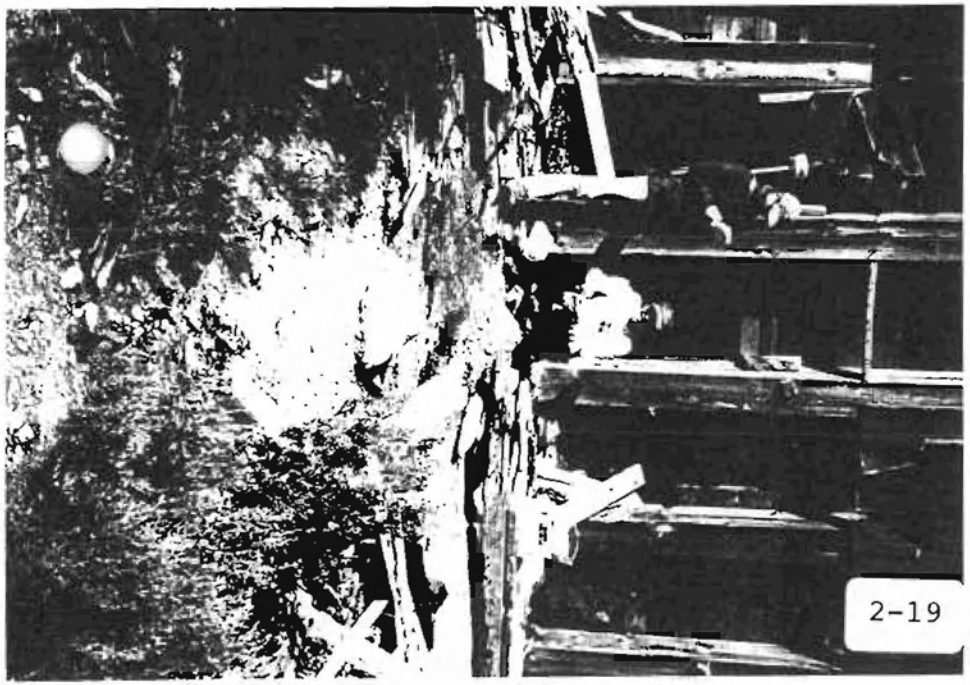

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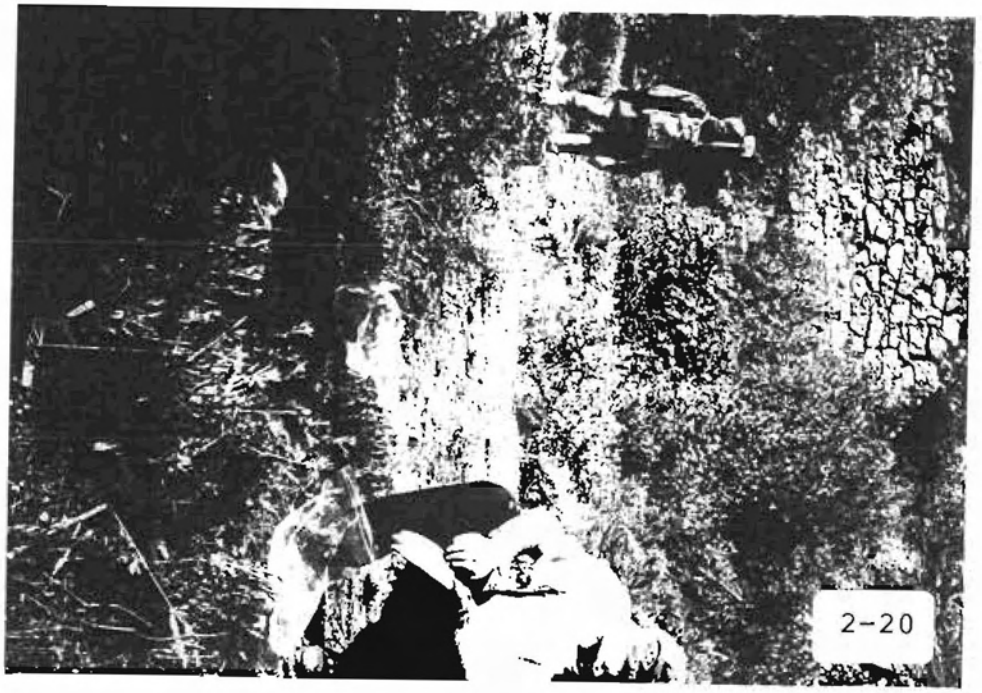

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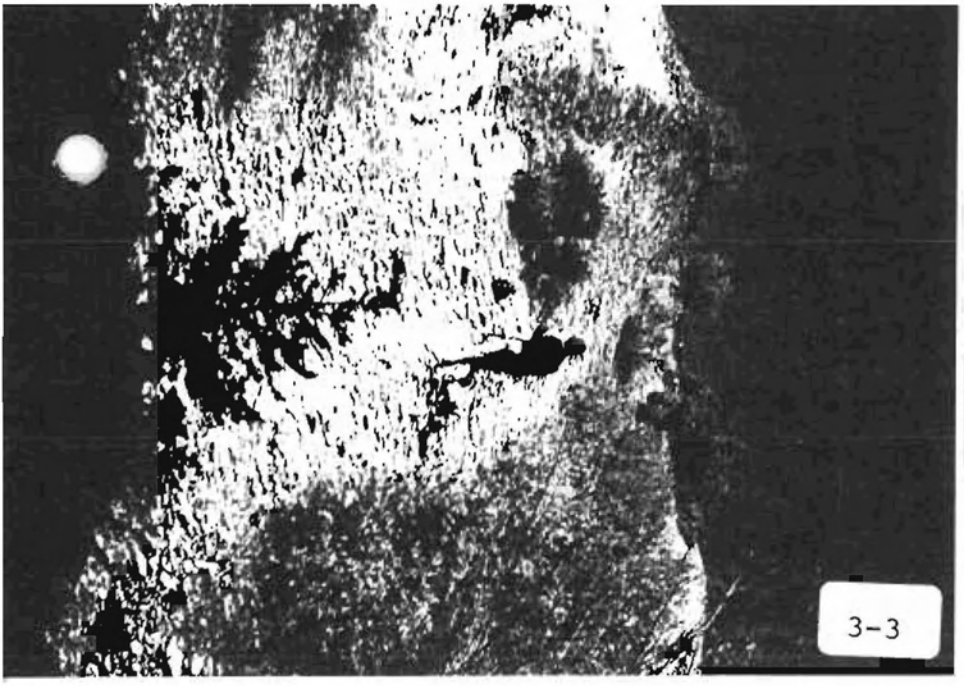
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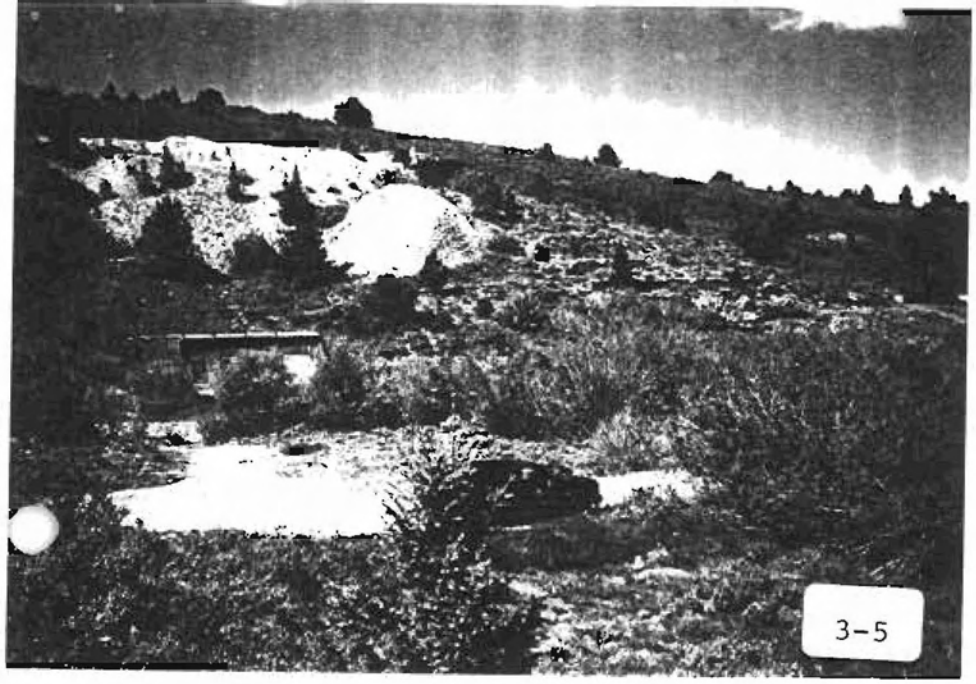
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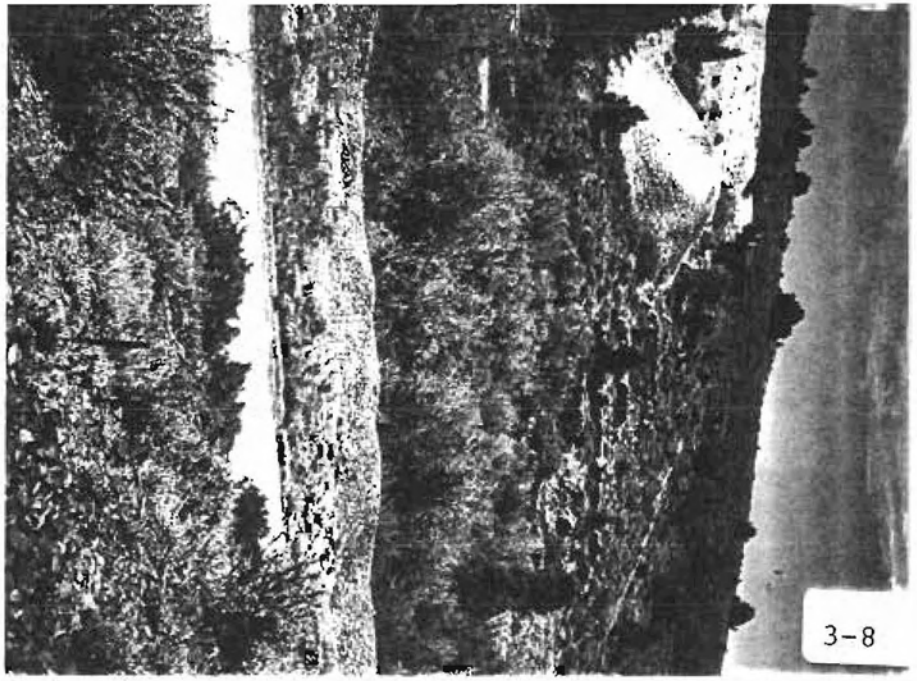

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APPENDIX B
GPS DATA

Table B-1

GLOBAL POSITIONING SYSTEM DATA
DEWEY MINE SITE
OWYHEE COUNTY, IDAHO

EPA Regional Tracking Number	Field Number	Decimal Degrees		Longitude			Latitude			PDOP	Horizontal Accuracy (meters)
		Longitude	Latitude	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
00244451	JC01	-116.7687263	43.03974944	-116	46	7.4148528	43	2	23.0979912	3 1	0.354
00244452	JC02	-116.7686959	43.03981423	-116	46	7.3051212	43	2	23 331228	5.2	0.312
00244453	JC03	-116.767006	43.0401042	-116	46	1.2217116	43	2	24.37512	4.7	0.57
00244454	JC04	-116 7669919	43.04012698	-116	46	1.1708616	43	2	24 45711	3	0 371
00244455	JC05	-116 7657634	43.03972048	-116	45	56.7480816	43	2	22.9937352	5.5	0.747
00244456	JC06	-116.7657204	43.03974685	-116	45	56.5933248	43	2	23.0886528	5.1	0 743
00244457	JC07	-116 7650789	43.03906827	-116	45	54 2840076	43	2	20.6457864	2.4	0.281
00244458	JC08	-116 764973	43.03907381	-116	45	53.902656	43	2	20.665698	2.2	0 295
00244459	DS01	-116.7649912	43.03898966	-116	45	53 9684352	43	2	20 3627904	2.2	0.289
00244460	BK01	-116.7506363	43.03882721	-116	45	2.2907664	43	2	19.7779632	3	0 434
00244461	BK02	-116.7505738	43.0387993	-116	45	2.0658384	43	2	19.6774692	3	0.345
00244462	BG01	-116.7652951	43.04110699	-116	45	55.062342	43	2	27.985164	5.4	0.82
00244463	PH01	-116 7661656	43 0395948	-116	45	58.19598	43	2	22 5412944	5 2	0.606
00244463	PH01b	-116.766045	43.03959771	-116	45	57.7621044	43	2	22.551756	4.4	1.122
00244463	PH01c	-116 7659773	43 03949273	-116	45	57.5182872	43	2	22.1738316	3.3	0.61
00244463	PH01d	-116.7661183	43.03947373	-116	45	58.0257144	43	2	22.1054208	3	0.372
00244464	DP01	-116.7668204	43 03921778	-116	46	0.5535444	43	2	21.1840008	3.1	0.287
00244465	DP02	-116.7665187	43 03933642	-116	45	59.4672948	43	2	21.6111192	3	0.416
00244466	DP03	-116 7666975	43.03940614	-116	46	0.111072	43	2	21 8621076	2.9	0.354
00244467	DP04	-116 7668804	43.03931641	-116	46	0.7695948	43	2	21.5390796	3.5	0.343
00244468	MF02	-116 7670595	43 03930089	-116	46	1.4140344	43	2	21.4832148	2.2	0.313
00244469	MF01	-116.7669853	43.03914327	-116	46	1.1471844	43	2	20 9157612	3.8	0.758
00244470	MF03	-116 7667808	43.03978976	-116	46	0.4109808	43	2	23.2431504	2.1	0.321
00244471	TP01a	-116.7674833	43.03967849	-116	46	2.9399196	43	2	22.8425748	2.3	0 337
00244471	TP01b	-116.7676672	43.03970022	-116	46	3.6018048	43	2	22.920774	2 5	0.342
00244471	TP01c	-116.7676504	43.03977758	-116	46	3.5414256	43	2	23.19927	2.6	0.603
00244471	TP01d	-116 7680043	43.03973943	-116	46	4.8155592	43	2	23.06193	2.7	0.332
00244471	TP01e	-116 7681117	43.03961531	-116	46	5.2021956	43	2	22.6151052	2.7	0.353
no sample	eastern mill bldgs	-116.7619807	43.03828628	-116	45	43.1304588	43	2	17.8305972	3.5	0 457
00244472	TW01	-116.7655812	43.03898783	-116	45	56.0923452	43	2	20.3561772	4.1	1.121
00244473	BK03	-116.7665903	43.04099722	-116	45	59.7252096	43	2	27.5899812	3.4	0.376

Key:

EPA = United States Environmental Protection Agency
PDOP = Position dilution of precision.

APPENDIX C

DATA VALIDATION MEMORANDA AND ANALYTICAL RESULTS

ecology and environment, inc.
International Specialists in the Environment

1500 First Interstate Center, 999 Third Avenue
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: July 21, 2000

TO: Leatta Dahlhoff, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA

SUBJ: **Inorganic Data Quality Assurance Summary Check, Dewey Mine Site, Idaho**

REF: TDD: 99-07-0011 PAN: DG-11-01-SI-DM

The data quality assurance summary check of samples collected from the Dewey Mine site located in Idaho has been completed. Analysis for mercury (EPA Method 245) was performed at the Manchester Environmental Laboratory, Port Orchard, Washington.

No discrepancies were noted.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

DATE: July 18, 2000

SUBJECT: Quality Assurance Report for Dewey Mine Project
Project Code: TEC-758A
Analyses: Mercury
Samples: 00244451 to 00244473

FROM: M.K.Parker
Manchester Environmental Laboratory Chemist

TO: Mark Ader, EPA Project Manager

The following is a tabular report of the Mercury analyses for the Dewey Mine project. The analyses were performed following USEPA and laboratory guidelines by the ESAT Team at the USEPA Manchester Environmental Laboratory (MEL), Port Orchard, WA. The samples were analyzed as-received. Percent solids were performed and the results reported on a dry weight basis.

This is an exception memo. All Manchester Environmental Laboratory quality assurance criteria for the analyses were met (holding time, calibration correlation coefficient, method blank, initial and continuing calibration verification, independent calibration verification, sample duplication and matrix spike duplication) with no exceptions.

Data reported below the detection limit are qualified with "U". No other qualification of this data is necessary.

Questions concerning the data may be directed to Kathy Parker at the Manchester Environmental Laboratory by either email (parker.katherine@epa.gov) or phone (360.871.8716).

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Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244451
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	1.38	mg/Kg	

Sent to:
mark Ader.
mark Woodke.
Lulin Li
7/19/00

7/19/00

00244451 Reg sample

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244452
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 02		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**0.431**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244453
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 03		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**1.22**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244454
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 04		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method:	245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**1.10**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244455
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 05		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	0.579	mg/Kg	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244456
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 06		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	0.876	mg/Kg	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244457
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 07		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	1.94	mg/Kg	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244458
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	JC - 08		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**0.716**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244459
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	DS - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**1.51**	**mg/Kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244460
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	BK - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**0.656**	**mg/Kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244461
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	BK - 02		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	4.44	mg/Kg	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244461
Account Code:	00T10P50102D10ZZLA00	**Type:**	Duplicate

Station Description:

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**4.40**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244461
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	98.3	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244461
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	98.9	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244462
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	BG - 01, MS/MSD		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**0.030**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244462
Account Code:	00T10P50102D10ZZLA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**0.055**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244462
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	102	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244462
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	103	%Rec	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244463
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	PH - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	6.35	mg/Kg	

Project Code:	TEC-758A	**Collected:**	6/12/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244464
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	DP - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**34.3**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244465
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	DP - 02		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**3.01**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244466
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	DP - 03		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**7.68**	**mg/Kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244467
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	DP - 04		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**1.92**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244468
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	MF - 02		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**67.3**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244469
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	MF - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**1.08**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244470
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	MF - 03		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**247**	**mg/Kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244470
Account Code:	00T10P50102D10ZZLA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 245.5-M Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976 Mercury**	**244**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244470
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	100	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244470
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	96.8	%Rec	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244471
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	TP - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**17.9**	**mg/Kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-758A

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244472
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	TW - 01		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**0.636**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	6/13/00
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244473
Account Code:	00T10P50102D10ZZLA00	**Type:**	Reg sample
Station Description:	BK - 03 - SB, MS/MSD		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: **7439976**	**Mercury**	**0.110**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244473
Account Code:	00T10P50102D10ZZLA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	**Mercury**	**0.120**	**mg/Kg**	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244473
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	106	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	00244473
Account Code:	00T10P50102D10ZZLA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	109	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	S000705A
Account Code:	00T10P50102D10ZZLA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	0.05	mg/Kg	U

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	S000705A
Account Code:	00T10P50102D10ZZLA00	**Type:**	Control

Station Description:

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	106	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	S000705A
Account Code:	00T10P50102D10ZZLA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	103	%Rec	

Project Code:	TEC-758A	**Collected:**	
Project Name:	DEWEY MINE	**Matrix:**	Solid
Project Officer:	MARK ADER	**Sample Number:**	S000705B
Account Code:	00T10P50102D10ZZLA00	**Type:**	Control
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments, CLP SOW			
Prep Method	: 245.5-M	Mercury, Cold Vapor, Manual, Sediments,			
Analytes	: 7439976	Mercury	106	%Rec	