CSM Unit 2, Midgradient Watersheds

South Fork Coeur d'Alene River

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ABBREVIATIONS AND ACRONYMS

AWQC	Ambient Water Quality Criteria
Belt	Belt Supergroup
BLM	Bureau of Land Management
Box	Bunker Hill Superfund Site
cfd	cubic foot per day
cfs	cubic foot per second
CIA	Central Impoundment Area
COPC	chemical of potential concern
CSM	conceptual site model
CV	coefficient of variation
EPA	U.S. Environmental Protection Agency
EV	expected value
FS	feasibility study
IDEQ	Idaho Department of Environmental Quality
MFG	McCulley, Frick & Gilman, Inc.
MidGradSeg	midgradient segment
North Fork	North Fork Coeur d'Alene River
PDF	probability density function
PRG	preliminary remediation goal
RI	remedial investigation
ROW	right of way
SF	South Fork Coeur d'Alene River
SFCDR	South Fork Coeur d'Alene River
SL	screening level
South Fork	South Fork Coeur d'Alene River
SVNRT	Silver Valley Natural Resource Trustees
TMDL	total maximum daily load
URS	URS Consultants, Inc.
URSG	URS Greiner, Inc.
USACE	U.S. Army Corps of Engineers
U.S.D.A.	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WRCC	Western Regional Climate Center

1.0 INTRODUCTION

The South Fork Watershed is located within the Coeur d'Alene River basin and encompasses the South Fork Coeur d'Alene River (South Fork) from the mouth of Canyon Creek to the confluence of the South Fork with the North Fork Coeur d'Alene River. The Bureau of Land Management (BLM) has identified 294 source areas (e.g., mining waste rock dumps, adits, and tailings deposits) within the watershed (BLM 1999). The watershed has been heavily affected by mining activities and past and continuing releases of metals from mining wastes, including the Bunker Hill Superfund site.

Excluding the actions within the Bunker Hill Superfund Site, several clean-up actions have been implemented in the South Fork Coeur d'Alene River watershed between Wallace and Pinehurst. These actions include several local actions identified to protect human health, and other response actions as implemented by the Silver Valley Natural Resource Trustees (SVNRT) and the Union Pacific Railroad. During the 1997, 1998, 1999 and 2000 field seasons, the USACE on behalf of USEPA performed residential soil cleanups at 20 properties determined to be necessary to protect human health (USEPA 1999, 2000a and 2000b). Localized removals have also been conducted at the Osburn Elementary and Middle schools. Grading and hydroseeding of the Osburn football field was completed in 2000. Clean-up activities were also implemented at the City Park, and Monument Park in Wallace. Material from these removal activities was disposed of at the Central Impoundment Area (CIA) (USEPA, 1999). Also during 2000, five homes in the Polaris area were connected to the public water system and one home in Wallace was placed on an end-of-tap water purification system. Road-based and river-based human health advisory signage was also installed (USEPA, 1999).

In 1998, the SVNRT performed non-time-critical removals of sediment and tailings from the floodplain of the South Fork Coeur d'Alene River. Removals included 58,000 cubic yards from the Osburn Flats, 50,000 cubic yards from the Big Creek Flats, 20,000 cubic yards from the Evolution Bridge area and 7,000 cubic yards from Silverton (USEPA 1997). These materials were transported to the CIA for disposal, and the removed area was regraded and revegetated. Channel bank armoring with riprap and rock groynes current deflectors were also added in the SFCDR channel reach upstream of Big Creek (Calibretta 1998).

Other work by the SVNRT in 1998 in the Osburn Flats area included large rock riprap channel bank armoring, construction of a high-water channel in the excavated removal area, and installation of a 3-acre soil amendment test pilot with piezometers. Results of test pilot are not known (IDSBWG, 1998).

In 1998, the Idaho Department of Transportation installed a clean barrier over contaminated materials in their ROW yard in Wallace to control dust and human exposure (IDSBWG 1998).

In 1994, the SVNRT performed limited tailings removals from the Elk Creek Pond near the confluence of Moon Creek with the South Fork Coeur d'Alene River, and placed clean beach sand along the north shore to prevent human exposure (Harvey 2000). Under a time-critical removal action during the 2000 field season, the USEPA removed a total of 28,000 cubic yards of contaminated sediments and tailings from the Elk Creek Pond near the confluence of Moon Creek with the South Fork Coeur d'Alene River. These materials were disposed of in the CIA of the Bunker Hill Site. Additional work to channelize the pond, and stabilize the bed and banks is being planned for 2000/2001 (Liverman, 2000).

As a part of the Consent Decree for the UPRR Wallace-Mullan Branch, contaminated soils and ballast materials within the UPRR ROW along the SFCDAR between Wallace and Pinehurst are to be covered with an asphalt, gravel or soil barrier, depending upon location. This action also includes limited removals of contaminated materials within selected railroad sidings in Osburn and Wallace. Eighteen (18) residential areas that are located within or encroaching onto the UPRR ROW are to be sampled; depending upon sample results, any residual contamination adjacent to these homes will be addressed. This action also includes fencing around the Burns-Yaak Waste Rock Dump ROW encroachment and an adit closure in the ROW in Silverton. Fencing is also provided to prevent access to the Hercules mill site, and to limit access in the Wallace Rail yard to a 26-foot wide corridor of the ROW; the Wallace Yard area outside of this corridor is not included into the Consent Decree with UPRR (MFG 1999a, 1999b and UPRR, 1999). Fencing, large boulders and hostile vegetation are used to prevent access to contaminated areas along the River at portions of the ROW near Gene Day Park, the Shont siding near Big Creek, High Water Road and Pinehurst. Implementation of this portion of the UPRR Response Action is also planned for the year 2000/ 2001 (MFG, 2000).

This watershed is one of three watersheds assigned to conceptual site model (CSM) Unit 2, Mid-Gradient Watersheds (see Part 1, Section 2, Conceptual Site Model Summary). The watershed itself has been divided into two segments to focus this investigation (Figure 1.1-1). A brief description of the South Fork Watershed is presented below.

1.1 WATERSHED DESCRIPTION

Segment 1 (MidGradSeg01) begins at the mouth of Canyon Creek and ends at Montgomery Creek (Figure 1.1-1). The BLM identified 160 source areas in this segment. Many of the primary source areas are on tributary gulches, but some, including the Hercules mill site, are

located along the valley of the South Fork. Osburn Flats is the location of a former wooden dam across the South Fork.

Segment 2 (MidGradSeg02) begins at Montgomery Creek and ends at the confluence of the South Fork with the North Fork Coeur d'Alene River (Figure 1.1-1). The BLM identified 134 source areas in this segment. Most of this segment lies within the Bunker Hill Superfund site, and incorporates the towns of Kellogg, Smelterville, and Pinehurst. For the purposes of this report, the primary interest is the ongoing loading of metals that occurs mainly by exchanges of surface water and groundwater and discharges of contaminated groundwater from beneath the Bunker Hill Superfund site.

Upland areas in MidGradSeg01 and MidGradSeg02 range from relatively undisturbed to degraded. Upland areas within the Bunker Hill Superfund site have been denuded by airborne emissions from mining facilities, and recovery has been impeded by erosion of surface soils. Some areas, such as the Placer Creek drainage, have seen relatively little mining or timber harvesting, and upland conditions are not considered degraded.

Floodplain areas in MidGradSeg01 and MidGradSeg02 have been extensively degraded due to the influences of channelization; urban, residential, industrial, and transportation infrastructure development; and the impacts of mining-related hazardous substances.

The river itself in MidGradSeg01 has been extensively modified for transportation, residential, industrial, and urban development. The river has been impacted by large inputs of bedload material, tailings, and sediment from historical mining-related activities. The river is channelized adjacent to I-90 along much of its length. Due to these impacts, riverine habitat conditions and water quality throughout the segment are degraded. The large inputs of bed material, tailings, and sediments have resulted in bank instability and erosion, substrate mobility, channel instability, filling of pools, widening of the stream channel, and other undesirable changes in channel structure.

Water quality conditions on the South Fork are compromised by the presence of metals, caused by mining-related activities, and nutrient pollution from untreated domestic waste. Measured metals concentrations in surface water between Canyon Creek and the confluence with the North Fork exceed ambient water quality criteria (AWQC).

Trout populations in the South Fork below Wallace are depressed relative to populations in reference streams. This is an indication of the degraded habitat and water quality conditions present in this portion of the segment. Sculpin, a species believed to be sensitive to metals

contamination and other anthropogenic impacts, were not observed in any fisheries population surveys in the South Fork below Wallace (Rahel 1999; Reiser 1999; Stratus 1999a, 1999b).

1.2 REPORT ORGANIZATION

The remedial investigation report is divided into seven parts. This report on the South Fork Watershed is one of three reports contained within Part 3 presenting the remedial investigation (RI) results for the three CSM Unit 2 watersheds. The content and organization of this report are based on EPA's *Guidance Document for Conducting Remedial Investigations and Feasibility Studies under CERCLA, Interim Final* (USEPA 1988). This report contains the following sections:

- Section 2–Physical Setting, includes discussions on the watershed's geology, hydrogeology, and surface water hydrology
- Section 3–Sediment Transport Processes
- Section 4–Nature and Extent of Contamination, includes a summary of chemical results and estimates of mass loading from source areas
- Section 5–Fate and Transport, includes chemical and physical transport processes for metals
- Section 6–References

Risk evaluations and potential remedial actions associated with source and depositional areas are described in the human health risk assessment, the ecological risk assessment, and the feasibility study (all under separate cover).

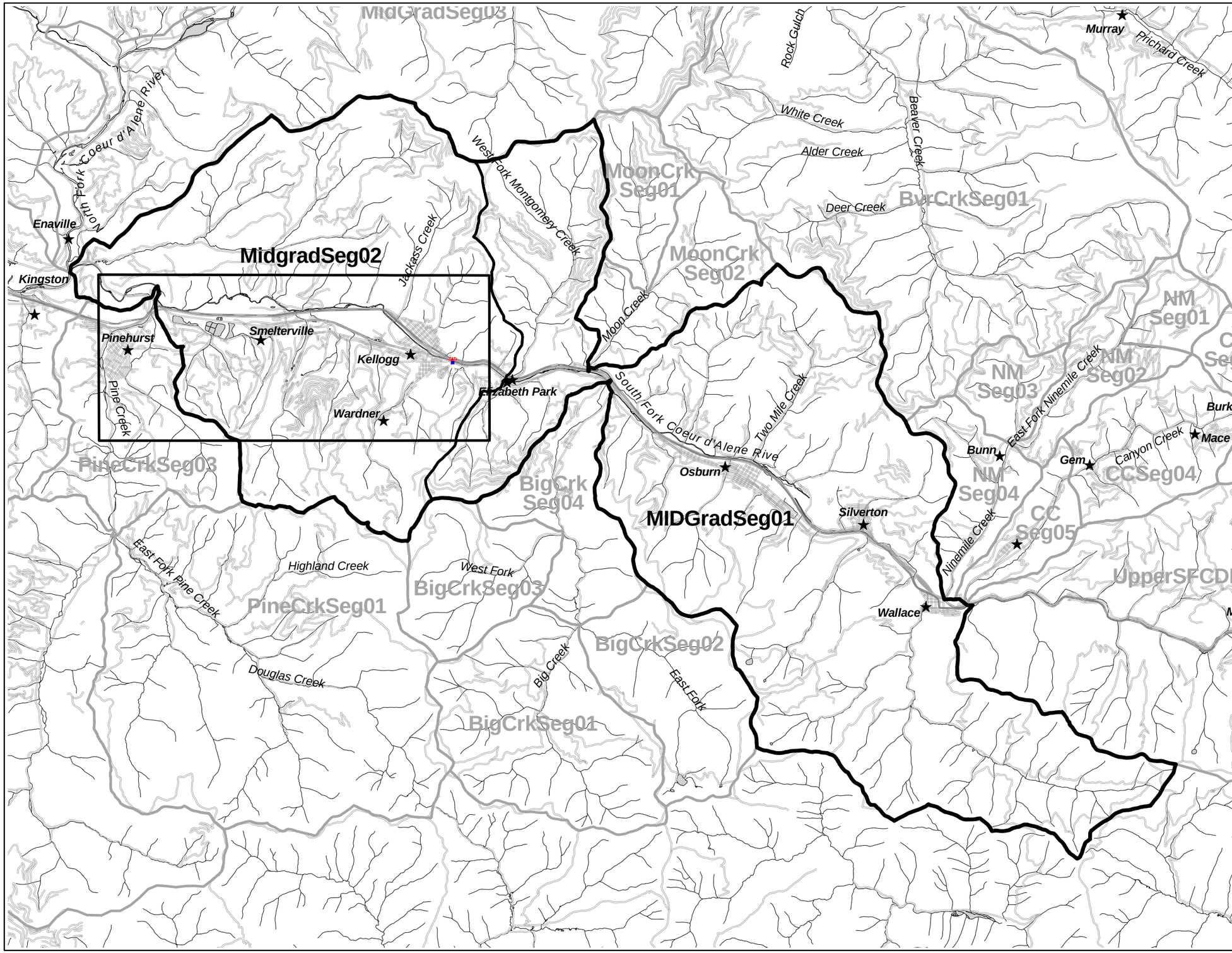
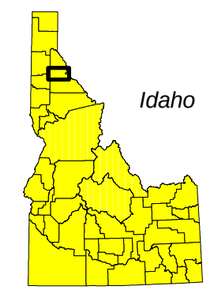


Figure 1.1-1
South Fork Coeur d'Alene River Watershed

LEGEND

- Stream
- Road
- Interstate 90
- City
- South Fork Coeur d'Alene River Watershed
- South Fork Coeur d'Alene River Segment
- River Segment
- Lake/River
- Bunker Hill Box



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:108,000

1 0 1 Miles

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027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\14_h2oshed_6-9-00.apr
V:SFCDAR
E: SFCDAR
L: Final RI SFCDAR
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

2.0 PHYSICAL SETTING

2.1 GEOLOGY AND MINES

The geology and mining history of the South Fork Watershed is presented in this section.

2.1.1 Bedrock Geology

Weakly metamorphosed sedimentary rocks assigned to the Precambrian Belt Supergroup (Belt) are the most prevalent rocks in the South Fork watershed (Part 1, Figure 3.2-1). The most abundant Belt formations present are the Prichard, Burke, Revett, and St. Regis Formations. The Prichard consists of argillite, quartz-rich argillite, and quartzite, whereas the Burke, Revett, and St. Regis Formations are primarily impure to pure quartzite. The St. Regis Formation grades upward to interbedded impure quartzite and argillite that makes up the bulk of the formation (Hobbs et al. 1965). A relatively minor amount of the Wallace Formation (consisting of argillite and lesser quartzite) is also present in the South Fork Watershed.

2.1.2 Structural Geology

The South Fork Watershed (as shown in Part 1, Figure 1.2-1) exhibits two dominant structural trends: north-northwest-trending faults and roughly east-west-trending faults (Part 1, Figure 3.2-1). The faults are both normal and reverse faults, with dip-slip movement involving hundreds of feet of displacement and strike-slip movement of up to 16 miles (as seen on the east-west trending Osburn fault). The South Fork River valley roughly parallels the trace of the Osburn Fault (Part 1, Figure 3.2-1). Most of the numerous folds and faults south of the Osburn Fault trend parallel or subparallel to the Osburn. The faults located north of the Osburn trend more northerly (Hobbs et al. 1965). See Part 1, Section 3, Regional Geology, for additional discussion on structural folding.

Probably the second-most important strike-slip fault in the Watershed is the Placer Creek Fault. The Placer Creek Fault extends across the width of the Basin and generally parallels the Osburn Fault at a location 3 to 4 miles to the south. Hobbs et al. (1965) described the other major faults in the watershed including (See Part 1, Figures 3.2-1 and 3.2-2):

- Smelterville area faults—Blue Star, Spring, Page-Government Gulch, Divide, Trapper Creek, and Ross

- Kellogg area faults—Kellogg, Alhambra, Striped Peak, and Silver Hill
- Wallace area faults, north of the South Fork—Carpenter Gulch, Blackcloud (extends into the Ninemile Watershed), Terror Gulch, Two Mile, and Western Union
- Wallace area faults, south of the South Fork—St. Elmo, Mineral Point, Argentine, Polaris, Fort Wayne, Killbuck, Silver Standard, Silver Summit, and Big Creek

Two faults in the South Fork Watershed stand out as distinctly different from the rest of the combination normal and reverse steeply dipping faults. Both the Carpenter Gulch Fault and the Page-Government Fault are low-angle reverse faults, a rare structural feature in the Basin. These faults might represent segments of the same fault or represent separate faults in a common overthrust zone (Hobbs et al. 1965).

2.1.3 Soils

Like most of the soils throughout the Coeur d'Alene district, the soils can be grouped into two broad categories: hillside soils and valley soils. Hillside soils are typically a silty loam with variable amounts of gravels and clay; they are generally less than 2 feet thick. Valley soils are found within the South Fork drainage and on the adjacent floodplains (Part 1, Figure 3.2-1).

Valley soils in the South Fork drainage are of two types: (1) Quaternary alluvium (Qal, see Part 1, Figure 3.2-1), which is unconsolidated sand, gravel, and clay valley fill material, and (2) older Channel and Terrace Gravels (QTog) located topographically above the Qal along the hillsides flanking the South Fork. The Qtog deposits are more prevalent in the lower reaches of the South Fork between the towns of Osburn and Pinehurst.

Downstream of the town of Kellogg, the Qal materials are divided into three units. A lacustrine clay bed separates two alluvial zones, an upper zone and a lower zone. These materials are described in more detail in Part 1, Section 4.4, Regional Hydrogeology. In many areas along the South Fork, mill tailings have mixed with alluvial material on the flood plains or were deposited in the river (Norton 1980). Figure 2.1-1, a geologic cross section, illustrates the sequence of alluvial materials present in the MidGradSeg02 portion of the watershed.

2.1.4 Tailings

Tailings produced by mining activities are present in varying thicknesses throughout the South Fork floodplain. The tailings, which were generated from both gravity and flotation processes, are now mixed with alluvium. These deposits have been reworked and redistributed by periodic flooding and construction activities. Before the mid-1960s, most mills in the watershed disposed of tailings either directly to surface water or to floodplain areas (Long 1998). Attempts to retain the coarser fractions of tailings with wooden-plank dams resulted in broad, braided deposits of these coarse tailings mixed with alluvium in floodplain locations such as Osburn Flats, Kellogg, Smelterville Flats, and near Pinehurst on the South Fork (Long 1998). After the practice of tailings disposal to surface waters ended, and with progressive improvements to mining and milling technology, the gradients changed in the South Fork. Some of the floodplain areas contaminated with tailings were left "perched," no longer covered during flood events, and became secondary sources of contamination. Box et al. (1999) have documented and mapped the floodplains of the upper Basin that were contaminated by jig tailings before 1933 but have not been covered by floodwaters since that major flood event.

The largest deposits of tailings are located in the broader segments of the floodplain and at constructed tailing impoundments such as the Osburn tailings ponds, Galena mine and mill site, and Silver Summit Mine. The reach between Kellogg and the mouth of Pine Creek, as mapped by Box et al. 1999, contains broad deposits of gravity and flotation tailings mixed with native alluvium. This mixture of tailings and natural alluvium is present in frequent, but more localized, deposits between Kellogg and Wallace.

McCulley, Frick & Gilman, Inc. (MFG) (1992) reported that the overbank tailing deposits are up to 7 feet thick in the Kellogg/Smelterville area and are "generally gray, dark reddish-brown, or black in color and vary in grain size from 3/8 inch to less than 200 mesh (clay slimes)." The tailing material is usually layered and locally contains lenses of overbank wood, debris, sand, and gravel (MFG 1992). This material was included in removal actions in the BHSS.

2.1.5 Waste Rock Piles

Waste rock piles consist of broken, angular rock that is generally unmilled and typically dumped near the mouth of the mine workings. Waste rock piles typically do not contain rock with ore-grade metal concentrations, although some waste piles from early mining operations may contain highly mineralized rock. The chemical and mineralogical content of waste rock in the Main Stem Watershed is discussed in Section 4, Nature and Extent of Contamination.

2.1.6 Ore Deposits

The Page-Galena mineral belt is the primary mineralized trend located within the South Fork Watershed (Part 1, Figure 3.2-1). In general, most of the lead, silver, and zinc ore deposits associated with the South Fork Watershed are metasomatic fissure veins formed by the replacement of siliceous sedimentary rocks along zones of fissuring (IBMG 1961). The majority of the lead-zinc deposits are located in the Burke Formation; some deposits are found in the Revett quartzite, the Wallace Formation, the St. Regis Formation, and the upper portion of the Prichard Formation (Ransome 1904). Ransome reports that the ore deposits in the Bunker Hill, Sullivan, and Last Chance mines are primarily found in one dominant fissure that strikes northwest and dips to the southwest at 38 degrees. The rocks on both sides of this fissure are quartzite of the Burke Formation.

Ransome (1904) describes the character of the lead-zinc ores as follows:

> The most characteristic minerals of the lead-zinc ores are galena and siderite. Both of these minerals occur as the filling of fissures and as metasomatic replacements. In many instances the galena directly replaces sericitic quartzite. But in some large ore bodies, particularly those at Wardner, the quartzite was first replaced by siderite, which was in turn replaced by galena.

Ransome (1904) also notes that pyrite and sphalerite are found in all deposits, although the latter is generally a minor constituent. In the South Fork Watershed, tetrahedrite "occurs in bunches in the galena" and chalcopyrite is rare (Ransome 1904).

2.1.7 Mining History

A brief summary of available information on historical mining activities is presented in this section. During the RI/FS process, an extensive list of mines, mills, and other source areas was developed based on a list originally developed by the Bureau of Land Management (BLM 1999). This list is presented in Section 4.1, Nature and Extent, and in Appendix I.

The South Fork Watershed discussed in this section includes segments MidGradSeg01 and MidGradSeg02 of CSM Unit 2. These segments also include Placer Creek, Lake Creek, Revenue Gulch, Shields Gulch, Twomile Creek, McFarren Gulch, Terror Creek, Montgomery Creek and Milo Creek. Other tributaries to the South Fork that are not included are Ninemile Creek, Moon Creek, Big Creek, and Pine Creek. Mines located within the Bunker Hill Superfund Site project area (Box) are not included.

At least 14 mines and mining complexes in the South Fork Watershed upstream of Elizabeth Park (just east of Kellogg) produced an estimated 22.2 million tons of ore between 1895 and 1990 (Mitchell and Bennett 1983, SAIC 1993a). From this ore, an estimated 20.5 million tons of tailings were produced. Table 2.1.7-1 provides ore production records for those mines that maintained records (SAIC 1993a). Downstream of Elizabeth Park in the South Fork Watershed, at least 11 mines or mine complexes produced an estimated 48 million tons of ore between 1895 and 1980 (Mitchell and Bennett 1983). Table 2.1.7-2 provides ore production records through 1980 for mines downstream of Elizabeth Park.

The largest producing mines, in decreasing order of volumes produced, were the Sunshine, Galena, Page (Corrigan), Last Chance, Coeur, and Senator Stewart. The most abundant metals produced in the South Fork Watershed were lead and zinc (Stratus 1999).

This section provides historical information about the mines and mills operating in the South Fork Coeur d'Alene River watershed over this period of time.

2.1.7.1 Mines

The mines that operated in the South Fork Coeur d'Alene River watershed and for which production records were found, are listed in Table 2.1.7-3. This table includes the production years of the mine, the estimated volumes of ore and tailings produced as a result of the mining activity, and the segment identifier in which the mine is located. (See the Conceptual Site Model (CSM) for the descriptions of these identifiers.) Only mines with documented ore production are listed. Additionally, some mining operations were carried out at more than one location, occasionally in more than one watershed. The ore production listed in Table 2.1.7-3 is the total production for each mining operation.

2.1.7.2 Mills

Table 2.1.7-4 lists the mills with operations in the South Fork Coeur d'Alene River Watershed for which records were recovered. This table includes the operating years of the mill and a summary of ownership, and the segment identifier in which the mine is located. The table is limited to known mills with recorded production.

2.1.8 Mine Workings

Underground workings in many mines are very extensive and act as collection and distribution systems for groundwater. Many adits and tunnels in the watershed act as discharge points for

groundwater. Typically adit drainage discharges directly to surface water or first infiltrates waste rock piles before discharging to surface water from seeps. Selected mine workings in each segment are listed and briefly described below (after SAIC 1993).

In addition to the named workings:

- At least 22 unnamed adits are located in MidgradSeg01
- At least 3 unnamed adits, one unnamed shaft, one unnamed tunnel, and one unidentified disturbance are located in MidgradSeg02

2.1.8.1 MidgradSeg01

A total of 70 mine workings have been mapped in MidgradSeg01. The majority of these (46) are located in the uplands on the south side of the South Fork.

2.1.8.1.1 Alhambra. The Alhambra Mine produced approximately 2,200 tons of ore.

2.1.8.1.2 Polaris. An adit and a waste rock pile are located in Polaris Gulch. The Polaris Mill was situated near the current location of the Silver Summit Mine.

2.1.8.1.3 Silver Summit. The Silver Summit Mine is located on the west end of Osburn. The mine had a sandfill system installed in 1964 to return coarse tailings to the mine. There are two small tailings ponds located just east of the mouth of Terror Gulch next to the South Fork.

2.1.8.1.4 Coeur d'Alene (Mineral Point). The Coeur d'Alene Mine is located in McFarren Gulch on the southwest side of Osburn. The mine site has an adit, a waste rock pile and a mill. McFarren Creek flows under the waste rock pile near the adit. Immediately downstream from the mine yard the creek flows along the toe of the waste rock pile. There is no visible evidence of tailings piles or ponds in the mill area (located downstream of the waste rock pile near the mouth of McFarren Gulch).

2.1.8.1.5 Western Union. The Western Union Mine has a caved adit and waste rock pile (both located in Revenue Gulch). The water issuing from the adit is reportedly used for either domestic or agricultural use.

2.1.8.1.6 Coeur. The Coeur Mine is located southeast of Osburn. All the tailings from the mine were either sent to tailings ponds or back to the mine as sandfill. The mine site has two vertical shafts (one ventilation hole and one production shaft), a waste rock pile and a mill.

2.1.8.1.7 Argentine. The Argentine mine site has one long adit and a waste rock pile at the adit.

2.1.8.1.8 Caladay. The Caladay Mine site in Daly Gulch has an adit, an internal shaft, a waste rock pile and a surface plant. The waste rock pile partly fills the gulch and is culverted to accommodate the creek. The Caladay Mine also has a ventilation adit in Placer Creek. Prior to closing of the mine, water from the Caladay was discharged via the adit. Currently, the Caladay is reportedly dewatered via a connection to the Galena Mine on Lake Creek.

2.1.8.2 MidgradSeg02

The main Bunker Hill Mining Complex resides in MidgradSeg02 on the south side of the South Fork. In addition to the main complex, a total of 51 workings have been mapped. Similar to MidgradSeg01, the majority of these (46) are located in the uplands on the south side of the South Fork.

2.1.8.2.1 Sweeney. The Sweeney Mine site has an adit and a waste rock pile.

2.1.8.2.2 Tyler. The Tyler Mine has an adit and a waste rock pile

2.1.8.2.3 Last Chance. The Last Chance Mine has an adit, a waste rock pile and a mill.

2.1.8.2.4 Reed Tunnel. The Reed Tunnel connects to the Bunker Hill Mine and discharges water of poor quality. To keep the water from flowing into Milo Creek a pump was installed in the tunnel to pump water into the Bunker Hill Mine.

2.2 HYDROGEOLOGY

2.2.1 Conceptual Hydrogeologic Model

The South Fork Watershed is an aggraded, montane alluvial valley which is fed by numerous tributary streams and the Upper South Fork. The larger tributary watersheds (Big Creek, Pine Creek, Canyon Creek, Ninemile Creek and Moon Creek) and the Upper South Fork (above Wallace) are treated and discussed as part of CSM Unit No. 1. Exclusive of its larger tributary

watersheds, the South Fork Watershed is approximately 94 square miles, of which 57 are apportioned into MidgradSeg01 (Wallace to Kellogg), and 37 are apportioned into MidgradSeg02 (Kellogg to confluence with the North Fork).

The current base level of the South Fork Watershed is Coeur d'Alene Lake near Harrison (approximate elevation 2,120 feet) approximately 20 miles west of Smelterville Flats. However, variations in base level over geologic time and attendant changes in prevailing geomorphological processes (downcutting of bedrock, glaciofluvial deposition and erosion, glaciolacustrine deposition and aggraded channel deposition/reworking) have created the present day aquifer system that consists of unconsolidated sediments overlying the relatively less permeable rocks of the Belt Supergroup (Belt) in an elongate, roughly U-shaped trough that varies in width from about 800 feet (at constrictions near Pinehurst, Kellogg and Wallace) to about 4,400 feet (Smelterville Flats).

In general, the Belt rocks have very low primary permeability. However, faulting and fracturing by natural tectonic processes, as wells as human actions (e.g., mine workings) have created an enhanced permeability in some areas of the Belt Rocks. The sediments overlying the Belt rocks comprise the primary hydrostratigraphic units in the South Fork Watershed.

In general, the aquifer system west of Kellogg consists of one leaky aquitard separating a lower, confined water-bearing zone of Pleistocene glaciofluvial/alluvial sediments (*lower aquifer*) from an upper, generally unconfined water-bearing zone of contemporaneous alluvial sediments admixed with mill tailings (*upper aquifer*). Norton (1980) reported that the upper aquifer is "extremely non-homogenous and anisotropic with a higher horizontal than vertical permeability." Furthermore, groundwater in at least two locations (just east and west of Page Ponds) of the upper aquifer occurs under some pressure due to the deposition of low permeability mill wastes (slimes and rock powder) below the current potentiometric surface. Upon penetrating a gravel layer beneath low permeability mill wastes at these locations, a 12-inch water level rise above the top of the gravel was observed (Norton 1980).

The aquitard, composed of glaciolacustrine silt and clay with seams of fine sand, appears to pinch out beneath the town of Kellogg between Portal Gulch and Milo Gulch (Figure 2.2-1). At some locations beneath Smelterville Flats the aquitard is either perforated (i.e., absent) or permeable (Williams 1989).

East of Kellogg, the upper sediments appear to unconformably overlie the lower sediments in direct hydraulic communication forming a single, unconfined aquifer above the Belt basement rocks. The composition, distribution, and hydraulic properties of these hydrostratigraphic zones is discussed in more detail below.

Detailed hydrostratigraphic descriptions are available from previous investigations for Smelterville Flats (Adams 1989; Towatana 1990) and the Bunker Hill Superfund Site (MFG 1992). Both of these areas are within MidgradSeg02 (Figure 1.1-1). Extensive or detailed hydrostratigraphic descriptions are not available for portions of the watershed above Kellogg (most of MidgradSeg01). However, Norbeck (1974) provides a general hydrostratigraphy of a study area from Wallace to Rose Lake based on drillers' logs, exposures of alluvium in the valley, and geophysical surveys.

Norbeck (1974) reports the following information with regard to the valley-fill materials:

- Sediments are coarser with less silt in the east end of the valley and in the valley of Canyon Creek.
- Near Wallace the alluvium consists of "sand and gravel with a considerable percentage (10 to 20 percent) of rounded to subrounded cobbles and boulders." This material grades into "interbedded silt, clay and sand near Rose Lake, over a distance of 33 miles."
- An account from Hobbs et al. (1965) regarding a well at Pinehurst that was drilled to 300 feet through "mostly silt" without encountering bedrock.
- A "thin soil" is developed on top of alluvium. The soil is distinguished by presence of organic (humic) matter and is mixed with or has been covered by tailings.
- Depth to bedrock ranges from 30 feet near Wallace to 414 feet Rose Lake.

2.2.1.1 Smelterville Flats

Adams (1989) and Towatana (1990) report that the unconsolidated sediments of Smelterville Flats host three hydrostratigraphic units:

- An upper aquifer approximately 15 to 30 feet thick comprised of alluvium and "fluvio-glacial deposits intermixed with mine and mill wastes at its surface."

- An aquitard that varies in thickness from 60 feet at the west end to 30 feet at the east end of the Flats, and that pinches out east of Kellogg. The aquitard is comprised of clay, silt and fine sand originally deposited on the bottom of the Pleistocene Glacial Lake Coeur d'Alene. The lower 10 feet of the aquitard is "tan plastic clay… overlain by olive-brown silt and clay with interbedded fine sand."

- A lower aquifer approximately 15 to 45 feet thick comprised of "silty sand, gravel and cobbles."

2.2.1.2 Bunker Hill Superfund Site

Dames & Moore conducted Task 3.0 (Hydrogeologic Assessment) of the Bunker Hill RI/FS (MFG 1992). This work included detailed hydrostratigraphic descriptions. Consistent with the descriptions of the unconsolidated materials at Smelterville Flats, Dames & Moore (MFG 1992) grouped the Bunker Hill valley-fill deposits into three hydrostratigraphic zones:

- An "upper zone" that varies in thickness from less than 10 feet near the valley walls to greater than 40 feet at the Pinehurst Narrows. This zone contains three described subdivisions: (1) "Jig Tailings" comprised of alluvium and mine/mill wastes, (2) "organic silt" that is reported to be the pre-mine-waste ground surface, (3) "natural alluvium" comprised of silty to clayey sand with gravel and lenses of poorly graded sand and gravel (interpreted as overbank deposits).

- A "confining zone" that varies in thickness from zero feet (where it pinches out between Portal Gulch and Milo Gulch outside the Bunker Hill Superfund Site) to 50 feet at the western end of the Bunker Hill Superfund Site; and is comprised of "lacustrine silt, clay and fine sand with scattered lenses of silty to clayey gravel."

- A "lower zone" that varies in thickness from zero feet at the valley walls to greater than 50 feet beneath the eastern part of Kellogg; and is comprised of "silty to clayey sand and gravel with scattered lenses of clean sand and gravel."

Also described are two minor units:

- Colluvial ("slope wash") materials in tributary valleys and on hillsides.

- Terrace gravels (relict from the ancestral South Fork and Glacial Lake Coeur d'Alene) stranded at some locations on the south valley wall.

This reporting of the confining zone pinch-out just east of Kellogg correlates well with Norbeck's (1974) description of the gradation from alluvium consisting of "sand and gravel with a considerable percentage (10 to 20 percent) of rounded to subrounded cobbles and boulders" in the east South Fork valley near Wallace to "interbedded silt, clay and sand" in the west South Fork valley. This correlation supports the conceptual hydrogeologic model for the valley-fill deposits overlying the Belt bedrock in the South Fork Watershed of a single unconfined aquifer east of Kellogg in MidgradSeg01 (between Wallace and Kellogg) that grades into a three-layer system in MidgradSeg02 (Kellogg to the confluence).

2.2.1.3 Groundwater Level Fluctuations

Groundwater levels in wells completed in the upper and lower aquifers beneath Bunker Hill fluctuate seasonally and are generally highest in the spring (April) and lowest in October through January (MFG 1992). In addition, groundwater levels in the upper aquifer respond to river stage fluctuations; and groundwater levels in the lower aquifer respond to fluctuations in weight, due to changes in saturated thickness, of the overlying strata.

Generally, the lower aquifer remains completely saturated due to its confined nature; and the upper aquifer and single unconfined aquifer east of Kellogg (both are water table aquifers) are generally saturated to within 10 or less feet of the ground surface depending on the recharge conditions and seasonal fluctuations within a given year. Tailings-laden strata generally do not extend beneath the water table in the vicinity of Bunker Hill (MFG 1992). Although, as previously noted, some low permeability mill and/or mine wastes have been deposited below the current potentiometric surface.

Groundwater occurrence and movement are discussed in more detail in Section 2.2.3 (Flow Rates and Directions) and Section 2.2.4 (Surface Water/Groundwater Interaction).

2.2.2 Aquifer Parameters

Selected aquifer parameters for the three-layer system in MidgradSeg02 (Smelterville Flats-Bunker Hill aquifer system) are summarized in Table 2.2-1. Aquifer parameters for the single unconfined aquifer east of Kellogg in MidgradSeg01 are not available. However, based on reported lithological similarities between the single unconfined aquifer east of Kellogg and the

upper and lower aquifers of the Smelterville Flats-Bunker Hill aquifer system and the ranges of parameter estimates in Table 2.2-1, it is reasonable to expect that aquifer parameters for the single unconfined aquifer east of Kellogg are similar to those reported in Table 2.2-1.

2.2.3 Flow Rates and Directions

Groundwater flow direction in the valley-fill deposits in the South Fork Watershed is generally from east to west, with minor north and south components near the mouths of tributary watersheds (MFG 1992). Groundwater entering the Smelterville Flats-Bunker Hill aquifer system from upgradient sources partitions between the upper and lower aquifers. Of the major tributary watersheds to MidgradSeg02, Portal Gulch, Jackass Creek, Government Gulch and Pine Creek may contribute significant flow to the lower aquifer (MFG 1992).

An average 3.57 cubic feet per second (cfs) of groundwater is estimated to recharge the Smelterville Flats-Bunker Hill aquifer system from the single unconfined aquifer east of Kellogg at the upgradient boundary of the Bunker Hill Superfund Site while an average of 8.75[1] cfs of groundwater is estimated to discharge from the Smelterville Flats-Bunker Hill aquifer system at the downgradient boundary of the Bunker Hill Superfund Site. Of this discharge, 5.79 cfs are estimated to be from the upper aquifer and 2.96 cfs are estimated to be from the lower aquifer (MFG 1992).

In general, there is a vertical hydraulic gradient across the aquitard in MidgradSeg02 that is downward in the eastern part and upward in the western part of the segment. There is a small area of downward hydraulic gradient in the Smelterville Area (MFG 1992).

In the Smelterville Flats-Bunker Hill aquifer system, potential groundwater flow between the upper and lower aquifers exists via one or more pathways:

- Flow through the aquitard itself.
- Flow through perforations where the aquitard is absent (Williams 1989 – e.g. buried colluvium and weathered bedrock along the valley margins [MFG 1992]).
- Flow through wells connecting the upper and lower zones.

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[1]Although McCulley, Frick & Gilman (1992) report 786,000 cubic feet per day (cfd) on page 261, this appears to be an addition error or typographical error because the figures calculated on page 68 of the same report show a total (upper plus lower aquifer) average outflow of 756,000 cfd, or 8.75 cfs.

However, based on persistent hydraulic head and water quality differences (see Section 2.2.5 Water Quality and Water Chemistry) between the upper and lower aquifers, groundwater flow between the upper and lower aquifers is small (MFG 1992).

Table 2.2-2 presents a range of groundwater flow velocities in the upper and lower aquifers of the Smelterville Flats-Bunker Hill aquifer system for 1988 using representative aquifer parameters and the modified form of Darcy's Law:

$$\text{Velocity} = \frac{K \cdot i}{n_e}$$

where,

K = hydraulic conductivity
I = hydraulic gradient
n_e = effective porosity

2.2.4 Surface Water/Groundwater Interaction

Previous studies (MFG 1992; Williams 1989) have reported that the South Fork is composed of both gaining reaches (where groundwater flows into the river) and losing reaches (where surface water flows into the upper aquifer or the single unconfined aquifer east of Kellogg). The prevailing conceptual hydrologic model holds that the distribution of gaining and losing reaches on the South Fork is governed by the cross-sectional area of the valley-fill deposits. Specifically, where the valley-fill is narrow and/or thin (i.e., constricted valley) net gain to the river from the aquifer is observed; and where the valley fill is wide and/or thick (e.g., at Smelterville Flats) net loss from the river to the aquifer is observed (Figure 2.2-2).

It is also reasonable to expect that areal limits and net flow rates of gaining and losing reaches on the South Fork will vary from season to season and year to year as a result of variations in recharge-discharge conditions. Previous reports of gaining and losing reaches (Table 2.2-3) generally agree with each other.

MFG (1992) further report that for the Bunker Hill Superfund Site during the RI:

- The cumulative net flow gain to the South Fork while passing through the Bunker Hill Superfund Site during low flow conditions was 8 to 9 cfs.

- The estimated net effective infiltration rates (expressed as a percentage of precipitation at Kellogg during the 1987-1988 water year [22.8 inches]) for hillsides/tributary gulches and the valley floor are about 5 to 6 percent and 45 to 75 percent, respectively.

The USGS completed a seepage study for a 4.5-mile reach of the South Fork at Osburn extending from near the upstream end of MidGradSeg01 to Rosebud Gulch (Barton 2000). This study examined losing and gaining subreaches within MidGradSeg01. According to this study, the locations of gaining and losing reaches in the South Fork changed through the study period of July 1999 to October 1999. During the September and October investigations, the South Fork generally lost surface water from surface water sampling locations SF241 to SF603. From near SF603 to SF247, the channel gained groundwater. From near SF247 downstream to SF249, the channel lost surface water to groundwater. From near SF249 downstream to SF251, the channel gained surface water from groundwater. From SF251 downstream to SF254, the channel lost surface water to groundwater. From SF254 downstream to SF258, the channel gained surface water from groundwater. During the October investigation, some shifting of the boundaries of gaining and losing reaches was observed. Results show that interactions between groundwater and surface water are complex and vary in relation to river discharge and precipitation.

2.2.4.1 Page Swamps

Page Swamps, located in the southwest valley of MidgradSeg02 (Figure 1.1-1), receive drainage from Humbolt, Silver and Grouse Creeks, and discharge nearly year-round into the South Fork in southwestern Smelterville Flats (Norton 1980). The swamps appear to be a perched feature on (and containing) very fine grained, low permeability mill wastes (tailings, slimes and rock powder). The MFG (1992) report suggests that the low permeability mill wastes in this area may locally confine groundwater in the upper aquifer which agrees with hydraulic conditions in the upper aquifer reported by Norton (1980).

2.2.5 Water Quality and Water Chemistry

Ranges of selected groundwater parameters (after Norbeck 1974) based on samples from 43 wells located within CSM Unit No. 2 are presented in Table 2.2-4. These data are not differentiated by hydrostratigraphic unit in the original report. Also, Norbeck (1974) reports the following:

- Electrolytic conductivity "decreases from an average value of 260 mmhos near Wallace to about 228 mmhos at Rose Lake."

- "Anomalously high values [of conductivity] are noted near Kellogg, Smelterville, and Cataldo."

MFG (1992) report on the concentrations and distributions of ten groundwater parameters in the upper and lower aquifers (and to a lesser extent, the single unconfined aquifer east of Kellogg). Of these, five are metal contaminants that will be discussed in Section 4 (Nature and Extent of Contamination), the other five (fluoride, nitrate, potassium, phosphate and sulfate) are summarized in Table 2.2-5. As shown in Table 2.2-5, within the Smelterville Flats-Bunker Hill aquifer system certain areas of the upper aquifer are enriched in certain anions relative to the lower aquifer (e.g., phosphate and sulfate beneath the Central Impoundment Area (CIA). This difference in groundwater chemistry supports the conclusion of limited groundwater exchange between the two aquifers.

Results of quarterly groundwater monitoring within the BHSS were summarized by EPA (2000). A total of 61 wells are typically sampled during the quarterly monitoring programs. The areas monitored and the number of wells in the vicinity of each area are:

- CIA, Slag Pile, and CIA seeps – 19 wells
- Smelterville Flats (north of I-90) – 8 wells
- South of I-90 – 7 wells
- Lead Smelter – 8 wells
- Government Gulch – 6 wells
- City of Kellogg – 2 wells
- Industrial Landfill – 1 well
- Deadwood Gulch – 1 well
- Magnet Gulch – 1 well
- Bunker Creek – 6 wells
- Lined Pond – 1 well
- North of Pinehurst – 1 well

The groundwater samples obtained from these wells are analyzed for dissolved arsenic, antimony, cadmium, lead, mercury, zinc, and copper. Field parameters include temperature, pH, conductivity, and groundwater level where possible.

To identify trends, in 1999 IDEQ analyzed the results of the sampling that had been performed to date and concluded:

- There were not enough observations to determine trends over time. A minimum

of 15 to 25 observations collected, preferably at uniformly spaced sampling events, are required for statistically valid conclusions of trending.

- A strong correlation between the presence and concentration of cadmium and zinc was found across most areas of the BHSS. Discrepancies exist however, which indicate extremely variable materials.

- Samples with arsenic concentrations exceeding the 50 µg/L Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) were found in only six wells on the CIA.

- Cadmium concentrations consistently exceeded 5 µg/L (SDWA MCL) in wells throughout the BHSS (29 of 34 wells).

- Lead concentrations exceeded 15 µg/L (SDWA MCL) in 15 of 34 wells.

- Zinc concentrations varied widely throughout the BHSS. Three of the four wells with zinc concentrations greater than 100,000 µg/L were in Government Gulch. Smelterville Flats sample concentrations were generally lower than the rest of the BHSS with none exceeding 50,000 µg/L. The results of samples taken from the CIA wells generally fell mid-range.

The fact that significant trends were not identified in the analysis was to a degree anticipated since at the time of the last sampling event a great deal of work on the remedial actions around the BHSS was being performed, and few of the remedial actions and none of the remedies for an entire sub-area were completed.

The primary conclusion concerning the status of the BHSS site-wide monitoring program is the need to re-evaluate the program to determine if sufficient and appropriately located data are being obtained to assess whether performance standards are being achieved and whether the installed remedy is protective of human health and the environment. EPA and the State of Idaho are in the process of conducting this review.

Groundwater conditions upgradient of the Bunker Hill Superfund Site have not been studied extensively. Additional studies will be conducted if necessary to support remedial design.

2.2.6 Groundwater Use

The level of reliance on groundwater supplies for domestic, municipal and industrial uses as well as points of withdrawal and/or delivery in the South Fork valley have changed through time. The following subsections summarize groundwater use information available from previous reports for specific time periods.

2.2.6.1 1974

In 1974, Norbeck reported that wells drilled anywhere in the sediments of the main valley could provide adequate quantities of water (though highly mineralized) for domestic purposes; at one time, almost all homesites in the area obtained water from wells or developed springs. Most communities had converted to municipal supplies by 1974. The 150 domestic wells still in use were located at the beginning of the study, and it was speculated that "there are probably about that many more which were missed due to the short time available for locating wells." The number of abandoned domestic wells was estimated at 200. Several domestic wells had been drilled in the Belt rocks, but their yields were generally low (on the order of five gallons per minute).

There were approximately 30 industrial and municipal wells in use at the time and "probably about 20 more either not presently in use or abandoned." There were about 15 high capacity industrial wells drilled in the alluvium between Wallace and the confluence of the North Fork and the South Fork, and most of these had been in use for several years.

2.2.6.2 1980 and 1990

Norton (1980) and Towatana (1990) report that the Bunker Hill Company taps the lower aquifer for industrial use water. Norton (1980) further reports that the upper aquifer was not used.

2.2.6.3 1996

Figure 2-14 of the *Interim Site Characterization Report for the Bunker Hill Site* (CDM 1986) shows 11 wells in the valley between Kellogg and Pinehurst Narrows. The level of use of these wells was not reported.

2.2.6.4 1998

Ridolfi (1998) reports that:

- Surface water in creeks and groundwater in "shallow unconfined alluvial aquifers" are
  potential domestic water sources in the watershed.

- Surface water and groundwater contain concentrations of heavy metals that exceed drinking water standards established by the U.S. EPA under the Safe Drinking Water Act.

- Water rights records indicate that 17 groundwater sources in the watershed are permitted for domestic use, 96 surface water sources in the watershed and 20 "groundwater/spring" sources are permitted for domestic or irrigation purposes (IDWR 1996).

- Municipal water supplies for the towns of Elizabeth Park, Silverton, Wallace, and Mullan are provided from upstream surface water sources (IDWR 1996).

2.3 SURFACE WATER HYDROLOGY

Surface water hydrology of the South Fork is described in this section. For the purposes of this report, the South Fork has been divided into two segments referred to as MidGradSeg01, from Elizabeth Park to Wallace, and MidGradSeg02, from the confluence with the North Fork Coeur d'Alene River to Elizabeth Park. The South Fork Watershed has areal extent of approximately 97 square miles. The South Fork channel length through segments MidGradSeg01 and MidGradSeg02 is approximately 18.9 miles. Seven major tributaries provide surface water drainage to the South Fork. Canyon, Ninemile, and Placer Creeks, and the upper South Fork join near the upstream end of the South Fork Watershed at the City of Wallace. Pine Creek joins the South Fork at the city of Pinehurst. Moon Creek and Big Creek join the South Fork upstream of Elizabeth Park. The hydrology of these tributaries are discussed in separate reports.

2.3.1 Available Information

The available hydrologic information for the South Fork Watershed includes United States Geological Survey (USGS) stream flow data for water year 1999, historical stream discharge

measurements from several stream gages, and climatological data for Wallace, ID, and instantaneous discharge data obtained during water quality sampling events performed by a variety of consultants from 1991 to 1999.

The USGS has several operating stream flow gages in the South Fork which collected data for water year 1999. In addition, historical stream flow data are available for several discontinued gage stations and some of the currently operated gages in the South Fork.

2.3.1.1 Segment MidGradSeg01 (Elizabeth Park to Wallace)

Two USGS gaging stations are located in segment MidGradSeg01, Placer Creek at Wallace, Station 12413140, and South Fork Coeur d'Alene River at Silverton, Station 12413150. Historical data are available for both gaging stations. The South Fork at Silverton has a period of record from November 9, 1967, to September 30, 1988, and October 1, 1998, to present. Placer Creek at Wallace has a period of record from October 1, 1967, to September 30, 1995, October 1, 1996, to September 30, 1997, and September 1, 1998, to present (USGS 2000).

Precipitation data from the Western Regional Climate Center (WRCC) station at Wallace, Woodland Park were collected for the same period (WRCC 2000). This precipitation gage is the nearest gage to the South Fork at Silverton and Placer Creek at Wallace. The mean daily discharge hydrograph and precipitation data for water year 1999 are presented in Figure 2.3.1-1 for Placer Creek and Figure 2.3.1-2 for the South Fork at Silverton. The historical stream flow data are presented in Figure 2.3.1-3 for Placer Creek and Figure 2.3.1-4 for the South Fork at Silverton.

In addition to the USGS hydrologic information, the U.S. Department of Housing and Urban Development, Federal Insurance Administration completed a flood insurance study for Shoshone County, Idaho (FIA 1979). Computed peak discharges for 10-year, 50-year, 100-year and 500-year events at various locations on the South Fork were presented and are discussed in Section 2.3.2. These calculated discharges are compared to discharges calculated from the USGS stream flow data.

Stream discharge measurements were taken in association with water quality sampling events completed by MFG, URS, Idaho Division of Environmental Quality (IDEQ), and USGS. These measurements have occurred regularly since 1991. These data can be used to evaluate the adequacy of the historical hydrographs extrapolated from the Placer Creek data. These data for both segments MidGradSeg01 and MidGradSeg02 are summarized in Table 2.3.1-1.

2.3.1.2 Segment MidGradSeg02 (Confluence with the North Fork to Elizabeth Park)

Five USGS gaging stations are located in segment MidGradSeg02; South Fork at Kellogg, station 12413250; South Fork at Elizabeth Park, station 12413210; South Fork at Smelterville, station 12413300; South Fork near Pinehurst, station 12413470; and Government Gulch near mouth at Smelterville, station 12413290 (USGS 2000). Historical data are available for all of these stations except Government Gulch. Water year 1999 stream flow data are available for the South Fork at Elizabeth Park, the South Fork near Pinehurst, and Government Gulch. Precipitation data from the WRCC station at Kellogg were collected for the same period (WRCC 2000). This precipitation gage is the nearest gage to the South Fork at Elizabeth Park, Pinehurst and Government Gulch. The mean daily discharge hydrograph and precipitation data for water year 1999 are presented in Figure 2.3.1-5 for the South Fork at Elizabeth Park, Figure 2.3.1-6 for the South Fork near Pinehurst, and Figure 2.3.1-7 for Government Gulch. The historical stream flow data are presented in Figure 2.3.1-8 for the South Fork at Kellogg, Figure 2.3.1-9 for the South Fork at Elizabeth Park, Figure 2.3.1-10 for the South Fork at Smelterville, and Figure 2.3.1-11 for the South Fork near Pinehurst. The period of record shown on Figures 2.3.1-8 through -11 are the available periods for each gage.

In addition to the USGS hydrologic information, the U.S. Department of Housing and Urban Development, Federal Insurance Administration completed a flood insurance study for Shoshone County, Idaho (FIA 1979). Computed peak discharges for 10-year, 50-year, 100-year and 500-year events at various locations on the South Fork were reported and are discussed in Section 2.3.2. These calculated discharges can be compared to discharges calculated from the USGS stream flow data.

2.3.2 Hydrologic Description

This section describes the hydrology of the South Fork based on water year 1999 stream discharge and precipitation data, historical stream discharge data and the flood insurance study. Frequency analyses were completed where sufficient period of record exists and compared to flood frequency analyses from other sources.

2.3.2.1 Segment MidGradSeg01 (east of Kellogg to Wallace)

Data from the two USGS gages are used to describe the surface water hydrology of Segment MidGradSeg01, Placer Creek at Wallace and the South Fork at Silverton.

2.3.2.1.1 Historical Description. As indicated in Figure 2.3.1-4, the maximum mean daily discharge measured at the Silverton gage was approximately 4,000 cfs and occurred on January 16, 1974, the instantaneous peak discharge on this date was 4,300 cfs. Typically for this period of record, maximum mean daily discharge varied from about 1,000 to about 2,000 cfs, with average annual discharge approximately 250 cfs. Base flow is estimated to be between 50 and 60 cfs. The majority of discharge occurs in spring and summer months when snowmelt supplies water to the channel system. Smaller discharges typically occur during the fall and winter months.

Figure 2.3.1-3 indicates the maximum mean daily discharge recorded at the Placer Creek gage was about 900 cfs and occurred on January 15, 1974, with an instantaneous peak discharge of 1,140 cfs. The USGS has estimated that a peak discharge of 2,200 cfs occurred on February 2, 1996 during a period when the gage was not recording information. Typically for this period of record, peak mean annual discharge varies from about 150 to about 500 cfs. The average annual discharge for Placer Creek is about 35 cfs and baseflow is estimated at 3 to 5 cfs.

2.3.2.1.2 Flood Frequency Analyses (Segment MidGradSeg01). Peak annual discharge for Placer Creek and the South Fork for the period of record were used with the USGS computer program PEAKFQ2.4 (USGS 1998) to calculate the discharge and 95 percent confidence intervals at various recurrence intervals. PEAKFQ2.4 performs the flood frequency calculations based on Bulletin 17B from the Interagency Advisory Committee on Water Data (USGS 1982). As described in Section 2.3.1, a flood insurance study is available for Shoshone County (FIA 1979), which reports magnitudes of flooding events of various recurrence intervals. The results of these three analyses are presented in Table 2.3.2-1 for Placer Creek, and Table 2.3.2-2 for the South Fork at Silverton. The bankful discharge, the approximately 1.5 year event, is estimated to be approximately 300 cfs for Placer Creek and 1,500 cfs for the South Fork at Silverton.

Comparison of the estimated peak flows in the flood insurance study and the estimates from the PEAKFQ analyses for Placer Creek, Table 2.3.2-1, indicate reasonable correlation. In general, the estimate from the flood insurance study falls in the bounds of the 95 percent confidence intervals from the PEAKFQ calculation. A comparison of the PEAKFQ estimate and the flood insurance study estimate for the Silverton site are not as good. The discharge presented in the flood insurance study is greater than the upper 95 percent confidence interval for all recurrence intervals presented. The values calculated for this report are based on recorded stream discharge and the values used from the flood insurance study are based on empirical relationships. While there are differences, the values reported in the flood insurance study are considered usable conservative estimates.

2.3.2.1.3 Water Year 1999. Total annual average precipitation at the WRCC Wallace at Woodland Park Station for the 51-year period of record is 37.7 inches, while for water year 1999 the total precipitation was 39.8 inches (WRCC 2000). Total annual average snowfall for the WRCC station is 83.7 inches, while for water year 1999 the total snowfall was 82.2. While these comparisons do not address monthly variations in precipitation, they do indicate that the water budget for water year 1999 was typical.

Table 2.3.2-3 summarizes the mean monthly flows, for Placer Creek and the South Fork at Silverton, mean monthly precipitation (rain and snow water content), and total snowfall at the WRCC station at Wallace, Woodland Park for water year 1999. Table 2.3.2-3 and Figure 2.3.1-1 and 2.3.1-2 indicate the majority of precipitation occurred from October to March, 83 percent of the total annual precipitation. Much of this precipitation was in the form of snow and did not run off into the stream channels immediately.

As indicated in Table 2.3.2-3, stream discharges remained relatively low through February 1999. Small increases in discharge are noticeable in response to precipitation events in Figures 2.3.1-1 and 2.3.1-2 through the end of March 1999.

The majority of discharge in Placer Creek and the South Fork at Silverton during water year 1999 was produced during spring and summer. The increase in discharge during the spring and summer is attributed to increased runoff caused by snowmelt. Increased discharges began in late March and continued through July 1999 as shown on Figures 2.3.1-1 and 2.3.1-2. Maximum daily temperature and mean daily discharge for water year 1999 are presented in Figures 2.3.2-1 and 2.3.2-2. Periods of increased discharge correspond well with maximum daily temperature above about 50 degrees, as seen in Figures 2.3.2-1 and 2.3.2-2. A time lag occurs between the occurrence of increased temperatures and the increased stream discharges due to the time to melt snow and the travel time through the channel network. Two periods of increase maximum temperature correspond very well with the peak discharge events for water year 1999, May 23 to June 6 and June 11 to July 3. Increased temperatures over these periods melted much of the snow in the upper basin. Rain on snow also may have contributed to these increased discharges as indicated in Figures 2.3.2-1 and 2.3.2-2 where precipitation events also occurred during periods of increased temperature.

The overall pattern of discharge observed in water year 1999 is typical of Placer Creek and the South Fork at Silverton; however, magnitudes of discharge may vary significantly from year to year. Figures 2.3.2-3 and 2.3.2-4 indicate the pattern of increased discharges during the spring and summer is typical of these channels. Fall and winter typically have lower discharges. Occasional large discharges occur during winter months as seen in water year 1974 and 1982 at

both stations and in water year 1991 at Placer Creek. The South Fork at Silverton data for water year 1991 were not collected. Although the general pattern of the discharge at both of these locations is similar, the magnitudes of the discharges are not.

2.3.2.2 Segment MidGradSeg02 (Confluence With the North Fork to East of Kellogg)

Data from five USGS gages are used to describe the surface water hydrology of MidGradSeg02, South Fork at Elizabeth Park, South Fork near Pinehurst, Government Gulch at Mouth, South Fork at Kellogg, and South Fork at Smelterville.

2.3.2.2.1 Historical Description. As indicated in Figure 2.3.1-8 the maximum mean daily discharge measured at the Kellogg gage was approximately 7,200 cfs and occurred on February 2, 1982, the instantaneous peak discharge on this date was 7,580 cfs. Typically for this period of record maximum annual mean daily discharge varied from about 1,500 to about 3,000 cfs, with average annual discharge approximately 400 cfs. Base flow is estimated to be between 80 and 90 cfs. The majority of discharge occurs in spring and summer months when snowmelt supplies water to the channel system; however large discharges in fall and winter appear to be relatively common based on this period of record.

Figure 2.3.1-9 indicates the maximum mean daily discharge recorded at the South Fork Elizabeth Park gage was about 7,400 cfs and occurred on February 9, 1996, with an instantaneous peak discharge of 9,600 cfs. Typically for this period of record, peak mean annual discharge varied from about 1,200 to about 2,000 cfs. The average annual discharge for the South Fork at Elizabeth Park is about 330 cfs, and baseflow is estimated at 50 to 70 cfs. The majority of discharge occurs in spring and summer months when snowmelt supplies water to the channel system; however, large discharges in fall and winter also occur common based on this period of record.

Figure 2.3.1-10 indicates the maximum mean daily discharge recorded at the South Fork Smelterville gage was about 9,000 cfs and occurred on January 16, 1974, with an instantaneous peak discharge of 11,500 cfs. Typically for this period of record, peak mean annual discharge varied from about 2,000 to about 3,000 cfs. The average annual discharge for the South Fork at Smelterville is about 460 cfs and baseflow is estimated at 90 to 100 cfs. The majority of discharge occurs in spring and summer months when snowmelt supplies water to the channel system; however large discharges in fall and winter also occur common based on this period of record.

As indicated in Figure 2.3.1-11, the maximum mean daily discharge measured at the Pinehurst gage was approximately 9,000 cfs and occurred on February 9, 1996; the instantaneous peak discharge on this date was 11,700 cfs. Typically for this period of record, maximum annual mean daily discharge varied from about 2,500 to about 5,000 cfs, with average annual discharge approximately 540 cfs. Base flow is estimated to be between 90 and 100 cfs. The majority of discharge occurs in spring and summer months when snowmelt supplies water to the channel system; however, large discharges occur throughout the year.

2.3.2.2.2 Flood Frequency Analyses (Segment MidGradSeg02). Peak annual discharge for the stations with at least 10 years of data, Pinehurst and Elizabeth Park, were used with the USGS computer program PEAKFQ2.4 (USGS 1998) to calculate the discharge and 95 percent confidence intervals at various recurrence intervals. PEAKFQ2.4 performs the flood frequency calculations based on Bulletin 17B from the Interagency Advisory Committee on Water Data (USGS 1982). As described in Section 2.3.1, a flood insurance study is available for Shoshone County (FIA 1979), which reports magnitudes of flooding events of various recurrence intervals. The results of these three analyses are presented in Table 2.3.2-4 for the South Fork at Elizabeth Park, and Table 2.3.2-5 for the South Fork at Pinehurst. The bankful discharge, the approximately 1.5 year event, is estimated to be approximately 1,300 cfs for the South Fork at Elizabeth Park and 2,700 cfs for the South Fork at Pinehurst.

Comparison of the estimated peak flows in the flood insurance study and the estimates from the PEAKFQ analyses for the South Fork at Elizabeth Park, Table 2.3.2-4, indicate reasonable correlation. In general, the estimate from the flood insurance study for locations falls in the bounds of the 95 percent confidence intervals from the PEAKFQ calculation. A comparison of the PEAKFQ estimate and the flood insurance study estimate for the Pinehurst site are not as good; however, the flood insurance study comparison location is downstream of Pine Creek and the USGS gage site is upstream of Pine Creek. Although the values calculated for this report are based on recorded stream discharge and the flood insurance study is based on empirical relationships, the values reported in the flood insurance study should be considered for conservatism in design of remedial measures.

2.3.2.2.3 Water Year 1999. Total annual average precipitation at the WRCC Kellogg Station for the 95-year period of record is 30.8 inches, while for water year 1999 the total precipitation was 37.8 inches (WRCC 2000). Total annual average snowfall for the WRCC station is 54.3 inches, while for water year 1999 the total snowfall was 35.5 inches. While these comparisons do not address monthly variations in precipitation, they do indicate that the water budget for water year 1999 was somewhat typical with above average total precipitation and below average snowfall.

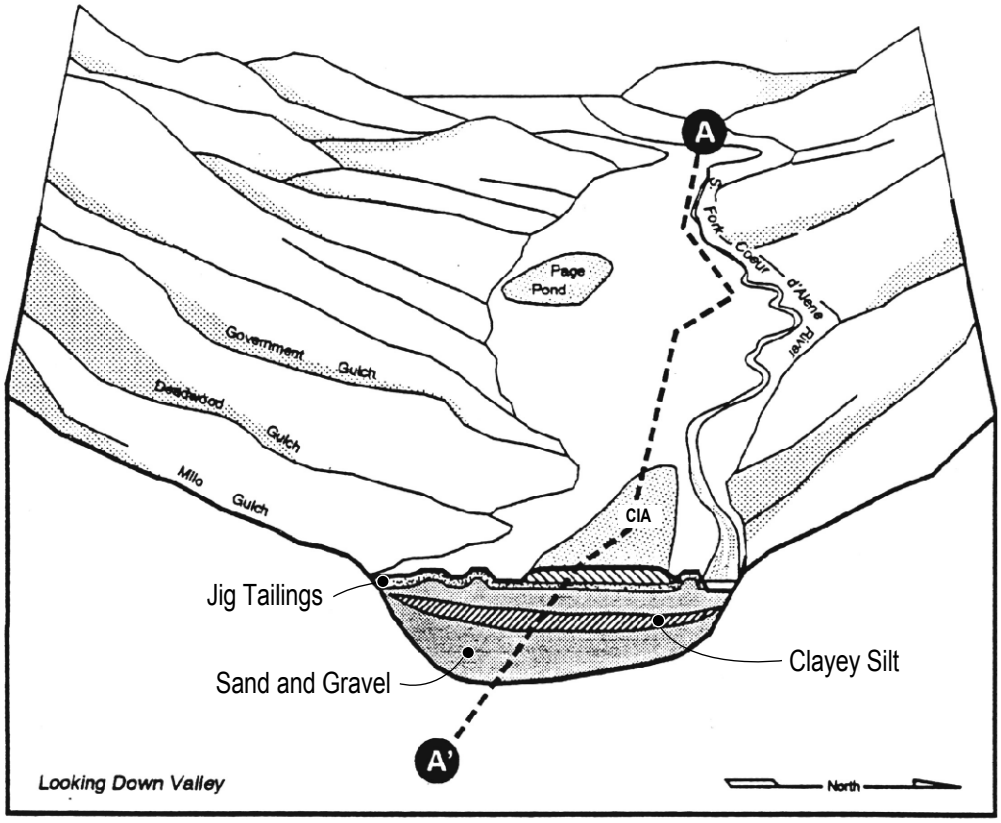
Table 2.3.2-6 summarizes the mean monthly flows, for the South Fork at Elizabeth Park, the South Fork at Pinehurst, and Government Gulch at Smelterville, total monthly precipitation (rain and snow water content), and total snowfall at the WRCC station at Kellogg for water year 1999. Table 2.3.2-6 and Figures 2.3.1-5 to 2.3.1-7 indicate the majority of precipitation occurred from October to March, 78 percent of the total annual precipitation. Much of the precipitation in the upper basin was in the form of snow and did not run off into the stream channels immediately.

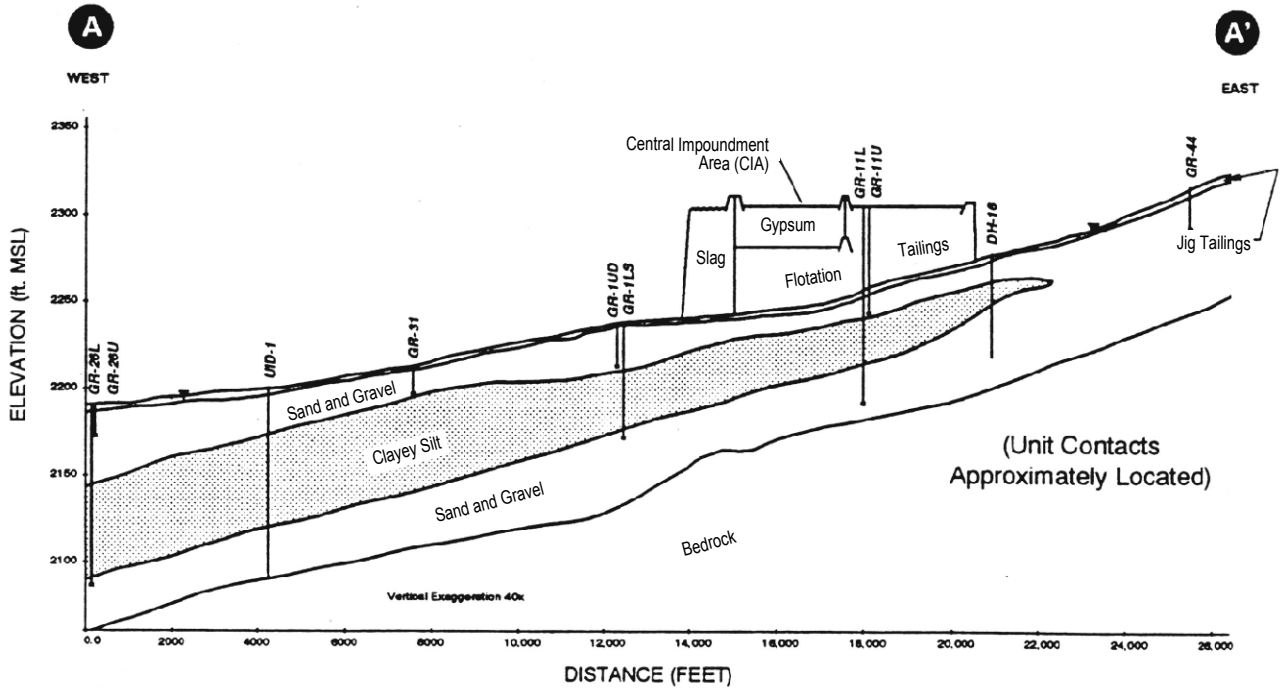
As indicated in Table 2.3.2-6, stream discharges remained relatively low through February 1999 for the stations on the South Fork. Increases in discharge are noticeable in response to precipitation events in Figures 2.3.1-5 and 2.3.1-6 through the end of March 1999; however, these increases are small with respect to the maximum discharge, which occurred in May 1999. Increases in discharge are more pronounced in response to precipitation events throughout the year in Government Gulch, Figure 2.3.1-7. This may be due to the lower elevation of the Government Gulch watershed, where less precipitation falls as snow.

The majority of discharge in the South Fork at Elizabeth Park and near Pinehurst during water year 1999 was produced during spring and summer. The increase in discharge during the spring and summer is attributed to increased runoff caused by snowmelt. Increased discharges began in late March and continued through July 1999 for the South Fork at Elizabeth Park and near Pinehurst as shown on Figures 2.3.1-5 and 2.3.1-6. Maximum daily temperature and mean daily discharge for water year 1999 for the South Fork at Elizabeth Park and near Pinehurst are presented in Figures 2.3.2-3 and 2.3.2-4. Periods of increased discharge correspond well with maximum daily temperature above about 50 degrees, as seen in Figures 2.3.2-3 and 2.3.2-4. A time lag occurs between the occurrence of increased temperatures and the increased stream discharges due to the time to melt snow and the travel time through the channel network. Increased temperatures over these periods melted much of the snow in the upper basin. Rain on snow also may have contributed to these increased discharges as indicated in Figures 2.3.1-5 and 2.3.1-6 where precipitation events also occurred during periods of increased temperature.

The majority of discharge in Government Gulch also is produced during water year 1999 was also produced during spring and summer; however, distinct stream discharge peaks occur throughout the winter. These peaks also correspond well with observed maximum temperature and precipitation at Kellogg, Figures 2.3.2-5 and 2.3.1-7. The lower elevation of the Government Gulch watershed with respect to the drainages further west provide a greater degree of dependence on precipitation falling as rain because less precipitation is stored within the basin as snow.

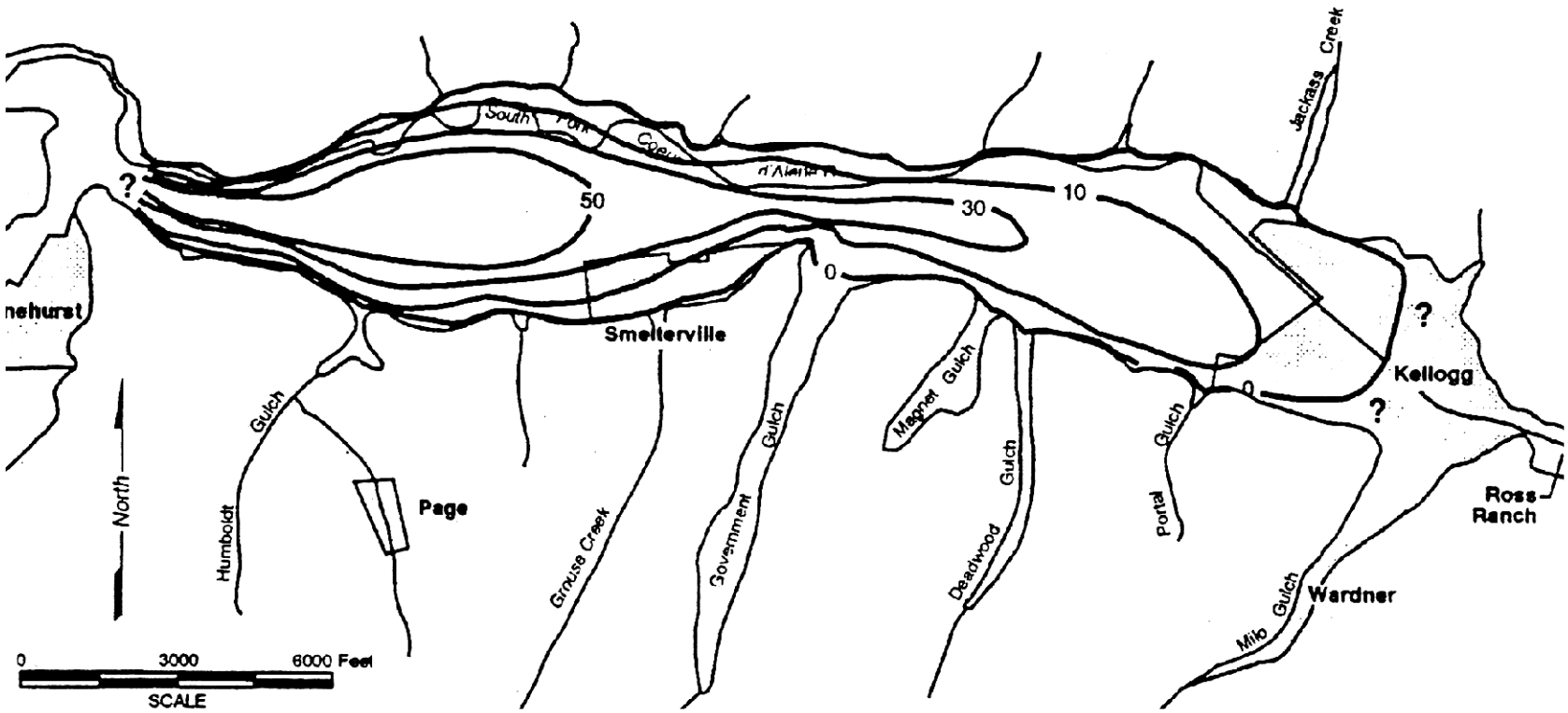
The overall pattern of discharge observed in water year 1999 is typical of the South Fork at Elizabeth Park and near Pinehurst, Figures 2.3.1-9 and 2.3.1-11. These figures indicate a general pattern of maximum annual discharge occurring in the spring or early summer, with a period of low base flow discharge occurring from summer to early fall. Discharge in the fall is dependent on the amount of precipitation falling as rain, as this water is not stored as snow and runs off directly into the stream channels. This direct runoff contributes to moderately high discharges in the fall. The magnitude of these moderately high discharges is more pronounced at downstream stations. In general, the fall discharge events at Pinehurst are larger than the fall discharge events at Elizabeth Park as a ratio of peak discharge for a specific year. This is due to increased drainage area where precipitation occurs as rain rather than snow further downstream in the watershed. Although the general pattern of discharge at these locations is similar, the magnitudes of the discharges are not.





Source: Dames & Moore, 1991. Bunker Hill RI/FS, Task 3.0, Revised Final Hydrologic Assessment, Volume I - text.

EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc. Control:4162500.6615.05.a Generation: 1 RI-2111 07/13/01	**Figure 2.1-1** **Geologic Cross-Section Along South Fork Coeur d'Alene River Valley**



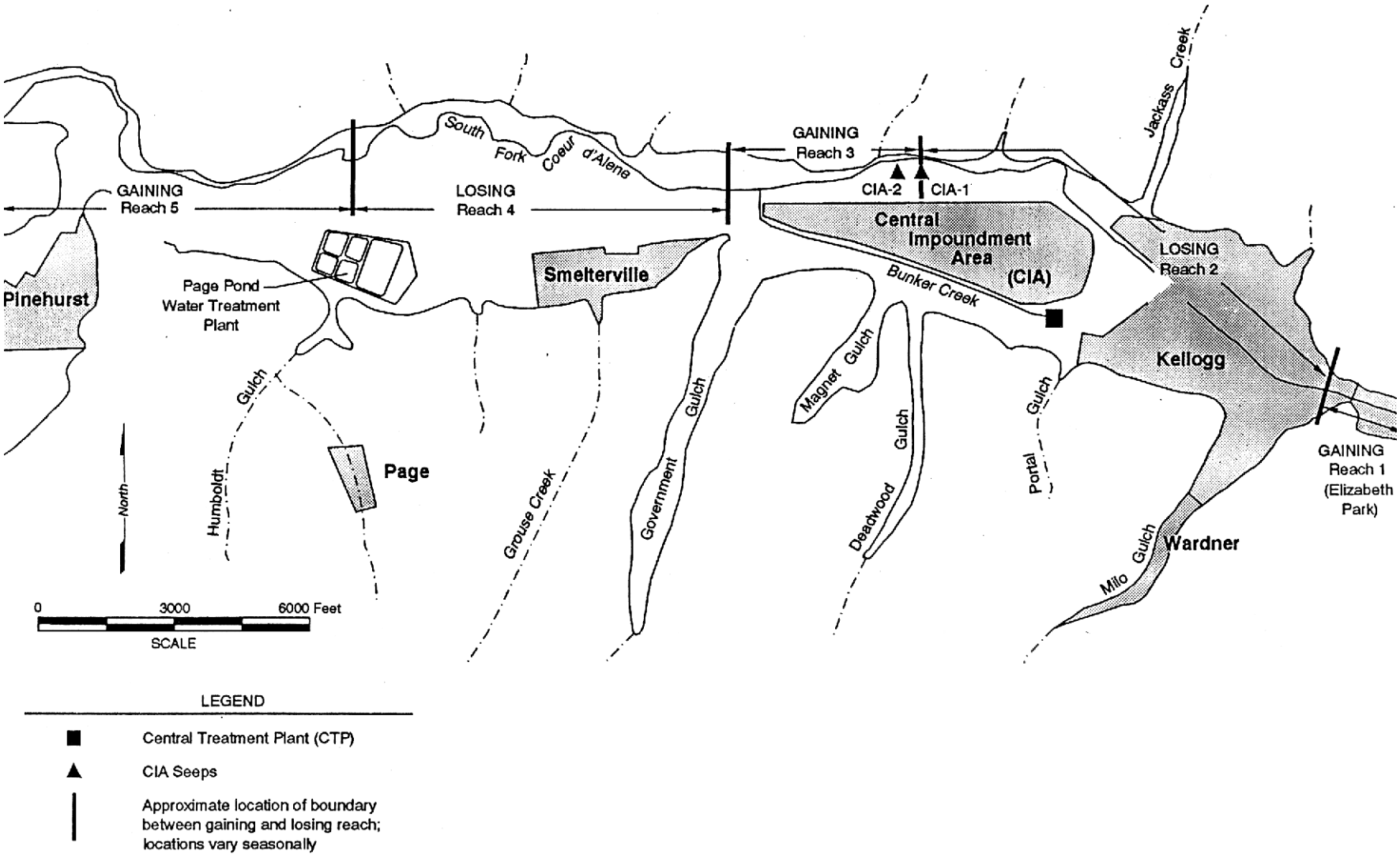
LEGEND

50 — Approximate Location of Line of Equal Thickness (in Feet)

Variable Contour Interval

Source: Dames & Moore 1991.

EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc. Control:41625.6615.05.a Generation: 1 SF-1 07/13/01	**Figure 2.2-1** **Thickness of Confining Zone**



Source: Dames & Moore 1991.

EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc. Control:4162500.6615.05.a Generation: 1 SF-2 07/13/01	**Figure 2.2-2** **Estimated Locations of Losing and Gaining Reaches**

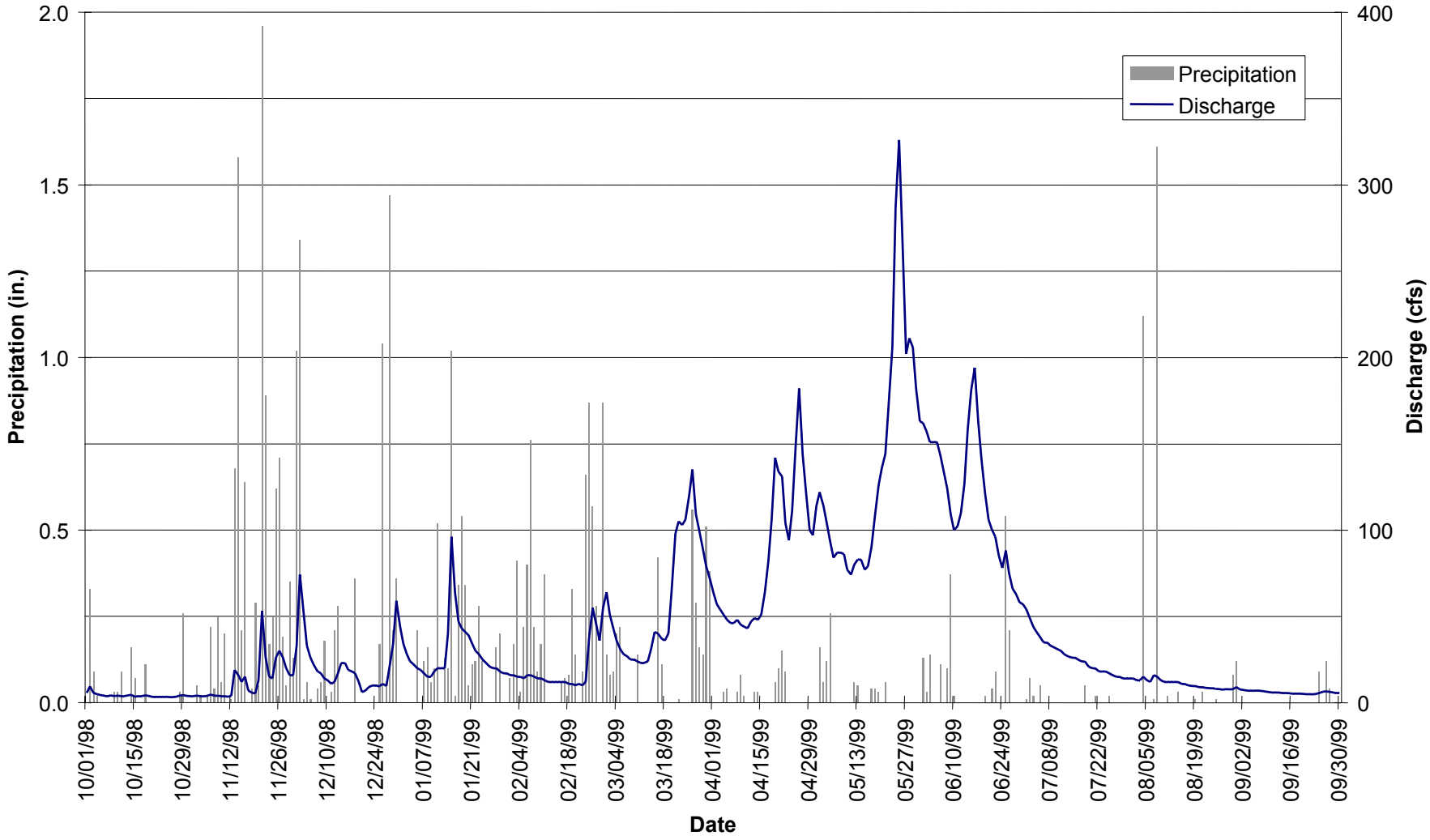


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Figure 2.3.1-1

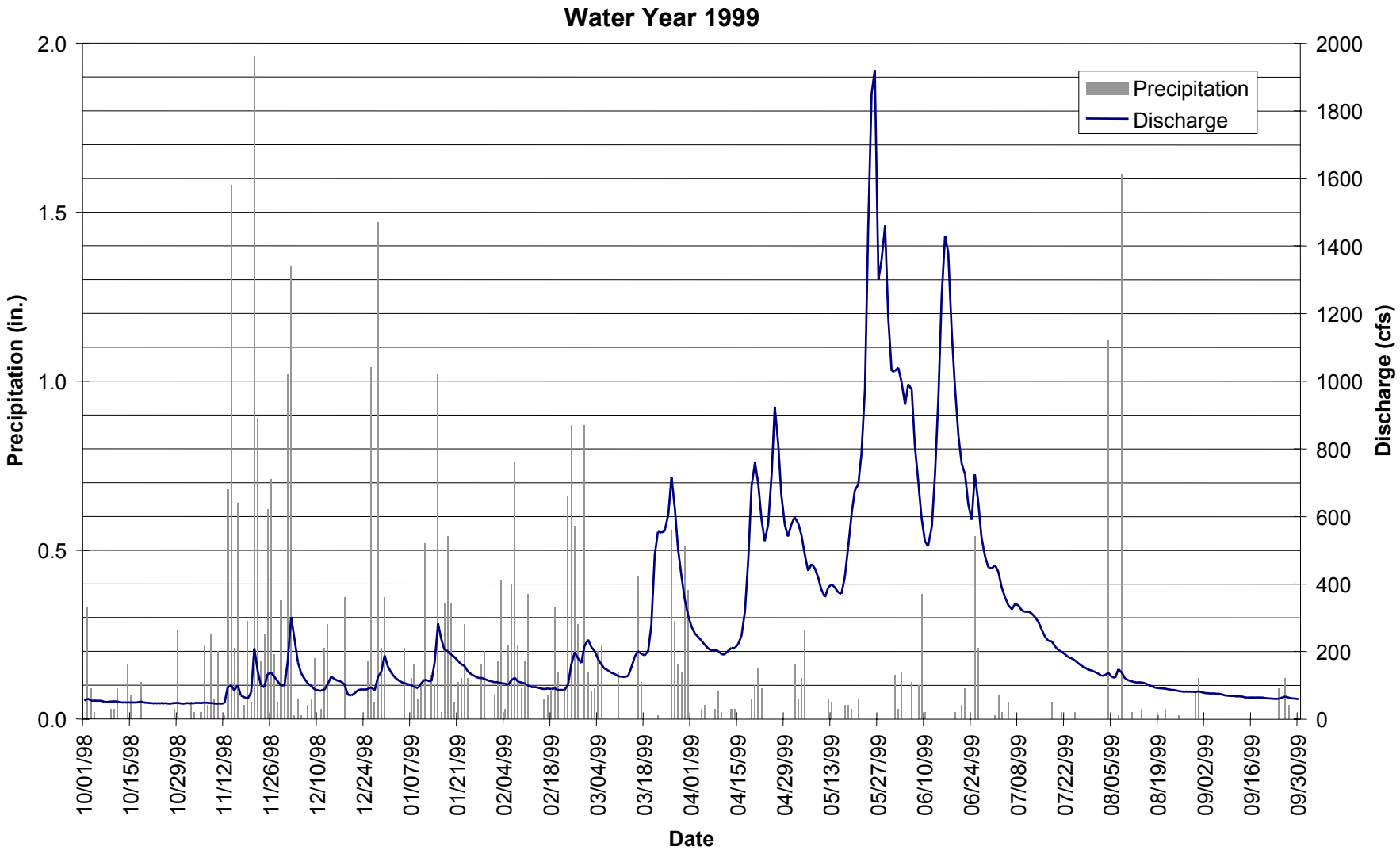

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Figure 2.3.1-2

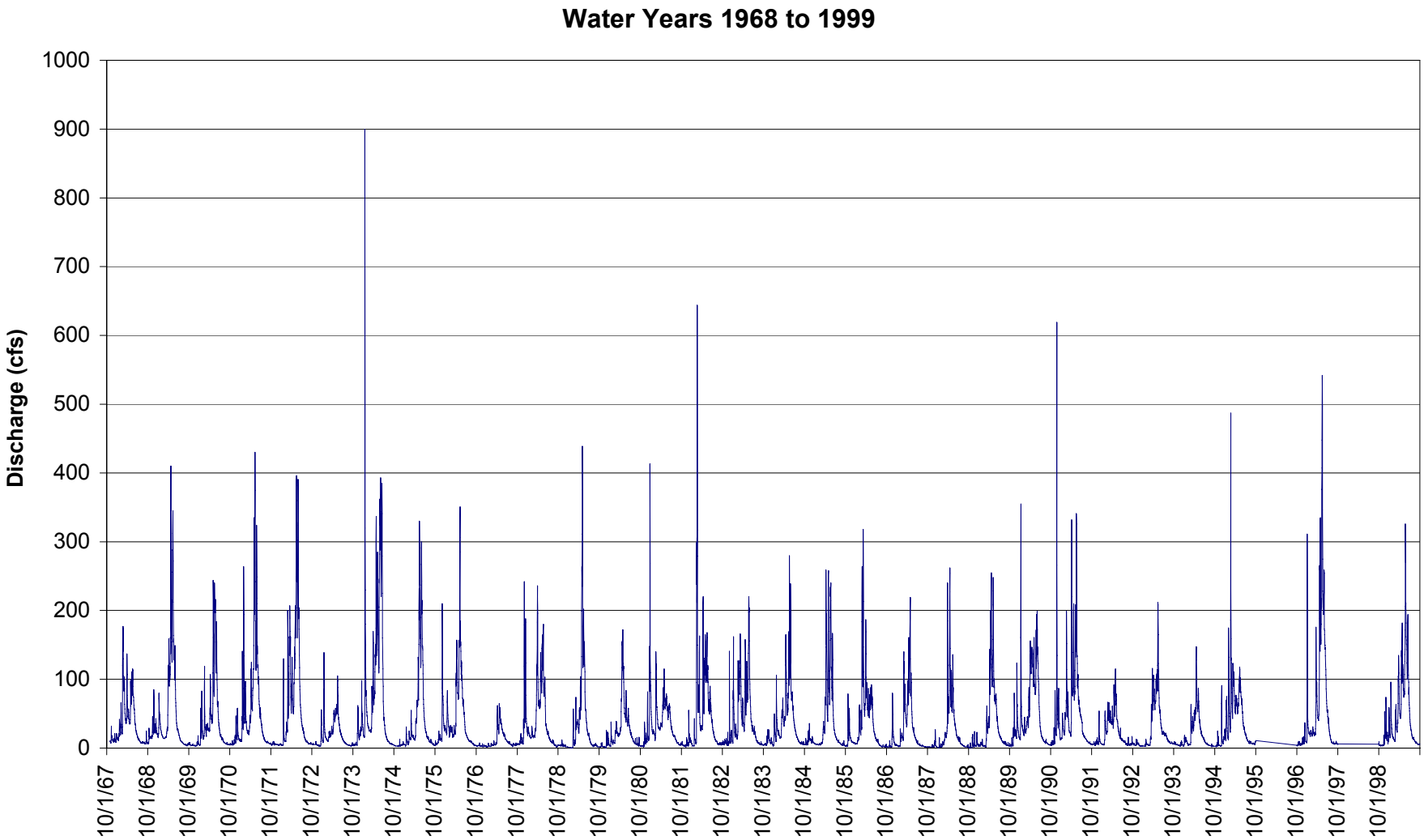

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Figure 2.3.1-3

Mean Daily Discharge, South Fork Coeur d'Alene River at Silverton, USGS Station 12413150 Water Years 1968-1987 and 1999

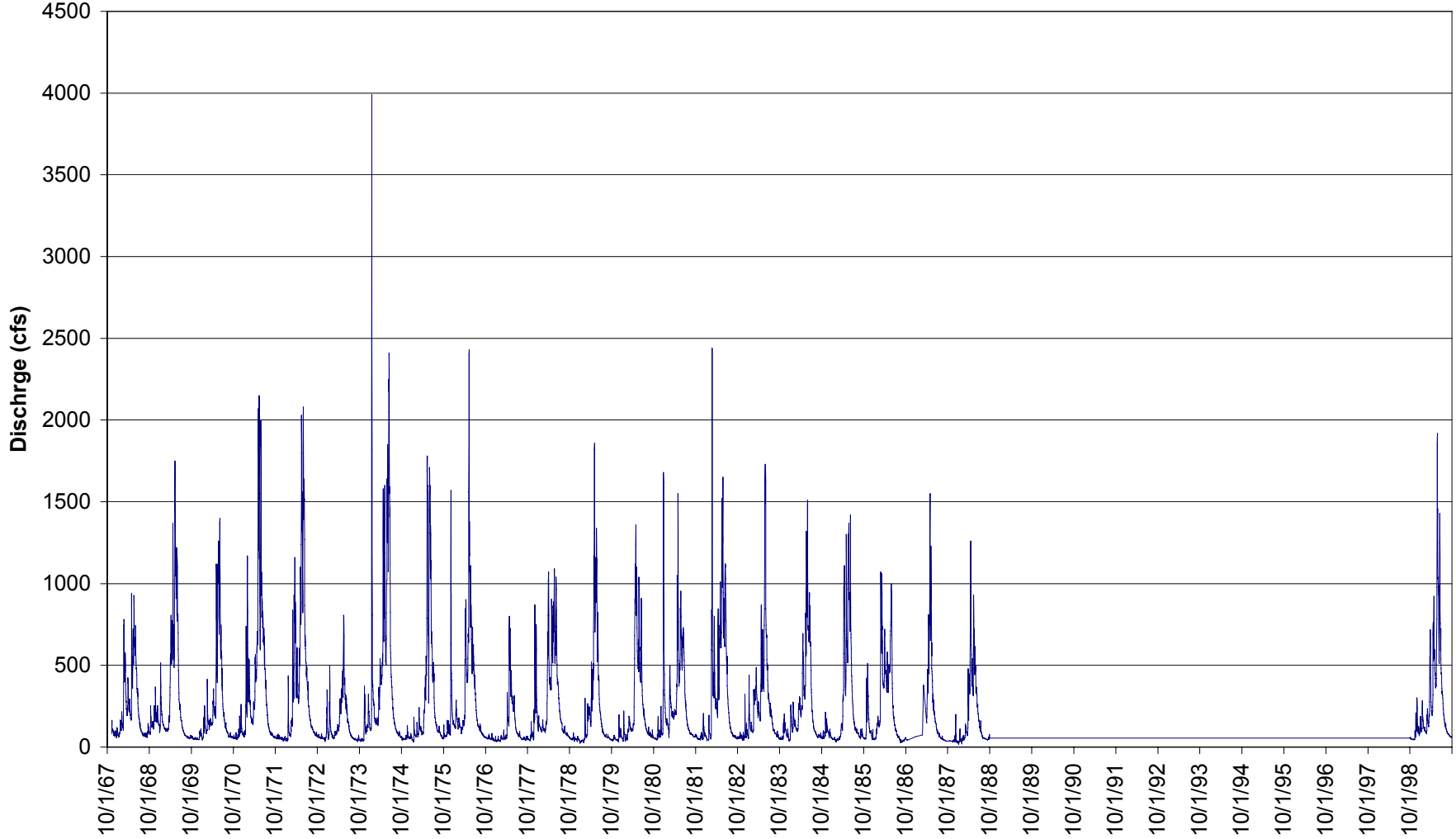

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Figure 2.3.1-4

Mean Daily Discharge, South Fork Coeur d'Alene River at Elizabeth Park, USGS Station 12413210 Water Years 1987-1999

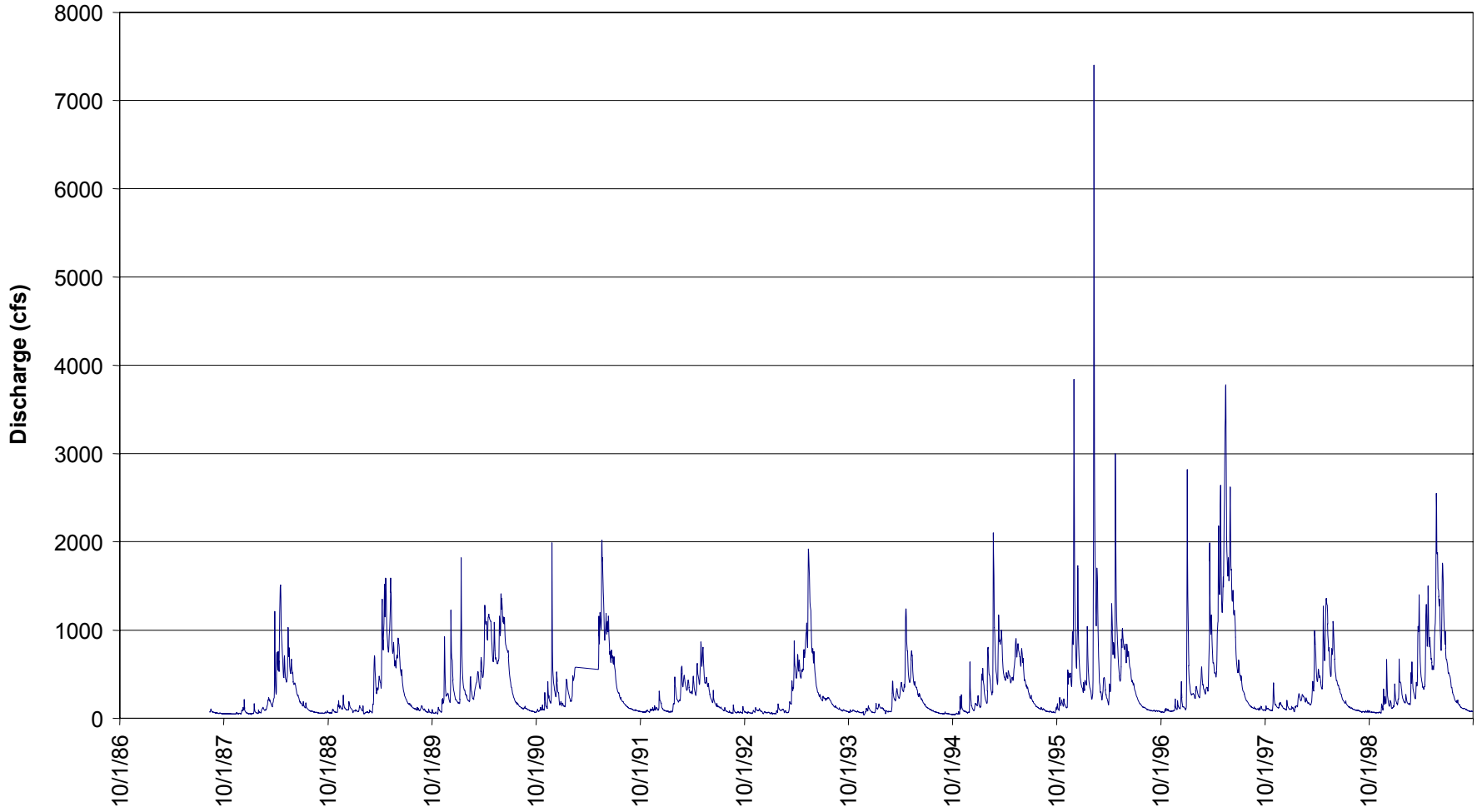

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Figure 2.3.1-5

Daily Total Precipitation and Daily Average Discharge for South Fork Coeur d'Alene River near Pinehurst, USGS Station 12413470 Water Year 1999

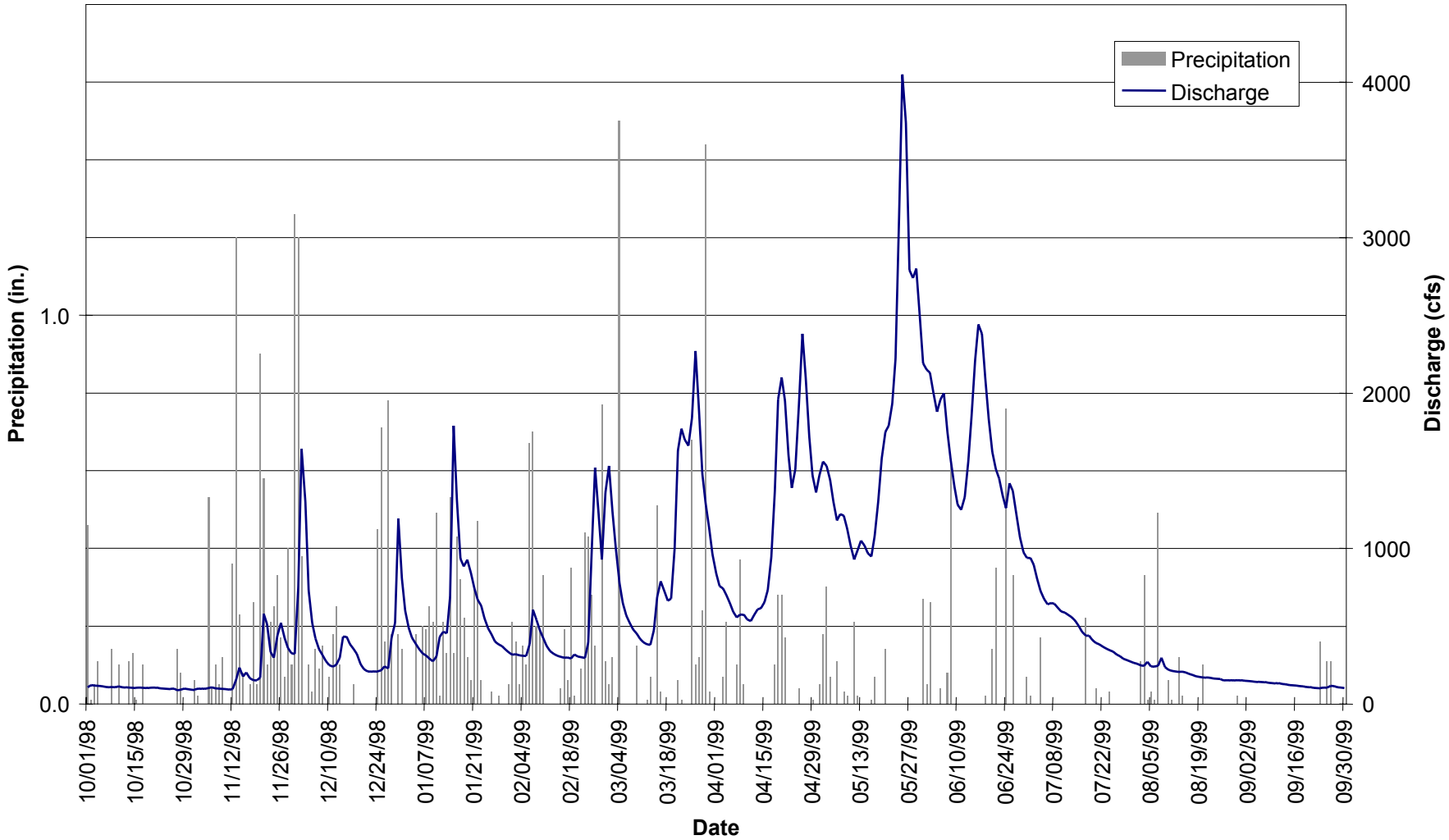

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Figure 2.3.1-6

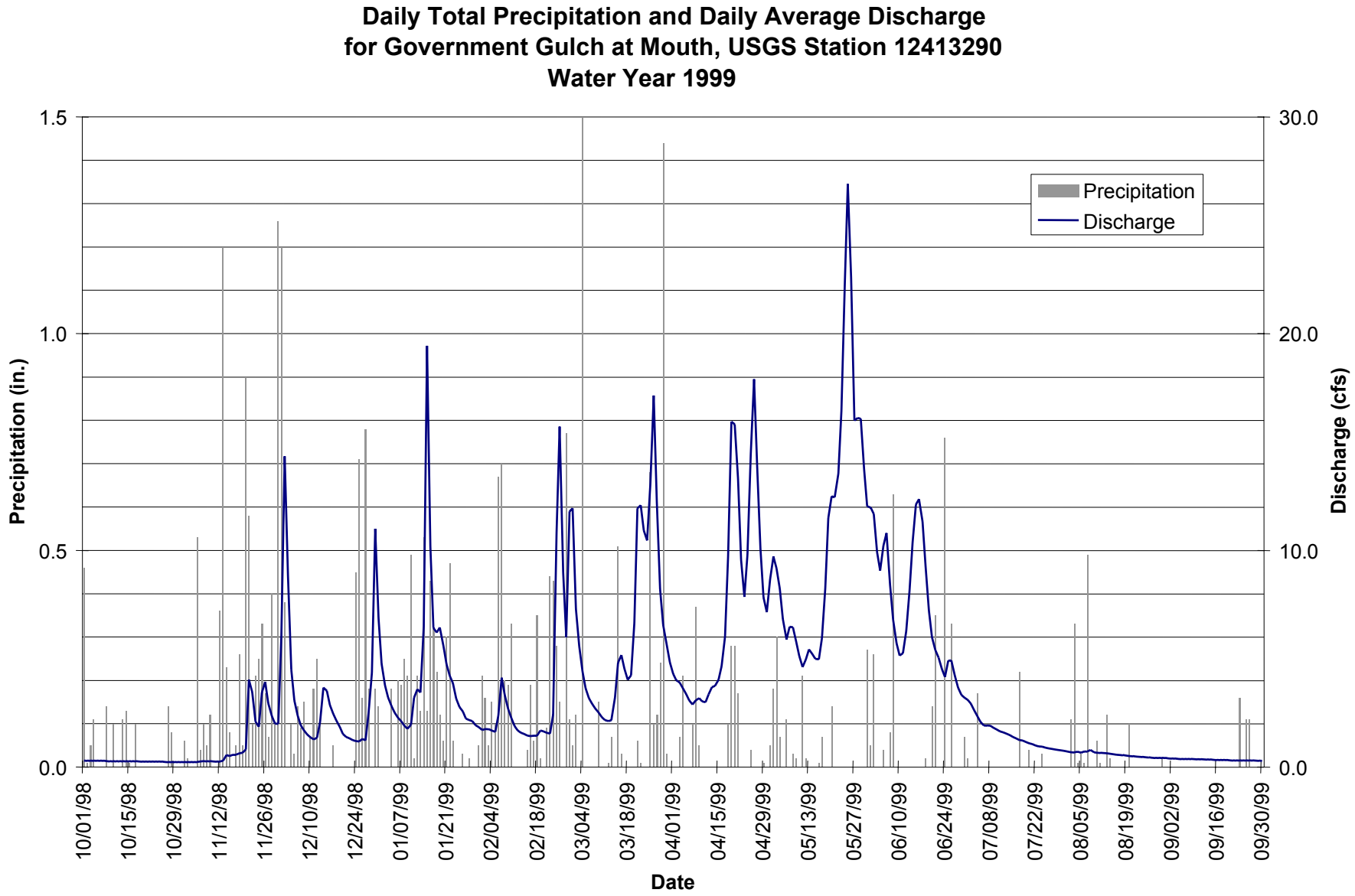

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Figure 2.3.1-7

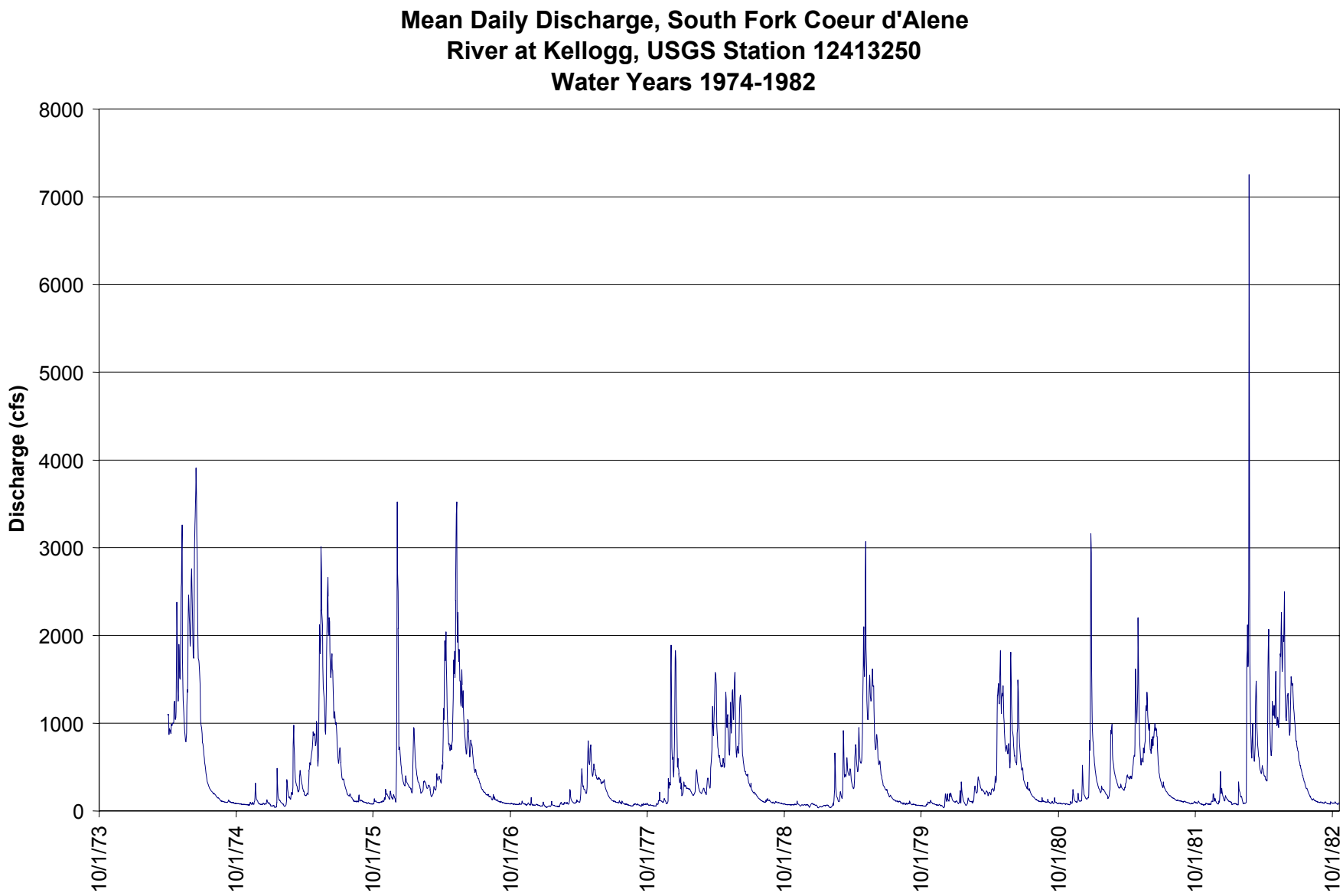

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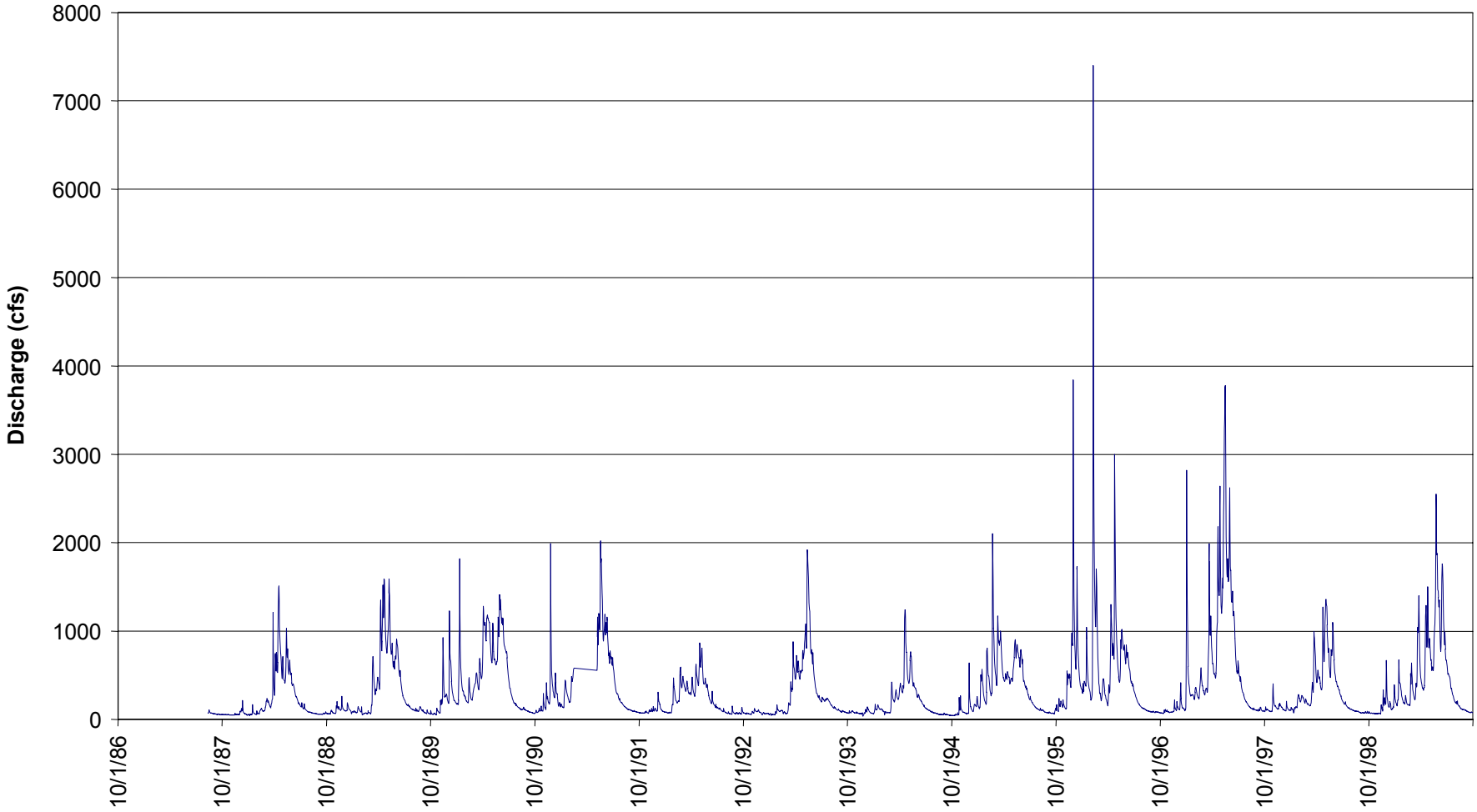
Figure 2.3.1-8

Mean Daily Discharge, South Fork Coeur d'Alene River at Elizabeth Park, USGS Station 12413210 Water Years 1987-1999



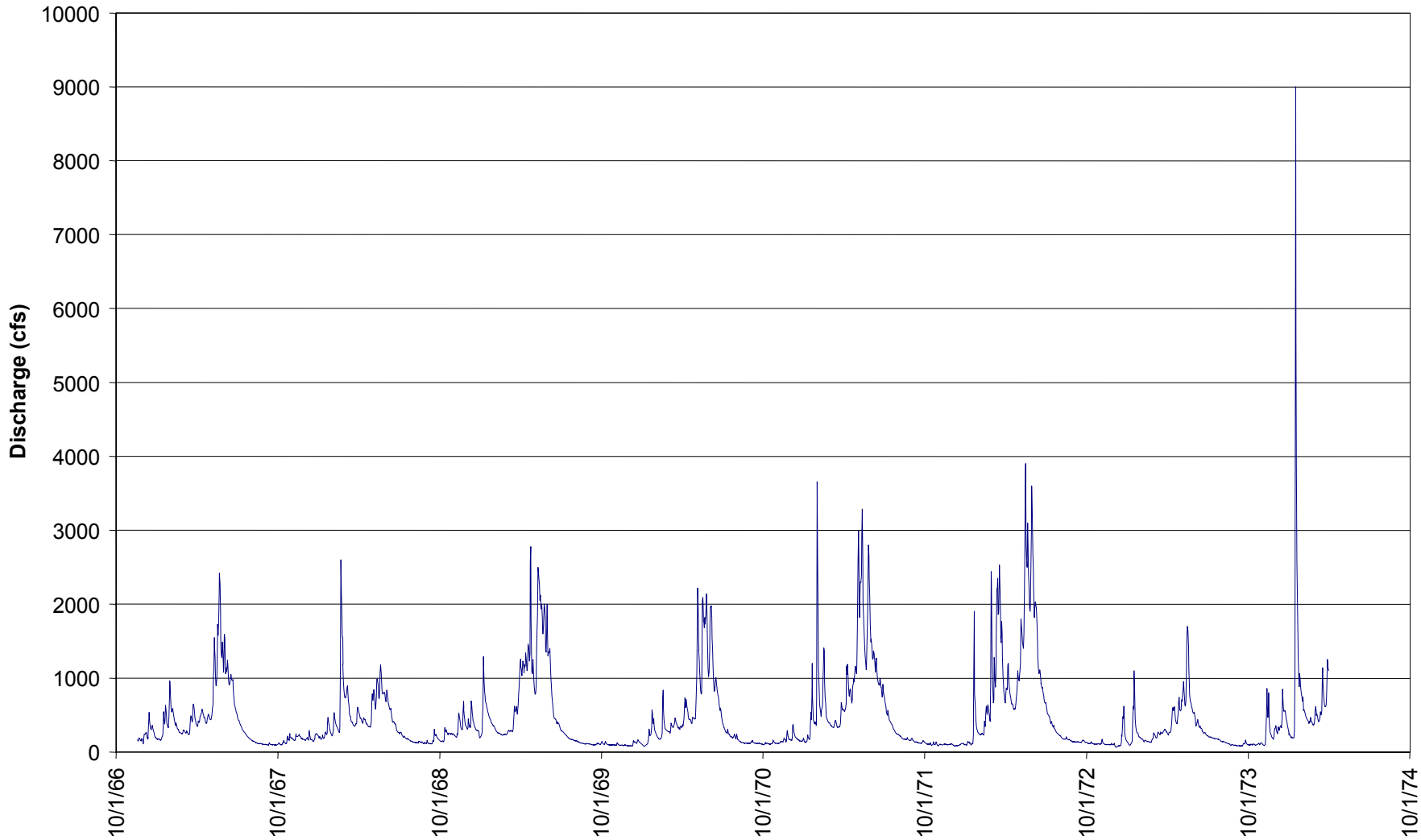
EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.1-9



EPA REGION 10

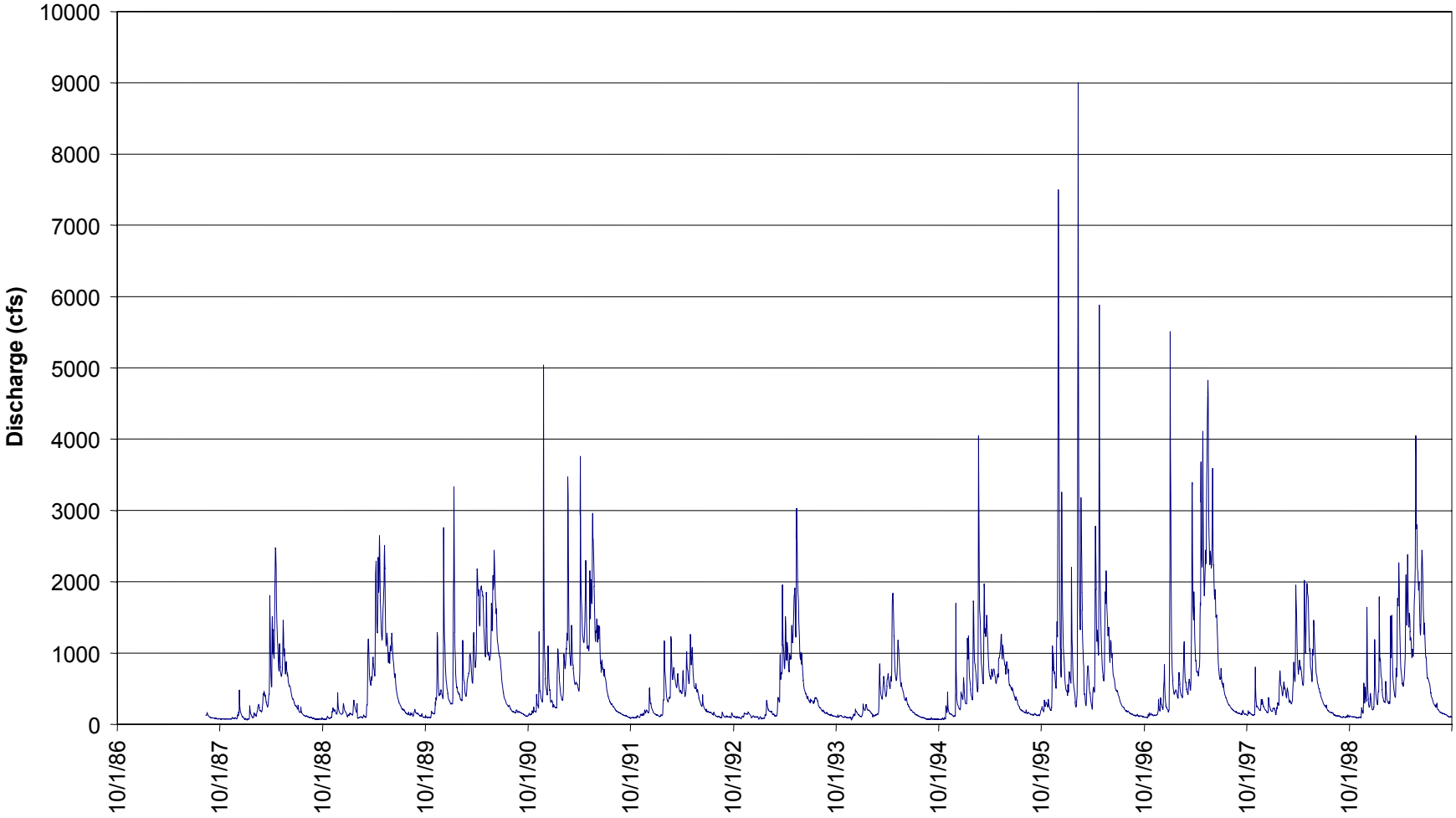
027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.1-10

Mean Daily Discharge, South Fork Coeur d'Alene River near Pinehurst, USGS Station 12413470 Water Years 1987-1999



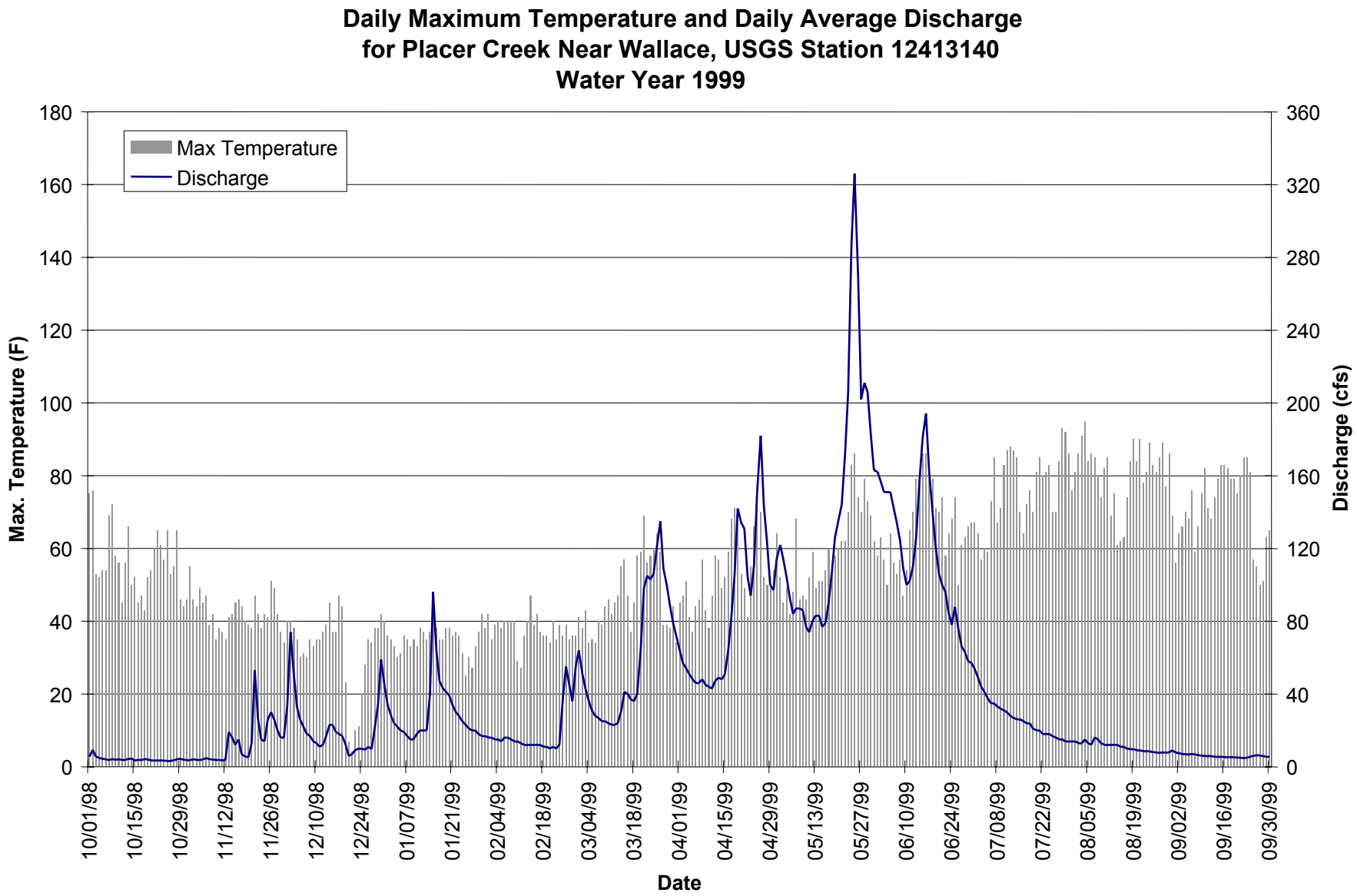
EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.1-11



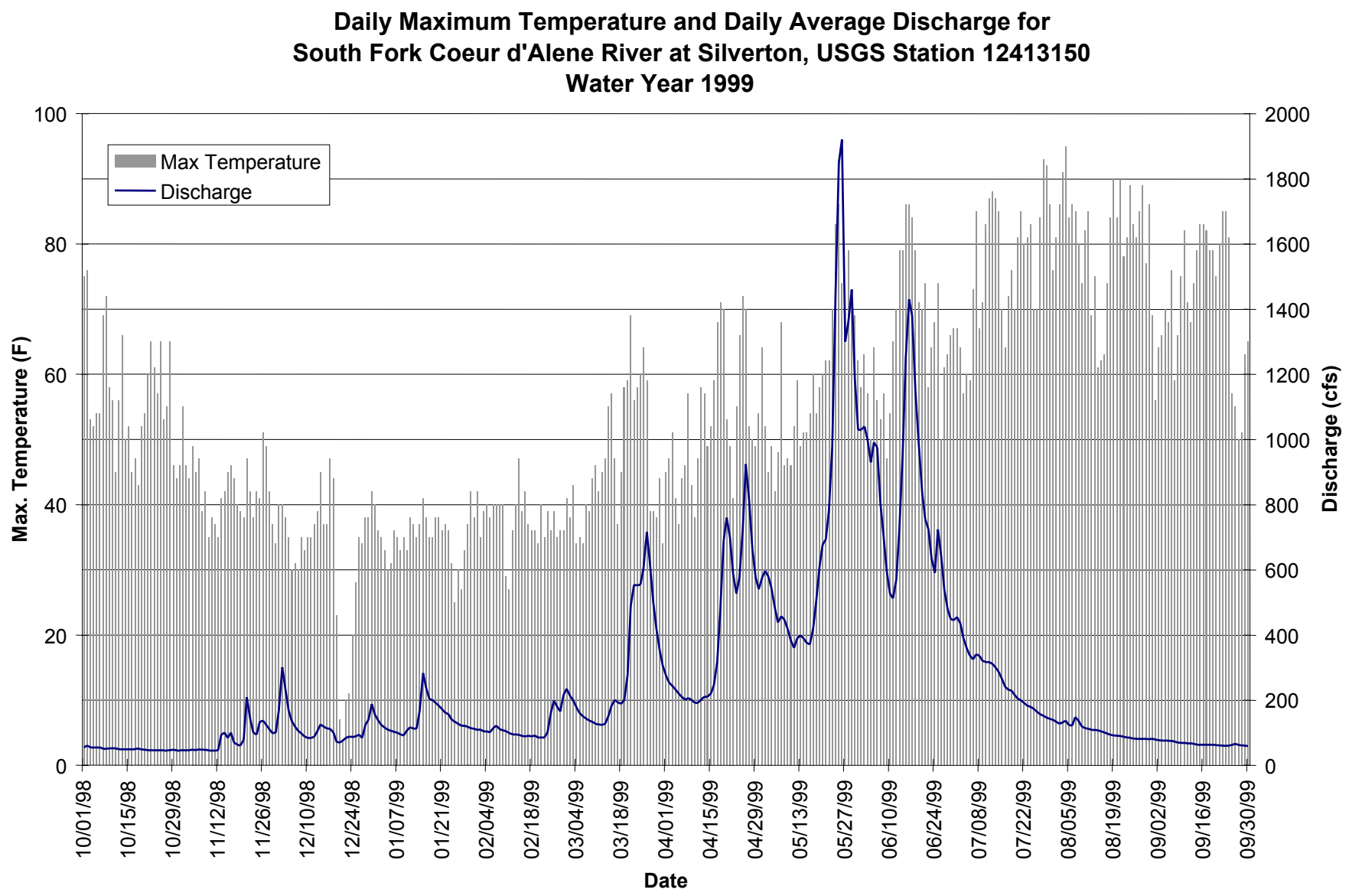
EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.2-1



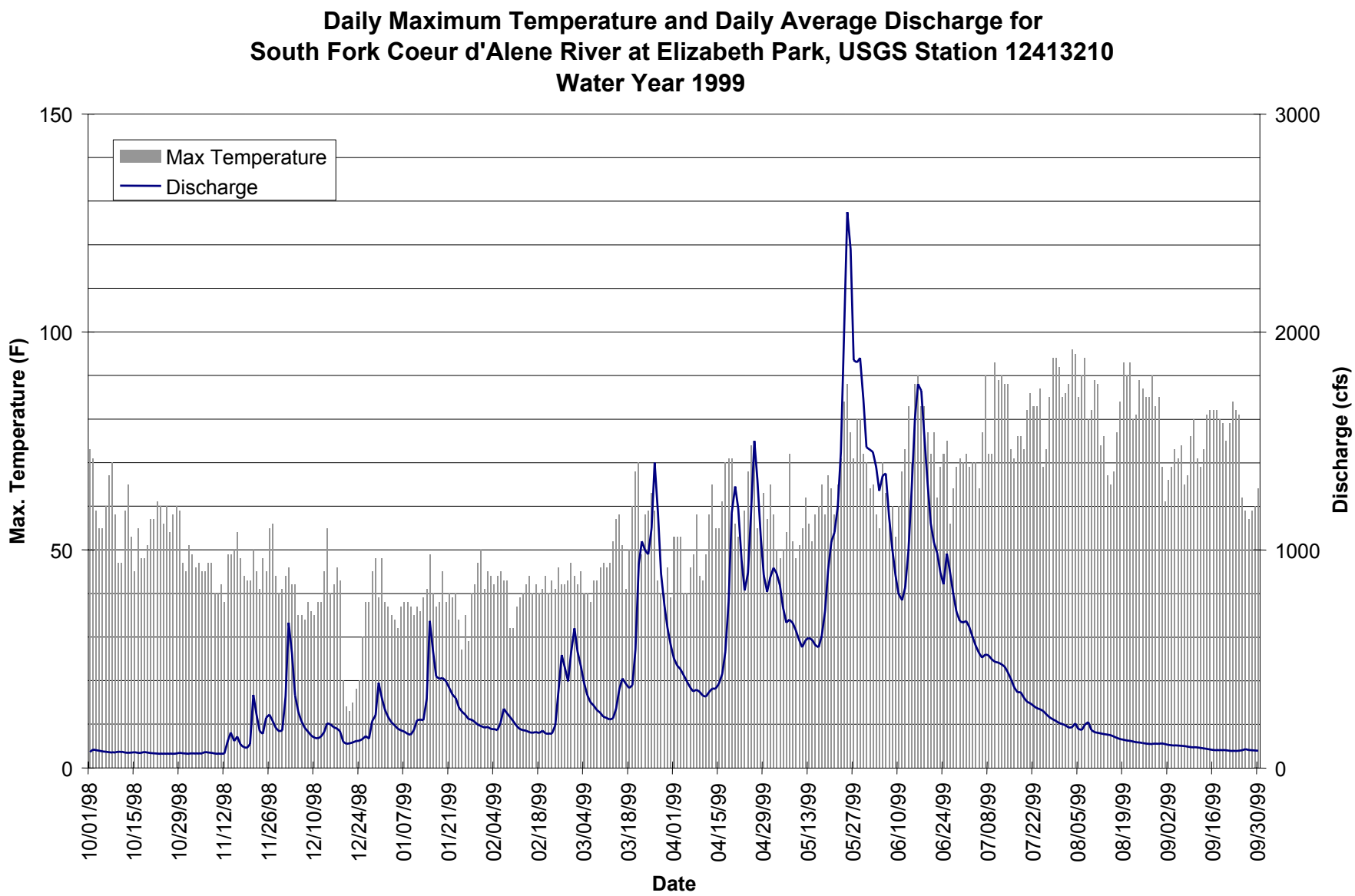
EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.2-2



EPA REGION 10

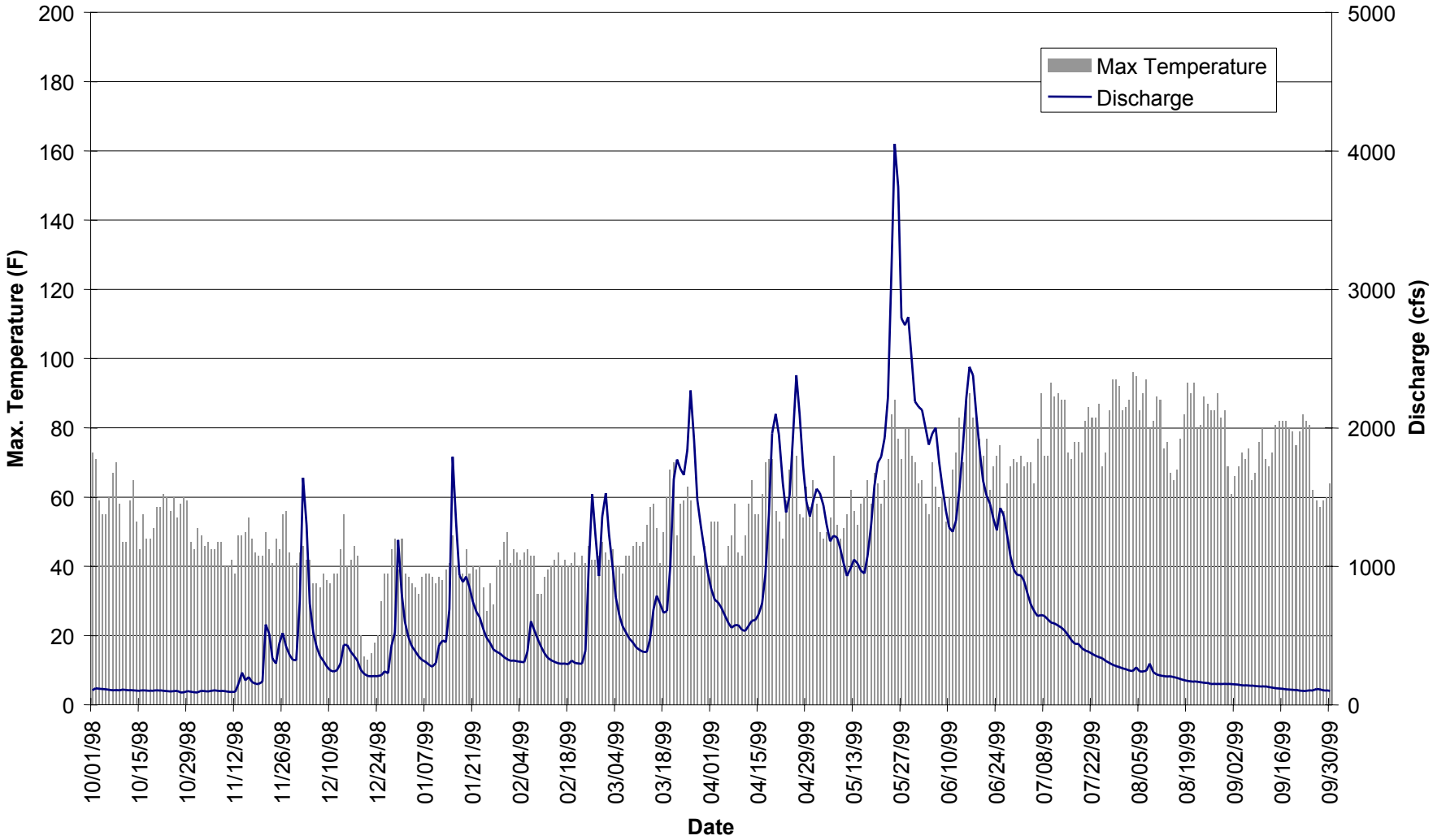
027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.2-3

Daily Maximum Temperature and Daily Average Discharge for South Fork Coeur d'Alene River near Pinehurst, USGS Station 12413470 Water Year 1999



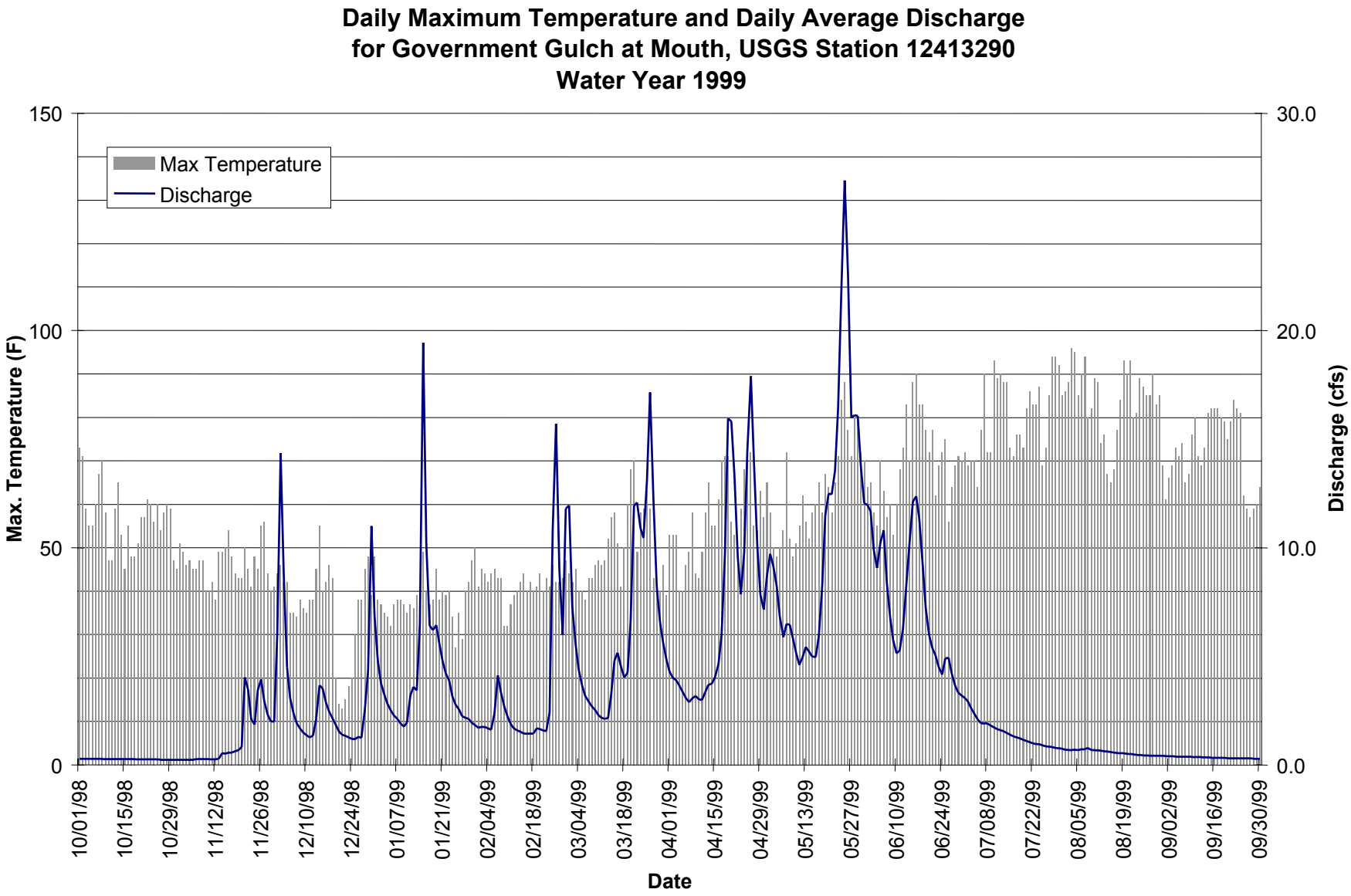
EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.2-4



EPA REGION 10

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 2.3.2-5

Table 2.1.7-1
South Fork Coeur d'Alene River Mine Production Upstream of Elizabeth Park

Mine	Production Years	Ore Produced (tons)	Mill[a]	Estimated Tailings Produced[b] (tons)
Alhambra	1917-1918	2,200	Crescent	2,059
Argentine	1921-1923	401		393
Big Creek Silver (part of Crescent)	1913-1935	16,847	Crescent	15,608
Coeur d'Alene (Mineral Point)	1919-1952	440,779	Coeur d'Alene (Mineral Point), Hercules (Wallace)	430,984
Coeur	1969-1990	2,251,910	Coeur	2,195,612
Crescent	1924-1990	962,252	Crescent, Polaris/Silver Summit, Bunker Hill Complex	NA
Evolution	1908-1948	10,474		10,342
Galena	1922-1990	5,895,490	Galena	5,682,193
New Hilarity	1944-1946	879		768
Polaris	1916-1943	320,783	Polaris/Silver Summit	308,203
Rainbow	1958	7,582		7,377
Silver Summit (Con Silver)	1948-1982	827,617	Polaris/Silver Summit	795,161
Sunshine	1904-1990	11,453,874	Sunshine	11,004,701
Western Union	1920-1948	11,173		7,838
Total		22,202,261		20,461,239

[a]Blank cells indicate that there was most likely no mill located onsite, and ores were probably shipped elsewhere for milling. No records were found identifying the mill to which the ores were shipped.

[b]Estimated tailings produced by each mine were not necessarily disposed within the reach where the ores were mined.

Source: Stratus 1999.

Table 2.1.7-2
South Fork Coeur d'Alene River Mine Production Downstream of Elizabeth Park

Mine	Production Years	Ore Produced (tons)	Mill[a]
Arizona	1945-1946	2,321	
Blackhawk	1916-1944	214,126	Page
Bunker Hill	1887-1980	38,483,673	Sweeney, West, South
Caledonia	1909-1942	263,182	
Crown Point	1901-1940	63,098	
Last Chance	1895-1918	2,845,356	On site, Sweeney, Crescent
Ontario	1911-1917	325,502	South
Page (Corrigan)	1916-1969	4,307,335	Page
Senator Stewart	1904-1951	1,041,814	
Sierra Nevada	1943-1947	289,450	South
Wyoming	1916-1926	2,774	Page
Total		***47,838,631***	

[a]Blank cells indicate that there was most likely no mill located onsite, and ores were probably shipped elsewhere for milling. No records were found identifying the mill to which the ores were shipped.

Source: Stratus 1999.

Table 2.1.7-3
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Alhambra Mine					
MidGradSeg01	1917-1918	2,200	Unknown/ custom	2,059	Workings associated with the Alhambra are located on the West Fork of Elk Creek, about 7,000 feet upstream from the mouth of Elk Creek. Total production was small; the metals produced were lead and silver. Zinc was not recovered (Mitchell and Bennett 1983). Ore was probably shipped directly to a smelter or custom milled off site.
Argentine Mine					
MidGradSeg01	1921-1923	401	Unknown, possibly Galena Mill	393	Workings associated with the Argentine consist of one adit and a waste rock pile located west of and adjacent to the Galena Mine in Argentine Gulch (SAIC 1993a). Total production was very small; the metals produced were lead, silver, and copper (Mitchell and Bennett 1983). The mine is now considered part of the Galena Mine (SAIC 1993b). Mine drainage has not been documented for the adit.
Coeur d'Alene Mine *(Mineral Point)*					
MidGradSeg01	1892-1952	440,779	Hercules Mill, then Coeur d'Alene Mill	430,984	Workings associated with the Coeur d'Alene Mine are located in McFarren Gulch south of Osburn, about 3,000 feet up from the mouth of the gulch. The mine was known as the Mineral Point until the early 1940s (Bennett unpublished). The mine produced silver/copper ore with by-product antimony and minor amounts of lead. Ore production at the Mineral Point Mine goes back to 1892, when William Osburn and his partners bonded it with some St. Paul parties, who in turn developed at least three tunnels to the ore body, extracted some ore, sacked and shipped it (Quivik 1999).

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Coeur d'Alene Mine *(Mineral Point)* (continued)					
MidGradSeg01					Earliest production from near-surface stopes dates from 1919 (Mitchell and Bennett 1983). The Coeur d'Alene Mines Corp. formed in late 1928 and took an option on the Mineral Point Group. By the late 1920s, the mine was developed with 12 tunnels, the longest being the No. 5 (later called the Coeur d'Alene Tunnel). Prior to construction of a 300~tpd mill on site, ore was milled at the Hercules Mill in Wallace. By the late 1940s, ore reserves were rapidly being depleted, and the mill operated intermittently. Production ceased in 1952, and all mining activity had ended by 1953 (Bennett unpublished).
Coeur Mine (Rainbow)					
MidGradSeg01	1969-1990 (Coeur unit)	2,251,910	Coeur Mill	2,195,612	*There is some confusion in different sources between Coeur Mine (Rainbow/Mineral Point) and Coeur d'Alene Mine and Mill. Evidence indicates that the proper identifications are Coeur Mine (Rainbow Mine) and Coeur d'Alene Mine (Mineral Point).* The Coeur Unit is an active site consisting of 2 vertical shafts (a borehole for ventilation and a production shaft), a mill, and a waste rock pile. Workings associated with the Coeur are located at the site of the former Rainbow Mine in Shields Gulch, about 2,500 feet above the mouth of the gulch. The mine is the newest in the District and has been a major producer of silver and by-product copper. Exploration on the Rainbow Mine property was conducted from the Silver Summit Mine during the late 1950s (SAIC 1993b). At that time, a small amount of silver/copper ore was produced (Table SF-A4; Mitchell and Bennett 1983). Some mining activity probably occurred at the Rainbow in Shields Gulch before the 1950s; mapping by the USGS (Hobbs et al. 1965) shows at least two adits in Shields Gulch attributed to the mine. Construction at the Coeur was

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Coeur Mine (Rainbow) (continued)					
MidGradSeg01					initiated in 1966 with the sinking of a shaft. By 1971, the shaft had been completed to a depth of 3,700 feet. A 450~tpd mill was constructed in 1975, and production began early the following year. Some production is recorded as early as 1969 (Mitchell and Bennett 1983). Tailings impoundments were constructed prior to the onset of milling; the ponds are located on the north side of the SFCDR across from Shields Gulch. The ponds also receive tailings from the Galena Mine (SAIC 1993a). The channel of the SFCDR was rerouted to accommodate the impoundments (USGS 1985a, 1988a). All the tailings from the Coeur Mine were sent to either the tailings pond or back to the mine as sandfill.
Consolidated Silver					
MidGradSeg01	1948-1969	798,761			Source: Mitchell and Bennett 1983
Evolution Mine					
MidGradSeg01	1908-1948	10,474	Unknown/ custom	10,342	Workings associated with the Evolution are located along the north side of the SFCDR west of Terror Gulch. Total production was small. Metals produced were lead, zinc, and silver, with minor amounts of copper (Table SF-A4; Mitchell and Bennett 1983). Ore was probably shipped directly to a smelter or custom milled off site

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Galena Mine And Millsite					
MidGradSeg01	1926-1931; 1936-1990	5,895,490	Galena mill	5,682,193	Workings associated with the Galena Mine are located in Lake Creek, a tributary on the south side of the SFCDR. The operating facility includes mill sites, mill foundations, a parking area, tailings ponds and waste rock piles. The main shaft is located about 6,000 feet upstream from the mouth of the creek. Development of the Galena began in 1917, and first production was recorded in 1922 (Table SF-A4; Bennett, unpublished; Mitchell and Bennett 1983). At that time, the mine was accessed by ten tunnels and one shaft; the principal adit was the No. 6 (Bennett, unpublished). In 1926, the Callahan Zinc-Lead Company constructed a 150~tpd flotation mill fed from a surface tramway that delivered ore from the mine. The mill was designed to treat only lead and silver, therefore zinc encountered in the ore was discharged as a waste. Declining ore production coupled with the hardship caused by the Great Depression caused the closure of the Galena in February 1931. In 1941 the Zanetti Brothers purchased the mill. Much of the product treated at the mill was old tailings. Beginning in 1947, the shaft was progressively deepened and the mine enlarged. The Zanetti brothers operated the mill until 1954, when it was sold to ASARCO. ASARCO upgraded the capacity of the mill. Improvements in the tramway between mine and mill were also made. Through a lease agreement, ASARCO made an important discovery of silver-copper ore in the Galena Mine. In 1953, significant silver mineralization was discovered (Visnes 1963). Prior to about 1955, the ore mined was predominantly galena (lead-silver); afterwards, tetrahedrite (copper-antimony-silver) was the dominant ore mineral. In early 1955 the mill began full-scale production silver-copper. By 1959, the mill capacity had been increased and two additional shafts were subsequently constructed (SAIC

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Galena Mine And Millsite (continued)					
MidGradSeg01					1993a). As the mine grew and production increased, mill capacity was also increased (Bennett, unpublished). In 1965 ASARCO began construction of dams to impound tailings in Lake Gulch. The tailings quantity through 1990 includes 999,780 tons of tailings to the river, 1,967,201 tons of tailings to the tailings ponds, and 2,715,212 tons of tailings to sandfill. The Galena Mine was temporarily shut down in 1992 and is currently on standby status (SAIC 1993b, Mine Sites Fact Sheets).
New Hilarity Mine					
MidGradSeg01	1944-1946	879	Unknown/ custom	768	Workings associated with the New Hilarity are located on the West Fork of Elk Creek, about 5,000 feet upstream from the mouth of Elk Creek . Total production was small; the metals produced were lead and zinc, with minor amounts of silver and copper (Mitchell and Bennett 1983). Ore was probably shipped directly to a smelter or custom milled off site.
Polaris Mine					
MidGradSeg01	1916-1943 (-1947)	320,783	Silver Summit Mill	308,203	Workings associated with the Polaris Mine are located near the head of Polaris Gulch, about 7,200 feet upstream from the mouth of the gulch. The original claim was located in 1884; by 1908, the mine had an 800-foot long tunnel (Bennett, unpublished). The first recorded production was in 1916, although some silver ore is believed to have been produced earlier (Mitchell and Bennett 1983; Bennett, unpublished). In the mid 1930s, the mine was connected to the Silver Summit tunnel. A 200~tpd mill was built at the portal of this tunnel in 1937 to treat ore

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Polaris Mine (continued)					
MidGradSeg01	1916-1943 (-1947)	320,783	Silver Summit Mill	308,203	from the Polaris and the Silver Summit mines. Ore reserves were exhausted by 1943 and production ceased. After 1944, deeper ore zones on Polaris ground were mined from the Sunshine Mine; production figures after 1944 are included in Sunshine production (Mitchell and Bennett 1983).
Silver Summit Mine					
MidGradSeg01	1927->1986	828,000	Silver Summit Mill/ Polaris Mill	800,000	Workings associated with the Silver Summit are located in Rosebud Gulch near its mouth. From 1927 to 1930, sporadic development was done by Stratton Silver Summit Inc which held the property under lease & option. Ore was struck in 1930, with extensive development through 1932, including a tunnel driven from near the mouth of the gulch which reached the main vein in 1931. In the mid 1930s, the Polaris Mine Company arranged to extend this tunnel to its orebody (Bennett, unpublished). An internal shaft was started in the late1930s to explore the Silver Summit vein. In 1946, Polaris Mining Co was starting to do extensive exploration and development work. The shaft was deepened in the mid-1940s and significant silver mineralization was discovered in 1948 (Bennett, unpublished). Production from 1949 to 1969 was approximately 600,000 tons. In 1952 Silver Summit Mining Co merged into Polaris Mining Co. A sandfill system was installed in 1964 returning the coarse fraction of the tailings to the mine.

Table 2.1.7-3 (Continued)
Mines in South Fork Coeur d'Alene River Watershed With Recorded Production

Segment	Production Years	Ore (tons)	Mill	Tailings (tons)	Comments
Western Union Upper and Lower Adits[a]					
MidGradSeg01	1920-1948	11,173	Unknown/ custom	7,838	During 1921, the property operated under lease from Western Union Mining Co. with small production. In 1924, the control of the property passed to the Hercules Mining Co. and active development was undertaken. By 1927 most of the ore had been mined and the mine was only being worked by lessees. In 1947 the Western Union Mining Co. was consolidated into Day Mines, Inc. (Ridolfi, Draft Restoration Plan, 1998). Production was recorded from 1920 to 1948 (Mitchell and Bennett, 1983). Total production was relatively small; the metals produced were lead and silver, with minor amounts of zinc and copper. The mine did not have a mill, and the ore was either shipped directly to a smelter or custom milled off site (SAIC, 1993b). Workings associated with the Western Union include an adit in Nuckols Gulch and an adit in Revenue Gulch. The adit in Revenue Gulch is caved and has an associated waste rock pile (SAIC, 1993a). The adit in Nuckols Gulch presumably has a waste rock pile as well. Mine drainage is not documented for the Nuckols Gulch adit. Mine drainage from the Revenue Gulch adit is apparently being used for either agricultural or domestic use (SAIC, 1993a).

[a]Tons of ore and tailings produced were not broken out by upper or lower adit (Ridolfi 1998).

Table 2.1.7-4
Mills With Documented Operations in the South Fork Coeur d'Alene Watersheds

Segment	Operating Years	Ownership	Comments
Coeur d'Alene *(Mineral Point)* Millsite			
MidGradSeg01	1940-1953[1]	Coeur d'Alene Mines	The mill is located downstream from the waste rock pile near the mouth of McFarren Gulch. There is no visible evidence of tailings piles or ponds in the mill area. The Coeur d'Alene Mines Corporation began operating a new mill to treat ores of the Mineral Point Mine in October 1940. The mill was located about 1800 feet downstream of the main mine portal. In 1941, the mill was upgraded to 600 tons and the mill treated 87,672 tons of silver-copper ore during that year. The ore was also rich in antimony. Mine production began a steady decline due to the war-induced labor shortage and a declining grade of ore. The mill operated only occasionally to treat ore of sufficiently high quality after the mid-1940s. The mine and mill apparently closed in 1951. Mining stopped at the associated mine in 1953 (Quivik 1999).
Galena Mine And Millsite			
MidGradSeg01	1926-1931; 1936-1990	Callahan Zinc-Lead Company/leased to Silver Dollar Mining Company then to William Zanetti/sold to ASARCO	Workings associated with the Galena Mine are located in Lake Creek, a tributary on the south side of the SFCDR. The operating facility includes mill sites, mill foundations, a parking area, tailings ponds and waste rock piles. In 1926, the Callahan Zinc-Lead Company constructed a 150~tpd flotation mill which began operating in October of that year, fed from a surface tramway that delivered ore from the mine. The mill was designed to treat only lead and silver, therefore zinc encountered in the ore was discharged as a waste. Declining ore production coupled with the hardship caused by the Great Depression caused the closure of the Galena in February 1931. The mill was reopened in 1936 and was used for the next two years to treat lead-zinc ore from the Interstate-Callahan Mine and its waste dumps on Nine-Mile Creek. In 1936, this mill processed approximately 40,000 tons of tailings from the

Table 2.1.7-4 (Continued)
Mills With Documented Operations in the South Fork Coeur d'Alene Watersheds

Segment	Operating Years	Ownership	Comments
Galena Mine And Millsite (continued)			
MidGradSeg01	1926-1931; 1936-1990	Callahan Zinc-Lead Company/leased to Silver Dollar Mining Company then to William Zanetti/sold to ASARCO	Interstate-Callahan Mine (Bennett, unpublished). In 1937, the mill was upgraded to recover zinc in addition to lead. In June 1938, the company began custom milling of ore produced by leasers of the St. Elmo mine. The mill was leased to the Silver Dollar Mining Company in 1939 and to William Zanetti in 1940. In 1941, the Zanetti Brothers purchased the mill. Much of the product treated at the mill was old tailings. The Zanetti brothers operated the mill until 1954, when it was sold to ASARCO. ASARCO upgraded the capacity of the mill, nearly doubling the size of the concentrator area. Improvements in the tramway between mine and mill were also made. In 1953, significant silver mineralization was discovered as silver-copper ore at the Galena mine (Visnes 1963). Prior to this time, the ore mined was predominantly galena (lead-silver); afterwards, tetrahedrite (copper-antimony-silver) was the dominant ore mineral. In early 1955, the mill began full-scale production of silver-copper ore consisting of about 350 tons per day. By 1959, the mill capacity had been increased to 460 tons per day. As the mine grew and production increased, mill capacity was also increased (Bennett, unpublished). In 1965, ASARCO began construction of dams to impound tailings in Lake Gulch. The mill capacity was expanded to 750 tons per day in 1968-1969 (Quivik 1999). Four tailings ponds constructed after 1968 were used for tailings disposal until around 1975, when additional tailings ponds for the Coeur were constructed near Osburn along the SFCDR (Williams et al. 1971; SAIC 1993a, 1993b). Tailings were then routed to the Osburn ponds. The Galena Mine was temporarily shut down in 1992 and is currently on standby status (SAIC 1993b, Mine Sites Fact Sheets).

Table 2.1.7-4 (Continued)
Mills With Documented Operations in the South Fork Coeur d'Alene Watersheds

Segment	Operating Years	Ownership	Comments
Hercules Millsite			
MidGradSeg01	1911-1932; 1935-1942	Hercules Mining Co./Hecla Mining Co. through merger with Day Mines, Inc./Leased to the Sullivan Mining Co 1935-1936	The Hercules Mill near Wallace was opened in April 1911. Prior to the mill's opening, ore from the Hercules mine was treated at the Hercules concentrator at Gorge Gulch until it was destroyed by fire in 1909. The company subsequently treated its ores at the Tiger-Poorman Mill at Burke until the new mill near Wallace was opened. The new mill had a capacity of 400 tons per day. Due to the location of the mill near Wallace, ore from the mine was conveyed by a 3,500-ft. aerial tramway to a railroad loading facility at Burke. Railroad cars then conveyed the ore to the mill. Later this tramway was abandoned when a tunnel to the mine was extended from the Humming Bird mine allowing extracted ore to be shipped directly to the railroad at Burke. In 1913, a Wyman acid flotation process was added to the mill to allow recovery of zinc, and by 1914 flotation technologies were also being used to enhance recovery of lead. In the early 1920s, the capacity of the mill increased to 700 tons/day. Course tailings were no longer being discharged from the mill, but were being ground more finely and subjected to flotation. Several additional thickening tanks were built at this time to handle the mill through-put. Fine materials not recovered during the flotation process were discharged to the South Fork Coeur d'Alene River. By 1924, the ore reserves of the Hercules Mine were exhausted and the mine closed. The mill continued to operate as a custom concentrator for other mines controlled by the Days until 1932. It was inactive until it was leased to the Sullivan Mining Co during 1935-36. The mill again operated as a custom mill from 1937 until it closed permanently in 1942. Equipment from the mill was removed in 1968 and the remains of the mill burned in 1976 (Quivik 1999). It never had a tailings pond. Concrete foundations remain with the thickener located across the SFCDR from it. ASARCO also had their concentrate loading area here.

Table 2.1.7-4 (Continued)
Mills With Documented Operations in the South Fork Coeur d'Alene Watersheds

Segment	Operating Years	Ownership	Comments
Silver Summit Millsite			
MidGradSeg01	1927- after 1982	Stratton Silver Summit, Inc./Polaris Mining Co./consolidated Silver Corp./leased to ASARCO and Hecla(?)	Workings associated with the Silver Summit Millsite are located in Rosebud Gulch near its mouth. The Silver Summit mine was developed from 1927 to 1930 by Stratton Silver Summit, Inc. Polaris constructed a 200-tpd mill near the portal of the Silver Summit tunnel in 1937. Ore from the Silver Summit and Polaris mines were milled at this facility which is also called the Polaris Mill. Ore reserves from the Polaris mine were exhausted by 1943 and production ceased. The mill was converted to treat lead/zinc middlings from the Osburn tailings plant (Bennett, unpublished). The mill also processed ore from the Crescent Mine in the 1950s (Bennett, unpublished). In 1980, the capacity of this mill was increased to 300 tpd in order to process ore produced from the Con Silver project. After 1965, the sand fraction of the tailings was returned to the mine. Tailings from the mill were discharged to the SFCDR through 1969 (SAIC 1993a). Tailings associated with the Con Silver mines were deposited in two small tailings ponds located on the SFCDR floodplain just east of the mouth of Terror Gulch (SAIC 1993a, 1993b).

[1]Quivik 1999

Table 2.2-1
Summary of Aquifer Parameters of the Smelterville Flats-Bunker Hill Aquifer System

Hydrostratigraphic Unit	Horizontal Hydraulic Conductivity (ft/day)	Vertical Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Storativity (unitless)	Effective Porosity (%)
Upper Aquifer	500 – 10,790	0.0025[a]	10,002 – 216,852	0.0015 – 0.09	23.6 – 29.0
Aquitard	–	0.00028 – 0.86	--	--	43.5 – 48.3[b]
Lower Aquifer	100 – 1,910	--	3,220 – 80,000	0.00005 – 0.034	19.5 – 36.2

[a]Based on one test conducted on a sample of upper aquifer alluvium from borehole GR-26U at 13.5 feet bgs. **No units given in original source document**.

[b]Suspect values. Reproduced as originally reported in source document. Reported values appear to represent porosity values for materials of the type reported to comprise the aquitard, not *effective porosity* values which should range approximately 1 to 15 % for materials of the type reported to comprise the aquitard (USEPA 1989).

Source: MFG 1992

Table 2.2-2
Representative Aquifer Parameters and Groundwater Flow Velocity in the Smelterville Flats-Bunker Hill Aquifer System for 1988

Aquifer	K (ft/day)	i (ft/ft)	n_e (%)	Velocity (ft/day)
Upper (high estimate)	10,790	0.0046	23.6	210
(low estimate)	500	0.0043	29.0	7.5
Lower (high estimate)	1,910	0.0036	19.5	35
(low estimate)	100	0.0033	36.2	0.9

Note: Hydraulic conductivity and effective porosity based on Table 2.2-1; gradient (i) based on 1988 spring and fall groundwater contour maps in MFG 1992.

Table 2.2-3
Summary of Gaining and Losing Reaches in the South Fork Watershed

Reach No.	Type	Approximate Limits	Net Flow (cfs)
Source: MFG (1992)			
1	Gain	Elizabeth Park to Jackass Creek	+4.1
2	Lose	Jackass Creek to CIA Seeps	-8.6
3	Gain	CIA Seeps to Government Gulch	+3.9
4	Lose	Government Gulch to Humboldt Gulch	-2.6
5	Gain	Humboldt Gulch to Pinehurst Narrows	+11.8
Source: Williams (1989)			
NR	Lose	Eastern Smelterville Flats	NR
NR	Gain	Western Smelterville Flats	NR

NR - not reported
cfs - cubic feet per second

Table 2.2-4
Summary of Selected Groundwater Parameters from Wallace to Rose Lake Based on Samples from 43 Wells

Parameter	Reported Max/Min Range	Typical Range Within CSM Unit No. 2
pH (standard units)	5.41 – 7.53	--
Electrolytic conductivity (mmhos)	< 188 – 9,320	< 188 – 300
Calcium (mg/L)	< 0.5 – 45	1 – 20
Iron (mg/L)	< 0.1 – 47	0.1 – 2
Manganese (mg/L)	< 0.1 – 0.9	--
Potassium (mg/L)	< 0.5 – 5.7	--
Magnesium (mg/L)	< 0.5 – 37.3	1 – 10
Sodium (mg/L)	1.2 – 22	1 –10

Source: Norbeck 1974
mg/L - milligrams per liter
mmhos - millimhos

Table 2.2-5
Summary of Selected Groundwater Parameters in the Smelterville Flats-Bunker Hill Aquifer System (Average Values During 1988 RI)

Parameter	Area	Reported General Values[a] (mg/L)
Combined Valley Aquifer		
Nitrate	Near mouth of Milo Gulch	>5.0
Sulfate	East Kellogg	<100
Upper Aquifer		
Fluoride	Beneath CIA	>10.0
	Kellogg area	<0.1
	Throughout most of Smelterville Flats	0.1 – 1.0
	Pinehurst Narrows	<0.1
Nitrate	Eastern part of CIA	1.0 – 5.0
	Throughout most of Smelterville Flats	1.0 – 5.0
	Western part of CIA	<1.0
	Page Pond area	<1.0
Potassium	Western part of CIA	>10.0
	Page Pond area	>10.0
	Kellogg area and eastern part of CIA	<5.0
	Throughout most of Smelterville Flats	<5.0
	Pinehurst Narrows	<5.0
Phosphate	Between mouths of Government and Magnet Gulches	>20.0
	Central part of CIA	2.0 – 10.0
	Throughout remainder of study area	Near or below reporting limit
Sulfate	Beneath CIA and Page Pond area	500 – >1000
Lower Aquifer		
Fluoride	Near mouth of Government Gulch	2.56
	Kellogg area	<0.10
	Pinehurst Narrows	<0.10
Nitrate	Near mouth of Government Gulch	9.44
	Throughout remainder of study area	Near or <5.0
Potassium	West of Smelterville	4.78
	Bunker Hill Superfund Site	>2.0

Table 2.2-5 (continued)
Summary of Selected Groundwater Parameters in the Smelterville Flats-Bunker Hill Aquifer System (Average Values During 1988 RI)

Parameter	Area	Reported General Values[a] (mg/L)
Phosphate	Near mouth of Government Gulch	1.50
	Beneath CIA and west of Smelterville	>0.10
	Throughout rest of the site [sic]	Below reporting limit
Sulfate	Near mouth of Government Gulch	>290
	Beneath CIA	<100
	Kellogg area	<100
	Smelterville Flats	100 – 200
	Page Pond area	100 – 200
	Pinehurst Narrows	100 – 200

[a]As reported in text of MFG (1992)
Note:
mg/L - milligrams per liter
Source: MFG (1992)

Table 2.3.1-1
Summary of Discharge Data From Project Database
Segments MidGradSeg01 to MidGradSeg02

Segment Name	Site Location	Measured By	No. of Readings	Beginning Date	Ending Date	Minimum Discharge	Maximum Discharge	Units
MidGradSeg01	SF 11	MFG	2	05/15/91	10/03/91	41.3	518.2	cfs
MidGradSeg01	SF 12	IDEQ, MFG, USGS	43	10/03/91	06/05/98	37.2	1073	cfs
MidGradSeg01	SF 15	MFG	2	05/15/91	10/03/91	46.2	761.3	cfs
MidGradSeg01	SF 16	MFG	1	10/03/91	10/03/91	53.5	53.5	cfs
MidGradSeg01	SF 20	MFG	2	05/14/91	10/02/91	0.26	1.9	cfs
MidGradSeg01	SF 22	MFG	1	10/02/91	10/02/91	51.8	51.8	cfs
MidGradSeg01	SF 23	MFG	2	05/14/91	10/05/91	0.21	4.4	cfs
MidGradSeg01	SF 31	MFG	1	10/02/91	10/02/91	61.2	61.2	cfs
MidGradSeg01	SF 232	URS	1	11/09/97	11/09/97	86.3	86.3	cfs
MidGradSeg01	SF 233	IDEQ, URS, USGS	15	11/09/97	05/24/99	52.5	2111	cfs
MidGradSeg01	SF 234	URS, USGS	15	11/11/97	08/31/99	4.1	219	cfs
MidGradSeg01	SF 235	URS	2	11/08/97	05/13/98	111	918	cfs
MidGradSeg01	SF 236	MFG, URS	4	05/14/91	05/09/98	0.72	1.54	cfs
MidGradSeg01	SF 237	URS	1	11/08/97	11/08/97	149	149	cfs
MidGradSeg01	SF 238	MFG, URS, USGS	5	05/14/91	05/22/99	0.73	30	cfs
MidGradSeg01	SF 239	IDEQ, MFG, URS, USGS	64	05/15/91	09/01/99	5	1742	cfs
MidGradSeg01	SF 240	URS	2	11/08/97	05/09/98	0.33	0.51	cfs
MidGradSeg01	SF 241	MFG, URS	2	10/02/91	11/07/97	56.2	119	cfs
MidGradSeg01	SF 242	URS	2	11/08/97	05/08/98	0.095	0.317	cfs
MidGradSeg01	SF 243	URS	1	11/08/97	11/08/97	120	120	cfs
MidGradSeg01	SF 244	URS	2	11/08/97	05/08/98	0.051	6.85	cfs
MidGradSeg01	SF 245	MFG, URS	4	05/14/91	05/08/98	0.03	1.3	cfs
MidGradSeg01	SF 246	URS	2	11/17/97	05/08/98	0	0.053	cfs
MidGradSeg01	SF 247	URS	1	11/07/97	11/07/97	150	150	cfs
MidGradSeg01	SF 248	MFG, URS, USGS	5	05/14/91	05/22/99	0.34	5.7	cfs
MidGradSeg01	SF 249	IDEQ, MFG, URS, USGS	52	05/14/91	06/01/99	25.66	1850	cfs
MidGradSeg01	SF 250	MFG, URS	3	05/14/91	05/08/98	0	17	cfs
MidGradSeg01	SF 251	URS	2	11/06/97	05/08/98	0.04	0.6	cfs
MidGradSeg01	SF 252	MFG, URS, USGS	5	05/14/91	05/22/99	0.071	1.8	cfs
MidGradSeg01	SF 253	MFG, URS, USGS	5	05/14/91	05/24/99	50.5	1510	cfs
MidGradSeg01	SF 254	MFG, URS	3	10/02/91	05/12/98	57.5	1390	cfs
MidGradSeg01	SF 255	URS	2	11/06/97	05/07/98	0.35	4.9	cfs
MidGradSeg01	SF 256	URS	2	11/07/97	05/07/98	0.17	0.54	cfs
MidGradSeg01	SF 257	URS	2	11/07/97	05/05/98	0.15	0.44	cfs
MidGradSeg01	SF 258	URS	1	11/06/97	11/06/97	144	144	cfs
MidGradSeg01	SF 259	IDEQ, MFG, URS, USGS	49	05/14/91	05/24/99	30.9	1730	cfs
MidGradSeg01	SF 261	URS	2	11/05/97	05/08/98	0.49	1.42	cfs
MidGradSeg01	SF 263	MFG, URS	2	10/01/91	11/05/97	72.8	162	cfs
MidGradSeg01	SF 264	MFG, URS	3	10/01/91	05/16/98	66	776	cfs

Table 2.3.2-1 Segments MidGradSeg01 to MidGradSeg02

Segment Name	Site Location	Measured By	No. of Readings	Beginning Date	Ending Date	Minimum Discharge	Maximum Discharge	Units
MidGradSeg01	SF 265	URS	2	11/05/97	05/09/98	0.119	0.13	cfs
MidGradSeg01	SF 266	MFG, URS, USGS	4	05/14/91	05/22/99	0.2	10.9	cfs
MidGradSeg01	SF 267	URS, USGS	3	11/05/97	05/23/99	1.26	20	cfs
MidGradSeg01	SF 272	MFG, URS	3	05/14/91	05/12/98	55	899	cfs
MidGradSeg01	SF 273	URS	1	05/13/98	05/13/98	776	776	cfs
MidGradSeg01	SF 274	URS	1	05/13/98	05/13/98	883	883	cfs
MidGradSeg01	SF 426	URS	1	11/11/98	11/11/98	0.468	0.468	cfs
MidGradSeg01	SF 427	URS	1	11/11/98	11/11/98	0.46	0.46	cfs
MidGradSeg01	SF 429	URS	1	11/11/98	11/11/98	0.71	0.71	cfs
MidGradSeg01	SF 430	URS	1	11/11/98	11/11/98	0.156	0.156	cfs
MidGradSeg01	SF 431	URS	1	11/11/98	11/11/98	0.157	0.157	cfs
MidGradSeg02	SF 100	EPA	2	02/05/97	04/25/97	10.1	12.2	cfs
MidGradSeg02	SF 101	EPA	1	04/25/97	04/25/97	0.002	0.002	cfs
MidGradSeg02	SF 102	EPA	1	04/25/97	04/25/97	5.1	5.1	cfs
MidGradSeg02	SF 103	EPA	1	04/01/97	04/01/97	0.9	0.9	cfs
MidGradSeg02	SF 104	EPA	1	04/25/97	04/25/97	0.2	0.2	cfs
MidGradSeg02	SF 108	EPA	2	02/05/97	04/27/97	1.9	23	cfs
MidGradSeg02	SF 110	EPA	2	02/05/97	04/24/97	4.3	23.5	cfs
MidGradSeg02	SF 183	EPA	2	02/04/97	04/24/97	4.9	24.5	cfs
MidGradSeg02	SF 184	EPA	2	02/04/97	04/24/97	4.4	20	cfs
MidGradSeg02	SF 185	EPA	1	04/24/97	04/24/97	8.1	8.1	cfs
MidGradSeg02	SF 191	EPA	2	02/05/97	04/24/97	5.4	10.8	cfs
MidGradSeg02	SF 268	IDEQ, MFG, URS, USGS	70	05/15/91	08/30/99	5	2460	cfs
MidGradSeg02	SF 269	URS	2	11/05/97	05/05/98	0	0.04	cfs
MidGradSeg02	SF 270	IDEQ, URS, USGS	59	10/29/93	05/25/99	54.98	2610	cfs
MidGradSeg02	SF 271	IDEQ, MFG, URS, USGS	69	05/15/91	09/07/99	5	4190	cfs
MidGradSeg02	SF 655	USGS	1	05/25/99	05/25/99	2650	2650	cfs
MidGradSeg02	SF 938	USGS	24	10/22/93	09/17/97	52	9600	cfs

Note:
cfs - cubic feet per second

Table 2.3.2-1
Estimated Recurrence Intervals, Placer Creek at Wallace

Recurrence Interval (Years)	Estimate of Discharge (cfs) Annual Frequency Peak Flow 30 Year Period of Record	Lower 95 Percent Confidence Interval (cfs)	Upper 95 Percent Confidence Interval (cfs)	Flood Insurance Study At USGS Station 12413140 Estimated Peak Flow (cfs)
2	370	301	455	not available
5	655	528	858	not available
10	885	694	1227	1,375
25	1222	922	1819	not available
50	1508	1106	2358	1,910
100	1823	1301	2985	2,590

Notes:

Flood insurance study location for flooding source in Placer Creek is at USGS Gage Station 12413140.
cfs - cubic feet per second

Table 2.3.2-2
Estimated Recurrence Intervals, South Fork At Silverton

Recurrence Interval (Years)	Estimate of Discharge (cfs) Annual Frequency Peak Flow 22 Year Period of Record	Lower 95 Percent Confidence Interval (cfs)	Upper 95 Percent Confidence Interval (cfs)	Flood Insurance Study Above Lake Creek Estimated Peak Flow (cfs)
2	1720	1484	1997	not available
5	2410	2070	2943	not available
10	2858	2414	3635	4,190
25	3414	2817	4555	not available
50	3821	3100	5265	6,650
100	4221	3370	5991	8,690

Notes:

Flood Insurance Study location for flooding source in the South Fork of Coeur d'Alene River is above Lake Creek; USGS Gage Station 12413150 is downstream from Lake Creek.
cfs - cubic feet per second

Table 2.3.2-3
Precipitation Summary and Discharge Comparison for Water Year 1999
Wallace Woodland Park, Idaho
NOAA Cooperative Station 109498

Climate Indicators	Monthly Totals												Annual Total
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Total Precipitation (in.)	1.2	9.7	6.9	4.7	6.9	3.5	0.7	0.9	1.8	0.2	3.0	0.3	39.8
Total Snowfall (in.)	0.0	6.3	8.7	18.9	26.4	21.3	0.6	0.0	0.0	0.0	0.0	0.0	82.2
Average Precipitation for Period of Record (in.)	2.9	4.9	5.2	5.0	3.9	3.4	2.8	2.7	2.6	1.3	1.4	1.9	37.7
Average Snowfall for Period of Record (in.)	0.5	8.3	22.6	24.0	15.0	10.5	2.5	0.3	0.0	0.0	0.0	0.0	83.7
Mean Monthly Discharge (cfs) Placer Creek at Mouth	4.1	12.7	22.1	28.9	18.9	59.0	83.5	137.8	118.4	26.5	10.8	5.9	44.1
Mean Monthly Discharge (cfs) (S. Fork Coeur d'Alene River at Silverton)	50.2	82.1	119.5	141.3	114.4	294.6	413.1	756.1	812.8	259.8	104.2	66.7	268.3

Note:
cfs - cubic feet per second

Table 2.3.2-4
Estimated Recurrence Intervals, South Fork At Elizabeth Park

Recurrence Interval (Years)	Estimate of Discharge (cfs) Annual Frequency Peak Flow 13 Year Period of Record	Lower 95 Percent Confidence Interval (cfs)	Upper 95 Percent Confidence Interval (cfs)	Flood Insurance Study Above Montgomery Creek Estimated Peak Flow (cfs)	Flood Insurance Study Above Lake Creek Estimated Peak Flow (cfs)
2	1977	1459	2663	not available	not available
5	3384	2525	5168	not available	not available
10	4540	3276	7728	6750	4,190
25	6275	4293	12230	not available	not available
50	7778	5107	16680	10710	6,650
100	9470	5973	22230	13990	8,690

Notes:
Flood insurance study location for flooding source in the South Fork of Coeur d'Alene River is above Montgomery Creek; USGS Gage Station 12413210 is downstream from Montgomery Creek.
cfs - cubic feet per second

Table 2.3.2-5
Estimated Recurrence Intervals, South Fork At Pinehurst

Recurrence Interval (Years)	Estimate of Discharge (cfs) Annual Frequency Peak Flow 12 Year Period of Record	Lower 95 Percent Confidence Interval (cfs)	Upper 95 Percent Confidence Interval (cfs)	Flood Insurance Study Below Pine Creek Estimated Peak Flow (cfs)
2	3612	2689	4850	not available
5	5899	4435	9000	not available
10	7628	5568	12890	10,685
25	10040	7002	19170	not available
50	11990	8083	24920	16,955
100	14080	9179	31620	22,150

Notes:
Flood insurance study location for flooding source in the South Fork of Coeur d'Alene River is below Pine Creek. USGS Gage Station 12413470 is downstream from Pine Creek.
cfs - cubic feet per second

Table 2.3.2-6
Precipitation Summary and Discharge Comparison for Water Year 1999, Kellogg, Idaho
NOAA Cooperative Station 104831

Climate Indicators	Monthly Totals												Annual Total
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Total Precipitation (in.)	1.4	7.5	5.3	4.6	5.7	5.1	1.7	1.5	2.7	0.5	1.3	0.4	37.8
Total Snowfall (in.)	0.0	0.8	11.0	5.2	13.1	5.1	0.3	0.0	0.0	0.0	0.0	0.0	35.5
Average Precipitation for Period of Record (in.)	2.7	3.8	3.9	3.7	2.8	2.9	2.4	2.5	2.2	10.0	11.0	1.7	30.8
Average Snowfall for Period of Record (in.)	0.3	5.0	14.1	18.5	10.1	5.6	0.7	0.0	0.0	0.0	0.0	0.0	54.3
Mean Monthly Discharge (cfs) (S. Fork Coeur d'Alene at Elizabeth Park)	70.3	128.9	213.2	275.9	233.1	566.4	685.6	1085.2	1115.9	393.2	147.3	88.7	417.5
Mean Monthly Discharge (cfs) (S. Fork Coeur d'Alene River at Pinehurst)	103.7	222.8	457.9	575.5	505.4	1014.1	1133.6	1759.5	1641.4	503.0	198.8	121.6	686.9
Mean Monthly Discharge (cfs) (Government Gulch at Mouth)	0.3	1.2	3.3	4.2	3.5	6.4	7.2	10.6	7.4	1.5	0.6	0.3	3.9

Note:
cfs - cubic feet per second

3.0 SEDIMENT TRANSPORT PROCESSES

Sediment derived in the South Fork of the Coeur d'Alene River (South Fork) is transported through the system and into the main stem of Coeur d'Alene River. Sediment sources in the South Fork are mining waste, rock debris situated adjacent to channels, mobilization of channel bed sediment, bank erosion, sediment derived from road drainage, and sediment generated and transported by tributary channels including Canyon, Ninemile, and Placer Creeks and the Upper South Fork. Based on USGS sediment transport and stream discharge data, approximately 7,200 tons of sediment were transported past the USGS gage station at Silverton and 21,990 past the gage at Pinehurst. In this discussion, the available information, analyses, and likely sediment sources are identified.

3.1 AVAILABLE INFORMATION

One year of sediment transport gaging data is available for the South Fork. At the USGS gaging stations 12413150, South Fork Coeur at Silverton, and South Fork near Pinehurst, number 12413470 (USGS 2000a). To date, data from eight suspended load and six bedload sampling events are available for the station at Silverton. Data are available for eight suspended load and five bedload sampling events for the station near Pinehurst (USGS 2000b). The suspended load data were further divided into sand and fines fractions. The suspended and bedload sampling events were completed over a range of stream discharges to establish a rating curve relating sediment discharge to stream discharge. In addition, sampling was completed on both the rising and falling limbs of high water events to examine the transport during these differing conditions. Instantaneous stream discharge was recorded at the time of sampling for use in rating curve development. Mean daily discharge data prior to 1999 have been calculated as outlined in Section 2.3.

In addition to the gaging data, historical and current aerial photography is available. For the South Fork, 1998 photographs by URS Greiner, Inc.(URSG and CH2M HILL 1999), 1991 photographs by U.S. Department of Agriculture (USDA) (1991), and 1983 and 1984 photographs by USDA (USDA 1984) were reviewed.

3.2 ANALYSES

3.2.1 USGS Sediment Transport Data

The USGS sediment transport data from the stations at Silverton and Pinehurst were analyzed in general accordance with the U.S. Army Corps (USACE) guidance manual for sedimentation investigations (USACE 1989). Sediment rating curves were developed by relating measured stream discharge to measured sediment discharge. These curves were integrated with the stream discharge data for water year 1999 and estimates of historical stream discharge to produce estimates of annual sediment yield for the South Fork. These sediment transport data were further examined to delineate threshold discharges where different particle size classes become mobile.

The USGS sediment discharge station at Silverton is located within MidGradSeg01, while the station near Pinehurst is located within MidGradSeg02. These data represent sediment transport at the station, and do not necessarily represent the total sediment transported throughout the entire segment. Drainages, other sediment sources, and potential depositional areas occur between these stations and the downstream ends of each segment. These data do provide insight into the relative transport regimes within each segment.

3.2.1.1 MidGradSeg01 (Silverton)

The suspended sediment data for the station at Silverton is presented in Figure 3.2-1 with rating curves established for the sand fraction, and the fine fraction. The stream discharge presented is the instantaneous discharge noted at the time of sampling. The correlation analysis used to establish the curves is a power function that calculates the least squares fit through the points. The grain size break between sand and fines is 63 microns.

The relationships indicated on Figure 3.2-1 were integrated with the mean daily discharge data from USGS gage 12413150, South Fork Coeur d'Alene River at Silverton, to obtain mean daily suspended sediment discharge for water year 1999. Like the original data, the sand and fines fractions were calculated separately and summed to calculate the total suspended sediment discharge. Cumulative sediment discharge for water year 1999 was calculated by summing the mean daily sediment discharges. The results are presented in Figures 3.2-2 through 3.2-4. With a drainage area of approximately 108 square miles, the total suspended sediment yield for the South Fork at Silverton for water year 1999 was approximately 60 tons per year per square mile. Of that approximately 30 tons was sand and 30 tons was fines. A total of approximately 6,440 tons of suspended sediment was transported past the gage at Silverton in water year 1999.

A similar analysis was completed for the bedload sediment data. The USGS provisional report titled "Sediment Transport in the Coeur d'Alene River Basin of Northern Idaho" (USGS 2000c), presents the rating curves and regression relationship for bedload transport at the Silverton gage. As with the suspended sediment data, the regression relationship for bedload was integrated with the mean daily discharge hydrograph to obtain daily and cumulative bedload discharge for water year 1999. These results are presented in Figure 3.2-5. Annual bedload sediment yield was approximately 7 tons per year per square mile for the South Fork at Silverton in water year 1999 for a total of about 760 tons.

Summing the total suspended load and bedload sediment gives the total sediment yield for the South Fork at Silverton for water year 1999, approximately 67 tons per square mile, or a total of 7,200 tons. Water year 1999 appears to be typical from a water and snow budget perspective as discussed in Section 2.3; however, sediment yields can vary significantly from year to year based on hydrologic conditions, sediment inputs, changing land use, and other conditions.

As indicated by the USGS data, the majority of sediment transport occurs during high flow events. Much larger discharge events are likely in the South Fork than were observed during water year 1999. In fact, based on flood frequency analyses presented in Section 2.3, the peak discharge in water year 1999 of 2,320 cubic feet per second had approximately a five year recurrence interval. During these larger events, much more additional sediment load should be expected.

Review of Figures 3.2-2 through 3.2-5 indicate the majority of sediment transport, approximately 96 percent, occurred during the period with approximate dates March 20 to July 18, 1999. Two distinct peaks of high sediment discharge are evident in the figures. Two other distinct periods of increased sediment discharge are indicated on the figures with approximate dates March 20 to 30, 1999 and April 19 to May 9, 1999. High temperatures, rainfall, and snowmelt caused large stream discharge during these periods, which is discussed in Section 2.3. These high stream discharges mobilized and transported the vast majority of the sediment yield for water year 1999. Similar high sediment transport rates would be expected on an annual basis as snowmelt in the upper watershed mobilizes and transports sediment through the system.

To estimate sediment transport in years before water year 1999, the measured discharges from the gage were integrated with the sediment transport relationships developed for the South Fork at Silverton in 1999. The results are presented in Table 3.2-1. As with the estimates for sediment transport for 1999, extrapolation of the rating curves to stream discharges greater than discharges that were used to develop the rating curve was employed. Nevertheless, a wide range of sediment transport quantities is indicated. In this type of analysis the quantities of sediment

transported is directly correlated to the magnitude and duration of stream discharge. Years with high peak discharge and long duration will produce more sediment than years with low discharge and short duration. Figures 3.2-6 through 3.2-8 present estimates of sediment transport (for fines, sand and bedload, respectively) through time for water years 1980 through 1988 and 1999. A wide range of magnitude of sediment transport is estimated and in general most of the transport occurs between February and June during large stream discharges.

To identify potential thresholds of sediment transport based on the USGS data, calculated estimates of daily sediment discharge for sand, fines, and bedload were examined. For each daily estimate and size class, for water year 1999, the percentage of total annual sediment discharge was calculated. These values were plotted against stream discharge and percent of maximum daily discharge for water year 1999 as shown in Figure 3.2-9. As would be expected, this figure indicates sediment discharge increases with increasing stream discharge. Further, ranges in stream discharge appear to indicate increased rates of sediment discharge. For both sand and fines, rapid increases in sediment discharge occur at stream discharges of approximately 1,000 and 1,400 cfs for water year 1999. Figure 3.2-9 also indicates that bedload transport steadily increases with increasing stream discharge. Although this analysis is based on a few measurements of sediment concentration, it provides guidance to discrete stream discharges where increased sediment transport may be expected.

Additionally Figure 3.2-9 suggests that approximately 45 percent of the total annual sediment discharge at Silverton was fines, 45 percent was sand, and 10 percent was bedload.

3.2.1.2 MidGradSeg02 (Pinehurst)

The suspended sediment data for the station at Pinehurst are presented in Figure 3.2-10 with rating curves established for the sand and fines fractions. The stream discharge presented is the instantaneous discharge noted at the time of sampling. The correlation analysis used to establish the curves is a power function that calculates the least squares fit through the points. The grain size break between sand and fines is 63 microns.

The relationships indicated on Figure 3.2-10 were integrated with the mean daily discharge data from USGS gage 12413470, South Fork Coeur d'Alene River at Pinehurst, to obtain mean daily suspended sediment discharge for water year 1999. Like the original data, the sand and fines fractions were calculated separately and summed to calculate the total suspended sediment discharge. Cumulative sediment discharge for water year 1999 year was calculated by summing the mean daily sediment discharges. The results are presented in Figures 3.2-11 through 3.2-13. With a drainage area of approximately 299 square miles, the total suspended sediment yield for

the South Fork at Pinehurst for water year 1999 was approximately 62 tons per year per square mile. Of that, approximately 26 tons was sand and 36 tons was fines. A total of approximately 19,000 tons of suspended sediment was transported past the gage at Pinehurst in water year 1999.

A similar analysis was completed for the bedload sediment data. The USGS (USGS 2000b) presented the rating curves and regression relationship for bedload transport at the Pinehurst gage. As with the suspended sediment data, the relationship for bedload was integrated with the mean daily discharge hydrograph to obtain daily and cumulative bedload discharge for water year 1999. These results are presented in Figure 3.2-14. Annual bedload sediment yield was approximately 11 tons per year per square mile for the South Fork at Pinehurst in water year 1999 for a total of about 3,400 tons.

Summing the total suspended load and bedload sediment gives the total sediment yield for the South Fork at Pinehurst for water year 1999, approximately 73 tons per square mile, or a total of 22,000 tons. Water year 1999 appears to be typical from a water and snow budget perspective as discussed in Section 2.3; however, sediment yields can vary significantly from year to year based on hydrologic conditions, sediment inputs, changing land use, and other conditions.

As indicated by the USGS data, the majority of sediment transport occurs during high flow events. Much larger discharge events are likely in the South Fork than were observed during water year 1999. During these larger events, much more sediment load should be expected.

Review of Figures 3.2-10 through 3.2-14 indicates the majority of sediment transport, approximately 90 percent, occurred during the period with approximate dates April 20 to July 4, 1999. Three distinct peaks of high sediment discharge are evident in the figures. Other distinct periods of increased sediment discharge are indicated on the figures from November to March. High temperatures, rainfall, and snowmelt caused large stream discharge during these periods (Section 2.3). These high stream discharges mobilized and transported the vast majority of the sediment yield for water year 1999. Similar high sediment transport rates would be expected on an annual basis as snowmelt in the upper watershed mobilizes and transports sediment through the system.

To estimate sediment transport in years before water year 1999, the measured discharges from the gage were integrated with the sediment transport relationships developed for the South Fork at Pinehurst in 1999. The results are presented in Table 3.2-2. As with the estimates for sediment transport for 1999, extrapolation of the rating curves to stream discharges greater than discharges that were used to develop the rating curve was employed. Nevertheless, a wide range of sediment transport quantities is indicated. In this type of analysis, the quantities of sediment

transported is directly correlated to the magnitude and duration of stream discharge. Years with high peak discharge and long duration will produce more sediment than years with low discharge and short duration. Figures 3.2-15 through 3.2-17 present estimates of sediment transport (for fines, sand and bedload, respectively) through time for water years 1988 through 1999. A wide range of magnitude of sediment transport is estimated and in general most of the transport occurs between February and June during large stream discharges.

To identify potential thresholds of sediment transport based on the USGS data, calculated estimates of daily sediment discharge for sand, fines, and bedload were examined. For each daily estimate and size class, for water year 1999, the percentage of total annual sediment discharge was calculated. These values were plotted against stream discharge and percent of maximum daily discharge for water year 1999 as shown in Figure 3.2-18. As would be expected, this figure indicates sediment discharge increase with increasing stream discharge. Further, ranges in stream discharge appear to indicate increased rates of sediment discharge. For both sand and fines, rapid increases in sediment discharge occur at stream discharges of approximately 1,100 cfs for water year 1999. Figure 3.2-18 also indicates that bedload transport steadily increases with increasing stream discharge. Although this analysis is based on a few measurements of sediment concentration, it provides guidance to discrete stream discharges where increased sediment transport may be expected.

Additionally Figure 3.2-18 suggests that approximately 49 percent of the total annual sediment discharge at Silverton was fines, 36 percent was sand, and 15 percent was bedload.

3.2.2 Channel Classification

Channel classifications may provide a level of understanding and description of a channel's behavior. Some channel classification systems require fieldwork and in depth study while others only require topographic map and aerial photograph interpretation. The level of information provided by a classification based solely on topographic map and aerial photograph interpretation is limited but does provide a basic framework for channel processes and conditions.

Rosgen (Rosgen and Silvey 1996) proposed a classification that delineates channel types based on plan-view morphology, cross-section morphology, channel sinuosity, channel slope, and bed features to provide a broad level delineation. Aerial photograph and topographic map interpretation can be used for this Level 1 type of classification. The Rosgen methodology builds from this broad classification when combined with more detailed information. The Rosgen Level 1 classification was used for this study to identify broad-reach level channel morphologies.

Additional information on stream channel classifications available from the Idaho Division of Environmental Quality's Beneficial Use Reconnaissance Project (IDEQ/BURP) is currently under review and will be incorporated into the Draft RI report. IDEQ/BURP information is based on field surveys and offer greater resolution, for the limited areas surveyed, than available topographic maps and aerial photographs. Based on this information, some channel classifications presented in this report may change.

Electronic USGS 7-1/2-minute quadrangle maps containing three dimensional topographic data were analyzed using AutoCAD Land development software. Plots of channel profile, slope and plan view were produced for each segment of the South Fork, Figures 3.2-19 to 3.2-23. In general, the divisions between segments were established based on changes in channel type or other morphologic feature. As such, each segment contains one or two channel types. The channel type was determined based on channel slope and observation of aerial photographs from 1998.

Channel stationing was established from the downstream end of each segment at 100-foot stations for ease of locating specific features. This stationing is indicated on Figures 3.2-19 through 3.2-23. This stationing is approximate and is intended for general locating of discussed areas, more detailed stationing and survey should be used for precise locating, and project construction.

In the South Fork watershed, one Rosgen stream type occurs, "D". The following paragraphs briefly summarize "D" channel types and the mapping effort of channel classification.

"D" streams are configured as braided channels or with braids and bars. These channels are typically very wide and shallow with channel slope less than 4 percent. Sediment supply is generally unlimited as lateral migration and remobilization of bar material can occur during high discharge events. Channel and braid locations occur due to natural or changed conditions imposed on the channel or watershed. These conditions include changes in sediment supply from upstream, changes in land use, and imposed features within the channel system. Additionally, many areas in the watershed appear to be channelized and constrained by dikes, roads and other features. A distinction between the overall pattern of the channel and these channelized sections was not made due to the apparent tendency for braiding throughout the watershed.

The Idaho Department of Environmental Quality developed Rosgen classifications for four reaches in the South Fork Coeur d'Alene River under the Beneficial Use Reconnaissance Project (BURP). These reaches ranged in length from 140 to 360 meters (see Figures 3.2-19, 3.2-20,

and 3.2-22). These reaches were selected to be representative of general conditions in that area of the watershed. All four reaches were classified as Rosgen type C in the BURP studies (IDEQ 1998, 1999). The differences between the BURP classifications and the results presented here are most likely due to differences in the methods used to classify the channel. These classifications are based on maps, elevation profiles derived using a GIS-based analysis, and aerial photographs. The BURP classifications are based on field observations and channel measurements. Both classifications are preliminary in nature and are presented here for baseline characterization purposes only. They are not intended for use in the design phase of remediation planning. Detailed, site-specific hydrologic studies may be needed to guide actual remedial design development.

3.2.3 Channel Descriptions

The 1998 set of aerial photographs by URS Greiner, Inc., and CH2M HILL, the 1991, 1984 and 1983 set by USDA, and the topographic maps and profiles presented in Figures 3.2-19 through 3.2-23 were reviewed to further describe the South Fork. This review and interpretation focused on morphologic features indicating stream instability, channel migration, channel aggregation or degradation and other features that may contribute sediment to the system.

3.2.3.1 MidGradSeg01 (Elizabeth Park to Mouth of Canyon Creek)

MidGradSeg01 has approximately 63,600 linear feet (12.0 miles) of mapped channel indicated on Figures 3.2-19 and 3.2-20. The channel slope is relatively constant ranging from 0.5 to 2 percent with slightly higher slope in the upper reaches, Figure 3.2-22.

The channel from stations 0+00 to 26+00, flows through a valley approximately 550 feet wide with the Interstate 90 road structure occupying over 200 feet of this width. The channel slope through this reach is approximately 0.5 percent. The valley bottom where the channel flows appears to be composed of unvegetated gravel. No photographs were available from 1984 or 1991, however some areas in this reach appear to have bars and show possible braiding. Drainage from Elk Creek enters the South Fork at approximate station 8+00. Likely sediment sources from stations 0+00 to 26+00 are from remobilization of channel bed material and lateral migration.

From stations 26+00 to 46+00, the channel is constrained by the Interstate 90 embankment and Dikes to a valley width typically 100 feet wide. The slope of the channel through this reach is approximately 0.5 percent. The banks surrounding the active channel appears to consist of unvegetated gravel. Bars appear to be developed with possible braiding indicated on the 1998

photographs, 1991 and 1984 photographs were unavailable for review. Likely sediment sources in this reach include remobilization of channel bed material and lateral migration.
The South Fork from stations 46+00 to 87+00 flows through a valley 100 to 200 feet wide. The width of the effective valley bottom is constrained by a railroad grade and the Interstate 90 embankment. The slope through this reach is approximately 0.5 percent. The channel is braided throughout this reach. Drainage from Elk Creek enters the South Fork at approximate station 83+00. Little vegetation exists in the floodplain with clumps of trees occurring in the upstream end, stations 80+00 to 87+00. Sediment sources in this reach include remobilization of channel bed material and lateral migration.

The channel from stations 87+00 to 114+00 is constrained to a valley approximately 50 feet wide by the Interstate 90 embankment and road embankment. Little or no deposition of sediment occurs in this reach as indicated by lack of bed forms such as bars. Drainage from prospect Gulch at approximate station 135+00 on the northeast side of Interstate 90 appears to enter the South Fork at approximate station 112 via ditches and culverts. Big Creek enters the South Fork at approximate station 103+00; discussion of Big Creek is presented in another report. The banks of the South Fork through this reach appear to be moderately well vegetated. Sediment sources in this reach include minor bank erosion and remobilization of bed material and sediment contributed from Big Creek.

The South Fork from stations 114+00 to 160+00 flows through a valley approximately 400 feet wide in a braided channel. The channel slope is approximately 0.5 percent. The 1998 photographs indicate the majority of the flow was concentrated against the Interstate 90 embankment. Photographs from 1991 and 1984 were unavailable for review. The floodplain surrounding the channel is sparsely vegetated. Likely sediment sources in this reach include remobilization of channel bed material and from lateral migration.

From stations 160+00 to 224+00, the South Fork is constrained in position by steep valley walls and dikes protecting residences and a tailings dam. This tailings dam appears vegetated in the 1998 photographs and unvegetated in the 1991 photographs. Review of photographs from 1984, 1991 and 1998 indicate the channel has been in the same general location through this period. Channel slope is approximately 0.5 percent. Occasional bars are apparent on the inside of bends and behind obstructions to river flow. Drainage from Terror Gulch enters the South Fork at approximate station 197+00. Drainage from Rosebud Gulch enters somewhere in this reach through culverts and ditches. Two rock and soil deposits are apparent from the Silver Summit Mine and Silver Dollar Mine and sediment derived from these exposed deposits enters the South Fork through the Rosebud Gulch drainage. These deposits are separated from the South Fork by

over 1000 feet and likely contribute little sediment to the South Fork. Likely sediment sources in this reach are remobilization of channel bed material and minor bank erosion.

The South Fork from stations 224+00 to 266+00 is restricted in location by the Interstate 90 embankment and other road embankments. Channel slope is approximately 0.5 percent through this reach. The banks have become increasingly vegetated since the 1991 photographs were taken. Occasional small gravel bars are developed on the sides of the channel. The Osburn Rock Pit is located adjacent to the South Fork from stations 239+00 to 248+00. Sediment in this reach is likely derived from remobilization of channel bed material, minor bank erosion and some from the exposed rock and soil deposits around the Osburn Rock Pit.

From stations 266+00 to 297+00, the channel has become decreasingly braided as the main channel has become established along the Interstate 90 embankment. Review of the photographs indicate that in addition to decreasing braiding, vegetation has become increasingly dense along the floodplain. The decrease in braided nature of this reach may indicate that sediment supply is decreasing. Sediment sources in this reach include remobilization of channel bed material, and lateral migration. If current trends continue and sediment supply decreases, lateral migration of the channel may decrease.

The South Fork from stations 297+00 to 343+00 flows adjacent to the Osburn Tailings Ponds. The location is constrained by dikes adjacent to Interstate 90 and the Tailing Ponds and is approximately 50 feet wide. Channel slope through this reach is approximately 1 percent. Barbs or weirs are visible in the 1984 photos, apparently for bed control and channel stabilization. Little vegetation exists along the banks through this reach. Likely sediment sources in this reach are remobilization of channel bed material and minor bank erosion.

From stations 343+00 to 370+00, the river location is controlled by the Interstate 90 embankment and the valley walls with a width of about 50 feet. Channel slope is about 1 percent. Rock barbs or weirs are apparent in all three years of photographs reviewed. An exposed road cut or quarry with exposed soil and rock deposits exist along at approximate station 343+00. Mid-channel bars are visible in the photographs reviewed and vegetation is sparse along the riverbanks. Sediment sources in this reach include remobilization of channel bed material and minor bank erosion.

The river from stations 370+00 to 414+00 is constrained in a 50-foot wide channel by dikes on both banks. The channel slope is approximately 1 percent. Vegetation is sparse along the apparent riprap banks. The vegetation along the banks appears to get larger through time. Drainage from Revenue Gulch enters the South Fork at an unknown location, possibly at station

370 or through culverts through the Interstate 90 embankment. Drainage from Lake Creek enters somewhere around station 413+00 but channel mouth is not apparent in the photographs reviewed. Rock and soil deposits from the Galena Mine and Tailings pond are located in the Lake Creek drainage. Sediment sources in this reach include mobilization of channel bed material, minor bank erosion, and sediment derived from Lake Creek.

The South Fork from stations 414+00 to 486+00 constrained to a channel approximately 50 feet wide by road embankments and hillslope valley walls. The slope in this reach ranges from 0.5 to 1 percent. Weirs are visible from stations 430+00 to 438+00 in all three years of photographs reviewed. Vegetation is sparse adjacent to riverbanks. A rock and soil deposit is evident on the hillslope above the South Fork. Sediment sources in this reach include mobilization of channel bed material and minor bank erosion.

From stations 486+00 to 536+00, the South Fork flows through a flume or is channelized through the town of Wallace. The channel slope in this reach is approximately 1 percent. Three tributaries enter the South Fork in this reach: Placer Creek at station 490+00, Ninemile Creek at station 509+00, and Canyon Creek at station 534+00. Little change is observable in the three sets of photographs reviewed. Likely sediment sources in this reach are remobilization of channel bed material and sediment derived from tributary watersheds, discussed in separate sections.

3.2.3.2 MidGradSeg02 (Confluence With North Fork to Bunker Hill Superfund Site Park)

Aerial photographs were not reviewed for areas within the Bunker Hill Superfund Site. As such, channel descriptions from only stations 0+00 to approximately 32+00 are provided.

The South Fork from stations 0+00 to 32+00 flows across a valley bottom approximately 600 feet wide with a slope less than half of a percent. The channel appears to be in the same general location in all sets of photographs reviewed. However, lateral and mid-channel bars are indicated in the photographs, indicating channel migration may occur. Vegetation on areas adjacent to the channel have become better established through the time period observed. Likely sediment sources in this reach are remobilization of channel bed material, lateral migration, and bank erosion.

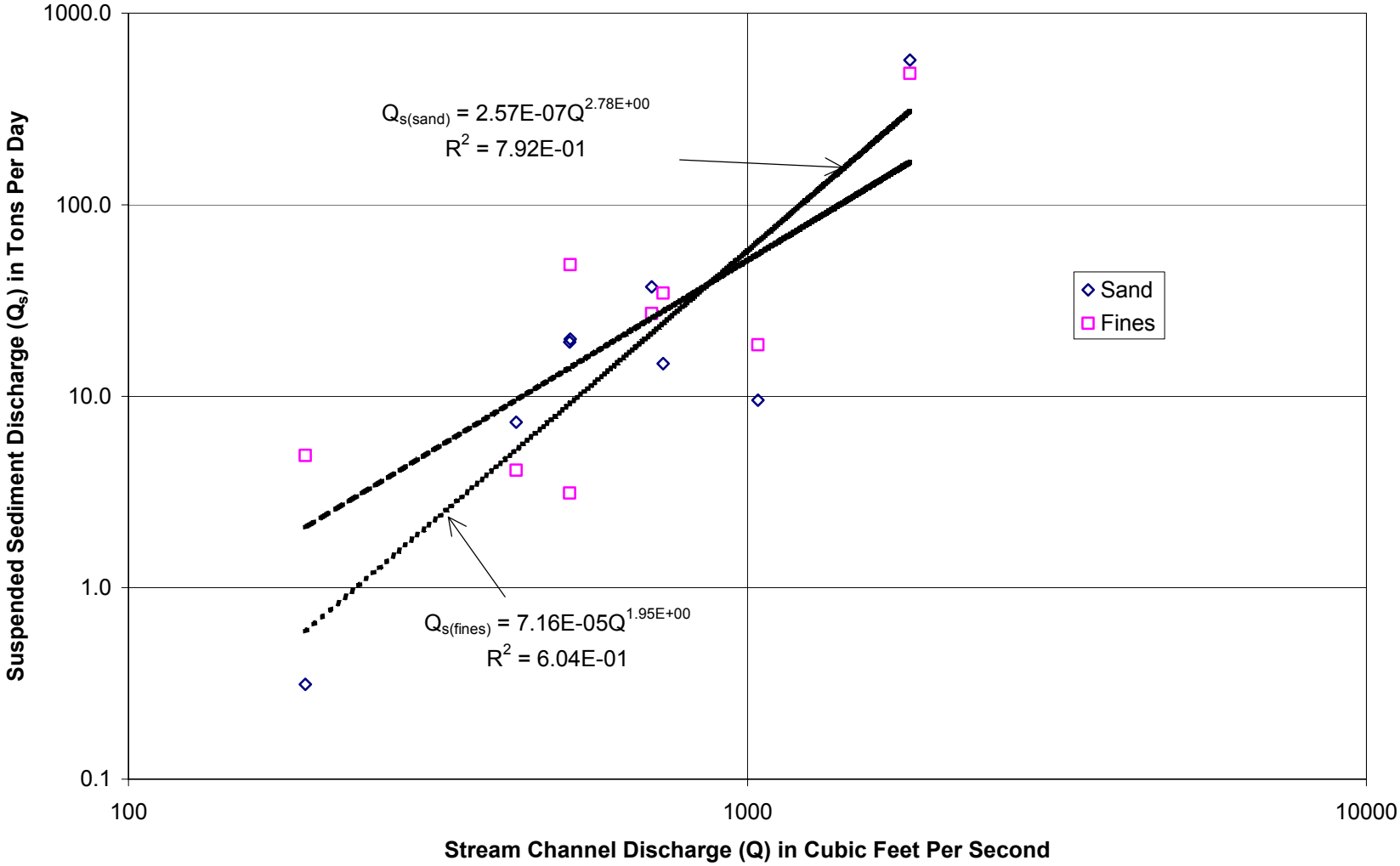
3.3 SUMMARY

Based on the information discussed above, approximately 22,000 tons, or 73 tons per square mile, of sediment was transported past the South Fork at Pinehurst stream gage in water year 1999. Although this gage is not at the absolute downstream end of MidGradSeg02, it is likely that similar magnitudes of sediment are transported to the channels downstream of MidGradSeg02.

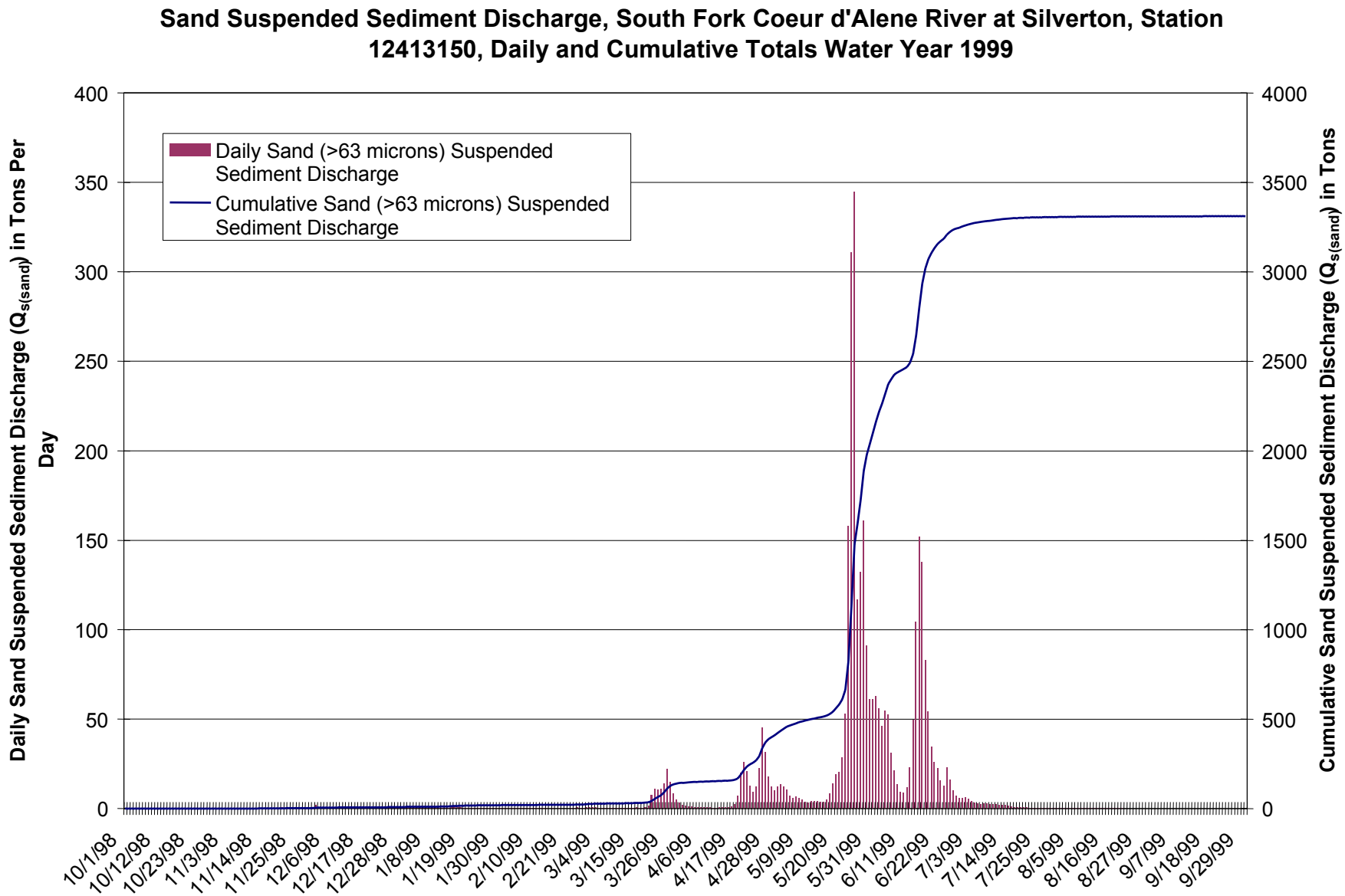
Much of the length of MidGradSeg01 has been channelized or constrained in position by road and railroad embankments, and dikes. Channel migration and sediment derived from migration is likely in only a few areas. Most notably from station 0+00 to 87+00 and 114+00 to 160+00. Channel bed remobilization and minor bank erosion occurs throughout the watershed. Few point sediment sources occur adjacent to or near the channel exist throughout MidGradSeg01. The entire length of channel could be enhanced and further stabilized by increasing vegetation on river banks and providing additional enhancement features such as barbs, weirs, and woody debris. Such efforts provide additional bed control, roughness, and complexity to the channel system.

These observations were based on a limited review of the available data, photographs, and topographic maps at the time of review. Not all potential sediment sources were identified as potential sediment sources literally cover the entire watershed. Primary sources were identified based on review of the available information.

Suspended Sediment Rating Curves, South Fork Coeur d'Alene River at Silverton, Station 12413150, Suspended Sediment by Sand Break, Water Year 1999



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-1**



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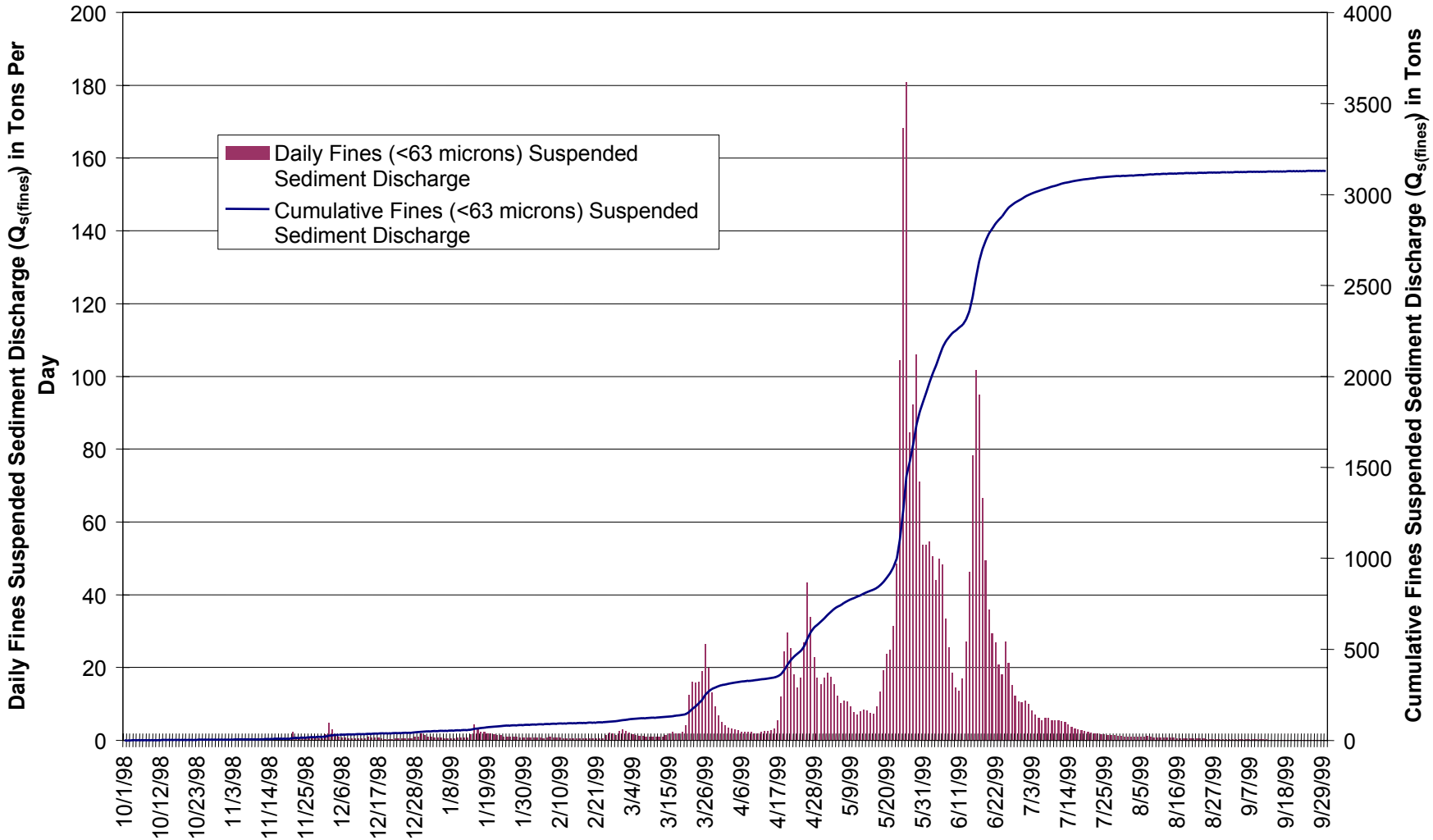
07/19/01

Figure 3.2-2

Fines Suspended Sediment Discharge, South Fork Coeur d'Alene River at Silverton, Station 12413150, Daily and Cumulative Totals, Water Year 1999



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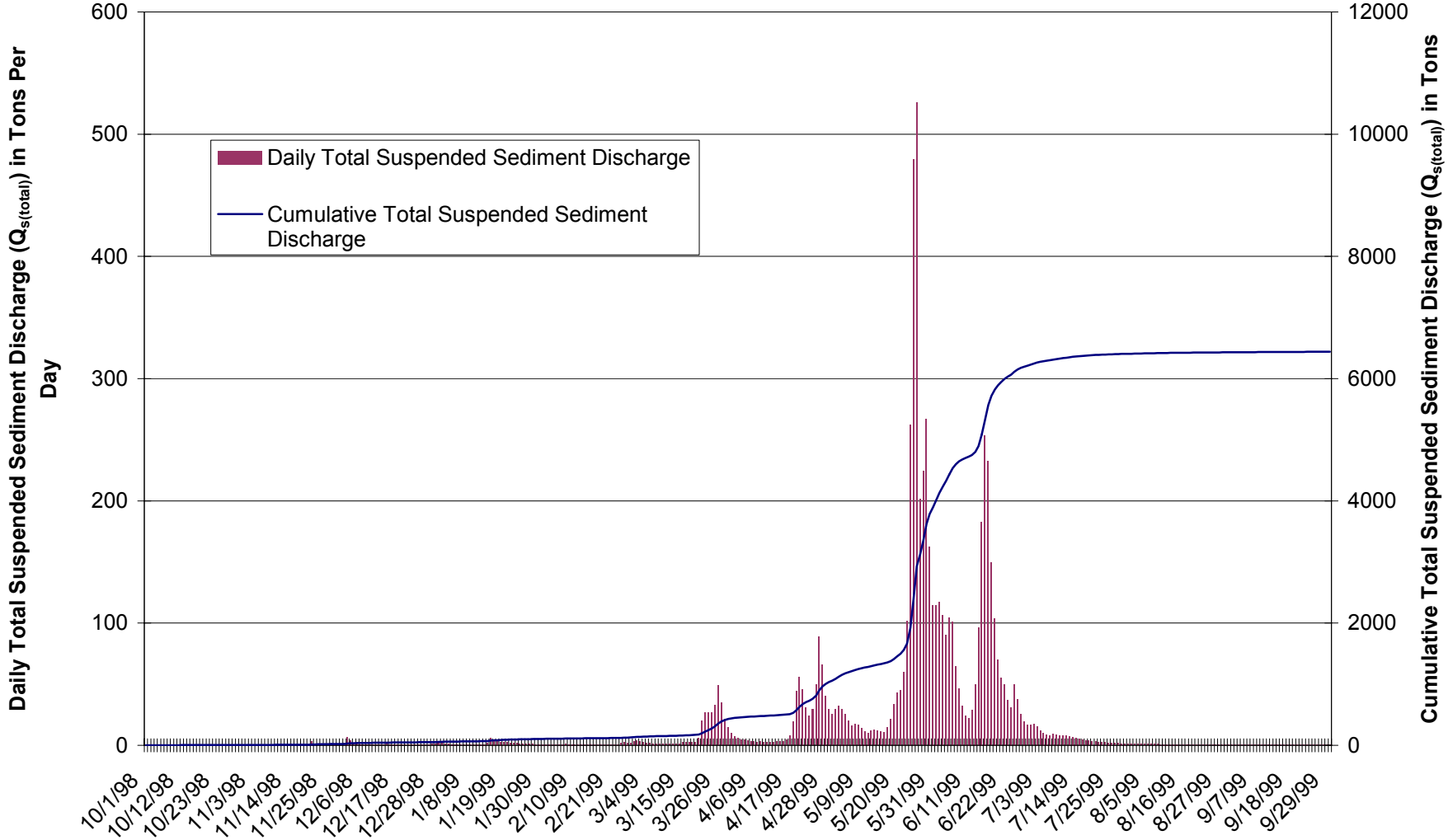
SouthFork Series
07/19/01

Figure 3.2-3

Total Suspended Sediment Discharge, South Fork Coeur d'Alene River at Silverton, Station 12413150, Daily and Cumulative Totals, Water Year 1999



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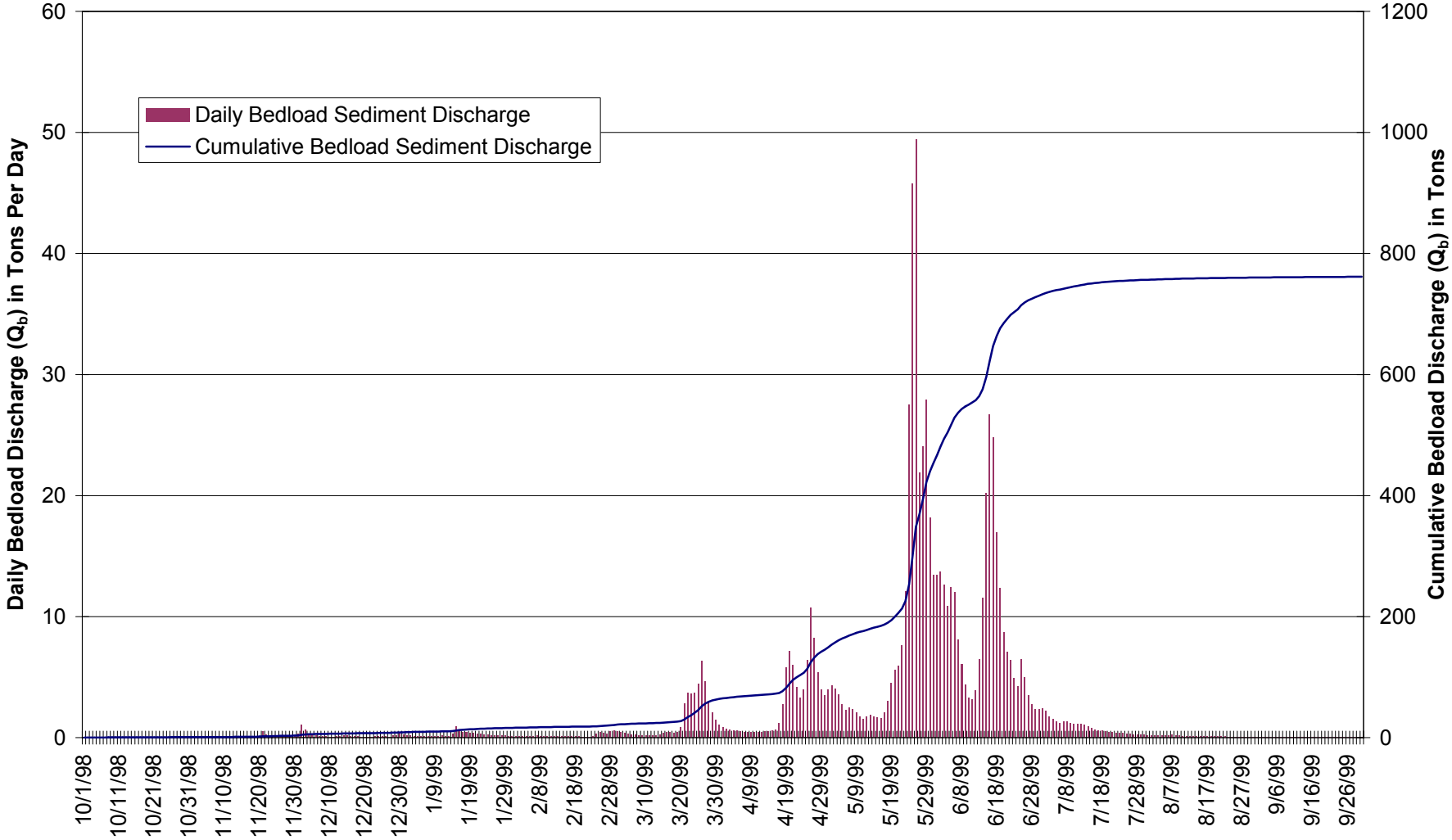
SouthFork Series
07/19/01

Figure 3.2-4

Bedload Sediment Discharge, South Fork Coeur d'Alene River at Silverton, Station 12413150, Water Year 1999



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	Figure 3.2-5

Estimated Cumulative Fines Sediment Transport, South Fork Coeur d'Alene River at Silverton

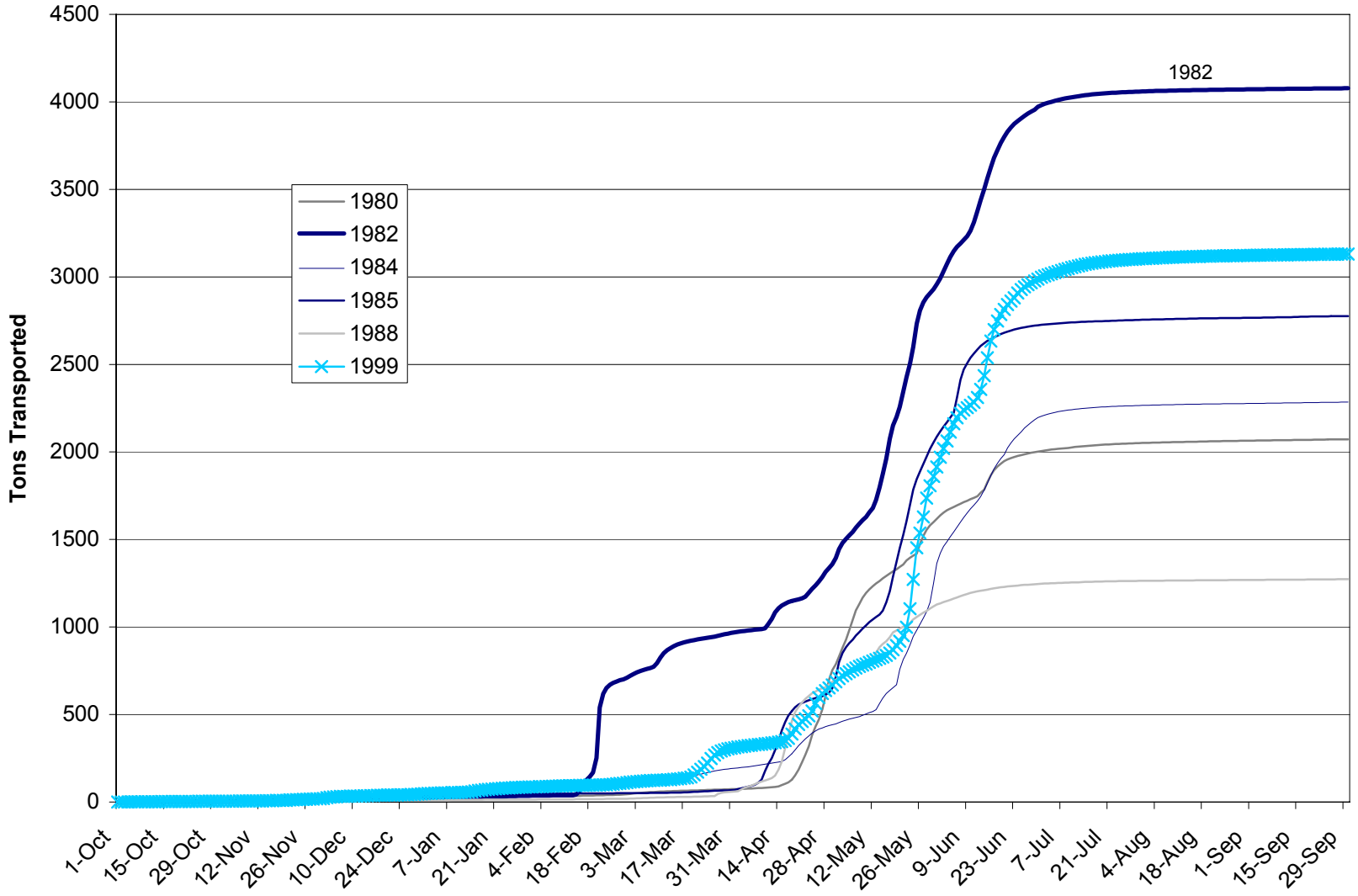


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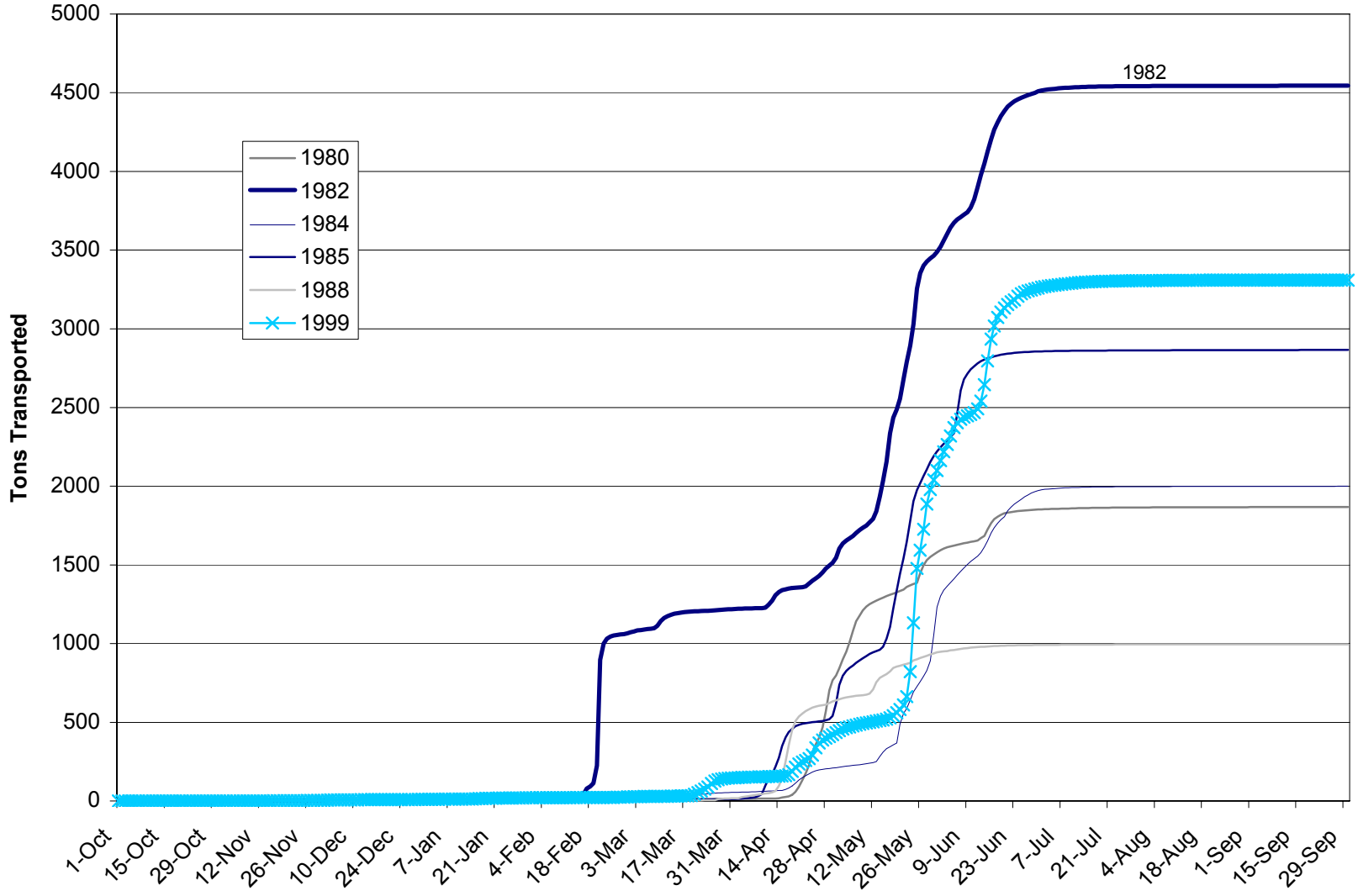
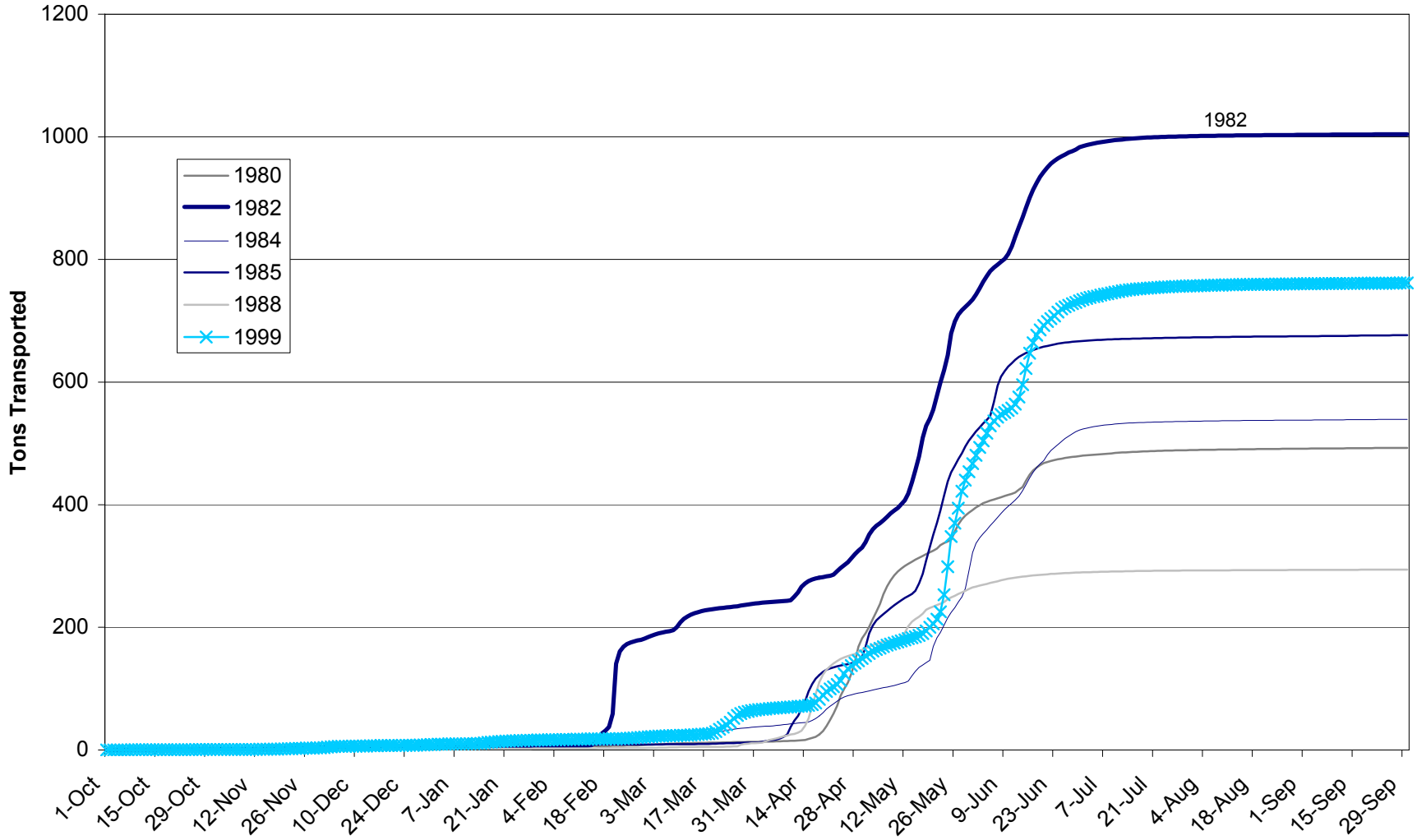
Figure 3.2-6

Estimated Cumulative Sand Transport, South Fork Coeur d'Alene River at Silverton



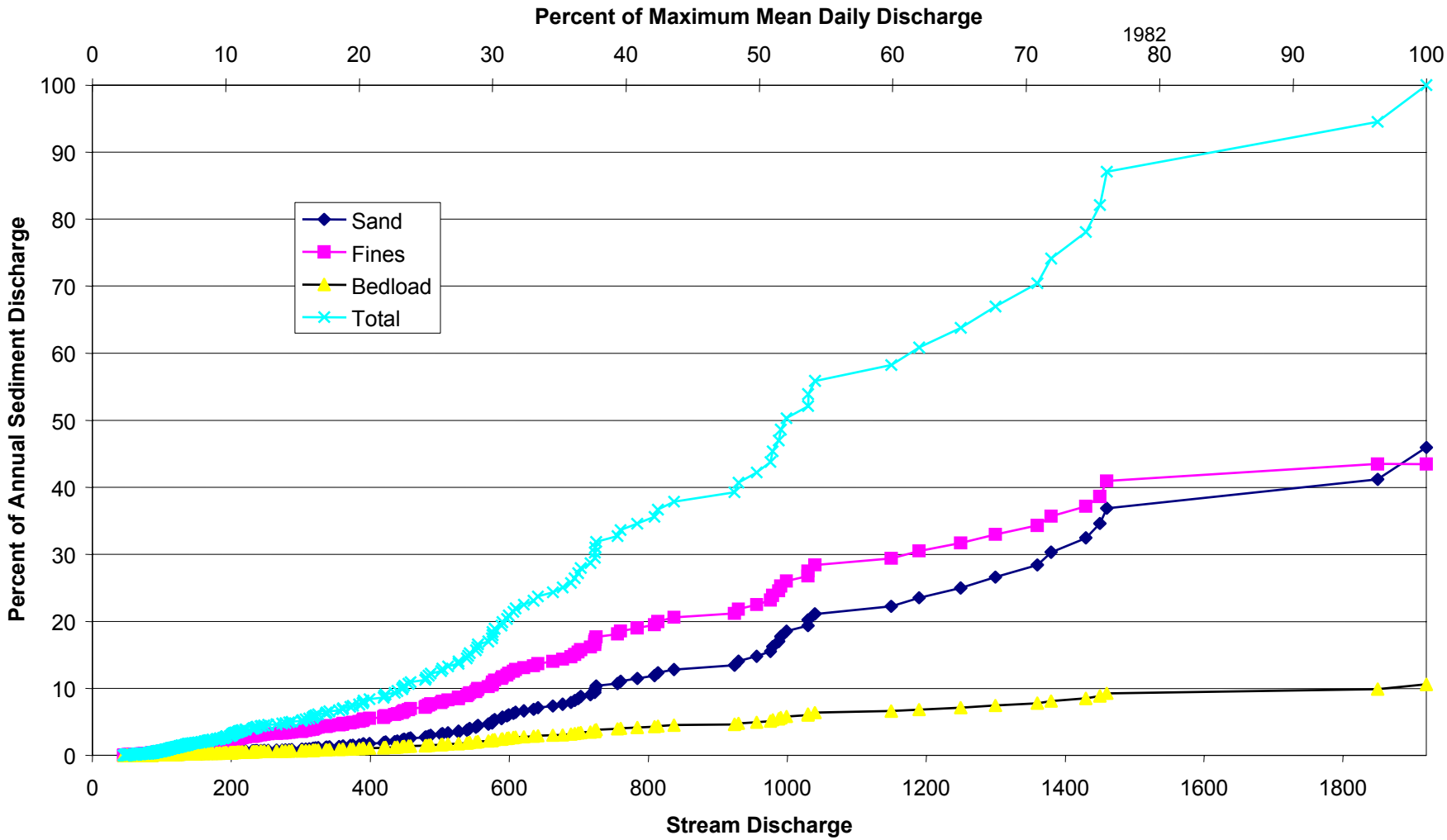
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-7**

Estimated Cumulative Bedload Sediment Transport South Fork Coeur d'Alene River at Silverton



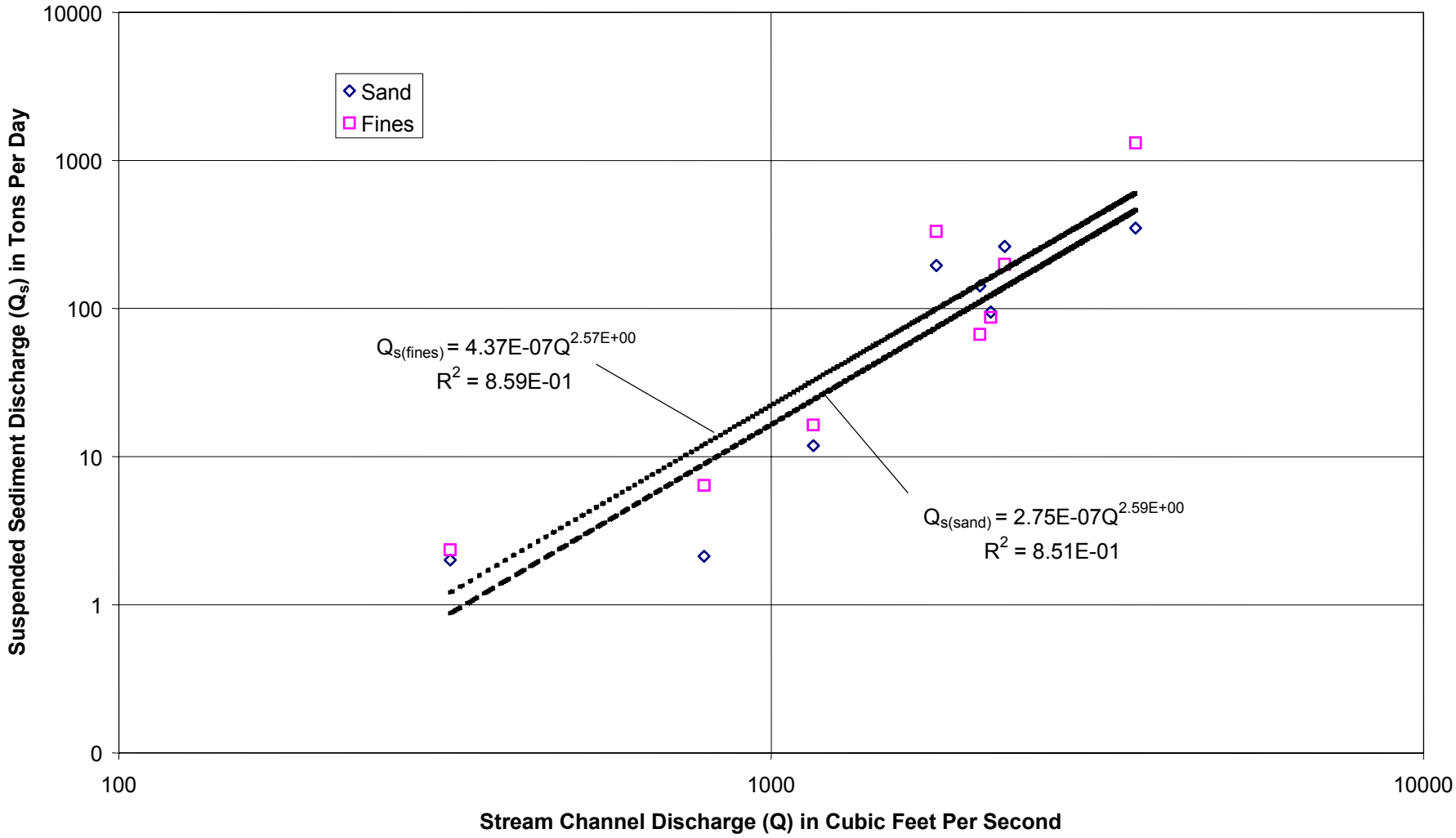
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-8**

South Fork Coeur d'Alene River at Silverton, Percent of Total Annual Sediment Discharge Versus Stream Discharge, Water Year 1999



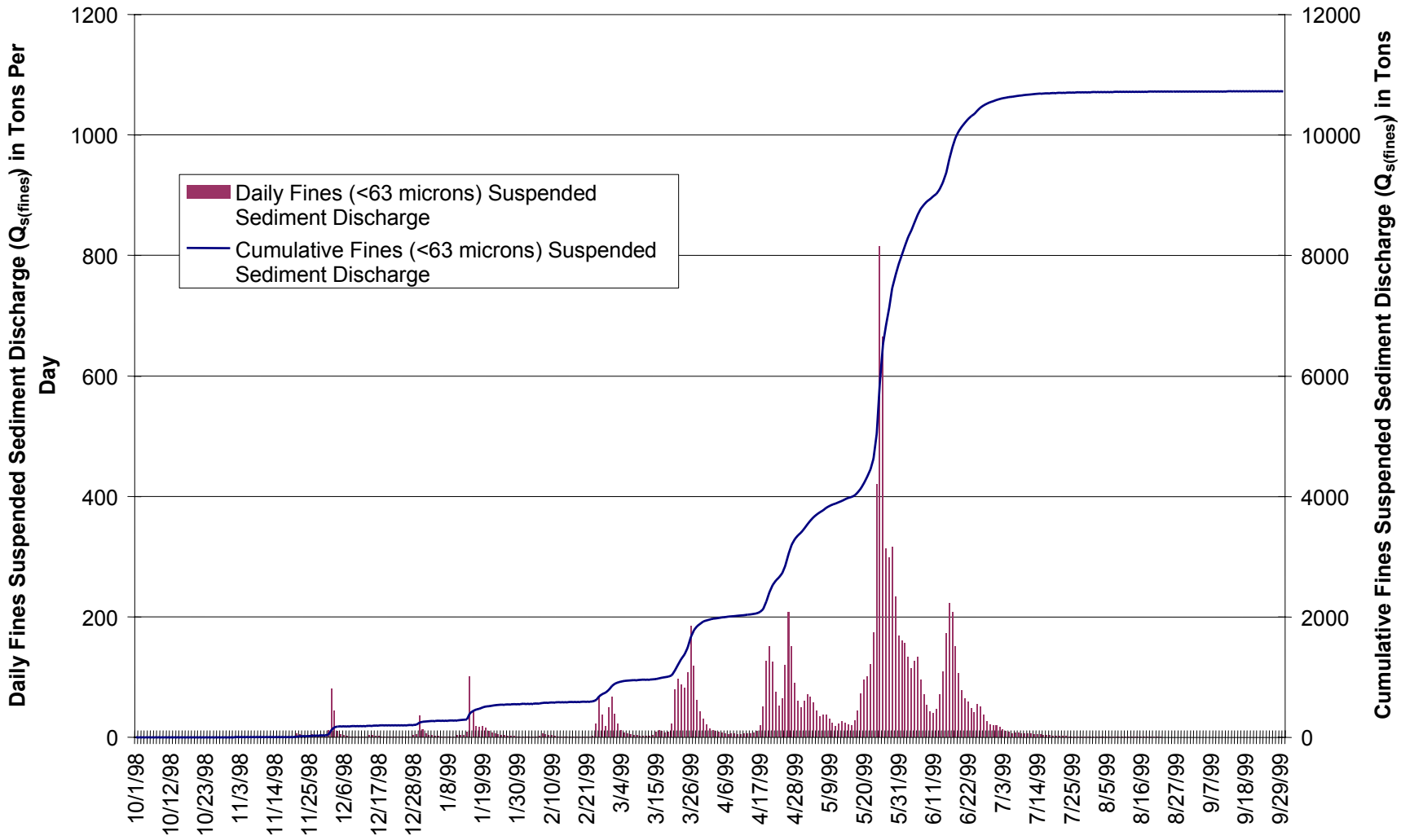
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	Figure 3.2-9

Suspended Sediment Rating Curves, South Fork Coeur d'Alene River near Pinehurst, Station 12413470, Suspended Sediment by Sand Break, Water Year 1999



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-10**

Fines Suspended Sediment Discharge, South Fork Coeur d'Alene River near Pinehurst, Station 12413470, Water Year 1999



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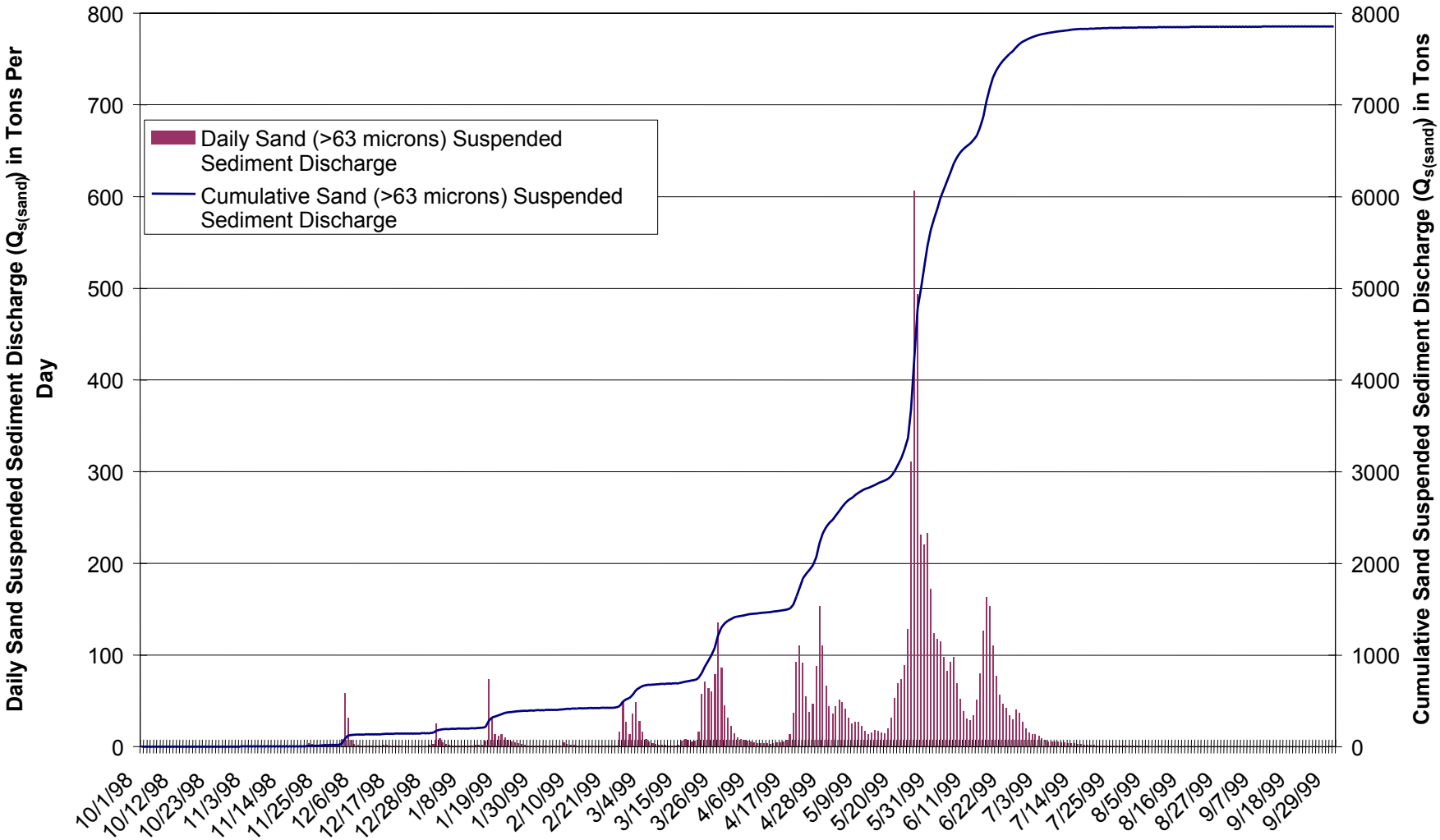
07/19/01

Figure 3.2-11

Sand Suspended Sediment Discharge, South Fork Coeur d'Alene River near Pinehurst, Station 12413470, Water Year 1999



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Generation: 1

SouthFork Series
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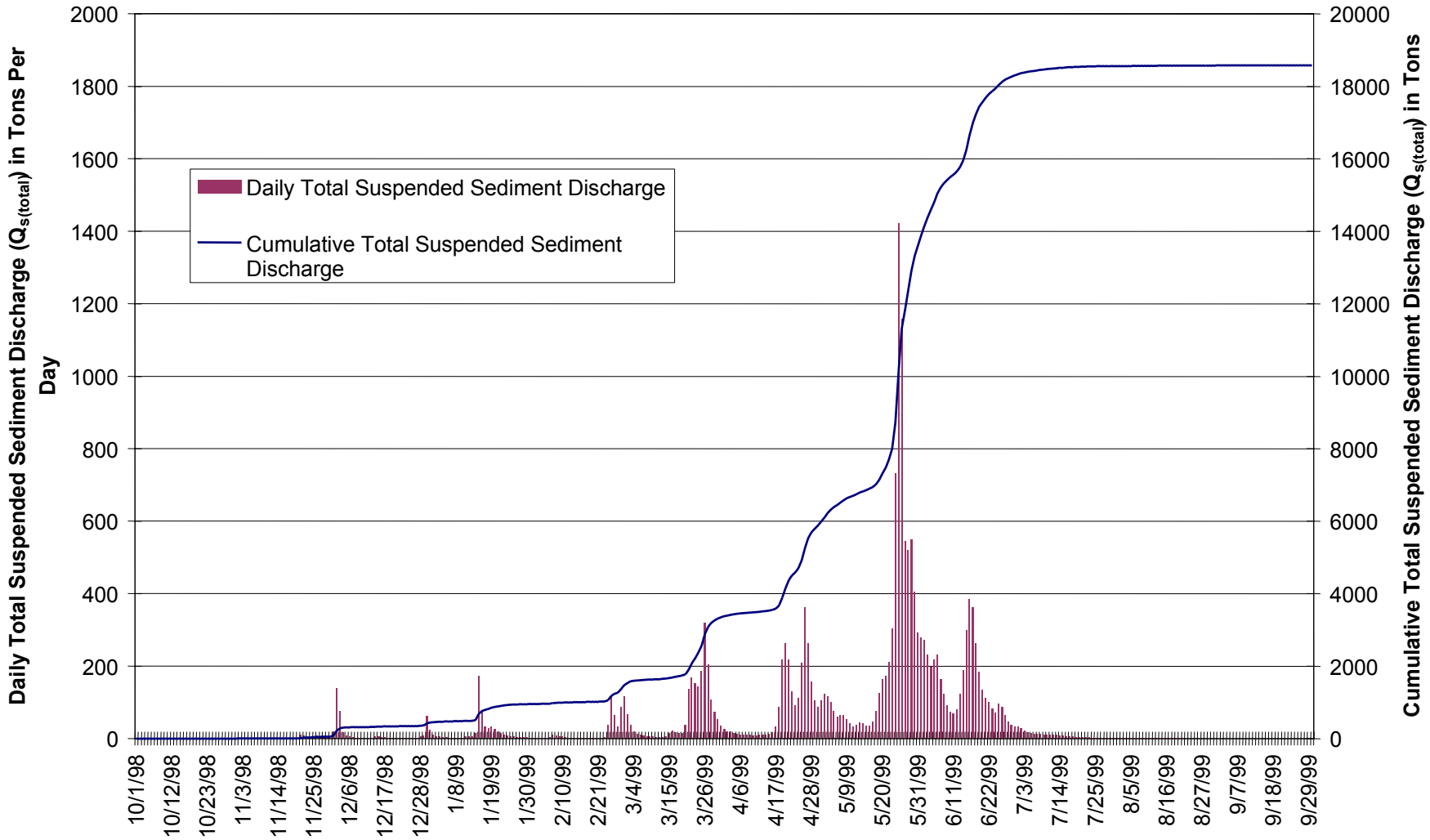
Figure 3.2-12

Total Suspended Sediment Discharge, South Fork Coeur d'Alene River near Pinehurst, Station 1413470, Water Year 1999



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RI REPORT

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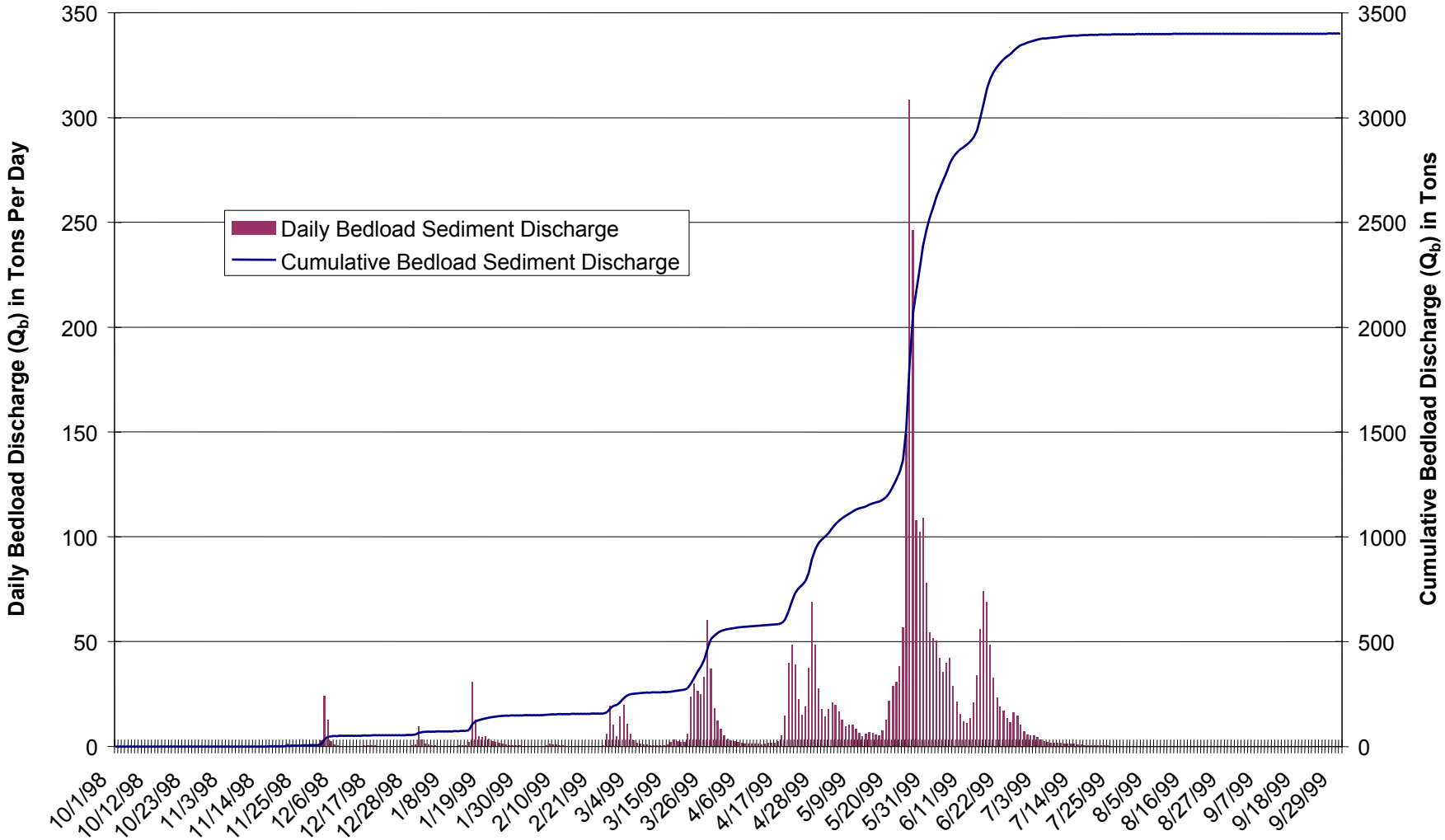
Generation: 1

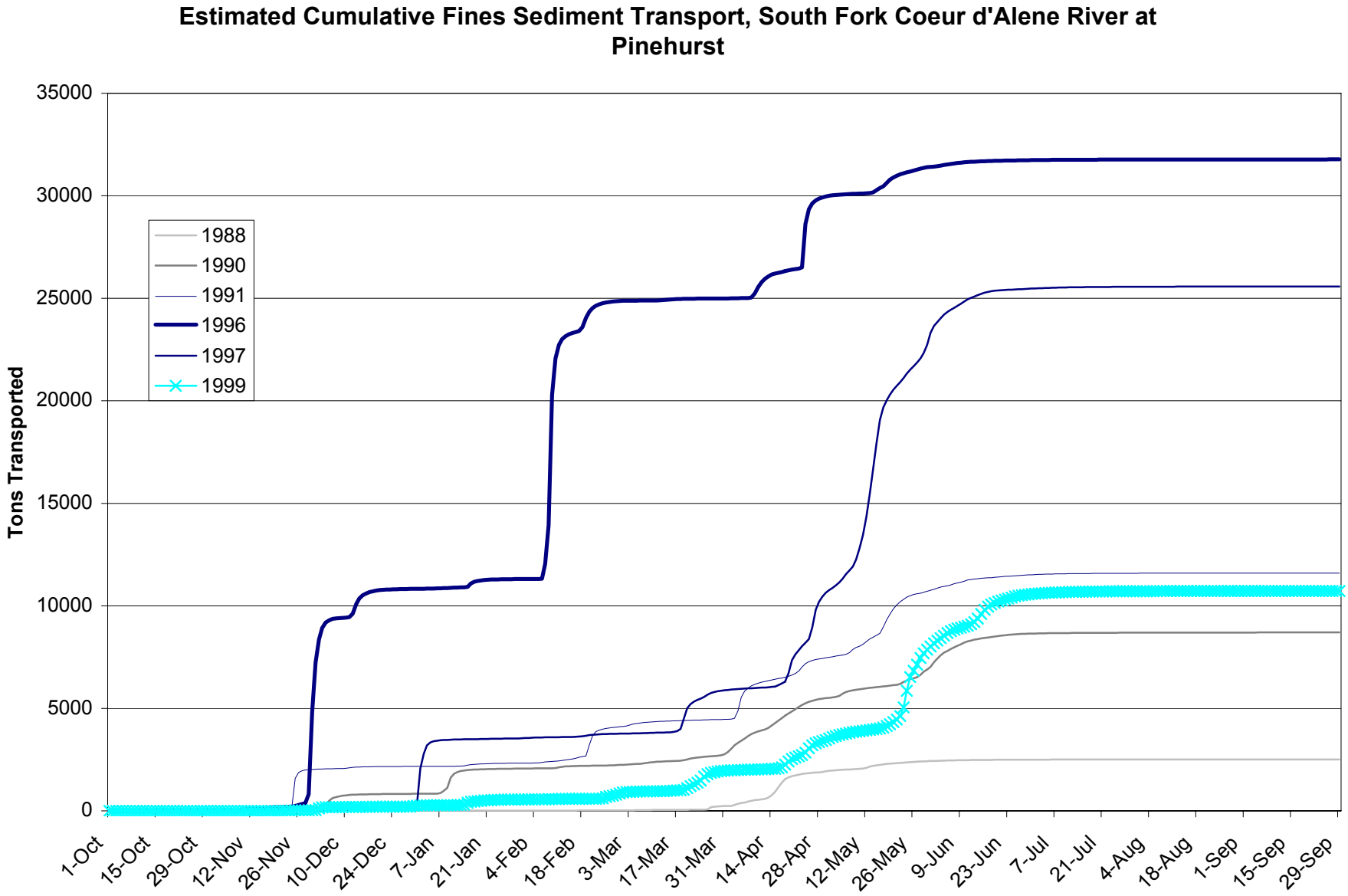
SouthFork Series
07/19/01

Figure 3.2-13

Bedload Sediment Discharge, South Fork Coeur d'Alene River near Pinehurst, Station 12413470, Water Year 1999



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	Figure 3.2-14



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RI REPORT

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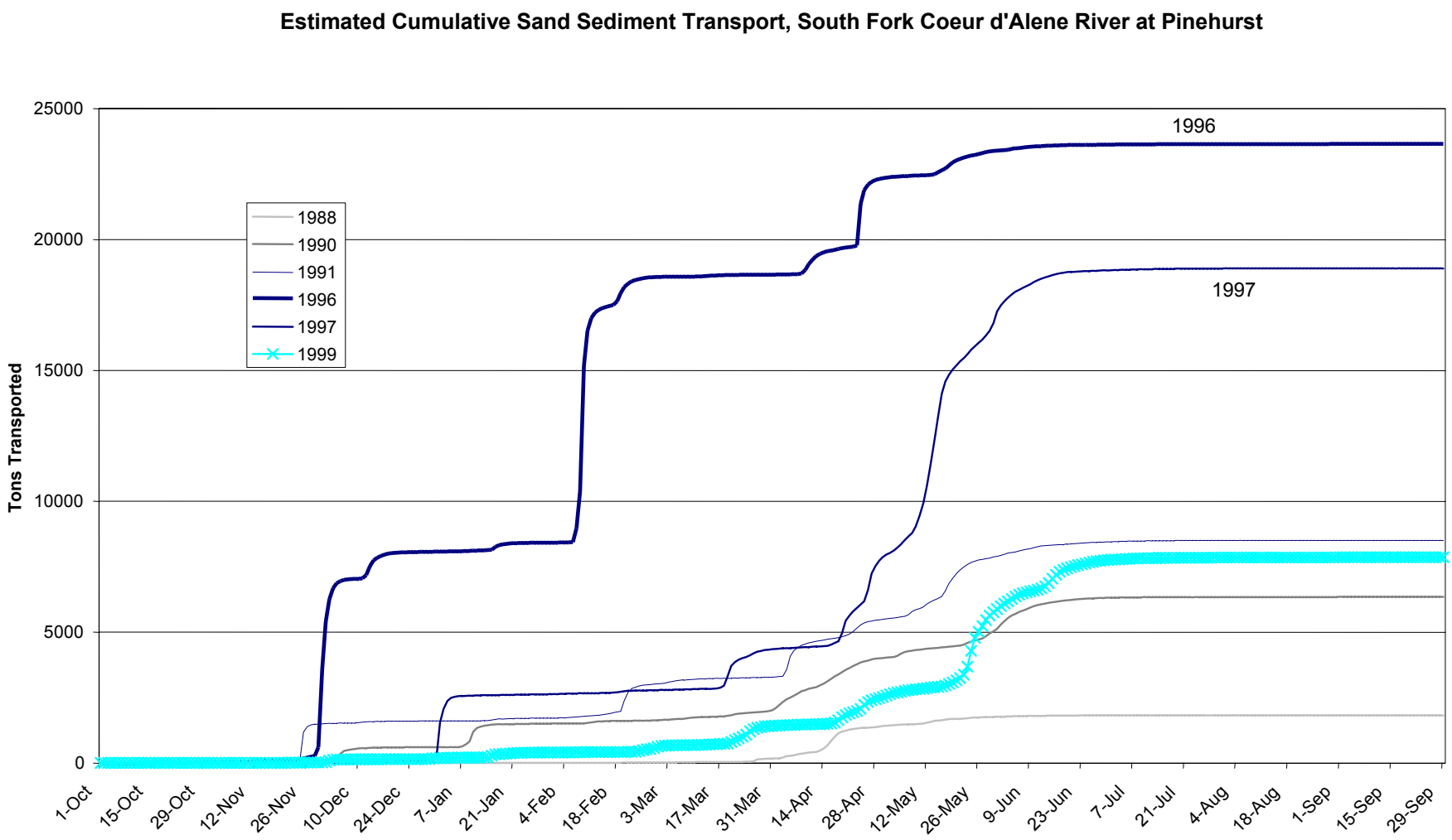
Generation: 1

SouthFork Series
07/19/01

Figure 3.2-15



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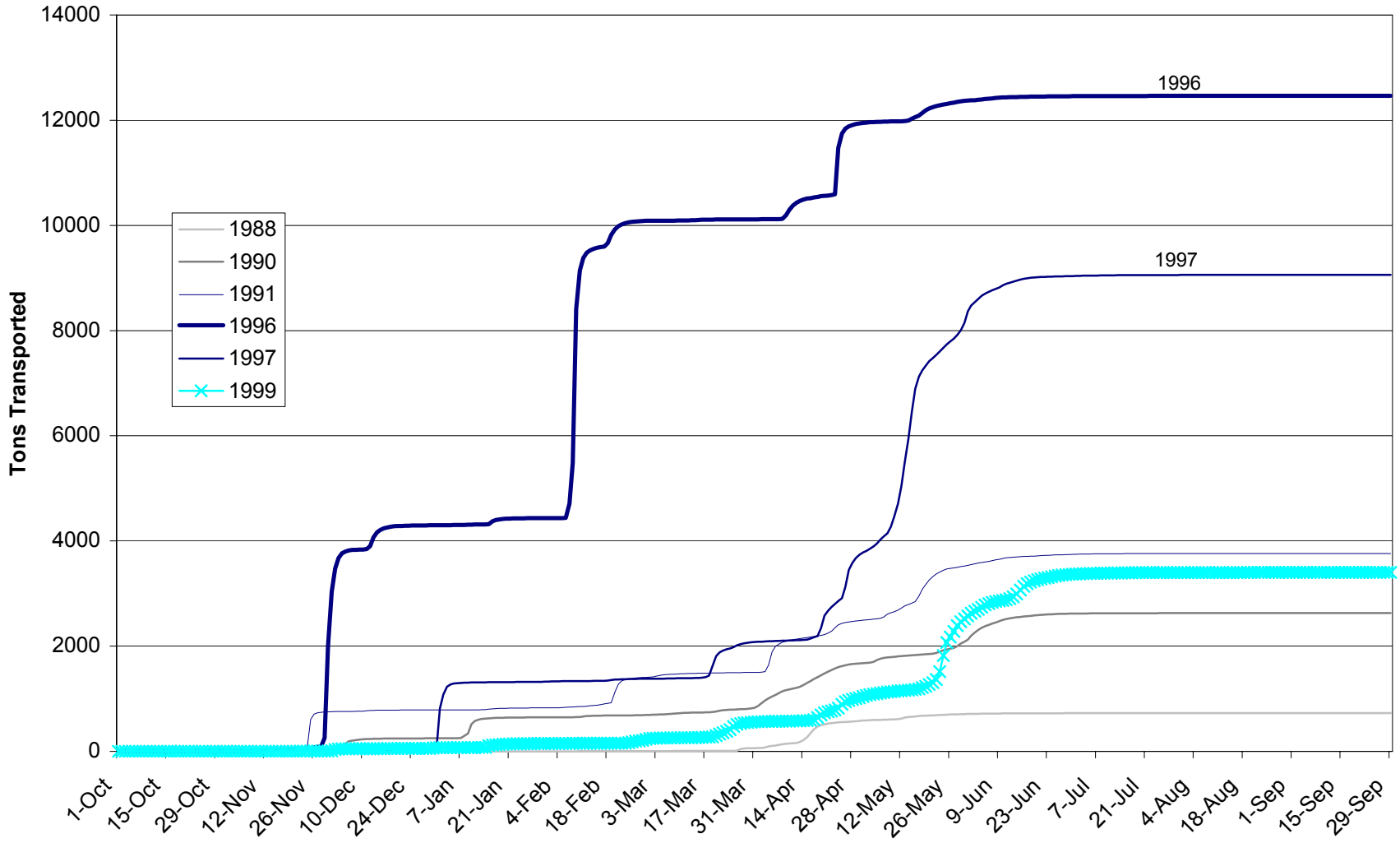
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

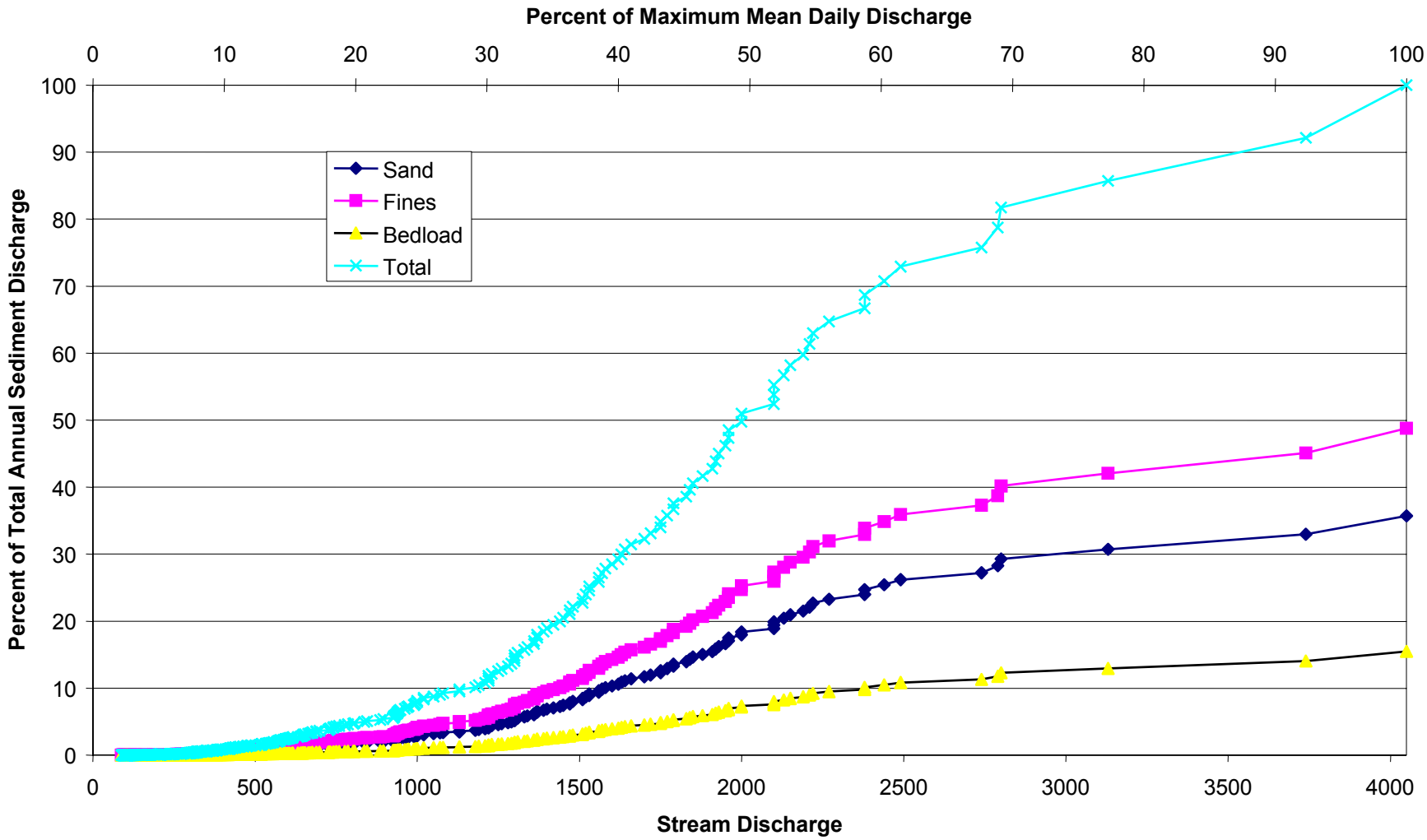
Figure 3.2-16

Estimated Cumulative Bedload Sediment Transport, South Fork Coeur d'Alene River at Pinehurst



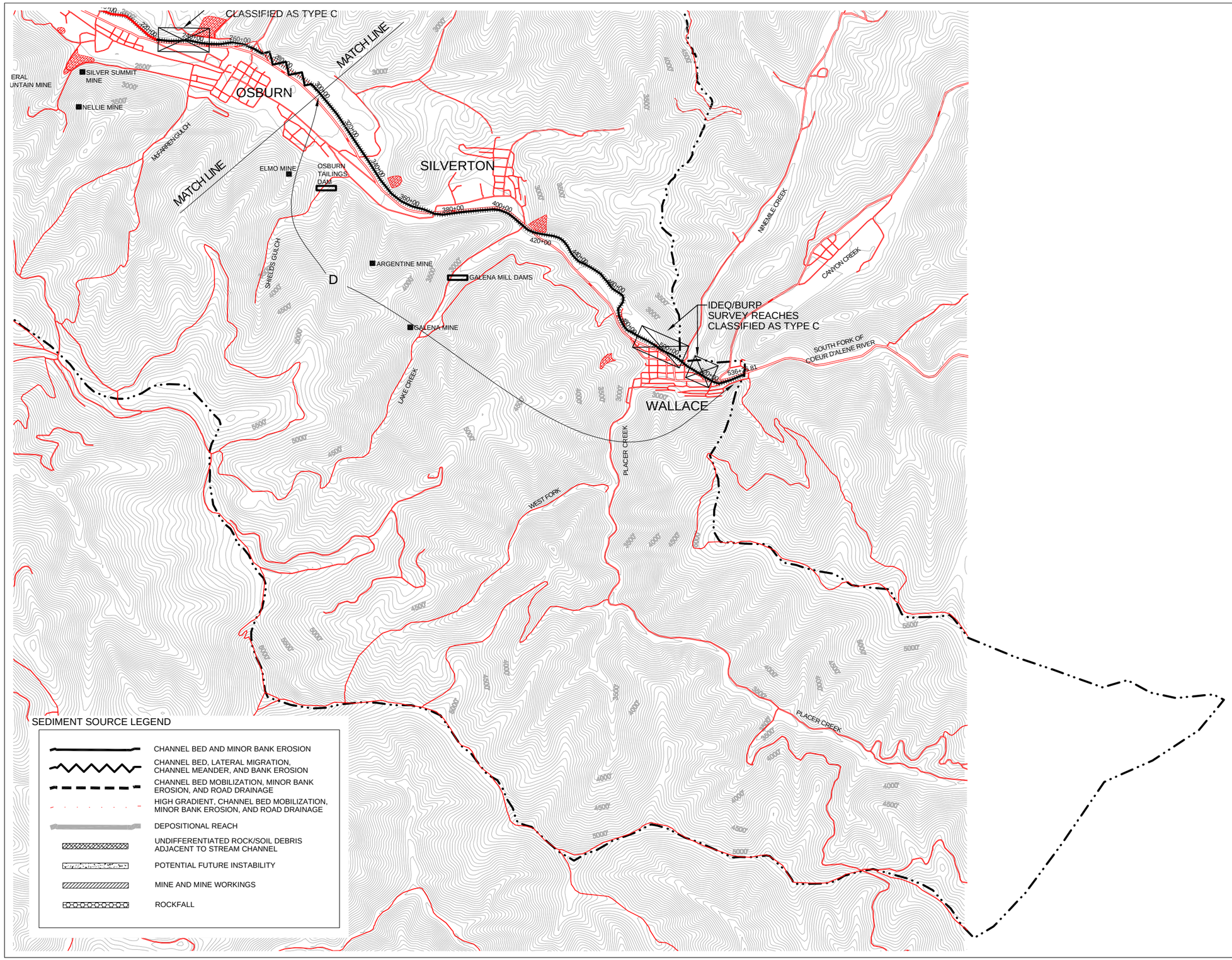
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-17**

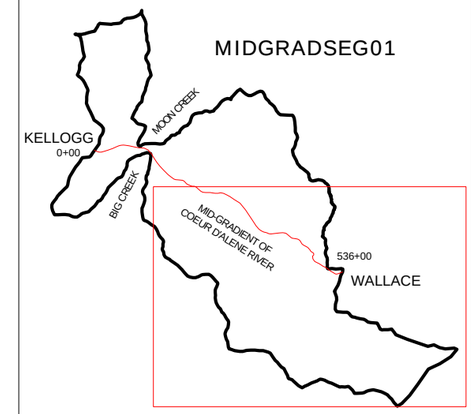
South Fork Coeur d'Alene River at Pinehurst, Percent of Total Annual Sediment Discharge Versus Stream Discharge, Water Year 1999



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 3.2-18**

Figure 3.2-19
Mid Gradient Segment 01 Site Plan
Southeast Portion





LEGEND

- BASIN BOUNDARY
- CONTOUR LINE (4200')
- CHANNEL CENTERLINE (170+00)
- INTERSTATE/ROAD/TRAIL
- ROSGEN CLASSIFICATION (Aa+)

NOTES:

1. MAP FEATURES AND CONTOURS PRODUCED BY AMERICAN DIGITAL CARTOGRAPHY, COPYRIGHT 1995, AND BASED ON 7.5 MINUTE SERIES MAPS, REVISED 1977, ZONE ID-W.
2. VERTICAL DATUM BASED ON NAD83 IDAHO STATE PLANE COORDINATE SYSTEM.
3. CONTOUR INTERVAL IS 50 FEET.
4. CHANNEL CENTERLINE TAKEN AT APPROXIMATE LOW POINT OF STREAM CHANNEL.
5. SEDIMENT SOURCE LOCATIONS ARE APPROXIMATE AND ARE BASED ON TOPOGRAPHIC MAP AND AERIAL PHOTOGRAPH INTERPRETATION.

N W E S

0 4000 8000

Scale in Feet

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI Report

EPA REGION 10

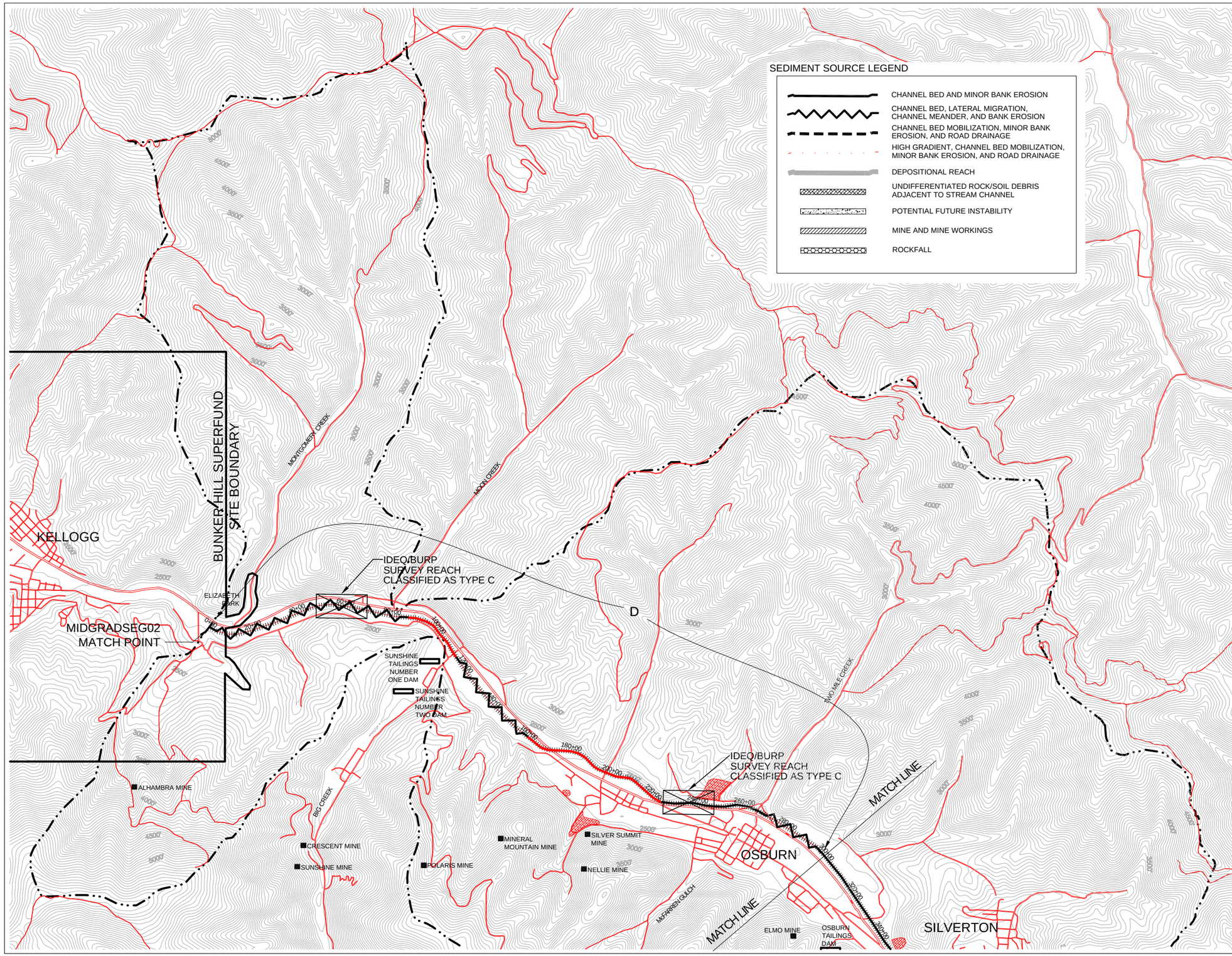
Doc. Control: 4162500.6615.05.a
Generation: 1
Path: N:\Coverages\Others\Shannon&Wilson\Midgrad\MidGrad1_Site.dwg

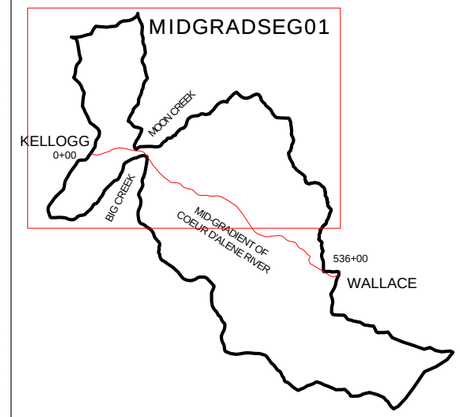
7/30/01

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 30, 2001

Figure 3.2-20
Mid Gradient Segment 01 Site Plan
Northwest Portion





LEGEND

- BASIN BOUNDARY
- CONTOUR LINE (4200')
- CHANNEL CENTERLINE (170+00)
- INTERSTATE/ROAD/TRAIL
- ROSGEN CLASSIFICATION (Aa+)

NOTES:

1. MAP FEATURES AND CONTOURS PRODUCED BY AMERICAN DIGITAL CARTOGRAPHY, COPYRIGHT 1995, AND BASED ON 7.5 MINUTE SERIES MAPS, REVISED 1977, ZONE ID-W.
2. VERTICAL DATUM BASED ON NAD83 IDAHO STATE PLANE COORDINATE SYSTEM.
3. CONTOUR INTERVALS ARE 50 FEET WEST AND 25 FEET EAST
4. CHANNEL CENTERLINE TAKEN AT APPROXIMATE LOW POINT OF STREAM CHANNEL.
5. SEDIMENT SOURCE LOCATIONS ARE APPROXIMATE AND ARE BASED ON TOPOGRAPHIC MAP AND AERIAL PHOTOGRAPH INTERPRETATION.

N W E S

0 4000 8000
Scale in Feet

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI Report

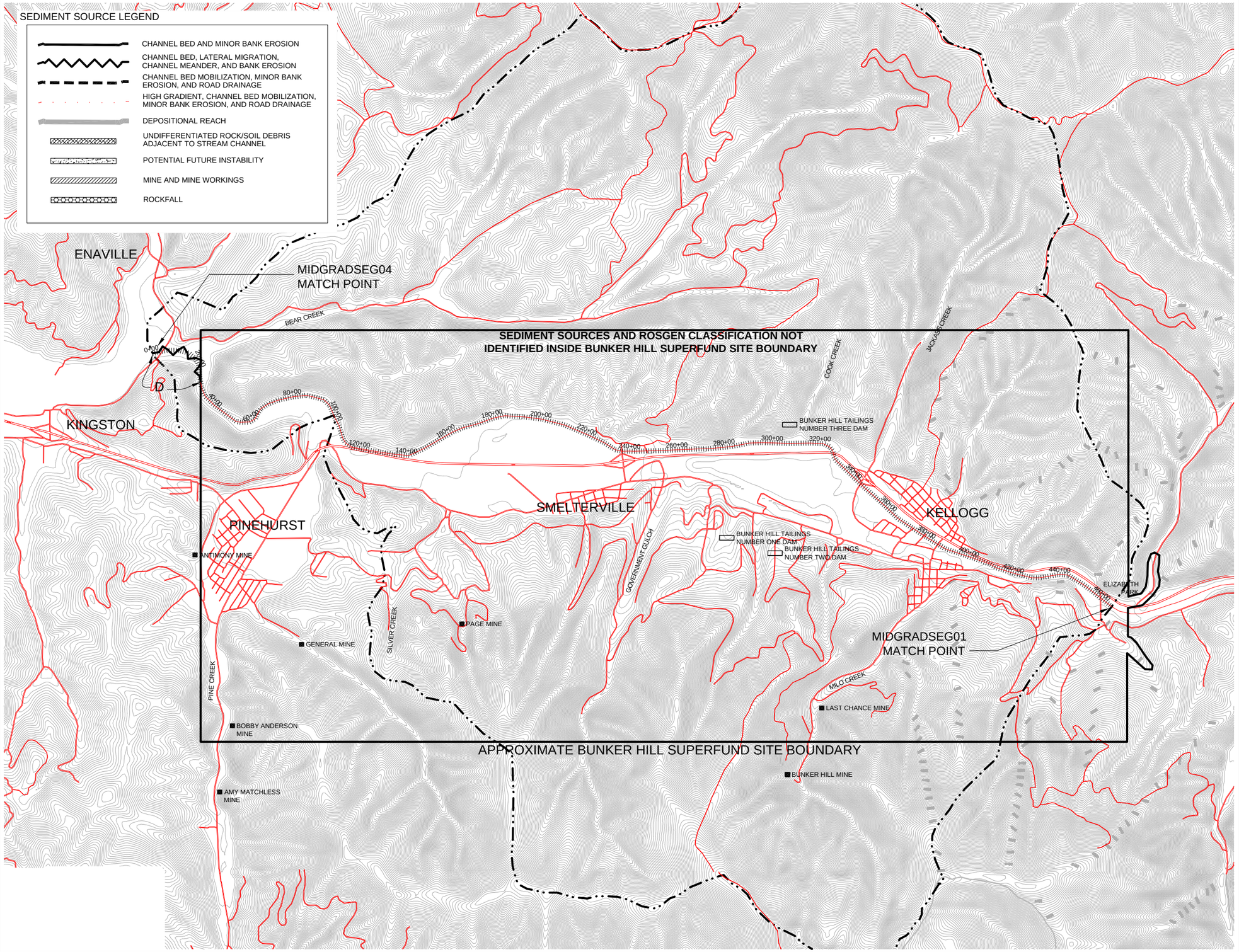
EPA REGION 10

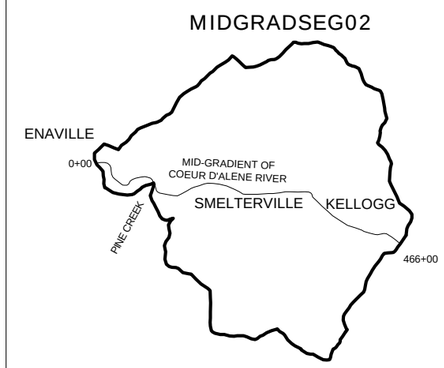
Doc. Control: 4162500.6615.05.a
Generation: 1
Path: N:\Coverages\Others\Shannon&Wilson\\MidGrad\MidGrad1_Site.dwg
Layout: MIDGradSeg01
07/30/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 30, 2001

Figure 3.2-21
Mid Gradient Segment 02 Site Plan





LEGEND

- BASIN BOUNDARY
- CONTOUR LINE
- CHANNEL CENTERLINE
- INTERSTATE/ROAD/TRAIL
- Aa+ ROSGEN CLASSIFICATION

NOTES:

1. MAP FEATURES AND CONTOURS PRODUCED BY AMERICAN DIGITAL CARTOGRAPHY, COPYRIGHT 1995, AND BASED ON 7.5 MINUTE SERIES MAPS, REVISED 1977, ZONE ID-W.
2. VERTICAL DATUM BASED ON NAD83 IDAHO STATE PLANE COORDINATE SYSTEM.
3. CONTOUR INTERVAL IS 25 FEET.
4. CHANNEL CENTERLINE TAKEN AT APPROXIMATE LOW POINT OF STREAM CHANNEL.
5. SEDIMENT SOURCE LOCATIONS ARE APPROXIMATE AND ARE BASED ON TOPOGRAPHIC MAP AND AERIAL PHOTOGRAPH INTERPRETATION.

N W E S

0 4000 8000

Scale in Feet

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI Report

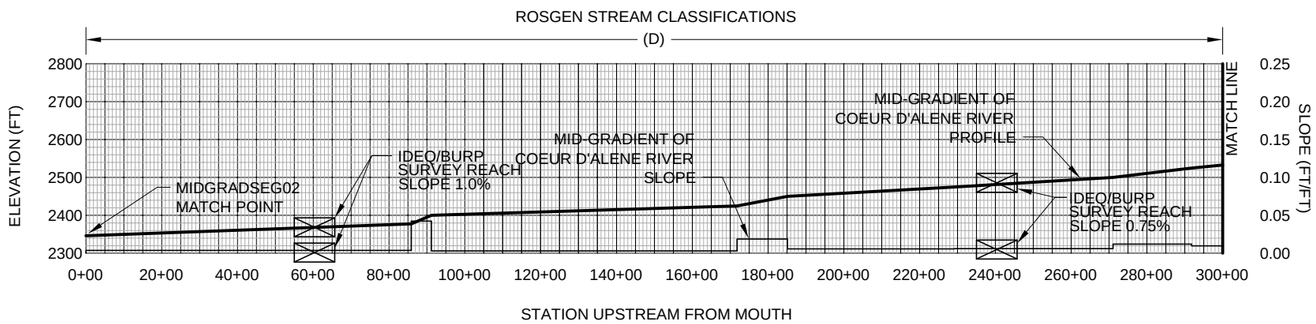
EPA REGION 10

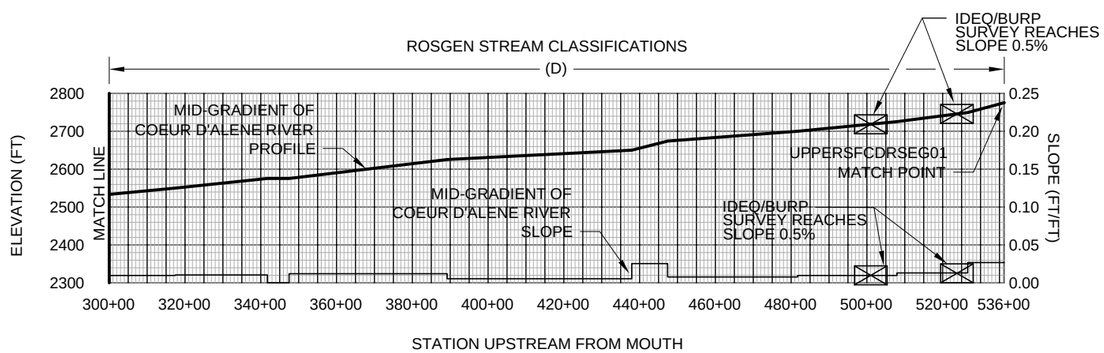
Doc. Control: 4162500.6615.05.a
Generation: 1
Path: N:\Coverages\Others\Shannon&Wilson\\MidGrad\MidGrad2_Site.dwg
Layout MidGradSeg02
7/30/01

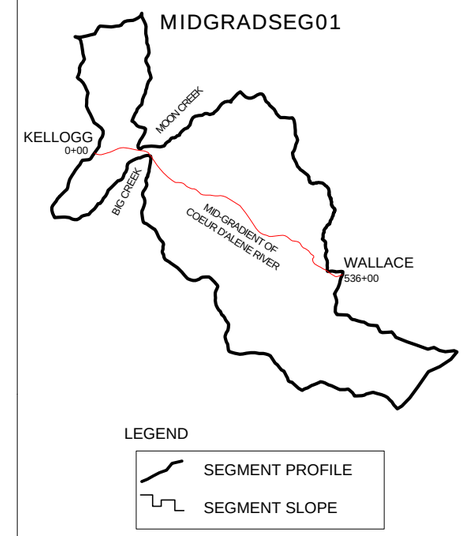
This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 30, 2001

Figure 3.2-22
Mid Gradient Segment 01
Rosgen Stream Classification







NOTES:

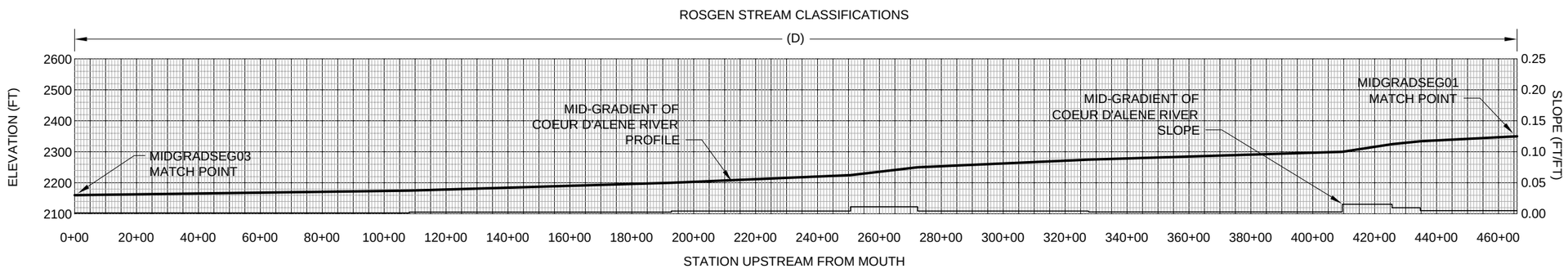
1. CHANNEL PROFILE AND SLOPES ARE APPROXIMATE AND BASED ON MAP PRODUCED BY AMERICAN DIGITAL CARTOGRAPHY, COPYRIGHT 1995, AND BASED ON 7.5 MINUTE SERIES MAPS, REVISED 1977, ZONE ID-W.
2. VERTICAL DATUM BASED ON NAD83 IDAHO STATE PLANE COORDINATE SYSTEM.
3. DRAINAGE AREAS ARE APPROXIMATE AND MAY NOT BE LINEAR AS INDICATED BY PLOT.

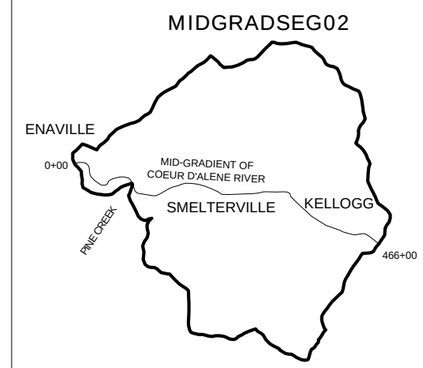
027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI Report

EPA REGION 10

Doc. Control: 4162500.6615.05.a
Generation: 1
Path: N:\Coverages\Others\Shannon&Wilson\
\MidGradSeg1\MidGrad1_Section.dwg
Layout: MIDGradSeg01
07/30/2001

Figure 3.2-23
Mid Gradient Segment 02 Section
Rosgen Steam Classification





LEGEND

- SEGMENT PROFILE
- SEGMENT SLOPE

NOTES:

1. CHANNEL PROFILE AND SLOPES ARE APPROXIMATE AND BASED ON MAP PRODUCED BY AMERICAN DIGITAL CARTOGRAPHY, COPYRIGHT 1995, AND BASED ON 7.5 MINUTE SERIES MAPS, REVISED 1977, ZONE ID-W.
2. VERTICAL DATUM BASED ON NAD83 IDAHO STATE PLANE COORDINATE SYSTEM.
3. DRAINAGE AREAS ARE APPROXIMATE AND MAY NOT BE LINEAR AS INDICATED BY PLOT.

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI Report

EPA REGION 10

Doc. Control: 4162500.6615.05.a
Generation: 1
Path: N:\Coverages\Others\Shannon&Wilson\
\MidGrad2\MidGrad2_Section.dwg
Layout: MidGradSeg02
07/30/2001

Table 3.2-1
Historical Estimates of Sediment Transport, South Fork Coeur d'Alene River at Silverton Based on Historical Discharge Data and Sediment Transport Data From Water Year 1999

Year	Sands (tons)	Fines (tons)	Bedload (tons)	Total (tons)
1980	1021	1552	350	2923
1981	2738	2466	607	5811
1980	1868	2073	493	4434
1981	2225	2493	589	5307
1982	4545	4078	1004	9626
1983	2795	2588	628	6012
1985	2866	2776	676	6319
Yearly Average of Sediment Transport				5493

Table 3.2-2
Historical Estimates of Sediment Transport, South Fork Coeur d'Alene River at Pinehurst Based on Historical Discharge Data and Sediment Transport Data From Water Year 1999

Year	Sands (tons)	Fines (tons)	Bedload (tons)	Total (tons)
1988	1823	2507	728	5059
1989	4055	5555	1692	11,302
1990	6351	8705	2630	17,686
1991	8509	11,600	3764	23,873
1992	819	1140	283	2242
1993	3448	4722	1447	9618
1994	914	1266	340	2520
1995	3701	5074	1539	10,314
1996	23,656	31,773	12,463	67,892
1997	18,900	25,580	9061	53,541
1998	2262	3118	880	6260
Yearly Average of Sediment Transport				19,119

4.0 NATURE AND EXTENT OF CONTAMINATION

The nature and extent of contamination and mass loading in the two segments of the South Fork of the Coeur d'Alene River are discussed in this section. Section 4.1 describes chemical concentrations found in environmental media, including horizontal and vertical extent. For each watershed segment, the discussion includes remedial investigation data chemical analysis results; comparison of chemical results to selected screening levels (Part 1, Section 5.1); and focused analysis of identified source areas. In Section 4.2, preliminary estimates of mass loading are presented.

4.1 NATURE AND EXTENT

The nature and extent of the ten metals of potential concern identified in Part 1, Section 5.1 (antimony, arsenic, copper, iron, lead, manganese, mercury, silver, and zinc) in surface soil, subsurface soil, sediment, groundwater and surface water are discussed in this section. Locations with metals detected in any matrix at concentrations 1 times (1x), 10 times (10x) and 100 times (100x) the screening level were identified and presented in the following data summary tables. The magnitudes of exceedance (10x and 100x) were arbitrarily selected to delineate areas of contamination. Metals identified in this evaluation are further evaluated in either the human health or ecological risk assessments (under separate cover).

Historical and recent investigations at areas within the study area are listed and summarized in Part 1, Section 4. Data source references are included as Attachment 1. Chemical data collected in the South Fork of the Coeur d'Alene River and used in this evaluation are presented at the end of this report. Data summary tables include sampling location, data source reference, collection date, depth, and reported concentration. Screening level exceedances are highlighted. Sampling locations are shown on Figures 4.1-1 through 4.1-7. All chemical data collected and compiled for this study are included in Attachment 2.

The nature and extent of contamination were evaluated by screening chemical results against applicable risk-based screening criteria and available background concentrations. Screening levels are used in this analysis to identify source areas and media (e.g., soil, sediment, groundwater, and surface water) of concern that will be evaluated in the feasibility study (FS).

Statistical summaries for each metal in surface soil, subsurface soil, sediment, groundwater, and surface water are included as Attachment 3 and discussed in the subsections below. The

summaries include the number of samples analyzed; the number of detections; the minimum and maximum detected concentrations; the average and coefficient of variation; and the screening level (SL) to which the detected concentration is compared. Proposed screening levels were compiled from available federal numeric criteria (e.g., National Ambient Water Quality Criteria), regional preliminary remediation goals (PRGs) (e.g., EPA Region IX PRGs), regional baseline or background studies for soil, sediment, and surface water, and other guidance documents (e.g., National Oceanographic and Atmospheric Administration freshwater sediment screening values). The screening level selection process is discussed in detail in Part 1, Section 5.1.

Source areas within the South Fork of the Coeur d'Alene River are presented in Tables 4.1-1 through 4.1-2. These sites are based source areas initially identified by the BLM (1999) and further refined by CH2M HILL and URS during the RI/FS process. The tables include source area names, source ID, source area acres, description, number of samples by matrix type, and metals exceeding 1x, 10x and 100x the screening levels in surface soil, subsurface soil, sediment, groundwater and surface water. This table reflects source area descriptive measurements initially generated in the CSM and subsequently refined by the FS.

It should be noted that the number of samples identified for each source area was determined using the project Geographical Information System. Only sampling locations located within a source area polygon (shown on Figures 4.1-1 through 4.1-7) are included in Tables 4.1-1 and 4.1-2; therefore, there may be samples collected from source areas and listed in the data summary tables in Attachment 2 that are not accounted for in Tables 4.1-1 and 4.1-2.

The following sections present segment-specific sampling efforts and results according to matrix type. Given the extensive geographic range of the Coeur d'Alene Basin, sampling efforts were focused on areas of potential concern; therefore, more samples were collected from known mining-impacted areas near the creek, than from other areas within the watershed.

4.1.1 Segment MidGradSeg01

4.1.1.1 Surface Soil

Two hundred and sixty-four surface soil samples were collected from a depth of 0 to 0.5 feet and analyzed for total metals. Arsenic, copper, lead, and zinc were detected in at least one to many sampling locations in concentrations that exceeded 10x the screening levels. Lead was also detected at eleven sampling locations in concentrations that exceeded 100x the screening levels.

4.1.1.2 Subsurface Soil

Six hundred and ninety-eight subsurface soil samples were collected and analyzed for total metals. Arsenic, lead and zinc were detected in numerous sampling locations at concentrations that exceeded 10x the screening levels. Lead was also detected at eighteen sampling locations at concentrations that exceeded 100x the screening levels.

4.1.1.3 Sediment

Thirty-six sediment samples were collected and analyzed for total metals. Antimony, arsenic, cadmium, copper, lead, mercury, silver, and zinc concentrations in the sediment of MidGradSeg01 were detected at concentrations that exceeded 10x the screening levels. Lead was also detected at six sampling locations at concentrations that exceeded 100x the screening level.

4.1.1.4 Surface Water

Six hundred and eighty surface water samples for total metals and three hundred and thirty-one samples for dissolved metals were collected and analyzed in segment MidGradSeg01. Results for total metals indicate antimony, cadmium, copper, iron, lead, manganese and zinc concentrations greater than 10x the screening levels at multiple locations in addition to one sampling location with a lead concentration exceeding 100x the screening level. Results for dissolved metals indicate concentrations of cadmium, lead, manganese and zinc at 10x the screening levels, along with one concentration of lead greater than 100x the screening level.

4.1.1.5 Identified Source Areas

Chemical data for surface soil, subsurface soil, sediment, groundwater, and surface water were reviewed together to identify source areas within segment MidGradSeg01 that may be significant contributors of metals to South Fork. Summary source area data are presented in Table 4.1-1.

Sixteen of the 180 source areas in this segment were sampled. Antimony, arsenic, cadmium, copper, lead, manganese, mercury, silver and zinc were detected in excess of 10x the screening levels at several of the source areas.

4.1.1.6 Major Source Areas

Based on an assessment of chemical data for surface soil, subsurface soil, sediment, groundwater, and surface water (URS 2000, Appendix G), major source areas of concern were identified. The technical memorandum identified discrete mine/mill sites and tailings impoundments. Evaluation of potential source areas conducted for this RI/FS resulted in the addition of floodplain reaches and other specific source areas. The major source area identified in this segment includes MidGradSeg01 Impacted Floodplain Reaches.

This source area is known to have high concentrations of metals resulting from historical mining activities. Figures 4.1-8 through 4.1-11 illustrate significant features for the above source areas including regional location, the river and associated floodplains, and major cities. Figures 4.1-8 and 4.1-10 include the source area boundary as provided by the BLM for MidGradSeg01 Impacted Floodplain Reaches and Figures 4.1-9 and 4.1-11 include surficial geology units obtained from the U.S. Geological Survey (Box et al. 2000). Based on a comprehensive list created by Box et al. (2000), seven surficial geologic units of interest were identified and combined into a single area for this report. The seven geologic units include the following source material types:

- Fcgos: Flotation-era channel gravels and overlying overbank sediments
- JFti: Jig- and early flotation-era tailings impoundments
- JFms: Jig- and early flotation-era ore concentration millsite
- Joscu: Jig-era overbank sediments, copper impacted
- Jos: Jig-era overbank sediments over pre-mining channel gravel
- Jcgos: Jig-era channel gravels and overlying jig-era overbank sands
- Jrrf: Jig-era railroad embankment fill

These geologic units formed the basis for estimates of contaminated sediment volumes within the historical floodplain. Volume estimates are included in the Feasibility Study (URS 2001).

4.1.2 Segment MidGradSeg02

4.1.2.1 Surface Soil

Twenty surface soil samples were collected from a depth of 0 to 0.5 feet and analyzed for total metals. Arsenic, lead, and zinc concentrations for numerous sampling locations exceeded 10x the screening levels. Lead was also detected at eight sampling locations at concentrations that exceeded 100x the screening levels.

4.1.2.2 Subsurface Soil

Eight subsurface soil samples were collected from depths greater than 0.5 feet and analyzed for lead. All eight samples had concentrations exceeding 10x the screening level for lead. One sample exceeded 100x the screening level.

4.1.2.3 Sediment

Eighty-seven sediment samples were collected and analyzed for total metals. Numerous sampling locations in MidGradSeg02 show concentrations of antimony, arsenic, cadmium, copper, lead, manganese, mercury, silver and zinc at greater than 10x the screening level. Arsenic, cadmium, lead, mercury, and zinc were also detected at concentrations that exceeded 100x the screening level.

4.1.2.4 Groundwater

One groundwater sample for total metals and two hundred and sixty-six groundwater samples for dissolved metals were collected and analyzed within MidGradSeg02. Total metals results were all less than 10x the screening level. Results for dissolved metals show concentrations greater than 10x the screening level for antimony, cadmium, copper, lead and zinc throughout this segment. Dissolved concentrations of cadmium, lead, and zinc exceeded 100x the screening levels.

4.1.2.5 Surface Water

Three hundred and eighty surface water samples for total metals, along with three hundred and forty-eight surface water samples for dissolved metals were collected and analyzed in segment MidGradSeg02. Total metals concentrations of antimony, cadmium, copper, iron, lead, manganese, and zinc exceeded 10x the screening levels. Cadmium, copper, lead, manganese, and zinc were also detected at concentrations that exceeded 100x the screening levels. Surface water samples for dissolved metals indicated concentrations greater than 10x the screening levels for cadmium, lead, manganese, and zinc for multiple sampling locations. Cadmium, lead, and zinc were also detected in numerous samples at concentrations that exceeded 100x the screening levels for dissolved metals. Overall in the surface water of this segment, cadmium, lead and zinc had the highest frequency of detection and exceedance of screening levels.

4.1.2.6 Identified Source Areas

Chemical data for surface soil, subsurface soil, sediment, groundwater, and surface water were reviewed together to identify source areas within segment MidGradSeg02 that may be significant contributors of metals to South Fork. Summary source area data are presented in Table 4.1-2.

Nine of the 161 source areas in this segment were sampled. Concentrations that exceeded 10x the screening levels for antimony, arsenic, cadmium, copper, lead, mercury, silver and zinc were detected in numerous sampling locations throughout this segment. Antimony, cadmium, copper, lead and zinc were also detected at concentrations greater than 100x the screening levels with cadmium, lead and zinc having the highest frequency of exceedance.

4.1.3 Adit and Seep Summary

Most adits and seeps with drainage that have been identified and sampled have flows under 1 cfs and relatively low concentrations of metals. However, very high concentrations of total zinc were measured in one of the adits and one of the seeps identified in the South Fork watershed (Gearheart et al. 1999). A total of fifteen adits and two seeps were identified. Available adit and seep data for the South Fork watershed are summarized in Table 4.1.3 -1. Discharge, average total zinc concentration, average total zinc mass loading, and associated source areas are listed. Zinc mass loading from the Osburn Flats seep was greater than 1 pound per day. Total zinc mass loading for all adits and seeps identified in the South Fork watershed (excluding the Bunker Hill Superfund Site) is estimated to be approximately 2 pounds per day.

4.2 SURFACE WATER MASS LOADING

In Part 1 of this report (Setting and Methodology, Section 5.3.1), the concept of mass loading and its use in the remedial investigation were presented. Section 4.2 of the Canyon Creek Nature and Extent further discussed the use of plotting discrete sampling events versus the probabilistic analysis of the mass loading data in Fate and Transport.

This section presents the discrete mass loading measurements made during several low- and high-flow sampling events. The events were selected to show variations in mass loading throughout the stream system relative to source areas. The events selected are not intended to represent all the available mass loading data. The remainder of this section presents the indicator metal correlation and selected maps with a discussion of discrete sampling events on a watershed basis.

4.2.1 Indicator Metal Correlation

In Section 4.2 of the Canyon Creek Watershed, the correlation of chemical concentrations for 8 chemicals of potential concern (COPCs) is evaluated for total lead and dissolved zinc. These two metals appear to be reasonable indicators of the other chemicals of potential concern. The following mass loading discussion is limited to total lead and dissolved zinc.

4.2.2 South Fork Watershed Mass Loading

Of the available sampling data, five sampling events were selected and mapped. Table 4.2-1 summarizes the sampling events, sampling locations and calculated mass loads for total lead and dissolved zinc. The high-flow events used were May 1991 (Figures 4.2-1 and 4.2-6) and May 1998 (Figures 4.2-4 and 4.2-9). The low-flow events used were October 1991 (Figures 4.2-2 and 4.2-7), November 1997 (Figures 4.2-3 and 4.2-8), and November 1998 (Figures 4.2-5 and 4.2-10). Data from these sampling events are summarized in Table 4.2-1.

The locations sampled during these events are plotted on maps (Figures 4.2-1 through 4.2-10). Each sampling location shows the cumulative mass loading of lead or zinc and the difference in mass load from the next upstream location. The difference in mass load is indicated on the maps by the term "delta." The following sections discuss observations made from plotting the low- and high-flow mass loading data.

4.2.2.1 Total Lead Mass Loading

Loading observations are as follows:

Sampling location SF10 is located near the upstream boundary of MidGrad Seg01. Low-flow total lead loading in the October 1991 sampling event was 1 pound per day. Down stream of SF10, lead load is added to the South Fork from Canyon and Ninemile Creeks. The combined highest load during low-flow from the two tributaries was 16 pounds per day in November 1997. Sampling location SF268 is the most downstream sampling location prior to the Bunker Hill Superfund Site (Box). The highest low-flow lead loading was 18 pounds per day in November 1997.

Under high-flow conditions, SF228 is the nearest up stream sampling location of the Canyon and Ninemile Creeks discharge into the South Fork. The total lead load at SF288 was 24 pounds per day (May 1998). The highest combined high-flow discharge from the creeks was 73 pounds per

day. The highest high-flow downstream load measured (prior to the Box) was 132 pounds per day at sampling location SF 268.

Throughout segments MidGradSeg01 and MidGradSeg01 (up stream of the Box) lead loading was variable with low-flow mass loading differences ranging from –6 to 9 pounds per day and high-flow differences ranging from –102 (SF 259) to 98 (SF259) pounds per day.

Downgradient of the Box, loading information was available for sampling location SF271. The highest low-flow lead load was 56 pounds per day (November 1998). Using sample location SF268 (up gradient of the Box), the loading difference is 44 pounds per day. The highest high-flow difference using SF268 and SF271 (May 1991) was 178 pounds per day. This increase in loading is assumed mostly due to sources or conditions within the Box.

4.2.2.2 Dissolved Zinc Mass Loading

Loading observations are as follows:

Sampling location SF10 is located near the upstream boundary of MidGradSeg01. Low-flow total zinc loading during the October 1991 sampling event was 2 pound per day. Down stream of SF10, zinc load is added to the South Fork from Canyon and Ninemile Creeks. The combined load discharged from the two tributaries under low-flow conditions was 370 pounds per day in October 1991. Sampling location SF268 is the most downstream sampling location prior to the Box. The highest low-flow zinc loading was 1326 pounds per day in November 1998.

Under high-flow conditions, SF228 is the nearest up stream sampling location to the Canyon and Ninemile Creeks discharge into the South Fork. The total zinc load at SF228 was 343 pounds per day (May 1998). The combined high-flow discharge from the creeks was 1306 pounds per day (May 1998). The highest high-flow downstream load measured (upstream of the Box) was 2523 pounds per day at sampling location SF268. High-flow differences in mass load upstream of the Box ranged from –999 (SF259) to 1,243 (SF270) pounds per day (May 1998). The highest differences were observed downstream of Obsurn Flats and upstream of the Box.

Downgradient of the Box, loading information was available for sampling location SF271. The highest low-flow zinc load was 2940 pounds per day (November 1998). Using sample location SF268 (up gradient of the Box), the difference in mass load is 1,614 pounds per day. The highest high-flow difference using SF268 and SF271 (May 1991) was 2,123 pounds per day. This increase in loading is assumed mostly due to sources or conditions within the Box.

Throughout segments MidGradSeg01 and MidGradSeg01 (upstream of the Box), zinc loading

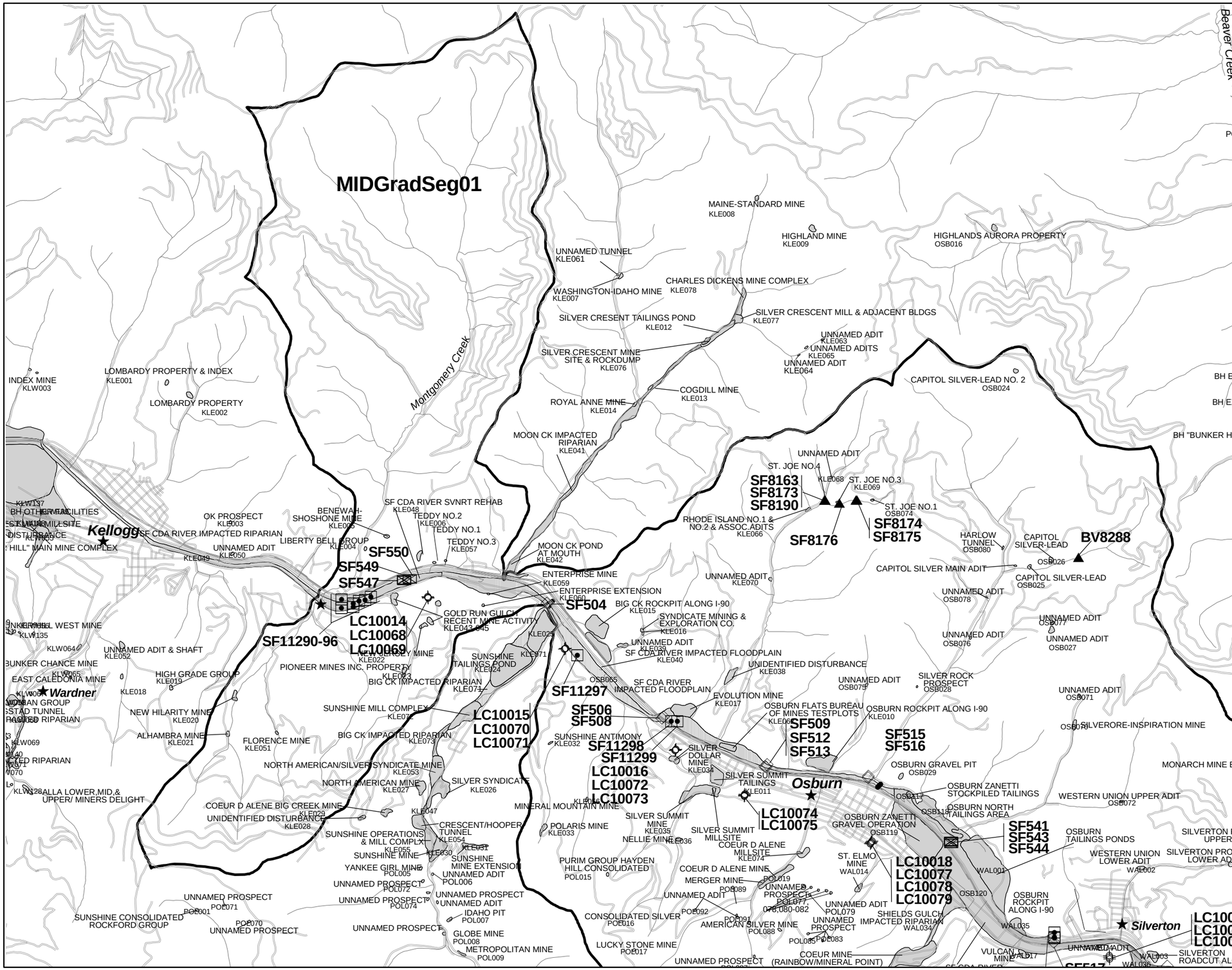
was extremely variable. A seepage study performed by the USGS in the Osburn Flats area (USGS 2000) showed similar results in a much smaller area. Based on the mass loading data and the USGS study, it is likely that gain and losing conditions could be present throughout most of the South Fork. Influx of metal loading from tributaries is relatively small. Using the existing data it would be difficult to identify source areas outside the active floodplain. Within the floodplain, the tailings as mapped by the USGS (Box 2000) and described in Section 4.1 represent the likely mining-related sources contributing to loading.

4.2.2.3 Groundwater Mass Loading

The mass loading of metals in groundwater throughout the South Fork is expected to be high. As shown in the discrete sampling events, wide variations in dissolved zinc mass loading differences exist. The USGS seepage study of the Osburn Flats area investigated the nature of the losses and gains in detail (USGS 2000). Their study encompassed roughly only 10 percent of segments MidGradSeg01 and MidGradSeg02. The USGS study demonstrated that there are large exchanges in mass load between surface water and groundwater.

Based on the differences in mass loading observed in the discrete sampling events, it is likely that many additional losing-gaining reaches will be identified as additional investigation is conducted throughout much of the segments. Most tributaries to the South Fork have narrow stream channels, and it is likely that groundwater flow will be restricted. However, Pine Creek and Big Creek have sufficient floodplain widths to potentially contribute mass load to groundwater in the South Fork. Groundwater and surface water interactions in this area have not been studied adequately to estimate mass loading from groundwater.

Figure 4.1-1
South Fork Coeur d' Alene River Segment MidGradSeg01 Northern Half Source Areas and Soil/Sediment Sampling Locations



LEGEND

- Common Use Area Sampling Location
- Hand Auger Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- River Sampling Location
- Stream
- Road
- Interstate 90
- City
- MidGradient Segment 1
- Source Area and Name

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

N

SCALE 1:48,000

0 0.5 1 Miles

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control 4162500.6615.05a
Generation 1
n:\Projects\RI_FS\midgrad|midgrad01.apr
V:MGSeg01 soil
E:SS northern
L: Final RI MGSeg01 Soil Northern
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

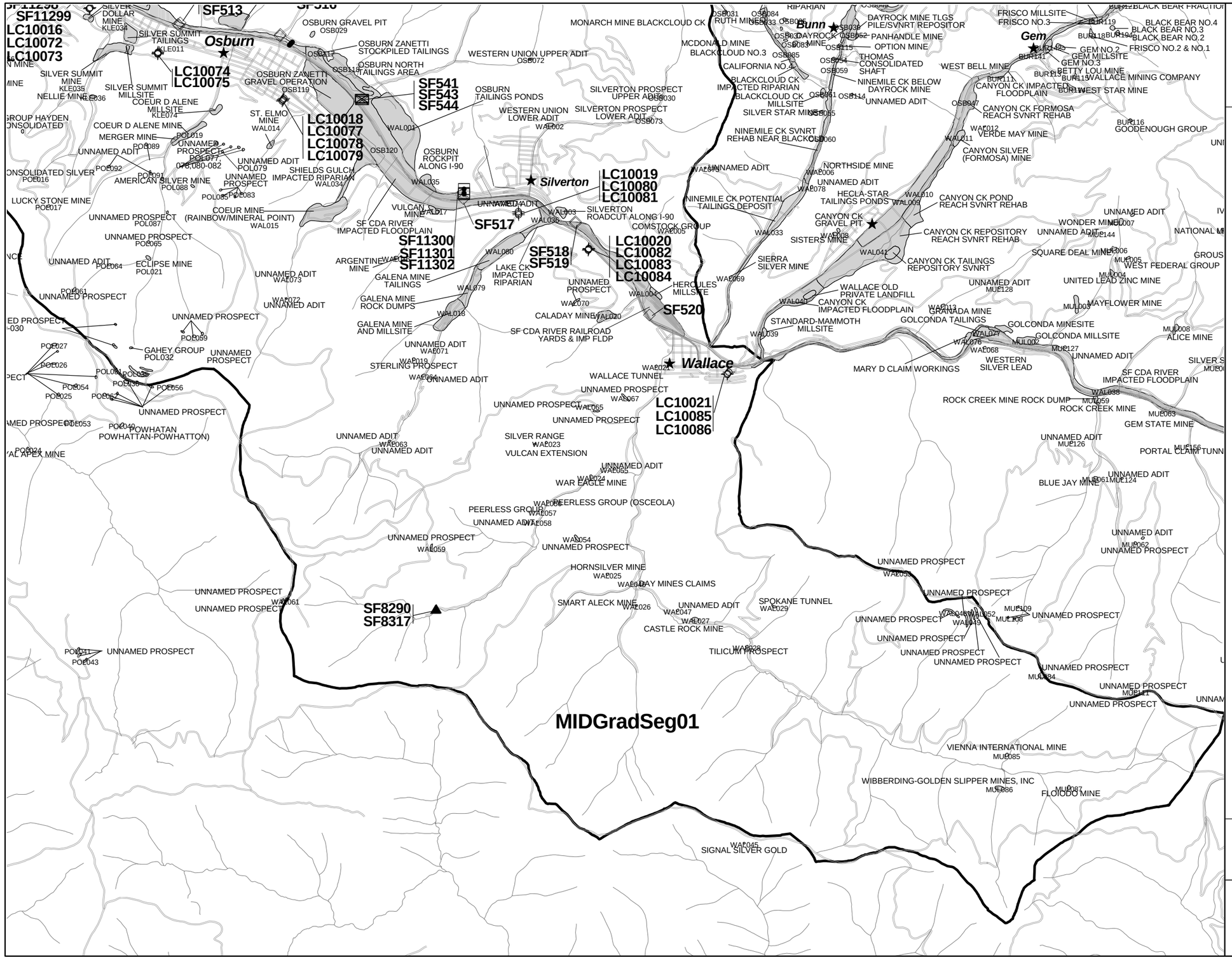
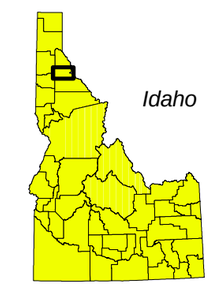


Figure 4.1-2
South Fork Coeur d' Alene River Segment MidGradSeg01 Southern Half Source Areas and Soil/Sediment Sampling Locations

LEGEND

- Common Use Area Sampling Location
- Hand Auger Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- River Sampling Location
- Stream
- Road
- Interstate 90
- City
- MidGradient Segment 1
- Source Area and Name



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

N

SCALE 1:48,000

0 0.5 1 Miles

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
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V:MGSeg01 soil
E:SS southern
L: Final RI MG Seg01 Soil Sediment southern
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

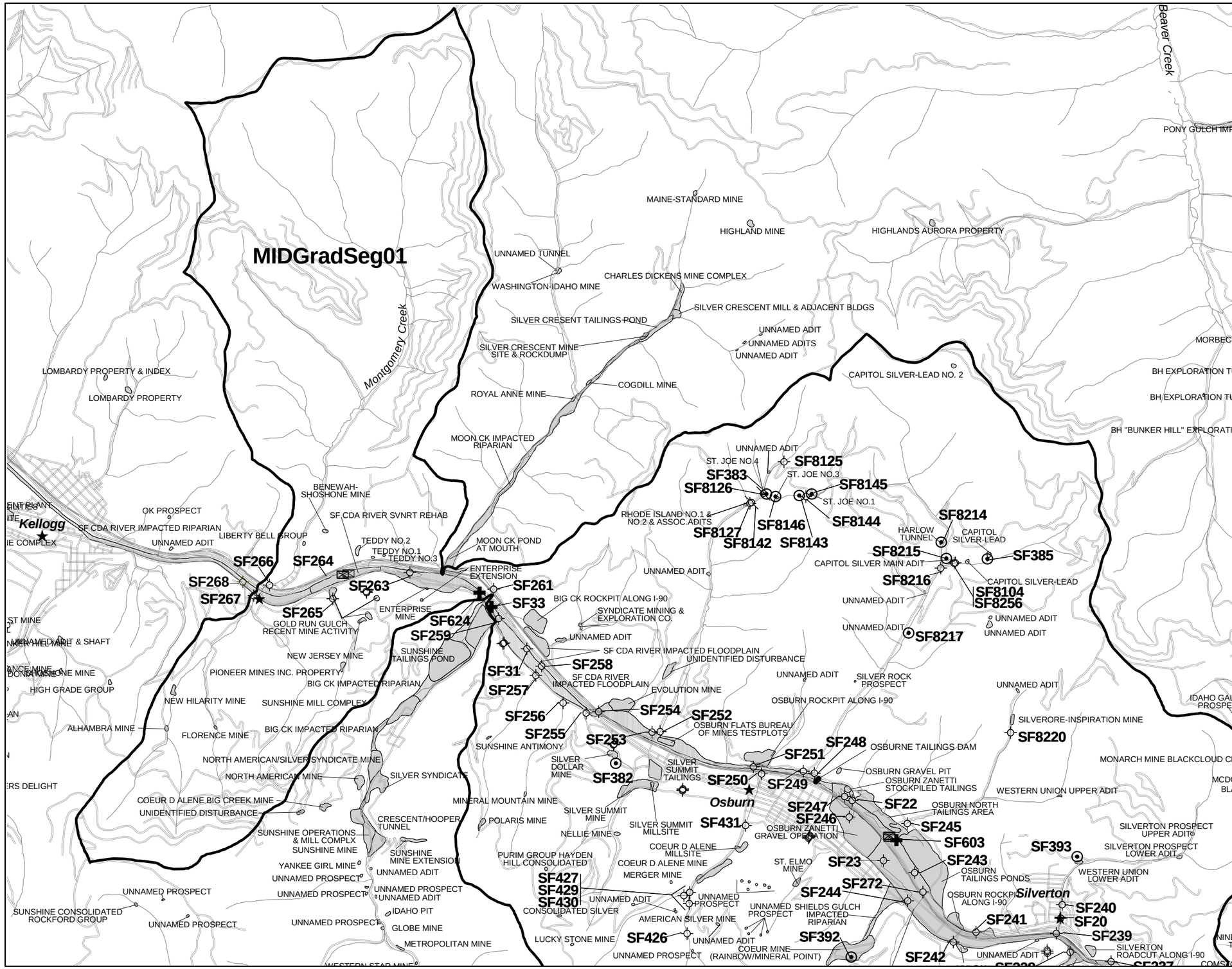
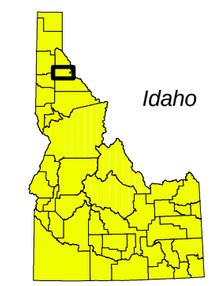


Figure 4.1-3
South Fork Coeur d' Alene River Segment MidGradSeg01 Northern Half Source Areas and Surface Water Sampling Locations

LEGEND

- Seep Sampling Location
- Adit Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Test Pit Sampling Location
- Osburne Tailings Dam (Approximate Historical Location)
- Stream
- Road
- Interstate 90
- City
- MidGradient Segment 1
- Source Area and Name



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner, Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

N

SCALE 1:48,000

0 0.5 1 Miles

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\midgrad|midgrad01.apr
V:MGSeg01 surfacewater
E:SW northern
L: Final RI MGSeg01 SW upper
7/12/01

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

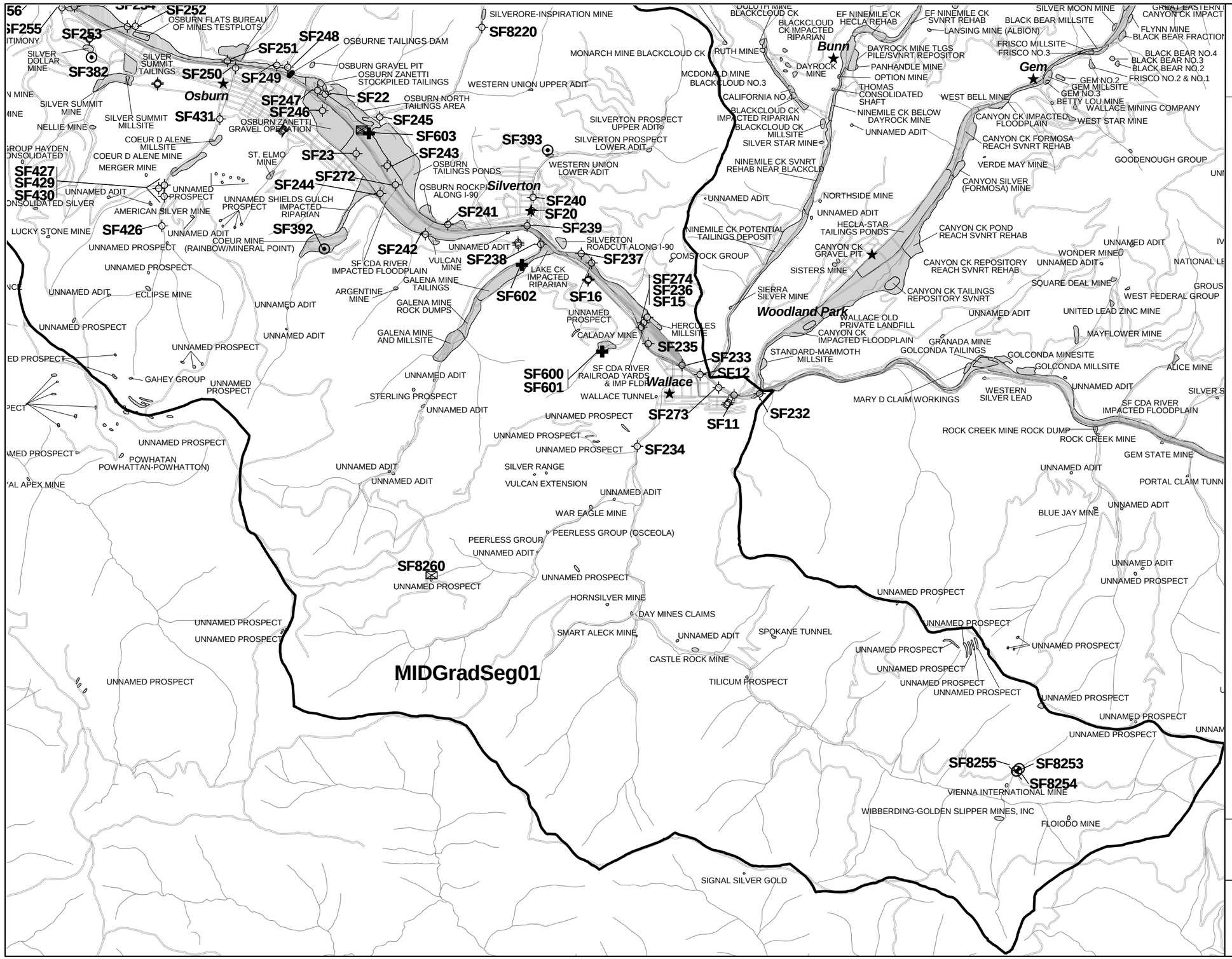
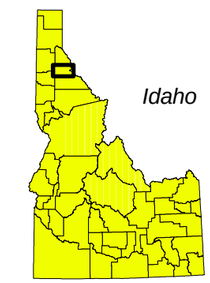


Figure 4.1-4
South Fork Coeur d' Alene River Segment MidGradSeg01 Southern Half Source Areas and Surface Water Sampling Locations

LEGEND

- Seep Sampling Location
- Adit Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Test Pit Sampling Location
- Osburne Tailings Dam (Approximate Historical Location)
- Stream
- Road
- Interstate 90
- City
- MidGradient Segment 1
- Source Area and Name



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

N

SCALE 1:48,000

0 0.5 1 Miles

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\midgrad|midgrad01.apr
V:MGSeg01 surfacewater
E:SW southern
L: Final RI MGSeg01SW southern
7/11/01

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

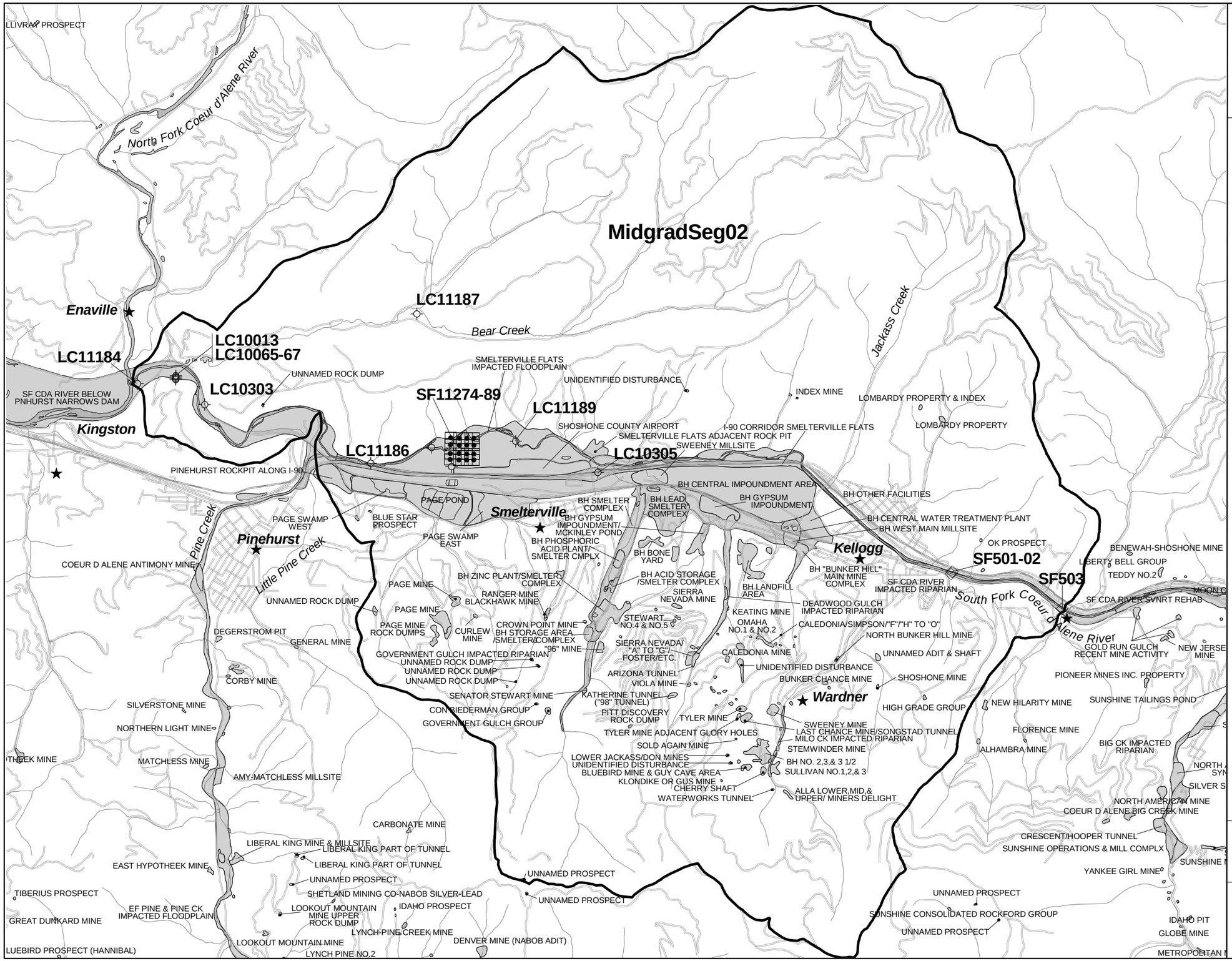
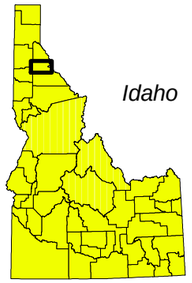


Figure 4.1-5
South Fork Coeur d' Alene River MidGradient River Segment MidGradSeg02 Source Areas and Soil/Sediment Sampling Locations

LEGEND

- Hand Auger Sampling Location
- River Sampling Location
- Floodplain Sampling Location
- Stream
- Interstate 90
- Road
- City
- MidGradient River Segment 2
- Source Area and Name
- River/Lake/Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner, Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

SCALE 1:50,000

0 0.5 1 Miles

N

027-RI-CO-102Q
Coeur d' Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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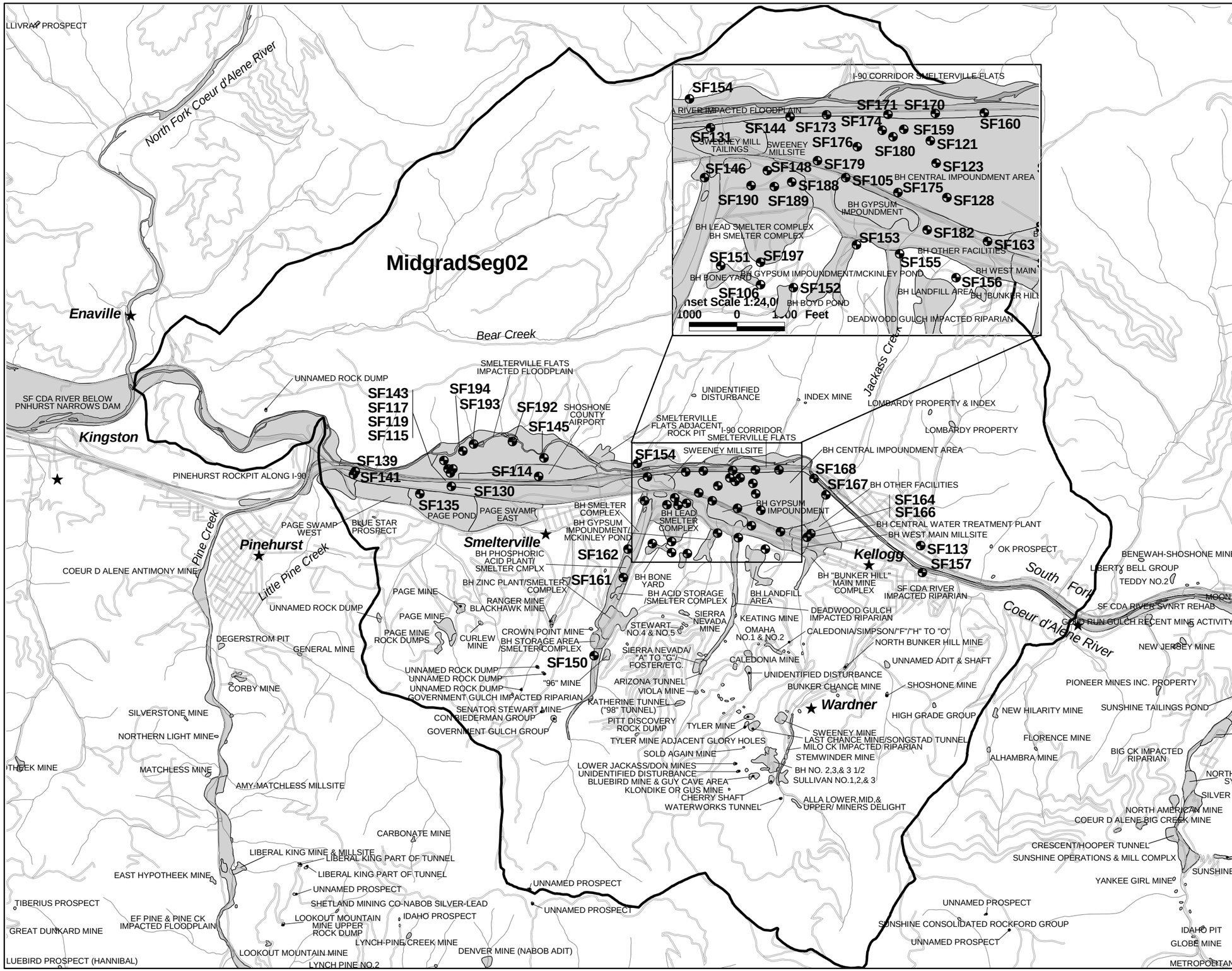
V:Midgrad02 Soil
E:Soil
L: FInal RI MGSeg02 Soil
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

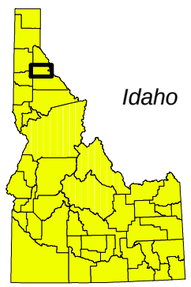
Date of Plot: July 11, 2001

Figure 4.1-6
South Fork Coeur d' Alene River MidGradient River Segment MidGradSeg02 Source Areas and Groundwater Sampling Locations



LEGEND

- Monitoring Well Sampling Location
- Stream
- Road
- Interstate 90
- City
- MidGradient Segment 2
- Source Area and Name
- Lake/River/Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc.Technical Data Management database as of 3/29/00.

N

SCALE 1:50,000

0 1 Miles

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\midgrad\midgrad01.apr
V:Seg02 Groundwater
E:Groundwater
INSET: Inset Seg02 GW
L: Final RI MG Seg02 Groundwater
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

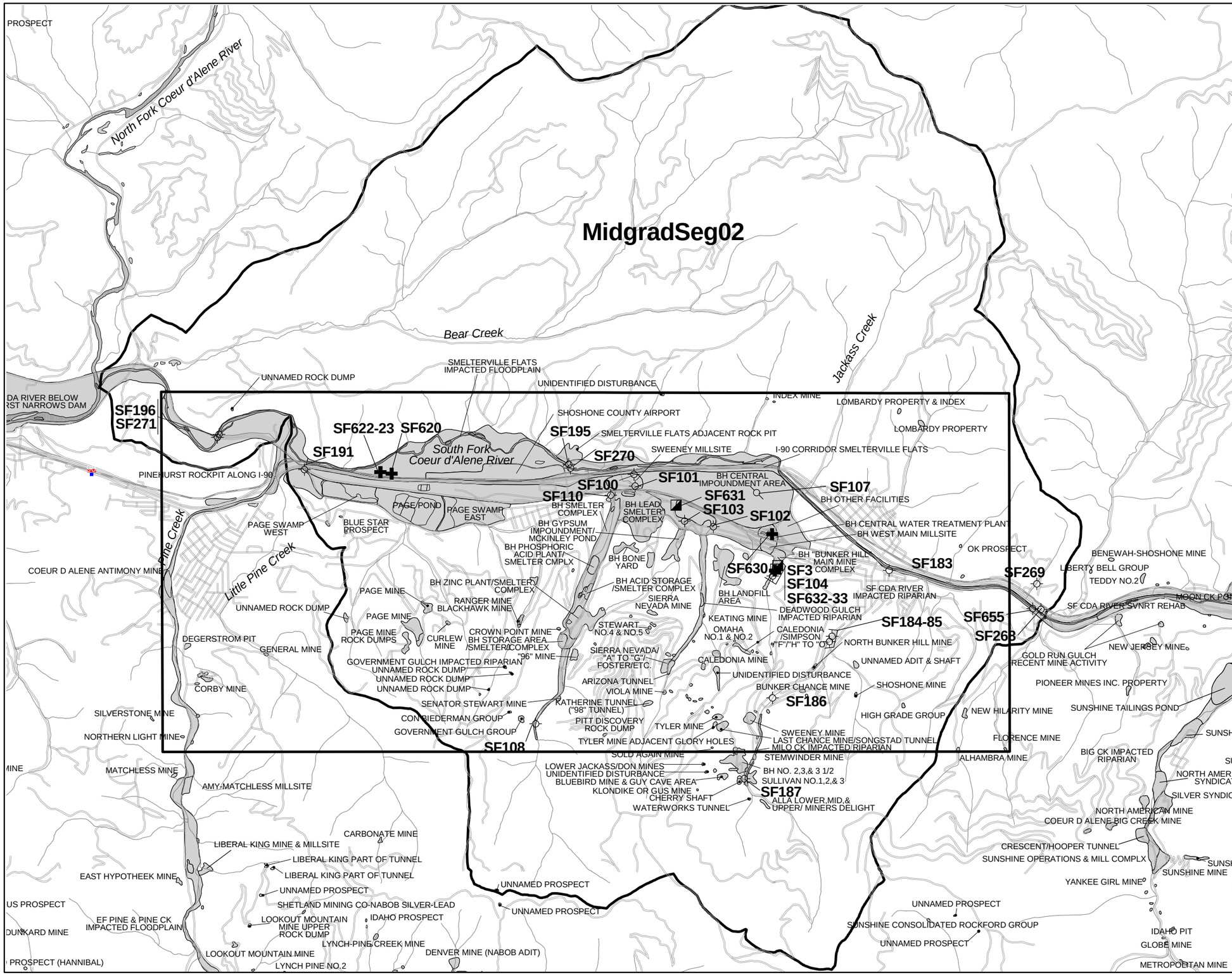
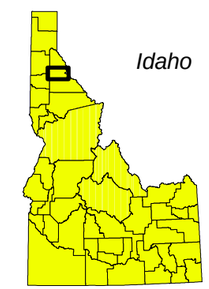


Figure 4.1-7
South Fork Coeur d' Alene River MidGradient River Segment MidGradSeg02 Source Areas and Surface Water Sampling Locations

LEGEND

- Outfall Sampling Location
- River Sampling Location
- Seep Sampling Location
- Effluent Sampling Location
- Stream
- Interstate 90
- Road
- City
- MidGradient River Segment 2
- Source Area and Name
- River/Lake/Floodplain
- Bunker Hill Box



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner, Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

SCALE 1:50,000

0 0.5 1 Miles

N

027-RI-CO-102Q
Coeur d' Alene Basin RI/FS
RI REPORT

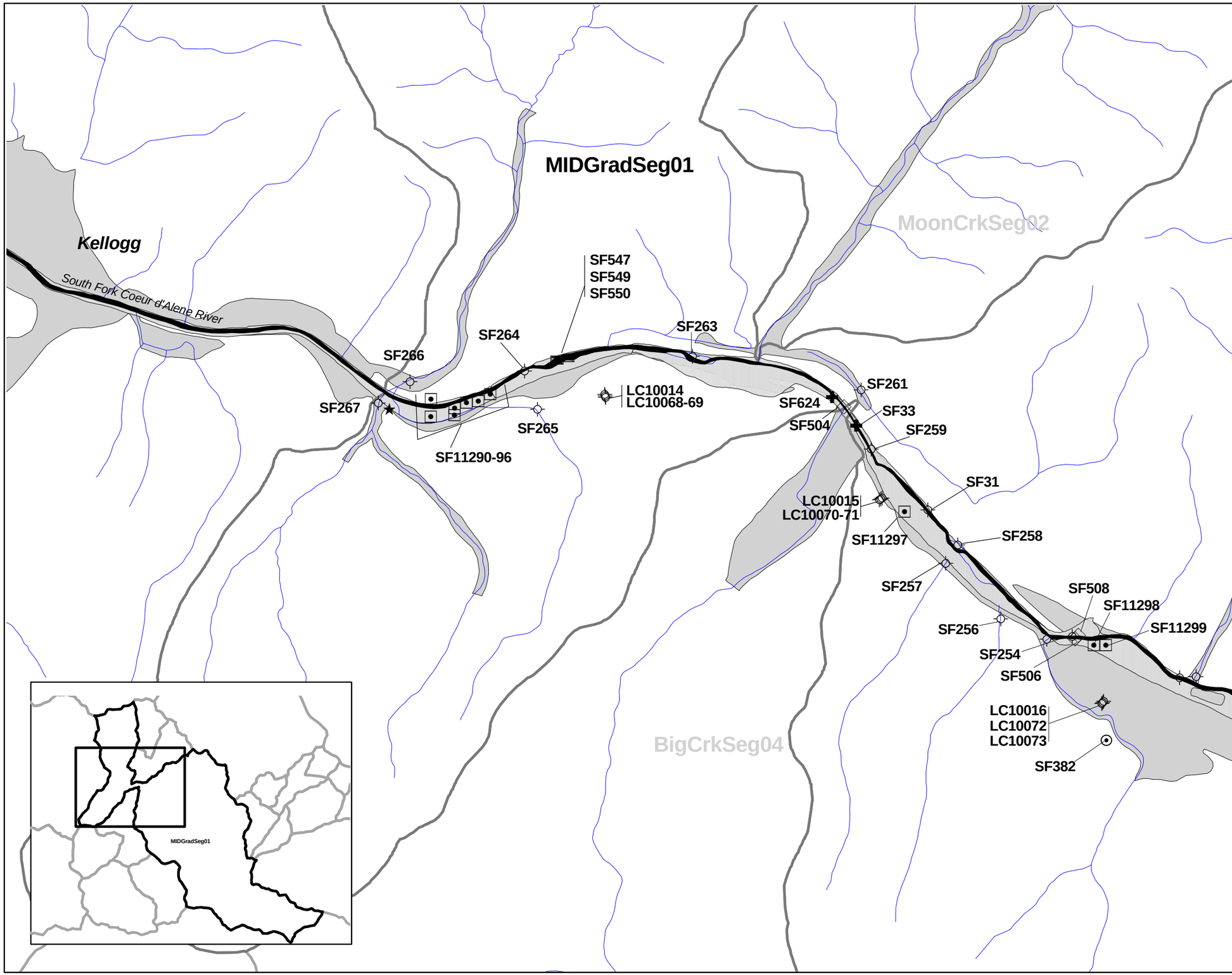
EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\Midgrad\midgrad01.apr
V:Midgrad02 SW
E:SW
L: Final RI MGSeg02 SW
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

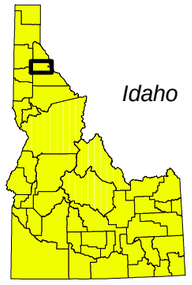
Date of Plot: July 11, 2001

Figure 4.1-8
Impacted Floodplain MidGradSeg01
BLM Source Areas and Sampling Locations
West Portion



LEGEND

- Adit Sampling Location
- Bore Hole Sampling Location
- Floodplain Sampling Location
- Ground Sampling Location
- Hand Auger Sampling Location
- Lake Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Seep Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- City
- Stream
- River
- River Segment Boundary
- BLM Source Area
- Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

SCALE 1: 24,000

0 — 0.5 Miles

N

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

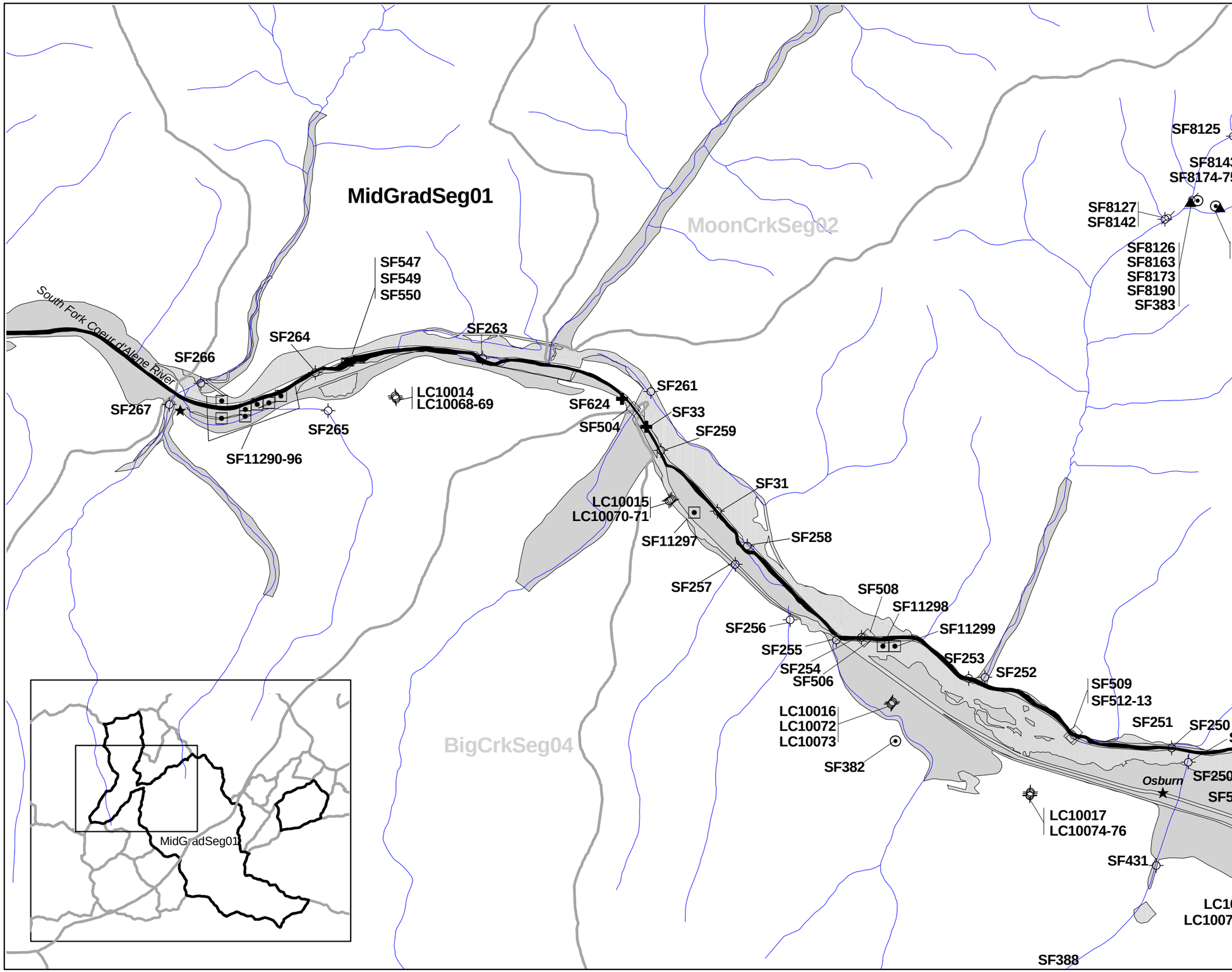
EPA REGION 10

Doc Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\Midgrad\fldplnvl_Section4.apr
V:BLM Source Areas
E:BLM Source areas
L: Midgrad BLM 1
7/12/01

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

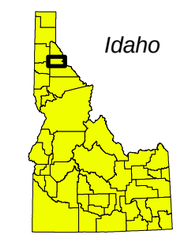
Date of Plot: July 12, 2001

Figure 4.1-9
Impacted Floodplain MidGradSeg01 Geologic Units and Sampling Locations West Portion



LEGEND

- Adit Sampling Location
- Bore Hole Sampling Location
- Floodplain Sampling Location
- Ground Sampling Location
- Hand Auger Sampling Location
- Lake Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Seep Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- City
- Stream
- River
- River Segment Boundary
- USGS Box Waste Units
- Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

*Box,S.E., A.A. Bookstrom, and W.N Kelly. 1999. Surficial geology of the valley of the South Fork of the Coeur d'Alene River, Idaho. U.S. Geological Survey Open File Report 99-XXX. Draft version, October 1999; and ArcView GIS Coverage, January 2000.

SCALE 1: 24,000

0 — 0.5 Miles

N

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05a
Generation 1
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V:USGSWaste
E:midgrad Waste1
L: Final RI MidGrad USGS Waste1
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

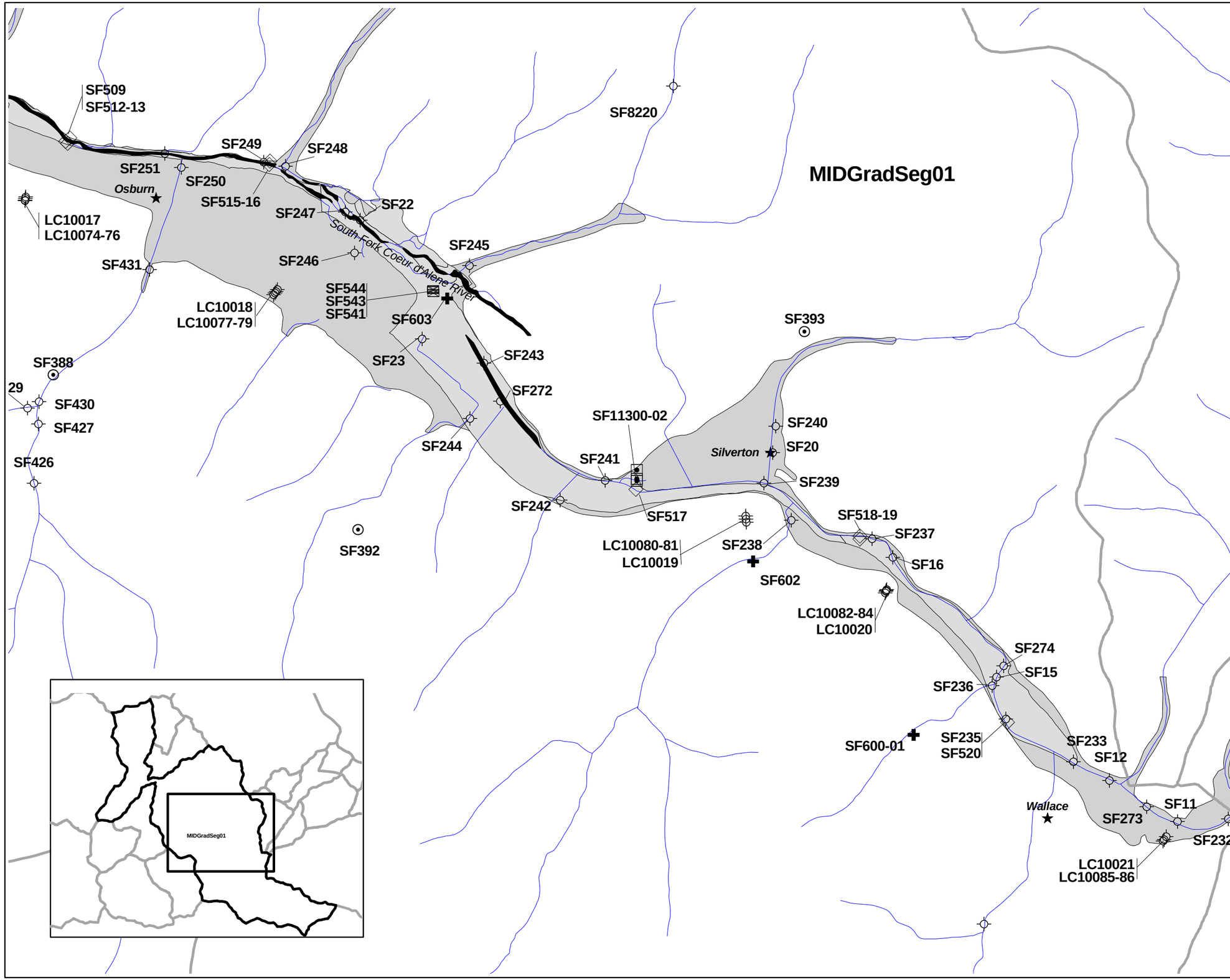
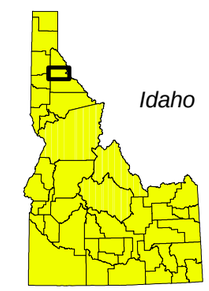


Figure 4.1-10
Impacted Floodplain MidGradSeg01
BLM Source Areas and Sampling Locations
East Portion

LEGEND

- Adit Sampling Location
- Bore Hole Sampling Location
- Floodplain Sampling Location
- Ground Sampling Location
- Hand Auger Sampling Location
- Lake Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Seep Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- City
- Stream
- River
- River Segment Boundary
- BLM Source Area
- Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner, Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

N

SCALE 1:24,000

0 0.5 Miles

027-RI-CO-102Q
Coeur d' Alene Basin RI/FS
RI REPORT

EPA REGION 10

Doc Control Pending
Generation 1
n:\Projects\RI_FS\Midgrad\fldplnvl_Section4.apr
V: BLM Source Areas
E:midgrad2
L: BLM Midgrad2
8/3/2000

This Map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983

Date of Plot: OCTOBER 16, 2000

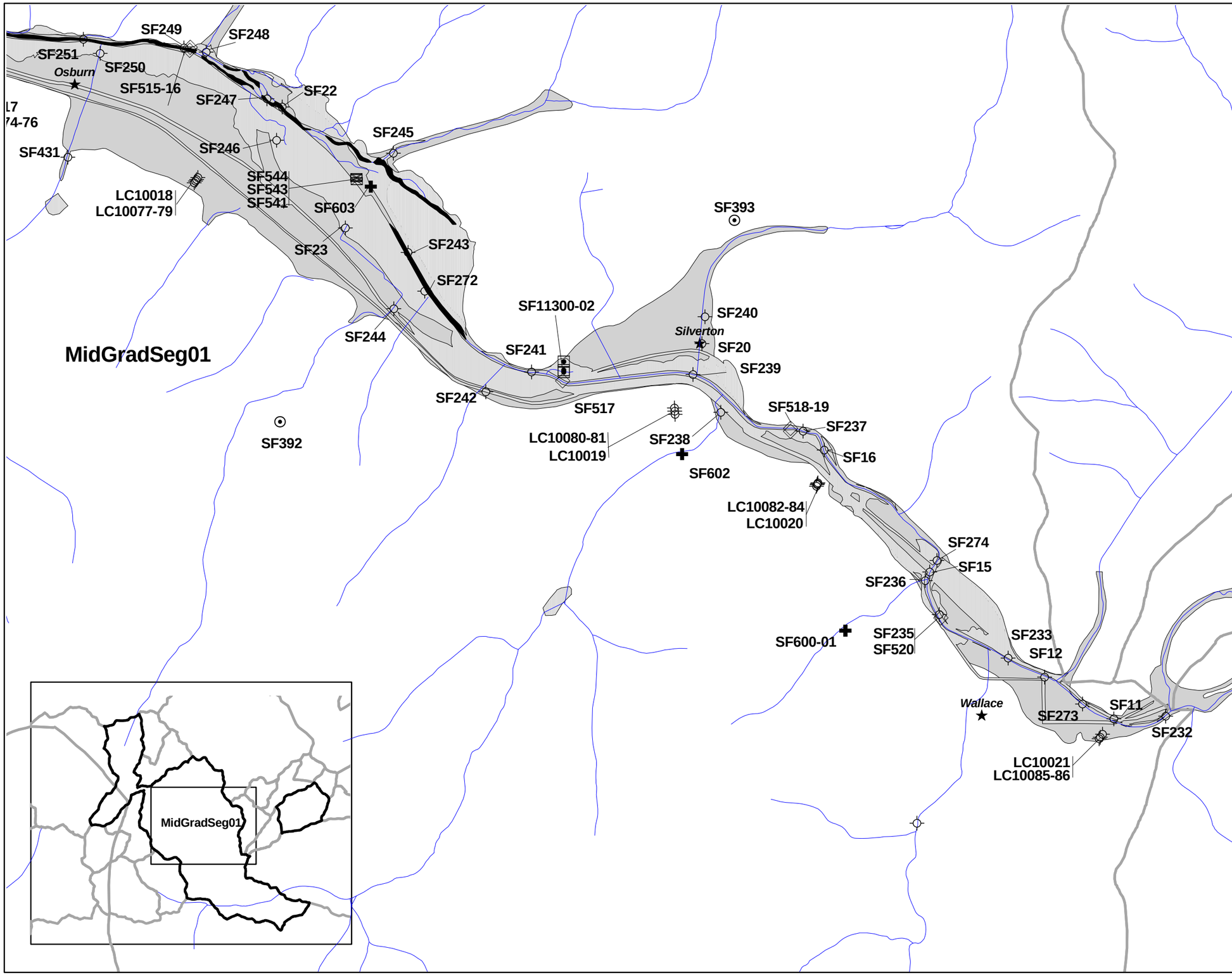
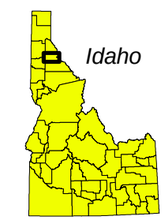


Figure 4.1-11
Impacted Floodplain MidGradSeg01 Geologic Units and Sampling Locations East Portion

LEGEND

- Adit Sampling Location
- Bore Hole Sampling Location
- Floodplain Sampling Location
- Ground Sampling Location
- Hand Auger Sampling Location
- Lake Sampling Location
- Outfall Sampling Location
- River Sampling Location
- Seep Sampling Location
- Tailings Sampling Location
- Test Pit Sampling Location
- City
- Stream
- River
- River Segment Boundary
- USGS Geological Units
- Floodplain



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

2) Sampling locations obtained from URS Greiner, Inc. Technical Data Management database as of 3/29/00.

*Box,S.E., A.A. Bookstrom, and W.N Kelly. 1999. Surficial geology of the valley of the South Fork of the Coeur d'Alene River, Idaho. U.S. Geological Survey Open File Report 99-XXX. Draft version, October 1999; and ArcView GIS Coverage, January 2000.

SCALE 1: 24,000

0 — 0.5 Miles

N

027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\RI_FS\MidGrad\
\fldplnvl_Section4.apr
V:USGSWaste
E:USGSWaste2
L: Final RI USGS Waste2
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

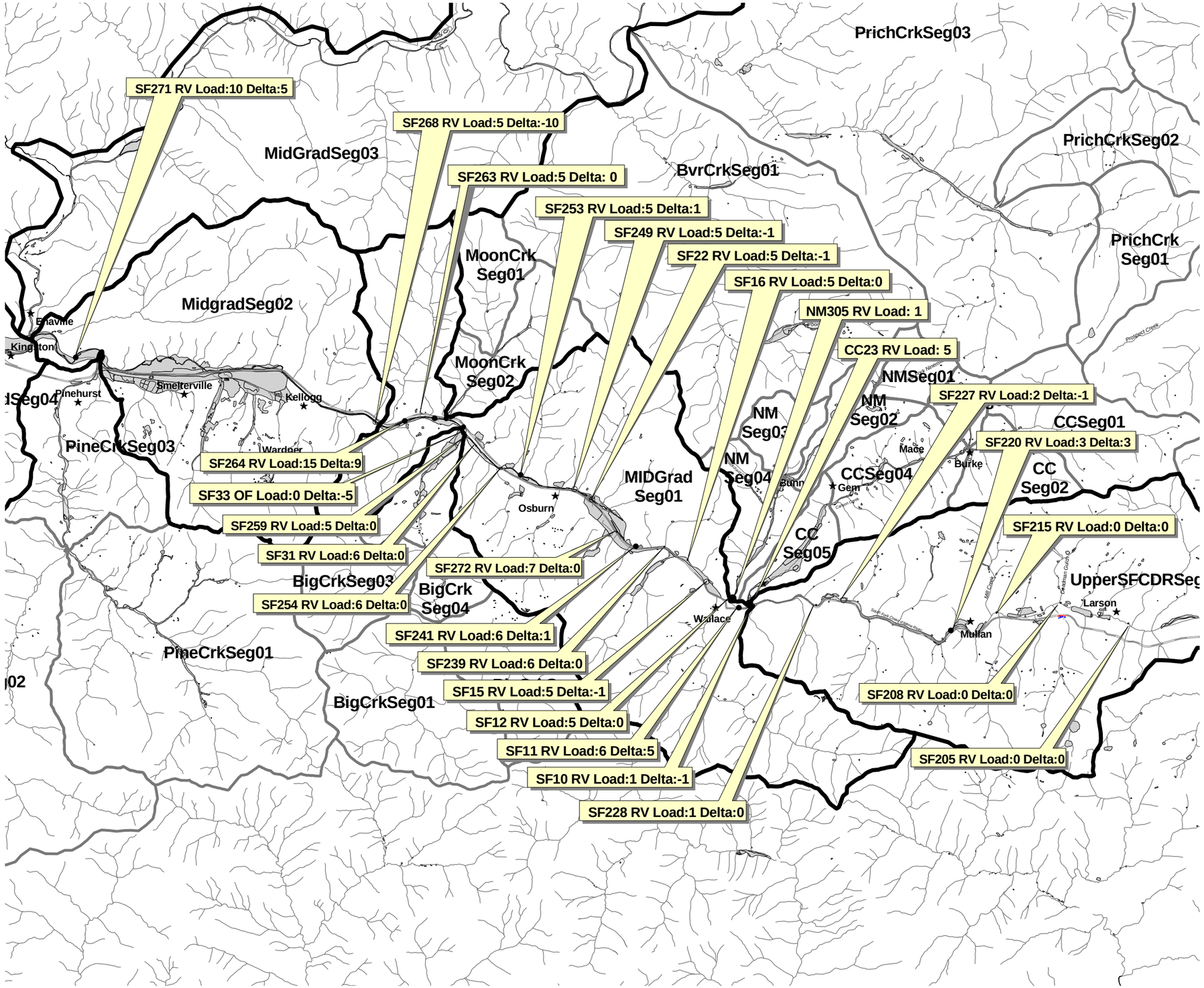


Figure 4.2-1
South Fork Coeur d' Alene River Watershed
Total Lead Mass Loading
Sampling Results Oct. 1991

LEGEND

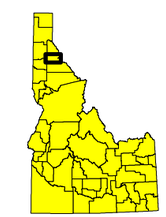
Sampling Location: SF271 Load: 10 Delta: 6

Values are lbs/day

Location Type:
RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 40
○	●	Delta Range: 40 - 100
○	●	Delta Range: 100 - 150
○	●	Delta Range: > 150

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000
0 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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incremental_watershed_usfcdr.apr
V: SF-oct91-lead
L: Final RI SF-oct91-lead
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

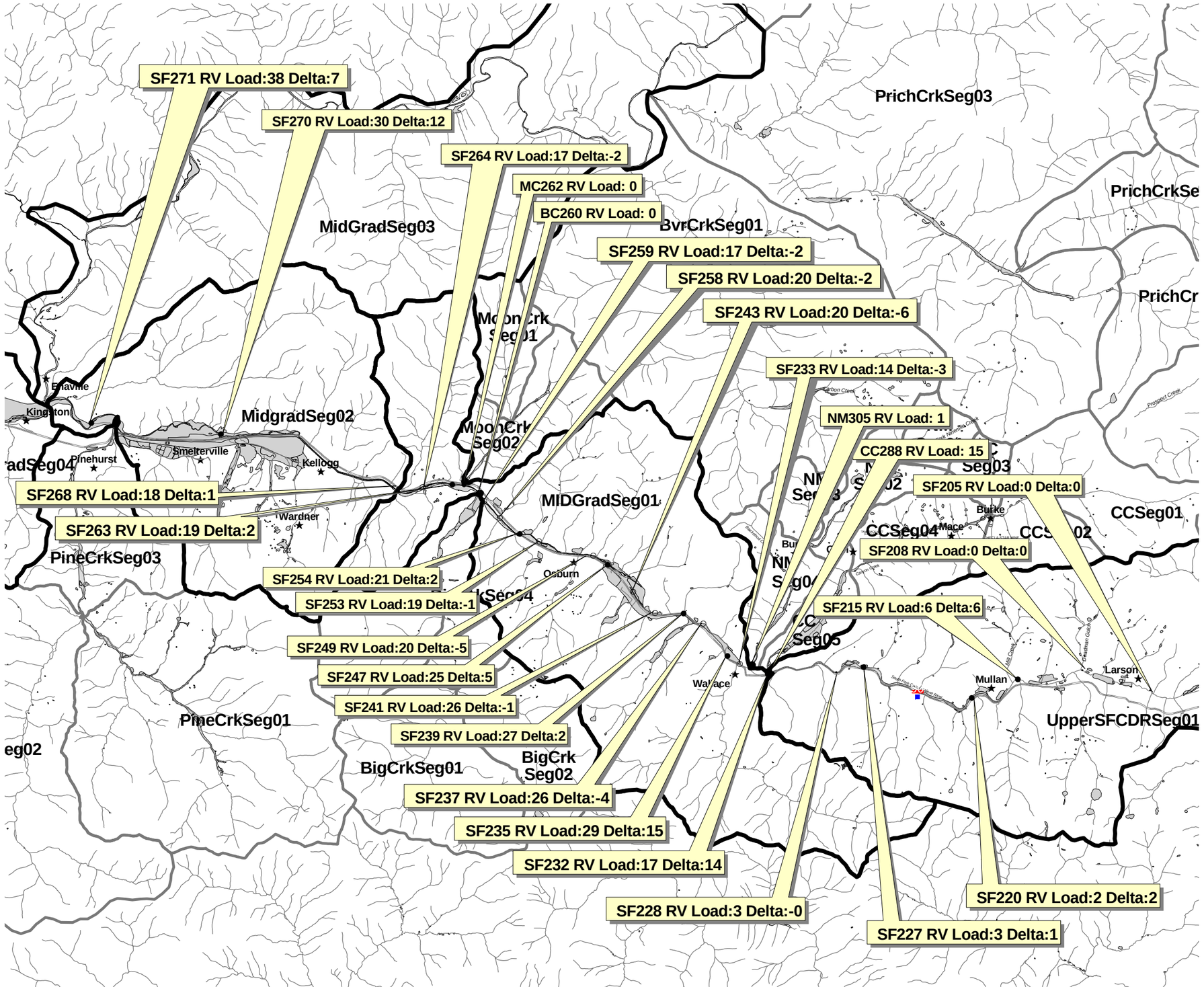


Figure 4.2-2
South Fork Coeur d' Alene River Watershed
Total Lead Mass Loading
Sampling Results Nov. 1997

LEGEND

Sampling Location — Values are lbs/day

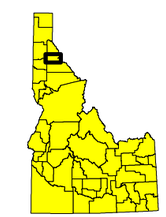
SF271 RV Load: 88 Delta: 8

Location Type:

RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 40
○	●	Delta Range: 40 - 100
○	●	Delta Range: 100 - 150
○	●	Delta Range: > 150

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05a
Generation 1
n:\Projects\watersheds\incremental_watershed_usfcdr.apr
V: SF-nov97-lead
L: Final RI SF-nov97-lead
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

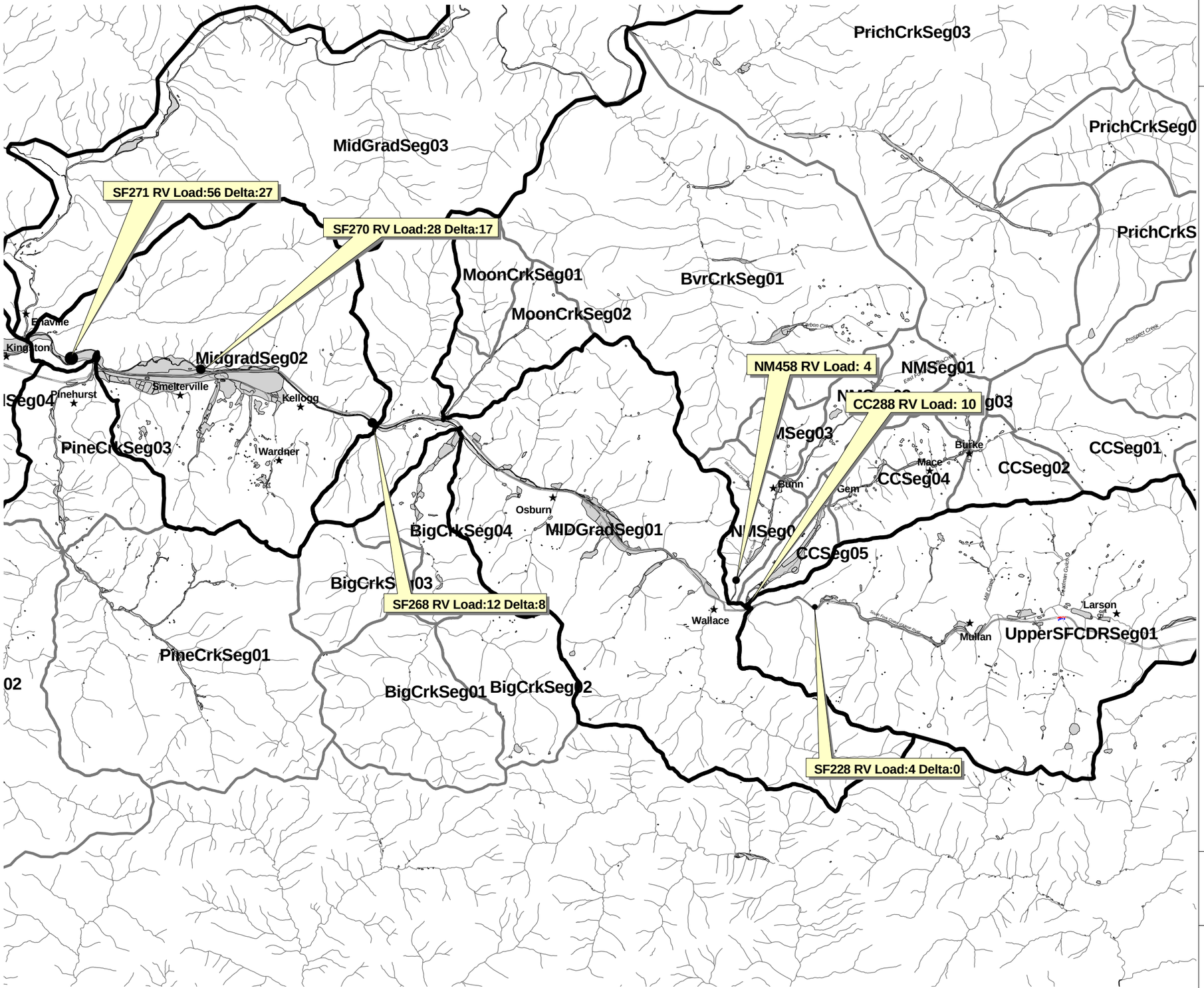


Figure 4.2-3
South Fork Coeur d' Alene River Watershed
Total Lead Mass Loading
Sampling Results Nov. 1998

LEGEND

Sampling Location — Values are lbs/day

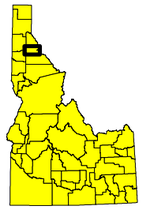
SF 268 RV Load: 2055 Delta: 76

Location Type:

RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 40
○	●	Delta Range: 40 - 100
○	●	Delta Range: 100 - 150
○	●	Delta Range: > 150

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-nov98-lead
L: Final RI SF-nov98-lead
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

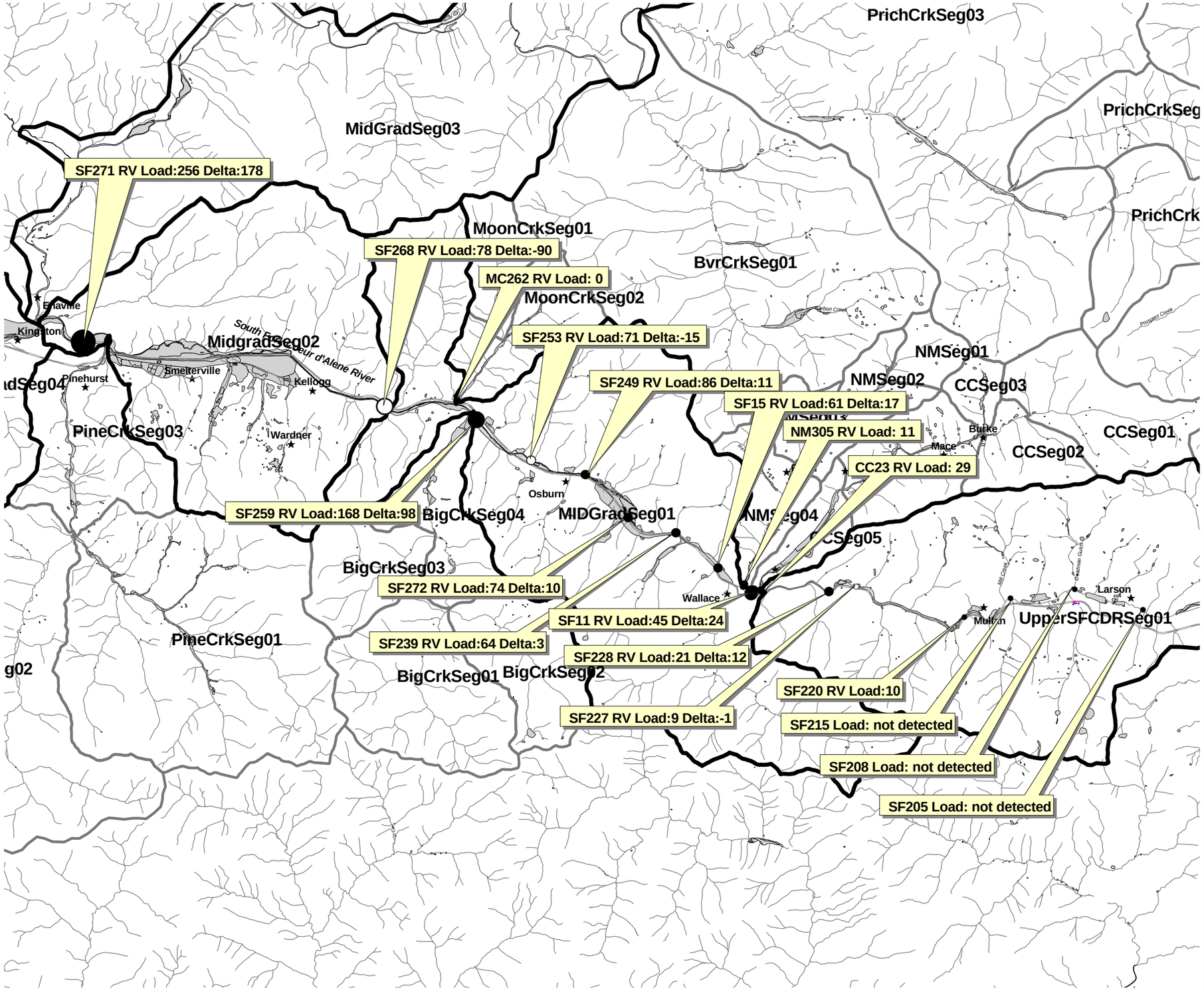


Figure 4.2-4
South Fork Coeur d' Alene River Watershed
Total Lead Mass Loading
Sampling Results May 1991

LEGEND

Sampling Location — Values are lbs/day

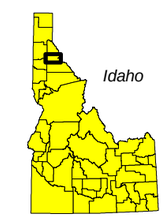
SF271 RV Load: 256 Delta: 178

Location Type:

RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 40
○	●	Delta Range: 40 - 100
○	●	Delta Range: 100 - 150
○	●	Delta Range: > 150

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-may91-lead
L: Final RI SF-may91-lead
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

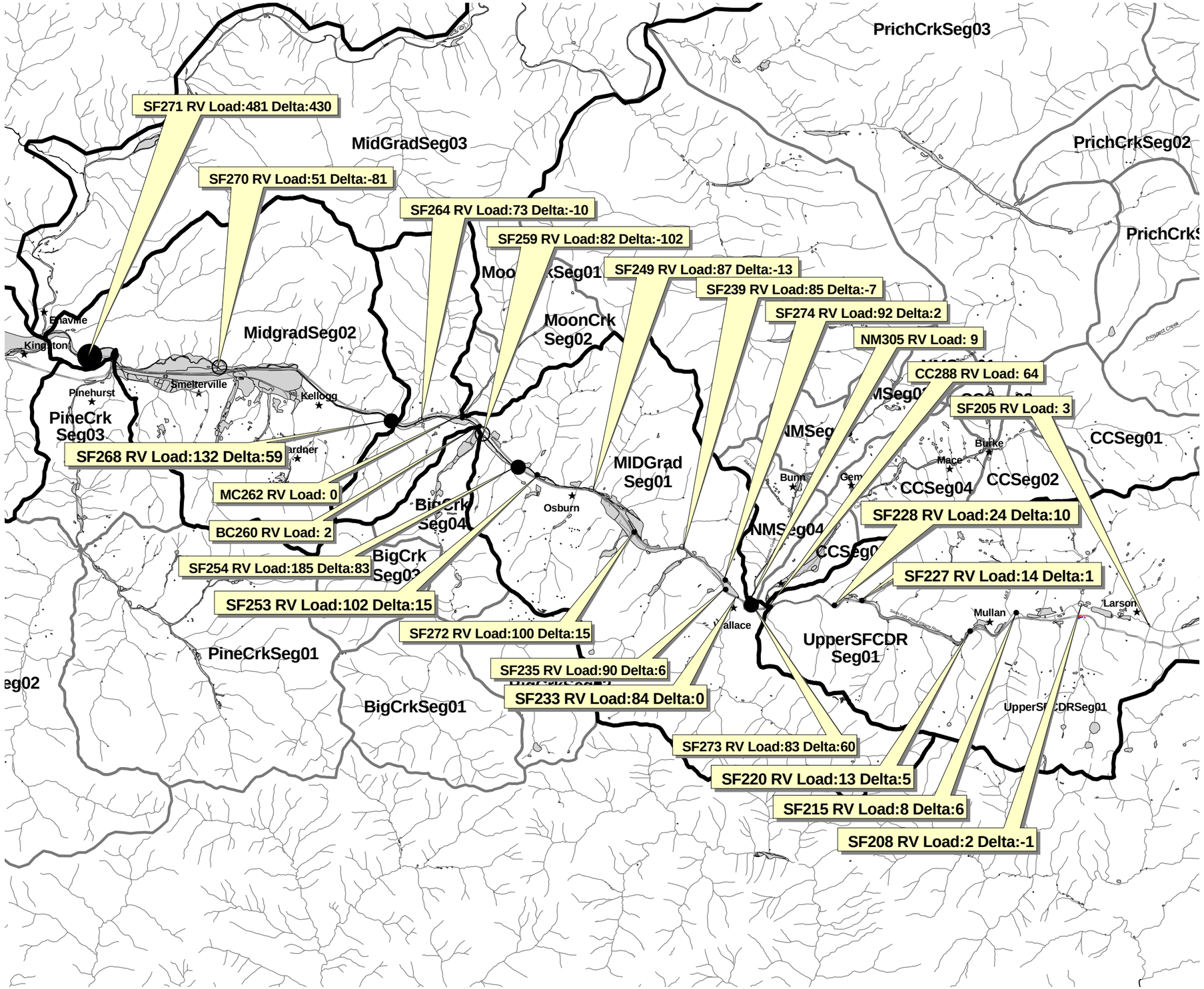


Figure 4.2-5
South Fork Coeur d' Alene River Watershed
Total Lead Mass Loading
Sampling Results May 1998

LEGEND

Sampling Location — Values are lbs/day

SF270 RV Load: 51 Delta: -81

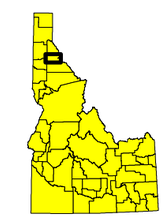
Location Type:

RV: River/Stream Sampling Location

(-) Neg. (+) Pos. — Delta of Mass Load Compared to Preceeding Upstream Sampling Location

- Delta Range: 0 - 0.9
- Delta Range: 1 - 20
- Delta Range: 20 - 60
- Delta Range: 60 - 150
- Delta Range: 150 - 400
- Delta Range: > 400

- Stream
- Interstate 90
- City
- River/Lake
- Midgrad/USFCDR Watershed
- River Segment
- Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 4 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-may98-lead
L: Final RI SF-may98-lead
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

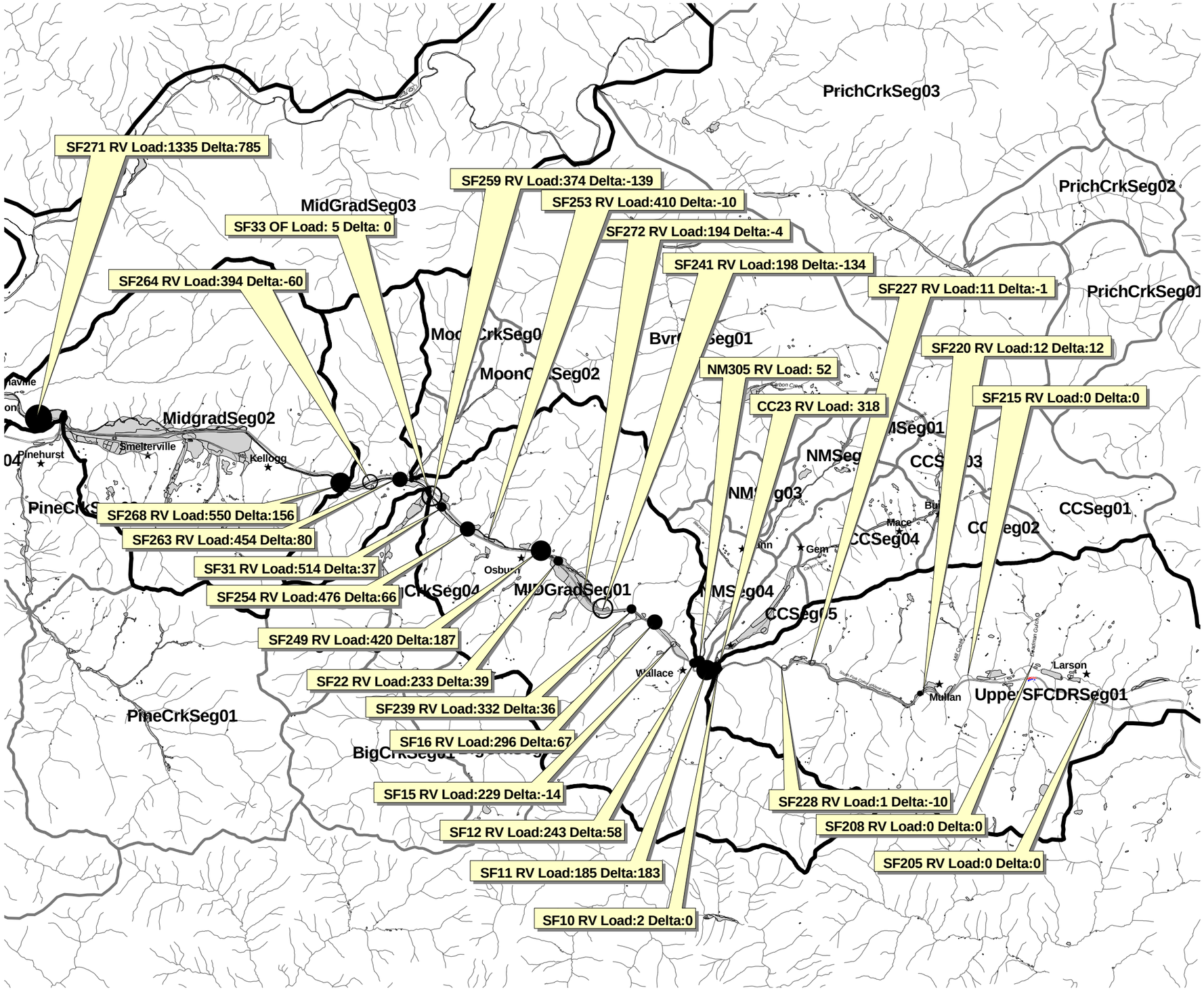


Figure 4.2-6
South Fork Coeur d' Alene River Watershed
Dissolved Zinc Mass Loading
Sampling Results Oct. 1991

LEGEND

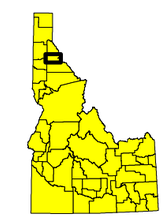
Sampling Location: SF271 RV Load: 5256 Delta: 2919

Values are lbs/day

Location Type:
RV: River/Stream Sampling Location
OF: Outfall Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 60
○	●	Delta Range: 60 - 150
○	●	Delta Range: 150 - 400
○	●	Delta Range: > 400

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-oct91-zinc
L: Final RI SF-oct91-zinc
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

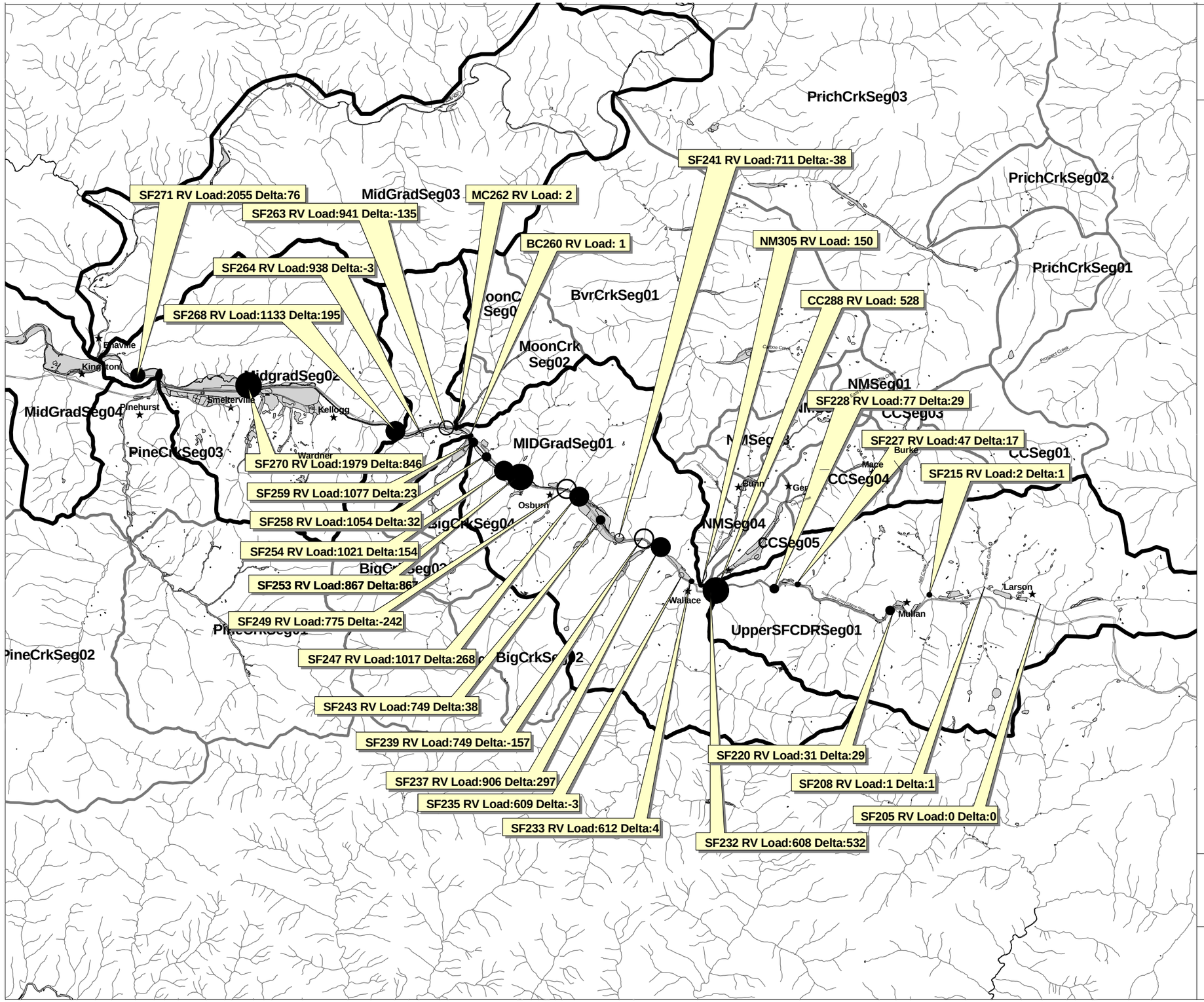


Figure 4.2-7
South Fork Coeur d' Alene River Watershed
Dissolved Zinc Mass Loading
Sampling Results Nov. 1997

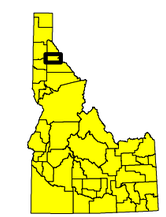
LEGEND

Sampling Location — SF271 RV Load: 256 Delta: 178 — Values are lbs/day

Location Type:
RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 20
○	●	Delta Range: 20 - 60
○	●	Delta Range: 60 - 150
○	●	Delta Range: 150 - 400
○	●	Delta Range: > 400

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-nov97-zinc
L: Final RI SF-nov97-zinc
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

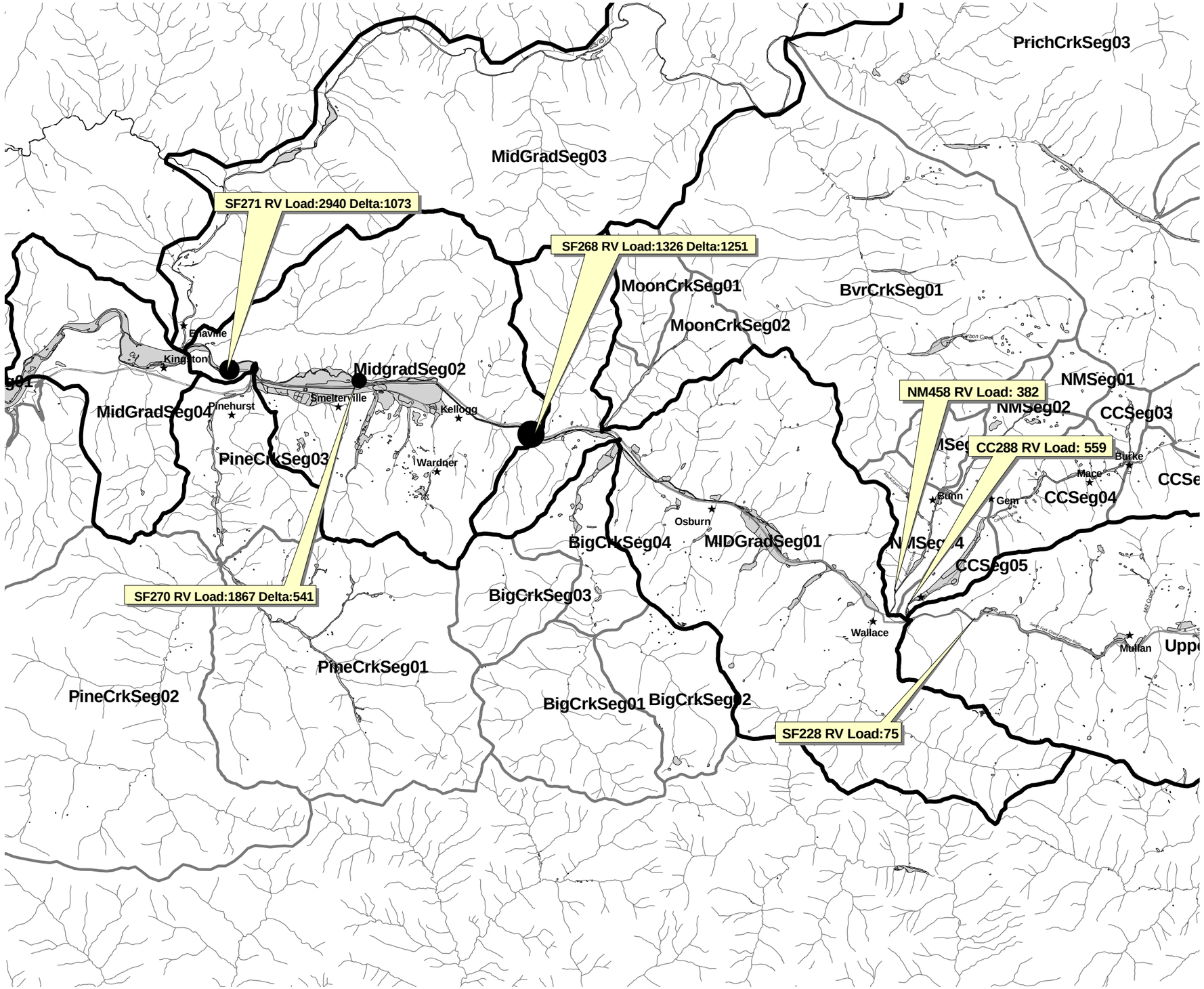


Figure 4.2-8
South Fork Coeur d' Alene River Watershed
Dissolved Zinc Mass Loading
Sampling Results Nov. 1998

LEGEND

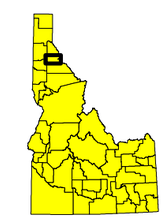
Sampling Location — Values are lbs/day

SF 368 RV Load: 1133 Delta: 195

Location Type:
RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 300
○	●	Delta Range: 300 - 500
○	●	Delta Range: 500 - 800
○	●	Delta Range: 800 - 1100
○	●	Delta Range: > 1100

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-nov98-zinc
L: Final RI SF-nov98-zinc
7/11/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 11, 2001

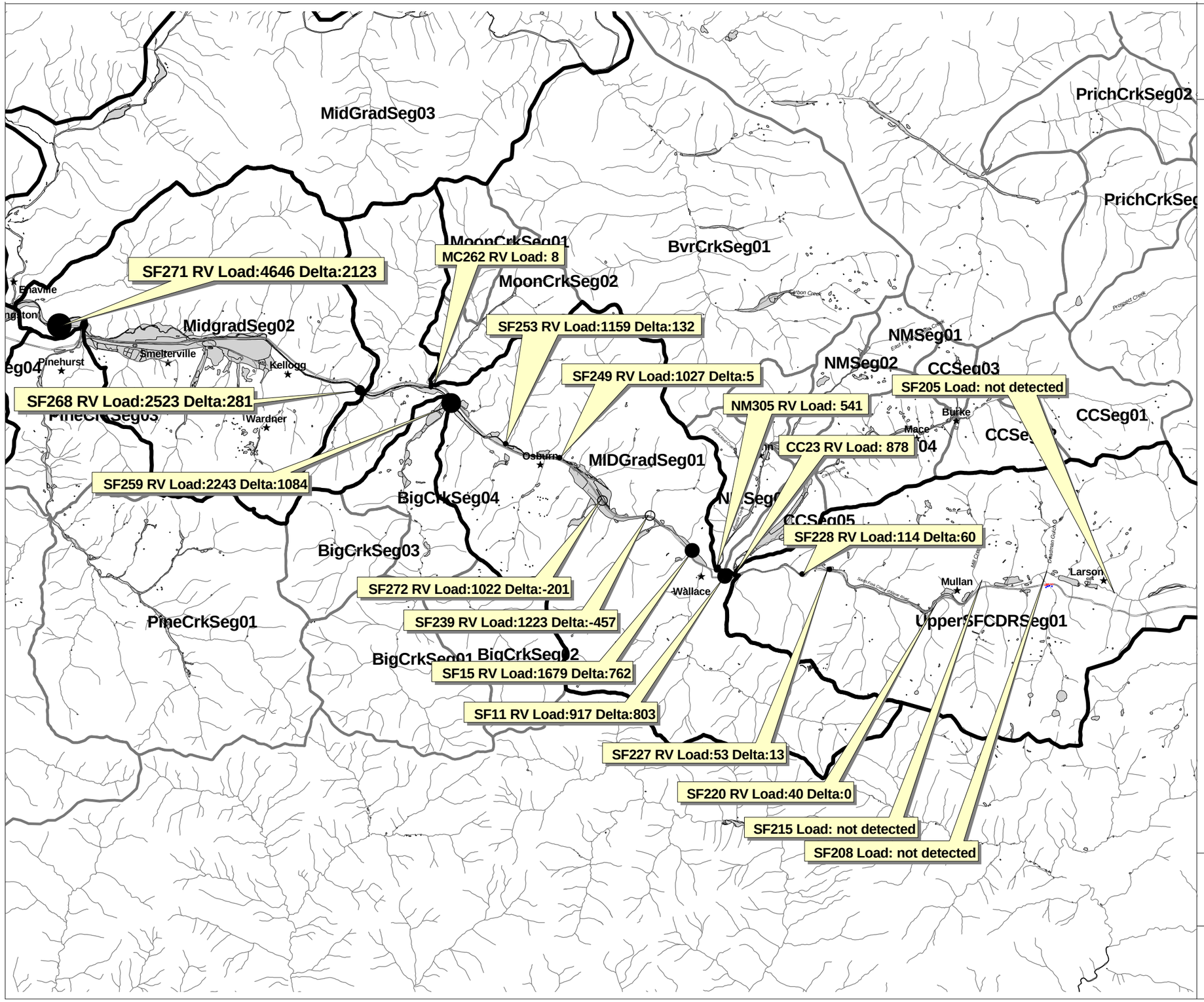


Figure 4.2-9
South Fork Coeur d' Alene River Watershed
Dissolved Zinc Mass Loading
Sampling Results May 1991

LEGEND

Sampling Location

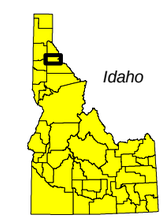
Values are lbs/day

SF271 RV Load: 4646 Delta: 2123

Location Type:
RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 150
○	●	Delta Range: 150 - 500
○	●	Delta Range: 500 - 1000
○	●	Delta Range: 1000 - 2000
○	●	Delta Range: > 2000

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
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V: SF-may91-zinc
L: Final RI SF-may91-zinc
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

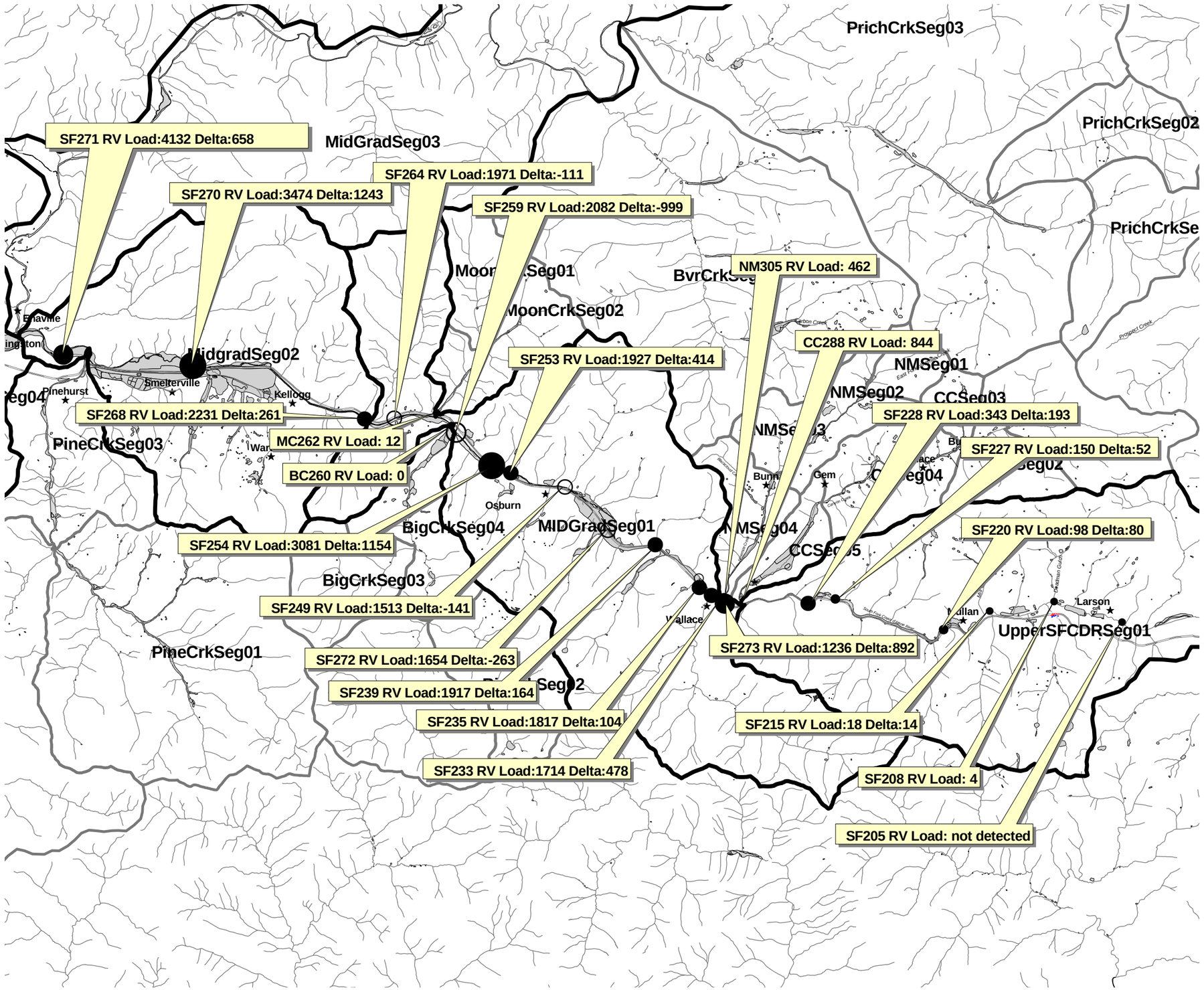


Figure 4.2-10
South Fork Coeur d' Alene River Watershed
Dissolved Zinc Mass Loading
Sampling Results May 1998

LEGEND

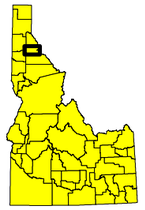
Sampling Location — SF271 RV Load: 4182 Delta: 968 — Values are lbs/day

Location Type:

RV: River/Stream Sampling Location

(-) Neg.	(+) Pos.	Delta of Mass Load Compared to Preceeding Upstream Sampling Location
		Delta Range: 0 - 0.9
○	●	Delta Range: 1 - 50
○	●	Delta Range: 50 - 100
○	●	Delta Range: 100 - 500
○	●	Delta Range: 500 - 1000
○	●	Delta Range: > 1000

Stream
Interstate 90
City
River/Lake
Midgrad/USFCDR Watershed
River Segment
Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d' Alene Tribe, URS Greiner Inc., CH2M HILL, and the Burueau of Land Management.

SCALE 1: 160,000

0 — 3 Miles

N

027-RI-C0-102Q
Coeur d' Alene Basin RI/FS
RI Report

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
n:\Projects\watersheds\
incremental_watershed_usfcdr.apr
V: SF-may98-zinc
L: Final RI SF-may98-zinc
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
ALHAMBRA MINE	KLE021	0.65	Upland waste rock (erosion potential)				
AMERICAN SILVER MINE	POL020	0.19	Upland waste rock				
ARGENTINE MINE	WAL016	0.48	Upland waste rock (erosion potential)				
BENEWAH-SHOSHONE MINE	KLE005	0.64	Upland waste rock				
BIG CK ROCKPIT ALONG I-90	KLE015	13.65	Upland waste rock				
CALADAY MINE	CH1411	5.80	Upland waste rock				
CALADAY MINE	WAL020	5.80	Adit drainage Upland waste rock (erosion potential)				
CAPITOL SILVER MAIN ADIT	OSB079	0.16	Upland waste rock	SW 1			
CAPITOL SILVER-LEAD NO. 2	CH1408	0.65	Upland waste rock				
CAPITOL SILVER-LEAD NO. 2	OSB024	0.65	Upland waste rock				
CAPITOL SILVER-LEAD: NO. 01	CH1407	0.78	Upland waste rock				
CAPITOL SILVER-LEAD: NO. 03	CH1406	0.50	Upland waste rock				
CAPITOL SILVER-LEAD: NO. 1	OSB026	0.78	Upland waste rock				
CAPITOL SILVER-LEAD: NO. 3	OSB025	0.50	Upland waste rock (erosion potential)				
CASTLE ROCK MINE	WAL027	0.91	Upland waste rock				
COEUR D ALENE MILLSITE	KLE074	2.88	Buildings & structures Upland tailings				
COEUR D ALENE MINE	POL019	7.48	Upland waste rock (erosion potential)				
COEUR MINE (RAINBOW)	WAL015	26.76	Upland waste rock	SW 1	SWD: Sb-1 SWT: Cu-1, Fe-1, Mn-1		
COMSTOCK GROUP	WAL005	0.34	Upland waste rock				
CONSOLIDATED SILVER	POL016	0.30	Upland waste rock				
DAY MINES CLAIMS	WAL046	0.26	Upland waste rock (erosion potential)				
ECLIPSE MINE	POL021	0.66	Upland waste rock (erosion potential)				
ENTERPRISE EXTENSION	KLE060	0.24	Upland waste rock				
ENTERPRISE MINE	KLE059	0.14	Upland waste rock				
EVOLUTION MINE	KLE017	10.55	Floodplain sediments				
FLOIODO MINE	MUL087	0.37	Upland waste rock				
FLORENCE MINE	KLE051	0.33	Upland waste rock (erosion potential)				
GAHEY GROUP	POL032	0.23	Upland waste rock				
GALENA MINE AND MILLSITE	CH1412	18.25	Upland Concentrates and Process Wastes				
GALENA MINE AND MILLSITE	CH1413	18.25	Upland tailings				
GALENA MINE AND MILLSITE	CH1414	18.25	Upland waste rock				

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type		Metals > 1X	Metals > 10X	Metals > 100X
GALENA MINE AND MILLSITE	WAL018	18.25	Upland tailings Upland waste rock					
GALENA MINE ROCK DUMPS	WAL079	13.32	Upland waste rock					
GALENA MINE TAILINGS	WAL080	25.14	Upland tailings	SW	110	SWT: Cd-5, Mn-1, Pb-103, Sb-1, Zn-47	SWT: Cu-1, Mn-1	
GOLD RUN GULCH RECENT MINE ACTIVITY	KLE043	2.69	Upland waste rock	SW	2	SWT: Cu-1, Zn-1		
GOLD RUN GULCH RECENT MINE ACTIVITY	KLE044	0.96	Upland waste rock					
GOLD RUN GULCH RECENT MINE ACTIVITY	KLE045	1.37	Upland waste rock					
GOLD RUN GULCH RECENT MINE ACTIVITY: NO. 01	CH1402	0.96	Upland waste rock					
GOLD RUN GULCH RECENT MINE ACTIVITY: NO. 02	CH1401	1.37	Upland waste rock					
GOLD RUN GULCH RECENT MINE ACTIVITY: NO. 03	CH1403	2.69	Upland waste rock					
HARLOW TUNNEL	OSB080	0.22	Adit drainage Upland waste rock	SW	1	SWD: Cd-1 SWT: Cd-1		
HERCULES MILLSITE	WAL037	2.42	Upland tailings					
HORNSILVER MINE	WAL025	0.20	Upland waste rock					
LAKE CK IMPACTED RIPARIAN	WAL036	9.27	Floodplain sediments	SW	5	SWD: Mn-2, Sb-1, Zn-1 SWT: Cu-1, Mn-2, Sb-1, Zn-1		
LIBERTY BELL GROUP	KLE004	0.35	Upland waste rock					
LUCKY STONE MINE	POL017	0.25	Upland waste rock					
MACEDONIA MINING COMPANY	WAL043	0.38						
MERGER MINE	POL018	0.91	Upland waste rock (erosion potential)					
MINERAL MOUNTAIN MINE	KLE056	0.36	Upland waste rock					
MOON CK POND AT MOUTH	KLE042	2.60	Floodplain sediments Floodplain tailings					
NELLIE MINE	KLE036	0.69	Upland waste rock					
NEW HILARITY MINE	CH1417	1.48	Upland waste rock					
NEW HILARITY MINE	KLE020	1.48	Upland waste rock (erosion potential)					
NEW JERSEY MINE	KLE022	1.05	Upland waste rock					
OREGON-IDAHO SILVER-GOLD	MUL088	0.42						
OSBURN FLATS BUREAU OF MINES TESTPLOTS	KLE062	3.30	Floodplain sediments Upland waste rock					
OSBURN GRAVEL PIT	OSB029	0.84	Upland artificial fill					

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
OSBURN NORTH TAILINGS AREA	OSB118	23.70	Floodplain sediments				
OSBURN ROCKPIT ALONG I-90: NO. 1	KLE010	13.38	Floodplain waste rock				
OSBURN ROCKPIT ALONG I-90: NO. 2	WAL035	5.89	Floodplain waste rock				
OSBURN TAILINGS PONDS	WAL001	66.24	Floodplain sediments (underlying tailings pond) Groundwater Upland tailings				
OSBURN ZANETTI GRAVEL OPERATION	OSB119	56.67	Floodplain sediments (underlying tailings pond) Groundwater	SW 1			
OSBURN ZANETTI STOCKPILED TAILINGS	OSB117	1.34	Floodplain tailings				
PEERLESS GROUP	WAL057	0.10	Upland waste rock (erosion potential)				
PEERLESS GROUP (OSCEOLA)	WAL056	0.24	Upland waste rock (erosion potential)				
PIONEER MINES INC. PROPERTY	KLE023	1.15	Upland waste rock (erosion potential)				
POLARIS MINE	CH1416	1.60	Upland waste rock				
POLARIS MINE	KLE033	1.60	Upland waste rock (erosion potential)				
PURIM GROUP HAYDEN HILL CONSOLIDATED	POL015	0.32	Upland waste rock				
RHODE ISLAND NO.1 & NO.2 & ASSOC.ADITS	KLE066	0.38	Upland waste rock (erosion potential)				
ROYAL MINING COMPANY	WAL032	0.30					
SF CDA RIVER IMPACTED FLOODPLAIN: NO. 3	OSB065	167.38	Floodplain sediments Groundwater	SD 11 SS 3 SW 171	SDT: Ag-10, As-8, Cd-6, Cu-9, Fe-4, Hg-3, Mn-10, Sb-8, Zn-4 SST: As-3, Cd-3, Cu-2, Fe-2, Mn-2, Zn-1 SWD: Cd-11, Cu-1, Mn-8, Pb-37, Sb-2, Zn-6 SWT: As-1, Cd-71, Cu-5, Fe-4, Mn-5, Pb-87, Sb-2, Zn-72	SDT: Cd-4, Hg-5, Pb-9, Zn-6 SST: Pb-2, Zn-2 SWD: Cd-42, Pb-11, Zn-45 SWT: Fe-1, Mn-2, Pb-13, Sb-2, Zn-56	SDT: Pb-1, Sb-1 SST: Pb-1
SF CDA RIVER IMPACTED FLOODPLAIN: NO. 4	OSB120	214.40	Floodplain sediments Groundwater Seep	SD 7 SS 2 SW 34	SDT: Ag-4, As-2, Cd-7, Cu-6, Hg-5, Mn-7, Sb-1, Zn-6 SST: As-2, Cd-2, Cu-2, Fe-1, Mn-1 SWD: Cd-2, Mn-3, Pb-4, Sb-3, Zn-2 SWT: Cd-26, Cu-6, Mn-1, Pb-23, Sb-2, Zn-1	SDT: As-1, Cu-1, Hg-1, Pb-7, Sb-2, Zn-1 SST: Zn-2 SWD: Cd-6, Pb-3, Zn-6 SWT: Pb-3, Zn-26	SST: Pb-2
SF CDA RIVER IMPACTED FLOODPLAIN: NO. 5	KLE040	12.07	Floodplain sediments Groundwater				

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
SF CDA RIVER IMPACTED RIPARIAN (MidGradSeg01 & MidGradSeg02)	KLE049	67.22	Floodplain sediments Groundwater	SD 3 SS 6 SW 106	SDT: Ag-2, As-2, Cd-1, Cu-3, Fe-3, Hg-1, Mn-2, Sb-2, Zn-1 SST: As-5, Cd-6, Cu-5, Fe-5, Mn-6, Zn-1 SWD: Cd-18, Mn-2, Pb-74, Sb-2, Zn-8 SWT: Cd-96, Cu-1, Fe-2, Mn-1, Pb-44, Sb-1, Zn-1	SDT: Ag-1, As-1, Cd-1, Hg-2, Mn-1, Pb-2, Sb-1, Zn-1 SST: As-1, Pb-5, Zn-5 SWD: Cd-80, Pb-20, Zn-90 SWT: Fe-1, Mn-1, Pb-7, Zn-98	SDT: Cd-1, Pb-1, Zn-1 SST: Pb-1
SF CDA RIVER RAILROAD YARDS & IMP FLDP	WAL004	70.27	Floodplain sediments Groundwater	SD 3 SW 34	SDT: Ag-2, Cd-1, Fe-2, Mn-2 SWD: Cd-6, Mn-3, Pb-6, Zn-4 SWT: Cd-28, Cu-5, Fe-1, Mn-2, Pb-25	SDT: Cd-1, Cu-1, Pb-2, Zn-2 SWD: Cd-22, Pb-21, Zn-24 SWT: Cd-1, Pb-3, Zn-29	SWD: Pb-1 SWT: Pb-1
SF CDA RIVER SVNRT REHAB	KLE048	20.37	Floodplain sediments Groundwater	SD 5 SW 5	SDT: Ag-1, As-5, Cd-5, Cu-5, Hg-4, Mn-5, Sb-2, Zn-5 SWD: Cd-1, Mn-2, Pb-3, Sb-1 SWT: Cd-5, Cu-1, Pb-3, Sb-1	SDT: Ag-1, Hg-1, Pb-4 SWD: Cd-4, Pb-2, Zn-5 SWT: Zn-5	SDT: Pb-1
SHIELDS GULCH IMPACTED RIPARIAN	WAL034	16.30	Floodplain sediments				
SIGNAL SILVER GOLD	WAL045	0.12					
SILVER DOLLAR MINE	KLE034	2.29	Floodplain waste rock	SW 2	SWD: Sb-2 SWT: Cu-2, Fe-2, Sb-2		
SILVER RANGE	WAL022	0.13	Upland waste rock				
SILVER ROCK PROSPECT	OSB028	0.11	Upland waste rock				
SILVER SUMMIT MILLSITE (Polaris)	KLE075	0.86	Upland tailings				
SILVER SUMMIT MINE	KLE035	13.45	Buildings & structures Floodplain waste rock				
SILVER SUMMIT TAILINGS	KLE011	7.89	Upland tailings				
SILVERORE-INSPIRATION MINE	CH1409	1.30	Upland waste rock				
SILVERORE-INSPIRATION MINE	OSB070	1.30	Upland waste rock (erosion potential)				
SILVERTON PROSPECT LOWER ADIT	OSB073	0.58	Upland waste rock (erosion potential)				
SILVERTON PROSPECT UPPER ADIT	OSB030	0.45	Upland waste rock (erosion potential)				
SILVERTON ROADCUT ALONG I-90	WAL003	3.29	Upland waste rock				
SLATE CREEK CONSOLIDATED	WAL044	0.26					
SMART ALECK MINE	WAL026	0.09	Upland waste rock				
SPOKANE TUNNEL	WAL029	0.36	Upland waste rock				
ST. ELMO MINE	CH1415	1.61	Upland waste rock				
ST. ELMO MINE	WAL014	1.61	Upland waste rock (erosion potential)				
ST. JOE NO.1	OSB074	0.25	Adit drainage Upland waste rock	SW 1	SWT: Cd-1, Pb-1	SWD: Cd-1, Mn-1, Zn-1 SWT: Cu-1, Fe-1, Mn-1, Zn-1	

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type		Metals > 1X	Metals > 10X	Metals > 100X
ST. JOE NO.3	KLE069	0.42	Upland waste rock (erosion potential)	SL SW	1 1	SST: Cd-1, Cu-1, Fe-1, Pb-1, Zn-1 SWT: Cd-1, Fe-1, Mn-1	SST: As-1	
ST. JOE NO.4	KLE067	0.20	Adit drainage Upland waste rock (erosion potential)	SL SW	2 3	SST: Cd-1, Cu-2, Fe-1, Zn-1 SWD: Cd-1, Zn-2 SWT: Cd-1, Fe-1, Mn-2	SST: As-2, Pb-2, Zn-1 SWD: Mn-2 SWT: Fe-1, Zn-2	
STERLING PROSPECT	WAL019	0.29	Upland waste rock					
SUNSHINE ANTIMONY	KLE032	0.28	Upland waste rock					
SYNDICATE MINING & EXPLORATION CO.	KLE016	0.62	Upland waste rock (erosion potential)					
TEDDY NO.1	KLE058	0.23	Upland waste rock					
TEDDY NO.2	KLE006	1.37	Upland waste rock					
TEDDY NO.3	KLE057	0.18	Upland waste rock					
TILICUM PROSPECT	WAL028	0.18	Upland waste rock					
UNIDENTIFIED DISTURBANCE	KLE038	3.64	Upland waste rock					
UNNAMED ADIT	KLE039	1.46	Upland waste rock (erosion potential)					
UNNAMED ADIT	KLE070	0.42	Upland waste rock (erosion potential)					
UNNAMED ADIT	OSB027	1.19	Upland waste rock					
UNNAMED ADIT	OSB071	0.32	Upland waste rock					
UNNAMED ADIT	OSB075	0.28	Upland waste rock (erosion potential)					
UNNAMED ADIT	OSB077	0.31						
UNNAMED ADIT	POL064	0.20	Upland waste rock (erosion potential)					
UNNAMED ADIT	POL079	0.18	Upland waste rock					
UNNAMED ADIT	POL088	0.32	Upland waste rock					
UNNAMED ADIT	POL090	0.11	Upland waste rock					
UNNAMED ADIT	POL091	0.19	Upland waste rock					
UNNAMED ADIT	POL092	0.28	Upland waste rock					
UNNAMED ADIT	WAL047	0.22	Upland waste rock					
UNNAMED ADIT	WAL055	0.17	Upland waste rock (erosion potential)					
UNNAMED ADIT	WAL058	0.09	Upland waste rock (erosion potential)					
UNNAMED ADIT	WAL062	0.19	Upland waste rock (erosion potential)					
UNNAMED ADIT	WAL063	0.29	Upland waste rock					
UNNAMED ADIT	WAL064	0.35	Upland waste rock (erosion potential)					
UNNAMED ADIT	WAL071	0.20	Upland waste rock					
UNNAMED ADIT	WAL072	0.08	Upland waste rock (erosion potential)					
UNNAMED ADIT	WAL073	0.10	Upland waste rock (erosion potential)					

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
UNNAMED ADIT	WAL074	0.26	Upland waste rock				
UNNAMED ADIT (Hardscrabble Claim)	OSB078	0.08	Upland waste rock (erosion potential)				
UNNAMED ADIT (May Claim)	OSB076	0.20	Adit drainage Upland waste rock (erosion potential)	SW 1	SWD: Cd-1, Fe-1 SWT: Cd-1, Fe-1	SWD: Mn-1 SWT: Cu-1, Mn-1	
UNNAMED ADIT (St. Joe No. 2)	KLE068	0.21	Upland waste rock (erosion potential)				
UNNAMED PROSPECT	POL029	0.16	Upland waste rock				
UNNAMED PROSPECT	POL030	0.48	Upland waste rock				
UNNAMED PROSPECT	POL031	0.43	Upland waste rock				
UNNAMED PROSPECT	POL033	0.23	Upland waste rock				
UNNAMED PROSPECT	POL034	0.82	Upland waste rock				
UNNAMED PROSPECT	POL035	1.96	Upland waste rock				
UNNAMED PROSPECT	POL055	0.45	Upland waste rock				
UNNAMED PROSPECT	POL057	0.18	Upland waste rock				
UNNAMED PROSPECT	POL058	0.23	Upland waste rock				
UNNAMED PROSPECT	POL059	0.27	Upland waste rock				
UNNAMED PROSPECT	POL060	0.21	Upland waste rock				
UNNAMED PROSPECT	POL061	0.38	Upland waste rock				
UNNAMED PROSPECT	POL065	0.21	Upland waste rock				
UNNAMED PROSPECT	POL077	0.20	Upland waste rock				
UNNAMED PROSPECT	POL078	0.16	Upland waste rock				
UNNAMED PROSPECT	POL080	0.16	Upland waste rock				
UNNAMED PROSPECT	POL081	0.22	Upland waste rock				
UNNAMED PROSPECT	POL082	0.22	Upland waste rock				
UNNAMED PROSPECT	POL083	0.18	Upland waste rock				
UNNAMED PROSPECT	POL084	0.16	Upland waste rock				
UNNAMED PROSPECT	POL085	0.14	Upland waste rock				
UNNAMED PROSPECT	POL086	0.18	Upland waste rock				
UNNAMED PROSPECT	POL087	0.18	Upland waste rock				
UNNAMED PROSPECT	POL089	0.22	Upland waste rock				
UNNAMED PROSPECT	WAL048	1.21	Upland waste rock				
UNNAMED PROSPECT	WAL049	1.13	Upland waste rock				
UNNAMED PROSPECT	WAL050	0.84	Upland waste rock				
UNNAMED PROSPECT	WAL051	0.64	Upland waste rock				
UNNAMED PROSPECT	WAL052	0.84	Upland waste rock				
UNNAMED PROSPECT	WAL053	0.32	Upland waste rock				

Table 4.1-1
Potential Source Areas Within South Fork - segment MidGradSeg01

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
UNNAMED PROSPECT	WAL054	0.69	Upland waste rock				
UNNAMED PROSPECT	WAL059	0.42	Upland waste rock	SW 1	SWD: Cu-1		
UNNAMED PROSPECT	WAL060	0.24	Upland waste rock				
UNNAMED PROSPECT	WAL061	0.38	Upland waste rock				
UNNAMED PROSPECT	WAL065	0.37	Upland waste rock				
UNNAMED PROSPECT	WAL066	0.33	Upland waste rock				
UNNAMED PROSPECT	WAL067	0.69	Upland waste rock				
UNNAMED PROSPECT	WAL070	0.71	Upland waste rock				
VIENNA INTERNATIONAL MINE	MUL085	0.37	Adit drainage Seep Upland waste rock (erosion potential)				
VULCAN EXTENSION	WAL023	0.16	Upland waste rock				
VULCAN MINE	WAL017	2.07	Upland waste rock				
WALLACE TUNNEL	WAL021	0.18	Upland waste rock				
WAR EAGLE MINE	WAL024	0.43	Upland waste rock (erosion potential)				
WESTERN UNION LOWER ADIT	WAL002	0.87	Floodplain waste rock	SW 2	SWD: Cu-1, Fe-1, Mn-1 SWT: Cu-2, Mn-2, Pb-2, Zn-1	SWD: Pb-1 SWT: Fe-2	
WESTERN UNION UPPER ADIT	OSB072	0.23	Upland waste rock (erosion potential)				
WIBBERDING-GOLDEN SLIPPER MINES	MUL086	1.26	Upland waste rock (erosion potential)				
WIBBERDING-GOLDEN SLIPPER MINES, INC.: NO. 02	CH1410	1.26	Upland waste rock				

Matrix Types

DR: Debris/Rubble
GW: Groundwater
RK: Rock/Cobbles/Gravel
SB: Subsurface Soil
SD: Sediment
SL: Soil
SS: Surface Soil
SW: Surface Water

Matrix Groupings

GWD: Groundwater - Dissolved Metals
GWT: Groundwater - Total Metals
SBT: Subsurface Soil
SDT: Sediment
SST: Surface Soil
SWD: Surface Water - Dissolved Metals
SWT: Surface Water - Total Metals

Analytes

Ag: Silver
As: Arsenic
Cd: Cadmium
Cu: Copper
Fe: Iron
Hg: Mercury
Mn: Manganese
Pb: Lead
Sb: Antimony
Zn: Zinc

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type		Metals > 1X	Metals > 10X	Metals > 100X
"96" MINE	CH1441	2.81	Upland waste rock					
"96" MINE	KLW036	2.81	Mine Workings/Water, Seeps, Springs and Leachate					
ALLA LOWER	KLW128	1.27	Upland waste rock					
ARIZONA TUNNEL	CH1435	2.61	Upland waste rock					
ARIZONA TUNNEL	KLW046	2.61	Mine Workings/Water, Seeps, Springs and Leachate					
BH "BUNKER HILL" MAIN MINE COMPLEX	KLW055	11.25	Mine Workings/Water, Seeps, Springs and Leachate	SW	53	SWD: Pb-1, Zn-1 SWT: As-1, Cd-21, Pb-36, Zn-18	SWD: Cd-2, Pb-2, Zn-2 SWT: Cd-20, Pb-16, Zn-23	SWT: Cd-3, Cu-1, Mn-2, Zn-12
BH "BUNKERHILL" MAIN MINE COMPLEX	CH1418	11.25	Upland waste rock					
BH ACID STORAGE/SMELTER COMPLEX	KLW027	4.54	Upland Concentrates and Process Wastes					
BH BONE YARD	KLW032	5.87	Upland Concentrates and Process Wastes					
BH BOYD POND	KLW033	3.89	Upland tailings					
BH CENTRAL IMPOUNDMENT AREA	KLW039	256.39	Floodplain tailings (above Cataldo No.& So. Fork)	GW SW	40 2	GWD: Pb-6 SWT: As-1, Cd-2, Pb-1	GWD: Cd-6, Cu-3, Pb-11, Sb-1, Zn-3 SWD: Cd-2	GWD: Cd-28, Pb-10, Zn-36 SWD: Zn-2 SWT: Zn-2
BH CENTRAL WATER TREATMENT PLANT	KLW137	9.84	Sediment Bed Load	GW SW	5 1	SWT: Mn-1, Zn-1		GWD: Cd-5, Zn-5
BH GYPSUM IMPOUNDMENT	KLW040	21.56	Upland Concentrates and Process Wastes	SW	1		SWT: Cd-1	SWT: Mn-1, Zn-1
BH GYPSUM IMPOUNDMENT/MCKINLEY POND	KLW042	13.43	Upland Concentrates and Process Wastes					
BH LANDFILL AREA	KLW048	23.00	Floodplain artificial fill					
BH LEAD SMELTER COMPLEX	KLW031	74.09	Upland Concentrates and Process Wastes	GW	44	GWD: Cu-2, Pb-6, Zn-8	GWD: Cd-2, Cu-2, Pb-4, Zn-16	GWD: Cd-34, Pb-8, Zn-18
BH NO. 2	KLW061	13.88	Upland waste rock					
BH OLD MILLSITE IN GOVERNMENT GULCH	KLW141	0.47	Upland Concentrates and Process Wastes					
BH OLD MILLSITE LOCATION	KLW140	0.40	Upland tailings					
BH OTHER FACILITIES	KLW041	77.38	Upland Concentrates and Process Wastes	GW SW	10 5	SWD: Cu-1 SWT: Cd-1, Cu-1, Pb-4	GWD: Pb-8 SWD: Cd-1, Pb-3, Zn-4 SWT: Cd-1, Pb-1, Zn-2	GWD: Cd-9, Pb-1, Zn-9 SWD: Cd-3, Pb-2, Zn-1 SWT: Cd-2, Zn-3
BH OTHER FACILITIES	KLW139	37.36	Upland Concentrates and Process Wastes	GW	5		GWD: Cd-2	GWD: Cd-3, Zn-5
BH PHOSPHORIC ACID PLANT/SMELTER CMPLX	KLW026	5.89	Upland Concentrates and Process Wastes					

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
BH SMELTER COMPLEX	KLW025	60.58	Upland Concentrates and Process Wastes	GW 19 SW 5	GWD: Zn-9 SWD: Cu-2, Pb-1 SWT: Cu-1, Hg-1, Pb-3	GWD: Cu-5 SWD: Pb-1, Zn-2 SWT: Cd-2, Cu-1, Pb-1, Zn-1	GWD: Cd-10, Pb-5, Zn-10 SWD: Cd-4, Zn-2 SWT: Cd-2, Cu-1, Zn-3
BH STORAGE AREA/SMELTER COMPLEX	KLW029	4.48	Upland Concentrates and Process Wastes				
BH WEST MAIN MILLSITE	KLW138	8.45	Upland Concentrates and Process Wastes				
BH ZINC PLANT/SMELTER COMPLEX	KLW028	27.72	Upland Concentrates and Process Wastes				
BLACKHAWK MINE	KLW018	0.47	Mine Workings/Water, Seeps, Springs and Leachate				
BLUE STAR PROSPECT	KLW009	0.59	Mine Workings/Water, Seeps, Springs and Leachate				
BLUEBIRD MINE & GUY CAVE AREA	CH1423	2.13	Mine Workings/Water, Seeps, Springs and Leachate				
BLUEBIRD MINE & GUY CAVE AREA	KLW062	2.13	Upland waste rock				
BLUEBIRD UPPER MINE	KLW124	0.37	Upland waste rock				
BUNKER CHANCE MINE	KLW065	0.71	Mine Workings/Water, Seeps, Springs and Leachate				
CALEDONIA MINE	CH1436	1.87	Upland waste rock				
CALEDONIA MINE	KLW051	1.87	Mine Workings/Water, Seeps, Springs and Leachate				
CALEDONIA/SIMPSON/"F"/"H" TO "O"	CH1419	2.33	Upland waste rock				
CALEDONIA/SIMPSON/"F"/"H" TO "O"	KLW111	2.33	Mine Workings/Water, Seeps, Springs and Leachate				
CHERRY SHAFT	CH1424	1.60	Upland waste rock				
CHERRY SHAFT	KLW063	1.60	Upland waste rock				
COMBINATION MINE	KLW108	0.25	Mine Workings/Water, Seeps, Springs and Leachate				
CON BIEDERMAN GROUP	KLW023	0.25	Mine Workings/Water, Seeps, Springs and Leachate				
CROWN POINT MINE	KLW022	0.35	Mine Workings/Water, Seeps, Springs and Leachate				
CURLEW MINE	CH1446	0.58	Upland waste rock				
CURLEW MINE	KLW016	0.58	Mine Workings/Water, Seeps, Springs and Leachate				
DEADWOOD GULCH IMPACTED RIPARIAN	KLW043	25.03	Floodplain sediments (above Cataldo No.& So. Fork)				
EAST CALEDONIA MINE	KLW066	0.25	Mine Workings/Water, Seeps, Springs and Leachate				

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
GOVERNMENT GULCH GROUP	CH1442	1.29	Upland waste rock				
GOVERNMENT GULCH GROUP	KLW024	1.29	Mine Workings/Water, Seeps, Springs and Leachate				
GOVERNMENT GULCH IMPACTED RIPARIAN	KLW030	18.21	Floodplain sediments (above Cataldo No.& So. Fork)	GW 5 SW 4	GWD: Cu-1, Hg-1		GWD: Cd-5, Zn-5
HIGH GRADE GROUP	KLE019	0.54	Mine Workings/Water, Seeps, Springs and Leachate				
I-90 CORRIDOR SMELTERVILLE FLATS	KLW006	111.31	Floodplain sediments (above Cataldo No.& So. Fork)	GW 30 SD 4 SW 2	GWD: Cd-1, Cu-1, Pb-9 SDT: As-4, Cu-2, Hg-1, Mn-3, Sb-2, Zn-2 SWD: Zn-2 SWT: Zn-2	GWD: Cd-14, Sb-1 SDT: Ag-2, Cd-4, Cu-2, Pb-2, Sb-2, Zn-2	GWD: Cd-14, Zn-29 SDT: Hg-2, Pb-2
INDEX MINE	KLW003	0.21	Mine Workings/Water, Seeps, Springs and Leachate				
INDEX MINE	KLW004	0.14	Mine Workings/Water, Seeps, Springs and Leachate				
JOHN GEORGE MILLSITE	KLW097	0.22	Upland Concentrates and Process Wastes				
KATHERINE TUNNEL ("98" TUNNEL)	CH1437	1.70	Upland waste rock				
KATHERINE TUNNEL ("98" TUNNEL)	KLW047	1.70	Mine Workings/Water, Seeps, Springs and Leachate				
KEATING MINE	KLW050	0.15	Mine Workings/Water, Seeps, Springs and Leachate				
KLONDIKE OR GUS MINE	KLW127	0.13	Upland waste rock				
LAST CHANCE MILLSITE	KLW107	0.19	Upland Concentrates and Process Wastes				
LAST CHANCE MINE/SONGSTAD TUNNEL	CH1425	3.43	Mine Workings/Water, Seeps, Springs and Leachate				
LAST CHANCE MINE/SONGSTAD TUNNEL	KLW060	3.43	Upland waste rock				
LEASE MILLSITE	KLW101	0.31	Upland Concentrates and Process Wastes				
LINE/SAN CARLOS TUNNELS	KLW119	0.23	Mine Workings/Water, Seeps, Springs and Leachate				
LINE/SAN CARLOS TUNNELS	KLW121	0.20	Mine Workings/Water, Seeps, Springs and Leachate				
LOMBARDY PROPERTY	CH1420	1.19	Upland waste rock				
LOMBARDY PROPERTY	KLE002	1.19	Mine Workings/Water, Seeps, Springs and Leachate				

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type		Metals > 1X	Metals > 10X	Metals > 100X
LOMBARDY PROPERTY & INDEX	KLE001	0.62	Mine Workings/Water, Seeps, Springs and Leachate					
LOWER JACKASS/DON MINES	KLW125	0.23	Upland waste rock					
MERRYFIELD TUNNEL	CH1426	0.13	Upland waste rock					
MERRYFIELD TUNNEL	KLW118	0.13	Mine Workings/Water, Seeps, Springs and Leachate					
MILO CK IMPACTED RIPARIAN	KLW068	3.53	Floodplain sediments (above Cataldo No.& So. Fork)					
MILO CK IMPACTED RIPARIAN: NO. 1	KLW070	1.87	Floodplain sediments					
MYERS/CHEYENNE DISC/HORNET/UNNAMED	KLW120	0.30	Upland waste rock					
NELLIE MINE	KLW052	0.29	Mine Workings/Water, Seeps, Springs and Leachate					
NEW ERA/BARNHART/UNNAMED	KLW130	0.94	Upland waste rock					
NORTH BUNKER HILL MINE	KLW064	0.65	Mine Workings/Water, Seeps, Springs and Leachate					
NORTH BUNKER HILL WEST MINE	KLW056	0.14	Mine Workings/Water, Seeps, Springs and Leachate					
OK GROUP	KLW021	0.24	Mine Workings/Water, Seeps, Springs and Leachate					
OK PROSPECT	KLE003	0.28	Mine Workings/Water, Seeps, Springs and Leachate					
OMAHA NO.1 & NO.2	KLW110	0.14	Mine Workings/Water, Seeps, Springs and Leachate					
ONTARIO	KLW045	0.26	Mine Workings/Water, Seeps, Springs and Leachate					
ONTARIO UPPER & MIDDLE TUNNELS	KLW131	0.59	Mine Workings/Water, Seeps, Springs and Leachate					
PAGE MILLSITE	KLW144	2.05	Upland Concentrates and Process Wastes					
PAGE MINE	KLW014	10.24	Mine Workings/Water, Seeps, Springs and Leachate					
PAGE MINE	KLW015	3.63	Upland waste rock					
PAGE MINE ROCK DUMPS	KLW013	3.98	Upland waste rock					
PAGE MINE: NO. 01	CH1447	10.24	Upland waste rock					
PAGE POND	KLW008	84.85	Floodplain Waste Rock (Above Cataldo No.& So.Fork)	GW	8		GWD: Cd-4	GWD: Cd-1, Pb-1, Zn-5
PAGE SWAMP EAST	KLW093	68.32	Floodplain sediments (above Cataldo No.& So. Fork)					

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
PAGE SWAMP WEST	KLW091	38.37	Floodplain sediments (above Cataldo No.& So. Fork)				
PHIL SHERIDAN MINE	CH1427	0.82	Upland waste rock				
PHIL SHERIDAN MINE	KLW095	0.82	Upland waste rock				
PINEHURST ROCKPIT ALONG I-90	KLW007	22.42	Floodplain Waste Rock (Above Cataldo No.& So.Fork)				
PITT DISCOVERY ROCK DUMP	KLW115	0.14	Upland waste rock				
QUAKER MINE	KLW034	0.24	Mine Workings/Water, Seeps, Springs and Leachate				
RANGER MINE	CH1444	1.17	Upland waste rock				
RANGER MINE	KLW019	1.17	Mine Workings/Water, Seeps, Springs and Leachate				
REED MINE	CH1428	0.62	Upland waste rock				
REED MINE	KLW069	0.62	Upland waste rock				
RUSSELL MINE	CH1429	0.55	Upland waste rock				
RUSSELL MINE	KLW096	0.55	Upland waste rock				
SANDOW MINE	KLW057	0.14	Mine Workings/Water, Seeps, Springs and Leachate				
SCORPION FRACTION	KLW109	0.14	Mine Workings/Water, Seeps, Springs and Leachate				
SENATOR STEWART MINE	CH1443	0.75	Upland waste rock				
SENATOR STEWART MINE	KLW037	0.75	Mine Workings/Water, Seeps, Springs and Leachate				
SF CDA RIVER BELOW PINEHURST NARROWS DAM	KLW001	1,780.53	Floodplain sediments	SB 16 SD 110 SL 17 SS 12 SW 277	SBT: Pb-2 SDT: Ag-75, As-33, Cd-29, Cu-80, Fe-63, Hg-17, Mn-48, Pb-7, Sb-20, Zn-27 SST: As-4, Cd-18, Cu-5, Fe-17, Mn-1, Pb-3, Zn-5 SWD: Cd-124, Mn-6, Pb-190, Sb-2, Zn-122 SWT: Cd-120, Cu-3, Fe-5, Mn-6, Pb-90, Sb-1, Zn-65	SBT: Pb-10 SDT: As-46, Cd-64, Hg-51, Mn-31, Pb-71, Sb-62, Zn-71 SST: Pb-24, Zn-15 SWD: Cd-116, Mn-1, Pb-18, Zn-151 SWT: Cd-1, Cu-1, Fe-1, Mn-1, Pb-12, Sb-1, Zn-124	SDT: Cd-2, Pb-8 SST: Pb-1 SWD: Cd-1
SF CDA RIVER IMPACTED FLOODPLAIN	KLW089	97.25	Floodplain sediments (above Cataldo No.& So. Fork)	GW 5 SW 84	SWD: Cd-3, Mn-2, Pb-50, Sb-1, Zn-2 SWT: Cd-73, Cu-1, Fe-1, Mn-1, Pb-67, Sb-1, Zn-3	GWD: Cd-2 SWD: Cd-79, Mn-1, Pb-27, Zn-81 SWT: Cd-8, Fe-1, Mn-1, Pb-7, Zn-79	GWD: Cd-3, Zn-5 SWT: Pb-1, Zn-2
SF CDA RIVER IMPACTED FLOODPLAIN	KLW092	168.07	Floodplain sediments (above Cataldo No.& So. Fork)	GW 15	GWD: Pb-3	GWD: Cd-1, Sb-1, Zn-8	GWD: Zn-7

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type		Metals > 1X	Metals > 10X	Metals > 100X
SF CDA RIVER TAILINGS DEPOSITION AREA	KLW090	7.12	Floodplain tailings (above Cataldo No.& So. Fork)	SW	5	SWD: Pb-2, Zn-1 SWT: Cd-4, Cu-1, Pb-2	SWD: Cd-2, Pb-1, Zn-3 SWT: Zn-4	
SHOSHONE COUNTY AIRPORT	KLW088	67.38	Floodplain artificial fill	GW	5	GWD: Pb-4	GWD: Cd-2, Pb-1	GWD: Cd-3, Zn-5
SHOSHONE MINE	KLE018	0.45	Mine Workings/Water, Seeps, Springs and Leachate					
SIERRA NEVADA MINE	CH1438	1.40	Upland waste rock					
SIERRA NEVADA MINE	KLW100	1.40	Mine Workings/Water, Seeps, Springs and Leachate					
SIERRA NEVADA/"A" TO "G"/FOSTER/ETC.	CH1439	3.66	Upland waste rock					
SIERRA NEVADA/"A" TO "G"/FOSTER/ETC.	KLW122	3.66	Mine Workings/Water, Seeps, Springs and Leachate					
SILVER BOWL MINE	KLW099	0.36	Upland waste rock					
SLAVONIAN GROUP	KLW067	0.36	Mine Workings/Water, Seeps, Springs and Leachate					
SMELTERVILLE FLATS ADJACENT ROCK PIT	KLW087	12.58	Floodplain Waste Rock (Above Cataldo No.& So.Fork)					
SMELTERVILLE FLATS IMPACTED FLOODPLAIN	KLW086	269.16	Floodplain sediments (above Cataldo No.& So. Fork)	GW SD SS SW	37 56 15 3	GWD: Pb-3 SDT: Ag-37, As-24, Cd-2, Cu-39, Fe-44, Hg-2, Mn-51, Pb-4, Sb-8, Zn-3 SST: As-10, Cd-15, Cu-15, Fe-14, Mn-15, Zn-2 SWT: Cd-1, Cu-3, Mn-3, Pb-2, Zn-1	GWD: Cd-12, Pb-3, Zn-11 SDT: Ag-12, As-29, Cd-45, Cu-12, Hg-37, Pb-21, Sb-43, Zn-48 SST: As-5, Pb-7, Zn-13 SWT: Zn-2	GWD: Cd-24, Zn-26 SDT: Cd-7, Hg-11, Pb-30, Sb-4, Zn-4 SST: Pb-8
SOLD AGAIN MINE	KLW114	0.13	Mine Workings/Water, Seeps, Springs and Leachate					
SPEAR MINE OR UNNAMED TUNNEL	CH1440	0.16	Upland waste rock					
SPEAR MINE OR UNNAMED TUNNEL	KLW129	0.16	Mine Workings/Water, Seeps, Springs and Leachate					
STEMWINDER MINE	CH1430	1.02	Upland waste rock					
STEMWINDER MINE	KLW113	1.02	Mine Workings/Water, Seeps, Springs and Leachate					
STEWART LOWER TUNNEL & RR LOADING AREA	KLW132	1.44	Upland waste rock					
STEWART NO.4 & NO.5	KLW134	0.47	Upland waste rock					
STEWART UPPER TUNNEL & SILIGO TUNNEL	KLW133	0.55	Upland waste rock					
SULLIVAN NO. 1, 2, & 3	CH1431	3.45	Upland waste rock					
SULLIVAN NO.1	KLW071	3.45	Upland waste rock					

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
SWEENEY MILL TAILINGS	KLW112	21.03	Floodplain tailings (above Cataldo No.& So. Fork)	GW 5 SW 7	GWD: Cu-1 SWD: Hg-1, Pb-2, Zn-1 SWT: Cu-2, Pb-5	SWD: Cd-2, Pb-3, Zn-2 SWT: Cd-4, Cu-2, Pb-1, Zn-2	GWD: Cd-5, Zn-5 SWD: Cd-4, Zn-4 SWT: Cd-1, Zn-5
SWEENEY MILLSITE	KLW104	2.61	Upland Concentrates and Process Wastes				
SWEENEY MINE	CH1432	4.35	Upland waste rock				
SWEENEY MINE	KLW058	4.35	Mine Workings/Water, Seeps, Springs and Leachate				
TYLER DISCOVERY TUNNEL DISTURBANCE	CH1433	0.49	Upland waste rock				
TYLER DISCOVERY TUNNEL DISTURBANCE	KLW117	0.49	Mine Workings/Water, Seeps, Springs and Leachate				
TYLER MINE	CH1434	2.02	Upland waste rock				
TYLER MINE	KLW059	2.02	Mine Workings/Water, Seeps, Springs and Leachate				
TYLER MINE ADJACENT GLORY HOLES	KLW094	0.82	Mine Workings/Water, Seeps, Springs and Leachate				
UNIDENTIFIED DISTURBANCE	KLW002	0.38					
UNIDENTIFIED DISTURBANCE	KLW010	0.19					
UNIDENTIFIED DISTURBANCE	KLW011	0.20					
UNIDENTIFIED DISTURBANCE	KLW017	1.40					
UNIDENTIFIED DISTURBANCE	KLW035	0.19					
UNIDENTIFIED DISTURBANCE	KLW038	0.39					
UNIDENTIFIED DISTURBANCE	KLW049	1.22					
UNIDENTIFIED DISTURBANCE	KLW054	0.29					
UNIDENTIFIED DISTURBANCE	KLW116	3.28					
UNIDENTIFIED DISTURBANCE	KLW126	0.26	Upland waste rock				
UNIDENTIFIED DISTURBANCE	KLW143	0.14					
UNNAMED ADIT	KLE050	0.36	Mine Workings/Water, Seeps, Springs and Leachate				
UNNAMED ADIT & SHAFT	KLE052	1.24	Mine Workings/Water, Seeps, Springs and Leachate				
UNNAMED ADIT & SHAFT: NORTH OF SHOSHONE MINE	CH1421	1.24	Upland waste rock				
UNNAMED PROSPECT	MAS070	0.40	Upland waste rock				
UNNAMED ROCK DUMP	KLW012	1.34					
UNNAMED ROCK DUMP	KLW102	0.37					
UNNAMED ROCK DUMP	KLW103	0.29					

Table 4.1-2
Potential Source Areas Within South Fork - segment MidGradSeg02

Source Area Name	Source ID	Area (Acres)	Source Description	No. Samples By Matrix Type	Metals > 1X	Metals > 10X	Metals > 100X
UNNAMED ROCK DUMP	KLW136	0.23					
UNNAMED ROCK DUMP	KLW142	0.12					
UNNAMED TUNNEL	KLW135	0.21	Mine Workings/Water, Seeps, Springs and Leachate				
VIOLA MINE	KLW098	0.47	Mine Workings/Water, Seeps, Springs and Leachate				
WATERWORKS TUNNEL	KLW123	0.18	Upland waste rock				
WESTWICK TUNNEL	KLW053	0.27	Mine Workings/Water, Seeps, Springs and Leachate				
WYOMING MINE	CH1445	0.55	Upland waste rock				
WYOMING MINE	KLW020	0.55	Mine Workings/Water, Seeps, Springs and Leachate				

Matrix Types

DR: Debris/Rubble
GW: Groundwater
RK: Rock/Cobbles/Gravel
SB: Subsurface Soil
SD: Sediment
SL: Soil
SS: Surface Soil
SW: Surface Water

Matrix Groupings

GWD: Groundwater - Dissolved Metals
GWT: Groundwater - Total Metals
SBT: Subsurface Soil
SDT: Sediment
SST: Surface Soil
SWD: Surface Water - Dissolved Metals
SWT: Surface Water - Total Metals

Analytes

Ag: Silver
As: Arsenic
Cd: Cadmium
Cu: Copper
Fe: Iron
Hg: Mercury
Mn: Manganese
Pb: Lead
Sb: Antimony
Zn: Zinc

Table 4.1.3-1
Adit and Seep Data Summary

BLM ID	Source Name	Average Discharge (cfs)	Maximum Discharge (cfs)	Average Total Zinc Concentration (µg/L)	Average Total Zinc Load (lbs/day)
Adits					
MUL085	Vienna International	0.356	0.356	32	0.061
KLE067	St. Joe No. 4	0.0055	0.007	455	0.013
OSB080	Harlow Tunnel	0.0022	0.0022	3	0.000036
OSB076	Unnamed adit (May Claim)	0.0011	0.0011	3	0.000018
OSB074	St. Joe No. 1	No data	No data	2,700	No discharge data
WAL020	Caladay	No data	No data	46	No discharge data
KLE034	Silver Dollar	No data	No data	No data	No data
KLE035	Silver Summit	No data	No data	No data	No data
KLE068	St. Joe No. 2	No data	No data	No data	No data
KLE069	St. Joe No. 3	No data	No data	No data	No data
OSB079	Capital Silver Main Adit	No data	No data	No data	No data
POL018	Merger	No data	No data	No data	No data
POL019	Coeur d'Alene	No data	No data	No data	No data
WAL002	Western Union Lower Adit	No data	No data	No data	No data
WAL015	Coeur (Rainbow)	No data	No data	No data	No data
Seeps					
OSB120	Osburn Flats seep	0.06	0.06	6,545	2.1
MUL085	Vienna International	No data	No data	3	No discharge data

Notes:
Data compiled from the Restorations Alternative Plan (Gearheart et al. 1999). See Appendix J.

cfs - cubic feet per second
µg/L - micrograms per liter
lbs/day - pounds per day

Table 4.2-1
Mass Loading South Fork

Location	Sample No.	MidGrad Segment	Sample Type	Sample Date	Flow (CFS)	Flow Delta	Total Lead			Dissolved Zinc		
							Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)	Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)
SF220	172048	*	RV	15-May-91	276.3	—	7	10.4	—	27	40.1	—
SF227	172049	*	RV	15-May-91	241.6	-34.7	7	9.1	-1	41	53.3	13
SF228	172050	*	RV	16-May-91	391.6	150.0	10	21.1	12	54	114	60
SF11	172051	1	RV	15-May-91	518.2	126.6	16	44.6	24	329	917	803
SF15	172054	1	RV	15-May-91	761.3	243.1	15	61.4	17	410	1680	762
SF239	172056	1	RV	15-May-91	626	-135.3	19	64.0	3	363	1220	-457
SF272	172058	1	RV	14-May-91	532.1	-93.9	26	74.4	10	357	1020	-201
SF249	172062	1	RV	14-May-91	513.3	-18.8	31	85.6	11	372	1030	5
SF253	172065	1	RV	14-May-91	624.5	111.2	21	70.6	-15	345	1160	132
SF259	172066	1	RV	14-May-91	920.2	295.7	34	168	98	453	2240	1080
SF268	172005	2	RV	15-May-91	1040	119.8	14	78.3	-90	451	2520	281
SF271	172000	2	RV	15-May-91	1700	660.0	28	256	178	508	4650	2120
SF205	172071	*	RV	04-Oct-91	6.47	0.0	1	<1	—	<1	<1	—
SF208	172072	*	RV	04-Oct-91	11.8	5.3	2	0.1	—	<1	<1	—
SF215	172073	*	RV	04-Oct-91	17.8	6.0	2	0.2	—	<1	<1	—
SF220	172075	*	RV	04-Oct-91	21.6	3.8	26	3.0	3	106	12.3	12
SF227	172076	*	RV	04-Oct-91	26.6	5.0	12	1.7	-1	77	11.0	-1
SF228	172077	*	RV	04-Oct-91	25.2	-1.4	11	1.5	—	10	1.4	-10
SF10	172078	1	RV	03-Oct-91	24.1	-1.1	6	0.8	-1	13	1.7	—
SF11	172080	1	RV	03-Oct-91	41.3	17.2	26	5.8	5	831	184.6	183
SF12	172081	1	RV	03-Oct-91	44.3	3.0	23	5.5	—	1020	243.1	58
SF15	172085	1	RV	03-Oct-91	46.2	1.9	20	5.0	-1	923	229.4	-14
SF16	172086	1	RV	03-Oct-91	53.5	7.3	19	5.5	—	1030	296.5	67
SF239	172088	1	RV	03-Oct-91	56.1	2.6	19	5.7	—	1100	332.0	36

Table 4.2-1 (Continued)
Mass Loading South Fork

Location	Sample No.	MidGrad Segment	Sample Type	Sample Date	Flow (CFS)	Flow Delta	Total Lead			Dissolved Zinc		
							Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)	Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)
SF241	172089	1	RV	02-Oct-91	56.2	0.1	21	6.3	1	656	198	-134
SF272	172091	1	RV	02-Oct-91	55	-1.2	22	6.5	—	656	194	-4
SF22	172092	1	RV	02-Oct-91	51.8	-3.2	19	5.3	-1	837	233	39
SF249	172096	1	RV	03-Oct-91	51.7	-0.1	17	4.7	-1	1510	420	187
SF253	172098	1	RV	02-Oct-91	50.5	-1.2	20	5.4	1	1510	410	-10
SF254	172099	1	RV	02-Oct-91	57.5	7.0	18	5.6	—	1540	476	66
SF31	172100	1	RV	02-Oct-91	61.2	3.7	18	5.0	—	1560	514	37
SF259	172101	1	RV	01-Oct-91	50.8	-10.4	20	5.5	—	1370	374	-139
SF263	172105	1	RV	01-Oct-91	72.8	22.0	14	5.5	—	1160	454	80
SF264	172106	1	RV	01-Oct-91	66	-6.8	42	14.9	9	1110	394	-60
SF268	172107	2	RV	01-Oct-91	67.3	1.3	14	5.1	-10	1520	550	156
SF271	172112	2	RV	01-Oct-91	94	26.7	20	10.1	5	2640	1340	785
SF33	172102	2	OF	01-Oct-91	4.02	-	2	<1	—	240	5.2	—
SF205	46540	*	RV	11-May-98	146	0.0	3.6	2.8	—	<1	0.0	—
SF208	46533	*	RV	09-May-98	114	-32.0	2.7	1.7	-1	6	3.7	—
SF215	46538	*	RV	10-May-98	428	314.0	3.4	7.8	6	7.6	17.5	14
SF220	46537	*	RV	10-May-98	432	4.0	5.8	13.5	5	42.2	98.1	81
SF227	46536	*	RV	10-May-98	435	3.0	6	14.0	1	64.3	150	52
SF228	46534	*	RV	10-May-98	859	424.0	5.1	23.6	10	74.3	343	193
SF273	46554	1	RV	13-May-98	776	-83.0	20	83.5	60	296	1240	897
SF233	46551	1	RV	13-May-98	719	-57.0	21.7	83.9	—	443	1710	470
SF235	46555	1	RV	13-May-98	918	199.0	18.2	89.9	6	368	1820	110
SF274	46552	1	RV	13-May-98	883	-35.0	19.3	91.7	2	369	1750	-70
SF239	46550	1	RV	13-May-98	865	-18.0	18.2	84.7	-7	412	1920	170

Table 4.2-1 (Continued)
Mass Loading South Fork

Location	Sample No.	MidGrad Segment	Sample Type	Sample Date	Flow (CFS)	Flow Delta	Total Lead			Dissolved Zinc		
							Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)	Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)
SF272	46549	1	RV	12-May-98	899	34.0	20.6	99.6	15	342	1650	-270
SF249	46547	1	RV	12-May-98	758	-141.0	21.4	87.3	-13	371	1510	-140
SF253	46545	1	RV	12-May-98	865	107.0	21.9	101.9	15	414	1930	420
SF254	46546	1	RV	12-May-98	1390	525.0	24.7	184.7	83	412	3080	1150
SF259	46544	1	RV	12-May-98	902	-488.0	17	82.5	-102	429	2080	-1000
SF264	46579	1	RV	16-May-98	776	-126.0	17.4	72.6	-10	472	1970	-110
SF268	46543	2	RV	11-May-98	1280	504.0	19.1	131.5	59	324	2230	260
SF270	46542	2	RV	11-May-98	1230	-50.0	7.7	51.0	-81	525	3470	1240
SF271	46541	2	RV	11-May-98	1530	300.0	58.4	480.7	430	502	4130	660
SF205	168411	*	RV	10-Nov-97	13.5	0.0	0.27	<1	—	6.78	0.5	—
SF208	168414	*	RV	10-Nov-97	21.5	8.0	2.3	0.3	—	10	1.2	1
SF215	168421	*	RV	09-Nov-97	34.4	12.9	32.8	6.1	6	11.4	2.1	1
SF220	168425	*	RV	08-Nov-97	42.2	7.8	8.4	1.9	-4	135	30.6	29
SF227	168432	*	RV	07-Nov-97	53.7	11.5	11	3.2	1	164	47.4	17
SF228	168433	*	RV	07-Nov-97	73.7	20.0	7.3	2.9	—	193	76.5	29
SF232	168437	2	RV	09-Nov-97	86.3	12.6	36.8	17.1	14	1310	608	532
SF233	168438	2	RV	09-Nov-97	85.5	-0.8	30.6	14.1	-3	1330	612	4
SF235	168440	2	RV	08-Nov-97	111	25.5	49.1	29.3	15	1020	609	-3
SF237	168411	1	RV	08-Nov-97	149	38.0	32.1	25.7	-4	1130	906	297
SF239	168414	1	RV	07-Nov-97	118	-31.0	43.3	27.5	2	1180	749	-157
SF241	168421	1	RV	07-Nov-97	119	1.0	40.8	26.1	-1	1110	711	-38
SF243	168448	2	RV	08-Nov-97	120	1.0	31.6	20.4	-6	1160	749	38
SF247	168451	2	RV	07-Nov-97	150	30.0	31.2	25.2	5	1260	1020	271
SF249	168453	2	RV	06-Nov-97	121	-29.0	30.8	20.1	-5	1190	775	-245

Table 4.2-1 (Continued)
Mass Loading South Fork

Location	Sample No.	MidGrad Segment	Sample Type	Sample Date	Flow (CFS)	Flow Delta	Total Lead			Dissolved Zinc		
							Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)	Conc. (µg/L)	Load (lbs/day)	Delta[a] (lbs/day)
SF253	168456	2	RV	06-Nov-97	131	10.0	26.8	18.9	-1	1230	867	92
SF254	168457	2	RV	06-Nov-97	146	15.0	27.1	21.3	2	1300	1020	153
SF258	168461	2	RV	06-Nov-97	144	-2.0	25.4	19.7	-2	1360	1054	34
SF259	168462	2	RV	06-Nov-97	145	1.0	22.3	17.4	-2	1380	1077	23
SF263	168466	2	RV	05-Nov-97	162	17.0	22	19.2	2	1080	941	-135
SF264	168467	2	RV	05-Nov-97	163	1.0	19.9	17.5	-2	1070	938	-3
SF268	168471	2	RV	05-Nov-97	177	14.0	19.3	18.4	1	1190	1130	192
SF270	168473	2	RV	04-Nov-97	183	6.0	30.6	30.1	12	2010	1980	850
SF271	168474	2	RV	04-Nov-97	248	65.0	28.2	37.6	7	1540	2050	70
SF228	202431	*	RV	24-Nov-98	49.709885	0.0	15	4.0	—	282	75.4	—
SF268	202431	2	RV	24-Nov-98	156	106.3	14	11.7	8	1580	1330	1250
SF270	202432	2	RV	24-Nov-98	139.4	-16.6	38	28.5	17	2490	1870	540
SF271	202433	2	RV	24-Nov-98	297	157.6	35	55.9	27	1840	2940	1070

[a]The delta value reported at a sample location is the difference between mass load at that location and the next upstream sample location, except for side streams and adits which are the maas load at that location.
—: Not calculated
* : Sample Location in CSM1, Segment UpperSFCDRSeg01
RV: River Sample
OF: Outfall Sample
CFS: Cubic feet per Second
µg/L: Micrograms per liter
lbs/day: pounds per day

5.0 FATE AND TRANSPORT

The fate and transport of metals in surface water, groundwater, and sediment in the South Fork Watershed are discussed in this section. The area evaluated in this section extends from the confluence of Canyon Creek with the South Fork to the confluence of the North Fork with the South Fork near Enaville (segments MidGradSeg01 and MidGradSeg02). A conceptual model of fate and transport, important fate and transport mechanisms, and a summary of the probabilistic model developed to evaluate fate and transport, were presented in the fate and transport section in the Canyon Creek report and are not repeated here. This section draws upon that general information.

Initial findings on metals concentrations and mass loading for each segment, as presented above in Section 4, Nature and Extent, are briefly summarized in Section 5.1. Results of the probabilistic modeling are presented in Section 5.2. Sediment transport is summarized in Section 5.3. A summary of fate and transport of metals in the South Fork Watershed is presented in Section 5.4.

5.1 INTRODUCTION

Significant quantities of mining-related cadmium, lead, zinc, and other metals are added to the South Fork from tributaries and source areas, including the Bunker Hill Superfund Site, in these segments. The lowest and highest dissolved cadmium and zinc and total and dissolved lead loadings measured during six sampling events (May 1991; October 1991; November 1997; May 1998; November 1998; and May 1999) are listed in Table 5.1-1. Potential sources of these metals in the watershed were identified for each segment in Section 4.1 and preliminary mass loading estimates were discussed in Section 4.2.

Segment 1 (MidGradSeg01) begins at the mouth of Canyon Creek and ends at Montgomery Creek. The BLM identified 160 source areas in this segment. Many of the primary source areas are on tributary gulches, but some, including the Hercules mill site, are located along the valley of the South Fork. Osburn Flats is the location of a former tailings impoundment on the South Fork.

Segment 2 (MidGradSeg02) begins at Montgomery Creek and ends at the confluence of the South Fork with the North Fork. The BLM identified 134 source areas in this segment. Most of this segment lies within the Bunker Hill Superfund Site, and incorporates the towns of Kellogg,

Smelterville, and Pinehurst. For the purposes of this report, the primary interest is the ongoing loading of metals that occurs mainly by exchanges of surface water and groundwater and discharges of contaminated groundwater from the Bunker Hill Superfund site.

The river is channelized adjacent to I-90 along most of its length. The large inputs of bed material and sediments have resulted in bank instability and erosion, substrate mobility, channel instability, filling of pools, widening of the stream channel, and other changes in channel structure.

Water quality conditions on the South Fork are compromised by the presence of metals, caused by mining-related activities, and nutrient pollution from untreated domestic waste. Measured metals concentrations in surface water between Canyon Creek and the confluence with the North Fork exceed ambient water quality criteria (AWQC).

5.2 MODEL RESULTS

Results from the probabilistic model are discussed for cadmium, lead, and zinc in this section. Modeling results for estimates of discharge are discussed in Section 5.2.1. Modeling results for estimates of chemical concentrations and mass loading of cadmium, lead, and zinc are discussed in Section 5.2.2. Data and calculations are included in Appendix C.

Data were evaluated for seven separate sampling locations. Only sampling locations with 10 or more individual data points for each parameter of interest were evaluated. In the South Fork, the seven sampling locations, in order from upstream to downstream are SF12, SF239, SF249, SF259, SF268, FS270, and SF271. The seven sampling locations are shown on Figure 5.2-1. The first, and most upgradient sampling location evaluated, SF12, is located immediately downstream of the confluence of Ninemile Creek with the South Fork. Sampling location SF239, is found on the South Fork at Silverton. The third sampling location, SF249, is located below Two Mile Creek near Osburn. Sampling location SF259 is found just before the confluence of Big Creek with the South Fork. The fifth sampling location, SF268, is situated at Elizabeth Park near Kellogg. Location, SF270, is found at Smelterville, and the last sampling location analyzed on the South Fork, SF271, is located near Pinehurst.

Sampling locations SF12, SF239, SF249, and SF259 are located within segment MidGradSeg01. The remaining sampling locations, SF268, SF270, and SF271, are in segment MidGradSeg02.

Sections of the river bracketed by sampling locations are designated reaches. For example, the portion of South Fork lying between sampling locations SF270 and SF271 is called a reach. Accordingly, there are six reaches encompassed by the seven sampling locations.

5.2.1 Estimated Discharge

An example of the lognormal distribution of discharge data at sampling location SF271 near Pinehurst is shown on Figure 5.2-2. Data from sampling location SF271 are used throughout this discussion for consistency of presentation and, additionally, because it is the furthest downgradient station evaluated and is downgradient from the Bunker Hill Complex. Moreover, more discharge data are available at this location (more than 3700 measurements) than at other locations. In Figure 5.2-2, the discharge (in cfs) is plotted on a log scale versus the normal standard variate. The normal standard variate is equivalent to the standard deviation for a normalized variable. When the log of a variable (e.g., discharge) is plotted versus the standard normal variate, a straight line will result if the data are lognormally distributed. The cumulative distribution function gives the probability that the observed discharge at any given time will not be exceeded by the estimated discharge at that cumulative probability. The cumulative distribution function is plotted versus the normal standard variate in Figure 5.2-3. To determine the probability of occurrence of a specific discharge, first select the discharge of interest on Figure 5.2-2, then find its corresponding normal standard variate. Using that value for the normal standard variate, look up its corresponding cumulative probability in Figure 5.2-3. For example, for a discharge of 100 cfs, the normal standard variate is approximately -1.3 (Figure 5.2-2). Looking on Figure 5.2-3, this value corresponds to a cumulative probability of approximately 0.1; therefore, approximately 10 percent of the time, discharges at this location will be 100 cfs or less.

As shown in Figure 5.2-2, there is a good fit of the lognormal regression line (solid line in Figure 5.2-2) to the data. This goodness of fit, as evidenced by a high coefficient of determination ($r^2 = 0.95$), supports the assumption that discharges are lognormally distributed. The dotted line represents the true (ideal) lognormal distribution having the same mean (536) and coefficient variation (1.03) as the actual data. The estimated expected value, or average discharge rate, for the South Fork at location SF271 is 533 cfs. Estimated expected values for discharge at all seven sampling locations are summarized in Table 5.2-1.

The probability distribution function (PDF) shown in Figure 5.2-2 is a predictive tool that can be used to estimate the expected discharge and provide a quantitative estimate of the probability that the observed discharge will not exceed a given value. Conversely, one can find the estimated

discharge rate having a specified probability of exceedance or non-exceedance by the observed discharge.

The expected or estimated gains or losses, EV, in discharge and the coefficients of variation (CV) for reaches between sampling locations on the South Fork are listed in Table 5.2-2. The estimated expected discharge value for sampling location SF12 is not included in Table 5.2-2 because available discharge data were determined to be biased low. Reported values ranged from approximately 37 to 310 cfs. Probabilistic modeling of these data resulted in an estimated expected value of approximately 99 cfs. This value appears low for a location just downgradient of where Ninemile Creek, Canyon Creek, and the Upper South Fork flow into the South Fork. Estimated expected discharge values for sampling locations just upgradient of the mouths of these tributaries of the South Fork are 19.8 cfs (NM305), 53.4 cfs (CC288), and 114.6 cfs (SF228), respectively (Table 5.2-1); therefore, if minimal surface water is lost to groundwater in this area, which a review of stream morphology suggests, the average expected discharge should be close to the sum of these values (188 cfs).

Reported values for discharge at sampling location SF12 were checked for accuracy by comparing the reported values (from Idaho Department of Environmental Quality) to measured values for a nearby sampling location within the South Fork, SF235. Discharge measurements were collected by URS, using established USGS methods (see Part 1, Section 5.3), for one high-flow and one low-flow event. Measured discharges for sampling location SF235 were 918 and 111 cfs, respectively. These results are much higher than the reported values for SF12. A reason for this apparent discrepancy may be that reported discharge values were calculated based on an existing rating curve. Using the rating curve, a discharge can be calculated from a measured stage. At some locations, such as SF12, it appears that the stage measurements were extrapolated beyond the upper bounds of the rating curve to estimate discharge during high-flow events. Because of this discrepancy, estimated expected discharge values and mass loading for sampling location SF12 are not included in this discussion. Concentration results are not affected by this discrepancy; therefore, concentration data for sampling location SF12 are included in this discussion.

The estimated discharge decreases in one reach (between sampling locations SF239 and SF249. Discharges increase in the remaining reaches.

As indicated, one of the reaches is a losing reach and the remaining five are gaining reaches. The losing reach is between SF239 and SF249 (approximately 10.6 cfs). The biggest gaining reach is bracketed by SF268 and SF270 (estimated gain of 104 cfs), followed by the reach between

SF270 and SF271 (estimated gain of approximately 84 cfs). Losses tend to occur where the gradient lessens and the valley broadens. Gains tend to occur where the valley narrows.

5.2.2 Estimated Cadmium, Lead, and Zinc Concentrations and Mass Loading

Dissolved cadmium and zinc, and total lead concentrations and loads were evaluated using the probabilistic model at the seven sampling locations (six reaches) that contained a minimum of 10 data points. Results of these analyses are included in Appendix C. Data from the seven sampling locations are discussed below.

The lognormal distribution of dissolved cadmium, total lead, and dissolved zinc concentrations and mass loading at sampling location SF271 are shown on Figures 5.2-4 through 5.2-9. The data follow a lognormal distribution as indicated by the high r-squared values (r^2) for the dissolved concentrations and total loads when plotted lognormally. For dissolved concentrations, the r-squared values for zinc and cadmium were 0.96 and 0.95, respectively. The r-squared value for the total lead concentration was 0.81. The corresponding values for dissolved zinc, total lead, and dissolved cadmium loads were 0.99, 0.92, and 0.97, respectively.

To assist in interpreting and placing in context the results, screening levels, expected values (EV), and total maximum daily loads (TMDLs) are shown on the figures where appropriate. Screening levels used were obtained from the Part 1 of this report. The TMDLs, where appropriate, are given at the 10th, 50th, and 90th percentiles. Often, it was necessary to multiply the TMDL by a scalar to fit it on the graph. The TMDLs used were those presented in the Technical Support Document of August 2000 (USEPA 2000). Strictly speaking, TMDLs for non-point sources are for dissolved loads. However, the TMDLs for dissolved lead loads were multiplied by a value [called a translator in the August Technical Support Document (USEPA 2000), the translator gives the ratio of the total to dissolved lead], to convert the dissolved TMDL load to a total load. The purpose of this exercise was to provide a reference value and point of discussion for total lead because of its importance. Often, most of the lead will be in the particulate, as opposed to dissolved, form. Because a high percentage of zinc and cadmium loads are in the dissolved form, zinc and cadmium were compared to their respective dissolved TMDL loading capacities. Estimated expected valued are summarized in Table 5.2-1 for all sampling locations evaluated.

The screening level for dissolved cadmium in surface waters is 0.38 µg/L. Cadmium concentrations at SF271 were above this screening level. A significant number of the measured cadmium concentrations exceeded 10 times the screening level. Only one dissolved cadmium

concentration exceeded 100 times the screening level (Figure 5.2-4). The estimated dissolved cadmium concentration of approximately 9.1 µg/L exceeded 10 times the screening level.

Measured total lead concentrations generally fell between 1 and 10 times the screening level (15 µg/L) although a few of the values (Figure 5.2-5) were below the screening level. The estimated expected lead concentration (approximately 56 µg/L) exceeds the screening level by more than three-fold.

All dissolved zinc concentrations plotted on Figure 5.2-6, except four, were at least 10 times the screening level (42 µg/L) for dissolved zinc in surface waters. The estimated dissolved zinc concentration (1,430 µg/L) exceeds the screening level by, approximately, 34-fold.

Essentially all measured and plotted dissolved cadmium loads at SF271 fell between the 90th percentile TMDL (2.80 pounds/day) and 10 times the 90th percentile TMDL (Figure 5.2-7). The estimated expected value (approximately 21 pounds/day) also lies within this same range.

The estimated total lead load at SF271 is approximately 370 pounds/day. The estimated expected value exceeds the 90th percentile TMDL value (4.7 pounds/day) at Pinehurst on the South Fork (Figure 5.2-8). The estimated expected value is more than 78 times the 90th percentile TMDL.

As shown on Figure 5.2-9, all plotted measured values of dissolved zinc loading at SF271 exceeded the 90th percentile TMDL (247 pounds/day) for the dissolved zinc load at this location on the South Fork (USEPA 2000). Many of the measured values exceeded 10 times the 90th percentile.

Figures similar to Figures 5.2-2 through 5.2-9 were developed for each of the seven sampling locations. The results of these and additional analyses are presented in Appendix C. Data in Appendix C were used to compute gains or loses in expected values and the coefficients of variation for dissolved and cadmium zinc, and total lead concentrations and loads in the six reaches of the South Fork. The resulting computations are presented in Tables 5.2-3 through 5.2-5. The calculations were performed in the same manner as described in the discharge section (Section 5.2.1).

The expected values of dissolved zinc concentrations and loads generally increase, with some exceptions, as one progresses downstream on the South Fork. Total lead concentrations and loads may increase or decrease depending on the specific reach evaluated. Analogous to zinc and lead, dissolved cadmium concentrations and loads may increase or decrease depending on the

reach. Changes in the estimated concentrations and loadings are further discussed in the reach by reach evaluation.

5.2.2.1 Segment MidGradSeg01. Segment MidGradSeg01 begins immediately downgradient of the mouth of Ninemile Creek and ends near Elizabeth Park. Sampling locations SF12, SF239, SF249, and SF259 are found in this reach. There are numerous potential source areas in this segment, but deposits of mine wastes in floodplains become increasingly important and, eventually, most important as one progresses downstream. This segment is also the location of some of the larger physical disturbances that have resulted from human use of the Coeur d'Alene valley. These human disturbances include the towns of Wallace and Kellogg, several smaller communities, railroads (now closed and presently being converted to trails), the Kellogg Airport, and I-90. Many of facilities used mining waste as fill material, and in several instances, the facilities were built over previously deposited mining wastes in the floodplain. To accommodate the infrastructure and mining wastes, the channel of the South Fork has been moved, channelized, armored, and otherwise altered, with only a few reaches still resembling a natural river.

This segment receives more than 900 pounds/day of zinc from upstream, mainly from Canyon and Ninemile Creeks, but also from the Upper South Fork. Estimated expected values for metals concentrations, mass loading, and discharge for sampling locations at the mouths of these three tributaries are included in Table 5.2-1 for reference. During high flows, substantial amounts of dissolved and particulate lead and cadmium are also transported in this segment. Exchange of surface water and groundwater occur. Typically, surface water discharges to groundwater as the valley widens into a broad depositional basin and groundwater recharges surface water as the valley narrows.

The estimated dissolved zinc concentrations between sampling locations SF228 (segment UpperSFCDRSeg01) and SF12 (segment MidGradSeg01) increases by approximately 1,200 µg/L. Sampling location SF12 is immediately downgradient of the confluences of Ninemile Creek and Canyon Creek with the South Fork. As shown in Table 5.2-1, concentrations of cadmium, lead, and zinc at the mouths of Ninemile Creek and Canyon Creek are much higher than observed at sampling location SF12. This is a result of the dilution of these inputs by surface water from the Upper South Fork Watershed that has much lower metal concentrations and a fairly high discharge (115 cfs) compared with those of Ninemile Creek (19.8 cfs) and Canyon Creek (53.4 cfs).

Based on the predictive probabilistic model, it is estimated that essentially all the zinc will be in the dissolved form at the downstream sampling location (SF12) within this reach. The estimated

dissolved zinc concentration (approximately 1,420 µg/L) at SF12 is more than an order of magnitude higher than the screening level for dissolved zinc in surface water (42 µg/L). The largest estimated increases in dissolved zinc concentrations occur within this reach (between SF228 and SF12).

Estimated total lead concentrations (approximately 36 µg/L) at the downgradient sampling location in this reach (SF12) exceed the screening level for total lead concentrations (15 µg/L) in surface waters.

Estimated values of dissolved (8.78 µg/L) cadmium concentrations exceeded the screening level for cadmium in surface waters at SF12.

The reach between SF12 and SF239 extends from below Ninemile Creek to Silverton. Dissolved cadmium concentrations decrease in this reach, while total lead concentrations increased. Increases in total lead concentrations may be explained by the increased discharge in this reach (based on measured discharge values for sampling location SF235, located just downgradient from SF12) which suspends additional sediments to which lead is adsorbed.

The next reach extends from Silverton (SF239) to Osburn near the mouth of Two Mile Creek (SF249). Estimated values of total lead concentrations and loads decreased in this reach. Estimated values of loads for dissolved zinc and cadmium also decreased. The decrease in the estimated discharge (approximately 10.6 cfs) in this reach helps account for the decreased loading. Dissolved concentrations of zinc and cadmium increased indicating the presence of source areas. Discharge and loads decrease as surface water is lost to groundwater in the broad depositional valley.

Estimated expected values for dissolved zinc and cadmium concentrations and total lead concentrations still exceed screening levels (Table 5.2-1) at the downstream (SF249) sampling location. Although dissolved and total loads decreased for each metal, TMDL loading capacities established at Pinehurst for zinc, lead, and cadmium continue to be exceeded.

The river reach between Osburn and the mouth of Big Creek is bracketed by sampling locations SF249 and SF259. Zinc and cadmium behaved similarly in this reach in that estimated dissolved concentrations and loads for zinc and cadmium increased. Estimated total concentrations for lead decreased while the corresponding loads increased. Increased discharges help contribute to increased dissolved and total loads for each metal. Screening level criteria for dissolved and total concentrations continue to be exceeded in this reach.

The next reach extends from near the mouth of Big Creek at Osburn (SF259) to just past the mouth of Montgomery Creek (SF268). Estimations of dissolved concentrations of zinc and cadmium decreased while loads increased for each metal. Decreased concentrations and increased loads are consistent with the estimated increased discharge (approximately 65.4 cfs). Total lead concentrations increased. A possible explanation for increased total lead concentrations is, again, the affinity of lead for solid surfaces. Increased discharges result in concomitant increases in suspended sediments with adsorbed lead.

Based on evaluation of SF228 and SF268, this segment contributes estimated loads of approximately 1,200 pounds/day of dissolved zinc, 120 pounds/day of total lead, and 8.4 pounds/ day of dissolved cadmium to the South Fork. Ninemile and Canyon Creeks contribute the largest share of the loading in this segment, but floodplain tailings become increasingly important as one moves downstream.

5.2.2.2 Segment MidGradSeg02. Substantial portions of this segment, including upland hillsides and residential and public areas, have been affected by past metals emissions from the lead smelter at Smelterville. Remedial actions are in progress within the 21-square-mile Bunker Hill Superfund Site from Kellogg to Smelterville. A phosphate fertilizer plant operated at Bunker Hill, and phosphate is thought to be dispersed in the vicinity of the Bunker Hill site. Phosphate could affect the solubility of lead through formation of relatively insoluble lead phosphates.

In the reach between the mouth of Montgomery Creek (SF268) and Smelterville (SF270) (which contains the central Impoundment Area and the impacted flood plain), dissolved concentrations and loads increased for each metal evaluated (zinc and cadmium). The estimated dissolved zinc concentration increased by 698 µg/L. The total lead concentration increased while the total lead load decreased. The estimated value of the discharge increased by approximately 104 cfs in this reach.

The last reach on the South Fork evaluated encompasses the river from Smelterville (SF270) to sampling location SF271 near Pinehurst. Estimated dissolved zinc and cadmium loads increased. Estimated values of dissolved zinc and cadmium concentrations decreased. Total lead loads increased in this reach and total lead concentrations increased.

Estimated dissolved zinc (1,430 µg/L) and cadmium (9.08 µg/L) concentrations exceed screening levels of 42 µg/L and 0.38 µg/L, respectively. Total lead concentrations (approximately 56 µg/L) surpass the screening level for this element. Estimated dissolved zinc (approximately 2,920 pounds/day) and cadmium (approximately 21 pounds/day) loads exceed the 90th percentile

TMDLs established at Pinehurst as does the estimated total lead load (approximately 369 pounds/day).

Based on probabilistic modeling of the data, it is estimated that approximately 96 percent of the zinc and 88 percent of the cadmium arriving at Pinehurst are in the dissolved phase, as opposed to only 8 percent of the lead. In other words, the vast majority (92 percent) of the lead in surface waters at Pinehurst is expected to reside on particulates.

Based on evaluation of SF268 ad SF271, the estimated loads contributed by segment MidGradSeg02 are thought to be, approximately, 1,600 pounds/day of dissolved zinc, 240 pounds/day of total lead, and 12 pounds/day of cadmium. The largest potential source in this segment is the Bunker Hill Superfund Site. Sampling location SF268 is on the eastern edge of the site and SF271 is located near the western boundary of the Superfund Site. Accordingly, the Bunker Hill Superfund Site contributes an estimated 50 to 60 percent of the zinc and cadmium and 20 to 25 percent of the lead arriving at Pinehurst.

5.2.2.3 Concentrations versus Discharge. The following discussion is based on evaluation of data (Appendix C) at Pinehurst (SF271). There is a decrease in dissolved zinc concentrations with increased discharge, which is significant at $\alpha < 0.0001$ (α is the probability the correlation is due to chance). Total lead concentrations increased with increasing discharge ($\alpha < 0.0001$). Similarly to zinc, estimated values of dissolved ($\alpha < 0.0001$) cadmium concentrations also exhibited decreased concentrations with increased discharge at Pinehurst.

The regressions permit estimation of dissolved zinc, lead, and cadmium concentrations at various discharge rates. Similar regressions were developed at the other sampling locations. At all seven sampling locations, there was a decrease in dissolved zinc and cadmium concentrations with increasing discharge rates (Appendix C). Total lead concentrations increased with increasing discharge at every location except SF220, below Mullan.

Ion speciation solubility calculations performed with the MINTEQA2 geochemical computer code indicated there were no solid phases controlling zinc concentrations in surface waters in the Coeur d'Alene River basin. Decreasing zinc and cadmium concentrations with increased discharge rates support this hypothesis by indicating that no solid has achieved equilibrium with these surface waters. Otherwise, the concentrations would remain relatively constant at different discharge rates. As indicated in the solubility and adsorption modeling, adsorption is the most likely control on zinc and cadmium concentrations. Accordingly, mechanistic modeling supports conclusions inferred from the regression analyses.

5.3 SEDIMENT FATE AND TRANSPORT

Sediment transport processes were discussed in detail in Section 3. Brief summaries of sediment transport processes active in the watershed are presented in this section, followed by descriptions of sediment sources and transport processes observed in each segment.

5.3.1 Sediment Transport Processes

Sediment derived in the South Fork is transported through the system and into the main stem of Coeur d'Alene River. Sediment sources in the South Fork are mine waste and tailings, rock debris situated adjacent to channels, mobilization of channel bed sediment, bank erosion, sediment derived from road drainage, and sediment generated and transported by tributary channels including Canyon, Ninemile, and Placer Creeks and the Upper South Fork. Based on USGS sediment transport and stream discharge data, approximately 7,200 tons of sediment were transported past the USGS gage station at Silverton and 22,000 past the gage at Pinehurst.

Suspended sediment and bedload samples were not analyzed for total metals; therefore mass loading was estimated from total and dissolved surface water data as described in Section 5.2.

5.3.2 Segment Descriptions

5.3.2.1 Segment MidGradSeg01

Segment MidGradSeg01 has approximately 63,600 linear feet (12.0 miles) of mapped channel. The channel slope is relatively constant, ranging from 0.5 to 2 percent with a slightly higher slope in the upper reaches. Likely sediment sources in this segment include minor bank erosion, remobilization of channel bed material, lateral migration, and loading from tributary watersheds.

With a drainage area of approximately 108 square miles, the total suspended sediment yield for the South Fork at Silverton for water year 1999 was approximately 60 tons per year per square mile. Of that, approximately 30 tons was sand and 30 tons was fines. A total of approximately 6,440 tons of suspended sediment was transported past the gage at Silverton in water year 1999. Annual bedload sediment yield was approximately 7 tons per year per square mile for the South Fork at Silverton in water year 1999 for a total of about 760 tons.

Summing the total suspended load and bedload sediment gives the total sediment yield for the South Fork at Silverton for water year 1999, approximately 67 tons per square mile, or a total of 7,200 tons. This value is in the range of values expected for this area and land use. Water year

1999 appears to be typical from a water and snow budget perspective as discussed in Section 2.3; however, sediment yields can vary significantly from year to year based on hydrologic conditions, sediment inputs, changing land use, and other conditions. As presented in Section 3.0, approximately 45 percent of the total annual sediment discharge at Silverton was fines, 45 percent was sand, and 10 percent was bedload.

5.3.2.2 Segment MidGradSeg02

With a drainage area of approximately 299 square miles, the total suspended sediment yield for the South Fork at Pinehurst for water year 1999 was approximately 62 tons per year per square mile. Of that, approximately 26 tons was sand and 36 tons was fines. A total of approximately 19,000 tons of suspended sediment was transported past the gage at Pinehurst in water year 1999.

Annual bedload sediment yield was approximately 11 tons per year per square mile for the South Fork at Pinehurst in water year 1999 for a total of about 3,400 tons.

Summing the total suspended load and bedload sediment gives the total sediment yield for the South Fork at Pinehurst for water year 1999, approximately 73 tons per square mile, or a total of 22,000 tons. This value is in the range of values expected for this area and land use.

Likely sediment sources in this segment are remobilization of channel bed material, lateral migration, and bank erosion.

As indicated by the USGS data, the majority of sediment transport occurs during high flow events. Much larger discharge events are likely in the South Fork than were observed during water year 1999. During these larger events, much more sediment load should be expected.

5.3.3 Summary of Sediment Transport

Based on the information discussed above, approximately 22,000 tons, or 73 tons per square mile, of sediment was transported past the Pinehurst stream gage in water year 1999. Although this gage is not at the absolute downstream end of MidGradSeg02, it is likely that similar magnitudes of sediment are transported to the channels downstream of MidGradSeg02. Based on interpretation of aerial photographs from 1984, 1991, and 1998, the majority of sediment supplied to the South appears to be from remobilization of floodplain sediment that has entered the South Fork from tributary watersheds. Much of the floodplain material has been impacted by mine waste transported in the stream system.

Suspended sediment and bedload samples were not analyzed for total metals; therefore mass loading was estimated from total and dissolved surface water data as described in Section 5.2. Floodplain soil and sediment samples, representative of suspended sediment deposited during low-flow events, were analyzed for total metals. Metals concentrations in floodplain soil and sediment samples exceeded screening levels in both segments. Metals in depositional floodplain sediments will be remobilized into the water column, moved downstream, and eventually enter the main stem of the Coeur d'Alene River during high-flow discharge events as both suspended sediment and dissolved metals in surface water.

5.4 SUMMARY OF FATE AND TRANSPORT

The probabilistic model was used to quantify and summarize the plethora of available data and to estimate pre-remediation metals concentrations in surface water and mass loading to the South Fork. Sediment transport was evaluated using USGS suspended and bedload sediment discharge data and measured floodplain soil and sediment data. Results are summarized in this section.

Surface water discharge, metals concentrations (total and dissolved), and mass loading data were analyzed using lognormal probability density functions (PDFs) at seven separate sampling locations in the South Fork. The data were also standardized location by location and PDFs were developed from the aggregated data for segments MidGradSeg01 and MidGradSeg02 combined. Only results for cadmium, lead, and zinc were analyzed. Regressions were developed for total and dissolved concentrations versus discharge to quantify and identify trends in concentrations and mass loading with changing discharge rates. The percentages of dissolved and particulate forms of metals were computed from the estimated expected values predicted by the model.

Results of the probabilistic modeling indicate:

- Estimated expected cadmium concentrations remain near, slightly above or below, the screening levels. Total lead and dissolved zinc concentrations exceed the screening levels at all sampling locations.

- Estimated values of dissolved zinc and cadmium and total lead load exceed TMDLs established for Pinehurst at all sampling locations.

- In general, concentrations tend to decrease and loads increase when significant increases in discharge occur.

- Potential major source areas identified include:

  - Upper South Fork
  - Canyon Creek
  - Ninemile Creek
  - SF CDAR SVNRT Rehab Sediments
  - SF CDAR Impacted Riparian
  - SF CDAR Impacted Floodplain
  - Osburn North Tailings Area
  - SF CDAR Railroad Yards and Impacted Floodplain

The identification of major source areas was primarily based on the estimated contributions of sites to dissolved zinc loading in surface water of the Coeur d'Alene River basin. The identification process and backup documentation are presented in Draft Technical Memorandum No. 1: Candidate Alternatives and Typical Conceptual Designs, Coeur d'Alene Basin Feasibility Study (URSG and CH2M HILL 2000).

To illustrate the observed trends of estimated expected values throughout the watershed, estimated expected values for cadmium, lead, and zinc concentrations and mass loading are shown in Figures 5.4-1 through 5.4-6. To illustrate the relationship between discharge, concentration, and mass loading, estimated expected values for these variables at each sampling location are plotted together for cadmium, lead, and zinc in Figures 5.4-7 through 5.4-9, respectively.

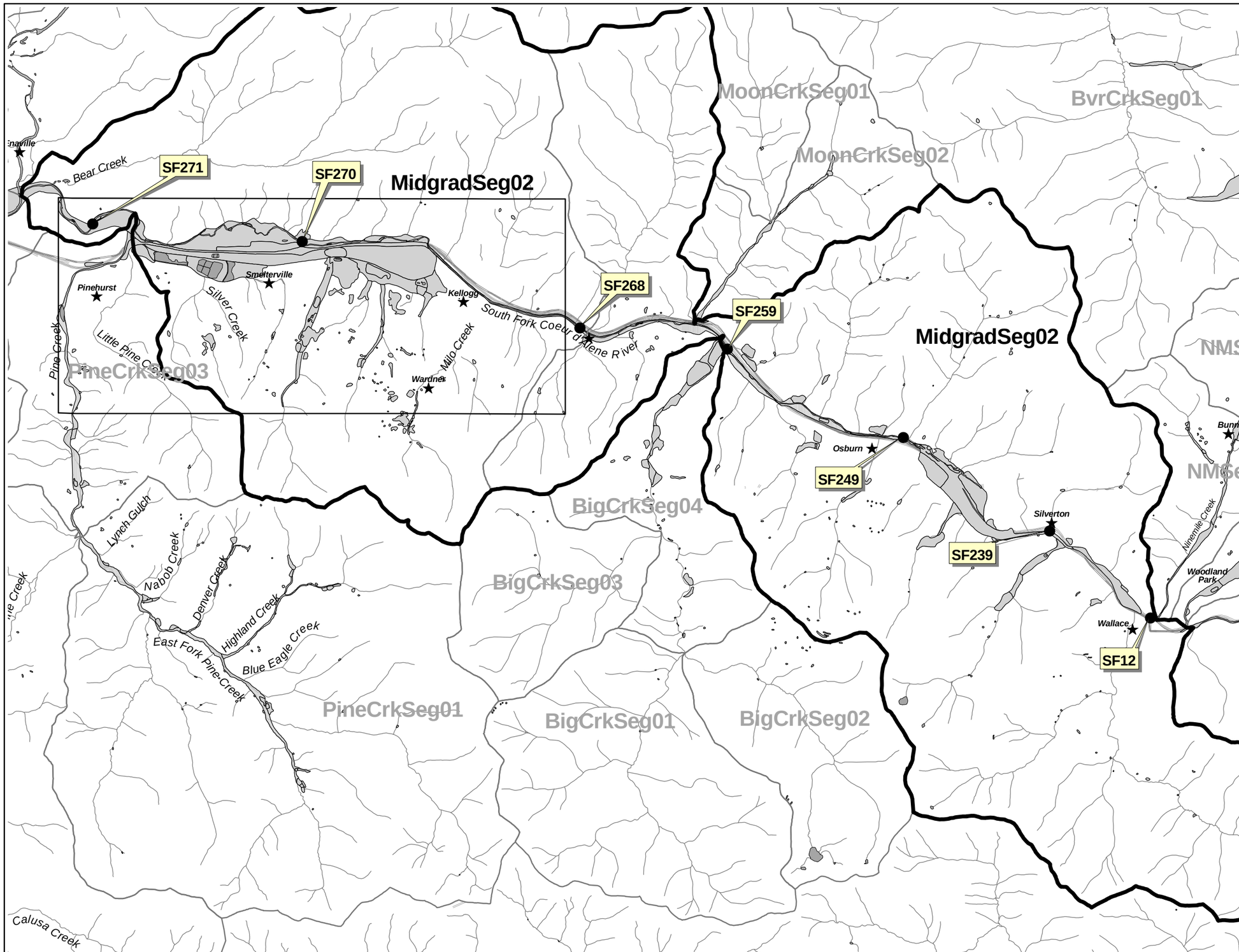
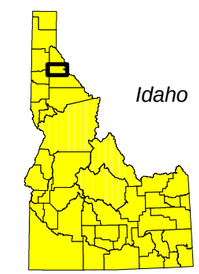


Figure 5.2-1
South Fork Coeur d'Alene River Watershed
Sampling Locations Evaluated in Probabilistic Modeling

LEGEND

- Sampling Location
- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

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027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05a
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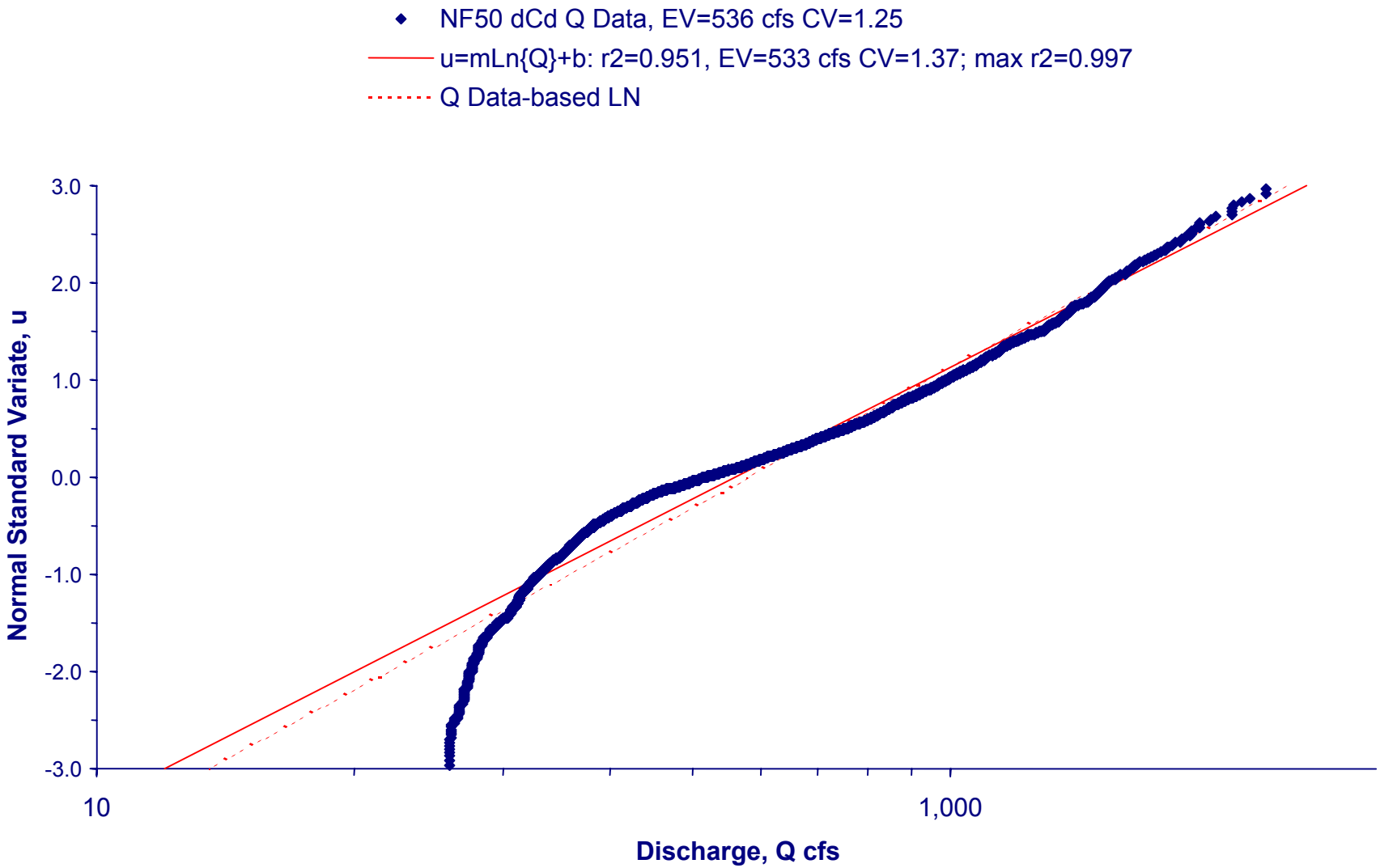
V:Locate
E:Locate
L: Final RI Locate
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

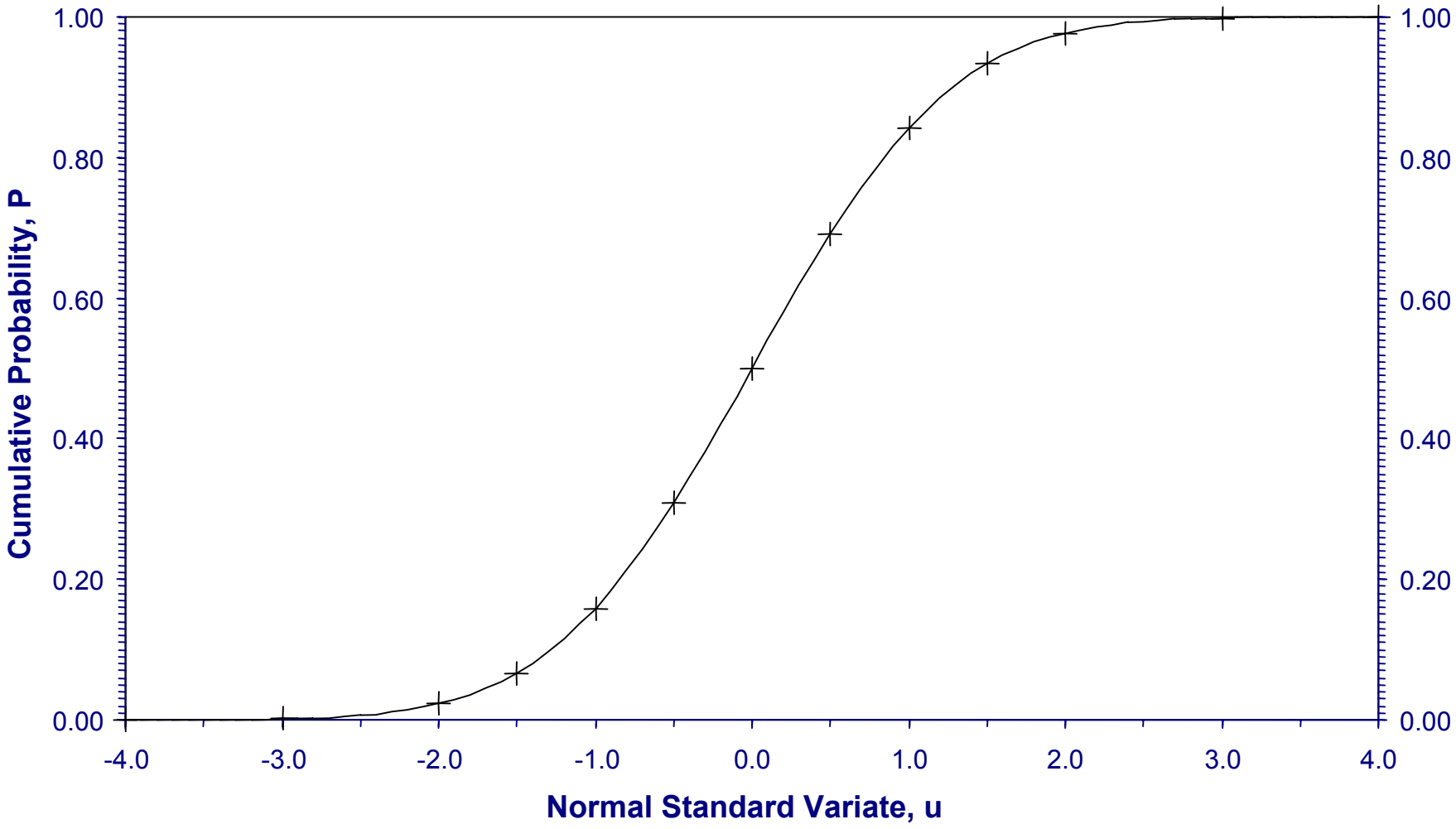
Date of Plot: July 12, 2001

Probabilistic Modeling Results of Discharge at Pinehurst (SF271)



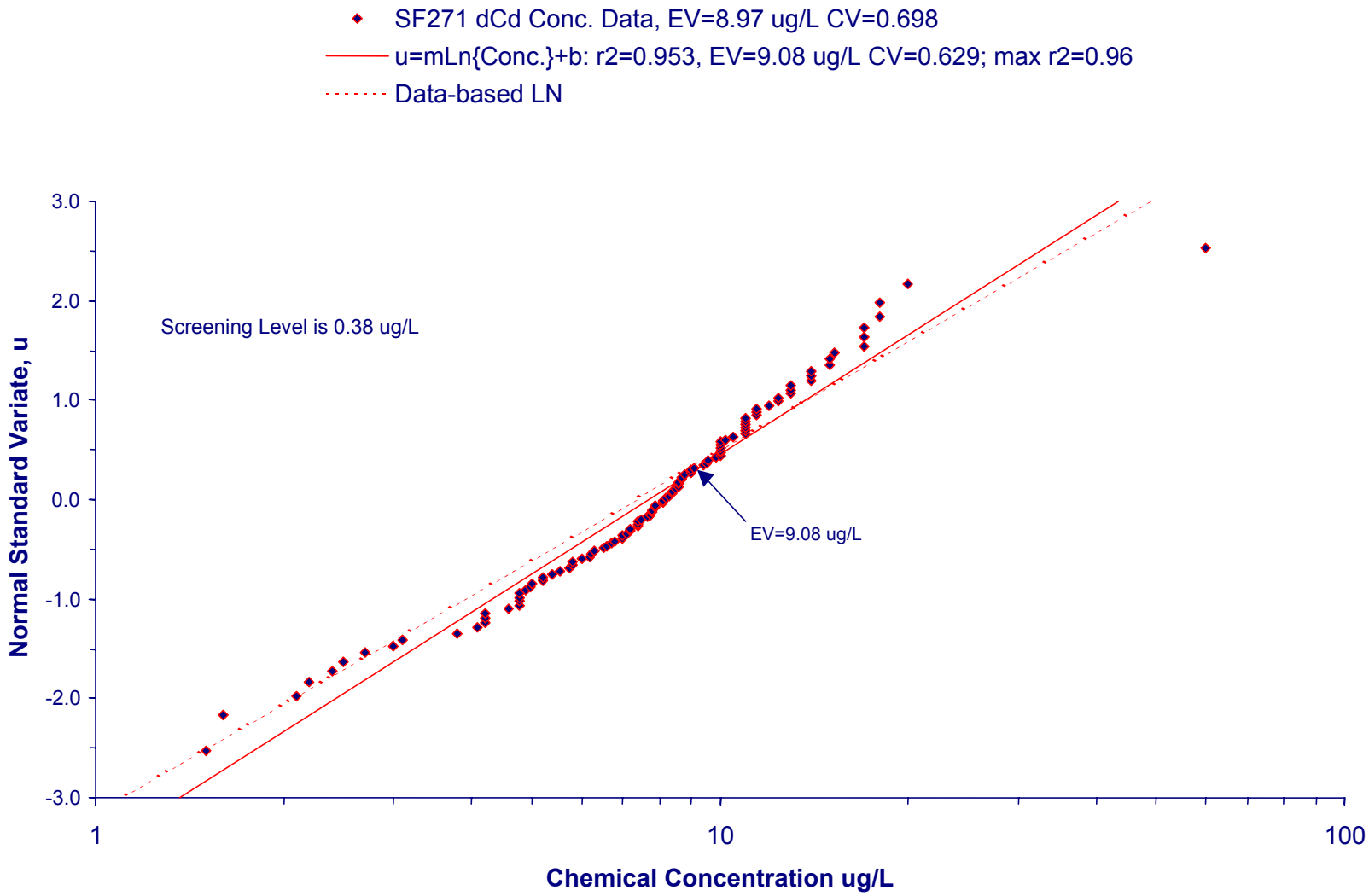
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-2**

Cumulative Probability Values Corresponding to Normal Standard Variate Values



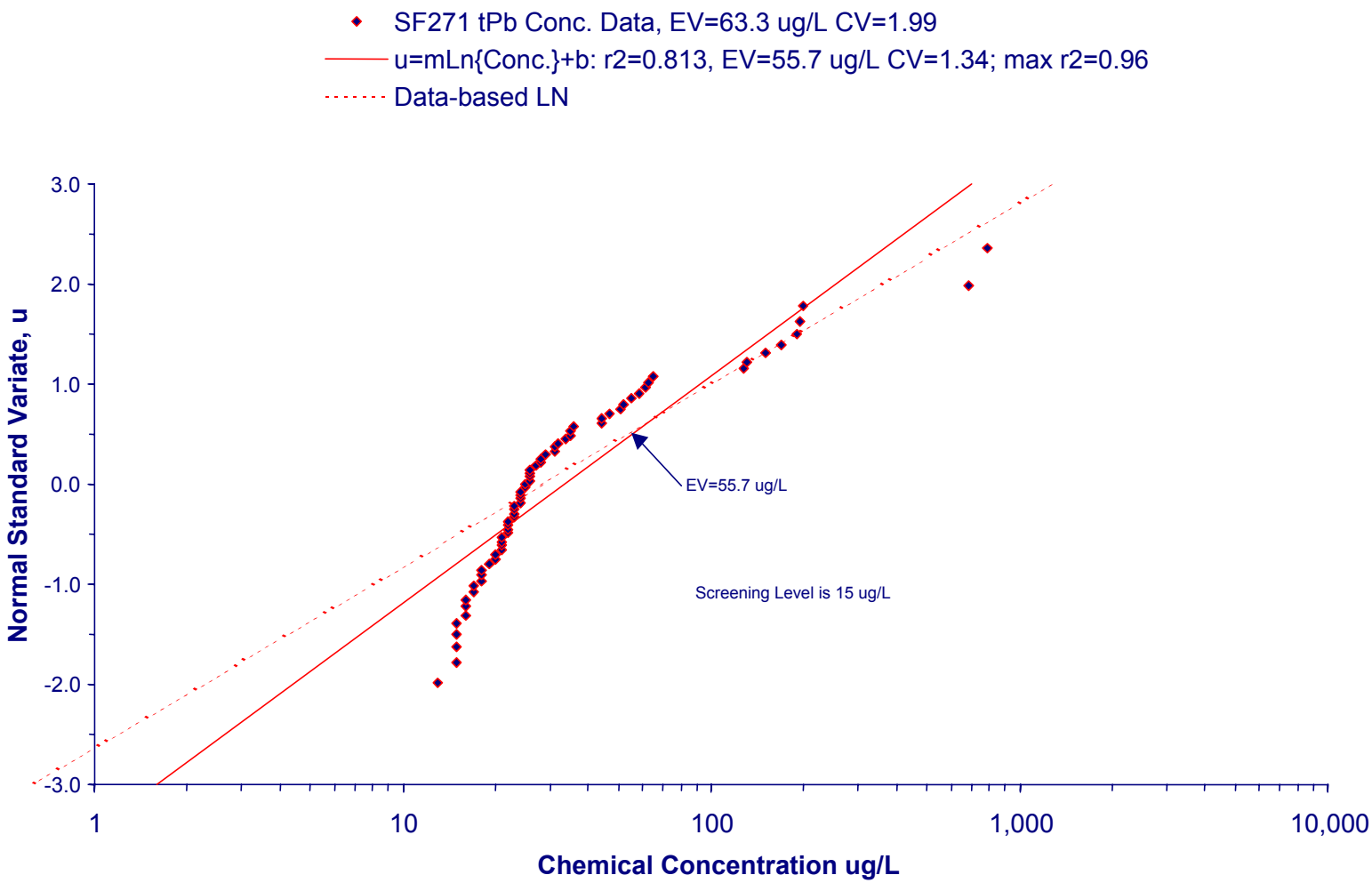
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-3**

Probabilistic Modeling Results for Dissolved Cadmium Concentrations at SF271



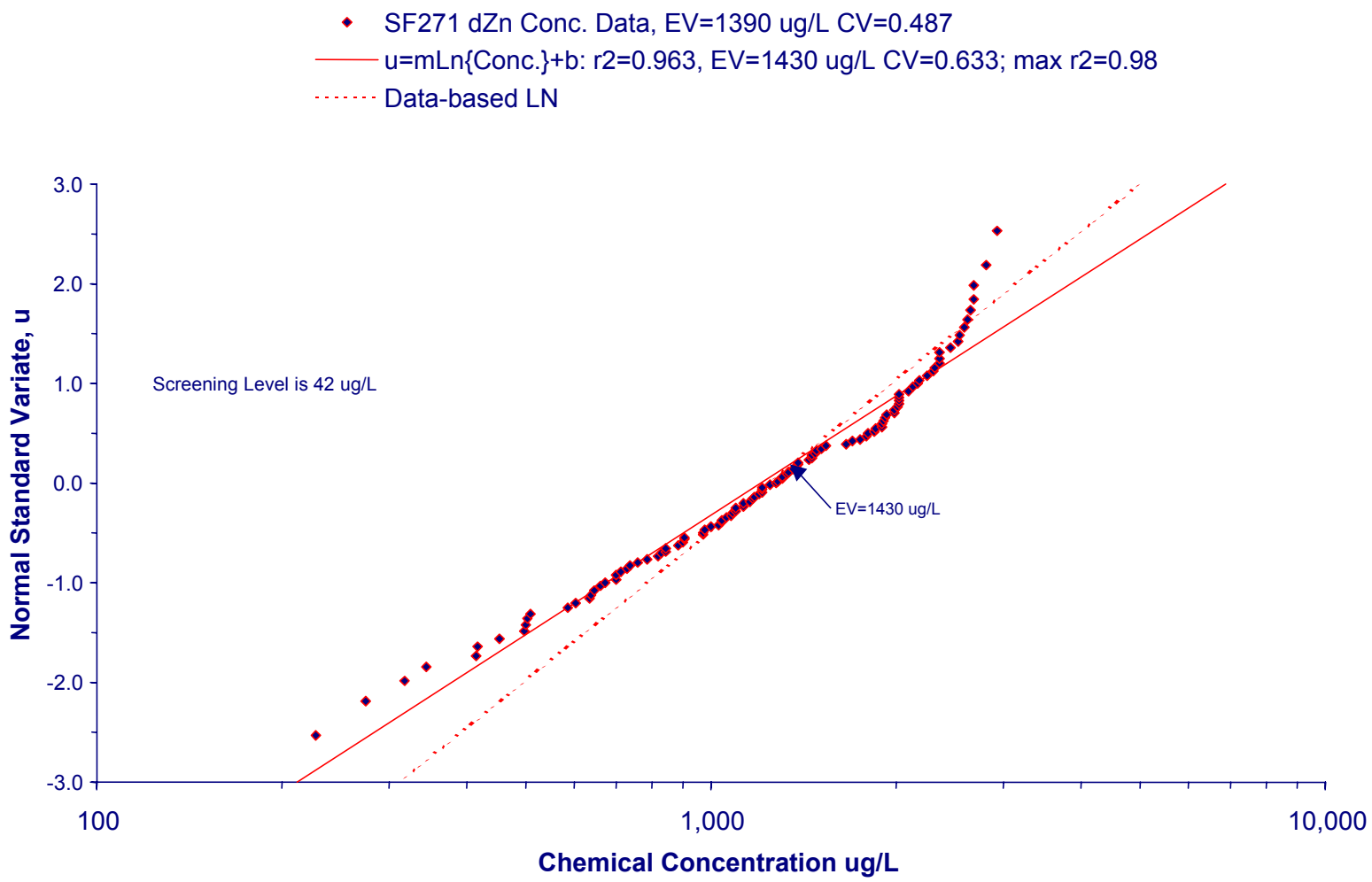
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-4**

Probabilistic Modeling Results for Total Lead Concentrations at SF271



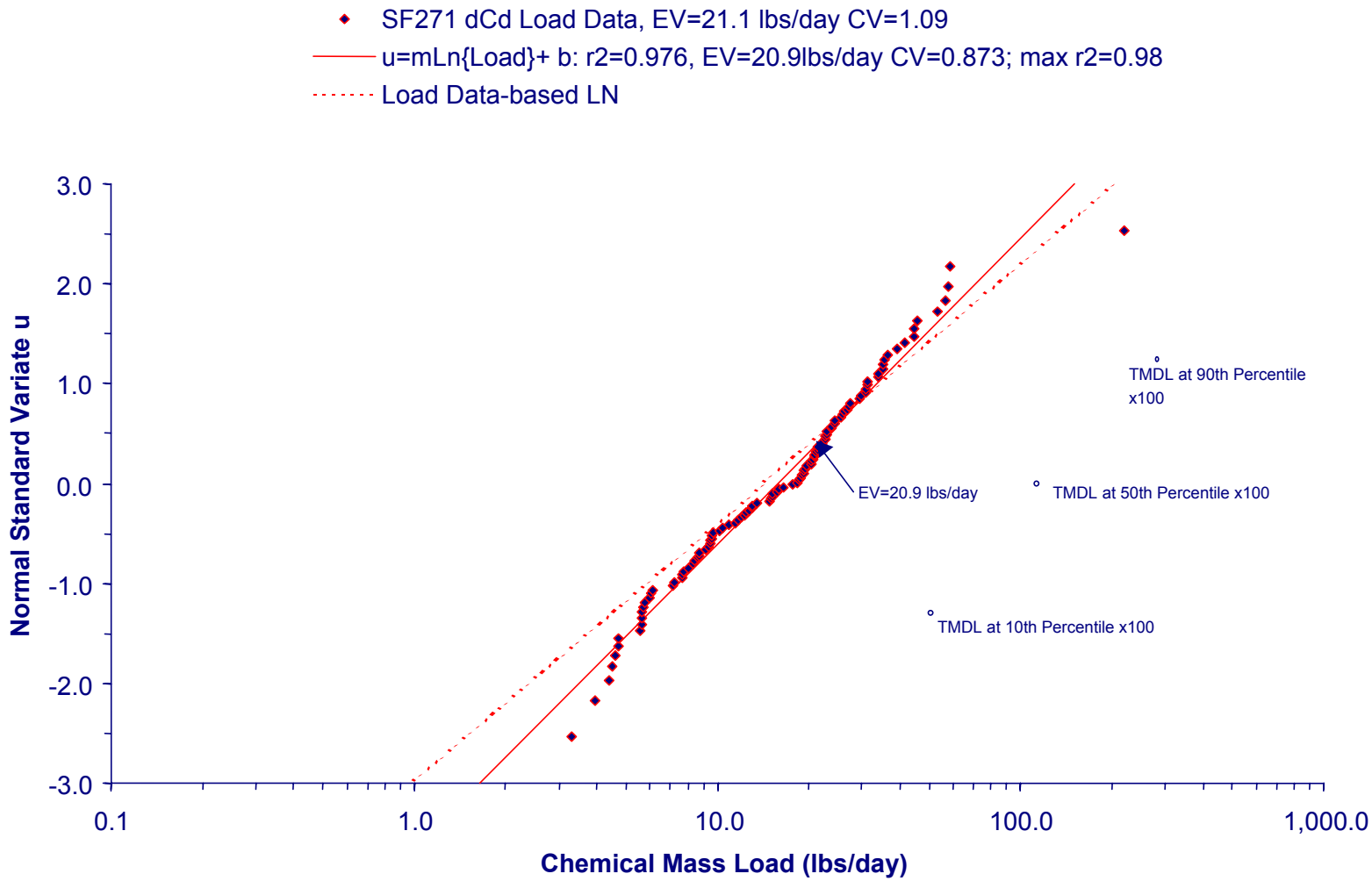
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-5**

Probabilistic Modeling Results for Dissolved Zinc Concentrations at SF271



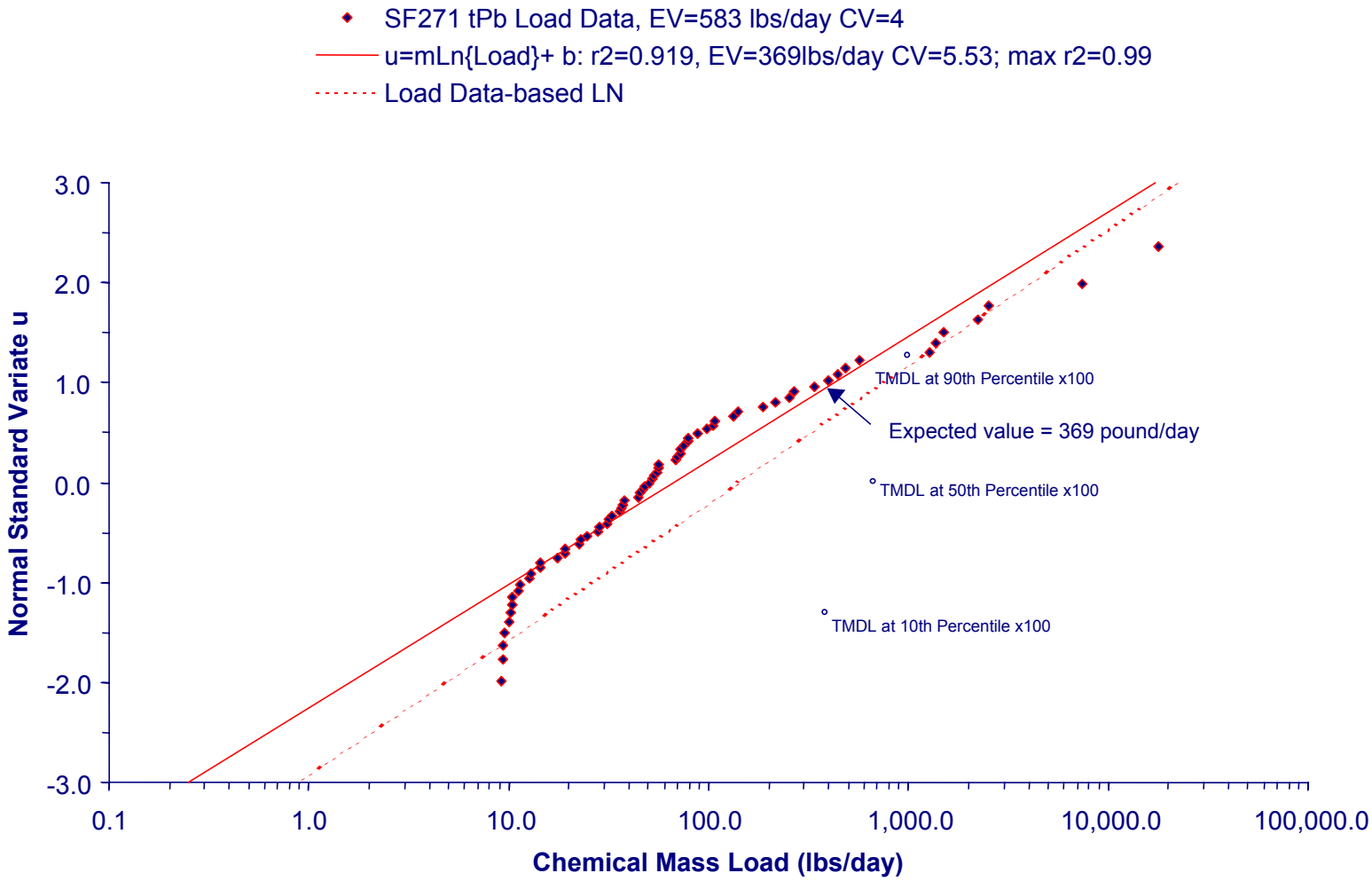
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-6**

Probabilistic Modeling Results for Dissolved Cadmium Mass Loading at SF271



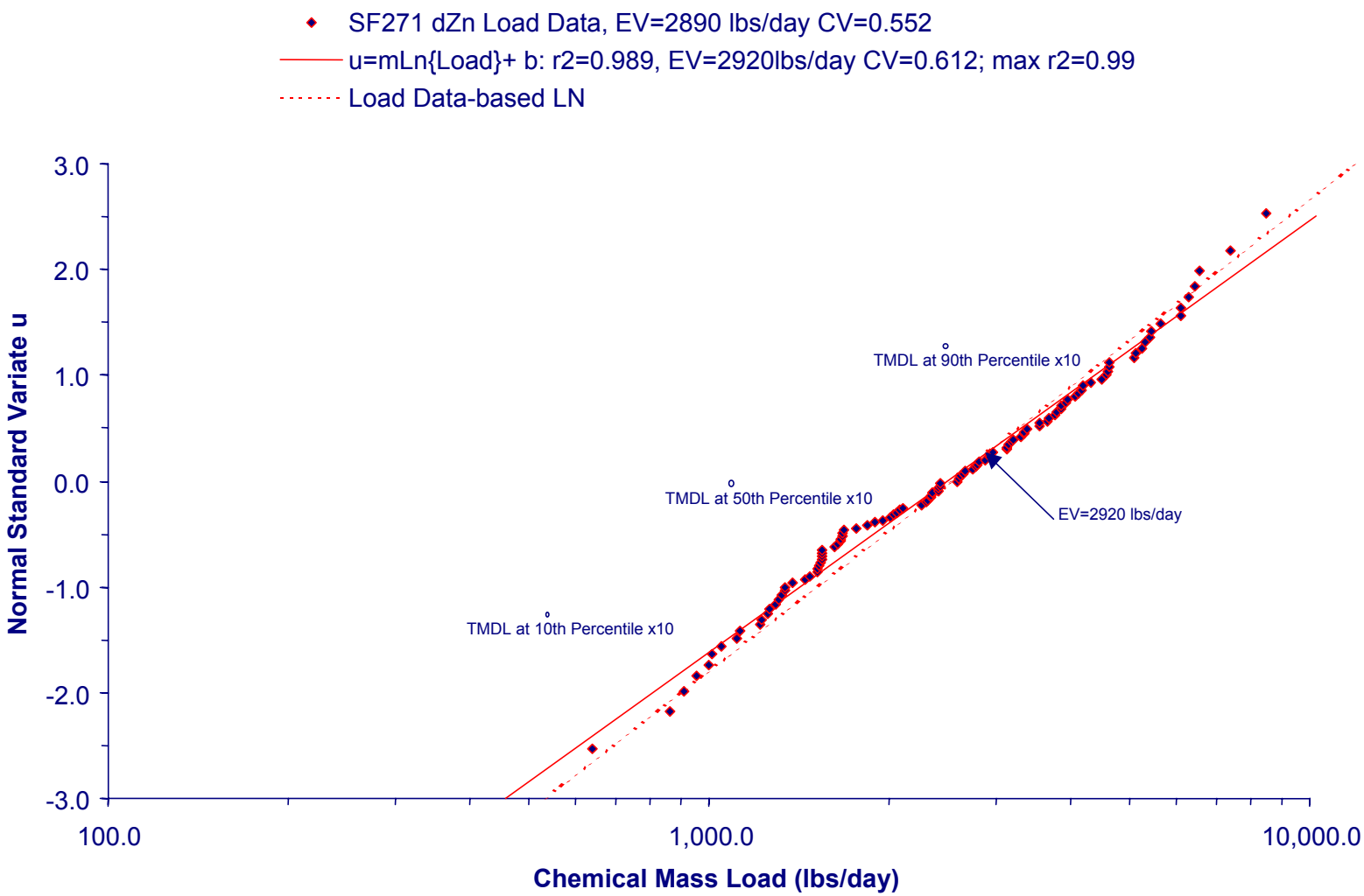
EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-7**

Probabilistic Modeling Results for Total Lead Mass Loading at SF271



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-8**

Probabilistic Modeling Results for Dissolved Zinc Mass Loading at SF271



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.2-9**

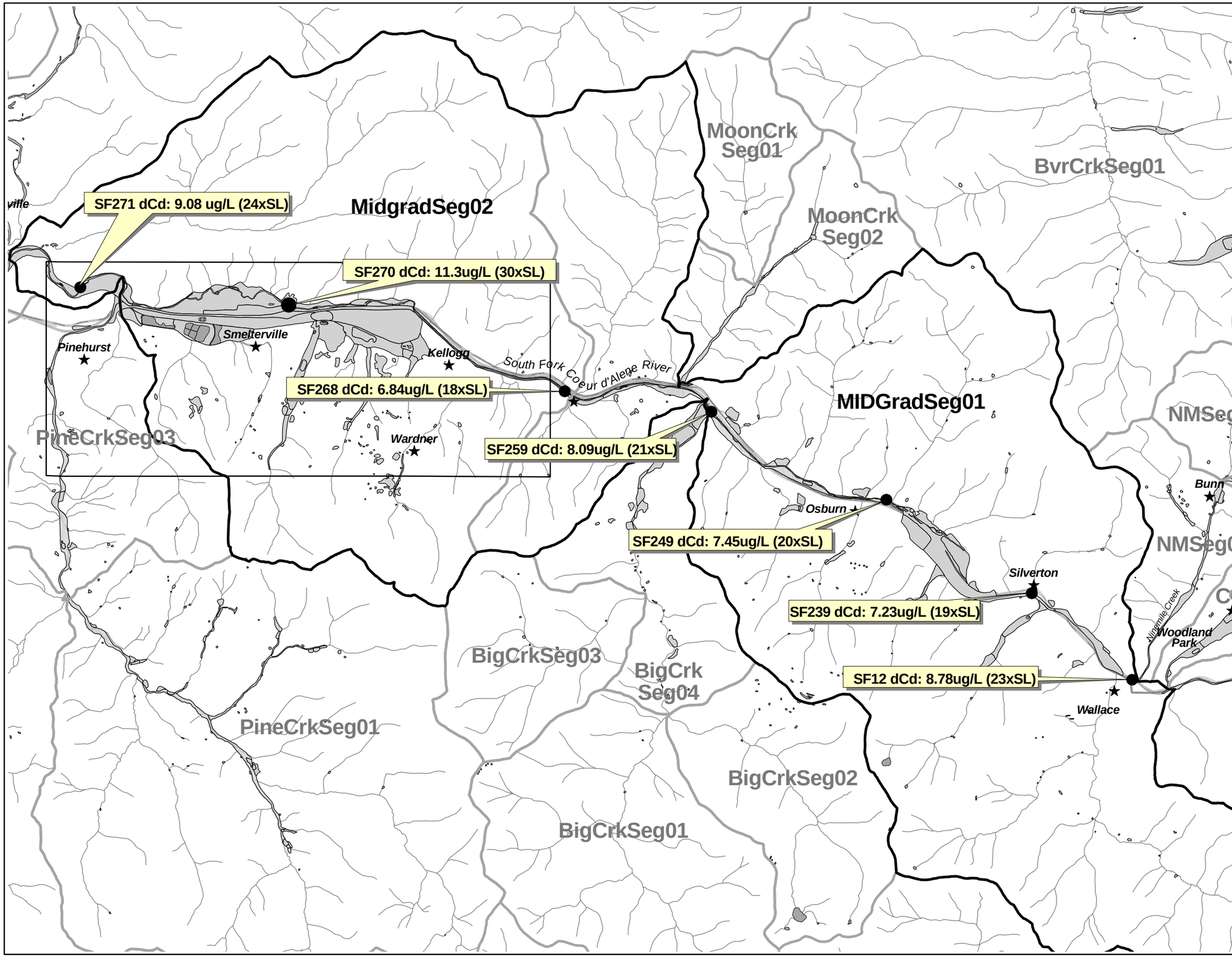


Figure 5.4-1
South Fork Coeur d'Alene Watershed
Estimated Expected Values for
Dissolved Cadmium Concentrations

LEGEND

Sampling Location — Concentration

SF12 dCd: 8.78ug/L (23xSL)

Analyte — Screening Level is 0.38 ug/L

Range of Dissolved Cadmium Concentrations in ug/L

- Range 0 - 2.5
- Range 2.5 - 5
- Range 5 - 10
- Range 10 - 15
- Range >15

- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area

Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

0.5 0 0.5 Miles

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027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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V:dCd concentrations
E:dCd
L: Final RI dCd Concentrations
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

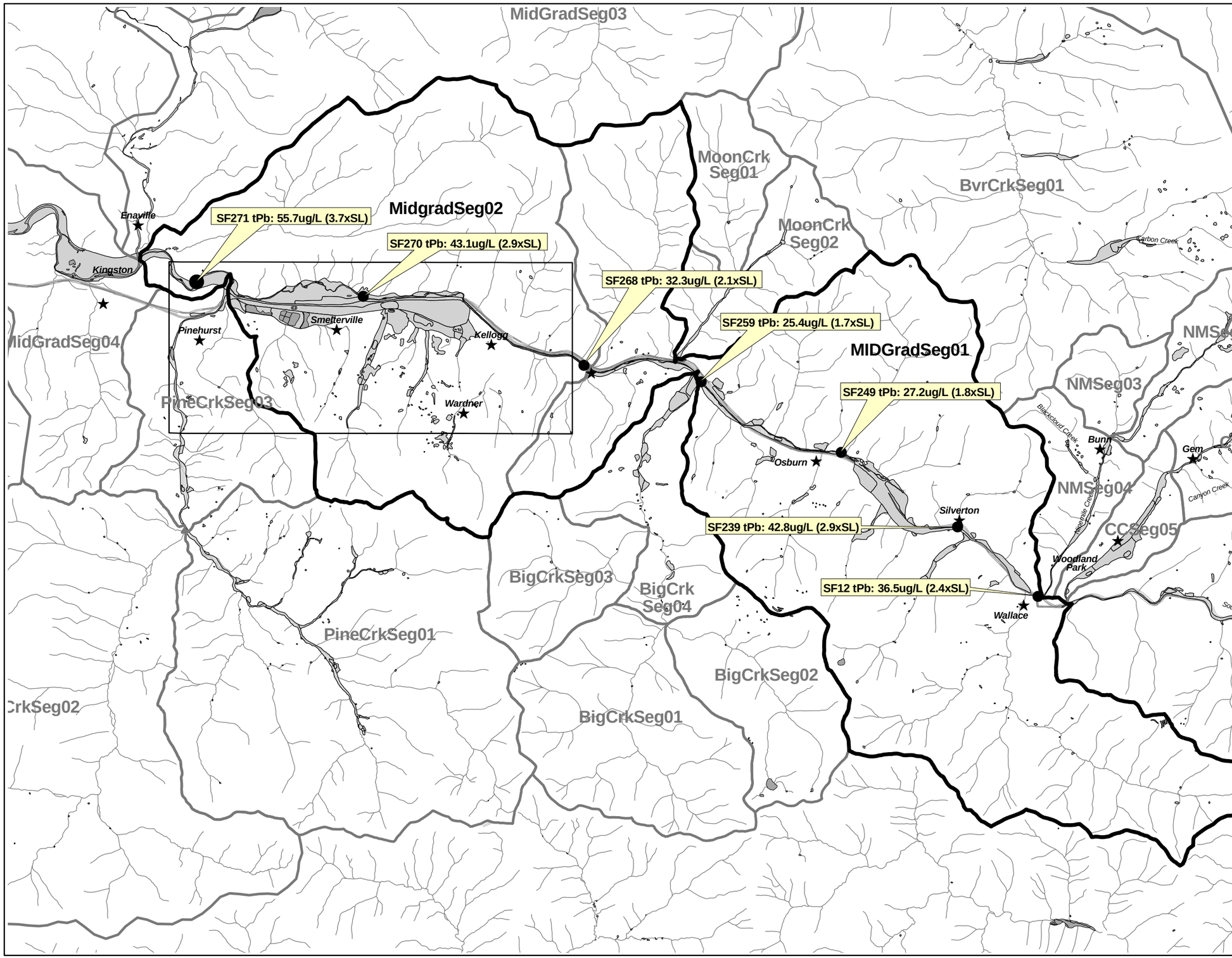


Figure 5.4-2
South Fork Coeur d'Alene River Watershed
Estimated Expected Values for Total Lead Concentrations

LEGEND

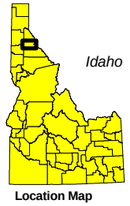
Sampling Location — Concentration

SF12 tPb: 36ug/L (2.4xSL)

Analyte — Screening Level is 15 ug/L

Range of Total Lead Concentrations in ug/L

- Range 0 - 5
- Range 5 - 10
- Range 10 - 50
- Range 50 - 100
- Range >100
- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

0.5 0 0.5 Miles

N

027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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V:tPb concentrations
E:tPb
L: Final RI tPb Concentrations
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

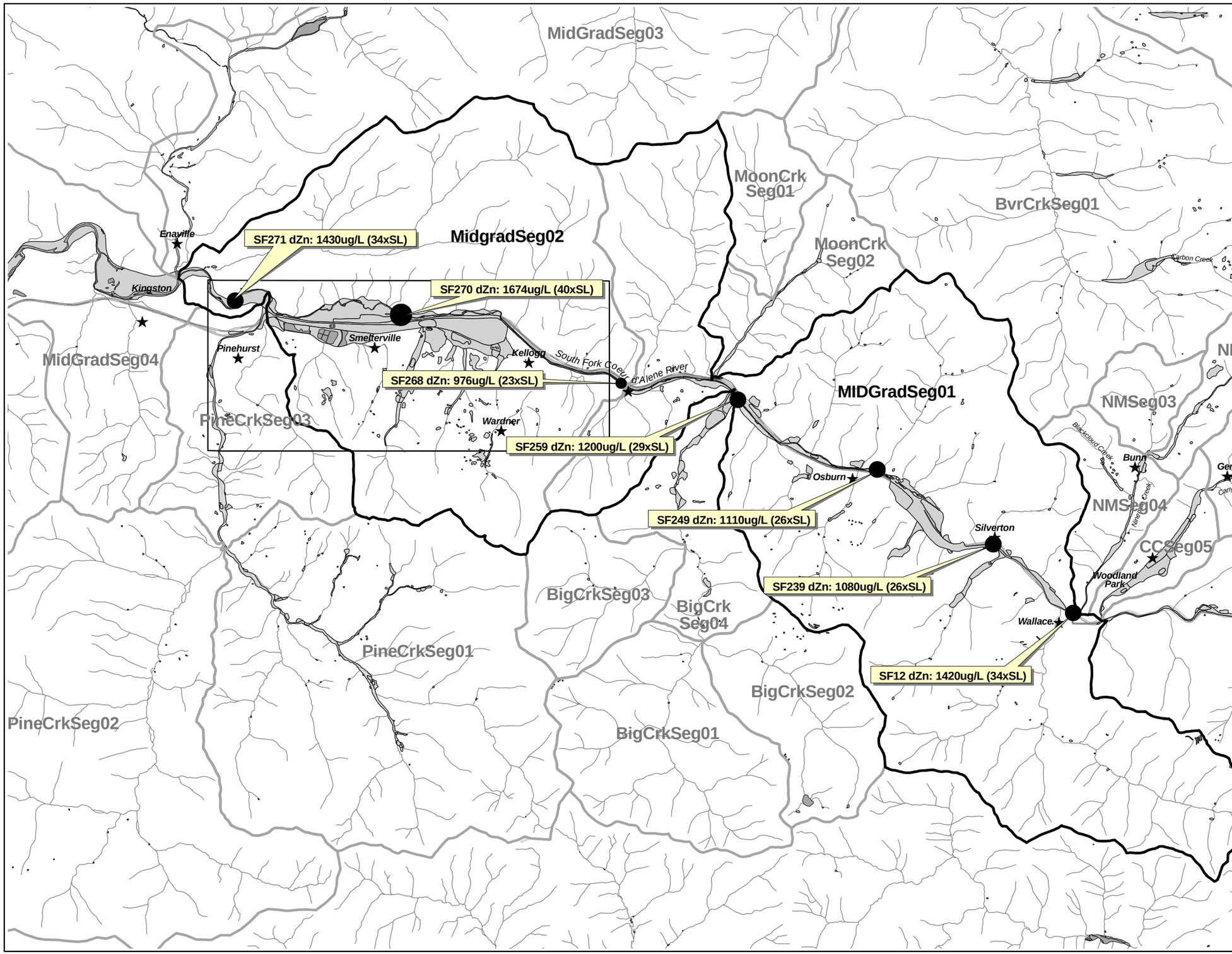

Figure 5.4-3
South Fork Coeur d'Alene River Watershed
Estimated Expected Values for Dissolved Zinc Concentrations

LEGEND

Sampling Location — Concentration

SF12 dZn: 1416ug/L (47xSL)

Analyte — Screening Level is 30 ug/L

Range of Dissolved Zinc Concentrations in ug/L

- Range 0 - 100
- Range 100 - 500
- Range 500 - 1000
- Range 1000 - 1500
- Range >1500

- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area

Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

0.5 0 0.5 Miles

N

027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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sfcdr_ev7-19.apr
V:dZn concentrations
E:dZn
L: Final RI dZn concentrations
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

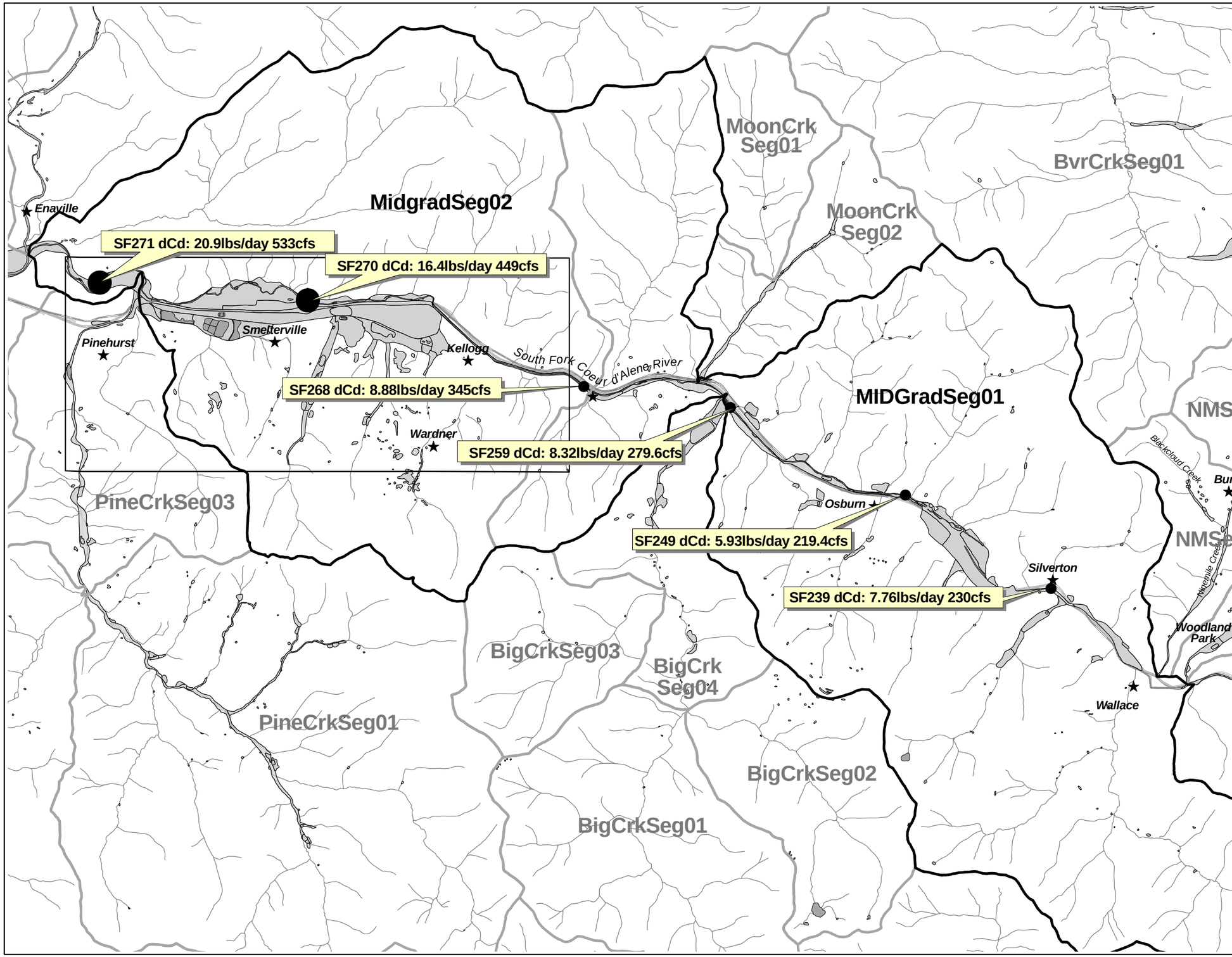


Figure 5.4-4
South Fork Coeur d'Alene River Watershed
Estimated Expected Values for Dissolved Cadmium Mass Loading

LEGEND

Sampling Location — Mass Load

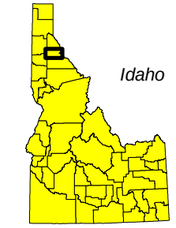
SF239 dCd: 7.76lbs/day 230cfs

Analyte — Flow in Cubic Feet per Second

Range of Total Cadmium Mass Loading in lbs/day

- Range 0 - 2.5
- Range 2.5 - 5
- Range 5 - 10
- Range 10 - 15
- Range >15

- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area



Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

0.5 0 0.5 Miles

N

027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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|sfcdr_ev7-18.apr
V: dCd Mass Loading
E: dCd
L: Final RI dCd Mass Loading
7/12/2001

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 12, 2001

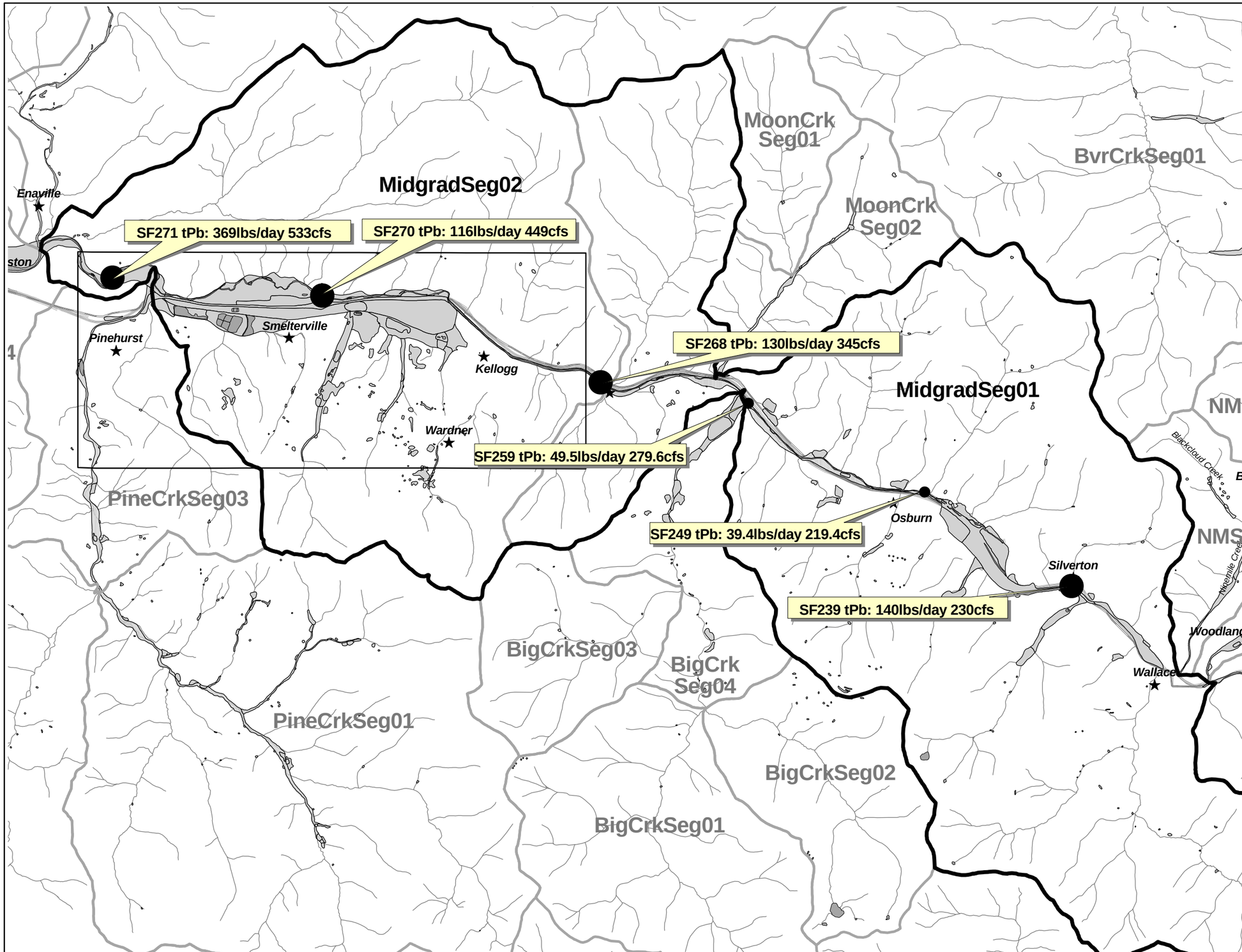

Figure 5.4-5
South Fork Coeur d'Alene River Watershed Estimated Expected Values for Total Lead Mass Loading

LEGEND

Sampling Location — Mass Load

SF239 tPb: 140lbs/day 230cfs

Analyte — Flow measured in Cubic Feet per Second

Range of Total Lead Mass Loading in lbs/day

- Range 0 - 5
- Range 5 - 10
- Range 10 - 50
- Range 50 - 100
- Range >100
- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area

Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

0.5 0 0.5 Miles

N

027-RI-C0-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05.a
Generation 1
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V:tPb massloading
E:tPb
L: Final RI tPb Massloading
7/19/2000

This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 25, 2000

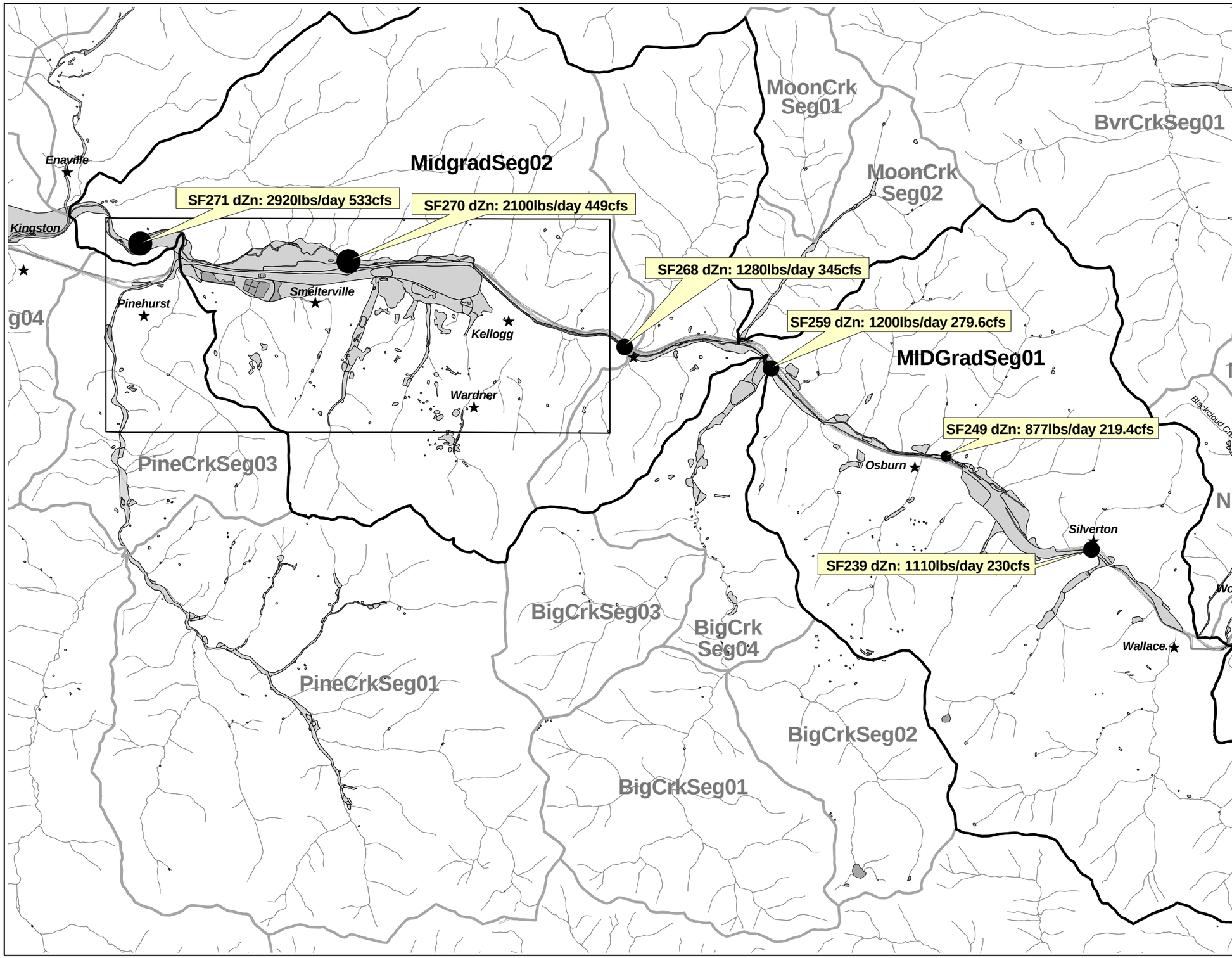

Figure 5.4-6
South Fork Coeur d'Alene River Watershed
Estimated Expected Values for Dissolved Zinc Mass Loading

LEGEND

Sampling Location — Mass Load

SF249 dZn: 877lbs/day 219.4cfs

Analyte — Flow measured in Cubic Feet per Second

Range of Dissolved Zinc Mass Loading in lbs/day

- Range 0 - 100
- Range 100 - 500
- Range 500 - 1000
- Range 1000 - 1500
- Range >1500
- Stream
- Interstate 90
- City
- Bunker Hill Site
- South Fork Coeur d'Alene River Watershed
- River Segment
- Lake/River
- Source Area

Location Map

NOTES

1) Base map coverages obtained from the Coeur d'Alene Tribe, URS Greiner Inc., CH2M HILL, and the Bureau of Land Management.

SCALE 1:84,000

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Coeur d'Alene Basin RI/FS
RI REPORT

EPA REGION 10

Document Control 4162500.6615.05a
Generation 1
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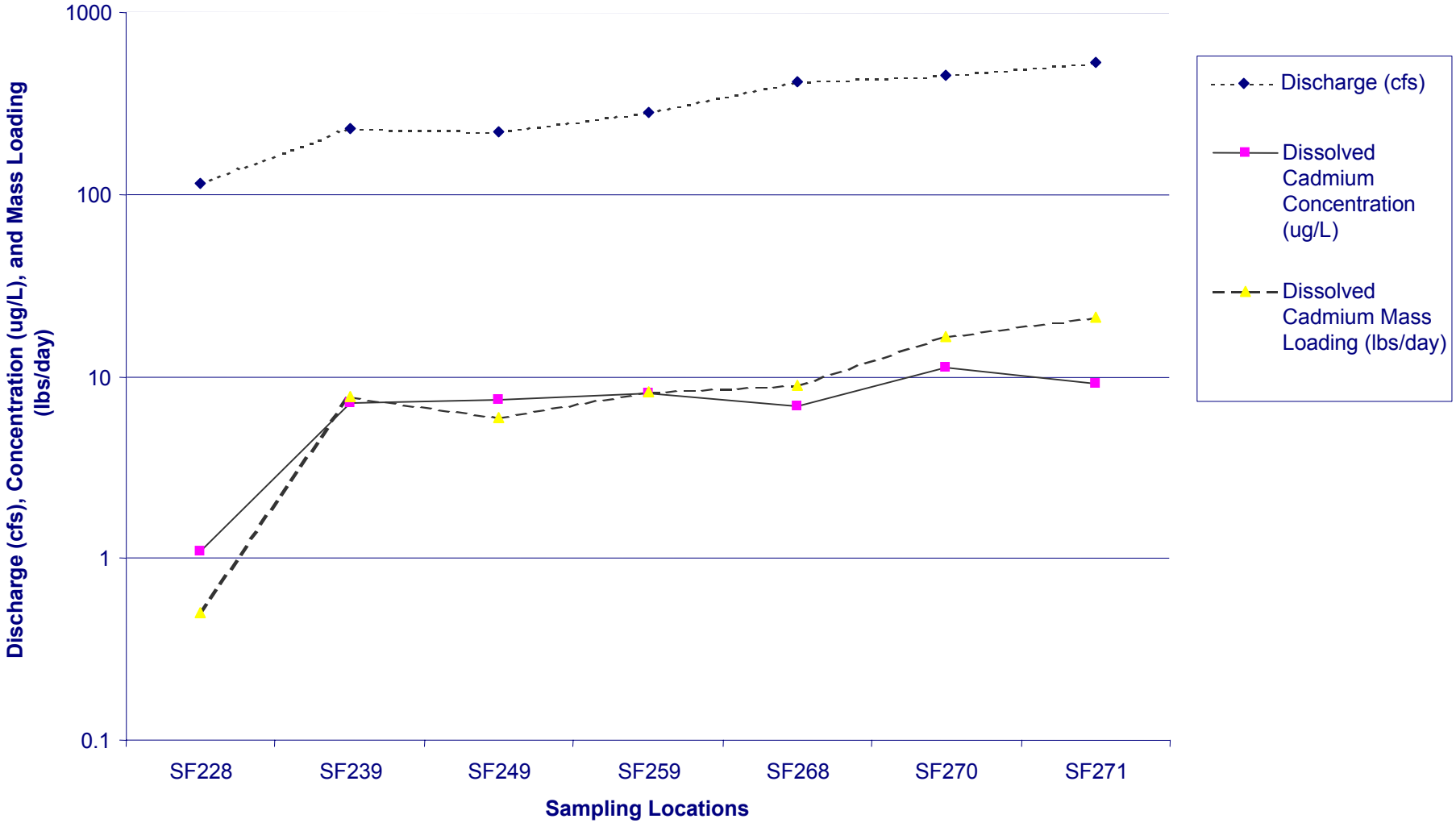
|sfcdr_ev7-13.apr
V:dZn Mass Loading
E:dZn
L: Final RI dZn Mass Loading
7/13/2001

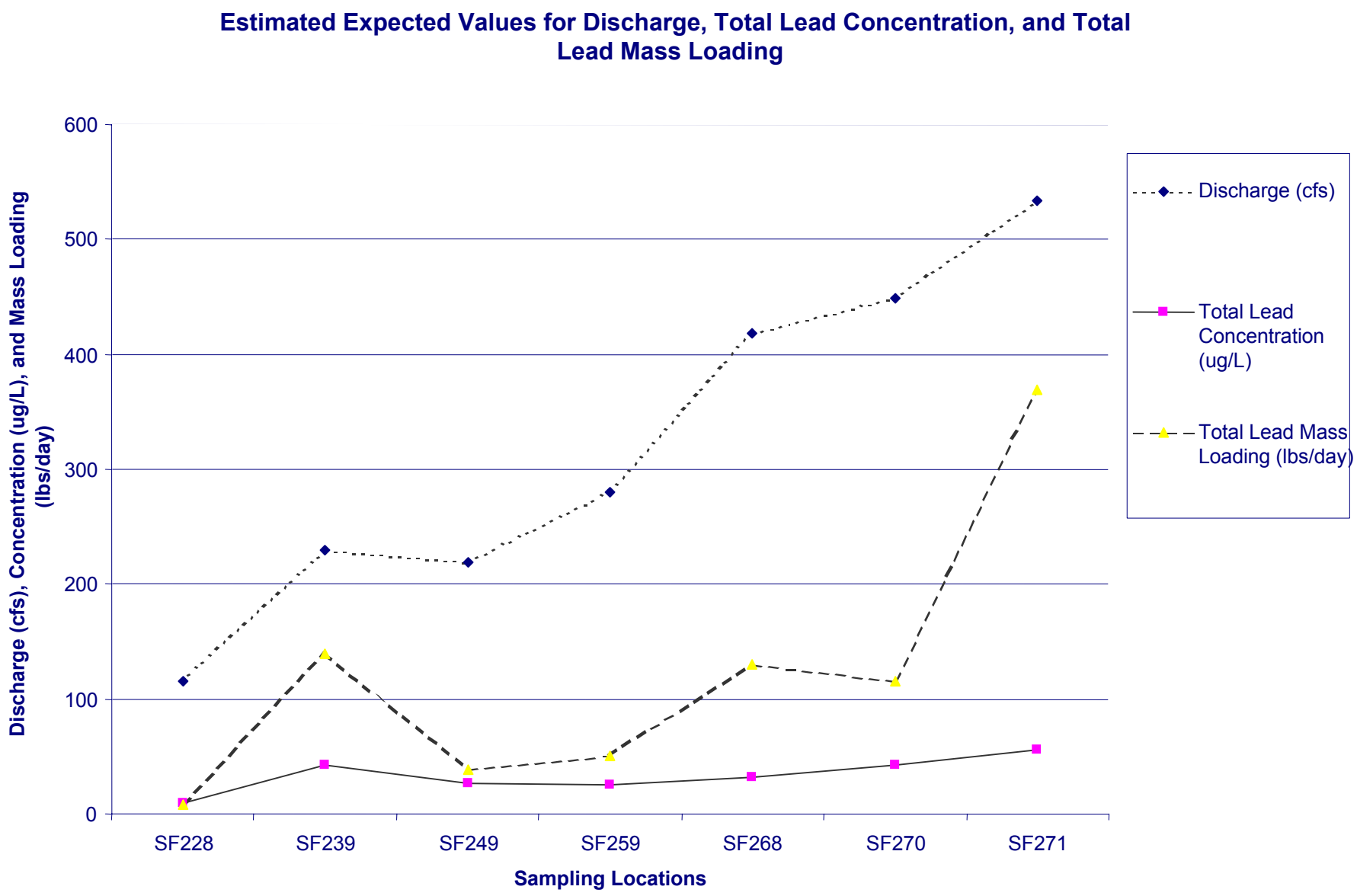
This map is based on Idaho State Plane Coordinates West Zone, North American Datum 1983.

Date of Plot: July 13, 2001

Estimated Expected Values for Discharge, Dissolved Cadmium Concentration, and Dissolved Cadmium Mass Loading



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.4-7**



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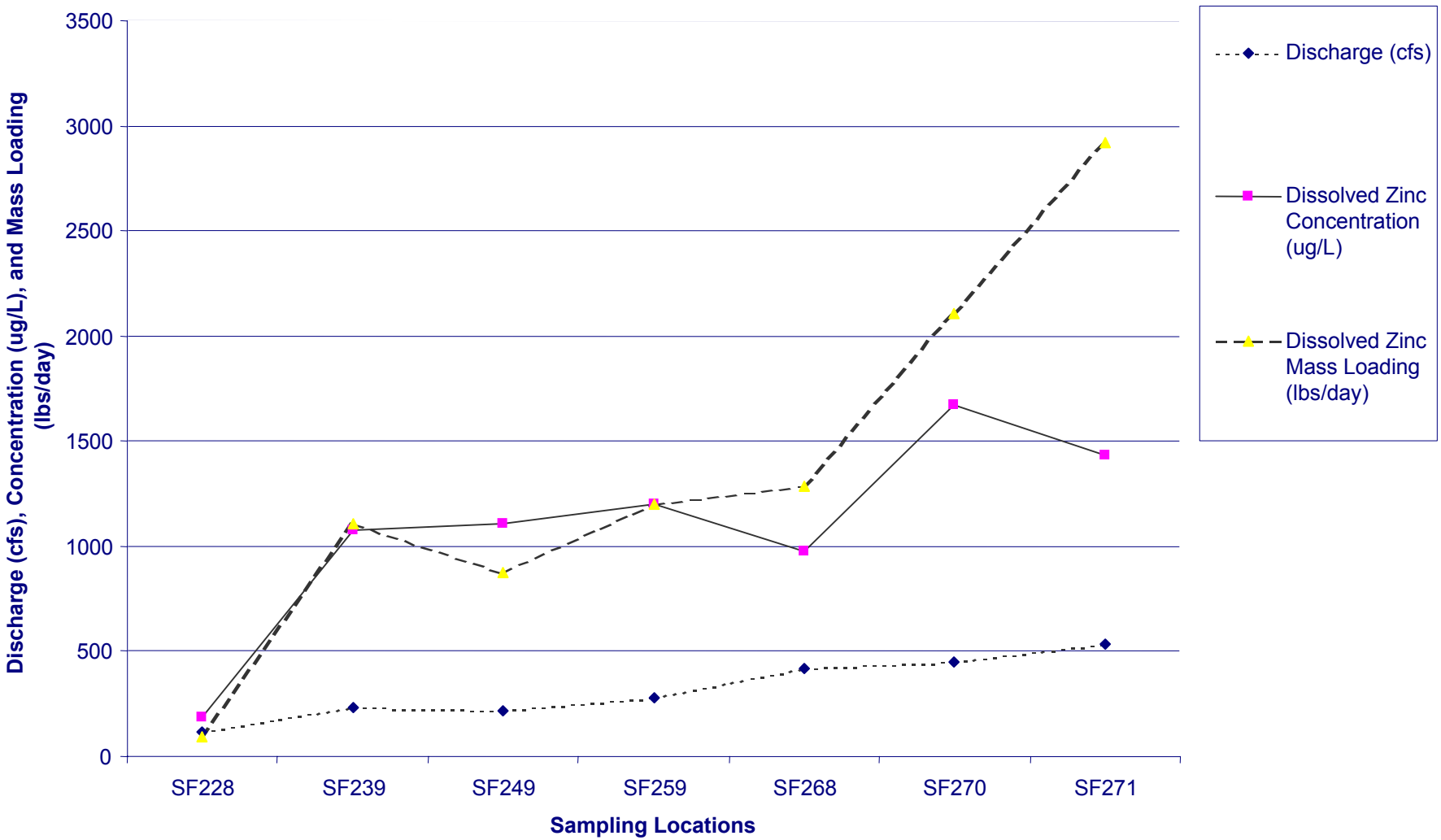
027-RI-CO-102Q
Coeur d'Alene Basin RI/FS
RI REPORT

Doc Control: 4162500.6615.05.a
Generation: 1

SouthFork Series
07/19/01

Figure 5.4-8

Estimated Expected Values for Discharge, Dissolved Zinc Concentrations, and Dissolved Zinc Mass Loading



EPA REGION 10	027-RI-CO-102Q Coeur d'Alene Basin RI/FS RI REPORT	Doc Control: 4162500.6615.05.a Generation: 1 SouthFork Series 07/19/01	**Figure 5.4-9**

Table 5.1-1
Low and High Instantaneous Metal Loading Values Measured During Six Sampling Events From May 1991 to May 1999

Metal	Low (pounds/day)	High (pounds/day)
Dissolved Cadmium	2.99	56.6
Total Lead	1.99	2,520
Dissolved Lead	1.56	67.9
Dissolved Zinc	426	6,460

Table 5.2-1
Estimated Expected Values of Discharge, Concentrations and Loads

Sampling Location	Concentration (µg/L)			Mass Loading Capacity (pounds/day)			Discharge (cfs)
	Dissolved Cadmium	Total Lead	Dissolved Zinc	Dissolved Cadmium	Total Lead	Dissolved Zinc	
Screening Level or TMDL[a]	0.38	15	42	2.8	4.7	247	NA
NM305 (Ninemile)	**22** (0.48)	**92.1** (0.802)	**3410** (0.47)	1.6 (0.86)	**13.1** (2.63)	**275** (0.92)	19.8 (1.31)
CC287/288 (Canyon)	**21.9** (0.74)	**174** (1.99)	**2996** (0.71)	**5.5** (1.2)	**48.6** (3.14)	**556** (0.67)	53.4 (1.15)
SF228 (Upper SFCDR)	**1.07** (0.455)	9.21 (0.902)	**188** (0.741)	0.504 (1.05)	**8.22** (3.9)	89.4 (1.23)	115 (1.32)
SF12	**8.78** (0.414)	**36.5** (0.579)	**1420** (0.511)	NC	NC	NC	NC
SF239	**7.23** (0.703)	**42.8** (1.13)	**1080** (0.738)	**7.76** (0.878)	**140** (4.91)	**1110** (0.827)	230 (1.33)
SF249	**7.45** (0.479)	**27.2** (0.666)	**1110** (0.521)	**5.93** (0.746)	**39.4** (2.25)	**877** (0.851)	220 (1.34)
SF259	**8.09** (0.455)	**25.4** (0.709)	**1200** (0.481)	**8.32** (0.882)	**49.5** (2.64)	**1200** (0.767)	280 (1.47)
SF268	**6.84** (0.614)	**32.3** (1.58)	**976** (0.594)	**8.88** (0.682)	**130** (5.89)	**1280** (0.851)	345 (1.28)
SF270	**11.3** (0.516)	**43.1** (1.26)	**1670** (0.551)	**16.4** (0.904)	**116** (3.43)	**2100** (0.691)	449 (1.14)
SF271	**9.08** (0.629)	**55.7** (1.34)	**1430** (0.633)	**20.9** (0.873)	**369** (5.53)	**2920** (0.612)	533 (1.37)

[a]TMDLs listed are the 90th percentile for the South Fork at Pinehurst
Note:
NC - Not calculated
Values in parentheses are coefficients of variation
Bold indicates exceedance of screening level or TMDL

Table 5.2-2
Estimated Gains or Losses in Discharge

Reach – between location Xi and Xj (# of samples)	Estimated expected value of gain or loss (EV[X]) in discharge (cfs)	Coefficient of variation (CV) for reach ($p_{xi,xj}$ = 0.9)
SF228 (47) to SF239	115.4	NC
SF239 (3948) to SF249	-10.6	12.7
SF249 (37) to SF259	60.2	3.2
SF259 (38) to SF268	65.4	3.0
SF268 (67) to SF270	104	2.2
SF270 (2691) to SF271 (3703)	84	4.2

Note:
NC - Not calculated
cfs - cubic feet per second

Table 5.2-3
Estimated Gains or Losses for Dissolved Zinc Concentrations and Load

Reach – between location Xi and Xj (# of samples)	Estimated expected value of increase or decrease in the concentration of dissolved zinc (µg/L)	Estimated coefficient of variation (CV) for the dissolved zinc ($p_{xi,xj}$ = 0.9)	Estimated expected value of gain or loss in the dissolved zinc load (lbs/day)	Estimated coefficient of variation (CV) for the dissolved zinc load ($p_{xi,xj}$ = 0.9)
SF228 (47) to SF12	1,232	0.5	NC	NC
SF12 (35) to SF239	-340	1.0	NC	NC
SF239 (56) to SF249	30	12.5	-233	1.8
SF249 (37) to SF259	90	2.9	323	1.3
SF259 (38) to SF268	-224	1.2	80	6.0
SF268 (67) to SF270	698	0.7	820	0.8
SF270 (45) to SF271 (111)	-244	1.7	820	1.0

Note:
NC - Not calculated
µg/L - micrograms per liter
lbs/day - pounds per day

Table 5.2-4
Estimated Gains or Losses for Total Lead Concentrations and Load

Reach – between location Xi and Xj (# of samples), [segment]	Estimated expected value of increase or decrease in the total concentration of lead (µg/L)	Estimated Coefficient of variation (CV) for total lead concentrations	Estimated expected value of gain or loss in the total lead load (lbs//day)	Estimated coefficient of variation (CV) for the total lead load
SF228 (47) to SF12	27.3	0.5	NC	NC
SF12 (35) to SF239	6.3	4.9	NC	NC
SF239 (56) to SF249	-15.6	2.1	-101	6.1
SF249 (37) to SF259	-1.8	4.5	10.1	6.3
SF259 (38) to SF268	6.9	5.2	80.5	8.1
SF268 (67) to SF270	10.8	2.2	-14	31.6
SF270 (45) to SF271 (111)	12.6	2.8	253	6.7

Note:
NC - Not calculated
µg/L - micrograms per liter
lbs/day - pounds per day

Table 5.2-5
Estimated Gains or Loses for Dissolved Cadmium Concentrations and Load

Reach – between location Xi and Xj (# of samples), [segment]	Estimated expected value of increase or decrease in the concentration of dissolved cadmium (µg/L)	Estimated coefficient of variation (CV) for the dissolved cadmium ($p_{xi,xj}$ = 0.9)	Estimated expected value of gain or loss in the dissolved cadmium load (lbs/day)	Estimated coefficient of variation (CV) for the dissolved cadmium load ($p_{xi,xj}$ = 0.9)
SF228 (47) to SF12	7.71	0.4	NC	NC
SF12 (35) to SF239	-1.55	1.6	NC	NC
SF239 (56) to SF249	0.22	11.1	-1.83	1.9
SF249 (37) to SF259	0.64	2.5	2.39	1.6
SF259 (38) to SF268	-1.25	1.5	0.56	5.8
SF268 (67) to SF270	4.46	0.6	7.52	1.3
SF270 (45) to SF271 (111)	-2.22	1.2	4.5	1.8

Note:
NC - Not calculated
µg/L - micrograms per liter
lbs/day - pounds per day

6.0 REFERENCES

Section 1—Introduction

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ATTACHMENT 1
Data Source References

Data Source References

Data Source References[a]	Data Source Name	Data Source Description	Reference
2	URS FSPA Nos. 1, 2, and 3	Fall 1997: Low Flow and Sediment Sampling	URS Greiner Inc. 1997. Field Sampling Plan Addendum 1 Sediment Coring in the Lower Coeur d'Alene River Basin, Including Lateral Lakes and River Floodplains
			URS Greiner Inc. 1997. Field Sampling Plan Addendum 2 Adit Drainage, Seep and Creek Surface Water Sampling
			URS Greiner Inc. 1997. Field Sampling Plan Addendum 3 Sediment Sampling Survey in the South Fork of the Coeur d'Alene River, Canyon Creek, and Nine-Mile Creek
3	URS FSPA No. 4	Spring 1998: High Flow Sampling	URS Greiner Inc. 1998. Field Sampling Plan Addendum 4 Adit Drainage, Seep and Creek Surface Water Sampling; Spring 1998 High Flow Event
4	MFG Historical Data Spring 1991	Spring 1991: High Flow Sampling	McCulley, Frick & Gillman, Inc. 1991. Upstream Surface Water Sampling Program Spring 1991 High Flow Event, South Fork Coeur d'Alene River Basin above Bunker Hill Superfund Site: Tables 1 and 2
5	MFG Historical Data Fall 1991	Fall 1991: Low Flow Sampling	McCulley, Frick & Gillman, Inc. 1992. Upstream Surface Water Sampling Program Fall 1991 Low Flow Event, South Fork Coeur d'Alene River Basin above Bunker Hill Superfund Site: Tables 1 and 2
6	EPA/Box Historical Data	Superfund Site Groundwater and Surface Water Data	CH2MHill. 1997. Location of Wells and Surface Water Sites, Bunker Hill Superfund Site. Fax Transmission of Map August 11, 1998
			Environmental Protection Agency. 1998. E-mail from Ben Cope July 15, 1998. Subject: 2 Datasets File Attached: BOXDATA.WK4
7	IDEQ Historical Data	IDEQ Water Quality Data	Idaho Department of Environmental Quality. 1998. Assortment of files from Glen Pettit for water years 1993 through 1996
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Data Source References (Continued)

Data Source References[a]	Data Source Name	Data Source Description	Reference
8	EPA/NPDES Historical Data	Water Quality based on NPDES Program	Environmental Protection Agency. 1998. E-mail from Ben Cope August 11, 1998/September 2, 1998. Subject: Better PCS Data Files/Smelterville. Attached: PCS2.WK4, PCSREQ.698/TMT-PLAN.XLS
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			Environmental Protection Agency. 1998. E-mail from Ben Cope July 15, 1998. Subject: 2 Datasets File Attached: PCSDATA.WK4
10	URS FSPA No. 5	Common Use Areas Sampling	URS Greiner Inc. 1998. Field Sampling Plan Addendum 5 Common Use Areas: Upland Common Use Areas and Lower Basin Recreational Beaches; Sediment/Soil, Surface Water, and Drinking Water Supply Characterization
11	URS FSPA No. 8	Source Area Sampling	URS Greiner Inc. 1998. Field Sampling Plan Addendum 8 Tier 2 Source Area Characterization Field Sampling Plan
12	Historical Groundwater Data from MFG	1997 Annual Groundwater Data Report Woodland Park	McCulley, Frick & Gillman. 1998. 1997 Annual Groundwater Data Report Woodland Park
13	Historical Data from US Forest Service, Idaho Geological Survey and others	Historical Data on Inactive Mine Sites USFS, IGS and CCJM, 1994-1997, Prichard Creek, Pine Creek and Summit Mining District	Mackey K, Yarbrough, S.L. 1995. Draft Removal Preliminary Assessment Report Pine Creek Millsites, Coeur d'Alene District, Idaho, Contract No. 1422-N651-C4-3049
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Data Source References (Continued)

Data Source References[a]	Data Source Name	Data Source Description	Reference
13	Historical Data from US Forest Service, Idaho Geological Survey and others (continued)		Idaho Geological Survey. 1999. Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest Vol. V, Coeur d'Alene River Drainage Surrounding the Coeur d'Alene Mining District (Excluding the Prichard Creek and Eagle Creek Drainages) Part 2 Secondary Properties
			US Forest Service. 1995. Pilot Inventory of Inactive and Abandoned Mine Lands, East Fork Pine Creek Watershed, Shoshone County, Idaho
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			Trace Element Geochemistry of Bottom Sediments and Waters from the Lateral Lakes of Coeur d'Alene River, A Dissertation by F. Rabbi, May 1994
15	URS FSPA No. 9	Source Area Characterization; Field XRF Data	CH2M Hill and URS Greiner. 1998. Field Sampling Plan Addendum 9 Delineation of Contaminant Source Areas in the Coeur d'Alene Basin using Survey and Hyperspectral Imaging Techniques
16	Historical Sediment Data	Electronic Data compiled by USGS	U.S. Geological Survey. 1992. Effect of Mining-Related Activities on the Sediment-Trace Element Geochemistry of Lake Coeue d'Alene, Idaho, USA--Part 1: Surface Sediments, USGS Open-File Report 92-109, Prepared by A.J. Horowitz, K.A. Elrick, and R.B. Cook
			US Geological Survey. 2000. Chemical Analyses of Metal-Enriched Sediments, Coeur d'Alene Drainage Basin, Idaho: Sampling, Analytical Methods, and Results. Draft. October 13, 2000. Prepared by S.E. Box, A.A. Bookstrom, M. Ikramuddin, and J. Lindsey. Samples collected from 1993 to 1998.
17	USGS Spokane River Basin Sediment Samples	Surface Sediment Samples Collected by USGS in the Spokane River Basin	Environmental Protection Agency. 1999. Data Validation Memorandum and Attached Table from Laura Castrilli to Mary Jane Nearman dated June 9, 1999. Subject: Coeur d'Alene (Bunker Hill) Spokane River Basin Surface Sample Samples, USGS Metals Analysis, <63 um fraction, Data Validation, Samples SRH7-SRH30

Data Source References (Continued)

Data Source References[a]	Data Source Name	Data Source Description	Reference
18	USGS Snomelt Surface Water Data	Surface Water Data from 1999 Snomelt Runoff Hydrograph	USGS. 1999. USGS WY99.xls Spreadsheet dowloaded from USGS (Coeur d'Alene Office) ftp site
			USGS. 2000. Concentrations and Loads of Cadmium, Lead and Zinc Measured near the Peak of the 1999 Snomelt Runoff Hydrograph at 42 Stations, Coeur d'Alene River Basin Idaho
			USGS. 2000. Concentrations and Loads of Cadmium, Lead and Zinc Measured on the Ascending and Descending Limbs of the 1999 Snomelt Runoff Hydrograph at Nine Stations, Coeur d'Alene River Basin Idaho
22	MFG Report on Union Pacific Railroad Right-of-Way Soil Sampling	Surface and Subsurface Soil Lead Data	MFG. 1997. Union Pacific Railroad Wallace Branch, Rails to Trails Conversion, Right-of-Way Soil Sampling, Summary and Interpretation of Data. McCulley, Frick and Gilman, Inc. March 14, 1997
23	URS FSPA No. 11A	Source Area Groundwater and Surface Water Sampling	URS Greiner Inc. 1999. Field Sampling Plan Addendum 11A Tier 2 Source Area Characterization
24	URS FSPA No. 15	Common Use Area Sampling—Spokane River	URS Greiner Inc. 1999. Field Sampling Plan Addendum 15 Spokane River - Washington State Common Use Area Sediment Characterization
25	URS FSPA No. 18	Depositional and Common Use Area Sediment Sampling - Spokane River	URS Greiner Inc. 2001. Final Field Sampling Plan Addendum No. 18, Fall 2000 Field Screening of Sediment in Spokane River Depositional Areas, Summary of Results. Revision 1. January 2001.

Data Source References (Continued)

Data Source References[a]	Data Source Name	Data Source Description	Reference
28	USGS National Water Quality Assessment database	Surface water data for sampling location NF50 at Enaville, Idaho	USGS. 2001. USGS National Water Quality Assessment database: http://infotrek.er.usgs.gov/pls/nawqa/nawqa.www_main.gohome. Data retrieved on August 2, 2001 for station 12413000, NF Coeur d'Alene River at Enaville, Idaho.

[a]Reference Number is the sequential number used as cross reference to associate chemical results in data summary tables with specific data collection efforts.

ATTACHMENT 2
Data Summary Tables

ABBREVIATIONS USED IN DATA SUMMARY TABLE

LOCATION TYPES:

AD adit
BH borehole
FP flood plain
GS ground surface/near surface
HA hand auger boring
LK lake/pond/open reservoir
OF outfall/discharge
RV river/stream
SP stockpile
TL tailings pile

QUALIFIERS:

U Analyte was not detected above the reported detection limit
J Estimated concentration

DATA SOURCE REFERENCES:

Data source references listed in Attachment 1 are shown in the Data Summary Tables in the "Ref" column.

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
BV8288	TL	13	---			85 U	0.85	41	8200	38	490			23
CUA0801	GS	10	08/24/1998	0	31.2 J	**68.9**	8.1	**260**	**67053**	**7870**	3590	7.1	30.5	**1960**
CUA0802	GS	10	08/24/1998	0	**53.3 J**	**87.2**	**64.5**	**353**	**99928**	**14100**	**9280**	8.6	36.6	**6130**
CUA0803	GS	10	08/24/1998	0			**11.7**	**298**	**84077**	**9970**	**5060**			**2210**
CUA0803	GS	10	08/24/1998	0	**41.9 J**	**98.5**						4.8	32.1	
CUA0804	GS	10	08/24/1998	0	**54.9 J**	**72.1**	**14.4**	**363**	**88771 J**	**15400**	**8470**	11.9	47.5	**3410**
CUA0805	GS	10	08/24/1998	0	**49.8 J**	**73.1**	**10.3**	**339**	**88119 J**	**13400**	**7530**	11.5	43.7	**2930**
CUA0891	BH	10	08/22/1998	0		9.6	3.6	36.3		**225**				236
CUA0891	BH	10	08/22/1998	0	1.6 J				16400		931	0.14	0.9 J	
CUA08910	BH	10	08/22/1998	0	1.7 J	9.8 J	2.5 J	25.7	16500	**242**	1010	0.15	1 J	**287**
CUA08911	BH	10	08/22/1998	0	1.1 J	8.7	2	20.3	16200	**179**	685	0.11	0.56 J	266
CUA08912	BH	10	08/22/1998	0	1.4 J	9.5	3.3	23.8	18100	**297**	921	0.27	0.63 J	**428**
CUA08913	BH	10	08/22/1998	0	1.7 J	10.1	2.5	21.8	17000	**257**	1110	0.23	0.53 J	**332**
CUA08914	BH	10	08/22/1998	0	3 J	13.2	2.7	25.4	17400	**268**	1020	0.21	0.75 J	**358**
CUA08915	BH	10	08/22/1998	0	1.8 J	9.9	4.6	24	19300	**303 J**	1070	0.18 J	0.84 J	**363 J**
CUA08916	BH	10	08/22/1998	0	2.1 J	9.2	4.5	**309**	17000	**255 J**	807	0.18 J	0.73 J	**458 J**
CUA08917	BH	10	08/22/1998	0	4.9 J	**38.9**	5	42.8	24700	**526 J**	1170	0.24 J	1.8 J	**602 J**
CUA08918	BH	10	08/22/1998	0	5.4 J	**34.3**	4	40.9	24300	**399 J**	990	0.17 J	1.7 J	**466 J**
CUA08919	BH	10	08/22/1998	0	18.1	**68.6**	7.9	**186**	44200	**726 J**	2530	0.48 J	5.2	**4070 J**
CUA0892	BH	10	08/22/1998	0	1.9 J	10.7	3.6	39.3	16700	**275**	1120	0.17	1.4 J	**327**
CUA0893	BH	10	08/22/1998	0	1.9 J	9.7	2.8	26.2	14800	**237**	771	0.13	1 J	226
CUA0894	BH	10	08/22/1998	0	1.3 J	8.6	2.3	24.9 J	15800	**212**	833	0.15	0.94 J	272
CUA0895	BH	10	08/22/1998	0	1.6 J	10	2.9	29.2 J	16400	**259**	1020	0.15	1.3 J	**316**
CUA0896	BH	10	08/22/1998	0	2.9 J	12.7	3.9	30.8 J	16800	**371**	724	0.24	2 J	**431**
CUA0897	BH	10	08/22/1998	0	1.4 J	9.4	2.8	25.6 J	16000	**229**	761	0.15	1.1 J	276
CUA0898	BH	10	08/22/1998	0	2.2 J	11.5 J	3.8 J	29.9	16000	**284**	826	0.14	1.4 J	**320**
CUA0899	BH	10	08/22/1998	0	1.8 J	8.6 J	3.8 J	26.6	15700	**331**	786	0.16	1.3 J	**375**
CUA0901	BH	10	08/23/1998	0	1.8 J	11.2	2.1	25.8	19600	**275**	1090	0.29	0.59 J	**407**
CUA09010	BH	10	08/23/1998	0	2.2 J	11.1	3.5	26.2	18800	**284**	766	0.29	0.73 J	**385**
CUA09011	BH	10	08/23/1998	0									0.5 J	
CUA09011	BH	10	08/23/1998	0	1.6 J	12.9	4.7	29	22600	**311**	1070	0.29		**429**
CUA09012	BH	10	08/23/1998	0	2.1 J	12.9	5.3	37.4	23000	**471**	1190	0.16	1.2 J	**703**
CUA09013	BH	10	08/23/1998	0	7.2 J	**38.4**	4.2	53	25900	**411**	1420	0.17	3.8	**452**
CUA09014	BH	10	08/23/1998	0	0.99 J	12.5	4.4	29.2	21700	**301**	1170	0.17	0.58 J	**435**
CUA09015	BH	10	08/23/1998	0	4.2 J	17.7 J	4.6 J	41.7	18000	**522**	1120	0.25	2.6	**632**
CUA09016	BH	10	08/23/1998	0	1.8 J	9.8 J	3.1 J	25.8	16900	**261**	1010	0.14	1.1 J	**335**
CUA09017	BH	10	08/23/1998	0	6.9 J	**53.9**	1.9	76.4 J	23700	**409**	1190	0.16 J	6.4	**350**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA09018	BH	10	08/23/1998	0	1.2 J	8.8	2.4	26.3 J	16900	234	1060	0.14 J	1.1 J	268
CUA09019	BH	10	08/23/1998	0	2 J	8.4	2.7	28	15500	151	855	0.12	0.97 J	177
CUA0902	BH	10	08/23/1998	0	1.5 J	9.2	3.6	24	16600	227	954	0.11	0.4 U	338
CUA0903	BH	10	08/23/1998	0	1.9 J	10.2	2.8	23.3	18400	197	1000	0.22	0.46 J	280
CUA0904	BH	10	08/23/1998	0	1.7 J	10.7	3.8	24.3	18600	278	996	0.27	0.41 U	372
CUA0905	BH	10	08/23/1998	0	1 U	9.3	1.5	20.1	17200	167	803	0.23	0.41 U	246
CUA0906	BH	10	08/23/1998	0	1.9 J	10.5 J	3.6	36 J	18800	254	1030	0.22	1.4 J	342
CUA0907	BH	10	08/23/1998	0	3.1 J	14.8 J	3.6	45.5 J	18600	387	1090	0.24	2.1	523
CUA0908	BH	10	08/23/1998	0	1.8 J	9.9 J	2.7	28.3 J	17300	236	1010	0.23	1.4 J	304
CUA0909	BH	10	08/23/1998	0	1.7 J	9.6 J	3.1	24.3 J	17400	192	969	0.24	1.2 J	257
CUA0911	BH	10	08/28/1998	0	53.5 J	175	8.4	290	44800	1210	3140	0.25	20.7 J	2390
CUA09110	BH	10	08/28/1998	0	17.7	31.5	11	93.3	30300	3130	2180	2.5	7.6	2220
CUA09111	BH	10	08/28/1998	0	18	49.8	3.3	144	30000	1050	1640	0.32	10.4	1810 J
CUA09112	BH	10	08/28/1998	0	233	1060	6.3	1260	69700	2980	4580	0.1 U	131	1760 J
CUA09113	BH	10	08/28/1998	0	8.8 J	66.3	12.1	123	28200	2640	1320	0.68	8.7	2840 J
CUA09114	BH	10	08/28/1998	0	7.5 J	21.7	1.5	53.1	18600	470	1220	0.11	2.4	675
CUA09115	BH	10	08/28/1998	0	22.8	48	5.6	102	17900	1440	795	0.22	7	1150
CUA09116	BH	10	08/28/1998	0	27.3	58.7	3	137	23100	787	1450	0.42	8.9	1330
CUA09117	BH	10	08/28/1998	0	6.9 J	26.8	12.5	70.8	23100	2220	1380	0.35	4.8	2000
CUA09118	BH	10	08/28/1998	0	4.6 J	18.9	2	57	19300	362	1400	0.09 J	3.1	668
CUA09119	BH	10	08/28/1998	0							1440	0.13		
CUA09119	BH	10	08/28/1998	0	7.9 J	20.7	2.4	67	18700	608			4.5	815
CUA0912	BH	10	08/28/1998	0	72.8 J	422	4.3	288	55400	1040	3980	0.26	31 J	
CUA0912	BH	10	08/28/1998	0										1420
CUA0913	BH	10	08/28/1998	0	19.9 J	43.9	6.5	164	36300	881	2410	0.26	7.5 J	3080
CUA0914	BH	10	08/28/1998	0	12 J	51.5	6.6	105	23100	1850	1330	0.05 U	7.4 J	1470
CUA0915	BH	10	08/28/1998	0	4 J	14.3	3.9	32.9	16300	662	670	0.42	1.7 J	923
CUA0916	BH	10	08/28/1998	0	32.8	59.5	8.6	242	41900	2020	2590	0.72	11.6	4180
CUA0917	BH	10	08/28/1998	0	10.4 J	34.4	1.9	77.7	20400	627	1460	0.16	3.8	854
CUA0918	BH	10	08/28/1998	0	109	240	2.4	352	42200	755	2730	0.62	31.6	1220
CUA0919	BH	10	08/28/1998	0	7.6 J	22	1.4	56.6	18200	474	1230	0.28	3	775
CUA0921	BH	10	08/18/1998	0	1.3 J	5.5	2.4	17.4	14100	132	603	0.14	0.41 U	156
CUA09210	BH	10	08/18/1998	0	3 J	11.8	5.3	19.4	13300	851	1110 J	0.5 J	0.97 J	384 J
CUA09211	BH	10	08/18/1998	0	1 U	7.3	2.1	15.3	14400	135	565 J	0.1 UJ	0.41 UJ	136 J
CUA09212	BH	10	08/18/1998	0	2.7 J	10	4.1	17.1	14200	250	988 J	0.11 J	0.43 J	203 J
CUA09213	BH	10	08/18/1998	0	2.9 J	10.3	3.9	18.9	13300	233	584 J	0.17 J	1 J	232 J
CUA09214	BH	10	08/18/1998	0	0.99 U	6.3	0.98 J	11.9	14100	82.9	616	0.09 U	0.4 U	138

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA09215	BH	10	08/18/1998	0	2 J	9.4	2.7	17.8	13600	175	698	0.26	0.56 J	178
CUA09216	BH	10	08/18/1998	0	2 J	9.9	5.8	17.8	13700	389	959	0.33	0.53 J	304
CUA09218	BH	10	08/18/1998	0	16.6	16	3.2	26.7	12800	999	1140	0.45	1.3 J	448
CUA09219	BH	10	08/18/1998	0	1.4 J	6.9	2.1	18.9	16100	117	755	0.11	1 J	145
CUA0922	BH	10	08/18/1998	0	1.4 J			14.8	14500		532	0.13	0.4 U	185
CUA0922	BH	10	08/18/1998	0		6.2	3.7			153				
CUA09221	BH	10	09/12/1998	0	1.9 J	11.7 J	4.3	22.5	16900	400	1260	0.21	1.1 J	246
CUA09222	BH	10	08/18/1998	0	6.4 J	20.7	8.7	56	25700	957	1820	0.32	3.7	968
CUA09223	BH	10	08/18/1998	0	3.1 J	11.7	7.6	27.7	16400	431	1310	0.28	1.5 J	487
CUA09224	BH	10	08/18/1998	0	5.9 J	10.5	13.5	36.2	12000	896	1320	0.36	1.8 J	592
CUA09225	BH	10	08/18/1998	0	7 J	14.7	5.7	36.7	14800	526	1090	0.27	1.9 J	374
CUA09226	BH	10	09/12/1998	0	3.5 J	10.2 J	3.4	28.4	13800	284	1160	0.13	1.3 J	351
CUA09227	BH	10	08/18/1998	0	3.8 J	16.3	3.9	25.8	21100	1160	1410	0.36	2.7	622
CUA09228	BH	10	08/18/1998	0	9.1 J	12.7	3.4	19.3	8680	943	1140	0.25	1.6 J	418
CUA09229	BH	10	08/18/1998	0	0.65 UJ	5.9	1.7	16.1	15300	94.3	675	0.06 J	0.67 J	128
CUA0923	BH	10	08/18/1998	0	4.1 J	8	3.2	155	11500	285	798	0.19	0.82 J	285
CUA09230	BH	10	08/18/1998	0	0.97 J	4.3	1.4	13.9	15200	76.1	634	0.14	0.75 J	107
CUA09231	BH	10	08/18/1998	0	1.3 J	49	0.77 J	31.9	28000	66.6	785	0.09 J	0.86 J	120
CUA09232	BH	10	08/18/1998	0	3.8 J	13	8.2	40.1	18600	1190	816	1	4.1	648
CUA09233	BH	10	08/18/1998	0		8.8	6.5					0.56	3.3	655
CUA09233	BH	10	08/18/1998	0	3.6 J			53	18400	1050	854			
CUA09234	BH	10	08/18/1998	0	14.2 J	15.4	10.7	99.9	22200	4930	1870	2.1	9.4	1420
CUA09235	BH	10	09/12/1998	0	4.1 J	8.4 J	7.2	62.6	19800	979	887	0.67	3.3	950
CUA09236	BH	10	08/18/1998	0	5.8 J	8.7	7.5	49.8	18900	1920	806	0.66	4.3	907
CUA09237	BH	10	08/18/1998	0	4.2 U	7.1	4	26.3	10900	976	358	1.1	2.3	463
CUA09238	BH	10	08/18/1998	0	1 U	4.2	0.78 J	9.3	11500	66	563	0.1 U	0.4 U	83.1
CUA0924	BH	10	08/18/1998	0	1.7 J	6.5	3.2	15.3	10900	173	663	0.1 U	0.4 U	182
CUA0925	BH	10	08/18/1998	0	8 J	25.5	4.8	36.9	27800	2180	2640	1	3.1	829
CUA0926	BH	10	08/18/1998	0	1.5 J	8.4	2.9	18.1	12100	336	952	0.36	0.39 U	206
CUA0927	BH	10	08/18/1998	0	5.6 J	4.4	3.9	29.5	7420	197	359	0.1 U	1.2 J	860
CUA0928	BH	10	08/18/1998	0	1.5 J	12.7	1.6	16.3	14800	167	495	0.25	0.46 J	214
CUA0929	BH	10	08/18/1998	0	1.2 J	5.8	0.96 J	12.7	14000	149	582	0.09 U	0.4 U	177
CUA0941	BH	10	08/21/1998	0	1.4 J	9.4	21.6	22.9	13100	458	772	0.29 J	0.8 J	259
CUA09410	BH	10	08/21/1998	0	1.5 J	7.3	7.7	22.1 J	12200	254 J	698	0.09 J	1 J	208 J
CUA09411	BH	10	08/21/1998	0	1.9 J	9.1			14900		975	0.15 J	1.3 J	270 J
CUA09411	BH	10	08/21/1998	0			5.5	32.6 J		299 J				
CUA09412	BH	10	08/21/1998	0	1.7 J	8	6.2	24.3 J	13700	257 J	975	0.14 J	1.1 J	247 J

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA09413	BH	10	08/21/1998	0		6.6	0.72 J	22.1 J	16600	36.6 J	577	0.08 J	0.63 J	94.5 J
CUA09414	BH	10	08/21/1998	0	**43.2 J**	**42.2**	**17.2**	**120 J**	18800	**6550 J**	1800	0.75 J	24.5	**2030 J**
CUA09415	BH	10	08/21/1998	0	1.6 J	6.7	2.3	17.8	14900	89.3	535	0.1 U	0.41 U	125
CUA09416	BH	10	08/21/1998	0	2.4 J	9.2	3.6	18.9	15400	**257**	819	0.14	0.7 J	272
CUA09417	BH	10	08/21/1998	0	1 U	9.1	5.1	18.7	15100	158	522	0.1 U	0.41 U	131
CUA09418	BH	10	08/21/1998	0	2.9 J	12	**54.4**	30.6	12700	**974**	605	0.59	1.7 J	268
CUA09419	BH	10	08/21/1998	0		**31.2**	7.3	**102**		**2380**	1670		12	**1100**
CUA09419	BH	10	08/21/1998	0	20.9				23700			0.63		
CUA0942	BH	10	08/21/1998	0	1.7 J	7.6	9.4	17.3	13400	**251**	735	0.17 J	0.5 J	200
CUA0943	BH	10	08/21/1998	0	0.99 U	7.6	3.6	17.1	11500	**272**	588	0.17 J	0.64 J	218
CUA0944	BH	10	08/21/1998	0	1.4 J	8.5	2.9	16.1	13800	**188**	587	0.17	0.4 U	166
CUA0945	BH	10	08/21/1998	0	0.99 U	4.6	1.5	10.2	10400	103	460	0.1 U	0.4 U	107
CUA0946	BH	10	08/21/1998	0	0.99 J	7.4	1 J	21.9	16400	39.7	619	0.08 J	0.7 J	110
CUA0947	BH	10	08/21/1998	0		7.4	0.17 J	20	17300	26.4	582	0.06 J	0.62 J	87.1
CUA0948	BH	10	08/21/1998	0	1.7 J	10.1	4.5	24.8	16800	**317**	1590	0.11	1.5 J	**356**
CUA0949	BH	10	08/21/1998	0	0.87 J	6.5	2.4	17.8	14400	**187**	498	0.12	0.9 J	210
CUA0951	BH	10	08/20/1998	0	8.5 J	19.9 J	7	38.2	15900	**3050**	906	1.9	8.1	**1030**
CUA09510	BH	10	08/20/1998	0	3.1 J	13 J	4.7	36.2	17800	**322**	506	0.26	1.4 J	257
CUA09511	BH	10	08/20/1998	0	3.6 J	11.8 J		41.7	15400	**374**	786	0.41	1.9 J	**459**
CUA09511	BH	10	08/20/1998	0			5.8							
CUA09511	BH	10	09/12/1998	0		9.2 J	5.9	35.6	14800	**375**	491			**408**
CUA09511	BH	10	09/12/1998	0	2.8 J							0.63	1.4 J	
CUA09512	BH	10	08/20/1998	0	3.6 J	12.3	5.4 J	33 J	17900	**413**	749	0.31 J	1.6 J	**297**
CUA09513	BH	10	08/20/1998	0	1.4 J	2.8	3.3 J	18 J	6370	153	125	0.08 J	0.55 J	**445**
CUA09514	BH	10	08/20/1998	0	11.5 J	**35.3**	**10 J**	70.1 J	29900	**3520**	2910	0.9 J	6.7	**1290**
CUA09515	BH	10	08/20/1998	0	3.4 J	16.7	6.4	31.4	16500	**349**	550	0.63	1.7 J	**364**
CUA09516	BH	10	08/20/1998	0	5.3 J	12.1	5.5	82	18300	**588**	665	0.55	2.1	**529**
CUA09517	BH	10	08/20/1998	0	5.4 J	13.6	4.7	71.9	17100	**942**	558	0.42	2 J	**676**
CUA09518	BH	10	08/20/1998	0	1.6 J	11.2	2.6	32.5	18000	**400**	728	0.29	1.3 J	**445**
CUA09519	BH	10	08/20/1998	0	5.7 J	18.9	5	31.9	17800	**1270**	1110	0.66	2.4	**756**
CUA0952	BH	10	08/20/1998	0						**402**		0.45		
CUA0952	BH	10	08/20/1998	0	3.6 J	12.9 J	6.6	33.9	26000		1110		2.2	**346**
CUA09520	BH	10	08/20/1998	0	1.3 J	15.3	2.6	28.2	16600	**264**	485	0.15	0.48 J	**328**
CUA09521	BH	10	08/20/1998	0	15.3	21.8	7.5	**185**	22400	**1800**	986	1	3.6	**1290**
CUA09522	BH	10	08/20/1998	0	5.1 J	**29**	5.3	28.3	22000	**895**	620	0.76	2.2	**737**
CUA09523	BH	10	08/20/1998	0	3.9 J	9.9	2.6	24.6	15000	**410**	312	0.18	1.1 J	**328**
CUA09524	BH	10	08/20/1998	0	4.9 J	12.3	2.4	50.5	17300	**527**	392	0.22	1.1 J	**378**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA09525	BH	10	08/20/1998	0	4.5 J	15.5	12.3	22.8	17400	618	823	0.33	1.4 J	3280
CUA09526	BH	10	08/20/1998	0	3 U	13.7	2.5	21.6	19000	654	346	0.1 U	1.4 J	387
CUA09527	BH	10	08/20/1998	0	2.7 J	11.9	4	25.4	18300	256	754	0.25	0.77 J	350
CUA09528	BH	10	08/20/1998	0	1.6 J	16.8			22500			0.23	1 J	
CUA09528	BH	10	08/20/1998	0			2.3	26.2		139	643			196
CUA09529	BH	10	08/20/1998	0	4.4 J	17	5.2	42.7	17000	462	608	0.85	2.2 J	368
CUA0953	BH	10	08/20/1998	0	3.5 J	18.6 J	2.3	59.4	21500	334	840	0.18	1.2 J	313
CUA09530	BH	10	08/20/1998	0	4.3 J	35.5	4.2	37.4	19700	484	647	0.3	2.6	414
CUA09531	BH	10	08/20/1998	0	10.5 J	23.6	17.3	42.3	16700	5040	1050	2.4	8.2	2100
CUA09532	BH	10	08/20/1998	0	1.9 J	6.3	2	15.8	10900	132	222	0.28	0.39 U	170
CUA09533	BH	10	08/20/1998	0	1.6 J	11.3	1.8	17	18200	166	466	0.17	0.82 J	199
CUA09534	BH	10	08/20/1998	0	20.7	38.3	47.4	119	27400	9460	2630	11.8	23.2	10600
CUA09535	BH	10	08/20/1998	0	19.1	41.7	90.8	129	33600	9430	2470	11.2	21.7	18000
CUA09536	BH	10	08/20/1998	0	10.1 J	20.9	23	60.4	19900	2430	1180	2.6	7.4	3210
CUA09537	BH	10	08/20/1998	0	18.7 J	73.6	17.7 J	89.9 J	21000	1960	1690	1.1 J	13.2	2350
CUA09538	BH	10	08/20/1998	0	26.2 J	49	64.9 J	138 J	29800	11600	3610	8.5 J	26.3	15900
CUA0954	BH	10	08/20/1998	0	3.1 J	12.5	7.8	32.9	14100	488	568	0.22	1.8 J	585
CUA0955	BH	10	08/20/1998	0	3 J	13.3	4.3	36.3	17000	814	712	0.28	1.9 J	567
CUA0956	BH	10	08/20/1998	0	2.2 J	10.5	3.8	25.3	18100	306 J	560	0.27	0.86 J	359
CUA0957	BH	10	08/20/1998	0	0.98 U	3.5	1.6	15.6	7890	123 J	150	0.1 U	0.39 U	151
CUA0958	BH	10	08/20/1998	0	1.3 J	9	2.5	21.7	14300	163 J	655	0.15	0.41 U	209
CUA0959	BH	10	08/20/1998	0	1 U	22	0.73 J	29.5	21800	105 J	728	0.54	0.4 U	407
CUA0961	BH	10	08/27/1998	0	15.6 J	31.3 J	10.8	154 J	34700	1670	2150	0.82	6.3	3680
CUA0962	BH	10	08/27/1998	0	10 J	18.5 J	12.9	77.8 J	23100	3090	1360	2.2	8.6	1680
CUA0963	BH	10	08/27/1998	0	15.3 J	20.7 J	13.1	90.7 J	25800	4030	1780	2.4	11.6	1930
CUA0964	BH	10	08/27/1998	0	24 J	38.1 J	12.9	149 J	34700	2203 J	1930	1.2	11.4	3345 J
CUA0965	BH	10	08/27/1998	0	20.7 J	34.1 J	17	114 J	33000	7222 J	2730	3.8	21.4	2411 J
CUA0966	BH	10	08/27/1998	0								1.5 J		
CUA0966	BH	10	08/27/1998	0	17.7	25.6	16.1	91.8	24800	2490	1310		7.8	1920
CUA0967	BH	10	08/27/1998	0	7.4 J	16.1	7.5	55	17700	1450	920	1	3.4	899
CUA0971	BH	10	08/27/1998	0	9.9 J	16.5	7.1	53.9	17100	1690	858	1.1	5.1	1050
CUA0972	BH	10	08/27/1998	0	21.4	32.7	9.6	130	23900	4710	1180	1.5	12.5	1900
CUA0973	BH	10	08/27/1998	0	12.9 J	30.4	13.8	65.1	20900	2880	840		7.4 J	1220
CUA0973	BH	10	08/27/1998	0								1		
CUA0974	BH	10	08/27/1998	0	6.1 J	7	4.5	30.5	16700	1140	613	0.56	4.1 J	317
CUA0975	BH	10	08/27/1998	0	8.6 J	16.3	6.6	61.7	20000	1650	959	0.71	5.6 J	797
CUA0976	BH	10	08/27/1998	0	7.3 J	18.8	8.1	57.1	18400	1250	892	1.3 J	3.9	703

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA0977	BH	10	08/27/1998	0	8.4 J	20	8.6	63.9	19600	**1730**	945	1.6 J	5.3	**991**
CUA0981	BH	10	08/29/1998	0	2.2 J	13.7	2.5	34 J	20900	**685**	329	0.46 J	1.8 J	**358**
CUA0982	BH	10	08/29/1998	0	1.1 J	10.7	1.8	21.6 J	18700	**597**	398		0.91 J	211
CUA0982	BH	10	08/29/1998	0								0.23 J		
CUA0983	BH	10	08/29/1998	0	2.4 J	10.9	3.9	24 J	18900	**543**	467	0.28 J	1.1 J	**380**
CUA0984	BH	10	08/29/1998	0	1.6 J	15.5	1.3	30.7 J	24500	**179**	768	0.1 UJ	1 J	256
CUA0985	BH	10	08/29/1998	0	2.7 J	10.9	2.1	29.4 J	20300	**350**	462	0.3 J	1.1 J	**286**
CUA0986	BH	10	08/29/1998	0	3.2 J	11.4	2.7	34.2	17600	**624**	615	0.68 J	2.4	**369 J**
CUA0987	BH	10	08/29/1998	0	1.9 J	7.7	2.4	23.7	13900	**270**	390	0.55 J	0.94 J	180 J
CUA0991	BH	10	08/29/1998	0	1.1 J	13.7	0.38 J	25.1	20400	65.4	753	0.15 UJ	0.54 J	138
CUA0992	BH	10	08/29/1998	0	0.67 J	13.1	0.3 U	24.6	21400	65.5	711	0.17 UJ	0.68 J	114
CUA0993	BH	10	08/29/1998	0	2 J	14.9		24.9	22400			0.15 UJ	0.6 J	
CUA0993	BH	10	08/29/1998	0			0.38 J			60	789			118
CUA0994	BH	10	08/29/1998	0		14	1.3	33.7	23400	167	917	0.15	0.75 J	**385**
CUA0995	BH	10	08/29/1998	0		14	0.06 J	25.8	21700	51.7	534	0.18	0.34 J	107
CUA0996	BH	10	08/29/1998	0	1.7 J	13.7	2.5	27.9	20200	**260**	717 J	0.29 J	1.6 J	**359 J**
CUA0997	BH	10	08/29/1998	0			2.9	43.1		**596**		0.29 J	1.7 J	**481 J**
CUA0997	BH	10	08/29/1998	0	3.7 J	18.9			26200		1020 J			
CUA1001	BH	10	08/26/1998	0	5.9 J	21	7.4	66.2 J	21400	**1790**	1120	0.56 J	5.4	**1120**
CUA10010	BH	10	08/26/1998	0	12.9	16.2	7.2 J	60.7	22900	**2860 J**	860 J	2	9.2	**887 J**
CUA10011	BH	10	08/26/1998	0		13.4			17600		614	0.55	3.7	
CUA10011	BH	10	08/26/1998	0	7.7 J		7.3	48.2		**1340**				**968**
CUA10012	BH	10	08/26/1998	0	9.7 J	15.8	2.7	50.5	21900	**2000**	894	1.5	6.1	**616**
CUA10013	BH	10	08/26/1998	0	1.9 J	14.9	1.5	28.5	19000	**315**	714	0.98	0.51 J	240
CUA10014	BH	10	08/26/1998	0	1.3 J	15.8	1.1	30.6	21000	**347**	840	0.34	0.88 J	**303**
CUA10015	BH	10	08/26/1998	0	9.3 J	**33.5**	5.6	84.5	23700	**1920**	1170	0.23	4.9	**1130**
CUA10016	BH	10	08/26/1998	0	7.2 J	18	6.4	52.9	19200	**1310**	601	0.8	3.5	**823**
CUA10017	BH	10	08/26/1998	0	0.99 U	12.8	0.4 J	21.9	19800	114	713	0.1 U	0.4 U	183
CUA10018	BH	10	08/26/1998	0	**155 J**	**41.3 J**	2.4	**396 J**	19000	**1500**	479	0.53	40.4	**505 J**
CUA10019	BH	10	08/26/1998	0	6.3 J	21.6 J	6.2	71.4 J	21300	**1670**	1000	0.73	5.1	**777 J**
CUA1002	BH	10	08/26/1998	0		12.9		26.4 J	21500		837	0.05 UJ		110
CUA1002	BH	10	08/26/1998	0			0.06 J			64.6			0.64 J	
CUA1003	BH	10	08/26/1998	0	1.1 J	13.2	1.2	33.8 J	21500	**290**	953	0.06 J	1.2 J	224
CUA1004	BH	10	08/26/1998	0	3 J	13	1.4	23.1	13762 J	**239**	462	0.11	1.4 J	221
CUA1005	BH	10	08/26/1998	0	29.2	**22.7**	**10.1 J**	**108**	24800	**6900 J**	1050 J	7.7	22.5	**1620 J**
CUA1006	BH	10	08/26/1998	0	9.8 J	15.5	**9.9 J**	57.5	18400	**2360 J**	762 J	1.5	7	**1070 J**
CUA1007	BH	10	08/26/1998	0	1 U	11.2	1.8 J	20.4	17400	157 J	602 J	0.1 U	0.4 U	159 J

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
CUA1008	BH	10	08/26/1998	0	4.4 J	19.2	3.6	52.1	16800	790	739	0.52	2.5	523
CUA1009	BH	10	08/26/1998	0	5.6 J	17.4	3.7	40.1	15800	1150	633	0.8	3	839
CUA1021	BH	10	09/11/1998	0	12.1	23	22.5	63.4	24600	2400	1230 J	2	7.9	3360 J
CUA10210	BH	10	09/12/1998	0	0.67 UJ	11.2	0.74 J	26.4	21300	84.5	679	0.05 UJ	1.3 J	117
CUA10211	BH	10	09/12/1998	0	0.67 UJ	10.8	0.52 J	23.7	22100	58.4	684	0.06 J	1.2 J	99.2
CUA10212	BH	10	09/12/1998	0	0.67 UJ	10.7	0.34 J	22.8	21000	29.8	819	0.05 UJ	1.1 J	80.7
CUA10213	BH	10	09/12/1998	0	2 J	20.2	1.6	60.2 J	22000	262	752	0.14 J	1.8 J	194
CUA10214	BH	10	09/12/1998	0	0.67 UJ	12.5	0.57 U	28.4 J	19600	55.2	577	0.16 J	0.43 J	97.7
CUA1022	BH	10	09/11/1998	0	6.7 J		4.2	52.8		845	923 J	0.37	2.8	1110 J
CUA1022	BH	10	09/11/1998	0		20			21200					
CUA1023	BH	10	09/11/1998	0	6 J	20.6	4	46.7	22000	967	830 J	0.49	3.2	917 J
CUA1024	BH	10	09/11/1998	0	8.6 J	21.2	5.1	47.4	21300	828	837	0.36	4.4	1050
CUA1025	BH	10	09/11/1998	0	17.9	33.5	10.7	88.7	30300	2530	1390	1.3	8.7	2400
CUA1026	BH	10	09/11/1998	0	19.7	30.9	9.2	93.1	28200	2180	1330	0.29	8.2	1780
CUA1027	BH	10	09/11/1998	0	17.4	31.2	13	83.5	28600	2670	1220	1.2	9.1	2180
CUA1028	BH	10	09/12/1998	0	0.67 UJ	11	0.39 J	24.2	21900	31.3	861	0.05 UJ	1.1 J	85
CUA1029	BH	10	09/12/1998	0	0.67 UJ		0.44 J	22.9	22900			0.05 UJ	1.2 J	88.6
CUA1029	BH	10	09/12/1998	0		12.5				32.6	690			
LC10014	RV	22	---	0.5						* 23800				
LC10015	RV	22	---	0.5						* 74700				
LC10016	RV	22	---	0.5						* 28500				
LC10017	RV	22	---	0.5						* 39500				
LC10018	RV	22	---	0.5						* 17300				
LC10019	RV	22	---	0.5						* 31800				
LC10020	RV	22	---	0.5						2180				
LC10021	RV	22	---	0.5						4260				
LC10068	RV	22	---	0.5						13700				
LC10069	RV	22	---	0.5						917				
LC10070	RV	22	---	0.5						13300				
LC10071	RV	22	---	0.5						4140				
LC10072	RV	22	---	0.5						667				
LC10073	RV	22	---	0.5						292				
LC10074	RV	22	---	0.5						833				
LC10075	RV	22	---	0.5						958				
LC10076	RV	22	---	0.5						16400				
LC10077	RV	22	---	0.5						1000				
LC10078	RV	22	---	0.5						7650				

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
LC10079	RV	22	---	0.5						* 33800				
LC10080	RV	22	---	0.5						1250				
LC10081	RV	22	---	0.5						12300				
LC10082	RV	22	---	0.5						5270				
LC10083	RV	22	---	0.5						370				
LC10084	RV	22	---	0.5						4080				
LC10085	RV	22	---	0.5						1700				
LC10086	RV	22	---	0.5						4790				
SF11290	FP	16	---			131	26.2	138	67200	4700	6570			3240
SF11291	FP	16	---			140	24.5	164	69500	4960	6950			3070
SF11292	FP	16	---			93.4	24.8	117	53300	4560	4960			2930
SF11293	FP	16	---			149	43.7	359	96100	* 21700	10300			6650
SF11294	FP	16	---			223	37.7	160	84400	8810	8370			4030
SF11295	FP	16	---			173	18.1	91.9	71100	5250	6540			2750
SF11296	FP	16	---			147	33.4	132	66100	5610	6490			3860
SF11297	FP	16	---			67.7	12	83.4	34200	3050	3010			2030
SF11298	FP	16	---			116	24.4	218	78100	7950	7170			4060
SF11299	FP	16	---			126	52.5	340	113000	* 21800	12800			7310
SF11300	FP	16	---			70.4	6.3	198	30100	1300	2000			1420
SF11301	FP	16	---			111	50.6	387	85600	* 25600	7810			8570
SF11302	FP	16	---			56.1	18.6	216	48000	* 17200	3180			3270
SF8163	TL	13	---			470	29	350	65000	4800	120			6700
SF8173	TL	13	---			640	6.2	250	110000	8700	35			1400
SF8174	TL	13	---			700	3.8	100	95000	390	93			85
SF8175	TL	13	---			560	2.6	53	33000	84	590			91
SF8176	TL	13	---			500	18	270	82000	910	2000			950
SF8290	TL	13	---			150	3	30	28000	67	690			110
Subsurface Soil (mg/kg)														
CUA0891	BH	10	08/22/1998	0.08	1.4 J	8.7	2.4	34	17900	214	1110	0.17	0.97 J	273
CUA0891	BH	10	08/22/1998	0.5	1.3 J	7.7	0.83 J	23.7	17800	70.9	735	0.05 U	0.71 J	113
CUA0891	BH	10	08/22/1998	1	0.95 J	6	0.39 J	22.2	16400	32.5	613	0.06 J	0.72 J	57.4
CUA0891	BH	10	08/22/1998	1.5	0.68 U	6.2	0.53 J	44.6	14600	28.9	633	0.05 U	0.41 J	42.3
CUA08910	BH	10	08/22/1998	0.08	1.6 J	11.7	1.9	25.7	19600	249	1060	0.21	0.51 J	358
CUA08910	BH	10	08/22/1998	0.5	1.7 J	10.8	2.1	24.5	18800	275	1120	0.22	0.51 J	370
CUA08910	BH	10	08/22/1998	1	2.1 J	11.3	2	24.8	20200	294	1160	0.17	0.54 J	403
CUA08911	BH	10	08/22/1998	0.08	1.3 J	8.1	0.56 J	22.9	19600	122	735	0.17	0.41 U	224

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA08911	BH	10	08/22/1998	0.5	1 U	6.9	0.2 U	16	14900	27.3	451	0.1 U	0.41 U	63
CUA08911	BH	10	08/22/1998	1	0.97 U	6.9	0.19 U	13	13300	25	419	0.1 U	0.39 U	43.8
CUA08912	BH	10	08/22/1998	0.08	1.3 J	8.1	1.1	21.3	18000	168	774	0.29	0.43 J	279
CUA08912	BH	10	08/22/1998	0.5	1 U	6.2	0.2 U	18.6	15800	28.3	499	0.1 U	0.41 U	62
CUA08912	BH	10	08/22/1998	1	0.97 U	6.9	0.19 U	13.1	13500	28	473	0.1 U	0.39 U	46.1
CUA08913	BH	10	08/22/1998	0.08	1.5 J	10.7	1.9	22.3	18000	**242**	1060	0.32	0.57 J	**352**
CUA08913	BH	10	08/22/1998	0.5	1.4 J	10.9	1.9	23.8	19100	**258**	1160	0.27	0.49 J	**364**
CUA08913	BH	10	08/22/1998	1	1.3 J	12.2	1.3	24.1	20100	**227**	1150	0.29	0.61 J	**327**
CUA08914	BH	10	08/22/1998	0.08	2 J	11.8	2.4	24.9	18700	**272**	1110	0.28	0.65 J	**381**
CUA08914	BH	10	08/22/1998	0.5	1.7 J	10.3	1.9	22.6	16900	**247**	1050	0.28	0.4 U	**335**
CUA08914	BH	10	08/22/1998	1	2.4 J	12.9	3.6	27.6	22300	**290 J**	1160	0.18 J	0.56 J	**420 J**
CUA08915	BH	10	08/22/1998	0.08	1.7 J	9.6	3.4	23	19000	**267 J**	1020	0.18 J	0.5 J	**347 J**
CUA08915	BH	10	08/22/1998	0.5	1 U	7.2	1.4	20	17100	66.8 J	589	0.1 UJ	0.4 U	125 J
CUA08915	BH	10	08/22/1998	1	0.99 U	7.4	0.68 J	15.5	15800	22.5 J	601	0.1 UJ	0.4 U	39.2 J
CUA08916	BH	10	08/22/1998	0.08	1 U	7.9	2	28	18000	99.7 J	874	0.1 UJ	0.4 U	214 J
CUA08916	BH	10	08/22/1998	0.5	0.99 U	7	0.78 J	18.2	16000	19.8 J	765	0.1 UJ	0.4 U	70.5 J
CUA08916	BH	10	08/22/1998	1	1 U	7.6	1.1	18.6	20900	23.6 J	1210	0.1 UJ	0.41 U	108 J
CUA08917	BH	10	08/22/1998	0.08	4.8 J	**23**	4.9	31.3	18300	**455 J**	982	0.29 J	1.2 J	**516 J**
CUA08917	BH	10	08/22/1998	0.5	2 J	10.4	4	24.8	18100	**314 J**	868	0.28 J	0.71 J	**497 J**
CUA08917	BH	10	08/22/1998	1	1.6 J	9.5	3.5	25.3	18100	**287 J**	820	0.24 J	0.62 J	**476 J**
CUA08918	BH	10	08/22/1998	0.08	2 J	19.5	4	28.5	21500	**279 J**	949	0.24 J	1 J	**350 J**
CUA08918	BH	10	08/22/1998	0.5	1.6 J	9.8	2.8	24.8	18900	**220 J**	891	0.24 J	0.45 J	**333 J**
CUA08918	BH	10	08/22/1998	1	0.99 U		1.9	20.2	14600	96.5 J	471	0.1 UJ	0.4 U	245 J
CUA08918	BH	10	08/22/1998	1		7								
CUA08919	BH	10	08/22/1998	0.08	23.7	**145**	6.4	**185**	40900	**944 J**	2600	0.56 J	9.4	**2900 J**
CUA08919	BH	10	08/22/1998	0.5	6.1 J	**32.7**	4.8	74.9	23500	**896**	1840	0.19	4.2	**1100**
CUA08919	BH	10	08/22/1998	1	1.6 J	11.1	2.7	30.1	18100	**283**	1030	0.18	1.3 J	**379**
CUA0892	BH	10	08/22/1998	0.08	2.5 J	14.9	3.4	31.2	18800	**278**	1180	0.22	1.6 J	**358**
CUA0892	BH	10	08/22/1998	0.5	2.2 J	10.2	3.3	31.7	19000	**369**	1260	0.21	1.4 J	**400**
CUA0892	BH	10	08/22/1998	1	1.6 J	8.7	2.1	27	19500	**186**	1030	0.14	1 J	275
CUA0893	BH	10	08/22/1998	0.08	1 J	7.9	0.93 J	39.8 J	15900	111	645	0.06 J	0.9 J	152
CUA0893	BH	10	08/22/1998	0.5		6	0.06 U	28.7 J	15500	29.1	444	0.05 U	0.74 J	59.5
CUA0893	BH	10	08/22/1998	1		7.2	0.06 U	19.5 J	14700	27.3	705	0.05 U	0.48 J	43.6
CUA0894	BH	10	08/22/1998	0.08	1.5 J	7.9	1.3	27.8 J		148		0.13	0.89 J	212
CUA0894	BH	10	08/22/1998	0.08					16600		813			
CUA0894	BH	10	08/22/1998	0.5		6.1	0.06 U	22.8 J	14600	23	552	0.05 U	0.82 J	43.9
CUA0894	BH	10	08/22/1998	1		7.6	0.06 U	19.2 J	14000	24.2	589	0.05 U	0.34 J	37.4

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0895	BH	10	08/22/1998	0.08	1.3 J	11.2	2.3	44.3 J	18100	**272**	1140	0.16	1.2 J	**354**
CUA0895	BH	10	08/22/1998	0.5	1.3 J	12.1	1.6	29.2 J	19400	**260**	1120	0.18	1.2 J	**332**
CUA0895	BH	10	08/22/1998	1	0.82 J	8	0.74 J	26	20100	76.4	846	0.09 J	0.8 J	140
CUA0896	BH	10	08/22/1998	0.08	2.2 J	10.7	4.1	32.7 J	19900	**493**	1130	0.34	2.1	**679**
CUA0896	BH	10	08/22/1998	0.5	0.97 J	8.8	0.95 J	33.1 J	19400	160	861	0.18	1.2 J	**284**
CUA0896	BH	10	08/22/1998	1		7.7	0.06 U	23.2 J	18200	41.4	556	0.07 J	0.84 J	79.6
CUA0897	BH	10	08/22/1998	0.08	1.1 J	8.3	1.1	25.8 J	16600	165	782	0.15	0.91 J	229
CUA0897	BH	10	08/22/1998	0.5		3.6	0.06 U		8310	19.4	212	0.05 U		39.5
CUA0897	BH	10	08/22/1998	0.5				16.8 J					0.31 J	
CUA0897	BH	10	08/22/1998	1		3.8	0.06 U	13.6 J	7420	9.9	202	0.05 U	0.36 J	19.8
CUA0898	BH	10	08/22/1998	0.08	1.8 J	10.6 J	2.6 J	28	17500	**292**	934	0.15	1.5 J	**350**
CUA0898	BH	10	08/22/1998	0.5	1.8 J	11 J	2.2 J	34.3	18000	**283**	938	0.15	1.3 J	**345**
CUA0898	BH	10	08/22/1998	1	0.75 J	5.8 J	0.06 UJ	24.6	13100	46.7	402	0.06 J	0.66 J	94.8
CUA0899	BH	10	08/22/1998	0.08	1.5 J	8.2 J	2.6 J	27.9	17400	**277**	772	0.2	1.4 J	**460**
CUA0899	BH	10	08/22/1998	0.5	0.77 J	6.4 J	0.18 J	26	15900	53.9	557	0.05 U	0.83 J	130
CUA0899	BH	10	08/22/1998	1			0.06 UJ		11500	21.6	350	0.05 U	0.56 J	
CUA0899	BH	10	08/22/1998	1	0.69 J	4.7 J		20.2						46.5
CUA0901	BH	10	08/23/1998	0.08	1.9 J	10.1	2.5	25.3	17800	**270**	1050	0.23	0.58 J	**386**
CUA0901	BH	10	08/23/1998	0.5	1.2 J	10.7	1.8	25.2	19800	**269**	1140	0.33	0.41 U	**386**
CUA0901	BH	10	08/23/1998	1	1 U	11.4	1	25.2	20100	**207**	960	0.27	0.41 U	**296**
CUA0901	BH	10	08/23/1998	1.5	1 U	8.1	0.2 U	20.7	19800	34.2	587	0.1 U	0.41 U	88.7
CUA09010	BH	10	08/23/1998	0.08	1.4 J	9.3	1.8	28.2	21600	**193**	810	0.34	0.55 J	**319**
CUA09010	BH	10	08/23/1998	0.5	0.98 U	9.4	0.2 U	20.1	19400	31.9	617	0.09 U	0.39 U	62.3
CUA09010	BH	10	08/23/1998	1	1 U	10.2	0.2 U	20.6	19500	31.9	640	0.1 U	0.4 U	54.8
CUA09011	BH	10	08/23/1998	0.08	1 J	13	2.7	31.4	23700	**270**	1140	0.4	0.53 J	**420**
CUA09011	BH	10	08/23/1998	0.5	1 U	12.9	2.2	32.4	25600	**252**	1150	0.43	0.41 J	**399**
CUA09011	BH	10	08/23/1998	1	0.99 U	9.3	0.37 J	21.5	22800	62.3	766	0.1 U	0.39 U	135
CUA09012	BH	10	08/23/1998	0.08	2.2 J	14.2	4.8	37.1	23800	**495**	1360	0.29	1.1 J	**762**
CUA09012	BH	10	08/23/1998	0.5	1.7 J	12.4	2.4	32.3	24600	**269**	1060	0.17	0.78 J	**479**
CUA09012	BH	10	08/23/1998	1	1 U	9.6	0.33 J	27	24400	49	631	0.1 U	0.4 U	136
CUA09013	BH	10	08/23/1998	0.08	3.5 J	21	3.3	40.7	24200	**363**	1370	0.22	1.7 J	**448**
CUA09013	BH	10	08/23/1998	0.5	2.1 J	16	2.9	34.9	24000	**345**	1390	0.24	1.1 J	**450**
CUA09013	BH	10	08/23/1998	1	1.1 J	11.4	0.96 J	27.9	23300	145	2040	0.1 U	0.4 U	207
CUA09014	BH	10	08/23/1998	0.5	1.8 J	10.8 J	2.2 J	28.8	19200	**248**	1090	0.16	1.3 J	**370**
CUA09014	BH	10	08/23/1998	1	1.4 J	10.8 J	1.7 J	28.4	19300	**228**	1040	0.15	1.1 J	**331**
CUA09014	BH	10	08/23/1998	0.08	2.2 J	12.3	4.2	28.3	22300	**303**	1190	0.18	0.59 J	**441**
CUA09015	BH	10	08/23/1998	0.08			4.5 J			**649**	1210	0.35	2.4	

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09015	BH	10	08/23/1998	0.08	3.8 J	15.1 J		46	19400					**695**
CUA09015	BH	10	08/23/1998	0.5	0.92 J	6.2 J	0.06 UJ	21.7	16400	44	671	0.05 U	0.84 J	77.8
CUA09015	BH	10	08/23/1998	1	1.8 J	8.6 J	0.87 J	27.2	18200	**182**	1090	0.09 J	1.1 J	273
CUA09016	BH	10	08/23/1998	0.08	1.8 J	10.3 J	2.7 J	27.7	18500	**261**	1060	0.14	1.3 J	**361**
CUA09016	BH	10	08/23/1998	0.5	1.7 J	10.8 J	2.4 J	29.2	19200	**282**	1140	0.14	1.3 J	**390**
CUA09016	BH	10	08/23/1998	1	1.4 J	11.1	2.2	28.4 J	19700	**284**	1180	0.16 J	1.3 J	**377**
CUA09017	BH	10	08/23/1998	0.08	10 J	**80.3**	3.5	**110 J**	24700	**713**	1480	0.05 UJ	9.1	**553**
CUA09017	BH	10	08/23/1998	0.5	19 J	**241**	3.9	**164 J**	30000	**926**	1900	0.14 J	14.6	**560**
CUA09017	BH	10	08/23/1998	1	**32.8 J**	**415**	3.6	**243 J**	35900	**1100**	2590	0.31 J	27	**362**
CUA09018	BH	10	08/23/1998	0.08	1 J	8.6	0.85 J	26.1 J	18800	133	938	0.08 J	1 J	176
CUA09018	BH	10	08/23/1998	0.5	0.7 J	6.3	0.06 U	21.6 J	16900	28.6	582	0.05 UJ		55.9
CUA09018	BH	10	08/23/1998	0.5									0.67 J	
CUA09018	BH	10	08/23/1998	1	0.67 U	5.2	0.1 J	16.5	12700	20.2	253	0.05 U	0.39 J	31.9
CUA09019	BH	10	08/23/1998	0.08	1.3 J	7.5	1.2	23.4 J	16100	82.5 J	695	0.08 J	0.76 J	121 J
CUA09019	BH	10	08/23/1998	0.5	1.1 J	6.8	0.57 J	20.7 J	16700	45.7 J	638	0.05 U	0.62 J	75.3 J
CUA09019	BH	10	08/23/1998	1	0.76 J									
CUA09019	BH	10	08/23/1998	1		7.4	0.33 J	29.3 J	15600	31.9 J	737	0.07 J	0.53 J	49.3 J
CUA0902	BH	10	08/23/1998	0.08	1 U	11.2	2.6	27.7	20200	**227**	1110	0.23	0.44 J	**342**
CUA0902	BH	10	08/23/1998	0.5	1.2 J	10.7	2	25.2	19300	**219**	1040	0.4	0.4 U	**311**
CUA0902	BH	10	08/23/1998	1	1.6 J	12.1	2	28.3	21700	**238**	1160	0.4	0.43 J	**329**
CUA0903	BH	10	08/23/1998	0.08	1.3 J	9.2	1.2	20.2	18400	104	836	0.16	0.39 U	181
CUA0903	BH	10	08/23/1998	0.5	1 J	9	0.2 U	19.5	17900	49.2	699	0.1 U	0.4 U	84.2
CUA0903	BH	10	08/23/1998	1	1 U	7.7	0.28 J	17.9	16300	37.4	596	0.1 U	0.41 U	68.3
CUA0904	BH	10	08/23/1998	0.08		12.3	4.2	27	20200	**336**	1240		0.85 J	**435**
CUA0904	BH	10	08/23/1998	0.08	2.4 J							0.29		
CUA0904	BH	10	08/23/1998	0.5	2.3 J	11	3.1	25.5	18800	**307**	1050	0.29	0.61 J	**406**
CUA0904	BH	10	08/23/1998	1	2.6 J	12	4.1	28.8	21600	**334**	1130	0.17	0.87 J	**441**
CUA0905	BH	10	08/23/1998	0.08	1.2 J	9.6 J	1.2	30.3 J	20500	**189**	810	0.18	1.3 J	276
CUA0905	BH	10	08/23/1998	0.5	0.72 J	7 J	0.06 U	22.1 J	15600	31.5	479	0.05 J	0.73 J	62.3
CUA0905	BH	10	08/23/1998	1	0.9 J	7.3 J	0.06 U	20.9 J	15100	38.4	481	0.06 J	0.51 J	58.6
CUA0906	BH	10	08/23/1998	0.08	2.3 J	11 J	3	30.4 J	20100	**250**	1150	0.19	1.3 J	**343**
CUA0906	BH	10	08/23/1998	0.5	1.3 J	11.9 J	1.9	31.9 J	20900	**253**	1120	0.25	1.4 J	**339**
CUA0906	BH	10	08/23/1998	1	1.4 J	10.6 J	0.36 J	30.3 J	20800	111	771	0.15	0.99 J	183
CUA0907	BH	10	08/23/1998	0.08	1.8 J	10.1 J	2	38.4 J	18100	**234**	950	0.21	1.7 J	**353**
CUA0907	BH	10	08/23/1998	0.5		7.9 J	0.06 U		15900		733	0.08 J	0.76 J	
CUA0907	BH	10	08/23/1998	0.5	1.1 J			27.8 J		70.7				86.2
CUA0907	BH	10	08/23/1998	1	0.88 J	7.6 J	0.06 U	22.3 J	15100	29	658	0.06 J	0.59 J	44.1

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0908	BH	10	08/23/1998	0.08	2.1 J	11.2 J	2	32.4 J	21100	243	1150	0.21	1.5 J	388
CUA0908	BH	10	08/23/1998	0.5	1 J	9.2 J	0.06 U	26 J	21900	68.1	910	0.1 J	1.1 J	168
CUA0908	BH	10	08/23/1998	1		7.6 J	0.06 U	20.9 J	17800	34.5	584	0.2	0.81 J	81.4
CUA0909	BH	10	08/23/1998	0.08	1.4 J	9.5 J	1.6	25.5 J	18700	145	945	0.15	1.1 J	230
CUA0909	BH	10	08/23/1998	0.5	1.3 J	8.2 J	0.22 J	24.8 J	20400	48.3	934	0.07 J	1 J	127
CUA0909	BH	10	08/23/1998	1	0.89 J			37.2 J		58.7		0.08 J	0.87 J	
CUA0909	BH	10	08/23/1998	1		10.2	0.33 J		20600		894			100
CUA0911	BH	10	08/28/1998	0.08	24.7 J	129	7.1	173	32100	1130	2030	0.56	13.5 J	1510
CUA0911	BH	10	08/28/1998	0.5	7.2 J	37.7	11.7	96.5	24100	1340	1470	1.1	6.3 J	1760
CUA0911	BH	10	08/28/1998	1	5.8 J	26.5	14.6	134	22500	1720	1380	2.2	6.3 J	2040
CUA09110	BH	10	08/28/1998	0.08	134	282	4	441	41900	924	2780	2.5	38.5	1150
CUA09110	BH	10	08/28/1998	0.5	3.1 J	11.4	1.9	27.9	19700	508	861	0.72	1.2 J	460
CUA09110	BH	10	08/28/1998	1	3.3 J	10	1.6	25.8	17100	535	650	0.81	1.4 J	352
CUA09111	BH	10	08/28/1998	0.08	7.1 J	20.2	0.86 J	75	24700	384	1670	0.44	4.1	541 J
CUA09111	BH	10	08/28/1998	0.5	1.8 J	12	0.2 U	46.9	23400	154	1620	0.18	1.5 J	262 J
CUA09111	BH	10	08/28/1998	1	1.7 J	16.3	0.2 U	41.5	25600	138	1400	0.17	0.98 J	253 J
CUA09112	BH	10	08/28/1998	0.08	166	681	4.2	786	51900	2320	3350	1.6	85.5	1230 J
CUA09112	BH	10	08/28/1998	0.5	45.2	308	2.1	369	34600	1520	2230	1.1	39.7	693 J
CUA09112	BH	10	08/28/1998	1	18.6	132	2.1	179	28600	1120	1760	0.79	18.2	645 J
CUA09113	BH	10	08/28/1998	0.08					27500					
CUA09113	BH	10	08/28/1998	0.08	7.8 J	93.1	9.6	94.6		2430	1210 J	1	8.1	2140
CUA09113	BH	10	08/28/1998	0.5	1.7 J	14.1	3.7	86.5	21900	535	227	0.23	1.6 J	566
CUA09113	BH	10	08/28/1998	1	1.1 U	11.4	2.3	58	14400	512	276	0.11 U	1.6 J	438
CUA09114	BH	10	08/28/1998	0.08	4.5 U	13.7	0.66 J	40.1	18500	263	1240	0.16	1.1 J	374
CUA09114	BH	10	08/28/1998	0.5	2.4 U	14.8	0.2 U	32.1	19800	152	1040	0.1 U	0.59 J	250
CUA09114	BH	10	08/28/1998	1	1.4 U	15	0.2 U	25	19700	76.5	791	0.1 U	0.39 U	183
CUA09115	BH	10	08/28/1998	0.08	26.4	51.5	5.4	112	20500	1710	761	0.59	8.1	1070
CUA09115	BH	10	08/28/1998	0.5								0.41		
CUA09115	BH	10	08/28/1998	0.5	26.8	54.1	4.3	113	19200	1550	686		9.3	840
CUA09115	BH	10	08/28/1998	1	7.6 J	14.8	0.77 J	38.2	8860	386	186	0.11	2.6	200
CUA09116	BH	10	08/28/1998	0.08	53.8	121	5.2	218	27700	1250	1860	0.55	16.7	1340
CUA09116	BH	10	08/28/1998	0.5	46.1	133	6.1	188	22200	1420	1620	0.62	15.7	1190
CUA09116	BH	10	08/28/1998	1	8.6 J	21.5	8.2	46.9	18300	1020	775	1.1	2.9	1250
CUA09117	BH	10	08/28/1998	0.08	4.3 J	20.4	9.2	57.7	21500	1840	1230	0.43	3.9	1540
CUA09117	BH	10	08/28/1998	0.5	3.6 J	20.2	5.5	51.2	21100	1580	1260	0.44	3.7	964
CUA09117	BH	10	08/28/1998	1		16.5	3.3	43.7	21200	1140	1080	0.31	3	565
CUA09117	BH	10	08/28/1998	1	2.9 J									

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09118	BH	10	08/28/1998	0.08	1.8 J	6.8	0.81 J	36.9	19400	107	1530	0.07 J	1.3 J	160
CUA09118	BH	10	08/28/1998	0.5	2.3 J	11.5	3.9	38.7	21500	449	1270	0.3	2	530
CUA09118	BH	10	08/28/1998	1	3 J	11.1	8	41	21300	907	934	0.77	2.9	1150
CUA09119	BH	10	08/28/1998	0.08	0.99 J	8.3	1.6	40	19500	227	1520	0.13	1.9 J	257
CUA09119	BH	10	08/28/1998	0.5	0.86 J	12.8	1.4	35.6	20300	163	1200	0.12	1.2 J	203
CUA0912	BH	10	08/28/1998	0.08	137 J	796	4.5	487	79800	1310	5940	0.31	58.6 J	949
CUA0912	BH	10	08/28/1998	0.5	51 J	464	4.2	379	39300	1080	3680	0.5	45.5 J	445
CUA0912	BH	10	08/28/1998	1	27 J	202	4.4	196	33300	723	2480	0.36	19.7 J	598
CUA0913	BH	10	08/28/1998	0.08	17.8 J	43.1	7	158	34300	943	2280	0.32	7.9 J	2780
CUA0913	BH	10	08/28/1998	0.5	22.3 J	73.1	7.5	177	30800	1070	2230	0.38	11.1 J	2160
CUA0913	BH	10	08/28/1998	1	13.8 J	69.6	5.4	149	26200	822	2110	0.38	9.3 J	1370
CUA0914	BH	10	08/28/1998	0.08	5.8 J	21.9	2.6	50.6	21900	1370	1250	0.55	2.9	
CUA0914	BH	10	08/28/1998	0.08										884
CUA0914	BH	10	08/28/1998	0.5	3.7 J	13.9	1.5	29.5	12500	602	666	0.31	1.4 J	501
CUA0914	BH	10	08/28/1998	1	4.3 J	17.8	1.7	39.9	17300	760	883	0.38	1.9 J	635
CUA0915	BH	10	08/28/1998	0.08	2.4 J	10.9	2	22.9	15700	337	550	0.28	0.94 J	511
CUA0915	BH	10	08/28/1998	0.5	1.3 J	8.8	0.8 J	19	14300	202	524	0.17	0.42 U	287
CUA0915	BH	10	08/28/1998	1	1.4 J	10.1	0.56 J	18.2	17000	186	720	0.1	0.39 U	224
CUA0915	BH	10	08/28/1998	1.5	1.6 J	9.8	0.41 J	17.9	16100	150	717	0.1 U	0.41 U	192
CUA0916	BH	10	08/28/1998	0.08	11.5 J	26.9	7.5	68.5	25400	1310	1460	0.78	4.5	1730
CUA0916	BH	10	08/28/1998	0.5					23600					
CUA0916	BH	10	08/28/1998	0.5	4.5 U	17.4	4	47		640	1170	0.57	1.8 J	1040
CUA0916	BH	10	08/28/1998	1	4.8 U	13.5	2.5	33.4	20100	402	925	0.34	1.2 J	659
CUA0917	BH	10	08/28/1998	0.08	3.4 J	12.2	0.55 J	39.9	19500	243	1580	0.1 U	1.4 J	337
CUA0917	BH	10	08/28/1998	0.5	2.1 J	27	2.5	32.6	21400	507	1050	0.28	0.81 J	567
CUA0917	BH	10	08/28/1998	1	3.8 J	14.6	7.8	33.7	19300	942	781	1	1.9 J	1190
CUA0918	BH	10	08/28/1998	0.08	13	26.5	16.4	71	22800	1890	1350	0.96	5.8	2590
CUA0918	BH	10	08/28/1998	0.5	7.9 J	22.9	16.6	66.5	23800	1810	1420	1.7	5.2	2710
CUA0918	BH	10	08/28/1998	1			15.6					1.5		
CUA0918	BH	10	08/28/1998	1	23.4	38.1		121	35100	3640	2580		8.8	2750
CUA0919	BH	10	08/28/1998	0.08	2.5 J	9.2	1.8	24.5	17000	268	857	0.49	0.78 J	386
CUA0919	BH	10	08/28/1998	0.5	1.3 J	9.1	0.61 J	19.7	17000	149	835	0.23	0.45 J	235
CUA0919	BH	10	08/28/1998	1	1.6 J	8.8	0.2 U	16.8	17900	86.3	621	0.11	0.4 U	145
CUA0921	BH	10	08/18/1998	0.08	2.3 U	6.6	5.4	30.6	11400	755	427	2.3	2 J	591
CUA0921	BH	10	08/18/1998	0.5	1 U	3.9	0.36 J	9.5	12300	37.2	567	0.1 U	0.4 U	67.5
CUA0921	BH	10	08/18/1998	1	1 U	4.4	0.21 U	9.8	13500	17.6	354	0.1 U	0.42 U	49.5
CUA09210	BH	10	08/18/1998	0.08		6.6	1.9	19.4 J	15300	154	984	0.07 J	0.79 J	141

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09210	BH	10	08/18/1998	0.5		7	1.1	20.3 J	16700	67.4	820	0.06 J	0.73 J	77.7
CUA09210	BH	10	08/18/1998	1	1 J	7.9	1.1	29.3 J	17500	94.4	849	0.07 J	0.59 J	96.5
CUA09210	BH	10	08/18/1998	1.5	0.76 J	8.3	1.1	24.9 J	17900	63.3	851	0.05 UJ	0.66 J	76.1
CUA09211	BH	10	08/18/1998	0.08		4.4	1.7	20.3 J	14600	52.5	473	0.08 J	0.47 J	88.2
CUA09211	BH	10	08/18/1998	0.5		4	1	16.1 J	15000	30.7	409	0.1 J	0.51 J	58.8
CUA09211	BH	10	08/18/1998	1		4.6	1.4	16.6 J	16300	45.9	618	0.08 J	0.49 J	75.3
CUA09212	BH	10	08/18/1998	0.08	0.88 J	7.8	2.6	22.8 J	17200	114	1440	0.13 J	1 J	138
CUA09212	BH	10	08/18/1998	0.5	0.66 J	7.5	2.1	21.4 J	17300	87.5	1240	0.12 J	0.75 J	107
CUA09212	BH	10	08/18/1998	1		8.4	1.2	27.8 J	19000	91	1260	0.06 J	0.71 J	115
CUA09213	BH	10	08/18/1998	0.08	1.5 J	6.8	1.9	19.6 J	17000	**178**	927	0.14	1.3 J	151
CUA09213	BH	10	08/18/1998	0.5	1.6 J	7.8	1.8	21.5 J	17700	**367**	1020	0.1 J	1.8 J	159
CUA09213	BH	10	08/18/1998	1	1.8 J	7.5	2	22.4 J	17100	**322**	1010	0.12	1.7 J	168
CUA09214	BH	10	08/18/1998	0.08	0.73 J	5.3	0.34 J	19.1 J	16400	43.8	427	0.1 J	0.62 J	63.9
CUA09214	BH	10	08/18/1998	0.5		4.2	0.08 U	14.7 J	16000	16.5	158	0.05 U	0.27 J	27.9
CUA09214	BH	10	08/18/1998	1		4.2	0.06 U	15 J	15700	13.5	126	0.05 U	0.33 J	23.3
CUA09215	BH	10	08/18/1998	0.08	1.5 J	7.9	1.7	34.3 J	17400	147	996	0.12	0.99 J	151
CUA09215	BH	10	08/18/1998	0.5		7.3	1.4	19.8 J	16700	106	888	0.09 J	0.82 J	123
CUA09215	BH	10	08/18/1998	1		6.3	0.49 J	26.3 J	19800	43.7	1390	0.05 U	0.79 J	84.3
CUA09216	BH	10	08/18/1998	1	1 U	5.8	0.79 J	11.4	11600	94	772	0.14	0.4 U	149
CUA09216	BH	10	08/18/1998	0.08	1 J	8.7	3.2	22.7 J	18100	**281**	1370	0.37	1.3 J	261
CUA09216	BH	10	08/18/1998	0.5	1.3 J	7.4			17300			0.14		
CUA09216	BH	10	08/18/1998	0.5			2.3	41.4 J		**204**	1260		1 J	255
CUA09217	BH	10	08/18/1998	0.08	4 J	15.6	4.3	31.4 J	20200	**841**	2110	0.28	2.5	**432**
CUA09217	BH	10	08/18/1998	0.5		8.2	1.4	23.6 J	16000	**211**	1490	0.05 J	0.97 J	185
CUA09217	BH	10	08/18/1998	1		8.9	1.3	43.1 J	19100	**187**	3080	0.07 J	1.2 J	150
CUA09218	BH	10	08/18/1998	0.08	12.7 J	**49.8**	**10.7**	77.9 J	42600	**4970**	**5050**	1.7	11.4	**1760**
CUA09218	BH	10	08/18/1998	0.5	4.5 J	21.6	5.7	39.1 J	27000	**1440**	2330	0.56	4.2	**791**
CUA09218	BH	10	08/18/1998	1	3 J	15.4	3.3	30 J	24200	**713**	1880	0.26	2.1	**412**
CUA09219	BH	10	08/18/1998	0.5	0.98 U	5.3	0.97 J	10.3	15700	62.9	755	0.1 U	0.39 UJ	88.1
CUA09219	BH	10	08/18/1998	1	0.98 U	3.9	0.48 J	9.6	16200	52.1	691	0.1 U	0.39 U	74.5
CUA09219	BH	10	08/18/1998	1.5	0.98 U							0.1 U	0.39 U	
CUA09219	BH	10	08/18/1998	1.5		5.1	0.53 J	10.4	16500	38.8	529			72.3
CUA09219	BH	10	08/18/1998	0.08		5.7	1.8	19.9 J	16700	110	781	0.05 U	0.79 J	138
CUA0922	BH	10	08/18/1998	0.08	1 U	3.8	0.66 J	10.5	11800	62.3	408	0.11 U	0.42 U	76.2
CUA0922	BH	10	08/18/1998	0.5	0.99 U	3.7	0.2 U	7.6	11400	12.5	279	0.1 U	0.4 U	37.6
CUA0922	BH	10	08/18/1998	1	0.99 U	3.1	0.2 U	10	11900	17.9	285	0.1 U	0.39 U	40.2
CUA09220	BH	10	08/18/1998	0.08	1.3 J	12.8	2.6	20.4	19000	**376**	1620	0.17	0.52 U	251

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09220	BH	10	08/18/1998	0.5	1 U	7.1	0.35 J	16	16000	56.9	1190	0.1 U	0.4 U	82.9
CUA09220	BH	10	08/18/1998	1	0.98 U	10.8	0.77 J	19.1	22100	99.3	3590	0.17	0.39 U	106
CUA09221	BH	10	08/18/1998	0.08	1 U	10.7	1.7	18.9	21100	128	1420	0.12	0.4 UJ	149
CUA09221	BH	10	08/18/1998	0.5	1 U	9.3	1.1	17.6	19900	94.7		0.12	0.4 UJ	115
CUA09221	BH	10	08/18/1998	0.5							1720			
CUA09221	BH	10	08/18/1998	1	1 U	5.8	0.56 J	12.7	13300	46.1	1260	0.23	0.4 UJ	55.7
CUA09222	BH	10	08/18/1998	0.08	0.97 U	14.3	2.2	28.1	27000	**193**	2010	0.23	0.39 UJ	242
CUA09222	BH	10	08/18/1998	0.5	1 U	13.4	1.3	24.8		124	1870	0.12	0.4 UJ	188
CUA09222	BH	10	08/18/1998	0.5					27600					
CUA09222	BH	10	08/18/1998	1	1 U	11.8	0.9 J	22.6	24900	92.2	1970	0.1 U	0.4 UJ	136
CUA09223	BH	10	08/18/1998	0.08	1.2 J	10.8	3.8	22	20100	**180**	1360	0.17	0.4 UJ	**391**
CUA09223	BH	10	08/18/1998	0.5	1.1 J	9.5	1.8	18.5	20200	110	1090	0.12	0.39 UJ	238
CUA09223	BH	10	08/18/1998	1	0.98 U	6.9	0.93 J	13.9	16000	57.7	612	0.1 U	0.39 UJ	121
CUA09224	BH	10	08/18/1998	0.08	2.6 J	15.5	**17.4**	29.7	21000	**536**	1730	0.45	0.82 J	**790**
CUA09224	BH	10	08/18/1998	0.5	1 U	10.7	4	22.4	20000	**180**	1460	0.23	0.41 UJ	**407**
CUA09224	BH	10	08/18/1998	1		5.3	1.1	18.9 J	13500	50	918	0.05 UJ	0.6 J	112
CUA09225	BH	10	08/18/1998	0.08	2 J	12.4	6	29.4 J	17200	**634**	1340	0.33 J	1.7 J	**373**
CUA09225	BH	10	08/18/1998	0.5	0.94 J	9.3	3.3	25.9 J	17800	**249**	1270	0.21 J	1.2 J	256
CUA09225	BH	10	08/18/1998	1		5.3	0.79 J	20.4 J	14900	72.4	653	0.08 J	0.61 J	100
CUA09226	BH	10	08/18/1998	0.08	1.9 J	11.6	3.3	29.6 J	18600	**489**	1590	0.25 J	1.5 J	**346**
CUA09226	BH	10	08/18/1998	0.5	0.72 J	9.6	2	27.1 J	19600	**256**	1980	0.15 J	1.3 J	216
CUA09226	BH	10	08/18/1998	1	5.8 J	10.6	1.3	36.9 J	22400	166	2380	0.1 J	1.3 J	148
CUA09227	BH	10	08/18/1998	0.08	0.82 J	6	1.7	21.1 J	16300	**307**	854	0.2 J	1.1 J	269
CUA09227	BH	10	08/18/1998	0.5		4.4	0.73 J	14.4 J	16200	89.4	757	0.07 J	0.72 J	113
CUA09227	BH	10	08/18/1998	1	0.98 U	4.3	0.22 J	10.7	15100	64.1	482	0.1 U	0.39 U	105
CUA09228	BH	10	08/18/1998	0.08	19.8	**51.7**	7.5	73.8	43300	**4440**	**4130**	2.1	7.9	**1850**
CUA09228	BH	10	08/18/1998	0.5	6.2 J	20.9	2.4	31.2	26000	**1320**	2050	0.6	2.1	**637**
CUA09228	BH	10	08/18/1998	1	0.99 U	4.8	0.2 U	10		56.6	472	0.1 U	0.4 U	
CUA09228	BH	10	08/18/1998	1					11200					52.8
CUA09229	BH	10	08/18/1998	0.08	1 U	4	0.49 J	9.1	13400	56	510	0.1 U	0.41 U	93.5
CUA09229	BH	10	08/18/1998	0.5	1 U	6	0.29 J	10.8	16100	59	604	0.1 U	0.41 U	109
CUA09229	BH	10	08/18/1998	1	0.99 U	9.5	0.3 J	10.1	14300	55.8	545	0.1 U	0.4 U	92.2
CUA0923	BH	10	08/18/1998	0.08	1.1 U	9.8	2.6	19.5	14700	**296**	1160	0.27	0.61 J	226
CUA0923	BH	10	08/18/1998	0.5	1.1 U	7.3	0.89 J	16.5	14600	99.7	1010	0.09 U	0.4 U	120
CUA0923	BH	10	08/18/1998	1	1 U	5.1	0.2 U	12.5	13500	45	645	0.1 U	0.41 U	72.8
CUA09230	BH	10	08/18/1998	0.08	0.97 U	4.1	0.32 J	9.4	14400	50.9	508	0.1 U	0.39 U	96.3
CUA09230	BH	10	08/18/1998	0.5	1 U	4.2	0.2 U	9.4	14400	45.4	500	0.1 U	0.4 U	80.9

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09230	BH	10	08/18/1998	1	0.98 U	4.2	0.42 J	8.3	13100	34.3	412	0.1 U	0.39 U	64.2
CUA09231	BH	10	08/18/1998	0.08	1.7 J	**25.4**	2.3	19.3	16900	164	713	0.1 U	0.5 U	204
CUA09231	BH	10	08/18/1998	0.5	1.4 J	13.9	3.6	19.5	14900	**236**	955	0.23	0.55 U	270
CUA09231	BH	10	08/18/1998	1	1.5 J	9.1	2.1	15.1	14800	169	1070	0.23	0.41 U	190
CUA09232	BH	10	08/18/1998	0.08		12.6	8.9	64.7	17200	**3470**	1870		6.5	**1240**
CUA09232	BH	10	08/18/1998	0.08	8.9 J							2.7		
CUA09232	BH	10	08/18/1998	0.5	1.4 J	6.7	2.5	19.7	13300	**500**	404	0.56	1.4 U	**364**
CUA09232	BH	10	08/18/1998	1	1.4 J	4	1.2	10.1	11700	140	213	0.12	0.41 U	213
CUA09233	BH	10	08/18/1998	0.08	2.8 J	6.4	2.4	28.8	13900	**554**	721	0.43	1.7 U	**471**
CUA09233	BH	10	08/18/1998	0.5	2.4 J	5.8	2	20.2	15500	**416**	532	0.43	1.7 U	**340**
CUA09233	BH	10	08/18/1998	1	0.98 U	4.8	0.33 J	8.8	13900	37	220	0.1 U	0.39 U	59.8
CUA09234	BH	10	08/18/1998	0.08	9.6 J	19.7	**11.9**	85.5	21100	**4790**	1920	3.1	10.3	**1870**
CUA09234	BH	10	08/18/1998	0.5	3.5 J	10.1	6	38.1	15900	**1570**	766	1.5	6.3	**967**
CUA09234	BH	10	08/18/1998	1	0.98 U	3.7	0.39 J	9.1	12500	164	219	0.1 U	1.5 U	69.5
CUA09235	BH	10	08/18/1998	0.08	8.7 J	14.6	7.1	68.5	18600	**3180**	2200	2.5	7.7	**994**
CUA09235	BH	10	08/18/1998	0.5	18.3	**24.4**	6.6	91.6	22800	**5320**	2690	4.7	16.3	**1160**
CUA09235	BH	10	08/18/1998	1	6.8 J	12.4	2.8	45.9	19000	**2370**	1330	2.8	10.5	**538**
CUA09236	BH	10	08/18/1998	1	1 U	5.3	0.2 U	13.3	16800	146	287	0.19	0.41 U	91
CUA09236	BH	10	08/18/1998	0.08	3.5 J	5.4	3.9	26.5	9130	**1360**	684	1.7	3 U	**536**
CUA09236	BH	10	08/18/1998	0.5	1 U	1.8 J	0.48 J	5.1	5360	123	122	0.22	0.4 U	80.9
CUA09237	BH	10	08/18/1998	0.08	6 J	7.9	5.4	43.2	18400	**1680**		0.58	3.7	**832**
CUA09237	BH	10	08/18/1998	0.08							809			
CUA09237	BH	10	08/18/1998	0.5	1 U	5.1	0.23 J	11.9	17500	74.7	266	0.1 U	0.41 U	159
CUA09237	BH	10	08/18/1998	1	0.98 U	4.1	0.2 U	11	16200	116	282	0.1 U	0.39 U	89.4
CUA09238	BH	10	08/18/1998	0.08	3.7 J	8.2	6.5	41.4	17200	**1470**	824	1.2	2.6	**893**
CUA09238	BH	10	08/18/1998	0.5	1.6 J	5.6	2.3	17.7	15500		481			**405**
CUA09238	BH	10	08/18/1998	0.5						**521**		0.47	1.1 J	
CUA09238	BH	10	08/18/1998	1	1.1 U	3	0.22 U	8.4	11300	58.4	286	0.11 U	0.45 U	65.6
CUA0924	BH	10	08/18/1998	0.08	0.99 U	5.3	1.7	11.6	11100	113	758	0.11	0.4 U	136
CUA0924	BH	10	08/18/1998	0.5	0.98 U	5.4	0.71 J	10.9	11900	68.1	762	0.11	0.39 U	91.7
CUA0924	BH	10	08/18/1998	1	1 U	4.6	0.2 U	10.5	10500	29.2	527	0.1 U	0.4 U	53.6
CUA0925	BH	10	08/18/1998	0.08			1.4			**418**		0.51	0.41 U	
CUA0925	BH	10	08/18/1998	0.08	1.2 J	12.3		20.6	23300		2080			280
CUA0925	BH	10	08/18/1998	0.5	0.98 U	7.1	0.21 J	13.7	16900	111	1470	0.11	0.39 U	108
CUA0925	BH	10	08/18/1998	1	0.99 U	7.6	0.2 U	16.2	17200	60.4	2360	0.1 U	0.4 U	83.1
CUA0926	BH	10	08/18/1998	0.08	1 U	6.8	0.86 J	15.6	13500	106	1010	0.11	0.4 U	116
CUA0926	BH	10	08/18/1998	0.5	0.98 U	4.8	0.2 U	10.8	12000	24.5	528	0.09 U	0.39 U	54.6

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0926	BH	10	08/18/1998	1	1 U	5.6	0.2 U	11.5	13400	28.8	652	0.1 U	0.41 U	46.2
CUA0927	BH	10	08/18/1998	0.08	3.4 U	18.7	3.7	26.8	15600	**887**	1190	0.5	1.7 J	**527**
CUA0927	BH	10	08/18/1998	0.5	1.6 U	9.7	1.4	20	16800	**199**	1180	0.23	0.4 U	231
CUA0927	BH	10	08/18/1998	1	1 U	7.1		17.6	14200		897	0.09 U		
CUA0927	BH	10	08/18/1998	1			1.7			**411**			1.1 J	218
CUA0928	BH	10	08/18/1998	0.08	0.97 U	4.2	0.19 U	9.5	12200	19.4	261	0.1 U	0.39 U	45.7
CUA0928	BH	10	08/18/1998	0.5	1.3 U	9.6	1.2	14	12600	99.5	395	0.22	0.4 U	145
CUA0928	BH	10	08/18/1998	1	0.99 U	6.1	0.45 J	11.5	12600	38.7	307	0.1 U	0.39 U	77.9
CUA0929	BH	10	08/18/1998	0.08	0.99 U	4.4	0.54 J	10.3	12100	62.7	500	0.09 U	0.4 U	97.3
CUA0929	BH	10	08/18/1998	0.5	1 U	3.2	0.69 J	7.6	5980	124	372	0.42	0.46 J	68.7
CUA0929	BH	10	08/18/1998	1	1 J	6.3	2	38.6 J	16300	**231**	890	0.28 J	0.96 J	157
CUA0941	BH	10	08/21/1998	0.08	0.97 U	8.1	2.5	19.8	14800	147	1140	0.23 J	0.39 U	159
CUA0941	BH	10	08/21/1998	0.5	0.98 U	9.1	2.2	20.7	16800	164	1570	0.28 J	0.39 U	179
CUA0941	BH	10	08/21/1998	1	1.1 J	9.9	2.7	18	15900	**251**	1500	0.36 J	0.43 J	188
CUA09410	BH	10	08/21/1998	0.08	1.1 J	7.5	2.1	20.3 J	15700	159 J	1250	0.1 J	1.1 J	166 J
CUA09410	BH	10	08/21/1998	0.5	2.1 J	8.3	1	22.8 J	16500	127 J	1310	0.08 J	0.94 J	143 J
CUA09410	BH	10	08/21/1998	1		6.6	0.24 J	22.4 J	16200	58.1 J	738	0.05 UJ	0.72 J	78.1 J
CUA09411	BH	10	08/21/1998	0.08	0.82 J	6.3	1.5	20.9 J	16400	110 J	770	0.07 J	0.9 J	149 J
CUA09411	BH	10	08/21/1998	0.5	0.94 J	7.8	1.1	31.2 J	17600	86.1 J	560	0.06 J	0.76 J	105 J
CUA09411	BH	10	08/21/1998	1	0.88 J	8.4	1.9	18.9 J	17200	51.6 J	757	0.07 J	0.8 J	86.4 J
CUA09412	BH	10	08/21/1998	0.08	1.7 J	10	2.5	37.7 J	16500	**198 J**	1270	0.18 J	1.2 J	187 J
CUA09412	BH	10	08/21/1998	0.5	1 J	8.4	2	23.2 J	17200	**182 J**	1670	0.13 J	1.2 J	218 J
CUA09412	BH	10	08/21/1998	1		9.7	0.37 J	25.4 J	24200	113 J	2000	0.13 J	1.3 J	179 J
CUA09413	BH	10	08/21/1998	0.08		6.4			16400					109 J
CUA09413	BH	10	08/21/1998	0.08	0.92 J		1.2	21.7 J		82.9 J	736	0.11 UJ	0.68 J	
CUA09413	BH	10	08/21/1998	0.5		6.6	0.09 J	18.3 J	17100	53.8 J	1590	0.08 UJ	1.3 J	79.6 J
CUA09413	BH	10	08/21/1998	1		8.3	0.06 U	22.2 J	19600	46.4 J	1080	0.05 UJ	0.79 J	68.8 J
CUA09414	BH	10	08/21/1998	0.08	3.8 J	13.8	3.2	26.1	18600	**421**	1810	0.25	1.2 J	**316**
CUA09414	BH	10	08/21/1998	0.5	2 J	12.5	2.2	22.1	17600	**239**	1820	0.24	0.43 J	230
CUA09414	BH	10	08/21/1998	1	1.3 J	9.9	1.4	17.3	16600	151	1400	0.19	0.41 U	218
CUA09415	BH	10	08/21/1998	0.08	1 U	6.4	1.4	12.9	15100	84.9	904	0.1 U	0.41 U	120
CUA09415	BH	10	08/21/1998	0.5	1 J	6.7	0.55 J	13.1	14700	50.5	1060	0.1 U	0.4 U	78.9
CUA09415	BH	10	08/21/1998	1	1 U	6.7	0.61 J	14	16100	56.5	830	0.1 U	0.41 U	79
CUA09416	BH	10	08/21/1998	0.08	1 U	6.9	0.92 J	15.1	16100	89.9	896	0.1 U	0.41 U	143
CUA09416	BH	10	08/21/1998	0.5									0.4 U	109
CUA09416	BH	10	08/21/1998	0.5	1.9 J	8.2	0.71 J	15.7	16200	111	1210	0.2		
CUA09416	BH	10	08/21/1998	1	1 U	5.2	0.2 U	9.3	12100	24	473	0.1 U	0.4 U	45.1

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09417	BH	10	08/21/1998	0.08	0.98 U	7.2	2.6	14.6	14800	139	712	0.2	0.39 U	150
CUA09417	BH	10	08/21/1998	0.5	1.5 J	7.3	1.2	12.8	14900	111	1080	0.53	0.39 U	158
CUA09417	BH	10	08/21/1998	1	1 J	8.5		14.6					0.4 U	
CUA09417	BH	10	08/21/1998	1			0.81 J		17000	63.1	689	0.49		120
CUA09418	BH	10	08/21/1998	0.08	1.8 J	8	2.4	14.8	15900	161	1070	0.24	0.4 U	180
CUA09418	BH	10	08/21/1998	0.5	1.2 J	9.4	1.8	16.6	18600	146	1450	0.18	0.39 U	212
CUA09418	BH	10	08/21/1998	1	0.98 J	7.9	0.65 J	19.3	17800	83.9	1200	0.1 J	0.8 J	128
CUA09419	BH	10	08/21/1998	0.08	3.7 J	14.9	2.9	47.2	23400	**428**	1650	0.32	2.4	**387**
CUA09419	BH	10	08/21/1998	0.5	2.2 J	12.7	1.4	27.6	21500	**250**	1370	0.21	1.7 J	274
CUA09419	BH	10	08/21/1998	1	1.4 J	10.9	0.54 J	18.9	18400	146	912	0.12	1.1 J	168
CUA0942	BH	10	08/21/1998	0.08	0.97 U	8.2	2.3	15.2	16100	148	1080	0.17 J	0.39 U	160
CUA0942	BH	10	08/21/1998	0.5	1 U	10.7	2.9	20.1	16700	**247**	1760	0.43 J	0.4 U	248
CUA0942	BH	10	08/21/1998	1	1 U	7.8	1.3	12.8	14700	127	1520	0.43 J	0.4 U	185
CUA0942	BH	10	08/21/1998	1.5	1 J	8.1	0.29 J	20.4	19000	64.7	1060	0.22	0.89 J	106
CUA0943	BH	10	08/21/1998	0.5	1 U	5.7	0.73 J	13.4	12600	109	928	0.11	0.4 U	106
CUA0943	BH	10	08/21/1998	1	0.98 U	6.6	0.49 J	14.1	16100	93.7	890	1.2	0.39 U	108
CUA0943	BH	10	08/21/1998	0.08	0.97 U	10.3	0.57 J	13	15400	102	950	0.1 J	0.39 U	124
CUA0944	BH	10	08/21/1998	0.08								0.1 U		
CUA0944	BH	10	08/21/1998	0.08	0.97 U	5.3	0.49 J	10.6	13800	62.3	602		0.39 U	80.9
CUA0944	BH	10	08/21/1998	0.5	1 U	7.3	0.2 U	13.3	14300	51.2	458	0.1 U	0.41 U	55.3
CUA0944	BH	10	08/21/1998	1	0.99 U	5	0.2 U	10.6	10400	18.9	299	0.1 U	0.4 U	36.9
CUA0945	BH	10	08/21/1998	0.08	0.97 U	5.6	1.1	12.6	14600	102	720	0.1 U	0.39 U	121
CUA0945	BH	10	08/21/1998	0.5	1.3 J	7.9	0.73 J	19.6	18600	169	1190	0.15	1.1 J	135
CUA0945	BH	10	08/21/1998	1	0.67 U	6.2	0.06 U	16.7	18500	64	935	0.06 J	0.84 J	94.2
CUA0946	BH	10	08/21/1998	0.08	0.92 J	7	2	17.3	15400	129	943	0.09 J	1.1 J	152
CUA0946	BH	10	08/21/1998	0.5	0.67 J		0.94 J	18.2	16900	134	1360	0.11		156
CUA0946	BH	10	08/21/1998	0.5		8							1.1 J	
CUA0946	BH	10	08/21/1998	1		7.5	0.21 J	16.6	16500	70	1040	0.09 J	0.89 J	102
CUA0946	BH	10	08/21/1998	1.5		8.3	0.06 U	18.8	20100	39.6	1100	0.05 U	0.84 J	90.8
CUA0947	BH	10	08/21/1998	0.08	0.93 J	13	0.5 J	20.9	21000	**180**	1170	0.1 J	1.5 J	143
CUA0947	BH	10	08/21/1998	0.5		8.1	0.06 U	18	17500	45.1	722	0.07 J	0.95 J	68.4
CUA0947	BH	10	08/21/1998	1		8.2	0.06 U	18.6	18800	33.2	595	0.05 U	0.79 J	62.7
CUA0948	BH	10	08/21/1998	0.08	0.8 J	8.1	1.6	20.3	17500	129	1140	0.09 J	0.99 J	185
CUA0948	BH	10	08/21/1998	0.5		8	0.34 J	25	16900	72.3	683	0.07 J	0.69 J	97
CUA0948	BH	10	08/21/1998	1		9.5	0.06 U	28.6	19500	46.5	365	0.05 U	0.68 J	78.4
CUA0949	BH	10	08/21/1998	1	0.83 J	5.4	0.14 J	26.1 J		43.9 J		0.12 J		46.3 J
CUA0949	BH	10	08/21/1998	0.08		5	0.14 J	14.3	16500	53.5	430	0.05 U	0.67 J	80.8

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0949	BH	10	08/21/1998	0.5		4.8	0.06 U	11.9	14500	16.1	211	0.05 U	0.44 J	38.3
CUA0949	BH	10	08/21/1998	1					17000		270		0.56 J	
CUA0951	BH	10	08/20/1998	0.08	3.4 J	17.1 J	7.9	38	22400	**494**	545	0.21	2 J	**728**
CUA0951	BH	10	08/20/1998	0.5	4.1 J	19.1 J	3.6	41.6	26800	**278**	876	0.18	2.2	**436**
CUA0951	BH	10	08/20/1998	1	2.9 J	19.2 J	3.5	38.1	29700	**435**	927	0.39	1.7 J	**433**
CUA09510	BH	10	08/20/1998	0.08	1.8 J	11.8 J	2.2	26.9	21400	166	570	0.19	0.83 J	169
CUA09510	BH	10	08/20/1998	0.5	1.4 J	6.6 J	0.99 J	51.2	16100	50.5	707	0.13	0.77 J	74.3
CUA09510	BH	10	08/20/1998	1	1.2 J	6 J	0.29 J	22.1	14000	24.1	676	0.09 J	0.65 J	35.8
CUA09511	BH	10	08/20/1998	0.08	3.3 J	16.4 J	3	38.3	19200	**279**	674	0.38	1.7 J	**383**
CUA09511	BH	10	08/20/1998	0.5	1.6 J	15.1 J	2.6	34.6	20700	**186**	953	0.38	1.3 J	**367**
CUA09511	BH	10	08/20/1998	1	1.9 J	11.2 J	3.3	40.6	24000	**362**	1160	0.39	1.7 J	**399**
CUA09512	BH	10	08/20/1998	0.08	1.7 J	8.6	3 J	29.5 J	17500	**201**	515	0.19 J	0.95 J	271
CUA09512	BH	10	08/20/1998	0.5	1.1 J	9.3	1.2 J	24.8 J	18100	103	746	0.12 J	0.78 J	129
CUA09512	BH	10	08/20/1998	1	1.5 J	10.2	1.1 J	27.1 J	18900	107	691	0.11 J	0.75 J	114
CUA09513	BH	10	08/20/1998	0.08	2.4 J	7.4	7 J	31.1 J		**660**	306			**982**
CUA09513	BH	10	08/20/1998	0.08					13200			0.34 J	1.4 J	
CUA09513	BH	10	08/20/1998	0.5	1.7 J	7.7	1.2 J	22.3 J	16900	**175**	224	0.07 J	0.72 J	126
CUA09513	BH	10	08/20/1998	1	1.1 J	17.2	2 J	25.6 J	25200	105	605	0.06 J	0.94 J	248
CUA09514	BH	10	08/20/1998	0.08	6.7 J	**23.5**	6.8	50.4	26400	**1750**	1800	0.7	3.9	**991**
CUA09514	BH	10	08/20/1998	0.5	1.7 J	12	0.96 J	30.3	23000	**344**	891	0.25	1.6 J	**324**
CUA09514	BH	10	08/20/1998	1	1.5 J	11	0.56 J	29.9	22600	**255**	736	0.21	1.4 J	225
CUA09515	BH	10	08/20/1998	0.08	0.93 J	**25.1**	0.65 J	29.1	23200	97.1	586	0.42	0.78 J	**540**
CUA09515	BH	10	08/20/1998	0.5	2.1 J	21.6	1.8	39.5	27300	**391**	688	0.46	2 J	**447**
CUA09515	BH	10	08/20/1998	1	1.6 J	18.6	1.1	38.7	41800	**245**	497	0.21	1.8 J	240
CUA09516	BH	10	08/20/1998	0.08	2.3 J	9.1	1.4	33.8	19500	**254**	538	0.24	1.3 J	280 J
CUA09516	BH	10	08/20/1998	0.5	1.1 J	7.1		26.3	15600		437		0.69 J	
CUA09516	BH	10	08/20/1998	0.5			1.3			93.9		0.11		138
CUA09516	BH	10	08/20/1998	1	0.76 J	6.8	0.83 J	29.1	14400	73.9	440	0.09 J	0.52 J	101
CUA09517	BH	10	08/20/1998	0.08	3.5 J	14.2	4.5	72.3	20400	**663**	647	0.56	2.2	**818**
CUA09517	BH	10	08/20/1998	0.5	3.4 J	13.3	4	81.9	19800	**681**	948	0.53	2.5	**719**
CUA09517	BH	10	08/20/1998	1		9.1					591			
CUA09517	BH	10	08/20/1998	1	1.3 J		1.7	26.2	18400	**289**		0.18	1.3 J	239
CUA09518	BH	10	08/20/1998	0.08	4.5 J	19.8	5.2	51.2	22000	**1190**	1270	0.64	3	**798**
CUA09518	BH	10	08/20/1998	0.5	2 J	12.1	3.2 J	40 J	19900	**475 J**	986 J	0.39	1.9 J	**598 J**
CUA09518	BH	10	08/20/1998	1	2.2 J	12.6	1.4	26.4	18800	**316**	733	0.77	0.9 J	**380**
CUA09519	BH	10	08/20/1998	0.08	12.9	**40.8**	6.5	73.2	29100	**2470**	2000	1.5	4.6	**1190**
CUA09519	BH	10	08/20/1998	0.5	3.5 J	12.5	2.4	27.5	22600	**454**	1400	0.4	0.96 J	**429**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09519	BH	10	08/20/1998	1	3.7 J	13.6	4.4	28.5	25300	**740**	1600	0.75	1.7 J	**642**
CUA0952	BH	10	08/20/1998	0.08	4.1 J	16.3 J	5.2	51.7	28200	**874**	1240	0.84	3.6	**519**
CUA0952	BH	10	08/20/1998	0.5	21.6 J	**30.4 J**	**19.5**	**104**	46400	**5790**	3410	3.7	15.8	**3370**
CUA0952	BH	10	08/20/1998	1	25.6 J	**32.8 J**	**31.9**	**123**	**86000**	**5580**	**10000**	2.8	14.2	**4450**
CUA09520	BH	10	08/20/1998	0.08	6.8 J	20.8	2.9	39.1	23400	**637**	785	0.54	1.1 J	**539**
CUA09520	BH	10	08/20/1998	0.5	2.6 J	20.3	1.4	36.3	27300	**200**	694	0.1 U	0.4 U	245
CUA09520	BH	10	08/20/1998	1	0.99 U	20.2	0.2 U	25.9	25200	48.4	668	0.1 U	0.4 U	96.9
CUA09521	BH	10	08/20/1998	0.08	12.8	20.3	7.5	**132**	29000	**2230**	1550	2.1	6.1	**1500**
CUA09521	BH	10	08/20/1998	0.5	4.2 J	**29.2**	5.4	27.2	20700	**924**	639	0.6	2.2	**710**
CUA09521	BH	10	08/20/1998	1	2 J	9.1	0.64 J	25.8	18300	**233**	635	0.26	0.53 J	238
CUA09522	BH	10	08/20/1998	0.08			**14.2**		28300					**2810**
CUA09522	BH	10	08/20/1998	0.08	14.5	**36.9**		53.1		**3650**	1320	3	9.2	
CUA09522	BH	10	08/20/1998	0.5	20.8	**50.4**	**12.7**	74	26700	**5530**	2010	4.7	13.9	**3010**
CUA09522	BH	10	08/20/1998	1	6.4 J	**22.8**	6.2	39.9	24200	**1330**	817	1	3.5	**1620**
CUA09523	BH	10	08/20/1998	0.08	7.2 J	12	0.87 J	27.9	19500	**594**	184	1	2.3	232
CUA09523	BH	10	08/20/1998	0.5	7.7 J	12.1	0.44 J	25.8	20200	**600**	175	1	2.2	198
CUA09523	BH	10	08/20/1998	1	2.8 J	9.7	0.55 J	23.7	16900	**210**	201	0.22	0.47 J	138
CUA09524	BH	10	08/20/1998	0.08	2.1 J	9.2	0.6 J	23.6	19200	154	421	0.16	0.56 J	232
CUA09524	BH	10	08/20/1998	0.5			0.2 U	21.2	18700	103		0.11	0.4 U	156
CUA09524	BH	10	08/20/1998	0.5	1.5 J	9.4					453			
CUA09524	BH	10	08/20/1998	1	1 U	10	0.2 U	21.8	20400	91	611	0.1 U	0.4 U	144
CUA09525	BH	10	08/20/1998	0.08	2.3 J	15.3	4.8	29	21200	**284**	536	0.91	0.67 J	**1490**
CUA09525	BH	10	08/20/1998	0.5	11.8 J	**24.7**	3.3	77.3	25500	**610**	761	0.92	1.8 J	**939**
CUA09525	BH	10	08/20/1998	1	4.7 U	17.7	6	57.6	23800	**803**	670	0.71	2	**706**
CUA09526	BH	10	08/20/1998	0.08	1.6 U	9.9	1 J	24	19200	**188**	534	0.18	0.72 J	**316**
CUA09526	BH	10	08/20/1998	0.5	1.4 J	9	0.48 J	19.3	16600	118	640	0.1	0.41 U	182
CUA09526	BH	10	08/20/1998	1	0.96 U		0.19 U						0.38 U	
CUA09526	BH	10	08/20/1998	1		7.7		22.1	14800	33.4	528	0.33		71.8
CUA09527	BH	10	08/20/1998	0.08	1.3 J	9.1	1.7	20.3	15800	161	553	0.48	0.82 J	258
CUA09527	BH	10	08/20/1998	0.5	1.3 J	8.7	0.49 J	16.7	15700	85.3	498	0.11	0.4 U	133
CUA09527	BH	10	08/20/1998	1	1.2 J	7.7	0.77 J	30.8	16800	78.6	537	0.1 J	0.78 J	115
CUA09527	BH	10	08/20/1998	1.5	0.94 J	7.4	0.42 J	22.8	16600	40.4	521	0.15	0.73 J	68.9
CUA09528	BH	10	08/20/1998	0.08	3.3 J	17.9	1.7	39.1	24000	**193**	789	0.33	1.1 J	221
CUA09528	BH	10	08/20/1998	0.5	1.7 J	14.6	2.3	39.1	26900	**267**	751	0.29	1.5 J	276
CUA09528	BH	10	08/20/1998	1	3.8 J	18.1	3.2	36	28100	**999**	1280	1	3.5	**566**
CUA09529	BH	10	08/20/1998	1	1.9 J	11.3	2.6	39.8	22300	**358**	494	0.36	2 J	**358**
CUA09529	BH	10	08/20/1998	0.08	1.9 J	19.6	1.8	39.8	22200	158	667	0.24	1.2 J	220

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA09529	BH	10	08/20/1998	0.5	2.1 J	17.7	2.8	38.4	24500	694	994	0.51	1.5 J	283
CUA0953	BH	10	08/20/1998	0.08	3.7 J	21.6	4.7	73.5	24400	788	978	0.33	2.2	509
CUA0953	BH	10	08/20/1998	0.5	3.1 J	19.2	6.6	44.3	19000	691	1100	0.3	2.4	841
CUA0953	BH	10	08/20/1998	1	2.6 J	17.2	5.1	37	20300	809	1250	0.36	2.1	690
CUA09530	BH	10	08/20/1998	0.08	4.6 J	43.5	3.4	41.1	23500	549	744	0.4	3.1	488
CUA09530	BH	10	08/20/1998	0.5	6.4 J	43.2	7.6	54.9	29300	1270	888	1.2	5.9	1140
CUA09530	BH	10	08/20/1998	1	6.1 J	36.2	8.1	47.1	32400	1260	772	0.93	5.2	1220
CUA09531	BH	10	08/20/1998	0.08		25.9						1.6	6.1	
CUA09531	BH	10	08/20/1998	0.08	8.3 J		6.9	47.8	24100	2700	847			1050
CUA09531	BH	10	08/20/1998	0.5	5.2 J	14.7	3.2	39.5	24200	390	329	0.26	1.3 J	455
CUA09531	BH	10	08/20/1998	1	2.8 J	11.7	2.8	37.5	17800	519	404	0.45	1.6 J	323
CUA09532	BH	10	08/20/1998	0.08	1.1 U	6.5	0.29 J	16.3	15300	50.2	441	0.12 U	0.45 U	80.4
CUA09532	BH	10	08/20/1998	0.5	1.1 U	6.5	0.21 U	16.1	16700	27.2	642	0.1 U	0.43 U	50.5
CUA09532	BH	10	08/20/1998	1	1 U	6.6	0.2 U	15.7	15400	25.8	693	0.1 U	0.4 U	45.8
CUA09533	BH	10	08/20/1998	0.08	2.1 J	17.3	0.49 J	27	23200	222	656	0.22	0.4 J	202
CUA09533	BH	10	08/20/1998	0.5	2.2 J	16	1.2	28.6	25100		609	0.39		263
CUA09533	BH	10	08/20/1998	0.5						330			0.68 J	
CUA09533	BH	10	08/20/1998	1	0.99 U	6	0.84 J	13	10800	246	407	1	0.48 J	245
CUA09534	BH	10	08/20/1998	0.08	18.3	34.5	32.9	117	31200	5300	1720	3.5	15.6	7100
CUA09534	BH	10	08/20/1998	0.5	22.3	17.2	7.7	72.2	20600	2590	735	3.6	9.5	1990
CUA09534	BH	10	08/20/1998	1	28.4	25	17.8	106	30800	4360	1070	3.8	15.2	3720
CUA09535	BH	10	08/20/1998	0.08	25.1	41.2	48.3	127	28400	10600	2460	17.3	26.9	11000
CUA09535	BH	10	08/20/1998	0.5	22	52.2	81	117	33600	13800	2730	17.3	29.2	12100
CUA09535	BH	10	08/20/1998	1			68.4		27100					9920
CUA09535	BH	10	08/20/1998	1	11.1 J	32.8		69.5		6150	1620	3.7	13.7	
CUA09536	BH	10	08/20/1998	0.08	6.6 J	17.2	16.7	61	25300	1760	1040	2.8	7.1	2440
CUA09536	BH	10	08/20/1998	0.5	0.94 J	10.2	1.4 J	37 J	27500	87.1	394	0.08 J	1.6 J	276
CUA09536	BH	10	08/20/1998	1	1.7 J	9.9	4 J	39.6 J	22500	359	500	0.38 J	1.8 J	488
CUA09537	BH	10	08/20/1998	0.08	15.4 J	71.3	18.9 J	90.1 J	21900	1790	1560	1.3 J	12	2570
CUA09537	BH	10	08/20/1998	0.5	13.5 J	49.2	24.5 J	93.2 J	23300	2080	1380	1.9 J	9.5	3540
CUA09537	BH	10	08/20/1998	1	14.6 J	34	35.5 J	95.3 J	26200	3510	1480	4.8 J	12.3	5110
CUA09538	BH	10	08/20/1998	0.08	38.1 J	30.6	53.1 J	138 J	31500	6860	1340	8 J	23.3	7960
CUA09538	BH	10	08/20/1998	0.5	4.8 J	23.6	10.1 J	38 J	28400	1110	836	0.91 J	3.4	1590
CUA09538	BH	10	08/20/1998	1	4.7 J	27.6	9.9 J	32.9 J	26800	1100	906	0.98 J	3.6	1580
CUA0954	BH	10	08/20/1998	0.08	1.6 J		2.7	26.8		83.4	692	0.11		
CUA0954	BH	10	08/20/1998	0.08		17.8			22000				0.9 J	205
CUA0954	BH	10	08/20/1998	0.5	0.87 J	18.5	0.72 J	20.8	24600	93.3	703	0.1 J	0.89 J	182

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0954	BH	10	08/20/1998	1	3.8 J	12.5	6.5	31.4	16000	1090	964	0.62	3.3	1080
CUA0955	BH	10	08/20/1998	0.08	2.7 J	17.4	3.1	44.6	22400	799	923	0.37	2.3	504
CUA0955	BH	10	08/20/1998	0.5	1.3 J	10.3	0.84 J	26.2	21600	184 J	900	0.28	0.53 J	240
CUA0955	BH	10	08/20/1998	1	1.1 J	6.8	0.33 J	18.2	14800	107 J	557	0.14	0.4 U	132
CUA0956	BH	10	08/20/1998	0.08	2.2 J	8.8	1.7	20.8	18000	220 J	399	0.26	0.81 J	319
CUA0956	BH	10	08/20/1998	0.5									0.81 J	
CUA0956	BH	10	08/20/1998	0.5	1.4 J	7.7	1.5	22.1	18700	246 J	392	0.31		361
CUA0956	BH	10	08/20/1998	1	1 U	6.7	0.2 U	14.4	14600	72.8 J	416	0.1 U	0.41 U	112
CUA0956	BH	10	08/20/1998	1.5	1 U	7.3	0.2 U	15.8	15800	44.7 J	463	0.1 U	0.4 U	78.7
CUA0957	BH	10	08/20/1998	0.08	1.8 J	14.8	2.3	27	21400	192 J	357	0.15	0.4 U	204
CUA0957	BH	10	08/20/1998	0.5	32.8	32.4	0.68 J	129	22900	264 J	604	0.59	21.4	189
CUA0957	BH	10	08/20/1998	1	2.8 J	20.4	0.62 J	26.7	25900	176 J	730	0.26	0.89 J	173
CUA0958	BH	10	08/20/1998	0.08	1 U	8.9	1.1	21.7	16200	101 J	602	0.15	0.41 U	149
CUA0958	BH	10	08/20/1998	0.5	1 U	7.7	0.2 U	18.4	16000	28 J	526	0.1 U	0.4 U	55.2
CUA0958	BH	10	08/20/1998	1	1 U	6.4	0.21 U	16.9	15000	33.7 J	418	0.1 U	0.42 U	64.7
CUA0959	BH	10	08/20/1998	0.08	1.5 J	13.6	2.9	27.3	14900	196 J	374	0.45	0.57 J	321
CUA0959	BH	10	08/20/1998	0.5	3.3 J	19.4	4.3	42.2	26700	847 J	763	0.84	2 J	504
CUA0959	BH	10	08/20/1998	1		6.4	1		14500	139 J	387			123
CUA0959	BH	10	08/20/1998	1	1 J			20.6				0.05 U	0.51 J	
CUA0961	BH	10	08/27/1998	0.08	18.1 J	27 J	13.7	114 J	28700	3450	1810	1.9	10.7	2430
CUA0961	BH	10	08/27/1998	0.5	9 J	18.5 J	11.3	76.3 J	23500	2220	1340	1.2	6.9	1760
CUA0961	BH	10	08/27/1998	1	9.1 J	17.9 J	10.7	73.4 J	23900	2110	1400	1.4	7.1	1960
CUA0962	BH	10	08/27/1998	0.08	14.4 J	22.2 J	15.6	115 J	27400	5150	1800	3.8	16.7	1960
CUA0962	BH	10	08/27/1998	0.5	56 J	41.4 J	25.9	298 J	46800	14000	3820	11.5	50.1	2650
CUA0962	BH	10	08/27/1998	1	73.8 J	53 J	26.3	421 J	60000	* 19600	5150	14.4	66.7	2900
CUA0963	BH	10	08/27/1998	0.08	37.5 J	45.4 J	18.6	155 J	28700	* 35123 J	1790	4.8	26.9	14655 J
CUA0963	BH	10	08/27/1998	0.5		20.7 J	17.3			16439 J	1140	3.1	12.9	11602 J
CUA0963	BH	10	08/27/1998	0.5	12.5 J			91.7 J	25300					
CUA0963	BH	10	08/27/1998	1	27.6 J	27.3 J	14.5	152 J	31500	7767 J	1840	7.5	27.5	3941 J
CUA0964	BH	10	08/27/1998	0.08	13.5 J	26.8 J	14.6	92.4 J	28100	3817 J	1630	2.4	11.8	2660 J
CUA0964	BH	10	08/27/1998	0.5	34.4 J	36.4 J	23.4	163 J	38300	6188 J	2880	4.8	21.3	5677 J
CUA0964	BH	10	08/27/1998	1	41.8 J	62.3 J	44.8	232 J	51300	10228 J	4880	10	33.9	10623 J
CUA0965	BH	10	08/27/1998	0.08	93.2 J	61.2 J	18.5	331 J	76600	* 23900	9030	13.3	78.3	2910
CUA0965	BH	10	08/27/1998	0.5	261 J	120 J	61.3	886 J	152000	* 56900	18200	31.1	194	9120
CUA0966	BH	10	08/27/1998	0.08	33.3	18.6	6	78.1	25900	4600	1320	4.1	15.3	1200
CUA0966	BH	10	08/27/1998	0.5	60.7	30	5.7	105	33100	7360	1710	15.3	29.5	1210
CUA0966	BH	10	08/27/1998	1	48.1	21.5	6.6	90.9	29000	6330	1540	15.3	24.7	1260

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0967	BH	10	08/27/1998	0.08	5.1 J	13.5	4.7	36	15600	971	806	0.81	2.4	599
CUA0967	BH	10	08/27/1998	0.5	163	49.5	7.3	319	70300	* 22300	5340	26.8	74.7	1640
CUA0967	BH	10	08/27/1998	1	11.2 J	11	9.4	67.5	21100	2710	1090	3.1	7.1	1100
CUA0967	BH	10	08/27/1998	1.5	26.3	19.9	11.4	80.6	25600	4270	1430	9.2	15.1	1540
CUA0971	BH	10	08/27/1998	0.08	7.8 J	13.4	6.7	59.9	15800	1390	785	1.1	3.9	930
CUA0971	BH	10	08/27/1998	0.5	3.8 J	6.2	1.3	38.4	10800	414	341	0.62	1.4 J	375
CUA0971	BH	10	08/27/1998	1	9.2 J	10.4	2.6	33.7	16000	1360	787	1.5	3.7	546
CUA0972	BH	10	08/27/1998	0.08	6.8 J	16.5	9.4	59.5	18400	1490	760	0.86	3.8	1790
CUA0973	BH	10	08/27/1998	0.08	7.2 J	26.5	6.1	64.7	17500	1340	491	0.59	4.3 J	727
CUA0973	BH	10	08/27/1998	0.5	55.7 J	26.9	10.5	149	29700	10500	1890	3.6	33.7 J	1700
CUA0973	BH	10	08/27/1998	1	77.7 J	47.3	22.4	237	38100	* 18000	2870	11.5 J	47.5 J	2720
CUA0974	BH	10	08/27/1998	0.08	0.66 UJ	5.3	2.3	15	15900	142	551	0.11 U	0.85 J	164
CUA0974	BH	10	08/27/1998	0.5	17.1 J	13.7	6.4	78.5	20600	3410	1100	1.2	10.7 J	710
CUA0974	BH	10	08/27/1998	1	53.4 J	21.7	7.4	135	38200	8440	3060	4.1	31.2 J	968
CUA0975	BH	10	08/27/1998	1		22.5	2.7		43700		3000	14.3 J	34.1	
CUA0975	BH	10	08/27/1998	0.08	10.4 J	15.5	5.9	63.2	20100	1990	1020	0.73	6.3 J	691
CUA0975	BH	10	08/27/1998	0.5	9.8 J	11.7	3.2	53.2	18900	1660	801	1.3 J	5	471
CUA0975	BH	10	08/27/1998	1	58.2 J			134		11100				742
CUA0976	BH	10	08/27/1998	0.08	6 J	12.5	4.4	93.8	19500	1060	936	1 J	3.4	682
CUA0976	BH	10	08/27/1998	0.5	16.3 J	16.4	6.8	87.5	20400	2790	1190	3.3 J	9	861
CUA0976	BH	10	08/27/1998	1	74.1 J	28.7	1.9	151	45400	13600	3790	7.4 J	44.8	868
CUA0977	BH	10	08/27/1998	0.5	8.3 J	10.1	4.8	45.9	20900	2820	1010	1.1	7.8 J	509
CUA0977	BH	10	08/27/1998	1	16.5 J	12.3	3.7	64.1	21800	3860	1170	1.9	12.4 J	546
CUA0977	BH	10	08/27/1998	1.5	7.2 J	8.9	4.2	46.5	19800	2610	901	0.71	7.2 J	483
CUA0977	BH	10	08/27/1998	0.08	4.9 J	13.1	4.5	59.4	18300	1150	696	0.95 J	3.4	695
CUA0981	BH	10	08/29/1998	0.08	1.4 J	11	3.4	25 J	20500	218	510	0.17 J	0.93 J	261
CUA0981	BH	10	08/29/1998	0.5	34.4	50.9	19.8	284 J	51100	11000	3230	4.5 J	34	3850
CUA0981	BH	10	08/29/1998	1	26.5	52.6	37.1	299 J	52900	10800	1940	2.9 J	25.8	7550
CUA0982	BH	10	08/29/1998	0.08	5.2 J	18.7	4.3	43.4 J	30900	883	789	0.98 J	3.3	453
CUA0982	BH	10	08/29/1998	0.5	48.8	67	12	140 J	44400	7070	2810	4.6 J	25	2370
CUA0982	BH	10	08/29/1998	1	108	58.8	26.1	269 J	77300	* 25500	5990	20.1 J	69.8	5370
CUA0983	BH	10	08/29/1998	0.08	1 U	9.9	3	21.8 J	18900	248	465	0.28 J	0.89 J	1030
CUA0983	BH	10	08/29/1998	0.5	17	32.3	13.3	142 J	30200	3940	1290	2.5 J	11.5	2260
CUA0983	BH	10	08/29/1998	1	27.4	64.9	16.6	211 J	37400	6190	1670	3.4 J	19.4	3360
CUA0984	BH	10	08/29/1998	0.08	2.3 J	16.2	1.6	35.2 J	26300	292	975	0.24 J	1.5 J	333
CUA0984	BH	10	08/29/1998	0.5			4.9		24600				3.6	
CUA0984	BH	10	08/29/1998	0.5	5.8 J	19.3		64.6 J		1090	811	0.53 J		800

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA0984	BH	10	08/29/1998	1	65.4	51.2	15.3	186 J	43700	14600	2740	4.2 J	38.2	3360
CUA0985	BH	10	08/29/1998	0.08	1.5 J	10.8	3.6	24.5 J	20000	323	553	0.34 J	0.95 J	282
CUA0985	BH	10	08/29/1998	0.5	18.7	39.7	11.8	139	31500	5610	1170	7.7 J	17.7	2130 J
CUA0985	BH	10	08/29/1998	1	22.6	53.5	9.8	134	24100	3240	1260	2.7 J	13.9	1620
CUA0986	BH	10	08/29/1998	0.08	2.7 J	9.2	3.3	31.7	16400	448	454	0.51 J	1.8 J	323 J
CUA0986	BH	10	08/29/1998	0.5	3.1 J	9.5	2.8	23.4	15000	392	331	0.59 J	1.4 J	229 J
CUA0986	BH	10	08/29/1998	1							2960			
CUA0986	BH	10	08/29/1998	1	64.1	50.6	23.8	253	42400	13000		17.5 J	36.8	4050 J
CUA0987	BH	10	08/29/1998	0.08	2.1 J	8.9	3.6	24.2	16400	216	311	0.44 J	0.96 J	201 J
CUA0987	BH	10	08/29/1998	0.5	60.9	103	20.9	329	37400	6640	2070	8.9 J	33.5	2440 J
CUA0987	BH	10	08/29/1998	1	50.7	168	34.8	464	49200	10400	3140	11	45.2	4260 J
CUA0991	BH	10	08/29/1998	0.08	1.4 J	14.5	0.87 J	36.7	24100	152	721	0.26 UJ	0.92 J	149
CUA0991	BH	10	08/29/1998	0.5	1.4 J	13.4	0.3 U	28.8	20200	87.3	463	0.15 UJ	0.78 J	96.7
CUA0991	BH	10	08/29/1998	1	2.5 J	20.9	0.96 J	38.7	23800	341	708	0.23 UJ	1.5 J	297
CUA0992	BH	10	08/29/1998	0.08	1.6 J	13.8	1.1	43.2	23200	208	647	0.28 UJ	1.1 J	160
CUA0992	BH	10	08/29/1998	0.5	1.3 J	16.5	0.06 U	26.6	20100	65.9	378	0.16 UJ	0.63 J	76.3
CUA0992	BH	10	08/29/1998	1	1.3 J	19.3	0.06 U	27.3	20200	100	366	0.11 UJ	0.7 J	105
CUA0993	BH	10	08/29/1998	0.08		14.4	1.1	37	23900	163	751	0.15	0.5 J	141
CUA0993	BH	10	08/29/1998	0.5		17.2	0.62 J	40.2	22400	177	662	0.17	0.78 J	391
CUA0993	BH	10	08/29/1998	1	20.2 J	23.9	6.1	199	50600	1810	2800	0.77	6.6	4280
CUA0994	BH	10	08/29/1998	0.08	23.1 J	45.5	9.6	119	26400	4150	1430	1.5	12	1040
CUA0994	BH	10	08/29/1998	0.5	9.1 J	23.4	7.5	64.2	20500	1580	871	0.79	4.7	1010
CUA0994	BH	10	08/29/1998	1	9.1 J	24	7.1	89.6	20700	4260	1110	1.6	7.9	1090
CUA0994	BH	10	08/29/1998	1.5	11 J	24.8	9.7	90.3	20600	3760	1060	2	9.4	1210
CUA0995	BH	10	08/29/1998	0.08	2.4 J	17.2	2.7	45.5	21000	309	742	0.2 U	1.4 J	432
CUA0995	BH	10	08/29/1998	0.5	1.1 J	10.6	3.1	41.1	21600	201	1150	0.18 U	1.3 J	149
CUA0995	BH	10	08/29/1998	1	6.5 J	19	7.5	160	35900	600	1730	0.47	2.9 J	2340
CUA0996	BH	10	08/29/1998	0.08	6.4 J	23.1	9.4	59.5	21600	1430	1020 J	1 J	4.3	1190 J
CUA0996	BH	10	08/29/1998	0.5	9 J	28.1	17.2	84.3	24200	2160	1270 J	2.1 J	8	2010 J
CUA0996	BH	10	08/29/1998	1	7.8 J	22.4	22.4	57.6	21000	1530	1020 J	3.1 J	6.5	2470 J
CUA0997	BH	10	08/29/1998	0.08	6.3 J	18.9	4.2	59	25400	1030	1010 J	0.42 J	2.9	720 J
CUA0997	BH	10	08/29/1998	0.5	3.3 J	19.3	3.5	41.7	18000	720	832 J	0.54 J	2	570 J
CUA0997	BH	10	08/29/1998	1	2.5 J	21.4	3.1	42.4	21900	625	975 J	0.37 J	1.6 J	551 J
CUA1001	BH	10	08/26/1998	0.08	4.4 J	23.6	5.9	56.7 J	21300	1180	1020	0.47 J	3.8	857
CUA1001	BH	10	08/26/1998	0.5	5.6 J	28.8	7.1	58 J	25100	1990	1390	1.1 J	6.8	1470
CUA1001	BH	10	08/26/1998	1	5.6 J	39.2	7.4	67.4 J	28400	1880	1970	0.98 J	7.3	1500
CUA10010	BH	10	08/26/1998	0.08	41.9	22.4	14.4 J	135	28100	8850 J	948 J	8.8	29.5	1950 J

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA10010	BH	10	08/26/1998	0.5	77.8	31.8	26.7 J	198	35000	16700 J	1090 J	16.4	51.4	3070 J
CUA10010	BH	10	08/26/1998	1	31.3	18.5	26.2 J	116	23400	6730 J	1000 J	12.6	22.1	2600 J
CUA10011	BH	10	08/26/1998	0.08	14.3	19.3	11	71.7	19300	2960	979	1.5	8.8	1640
CUA10011	BH	10	08/26/1998	0.5	49.1	24	18.9	153	27300	10600	1300	14.2	35.5	2440
CUA10011	BH	10	08/26/1998	1	39.9	23.2	28.2	135	27000	9110	939	10.9	28.5	2810
CUA10012	BH	10	08/26/1998	0.08	45	23.7	7.2	129	27300	8190	1130	8.8	25.9	1430
CUA10012	BH	10	08/26/1998	0.5	48.2	24.1	30.2	149	30000	10500	1090	2.8	29.9	2340
CUA10012	BH	10	08/26/1998	1	7.5 J	15.8	42.4	50.5	23900	2270	1240	9.4	6.1	3160
CUA10013	BH	10	08/26/1998	0.08								1.5		
CUA10013	BH	10	08/26/1998	0.08	6.6 J	32.2	4.2	48.2	23600	1240	1200		3.7	1040
CUA10013	BH	10	08/26/1998	0.5	6.5 J	28.5	5	60.5	22300	1400	1110	2	4.2	1080
CUA10013	BH	10	08/26/1998	1	7.6 J	34.4	7	54.5	23500	1660	1240	1.6	4.4	1460
CUA10014	BH	10	08/26/1998	0.08	13.3	24.4	16.3	96.7	37900	2900	2570	2	9	6320
CUA10014	BH	10	08/26/1998	0.5	15.5	28.3	21.4	94	48600	4090	3670	3.2	11.6	9350
CUA10014	BH	10	08/26/1998	1	17	29.3	19	93	43000	3720	2960	3.4	11.8	8800
CUA10015	BH	10	08/26/1998	0.08	9.1 J	30.8	5.3	80.5	23000	1800	1100	1.2	4.6	1080
CUA10015	BH	10	08/26/1998	0.5	10.4 J	34.8	5.6	87.7	24300	1910	1160		4.9	1130
CUA10015	BH	10	08/26/1998	0.5								1.6		
CUA10015	BH	10	08/26/1998	1	8.2 J	43.5	7.2	56.8	24100	1840	1320	4.7	4.9	1530
CUA10016	BH	10	08/26/1998	0.08	18.2	30.5	7.8	66.9	24600	2980	1060	2.1	9.1	1260
CUA10016	BH	10	08/26/1998	0.5	28.8	40	20.2	99	27400	5100	1230	3.9	15.3	2850
CUA10016	BH	10	08/26/1998	1	12.4	34.1	12.1	58.2	22700	2110	1040	2.6	7	2320
CUA10017	BH	10	08/26/1998	0.08	5.9 J	23.5	3.6	98.6	20600	859	817	0.56	2.1	614
CUA10017	BH	10	08/26/1998	0.5	1 U	17.4	0.76 J	16.3	17600	130	559	0.84	0.4 U	328
CUA10017	BH	10	08/26/1998	1	2.5 J	24 J	1.8	43.5 J	21900	407	915		2.3	
CUA10017	BH	10	08/26/1998	1								0.19		348 J
CUA10018	BH	10	08/26/1998	0.08	6 J	27.7 J	5.5	65.6 J	22500	1080	1080	0.52	3.9	733 J
CUA10018	BH	10	08/26/1998	0.5	4 J	30.2 J	5.1	51.6 J	23000	919	956	0.57	3.2	794 J
CUA10018	BH	10	08/26/1998	1	8.1 J	26.5 J	4.6	60 J	22000	695	885	0.35	3.7	795 J
CUA10019	BH	10	08/26/1998	0.08	8.1 J	26.7 J	7.7	80.5 J	23700	2180	1260	1.1	6.7	1030 J
CUA10019	BH	10	08/26/1998	0.5	6.4 J	37.4 J	8.5	64.3 J	24300	1760	1420	0.95	6.3	1390 J
CUA10019	BH	10	08/26/1998	1	5.2 J	39 J	5.7	61.6 J	22700	1400	1200	0.7	5	1030
CUA1002	BH	10	08/26/1998	0.08	2.1 J	21.4	0.96 J	35.4 J	22500	245	720	0.09 J	1.1 J	236
CUA1002	BH	10	08/26/1998	0.5	6.6 J	25.4	7.3	62.5 J	23100	1930	925	0.89 J	7	1300
CUA1002	BH	10	08/26/1998	1	7.6 J	33.2	9	67.5 J	25200	2450	1290	1.1 J	8.2	1630
CUA1003	BH	10	08/26/1998	0.08	7.1 J	18.3	7.5	101 J	19600	1580	1050	0.49 J	4.6	876
CUA1003	BH	10	08/26/1998	0.5	10.5 J	168	10.7	73.1	22197 J	2410	1220	1.1	7.3	1410

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA1003	BH	10	08/26/1998	1	9.9 J	55.9	8.7	69.9	23266 J	2150	1350	0.8	6.9	1440
CUA1004	BH	10	08/26/1998	0.08	4.5 J	24.9		68.3	22538 J	1110	1230		4	
CUA1004	BH	10	08/26/1998	0.08			5.5 J					0.74		805 J
CUA1004	BH	10	08/26/1998	0.5	4.5 J	30.3	5.7 J	47.9	24200	1010 J	1010 J	0.7	2.8	949 J
CUA1004	BH	10	08/26/1998	1	4.5 J	28.9	5.7 J	45.6	24300	663 J	980 J	0.57	1.9 J	897 J
CUA1005	BH	10	08/26/1998	0.08	59.8	29	18.5 J	165	32400	11000 J	1380 J	11	37.7	2380 J
CUA1005	BH	10	08/26/1998	0.5	66.4	30.4	18.7 J	272	34600	13300 J	1280 J	14.1	44.4	2360 J
CUA1005	BH	10	08/26/1998	1	21.9	17.1	63.9 J	87.7	23200	4930 J	672 J	3.1	13.7	3150 J
CUA1005	BH	10	08/26/1998	1.5	10.7 J	26.9	39.8 J	61.9	42100	3310 J	2980 J	2.5	9.4	4280 J
CUA1006	BH	10	08/26/1998	0.08	15.2	19.9	18.3 J	91.2	23800	3980 J	872 J	2.4	12.3	2020 J
CUA1006	BH	10	08/26/1998	0.5	39.8	24.6	26.7 J	130	28400	8570 J	1230 J	11	29.1	2840 J
CUA1006	BH	10	08/26/1998	1	46.6	23.1	28.9 J	136	25900	10500 J	1090 J	13.1	32.8	2720 J
CUA1007	BH	10	08/26/1998	0.08	8.1 J	22.1	5.2 J	54.6	20600	1610 J	867 J	0.87	5.3	698 J
CUA1007	BH	10	08/26/1998	0.5	5.2 J	22.2	3	37.7	21400	920	774	0.57	2.7	634
CUA1007	BH	10	08/26/1998	1	3.1 J	22.2	1.8	31.1	20300	546	746	0.44	1.8 J	515
CUA1008	BH	10	08/26/1998	0.08	6.2 J	21.3	4.8	82.4	18600	941	829	0.57	1.7 J	707
CUA1008	BH	10	08/26/1998	0.5	5.4 J	45.4	4.8	45.4	21000	1560	1220	1.4	3.5	1070
CUA1008	BH	10	08/26/1998	1	8.4 J		8.3	56.9	22200	2210		1.7	5.5	1700
CUA1008	BH	10	08/26/1998	1		56.5					1310			
CUA1009	BH	10	08/26/1998	0.08	9.7 J	28.8	7.6	63.6	24400	1970	1320	1.7	5.7	1330
CUA1009	BH	10	08/26/1998	0.5	9.7 J	27.7	8.2	64.8	23600	2160	1290	1.9	5.8	1270
CUA1009	BH	10	08/26/1998	1	9.3 J	30.3	9.3 J	71	25700	2090 J	1400 J	2.5	6.4	1370 J
CUA1021	BH	10	09/11/1998	0.08	14.4	22.7	28.5	73.6	25100	3230	1390 J	2.9	9.4	4240 J
CUA1021	BH	10	09/11/1998	0.5	13.7	23.9	25.1	79.5	29100	3380	1530 J	2.6	9.9	4100 J
CUA1021	BH	10	09/11/1998	1	12.4	22.2	24.6	74.8	27100	2950	1410 J	2.7	9	3930 J
CUA10210	BH	10	09/12/1998	0.08	0.76 J	11	1.4	26.8	18900	256	607	0.1 J	1.7 J	257
CUA10210	BH	10	09/12/1998	0.5	0.85 J	14.3	0.83 J	30.5	18700	177	579	0.09 J	1.2 J	240
CUA10211	BH	10	09/12/1998	0.08	0.67 UJ	9.9	0.55 J	23.3	21900	49.9	710	0.09 J	1.2 J	98.6
CUA10211	BH	10	09/12/1998	0.5			8.2	102	21900	3480	843	0.85 J	12.9	1330
CUA10211	BH	10	09/12/1998	0.5	14.1 J	30.9								
CUA10211	BH	10	09/12/1998	1	5.4 J	25.4	4.1	53.1	19100	1500	697	0.45 J	5.2	767
CUA10212	BH	10	09/12/1998	0.08	0.67 UJ	6.5	0.76 J	19.1	18800	56	791	0.07 J	1.1 J	102
CUA10212	BH	10	09/12/1998	0.5	4.6 J	18.1	5.8	44.2	19300	1020	782	0.66 J	4.2	971
CUA10212	BH	10	09/12/1998	1	1.3 J	11	2.1	26.1	18800	287	654	0.17 J	1.9 J	307
CUA10213	BH	10	09/12/1998	0.08	2.8 J	22.8	2.1	79.3 J	22500	340	767	0.16 J	2.4 J	213
CUA10214	BH	10	09/12/1998	0.08	4.1 J	35.6	2.2	52.4 J	23700	506	855	0.25 J	3.6 J	342
CUA10214	BH	10	09/12/1998	0.5	4.3 J	33.5	2.4	50.3 J	24000	558	861	0.22 J	3.4 J	392

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
CUA10214	BH	10	09/12/1998	1	3.2 J	29.3	2.5	43.8 J	22200	474	828	0.26 J	3 J	391
CUA1022	BH	10	09/11/1998	0.08	2.4 J	18.1	1.7	37.2	18700	429	706 J	0.52	1 J	585 J
CUA1022	BH	10	09/11/1998	0.5	1 U	13.6	1.2	36.1	19900	283	655 J	0.25	0.5 J	482 J
CUA1022	BH	10	09/11/1998	1	1.3 J	11.9	1.1	31.3	17400	264	555 J	0.23	0.67 J	436 J
CUA1023	BH	10	09/11/1998	0.08	2.9 U	16.7	3.3	40.8	21000	1060	832	0.59	3.2	840
CUA1023	BH	10	09/11/1998	0.5	3.3 J	14.3	2.7	35.8	22700	756	795	0.56	2.3	805
CUA1023	BH	10	09/11/1998	1	3.2 J	13.8	2.9	34.5	22800	796	716	0.45	2.4	796
CUA1023	BH	10	09/11/1998	1.5	2.7 J	14.1	2.7	34.5	22600	772	709	0.42	2.2	780
CUA1024	BH	10	09/11/1998	0.08	2.6 J	22.4	1.1	25.5	18900	191	608	0.19	1.1 J	538
CUA1024	BH	10	09/11/1998	0.5	2 J	24		22.3	19900		604	0.25	0.4 U	
CUA1024	BH	10	09/11/1998	0.5			1.3			199				584
CUA1024	BH	10	09/11/1998	1	2.7 U	22.9	1.6	23.4	19700	238	592	0.25	0.72 J	606
CUA1025	BH	10	09/11/1998	0.08	10.1 J	64.8	36.3	421	143000	1270	7230	1	6.1	13800
CUA1025	BH	10	09/11/1998	0.5	22.1	87.7	22.9	240	71900	3780	3450	2.1	13.2	7160
CUA1025	BH	10	09/11/1998	1	27.3	77.7	27	236	69400	5440	3160	2.8	16.4	7290
CUA1026	BH	10	09/11/1998	0.08	11.7 J	41	13	134	50100	2370	2890	1.8	6.8	4750
CUA1026	BH	10	09/11/1998	0.5	13.3	47.4	15.1	134	53900	2650	3210	2.1	7.4	5020
CUA1026	BH	10	09/11/1998	1	8.2 J	33.8	9.1	83.7	38100	1640	1980	1.3	4.4	2870
CUA1027	BH	10	09/11/1998	0.08	6.8 J	26.5	5.2	39	22400	885	667	1.1	2.9	1160
CUA1027	BH	10	09/11/1998	0.5	1.9 J	22.3	5.3	33.8 J	19800	631	619	0.54 J	2 J	992
CUA1027	BH	10	09/11/1998	1	1.8 J	22.3	4.8	35.9 J	20400	565	592	0.51 J	1.8 J	892
CUA1028	BH	10	09/12/1998	0.08	2 J	12.9	2.6	30.3	18600	479	693	0.33 J	2.4	458
CUA1028	BH	10	09/12/1998	0.5	1.2 J	12.8	1.7	25.4	17600	349	634	0.2 J	1.7 J	350
CUA1028	BH	10	09/12/1998	1	1.3 J	10.8	0.98 J	21.4	18200	188	589	0.12 J	1.4 J	209
CUA1029	BH	10	09/12/1998	0.08	0.67 UJ	11.7	1.2	25.5	20300	238	671	0.09 J	1.6 J	206
LC10014	RV	22	---	1						* 24000				
LC10014	RV	22	---	1.5						* 24300				
LC10015	RV	22	---	1						* 55200				
LC10015	RV	22	---	1.5						* 26200				
LC10016	RV	22	---	1						* 17400				
LC10016	RV	22	---	1.5						11900				
LC10017	RV	22	---	1						* 26700				
LC10017	RV	22	---	1.5						13300				
LC10018	RV	22	---	1						17100				
LC10018	RV	22	---	1.5						14600				
LC10019	RV	22	---	1						* 29000				
LC10019	RV	22	---	1.5						* 32800				

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
LC10020	RV	22	---	1						2520				
LC10020	RV	22	---	1.5						555				
LC10021	RV	22	---	1						1950				
LC10021	RV	22	---	1.5						4160				
LC10068	RV	22	---	1						16500				
LC10068	RV	22	---	1.5						13500				
LC10069	RV	22	---	1						625				
LC10069	RV	22	---	1.5						500				
LC10070	RV	22	---	1						14200				
LC10070	RV	22	---	1.5						* 17900				
LC10071	RV	22	---	1						4230				
LC10071	RV	22	---	1.5						2790				
LC10072	RV	22	---	1						1750				
LC10072	RV	22	---	1.5						917				
LC10073	RV	22	---	1						208				
LC10073	RV	22	---	1.5						125				
LC10074	RV	22	---	1						875				
LC10074	RV	22	---	1.5						833				
LC10075	RV	22	---	1						583				
LC10075	RV	22	---	1.5						500				
LC10076	RV	22	---	1						4730				
LC10076	RV	22	---	1.5						4320				
LC10077	RV	22	---	1						185				
LC10077	RV	22	---	1.5						111				
LC10078	RV	22	---	1						852				
LC10078	RV	22	---	1.5						926				
LC10079	RV	22	---	1						13100				
LC10079	RV	22	---	1.5						7150				
LC10080	RV	22	---	1						1420				
LC10080	RV	22	---	1.5						958				
LC10081	RV	22	---	1						* 25000				
LC10081	RV	22	---	1.5						* 38900				
LC10082	RV	22	---	1						3790				
LC10082	RV	22	---	1.5						3620				
LC10083	RV	22	---	1						296				
LC10083	RV	22	---	1.5						296				
LC10084	RV	22	---	1						3710				

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Subsurface Soil (mg/kg)														
LC10084	RV	22	---	1.5						6140				
LC10085	RV	22	---	1						3840				
LC10085	RV	22	---	1.5						3450				
LC10086	RV	22	---	1						12500				
LC10086	RV	22	---	1.5						7220				
Sediment (mg/kg)														
CUA0811	LK	10	08/24/1998	0	27	53.9	5.6	130	43200	4820	2610	5.7 J	16.4	1300
CUA08110	LK	10	08/24/1998	0	47.1 J	113 J	45.6	398	21000	* 14800 J	1250	10.3	36.2	9340 J
CUA0812	LK	10	08/24/1998	0	0.98 U	41.8	0.2 U	28.2	19500	57.6	469	0.1 UJ	0.39 U	66.4
CUA0813	LK	10	08/24/1998	0		98.5								
CUA0813	LK	10	08/24/1998	0	28.7		3	157	41700	4440	3040	11.9 J	16.6	1450
CUA0814	LK	10	08/24/1998	0	1 U	29.6	0.2 U	21.4	20500	45.3	640	0.1 UJ	0.4 U	112
CUA0815	LK	10	08/24/1998	0	36.1	81.2	15.8	211	52200	* 7340	4410	12.5 J	23.7	3990
CUA0816	LK	10	08/24/1998	0	27.9	74.7	112	218	23800	4000	654	2 J	18.8	10500
CUA0817	LK	10	08/24/1998	0	2.7 J	43.7	1.7	24.9	21000	283	394	0.14 J	0.76 J	639
CUA0818	LK	10	08/24/1998	0			1.6							
CUA0818	LK	10	08/24/1998	0	5.4 J	64.6		47.6	26100	476	546	0.24 J	1.8 J	615
CUA0819	LK	10	08/24/1998	0	0.93 J	21.8	1.1	34.4	25233 J	45.8	665	0.05 U	0.9 J	276
SF504	HA	2	12/12/1997	0	25.3	36.4 J	5.67 J	106 J	33600	738	3120	0.125	5.9 J	1160
SF506	HA	2	12/13/1997	0	14 J	25.4 J	13.1	96.4 J	36700	2200	2590	1.5	10.9 J	2370
SF506	HA	2	12/13/1997	0.5	21.5 J	124 J	8.76 J	101 J	54700	3040	5230	1.99	15.9 J	1440
SF508	HA	2	12/13/1997	0.08	15.2 J	4.42 J	29.3	116 J	40000	2410	3530	1.61	9.34 J	4430
SF509	HA	2	12/13/1997	1.3	31.7	52 J	12.6	151 J	41500	5080	3740	3.96	17.7 J	2270
SF509	HA	2	12/13/1997	0.08	30.5 J	47.3 J	25.2		41100	* 5880	4140	6.08		3730
SF509	HA	2	12/13/1997	0.08				190 J					23.3 J	
SF512	HA	2	12/13/1997	0.25	7.38 UJ	3.81 J	7.09	23.2 J	25600	1890	2920	0.14	8.02 J	1000
SF513	HA	2	12/13/1997	0.5	20 J	26.7 J	17	196 J	39300	3390	2560	1.96	11.8 J	3150
SF513	HA	2	12/13/1997	0	24.2 J	50.1 J	19.8	133 J	54900	4500	4790	2.45	14.6 J	3270
SF515	HA	2	12/13/1997	0	8.52 UJ	33.6 J	6.07 J	65.6 J	39900	2710	3170	1.11	8.31 J	922
SF516	HA	2	12/13/1997	0	30.6	51.7 J	20.4	175 J	45400	* 5720	3210	2.92	17.2 J	4170
SF517	HA	2	12/14/1997	0	34	9.48 J	5.5	54.6	27400	1010	2020 J	0.159 J	5.67	1130 J
SF518	HA	2	12/14/1997	0	3.39 UJ	6.52 J	15.1	29.1	54000	1320	5760 J	0.096 J	5.27	2820 J
SF519	HA	2	12/14/1997	0	22.1 J	34.8 J	20.3	179	48200	* 6160	4100 J	2.38 J	15.1	3840 J
SF520	HA	2	12/14/1997	0				430		4450		0.111 J		
SF520	HA	2	12/14/1997	0	0.983 J	7.01 J	64.4		57200		6620 J		6.93	11500 J
SF541	TP	2	12/16/1997	0	6.47 UJ	18.2 J	12.3 J	62.5 J	32600	3910 J	2900	2.12	11.6	1870 J

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Sediment (mg/kg)														
SF541	TP	2	12/16/1997	2	12.1 J	89.7 J	14.6 J	86.7 J	33700	3950 J	3640	0.978	10.5	2440 J
SF543	TP	2	12/16/1997	0	2.11 UJ	9.24 J	5.27 J	47.2 J	27900	1490 J	2210	0.234	2.72	1480 J
SF544	TP	2	12/16/1997	0	174	184 J	5.47 J	823 J	27600	1600 J	1820	0.43	6.24	1410 J
SF544	TP	2	12/17/1997	0	3.51 UJ	10.3 J	5.38 J	40.1 J	22700	1370 J	1780	0.361	2.6	1420 J
SF544	TP	2	12/17/1997	1	2.04 UJ	9.64 J	5.6 J	48.9 J	24200	867 J	4190	0.234	3.33	1300 J
SF547	TP	2	12/17/1997	0.5	4.48 UJ	20.8 J	5.96 J	36.6 J	29000	929 J	2040	0.816	2.51	1080 J
SF547	TP	2	12/17/1997	1.5	28.7	33.4 J	7 J	114 J	39100	3160 J	3120	0.588	8.8	1320 J
SF549	TP	2	12/17/1997	0	27.5	22.6 J	8.77 J	104 J	35500	* 5340 J	3480	2.36	72.9	1450 J
SF550	TP	2	12/17/1997	0	7.1 UJ	25.2 J	9.13 J	54.2 J	26400	1610 J	1910	0.896	3.41	1390 J
SF550	TP	2	12/17/1997	2.5	10.6 UJ	22.8 J	7.27 J	211 J	37400	1400 J	3260	0.281	3.88	1440 J
Surface Water - Total Metals (ug/l)														
SF11	RV	4	05/15/1991				2.2			16				364
SF11	RV	5	10/03/1991				7			26				1230
SF12	RV	5	10/03/1991				8			23				1390
SF12	RV	7	10/26/1993				10			26				1800
SF12	RV	7	11/30/1993				10.1			98				1850
SF12	RV	7	12/20/1993				12.2			21				2040
SF12	RV	7	01/19/1994				10.9			22				2030
SF12	RV	7	02/15/1994				11			24				1810
SF12	RV	7	03/07/1994				9.4			29				1790
SF12	RV	7	03/23/1994				10			28				1760
SF12	RV	7	04/06/1994				7.4			32				1130
SF12	RV	7	04/18/1994				6.6			194				1020
SF12	RV	7	05/03/1994				4.8			34				619
SF12	RV	7	05/20/1994				4.6			24				616
SF12	RV	7	06/08/1994				5.8			25				944
SF12	RV	7	06/24/1994				6.8			29				934
SF12	RV	7	07/23/1994				9.2			36				1190
SF12	RV	7	08/16/1994				11			26				1450
SF12	RV	7	09/09/1994				9			29				1580
SF12	RV	7	10/05/1994				12			29				1540
SF12	RV	7	11/15/1994				14			31				2440
SF12	RV	7	12/14/1994				17			26				2800
SF12	RV	7	01/11/1995				13			57				1840
SF12	RV	7	02/10/1995				11			42				1680
SF12	RV	7	03/08/1995				9			25				1360

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF12	RV	7	03/22/1995				13			39				1650
SF12	RV	7	04/13/1995				8.3			35				1250
SF12	RV	7	04/25/1995				7.2			29				1080
SF12	RV	7	05/10/1995				4.2			40				570
SF12	RV	7	05/23/1995				4.6			23				492
SF12	RV	7	06/13/1995				4.8			57				554
SF12	RV	7	06/28/1995				5.2			21				823
SF12	RV	7	07/12/1995				6.7			24				910
SF12	RV	7	07/26/1995				8			29				1160
SF12	RV	7	08/15/1995				8.8			31				1370
SF12	RV	7	09/14/1995				9.6			29				1510
SF15	RV	4	05/15/1991				2.5			15				438
SF15	RV	5	10/03/1991				8			20				1360
SF16	RV	5	10/03/1991				8			19				1450
SF20	RV	4	05/14/1991				0.2			3 U				20 U
SF20	RV	5	10/02/1991				0.2 U			2				31
SF22	RV	5	10/02/1991				7			19				1210
SF23	RV	4	05/14/1991				0.2 U			3 U				20 U
SF23	RV	5	10/05/1991				0.2 U			2				18
SF232	RV	2	11/09/1997		3.1 J	0.35 U	8.4	1.5 J	74 U	36.8	58	0.1 U	0.22 U	1400
SF233	RV	2	11/09/1997		2.7 J	0.43 U	8.3	1.3 J	76.8 U	30.6	55.1	0.1 U	0.22 U	1420
SF233	RV	7	10/29/1996				13			70				1710
SF233	RV	7	11/26/1996				12			27				2100
SF233	RV	7	12/17/1996				13			34				2190
SF233	RV	7	01/29/1997				10			24				1440
SF233	RV	7	02/19/1997				11			52				1670
SF233	RV	7	03/27/1997				8.3			38				1220
SF233	RV	7	04/17/1997				7.6			55				1160
SF233	RV	7	05/15/1997				5.9			885				805
SF233	RV	7	06/25/1997				2.9			21				414
SF233	RV	7	07/24/1997				4.6			39				666
SF233	RV	7	08/13/1997				5.8			43				798
SF233	RV	7	09/04/1997				7.7			77				965
SF233	RV	7	10/17/1997				9.5			45				1350
SF233	RV	7	11/25/1997				9.6			54				1300
SF233	RV	7	12/18/1997				28			* 2160				2450
SF233	RV	7	01/22/1998				9.7			36				1440

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF233	RV	7	02/26/1998				13			26				1500
SF233	RV	7	03/19/1998				9			44				1260
SF233	RV	7	04/24/1998				7			460				805
SF233	RV	18	05/24/1999				4		1800	480	310			560
SF233	RV	3	05/13/1998		0.6 J	0.3 J	2.7 J	1.1 J	79.6 J	21.7	24.3	0.16 U	0.042 U	447
SF234	RV	2	11/11/1997		0.62 U	0.43 UJ	0.069 U	0.54 J	15.7 U	0.16 J	1 U	0.1 U	0.22 U	9.9 U
SF234	RV	4	05/14/1991				0.2 U			3 U				20 U
SF234	RV	5	10/03/1991				0.2 U			1 U				30
SF234	RV	18	10/26/1998				1			1 UJ				10
SF234	RV	18	11/17/1998				1 UJ			1 UJ				10
SF234	RV	18	12/14/1998				1 UJ			1 UJ				10
SF234	RV	18	01/21/1999				1 UJ			1 UJ				10
SF234	RV	18	02/25/1999				1 UJ							40
SF234	RV	18	03/22/1999				1 UJ			1 UJ				40
SF234	RV	18	04/21/1999				1 UJ			1 UJ				
SF234	RV	18	05/24/1999						900	4	63			10
SF234	RV	18	07/08/1999							1.1				
SF234	RV	18	08/05/1999							0.78				
SF234	RV	18	08/31/1999							0.58				
SF234	RV	3	05/09/1998		0.5 U	1 U	0.1 U	3 U	78.4	0.5 U	5 U	0.2 UJ	0.3 U	5 U
SF234	RV	3	05/17/1998		1.2 U	0.23 U	3.3 J	0.91 J	104 J	24.5	27 J	0.16 U	0.042 U	532
SF235	RV	2	11/08/1997		3.2 J	0.51 J	6.9	1.7 J	56.6 UJ	49.1	46.2	0.1 U	0.22 UJ	1020
SF235	RV	3	05/13/1998		0.51 J	0.23 U	2.4 J	0.9 J	107	18.2	23.7	0.16 U	0.042 U	377
SF236	RV	2	11/08/1997		1.8 J	7.1	0.069 U	0.29 J	5 UJ	0.18 J	1.2 U	0.1 U	0.22 UJ	21.1 U
SF236	RV	4	05/14/1991				0.2 U			3 U				20 U
SF236	RV	5	10/03/1991				0.2 U			1 U				24
SF236	RV	3	05/09/1998		1.1	7.3	0.1 U	3 U	20 U	0.5 U	5 U	0.2 UJ	0.3 U	5 U
SF237	RV	2	11/08/1997		2.8 J						47.4	0.1 U	0.22 UJ	1130
SF237	RV	2	11/08/1997			0.36 J	7.2	1.3 J	30.2 UJ	32.1				
SF238	RV	2	11/08/1997		7.5	3.9	0.069 U	3.6	76.8 UJ	1.5	174	0.1 U	0.22 UJ	20.2 U
SF238	RV	4	05/14/1991				0.2 U			3 U				20 U
SF238	RV	5	10/02/1991				0.2 U			4				50
SF238	RV	18	05/22/1999						180	4	57			10
SF238	RV	3	05/07/1998		1 J	1.2 J	0.042 U	0.84 J	146	1.1 J	34.3	0.16 U	0.042 U	6 J
SF239	RV	2	11/07/1997		2.8 J	0.23 J	7.2	1.6 J	63.1 J	43.3	47.6	0.84 J	0.22 U	1200
SF239	RV	4	05/15/1991				2.3			19				411
SF239	RV	5	10/03/1991				8			19				1490

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF239	RV	7	10/29/1993				8			19				1590
SF239	RV	7	12/02/1993				7.9			33				1540
SF239	RV	7	12/20/1993				10.7			20				1760
SF239	RV	7	01/19/1994				8.6			22				1380
SF239	RV	7	02/15/1994				9.4			16				1560
SF239	RV	7	03/07/1994				7.1			25				1410
SF239	RV	7	03/23/1994				8.3			20				1430
SF239	RV	7	04/06/1994				5.5			22				897
SF239	RV	7	04/18/1994				5.8			182				772
SF239	RV	7	05/03/1994				3.6			16				512
SF239	RV	7	05/20/1994				4			20				509
SF239	RV	7	06/08/1994				5.2			21				821
SF239	RV	7	06/24/1994				6.6			24				838
SF239	RV	7	07/23/1994				7			20				900
SF239	RV	7	08/16/1994				8.4			20				1030
SF239	RV	7	09/09/1994				9.1			20				1490
SF239	RV	7	10/05/1994				8.5			18				1100
SF239	RV	7	11/15/1994				12			28				2210
SF239	RV	7	12/14/1994				15			20				2320
SF239	RV	7	01/11/1995				7.8			42				1300
SF239	RV	7	02/09/1995				8.3			26				1160
SF239	RV	7	03/08/1995				7			20				1040
SF239	RV	7	03/22/1995				8.8			22				1170
SF239	RV	7	04/13/1995				6.1			31				975
SF239	RV	7	04/25/1995				7.2			22				824
SF239	RV	7	05/10/1995				5.4			46				502
SF239	RV	7	05/23/1995				3.3			22				419
SF239	RV	7	06/13/1995				4			40				510
SF239	RV	7	06/28/1995				5.8			21				697
SF239	RV	7	07/12/1995				6			17				806
SF239	RV	7	07/26/1995				7.8			21				1000
SF239	RV	7	08/15/1995				7.6			25				1180
SF239	RV	7	09/14/1995				8.6			22				1330
SF239	RV	18	10/22/1998				8			19				1100
SF239	RV	18	11/17/1998				11			23				1700
SF239	RV	18	12/10/1998				11			24				1700
SF239	RV	18	12/29/1998				8			33				

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF239	RV	18	12/29/1998				8			32				1300
SF239	RV	18	03/24/1999				8			49				1100
SF239	RV	18	04/19/1999				5			13				690
SF239	RV	18	05/05/1999				4		70	17	37			500
SF239	RV	18	05/24/1999				3		1600	390	290			450
SF239	RV	18	05/26/1999				4		3700	540	360			520
SF239	RV	18	05/27/1999				2		550	110	89			290
SF239	RV	18	06/01/1999				2		190	37	35			260
SF239	RV	18	06/16/1999				2			110				220
SF239	RV	18	07/15/1999				3.2			18.9				417
SF239	RV	18	08/05/1999				5			42.4				539
SF239	RV	18	09/01/1999				6.9			18.6				901
SF239	RV	3	05/13/1998		0.63 U	0.23 J	2.6 J	1 J	81.4 J	18.2	22.2	0.16 U	0.042 U	415
SF240	RV	2	11/08/1997		1.8 J	0.63 J	0.069 U	0.97 J	5 UJ	0.54	1.1 U	0.1 U	0.22 UJ	16.8 U
SF240	RV	3	05/09/1998		1.2	1 U	0.1 U	3 U	20 U	0.61	5 U	0.2 UJ	0.3 U	6.8
SF241	RV	2	11/07/1997		2.9 J	0.61 J	7.1	1.6 J	64 J	40.8	49.2	0.28 UJ	0.22 U	1130
SF241	RV	5	10/02/1991				6			21				1110
SF242	RV	2	11/08/1997		7	0.8 J	0.1 J	1.6 J	17 UJ	0.94	4.5 U	0.1 U	0.22 UJ	27.4 U
SF242	RV	3	05/08/1998		3.6	2 U	0.2 U	2	20 U	0.6	5 U	0.5 U	0.2 U	17
SF243	RV	2	11/08/1997		3 J	0.48 J	7.6	1.3 J	31.5 UJ	31.6	49.3	0.1 U	0.22 UJ	1160
SF244	RV	2	11/08/1997		6.3	0.6 J	0.069 U	0.3 J	5 UJ	0.2 J	1.7 U	0.1 U	0.22 UJ	9.7 U
SF244	RV	3	05/08/1998		1.4	2 U	0.2 U	2	35	0.3	7	0.5 U	0.2 U	10 U
SF245	RV	2	11/07/1997		0.83 U	0.23 J	0.069 U	0.66 J	13 U	0.88	3 J	0.13 UJ	0.22 U	21.4
SF245	RV	4	05/14/1991				0.2 U			3 U				20 U
SF245	RV	5	10/03/1991				0.2 U			1 U				33
SF245	RV	3	05/08/1998			2 U	0.2 U	2 U		1.1	5 U	0.2 U	0.2 U	12
SF245	RV	3	05/08/1998		0.7				44					
SF246	RV	3	05/08/1998		0.7	2 U	0.2 U	2 U	28	1.6	5 U	0.5 U	0.2 U	10 U
SF247	RV	2	11/07/1997		2.8 J		7.8			31.2		0.1 UJ	0.22 U	1320
SF247	RV	2	11/07/1997			0.42 J		1.3 J	45.4 J		49.5			
SF248	RV	2	11/07/1997		0.29 U	0.21 J	0.069 U	0.56 J	62.6 J	3	8 J	0.28 UJ	0.22 U	11.4 J
SF248	RV	4	05/14/1991				0.2 U			3 U				20 U
SF248	RV	5	10/03/1991				0.2 U			1 U				21
SF248	RV	18	05/22/1999						30 U		20 U			
SF248	RV	3	05/08/1998		0.2	2 U	0.2 U	2	40	0.4	5 U	0.2 U	0.2 U	10 U
SF249	RV	2	11/06/1997		2.8 U	0.47	7.5	1.3	43.4 J	30.8	47.1	0.1 U	0.22 U	1150
SF249	RV	4	05/14/1991				2.3			31				433

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF249	RV	5	10/03/1991				9			17				1730
SF249	RV	7	10/29/1993				8.2			20				1560
SF249	RV	7	12/02/1993				8.4			30				1700
SF249	RV	7	12/20/1993				11.5			22				1850
SF249	RV	7	01/19/1994				9.4			19				1350
SF249	RV	7	02/17/1994				8.8			19				1520
SF249	RV	7	03/07/1994				7			22				1340
SF249	RV	7	03/23/1994				8			22				1390
SF249	RV	7	04/06/1994				6			24				872
SF249	RV	7	04/18/1994				5.1			178				817
SF249	RV	7	05/03/1994				4.2			13				544
SF249	RV	7	05/20/1994				4.2			18				546
SF249	RV	7	06/08/1994				5			19				786
SF249	RV	7	06/24/1994				6.7			18				884
SF249	RV	7	07/23/1994				6.9			20				877
SF249	RV	7	08/16/1994				8.6			22				1040
SF249	RV	7	09/09/1994				9.2			16				1420
SF249	RV	7	10/05/1994				9.2			17				1340
SF249	RV	7	11/15/1994				13			23				2180
SF249	RV	7	12/14/1994				14			16				2100
SF249	RV	7	01/11/1995				7.5			45				1220
SF249	RV	7	02/09/1995				6.6			16				1000
SF249	RV	7	03/08/1995				6			16				1030
SF249	RV	7	03/22/1995				5.9			20				855
SF249	RV	7	04/13/1995				6.2			22				857
SF249	RV	7	04/25/1995				7			19				821
SF249	RV	7	05/11/1995				4.2			56				543
SF249	RV	7	05/23/1995				4.3			19				446
SF249	RV	7	06/13/1995				4.8			68				555
SF249	RV	7	06/28/1995				5.6			18				737
SF249	RV	7	07/12/1995				6.3			15				833
SF249	RV	7	07/26/1995				7.7			18				986
SF249	RV	7	08/15/1995				8.3			19				1180
SF249	RV	7	09/14/1995				9.1			18				1300
SF249	RV	18	04/19/1999				5			120				740
SF249	RV	18	05/05/1999				4		40	16	35			510
SF249	RV	18	05/24/1999				4		1800	380	300			500

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF249	RV	18	05/26/1999				4		3200	500	390			630
SF249	RV	18	05/27/1999				2		850	160	140			350
SF249	RV	18	06/01/1999				2		200	39	38			280
SF249	RV	3	05/12/1998		1.2	1 U	2.9	3 U		21.4	22.4	0.2 UJ	0.3 U	379
SF249	RV	3	05/12/1998						72.5					
SF250	RV	4	05/14/1991				0.2			3 U				32
SF250	RV	3	05/08/1998		0.4	2 U	2.2	2 U	35	1.4	6	0.2 U	0.2 U	271
SF251	RV	2	11/06/1997		0.46 U	0.49	0.069 U	0.73 U	44.8 J	0.6	3.3 J	0.1 U	0.22 U	8.8 U
SF251	RV	3	05/08/1998		0.3	2 U	0.2 U	2 U	269	0.7	16	0.2 U	0.2 U	10 U
SF252	RV	2	11/06/1997		0.52 U	0.3	0.069 U	0.77 U	36.1 J	0.73	7.9 J	0.1 U	0.22 U	35
SF252	RV	4	05/14/1991				0.2 U			3 U				29
SF252	RV	5	10/02/1991				0.2			1				48
SF252	RV	18	05/22/1999						40	500	6			20
SF252	RV	3	05/07/1998		0.032 U	0.38 J	0.042 U	0.44 U	61.2 J	0.34 J	4.1 J	0.16 U	0.042 U	19 J
SF253	RV	2	11/06/1997		2.7 U	0.39	7.9	1.6	58 J	26.8	48.1	0.1 U	0.22 U	1330
SF253	RV	4	05/14/1991				2			21				389
SF253	RV	5	10/02/1991				13.5			20				1770
SF253	RV	18	05/24/1999				4		2200	480	330			530
SF253	RV	3	05/12/1998		1.1	1 U	3.1	3 U	90.6	21.9	25.2	0.2 UJ	0.3 U	436
SF253	RV	3	05/18/1998		1.2	1 U	3.6	3 U	207	15.9	26.5	0.2 U	0.3 U	517
SF254	RV	2	11/06/1997		3.5 U	0.29	8.4	1.2	33.1 J	27.1	46.6	0.1 U	0.22 U	1380
SF254	RV	5	10/02/1991				14.5			18				1840
SF254	RV	3	05/12/1998		1.2	1 U	3.1	3 U	84.6	24.7	25.2	0.2 UJ	0.3 U	416
SF255	RV	2	11/06/1997		1.1 U	0.16 U	0.069 U	0.06 U	5.8 J	0.27 U	1.3 J	0.1 U	0.22 U	15.6 U
SF255	RV	3	05/07/1998		0.46 J	0.23 U	0.042 U	0.44 U	96.7 J	0.35 J	2 J	0.16 U	0.042 U	13.1 J
SF256	RV	2	11/07/1997		0.97 U	0.31 J	0.069 U	0.2 J	5 U	0.2 J	1 U	0.1 UJ	0.22 U	29.9
SF256	RV	3	05/07/1998		0.33 J	0.23 U	0.042 U	0.44 U	67.1 J	0.47 J	0.83 J	0.16 U	0.042 U	1.8 J
SF257	RV	2	11/07/1997		1.2 U	0.41 J	0.069 U	0.33 J	44.4 J	0.84	12	0.1 UJ	0.22 U	15 J
SF257	RV	3	05/05/1998		2.1	2 U	0.2 U	2 U	29	0.3	5 U	0.2 U	0.2 U	10 U
SF258	RV	2	11/06/1997		2.6 U	0.2	8.3	1.2	30.1 J	25.4	46.2	0.1 U	0.22 U	1460
SF259	RV	2	11/06/1997		2.5 U	0.25	8.7	1.3	528	22.3	48.3	0.1 U	0.22 U	1490
SF259	RV	4	05/14/1991				2.6			34				509
SF259	RV	5	10/01/1991				12.5			20				1500
SF259	RV	7	10/29/1993				9.1			14				1560
SF259	RV	7	12/02/1993				8.7			26				1650
SF259	RV	7	12/21/1993				11.8			17				1980
SF259	RV	7	01/19/1994				9.7			16				1380

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF259	RV	7	02/17/1994				9.3			16				1580
SF259	RV	7	03/07/1994				7			22				1360
SF259	RV	7	03/23/1994				8.3			21				1440
SF259	RV	7	04/06/1994				8.3			24				939
SF259	RV	7	04/18/1994				5.8			217				909
SF259	RV	7	05/03/1994				4.5			18				609
SF259	RV	7	05/20/1994				4.4			18				605
SF259	RV	7	06/08/1994				6.2			19				850
SF259	RV	7	06/24/1994				6.8			17				965
SF259	RV	7	07/23/1994				7.6			23				1010
SF259	RV	7	08/16/1994				9.6			21				1280
SF259	RV	7	09/09/1994				10.6			14				1670
SF259	RV	7	10/05/1994				11			14				1690
SF259	RV	7	11/15/1994				12			17				1990
SF259	RV	7	12/14/1994				14			17				2030
SF259	RV	7	01/11/1995				9.3			47				1260
SF259	RV	7	02/09/1995				7.6			16				1150
SF259	RV	7	03/08/1995				7.3			15				1090
SF259	RV	7	03/23/1995				7.6			26				1140
SF259	RV	7	04/13/1995				7			20				937
SF259	RV	7	04/25/1995				6.5			18				937
SF259	RV	7	05/11/1995				5.3			50				621
SF259	RV	7	05/24/1995				3.9			16				536
SF259	RV	7	06/13/1995				4.8			21				610
SF259	RV	7	06/28/1995				5.8			18				809
SF259	RV	7	07/12/1995				7			17				949
SF259	RV	7	07/26/1995				8.4			18				1120
SF259	RV	7	08/15/1995				8.5			15				1310
SF259	RV	7	09/14/1995				9.9			16				1340
SF259	RV	18	05/24/1999				6		5700	850	790			690
SF259	RV	3	05/12/1998		1.1	1 U	3.2	3 U	60.8	17	23	0.2 U	0.3 U	446
SF261	RV	2	11/05/1997		1.1 U	0.16 U	11	1.1	8.9 J	9.5	34.1	0.1 U	0.22 U	1640
SF261	RV	3	05/08/1998		0.8	2 U	12.5	2 U	68	17.3	65	0.2 U	0.2 U	1670
SF263	RV	2	11/05/1997						39.7 J		51.2	0.1 U	0.22 U	1080
SF263	RV	2	11/05/1997		7.5	0.72	6.7	1.2		22				
SF263	RV	5	10/01/1991				11.2			14				1260
SF264	RV	2	11/05/1997		7	0.66 J	6.6	1.1 J	36.1 J	19.9	48.3	0.1 UJ	0.22 U	1090

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF264	RV	5	10/01/1991				12			42				1320
SF264	RV	7	09/30/1998				9			12				1250
SF264	RV	7	10/09/1998				8.7			14				1230
SF264	RV	3	05/16/1998		4.3 U	0.51 J	3 J	0.86 J	108 J	17.4	25.3 J	0.16 U	0.042 U	473
SF265	RV	2	11/05/1997		1.2 U	0.33 J	0.18 J	1.3 J	71 J	0.83	9.1 J	0.1 UJ	0.22 U	32.2
SF265	RV	3	05/09/1998		1.4	1 U	0.22	3 U	175	1.8	11.7	0.2 UJ	0.3 U	23.3
SF266	RV	2	11/05/1997		0.25 U	0.16 U	0.069 U	0.42 J	10.6 U	0.4 J	1.1 J	0.1 UJ	0.22 U	11.1 J
SF266	RV	4	05/14/1991				0.2 U			3 U				20 U
SF266	RV	18	05/22/1999						40		2			
SF266	RV	3	05/05/1998		0.2 U	2 U	0.2 U	2 U	50	2.8	5 U	0.2 U	0.2 U	10 U
SF267	RV	2	11/05/1997		2 J	0.9 J	0.069 U	0.59 J	5 U	0.34 J	2.5 J	0.1 UJ	0.22 U	14.8 J
SF267	RV	18	05/23/1999						460	14	60			10
SF267	RV	3	05/09/1998		1	1 U	0.1 U	3 U	36.8	1.3	5.3	0.2 UJ	0.3 U	5 U
SF272	RV	4	05/14/1991				2.2			26				420
SF272	RV	5	10/02/1991				6			22				1130
SF272	RV	3	05/12/1998		1.1	1 U	2.6	3 U	65.4	20.6	21.7	0.2 UJ	0.3 U	350
SF273	RV	3	05/13/1998		0.6 J	0.23 U	1.9 J	0.95 J	82.4 J	20	23.1	0.16 U	0.042 U	295
SF274	RV	3	05/13/1998		0.51 J	0.23 U	2.4 J	1.2 J	143	19.3	24.9	0.16 U	0.042 U	386
SF31	RV	5	10/02/1991				13.5			18				1750
SF33	OF	4	05/14/1991				2.5			3 U				316
SF33	OF	5	10/01/1991				1.3			2				266
SF382	AD	2	11/18/1997		9.7	8.6	0.069 U	1.2 J	373	0.57	9.8 J	0.1 U	0.22 U	25.2 U
SF382	AD	3	05/12/1998		10	12	0.1 U	3.2	701	0.64	12.2	0.2 U	0.3 U	9.9
SF383	AD	2	11/18/1997		0.59 U	0.59 J	0.35 U	1 J	737	1.6	224	0.1 U	0.22 U	344
SF385	AD	2	11/19/1997		1.5 U	0.3 J	0.069 U	0.095 J	8.3 U	0.38 J	1.5 J	0.1 U	0.22 U	23 U
SF388	AD	2	11/19/1997		0.62 U	2.4	0.069 U	0.28 J	40.5 J	0.21 J	3.1 J	0.1 U	0.22 U	12.3 U
SF392	AD	2	11/20/1997		4.7 J	1.5 J	0.16 J	5.7	2910	4	156	0.1 U	0.22 UJ	20.2 U
SF393	AD	2	11/17/1997		0.66 U	2.2	0.15 U	4.9	3800	21.4	185	0.1 U	0.22 U	54.2 U
SF393	AD	3	05/15/1998		2.6	1 U	0.23	8.4	3580	89	134	0.2 U	0.3 U	44.8
SF426	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF427	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF429	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF430	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF431	RV	11	11/11/1998		4.5 J	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	7.9
SF600	OF	8	03/25/1998		45 U	40 U	2 U	3 U		25 UJ	2	0.2 U	4 U	29.3 J
SF600	OF	8	01/31/1994				2 U			39				41
SF600	OF	8	02/28/1994				2 U			15 U				55

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF600	OF	8	03/31/1994				2 U			15 U				**58**
SF600	OF	8	04/30/1994				2 U			**30**				**61**
SF600	OF	8	05/31/1994				2 U			**20**				**44**
SF600	OF	8	06/30/1994				**3**			**37**				**43**
SF600	OF	8	07/31/1994				2 U			**32**				**65**
SF600	OF	8	08/31/1994				2 U			20 U				**135**
SF600	OF	8	09/30/1994				2			**19**				**38**
SF600	OF	8	10/31/1994				2			**50**				**51**
SF600	OF	8	11/30/1994				2 U			15 U				**48**
SF600	OF	8	12/31/1994				2			**20**				**38**
SF600	OF	8	01/31/1995				2			**21**				**44**
SF600	OF	8	02/28/1995				2 U			15 U				5
SF600	OF	8	03/31/1995				2 U			**18**				**37**
SF600	OF	8	04/30/1995				2 U			**19**				**45**
SF600	OF	8	05/31/1995				2 U			**25**				29
SF600	OF	8	06/30/1995				2 U			**28**				**31**
SF600	OF	8	07/31/1995				2 U			**19**				**34**
SF600	OF	8	08/31/1995				2 U			**16**				21
SF600	OF	8	09/30/1995				2 U			**17**				**36**
SF600	OF	8	10/31/1995				2 U			**41**				**40**
SF600	OF	8	11/30/1995				2			**20**				25
SF600	OF	8	12/31/1995				2 U			10				**47**
SF600	OF	8	01/31/1996				2 U			**23**				**52**
SF600	OF	8	02/29/1996				2 U			15 U				29
SF600	OF	8	03/31/1996				2 U			15 U				**48**
SF600	OF	8	04/30/1996				2 U			**25**				**43**
SF600	OF	8	05/31/1996				2 U			15 U				**49**
SF600	OF	8	06/30/1996				2 U			15 U				22
SF600	OF	8	07/31/1996				2 U			**41**				29
SF600	OF	8	08/31/1996				2 U			**23**				**32**
SF600	OF	8	09/30/1996				2 U			**31**				**35**
SF600	OF	8	10/31/1996				2 U			**31**				**49**
SF600	OF	8	11/30/1996				2 U			**20**				**50**
SF600	OF	8	12/31/1996				2 U			**30**				**83**
SF600	OF	8	01/31/1997				2 U			15 U				**63**
SF600	OF	8	02/28/1997				2 U			**22**				**52**
SF600	OF	8	03/31/1997				2 U			**24**				**43**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF600	OF	8	04/30/1997				2 U			**20**				**40**
SF600	OF	8	05/31/1997				2 U			**37**				**46**
SF600	OF	8	06/30/1997				2 U			**23**				**41**
SF600	OF	8	07/31/1997				2 U			**29**				**85**
SF600	OF	8	08/31/1997				2 U			**38**				**95**
SF600	OF	8	09/30/1997				2 U			**43**				**76**
SF600	OF	8	10/31/1997				2 U			**43**				29
SF600	OF	8	11/30/1997				2 U			**36**				**48**
SF600	OF	8	12/31/1997				2 U			**41**				**72**
SF600	OF	8	01/31/1998				2 U			**36**				**45**
SF600	OF	8	02/28/1998				2 U			**26**				**49**
SF600	OF	8	03/31/1998				2 U			**21**				**35**
SF600	OF	8	04/30/1998				2 U			**41**				**82**
SF600	OF	8	05/31/1998				2 U			**30**				12
SF600	OF	8	06/30/1998				2 U			**50**				**32**
SF600	OF	8	01/15/1994							**39**				**41**
SF600	OF	8	02/15/1994							15 U				**55**
SF600	OF	8	03/15/1994							15 U				**58**
SF600	OF	8	04/15/1994							**30**				**61**
SF600	OF	8	05/15/1994							**20**				**44**
SF600	OF	8	06/15/1994							**37**				**43**
SF600	OF	8	07/15/1994							**32**				**65**
SF600	OF	8	08/15/1994							20 U				**135**
SF600	OF	8	09/15/1994							**19**				**38**
SF600	OF	8	10/15/1994							**50**				**51**
SF600	OF	8	11/15/1994							15 U				**48**
SF600	OF	8	12/15/1994							**20**				**38**
SF600	OF	8	01/15/1995							**21**				**44**
SF600	OF	8	02/15/1995							15 U				5 U
SF600	OF	8	03/15/1995							**18**				**37**
SF600	OF	8	04/15/1995							**19**				**45**
SF600	OF	8	05/15/1995							**25**				29
SF600	OF	8	06/15/1995							**28**				
SF600	OF	8	07/15/1995				2 U			**19**				**34**
SF600	OF	8	08/15/1995				2 U			**16**				21
SF600	OF	8	09/15/1995				2 U			**17**				**36**
SF600	OF	8	10/15/1995				2 U			**41**				**40**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF600	OF	8	11/15/1995				2			20				25
SF600	OF	8	12/15/1995				2 U			10				47
SF600	OF	8	01/15/1996				2 U			23				52
SF600	OF	8	02/15/1996				2 U			15 U				29
SF600	OF	8	03/15/1996				2 U			15 U				48
SF600	OF	8	04/15/1996				2 U			25				43
SF600	OF	8	05/15/1996				2 U							49
SF600	OF	8	06/15/1996				2 U			150 U				22
SF600	OF	8	07/15/1996				2 U			41				29
SF600	OF	8	08/15/1996				2 U			23				32
SF600	OF	8	09/15/1996				2 U			31				35
SF600	OF	8	10/15/1996				2 U			31				49
SF600	OF	8	11/15/1996				2 U			20				50
SF600	OF	8	12/15/1996				2 U			30				83
SF600	OF	8	01/15/1997				2 U			15 U				63
SF600	OF	8	02/15/1997				2 U			22				52
SF600	OF	8	03/15/1997				2 U			24				43
SF600	OF	8	04/15/1997							20				40
SF600	OF	8	05/15/1997				2 U			37				46
SF600	OF	8	06/15/1997				2 U			23				41
SF600	OF	8	07/15/1997				2 U			29				85
SF600	OF	8	08/15/1997				2 U			38				95
SF600	OF	8	09/15/1997				2 U			43				76
SF600	OF	8	10/15/1997				2 U			43				29
SF600	OF	8	11/15/1997				2 U			36				48
SF600	OF	8	12/15/1997				2 U			41				72
SF600	OF	8	01/15/1998				2 U			36				45
SF600	OF	8	02/15/1998				2 U			26				49
SF600	OF	8	03/15/1998				2 U			21				35
SF600	OF	8	04/15/1998				2 U			41				82
SF600	OF	8	05/15/1998				2 U			30				12
SF600	OF	8	06/15/1998				2 U			50				32
SF601	OF	8	04/03/1996		5 U	10	5 U	5 U		1 U	4.7	0.2 U	1 U	17.6
SF601	OF	8	04/30/1994				2 U			16 U				18
SF601	OF	8	10/31/1994				3			44				50
SF601	OF	8	04/30/1995				2 U			21				24
SF601	OF	8	10/31/1995				2 U			25				31

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF601	OF	8	04/30/1996				2 U			21				47
SF601	OF	8	10/31/1996				2 U			23				34
SF601	OF	8	04/30/1997				2 U			17				43
SF601	OF	8	10/31/1997				2 U			45				17
SF601	OF	8	04/30/1998				2 U			153				111
SF601	OF	8	01/15/1994				2 U							
SF601	OF	8	02/15/1994				2 U							
SF601	OF	8	03/15/1994				2 U							
SF601	OF	8	04/15/1994				2 U			16 U				18
SF601	OF	8	05/15/1994				2 U							
SF601	OF	8	06/15/1994				3							
SF601	OF	8	07/15/1994				2 U							
SF601	OF	8	08/15/1994				2 U							
SF601	OF	8	09/15/1994				2							
SF601	OF	8	10/15/1994				2							
SF601	OF	8	11/15/1994				2 U							
SF601	OF	8	12/15/1994				2							
SF601	OF	8	01/15/1995				2							
SF601	OF	8	02/15/1995				2 U							
SF601	OF	8	03/15/1995				2 U							
SF601	OF	8	04/15/1995				2 U							
SF601	OF	8	05/15/1995				2 U							
SF601	OF	8	06/15/1995				2 U							
SF602	OF	8	04/03/1996		12.7	7.64	5 U	5 U		2.37	462	0.2 U	1 U	8.4
SF602	OF	8	03/25/1998		45 U	40 U	2 U	17.2		25 UJ	761	0.2 U	4 U	18 J
SF602	OF	8	01/31/1994				2			26				15
SF602	OF	8	02/28/1994				2			21				14
SF602	OF	8	03/31/1994				2			15				23
SF602	OF	8	04/30/1994				2			31				19
SF602	OF	8	05/31/1994				2 U			27				13
SF602	OF	8	06/30/1994				3			47				27
SF602	OF	8	07/31/1994				0.2			43				39
SF602	OF	8	08/31/1994				3			23				210
SF602	OF	8	09/30/1994				3			39				37
SF602	OF	8	10/31/1994				3			56				42
SF602	OF	8	11/30/1994				2 U			23				38
SF602	OF	8	12/31/1994				3 U			55				38

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF602	OF	8	01/31/1995				3			33				27
SF602	OF	8	02/28/1995				2 U			19				26
SF602	OF	8	03/31/1995				2 U			25				33
SF602	OF	8	04/30/1995				2 U			31				27
SF602	OF	8	05/31/1995				2 U			31				19
SF602	OF	8	06/30/1995				2 U			39				29
SF602	OF	8	07/31/1995				2 U			27				27
SF602	OF	8	08/31/1995				2 U			29				17
SF602	OF	8	09/30/1995				2 U			17				27
SF602	OF	8	10/31/1995				2 U			28				42
SF602	OF	8	11/30/1995				2 U			30				14
SF602	OF	8	12/31/1995				2 U			27				24
SF602	OF	8	01/31/1996				2 U			31				10
SF602	OF	8	02/29/1996				2 U			18				13
SF602	OF	8	03/31/1996				2 U			25				40
SF602	OF	8	04/30/1996				2 U			29				47
SF602	OF	8	05/31/1996				2 U			25				21
SF602	OF	8	06/30/1996				2 U			27				27
SF602	OF	8	07/31/1996				2 U			50				46
SF602	OF	8	08/31/1996				2 U			27				31
SF602	OF	8	09/30/1996				2 U			31				20
SF602	OF	8	10/31/1996				2 U			31				31
SF602	OF	8	11/30/1996				2 U			30				32
SF602	OF	8	12/31/1996				2 U			40				43
SF602	OF	8	01/31/1997				2 U							
SF602	OF	8	02/28/1997				2 U			44				35
SF602	OF	8	03/31/1997				2 U			32				64
SF602	OF	8	04/30/1997				2 U			27				30
SF602	OF	8	05/31/1997				2 U			56				27
SF602	OF	8	06/30/1997				2 U			30				33
SF602	OF	8	07/31/1997				2 U			35				60
SF602	OF	8	08/31/1997				2 U			54				153
SF602	OF	8	09/30/1997				2			113				57
SF602	OF	8	10/31/1997				2 U			41				74
SF602	OF	8	11/30/1997				2 U			10				10
SF602	OF	8	12/31/1997				2 U			44				9
SF602	OF	8	01/31/1998				2 U			39				88

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF602	OF	8	02/28/1998				2 U			14				27
SF602	OF	8	03/31/1998				2 U			**42**				22
SF602	OF	8	04/30/1998				2 U			**45**				28
SF602	OF	8	05/31/1998				2 U			**40**				10
SF602	OF	8	06/30/1998				2 U			**56**				9
SF602	OF	8	01/31/1997							**59**				**65**
SF602	OF	8	01/15/1994							**26**				15
SF602	OF	8	02/15/1994							**21**				14
SF602	OF	8	03/15/1994							**15**				23
SF602	OF	8	04/15/1994							**31**				19
SF602	OF	8	05/15/1994							**27**				13
SF602	OF	8	06/15/1994							**47**				27
SF602	OF	8	08/15/1994							**23**				**210**
SF602	OF	8	09/15/1994							**39**				**37**
SF602	OF	8	10/15/1994							**56**				**42**
SF602	OF	8	11/15/1994							**23**				**38**
SF602	OF	8	12/15/1994							**55**				**38**
SF602	OF	8	01/15/1995							**33**				27
SF602	OF	8	02/15/1995							**19**				26
SF602	OF	8	03/15/1995							**25**				**33**
SF602	OF	8	04/15/1995							**31**				27
SF602	OF	8	05/15/1995							**31**				19
SF602	OF	8	06/15/1995							**39**				29
SF602	OF	8	07/15/1995							**27**				24
SF602	OF	8	08/15/1995							**29**				17
SF602	OF	8	09/15/1995							**17**				27
SF602	OF	8	10/15/1995							**28**				**42**
SF602	OF	8	11/15/1995							**30**				14
SF602	OF	8	12/15/1995							**27**				24
SF602	OF	8	01/15/1996							**31**				10
SF602	OF	8	02/15/1996							**18**				13
SF602	OF	8	03/15/1996							**25**				**40**
SF602	OF	8	04/15/1996							**29**				**47**
SF602	OF	8	05/15/1996							**25**				21
SF602	OF	8	06/15/1996							**27**				27
SF602	OF	8	07/15/1996							**50**				**46**
SF602	OF	8	08/15/1996							**27**				**31**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF602	OF	8	09/15/1996							31				20
SF602	OF	8	10/15/1996							31				31
SF602	OF	8	11/15/1996							30				32
SF602	OF	8	12/15/1996							40				43
SF602	OF	8	02/15/1997							44				35
SF602	OF	8	04/15/1997							32				30
SF602	OF	8	05/15/1997							27				27
SF602	OF	8	06/15/1997							56				33
SF602	OF	8	07/15/1997							30				60
SF602	OF	8	08/15/1997							35				153
SF602	OF	8	09/15/1997							54				57
SF602	OF	8	10/15/1997							113				74
SF602	OF	8	11/15/1997							41				10
SF602	OF	8	12/15/1997							10				9
SF602	OF	8	01/15/1998							44				88
SF602	OF	8	02/15/1998							39				27
SF602	OF	8	03/15/1998							42				22
SF602	OF	8	04/15/1998							45				28
SF602	OF	8	05/15/1998							40				10
SF602	OF	8	06/15/1998							56				9
SF602	OF	8	07/15/1994											39
SF602	OF	8	01/15/1997							59				65
SF603	OF	8	04/03/1996		5.84	5 U	5 U	5 U		1 U	109	0.2 U	1 U	51
SF603	OF	8	03/31/1994				10			23				1490
SF603	OF	8	06/30/1994				9			47				1110
SF603	OF	8	09/30/1994				12			42				1400
SF603	OF	8	12/31/1994				16			43				2190
SF603	OF	8	03/31/1995				9			35				1400
SF603	OF	8	06/30/1995				6			49				702
SF603	OF	8	09/30/1995				11			52				1630
SF603	OF	8	12/31/1995				8			44				988
SF603	OF	8	03/31/1996				7			160				990
SF603	OF	8	06/30/1996				5			27				792
SF603	OF	8	09/30/1996				9			50				1230
SF603	OF	8	12/31/1996				12			107				1640
SF603	OF	8	03/31/1997				8			227				1500
SF603	OF	8	06/30/1997				5			37				522

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF603	OF	8	09/30/1997				11			212				1190
SF603	OF	8	12/31/1997				9			62				1020
SF603	OF	8	03/31/1998				5			91				799
SF603	OF	8	06/30/1998				6			68				854
SF624	OF	8	04/04/1996		152	60.9	5 U	5 U	654	17.5	822	0.2 U	1 U	22.4
SF624	OF	8	03/26/1998		331	40 U	2 U	3 U		125	225	0.2 U	4 U	65
SF624	OF	8	01/31/1994				3							129
SF624	OF	8	02/28/1994											92
SF624	OF	8	03/31/1994											31
SF624	OF	8	04/30/1994											61
SF624	OF	8	05/31/1994											22
SF624	OF	8	06/30/1994				3							39
SF624	OF	8	07/31/1994											39
SF624	OF	8	08/31/1994				4							64
SF624	OF	8	09/30/1994											77
SF624	OF	8	10/31/1994							57				100
SF624	OF	8	11/30/1994				4.8							74.9
SF624	OF	8	12/31/1994				2							44.2
SF624	OF	8	01/31/1995											21
SF624	OF	8	02/28/1995											71
SF624	OF	8	03/31/1995											65
SF624	OF	8	04/30/1995											42
SF624	OF	8	05/31/1995											26
SF624	OF	8	06/30/1995				6							93
SF624	OF	8	07/31/1995				8							168
SF624	OF	8	08/31/1995											106
SF624	OF	8	09/30/1995											77
SF624	OF	8	10/31/1995							122				72
SF624	OF	8	11/30/1995							57				80
SF624	OF	8	12/31/1995							68				146
SF624	OF	8	01/31/1996							106				60
SF624	OF	8	02/29/1996							136				106
SF624	OF	8	03/31/1996							97				236
SF624	OF	8	04/30/1996							127				131
SF624	OF	8	05/31/1996							111				85
SF624	OF	8	06/30/1996							341				318
SF624	OF	8	07/31/1996				5			76				99

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF624	OF	8	08/31/1996				4			306				196
SF624	OF	8	09/30/1996							294				75
SF624	OF	8	10/31/1996							350				42
SF624	OF	8	11/30/1996				4			99				53
SF624	OF	8	12/31/1996				15			54				85
SF624	OF	8	01/31/1997				11			93				77
SF624	OF	8	02/28/1997				9			60				29
SF624	OF	8	03/31/1997							50				30
SF624	OF	8	04/30/1997				4 U			129				44
SF624	OF	8	05/31/1997				5			102				
SF624	OF	8	06/30/1997				4 U			97				34
SF624	OF	8	07/31/1997				13			139				89
SF624	OF	8	08/31/1997				4			141				221
SF624	OF	8	09/30/1997				4 U			216				134
SF624	OF	8	10/31/1997							89				222
SF624	OF	8	11/30/1997							241				326
SF624	OF	8	12/31/1997				7			120				41
SF624	OF	8	01/31/1998							161				219
SF624	OF	8	02/28/1998				4 U			259				150
SF624	OF	8	03/31/1998							146				99
SF624	OF	8	04/30/1998											710
SF624	OF	8	05/31/1998							262				332
SF624	OF	8	06/30/1998							91				46
SF624	OF	8	01/15/1994				0.3							45
SF624	OF	8	02/15/1994											25
SF624	OF	8	03/15/1994											16
SF624	OF	8	04/15/1994											24
SF624	OF	8	05/15/1994											8
SF624	OF	8	06/15/1994				0.2							16
SF624	OF	8	07/15/1994											18
SF624	OF	8	08/15/1994				0.2							25
SF624	OF	8	09/15/1994											15
SF624	OF	8	10/15/1994							5				22
SF624	OF	8	11/15/1994				0.3							20.7
SF624	OF	8	12/15/1994				0.1							14.3
SF624	OF	8	01/15/1995											9
SF624	OF	8	02/15/1995											27

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF624	OF	8	03/15/1995											35
SF624	OF	8	04/15/1995											26
SF624	OF	8	05/15/1995											17
SF624	OF	8	06/15/1995				0.5							56
SF624	OF	8	07/15/1995				0.9							86
SF624	OF	8	08/15/1995											72
SF624	OF	8	09/15/1995											40
SF624	OF	8	10/15/1995							26				41
SF624	OF	8	11/15/1995							3				28
SF624	OF	8	12/15/1995							3				22
SF624	OF	8	01/15/1996							13				23
SF624	OF	8	02/15/1996							24				38
SF624	OF	8	03/15/1996							9				57
SF624	OF	8	04/15/1996							21				44
SF624	OF	8	05/15/1996							18				43
SF624	OF	8	06/15/1996							29				109
SF624	OF	8	07/15/1996				0.5			21				58
SF624	OF	8	08/15/1996				0.7			82				46
SF624	OF	8	09/15/1996							26				43
SF624	OF	8	10/15/1996							38				24
SF624	OF	8	11/15/1996				4			42				34
SF624	OF	8	12/15/1996				4			2				28
SF624	OF	8	01/15/1997				4			10				22
SF624	OF	8	02/15/1997				3			6				13
SF624	OF	8	03/15/1997							42 U				12
SF624	OF	8	04/15/1997				4 U			51 U				19
SF624	OF	8	05/15/1997				4 U			54 U				
SF624	OF	8	06/15/1997				4 U			50 U				19
SF624	OF	8	07/15/1997				6 U			60 U				22
SF624	OF	8	08/15/1997				4 U			98				85
SF624	OF	8	09/15/1997				4 U			124				72
SF624	OF	8	10/15/1997							55 U				176
SF624	OF	8	11/15/1997							120				75
SF624	OF	8	12/15/1997				5 U			66				26
SF624	OF	8	01/15/1998							108				80
SF624	OF	8	02/15/1998				4 U			159				71
SF624	OF	8	03/15/1998							106				46

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF624	OF	8	04/15/1998											172
SF624	OF	8	05/15/1998							84				113
SF624	OF	8	06/15/1998							52				22
SF8104	RV	13	---	0			3	35 U	12 U		6			3 U
SF8125	RV	13	---			29 U	6	35 U	41	15 U	6	5 U		3 U
SF8126	SP	13	---			29 U		35 U				5 U		
SF8126	SP	13	---				6		5900	8.8	470			680
SF8127	SP	13	---			29 U	9	35 U	12 U	6.5	8	5 U		140
SF8142	RV	13	---			29 U	3 U	35 U	25	2.6	4	5 U		230
SF8143	AD	13	---			4.2	3	38	690	15 U	82	5 U		60
SF8144	RV	13	---			29 U	3	44	300	3.6	10	5 U		1100
SF8145	AD	13	---			4.9	11	37	5700	26	1200	5 U		2700
SF8146	AD	13	---			29 U	3	35 U	480	15 U	100	5 U		14
SF8214	AD	13	---			29 U	6	35 U	12 U	15 U	5	5 U		3 U
SF8215	AD	13	---			29 U	6	35 U	12 U	15 U	7	5 U		3 U
SF8216	RV	13	---			29 U	7	35 U	12 U	15 U	6	5 U		3 U
SF8217	AD	13	---			29 U	9	38	2100	15 U	710	5 U		3 U
SF8220	RV	13	---			29 U	3 U	35 U	35	15 U	2 U	5 U		3 U
SF8253	AD	13	---			29 U	3 U	35 U	12 U	15 U	25	5 U		6
SF8254	AD	13	---			29 U	3 U	35 U	43	15 U	12	5 U		32
SF8255	SP	13	---			29 U	3 U	35 U	12 U	15 U	9	5 U		3 U
SF8256	RV	13	---			29 U	3 U	36	12 U	15 U	6	5 U		8
SF8260	TP	13	---			29 U	3 U	35 U	12 U	15 U	2 U	5 U		21
Surface Water - Dissolved Metals (ug/l)														
SF11	RV	4	05/15/1991				2			6				329
SF11	RV	5	10/03/1991				11			6				831
SF12	RV	5	10/03/1991				10			6				1020
SF12	RV	7	10/26/1993				8.6			15				1830
SF12	RV	7	11/30/1993				9.1			11				1720
SF12	RV	7	12/20/1993				12.2			12				2090
SF12	RV	7	01/19/1994				9.8			15				1850
SF12	RV	7	02/15/1994				11			12				1820
SF12	RV	7	03/07/1994				10			15				1770
SF12	RV	7	03/23/1994				11			17				1770
SF12	RV	7	04/06/1994				7.4			14				1170
SF12	RV	7	04/18/1994				5.5			11				879

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF12	RV	7	05/03/1994				4.3			21				623
SF12	RV	7	05/20/1994				4.6			11				623
SF12	RV	7	06/08/1994				5.8			14				924
SF12	RV	7	06/24/1994				5.5			17				924
SF12	RV	7	07/23/1994				8.6			21				1190
SF12	RV	7	09/09/1994				9			14				1570
SF12	RV	7	10/05/1994				10			12				1500
SF12	RV	7	11/15/1994				14			18				2460
SF12	RV	7	12/14/1994				18			18				2840
SF12	RV	7	01/11/1995				11			10				1790
SF12	RV	7	02/10/1995				10			16				1650
SF12	RV	7	03/08/1995				8.2			16				1340
SF12	RV	7	03/22/1995				12			23				1600
SF12	RV	7	04/13/1995				7.5			18				1210
SF12	RV	7	04/25/1995				7			18				1080
SF12	RV	7	05/10/1995				3.9			13				489
SF12	RV	7	05/23/1995				3.6			13				474
SF12	RV	7	06/13/1995				4.8			21				536
SF12	RV	7	06/28/1995				5.2			14				799
SF12	RV	7	07/12/1995				6.8			18				934
SF12	RV	7	07/26/1995				8			19				1160
SF12	RV	7	08/15/1995				8.8			18				1380
SF12	RV	7	09/14/1995				10.3			21				1480
SF15	RV	4	05/15/1991				2.3			3				410
SF15	RV	5	10/03/1991				10			5				923
SF16	RV	5	10/03/1991				12			6				1030
SF20	RV	4	05/14/1991				0.3			3 U				20 U
SF20	RV	5	10/02/1991				0.2 U			1 U				20
SF22	RV	5	10/02/1991				12			5				837
SF23	RV	4	05/14/1991				0.2 U			3 U				20 U
SF23	RV	5	10/05/1991				0.2 U			1 U				12 U
SF232	RV	2	11/09/1997		2.7	0.34	9.08	0.98	17	23.9	54.7	0.2 U	0.03 U	1310
SF233	RV	2	11/09/1997		2.5	0.36	9.19	1	17	21.5	50.8	0.2 U	0.03 U	1330
SF233	RV	7	10/29/1996				12			31				1680
SF233	RV	7	11/26/1996				12			23				2140
SF233	RV	7	12/17/1996				13			21				2280
SF233	RV	7	01/29/1997				11			17				1430

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF233	RV	7	02/19/1997				11			18				1630
SF233	RV	7	03/27/1997				8.2			21				1250
SF233	RV	7	04/17/1997				7.6			19				1170
SF233	RV	7	06/25/1997				2.8			13				453
SF233	RV	7	07/24/1997				4.4			18				704
SF233	RV	7	08/13/1997				5.7			20				789
SF233	RV	7	09/04/1997				7.6			26				964
SF233	RV	7	10/17/1997				9.4			22				1400
SF233	RV	7	11/25/1997				8.8			21				1330
SF233	RV	7	12/18/1997				16			* 474				1810
SF233	RV	7	01/22/1998				9.8			15				1480
SF233	RV	7	02/26/1998				13			13				1510
SF233	RV	7	03/19/1998				8.4			21				1210
SF233	RV	7	04/24/1998				5			14				628
SF233	RV	18	05/24/1999				2.4		8.6	8.8	20			319
SF233	RV	3	05/13/1998		0.61 J	0.23 U	2.8 J	0.69 J	48.1 J	10	19.8	0.16 U	0.042 U	443
SF234	RV	2	11/11/1997		0.5 U	0.47	0.04 U	0.5 U	10 U	0.1 U	1 U	0.2 U	0.03 U	3.6
SF234	RV	4	05/14/1991				0.2 U			3 U				20 U
SF234	RV	5	10/03/1991				0.2 U			1 U				46
SF234	RV	18	10/26/1998				1 UJ			1.1				20 UJ
SF234	RV	18	11/17/1998				1 UJ			1 UJ				20 UJ
SF234	RV	18	12/14/1998				1 UJ			1 UJ				20 UJ
SF234	RV	18	01/21/1999				1 UJ			1 UJ				20 UJ
SF234	RV	18	02/25/1999				1 UJ			1				20 UJ
SF234	RV	18	03/22/1999				1 UJ			1 UJ				20 UJ
SF234	RV	18	04/21/1999				1 UJ			1 UJ				20 UJ
SF234	RV	18	05/04/1999				1 UJ			1				1.6
SF234	RV	18	05/24/1999				1 UJ		10 U	1 U	1.3			1 U
SF234	RV	18	07/08/1999				1 U			1 U				1
SF234	RV	18	08/05/1999				1 U			1 U				1 U
SF234	RV	18	08/31/1999				1 U			1 U				3
SF234	RV	3	05/09/1998		0.5 U	1 U	0.1 U	3 U	20 U	0.5 U	5 U	0.2 UJ	0.3 U	5 U
SF234	RV	3	05/17/1998		1.2 U	0.23 U	3.2 J	1 J	109 J	25	27.8 J	0.16 U	0.042 UJ	526 J
SF235	RV	2	11/08/1997		2.3	0.37	7.34	1.2	18	21.2	41.1	0.2 U	0.03 U	1020
SF235	RV	3	05/13/1998		0.42 J	0.3 J	2.3 J	0.67 J	49.2 J	13.2	16.6	0.16 U	0.042 U	368
SF236	RV	2	11/08/1997		1.7	7.27	0.04 U	0.5 U	10 U	0.1 U	1 U	0.2 U	0.03 U	7.53
SF236	RV	4	05/14/1991				0.2 U			3 U				20 U

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF236	RV	5	10/03/1991				0.2 U			1 U				12 U
SF236	RV	3	05/09/1998		1	5.5	0.1 U	3 U	20 U	0.5 U	5 U	0.2 UJ	0.3 U	5 U
SF237	RV	2	11/08/1997		2.5	0.46		1.1				0.2 U	0.03 U	
SF237	RV	2	11/08/1997				**7.97**		20.3	**21.1**	**44**			**1130**
SF238	RV	2	11/08/1997		**6.56**	3.5	0.043	1.7	14	0.34	**145**	0.2 U	0.03 U	15.8
SF238	RV	4	05/14/1991				0.2 U			3 U				20 U
SF238	RV	5	10/02/1991				0.2 U			1 U				12 U
SF238	RV	18	05/22/1999				1 U		10 U	1 U	**24**			10
SF238	RV	3	05/07/1998		0.91 J	0.73 J	0.042 U	0.44 U	18.6 J	0.11 U	18.8	0.16 U	0.042 U	**47 J**
SF239	RV	2	11/07/1997		2.5	0.44	**8.11**	1.1	17	**21.4**	**41.5**	0.2 U	0.03 U	**1180**
SF239	RV	4	05/15/1991				**2.2**			**3**				**363**
SF239	RV	5	10/03/1991				**11**			**6**				**1100**
SF239	RV	7	10/29/1993				**8.2**			**11**				**1620**
SF239	RV	7	12/02/1993				**8.3**			**11**				**1580**
SF239	RV	7	12/20/1993				**10.9**			**12**				**1800**
SF239	RV	7	01/19/1994				**8.2**			**11**				**1410**
SF239	RV	7	02/15/1994				**9.8**			**10**				**1600**
SF239	RV	7	03/07/1994				**8**			**11**				**1420**
SF239	RV	7	03/23/1994				**8.8**			**12**				**1450**
SF239	RV	7	04/06/1994				**5.4**			**9**				**888**
SF239	RV	7	04/18/1994				**3.8**			**7**				**611**
SF239	RV	7	05/03/1994				**3.6**			**11**				**531**
SF239	RV	7	05/20/1994				**3.8**			**9**				**511**
SF239	RV	7	06/08/1994				**5.2**			**13**				**794**
SF239	RV	7	06/24/1994				**6.1**			**15**				**834**
SF239	RV	7	07/23/1994				**7.2**			**13**				**882**
SF239	RV	7	08/16/1994				**8.5**			**15**				**1030**
SF239	RV	7	09/09/1994				**9.4**			**12**				**1520**
SF239	RV	7	10/05/1994				**8.5**			**9**				**1070**
SF239	RV	7	11/15/1994				**13**			**21**				**2180**
SF239	RV	7	12/14/1994				**15**			**12**				**2290**
SF239	RV	7	01/11/1995				**7.4**			**7**				**1260**
SF239	RV	7	02/09/1995				**7.5**			**11**				**1170**
SF239	RV	7	03/08/1995				**7**			**15**				**1020**
SF239	RV	7	03/22/1995				**6**			**11**				**846**
SF239	RV	7	04/13/1995				**7**			**13**				**885**
SF239	RV	7	04/25/1995				**6.5**			**14**				**838**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF239	RV	7	05/10/1995				5			10				411
SF239	RV	7	05/23/1995				3.3			11				412
SF239	RV	7	06/13/1995				4			15				497
SF239	RV	7	06/28/1995				5.4			14				715
SF239	RV	7	07/12/1995				6			14				839
SF239	RV	7	07/26/1995				7.4			15				1000
SF239	RV	7	08/15/1995				7.8			14				1190
SF239	RV	7	09/14/1995				9.2			18				1350
SF239	RV	18	10/22/1998				8.5			11				1200
SF239	RV	18	11/17/1998				12			9.5				1860
SF239	RV	18	12/10/1998				11			14				1670
SF239	RV	18	12/29/1998				8.4			5.6				1320
SF239	RV	18	12/29/1998				8.5			5.7				1370
SF239	RV	18	03/24/1999				7.3			8.5				1060
SF239	RV	18	04/19/1999				4.9			3.6				705
SF239	RV	18	05/05/1999				3.5		7.1	6.6	27			543
SF239	RV	18	05/24/1999				1.7		7	4.9	16			244
SF239	RV	18	05/26/1999				1.3		11	5.4	14			204
SF239	RV	18	05/27/1999				1.7		5.9	4.4	14			247
SF239	RV	18	06/01/1999				1.7		10 U	5.3	14			253
SF239	RV	18	06/16/1999				1.3			4.4				181
SF239	RV	18	07/15/1999				3			7				427
SF239	RV	18	08/05/1999				5			15				564
SF239	RV	18	09/01/1999				7			13				1040
SF239	RV	3	05/13/1998		0.55 J	0.38 J	2.6 J	0.83 J	43.2 J	7.9	17.1	0.16 U	0.042 U	412
SF240	RV	2	11/08/1997		1.6	0.8	0.04 U	0.74	10 U	0.16	1 U	0.2 U	0.03 U	10.2
SF240	RV	3	05/09/1998		1.3	1 U	0.1 U	3 U	20.9	0.5 U	5 U	0.2 UJ	0.3 U	7.4
SF241	RV	2	11/07/1997		2.6	0.45	8.07	1.1	17	20.4	43.6	0.2 U	0.03 U	1110
SF241	RV	5	10/02/1991				10			5				656
SF242	RV	2	11/08/1997		6.39	0.74	0.087	1.3	10 U	0.1	1 U	0.2 U	0.03 U	23.4
SF242	RV	3	05/08/1998		3.6	2 U	0.2 U	2 U	20 U	0.6	5 U	0.2 U	0.2 U	20
SF243	RV	2	11/08/1997		2.6	0.42	8.01	1	17	18.4	45.5	0.2 U	0.03 U	1160
SF244	RV	2	11/08/1997		5.68	0.58	0.04 U	0.52	10 U	0.1 U	1 U	0.2 U	0.03 U	3.6
SF244	RV	3	05/08/1998		1.4	2 U	0.2 U	2 U	20 U	0.2 U	5 U	0.2 U	0.2 U	10 U
SF245	RV	2	11/07/1997		0.75	0.23	0.04 U	0.75	10 U	0.43	2.5	0.2 U	0.03 U	15
SF245	RV	4	05/14/1991				0.2 U			3 U				20 U
SF245	RV	5	10/03/1991				0.2 U			1 U				12 U

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF245	RV	3	05/08/1998		0.7	2 U	0.2 U	2 U	20 U	0.2	5 U	0.2 U	0.2 U	10 U
SF246	RV	3	05/08/1998		0.7	2 U	0.2 U	2 U	20 U	0.2	5 U	0.2 U	0.2 U	10 U
SF247	RV	2	11/07/1997					1.1	17			0.2 U	0.03 U	
SF247	RV	2	11/07/1997		2.6	0.43	**8.87**			**20.8**	**46.1**			**1260**
SF248	RV	2	11/07/1997		0.5 U	0.22	0.04 U	1	21.7	0.68	4.1	**2.61**	0.03 U	7.39
SF248	RV	4	05/14/1991				0.2 U			**3**				20 U
SF248	RV	5	10/03/1991				0.2 U			1 U				12 U
SF248	RV	18	05/22/1999				1 U		10	1 U	1			1.5
SF248	RV	3	05/08/1998		0.2	2 U	0.2 U	2 U	20 U	0.2 U	5 U	0.2 U	0.2 U	10 U
SF249	RV	2	11/06/1997		2.5	0.42	**8.38**	1.1	17	**19.6**	**43.5**	0.506	0.03 U	**1190**
SF249	RV	4	05/14/1991				**2.2**			3 U				**372**
SF249	RV	5	10/03/1991				**14**			**8**				**1510**
SF249	RV	7	10/29/1993				**8.7**			**12**				**1570**
SF249	RV	7	12/02/1993				**8.4**			**10**				**1660**
SF249	RV	7	12/20/1993				**12.1**			**10**				**1930**
SF249	RV	7	01/19/1994				**9.6**			**10**				**1380**
SF249	RV	7	02/17/1994				**8.4**			**9**				**1540**
SF249	RV	7	03/07/1994				**7.7**			**10**				**1370**
SF249	RV	7	03/23/1994				**7.7**			**11**				**1400**
SF249	RV	7	04/06/1994				**5.6**			**8**				**874**
SF249	RV	7	04/18/1994				**3.8**			**6**				**599**
SF249	RV	7	05/03/1994				**4.2**			**9**				**569**
SF249	RV	7	05/20/1994				**4**			**7**				**548**
SF249	RV	7	06/08/1994				**5.4**			**11**				**812**
SF249	RV	7	06/24/1994				**6.8**			**10**				**883**
SF249	RV	7	07/23/1994				**7**			**12**				**857**
SF249	RV	7	08/16/1994				**9.1**			**11**				**1040**
SF249	RV	7	09/09/1994				**9.8**			**11**				**1430**
SF249	RV	7	10/05/1994				**9.1**			**8**				**1320**
SF249	RV	7	11/15/1994				**14**			**16**				**2200**
SF249	RV	7	12/14/1994				**15**			**11**				**2160**
SF249	RV	7	01/11/1995				**6.7**			**6**				**1200**
SF249	RV	7	02/09/1995				**6.4**			**9**				**1020**
SF249	RV	7	03/08/1995				**6.7**			**10**				**997**
SF249	RV	7	03/22/1995				**7.6**			**17**				**1160**
SF249	RV	7	04/13/1995				**5.3**			**9**				**871**
SF249	RV	7	04/25/1995				**6.2**			**11**				**849**

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF249	RV	7	05/11/1995				3.7			9				476
SF249	RV	7	05/23/1995				3.8			9				432
SF249	RV	7	06/13/1995				4.4			15				529
SF249	RV	7	06/28/1995				5.6			11				743
SF249	RV	7	07/12/1995				6.5			10				858
SF249	RV	7	07/26/1995				7.4			15				1020
SF249	RV	7	08/15/1995				8			11				1210
SF249	RV	7	09/14/1995				9.2			12				1300
SF249	RV	18	04/19/1999				4.2			4.2				640
SF249	RV	18	05/05/1999				3.7		7.5	6.2	28			552
SF249	RV	18	05/24/1999				1.8		8.9	5.3	18			250
SF249	RV	18	05/26/1999				1.6		8.5	4.4	17			222
SF249	RV	18	05/27/1999				2		8.7	4.1	15			257
SF249	RV	18	06/01/1999				2		5.2	5.7	15			267
SF249	RV	3	05/12/1998		1	1 U	2.7	3 U	20 U	8.2	16.6	0.2 UJ	0.3 U	371
SF250	RV	4	05/14/1991				0.2			3 U				20 U
SF250	RV	3	05/08/1998		0.5	2 U	2.5	2 U	20 U	0.4	5 U	0.2 U	0.2 U	272
SF251	RV	2	11/06/1997		0.52	0.67	0.04 U	0.63	14	0.1 U	1	0.2 U	0.03 U	5.01
SF251	RV	3	05/08/1998		0.4	2 U	0.2 U	2 U	20 U	0.2 U	5 U	0.2 U	0.2 U	10 U
SF252	RV	2	11/06/1997		0.5	0.35	0.055	0.84	10 U	0.1	3.7	0.2 U	0.03 U	27.5
SF252	RV	4	05/14/1991				0.2 U			3 U				20 U
SF252	RV	5	10/02/1991				0.2 U			1 U				12
SF252	RV	18	05/22/1999				1 UJ		7.7	1	4.3			23
SF252	RV	3	05/07/1998		0.032 U	0.25 J	0.042 U	0.44 U	27.9 J	0.11 U	2.8 J	0.16 U	0.042 U	20.2
SF253	RV	2	11/06/1997		2.4	0.38	9.19	1	12	19.3	42	0.2 U	0.03 U	1230
SF253	RV	4	05/14/1991				1.9			3 U				345
SF253	RV	5	10/02/1991				12.6			6				1510
SF253	RV	18	05/24/1999				1.9		6.5	5.6	19			251
SF253	RV	3	05/12/1998		0.96	1 U	2.9	3 U	20 U	7.9	17.6	0.2 UJ	0.3 U	414
SF253	RV	3	05/18/1998		1.1	1 U	3.6	3 U	20 U	7.1	20.8	0.2 U	0.3 U	496
SF254	RV	2	11/06/1997		2.4	0.4	9.7	3.3	13	19.5	42.5	0.2 U	0.03 U	1300
SF254	RV	5	10/02/1991				11.7			6				1540
SF254	RV	3	05/12/1998		1	1 U	3	3 U	20 U	8.5	17.3	0.2 UJ	0.3 U	412
SF255	RV	2	11/06/1997		1.1	0.22	0.04 U	0.5 U	10 U	0.1 U	1 U	0.2 U	0.03 U	10.9
SF255	RV	3	05/07/1998		0.49 J	0.23 U	0.042 U	0.44 U	73.8 J	0.11 U	1.7 J	0.16 U	0.042 U	13 J
SF256	RV	2	11/07/1997		0.98	0.17	0.04 U	0.5 U	10 U	0.1 U	1 U	0.2 U	0.03 U	4.6
SF256	RV	3	05/07/1998		0.4 J	0.23 U	0.42 U	0.44 U	59.2 J	0.11 U	0.11 J	0.16 U	0.042 U	1.9 J

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF257	RV	2	11/07/1997		1.2	0.31	0.04 U	0.61	10 U	0.1 U	1 U	0.2 U	0.03 U	7.4
SF257	RV	3	05/05/1998		2.2	2 U	0.2 U	2 U	20 U	0.2 U	5 U	0.2 U	0.2 U	10 U
SF258	RV	2	11/06/1997		2.3	0.39	9.64	0.98	12	18	43.1	0.2 U	0.03 U	1360
SF259	RV	2	11/06/1997		2.3	0.37	9.76	1.1	11	16.7	41.8	0.2 U	0.03 U	1380
SF259	RV	4	05/14/1991				2.5			3 U				453
SF259	RV	5	10/01/1991				11			7				1370
SF259	RV	7	10/29/1993				8.6			11				1600
SF259	RV	7	12/02/1993				8.2			8				1630
SF259	RV	7	12/21/1993				12.8			9				2000
SF259	RV	7	01/19/1994				10			9				1430
SF259	RV	7	02/17/1994				10			9				1600
SF259	RV	7	03/07/1994				7.2			9				1360
SF259	RV	7	03/23/1994				8.2			8				1440
SF259	RV	7	04/06/1994				7.5			7				935
SF259	RV	7	04/18/1994				4.1			8				650
SF259	RV	7	05/03/1994				4.5			8				641
SF259	RV	7	05/20/1994				4.4			8				609
SF259	RV	7	06/08/1994				6			9				871
SF259	RV	7	06/24/1994				7.2			9				962
SF259	RV	7	07/23/1994				7.1			11				1000
SF259	RV	7	08/16/1994				10			12				1290
SF259	RV	7	09/09/1994				10.6			9				1720
SF259	RV	7	10/05/1994				11			10				1730
SF259	RV	7	11/15/1994				14			10				2050
SF259	RV	7	12/14/1994				14			9				2070
SF259	RV	7	01/11/1995				8.1			6				1220
SF259	RV	7	02/09/1995				7.3			8				1150
SF259	RV	7	03/08/1995				7.2			9				1070
SF259	RV	7	03/23/1995				7.9			13				1140
SF259	RV	7	04/13/1995				6.6			10				923
SF259	RV	7	04/25/1995				6.8			10				899
SF259	RV	7	05/11/1995				5.4			9				514
SF259	RV	7	05/24/1995				4			7				540
SF259	RV	7	06/13/1995				4			10				597
SF259	RV	7	06/28/1995				6.2			12				825
SF259	RV	7	07/12/1995				7.2			9				959
SF259	RV	7	07/26/1995				8.4			14				1120

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF259	RV	7	08/15/1995				8.8			13				1320
SF259	RV	7	09/14/1995				9.4			10				1370
SF259	RV	18	05/24/1999				2		9.4	6.5	23			263
SF259	RV	3	05/12/1998		1.1	1 U	3.2	3 U	20 U	6.7	17.8	0.2 U	0.3 U	429
SF261	RV	2	11/05/1997		1.1	0.11	12.7	0.82	12	10.9	32.6	0.2 U	0.03 U	1560
SF261	RV	3	05/08/1998		0.8	2 U	11.9	2	20 U	10.9	65	0.2 U	0.2 U	1720
SF263	RV	2	11/05/1997					1.8	87.8		49.5	0.2 U	0.03 U	
SF263	RV	5	10/01/1991				10			4				1160
SF264	RV	2	11/05/1997		6.72	0.74	7.91	0.99	16	14.6	44.4	0.2 U	0.03 U	1070
SF264	RV	5	10/01/1991				10			4				1110
SF264	RV	7	09/30/1998				9.2			8				1240
SF264	RV	7	10/09/1998				9			6				1220
SF264	RV	3	05/16/1998		4 U	0.35 J	3 J	1 J	108 J	17.1	24.8 J	0.16 U	0.042 UJ	472 J
SF265	RV	2	11/05/1997		1.2	0.31	0.17	1.3	29.9	0.27	6.3	0.2 U	0.03 U	23
SF265	RV	3	05/09/1998		1.3	1 U	0.19	3 U	20 U	0.5 U	5 U	0.2 UJ	0.3 U	18.6
SF266	RV	2	11/05/1997		0.5 U	0.14	0.04 U	0.5 U	10 U	0.12	1 U	0.2 U	0.03 U	5.42
SF266	RV	4	05/14/1991				0.2 U			3 U				20 U
SF266	RV	18	05/22/1999				1 UJ		40	1	1			2.8
SF266	RV	3	05/05/1998		0.2 U	2 U	0.2 U	2 U	20 U	1.2	5 U	0.2 U	0.2 U	10 U
SF267	RV	2	11/05/1997		1.8	0.84	0.1	0.5 U	10 U	0.12	2.1	0.2 U	0.03 U	11
SF267	RV	18	05/23/1999				1		10	1	1.6			3.3
SF267	RV	3	05/09/1998		0.98	1 U	0.1 U	3 U	20 U	0.5 U	5 U	0.2 UJ	0.3 U	5 U
SF272	RV	4	05/14/1991				2.1			3 U				357
SF272	RV	5	10/02/1991				10			4				656
SF272	RV	3	05/12/1998		1	1 U	2.5	3 U	25	8.4	16.5	0.2 UJ	0.3 U	342
SF273	RV	3	05/13/1998		0.58 J	0.23 J	2 J	0.69 J	48.3 J	9.6	18	0.16 U	0.042 U	296
SF274	RV	3	05/13/1998		0.42 J	0.42 J	2.3 J	0.79 J	44.2 J	8.3	16.5	0.16 U	0.042 U	369
SF31	RV	5	10/02/1991				11.7			7				1560
SF33	OF	4	05/14/1991				2.1			3 U				20 U
SF33	OF	5	10/01/1991				1.6			1 U				240
SF382	AD	2	11/18/1997		9.38	7.68	0.02 U	0.63	11	0.19	5.02	0.2 U	0.03 U	9.6
SF382	AD	3	05/12/1998		9.8	8.6	0.1 U	3 U	20 U	0.5 U	5 U	0.2 U	0.3 U	5 U
SF383	AD	2	11/18/1997		0.57	0.34	0.24	0.22	183	0.069	220	0.2 U	0.03 U	286
SF385	AD	2	11/19/1997		1.6	0.36	0.02 U	0.31	10 U	0.19	1.1	0.2 U	0.03 U	11.6
SF388	AD	2	11/19/1997		0.73	2.2	0.02 U	0.45	10 U	0.092	1 U	0.2 U	0.03 U	5.35
SF392	AD	2	11/20/1997		3.9	1.1	0.02 U	0.59	40.4	0.2	12.7	0.2 U	0.03 U	9.7
SF393	AD	2	11/17/1997		0.69	0.36	0.033	0.4	10 U	0.52	3.5	0.2 U	0.03 U	11

Data Summary Table
South Fork - segment MidGradSeg01

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF393	AD	3	05/15/1998		2.7	1 U	0.23	**6.6**	**3080**	**81.4**	**128**	0.2 U	0.34	38.2
SF426	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF427	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF429	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF430	RV	11	11/11/1998		1 U	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	5 U
SF431	RV	11	11/11/1998		**4.6 J**	1 U	1 U	5 U	50 U	1 U	5 U	0.2 U	5 U	6.3
SF8104	RV	13	---	0			2.3 U	8.4 U	3.7 U		1.2 U			5.3
SF8125	RV	13	---				2.3 U	8.4 U	3.7 U		1.2 U			2.5 U
SF8126	SP	13	---				**2.8**	8.4 U	950		**340**			**330**
SF8127	SP	13	---				**3.2**	8.4 U	3.7 U		2.4			**150**
SF8142	RV	13	---				2.3 U	8.4 U	3.7 U		4			**150**
SF8143	AD	13	---				2.3 U	8.4 U	37		**63**			7.9
SF8144	RV	13	---				**2.6**	8.4 U	3.7 U		8.4			**1000**
SF8145	AD	13	---				**4.8**	8.4 U	310		**1100**			**1900**
SF8146	AD	13	---				2.3 U	8.4 U	3.7 U		20			2.5 U
SF8214	AD	13	---				**2.4**	8 U	3.7 U		2 U			2.5 U
SF8215	AD	13	---				**2.4**	8 U	3.7 U		2			2.5 U
SF8216	RV	13	---				**2.6**	8 U	3.7 U		2 U			2.5 U
SF8217	AD	13	---				**2.4**	8 U	**1900**		**680**			4
SF8220	RV	13	---				2.3 U	8 U	3.7 U		2 U			2.5 U
SF8253	AD	13	---				**4.1**	8 U	9.1		13			2.5 U
SF8254	AD	13	---				**5**	8 U	7.2		5			2.5 U
SF8255	SP	13	---				**4.8**	8 U	13		5			2.5 U
SF8256	RV	13	---				2.3 U	8 U	3.7 U		3			2.5 U
SF8260	TP	13	---				2.3 U	**12**	9		3			6.4

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Soil (mg/kg)														
LC10013	RV	22	---	0.5						5940				
LC10065	RV	22	---	0.5						10900				
LC10066	RV	22	---	0.5						4420				
LC10067	RV	22	---	0.5						3450				
SF11274	FP	16	---			177	26.7	134	65200	4690	6290			2940
SF11275	FP	16	---			312	33.8	147	83600	5750	8060			3280
SF11276	FP	16	---			158	18.1	111	75900	3880	6710			2130
SF11277	FP	16	---			120	26.7	156	41400	3860	3990			2780
SF11278	FP	16	---			215	55.4	361	120000	* 18100	11400			6670
SF11279	FP	16	---			247	45.1	227	87000	9410	9550			5080
SF11280	FP	16	---			309	44.4	221	125000	11800	13300			6470
SF11281	FP	16	---			231	37.1	269	151000	14600	16000			6510
SF11282	FP	16	---			230.5	53.2	343	140500	* 18050	15350			7710
SF11283	FP	16	---			177	46.9	349	129000	* 19700	11400			7060
SF11284	FP	16	---			138	61.1	416	142000	* 21600	13400			8100
SF11285	FP	16	---			215	69.8	300	128000	13600	13800			8290
SF11286	FP	16	---			197	58.9	328	150000	* 18200	17400			8140
SF11287	FP	16	---			120	95.7	443	177000	* 19700	20200			14200
SF11288	FP	16	---			180	62.9	429	135000	* 22000	12900			9100
SF11289	FP	16	---			89.1	66.8	416	133000	* 22100	13700			7930
Subsurface Soil (mg/kg)														
LC10013	RV	22	---	1						6280				
LC10013	RV	22	---	1.5						9190				
LC10065	RV	22	---	1						16800				
LC10065	RV	22	---	1.5						* 20600				
LC10066	RV	22	---	1						4210				
LC10066	RV	22	---	1.5						6390				
LC10067	RV	22	---	1						3450				
LC10067	RV	22	---	1.5						8180				
Sediment (mg/kg)														
LC10303	RV	16	---	0	49	60	10	118	10	2950	7740		9	2000
LC10303	RV	16	---	0	42	79	16	108	5.2	2700	3320		9	1600
LC10303	RV	16	---	0.36	46	133	9	144	9.4	5050	6650		15	1600
LC10303	RV	16	---	0.66	34	64	5	70	6.5	2550	4750		7	890

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Sediment (mg/kg)														
LC10303	RV	16	---	1.8	74	117	11	96	12	5000	10700		15	1700
LC10304	RV	16	---	0.23	112	80	47	370	12.67	* 24500		15	56	5560
LC10304	RV	16	---	0.33	146	66	48	450	11.56	* 33800	9090	* 20	80	5820
LC10304	RV	16	---	0.85	132	60		670		* 37500		* 21	84	5300
LC10304	RV	16	---	2.69	40	216	22	100	10.98	3230	9260	4	12	2730
LC10304	RV	16	---	3.02	6	12	64	56	1.79	260	885			5920
LC10304	RV	16	---	3.58	6	12	23	39	2.11	220	890			1700
LC10305	RV	16	---	0.82	102	58	71	390	14.36	* 18300		* 20	54	10200
LC10305	RV	16	---	2.23	228	118	40	355	11.49	* 60600	6050	* 20	171	5900
LC10305	RV	16	---	3.48	16	16	36	70	2.74	3320	5670	1	4	1880
LC10305	RV	16	---	4.99	10	24	20	58	2.96	1080	2830		3	1310
LC11184	RV	16	---	0	82	150	52	130	64000	4300	5800	3	13.9	3000
LC11184	RV	16	---	0.14	56	140	25	126	62000	4500	5200	2.7	11.1	2600
LC11184	RV	16	---	0.26	50	120	15	114	74000	3500	6300	1.8	11.5	2200
LC11184	RV	16	---	0.31	76	165	24	148	74000	4950	6600	3.7	17.4	2600
LC11184	RV	16	---	0.39	64	160	26	142	65000	4800	5800	3.3	15.1	2700
LC11184	RV	16	---	0.5	56	150	15	111	79000	3700	6800	1.8	11.1	2000
LC11184	RV	16	---	0.66	59	130	17	116	66000	3800	5500	2.3	11.5	2300
LC11184	RV	16	---	0.82	52	130	15	110	62000	3500	5100	1.6	9.9	2000
LC11184	RV	16	---	0.92	52	130	14	110	66000	3500	5300	1.6	15.3	2000
LC11184	RV	16	---	1	50	120	15	95	70000	3300	5300	1.4	10.3	2000
LC11186	RV	16	---	0	36	90	* 177	137	66000	2900	1600	2.3	12.6	7000
LC11186	RV	16	---	0.15	66	100	150	185	85000	* 5700	1800	4	21	4100
LC11186	RV	16	---	0.3	87	210	10	133	95000	* 6500	6100	4.1	17.4	1800
LC11186	RV	16	---	0.41	88	240	32	180	89000	* 6600	5100	6.3	21	2500
LC11186	RV	16	---	0.53	73	100	103	172	55000	* 5950	3200	5	23	9550
LC11186	RV	16	---	0.66	57	190	103	161	51000	4300	2300	4.8	14.5	9500
LC11186	RV	16	---	0.69	80	160	37	159	74000	* 6600	6000	6.4	23	5300
LC11186	RV	16	---	0.85	77	220	* 329	199	95000	* 6400	4900	6.3	26	* 33000
LC11186	RV	16	---	0.95	69	130	* 472	225	89000	* 8400	3100	11.1	23	* 51000
LC11187	RV	16	---	0	1.6	5.2	2	17	20000	63	600	0.06	0.01 U	91
LC11187	RV	16	---	0.16	1.7	6.1	1	17	20000	62	500	0.09	0.01 U	83
LC11187	RV	16	---	0.33	1.6	5.7	1	16	20000	59	500	0.09	0.01 U	76
LC11187	RV	16	---	0.49	1.8	5.7	1	16	20000	56	500	0.09	0.01 U	79
LC11187	RV	16	---	0.66	1.5	6.2	1	17	21000	42	500	0.06	0.01 U	67
LC11187	RV	16	---	0.82	0.9	6.5		17	24000	16	400	0.02	0.01 U	48
LC11187	RV	16	---	0.82	1	9.5		19	26000	20	500	0.01 U	0.01 U	47

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Sediment (mg/kg)														
LC11187	RV	16	---	1.31	1.1	8.8		19	25000	20	400	0.03	0.01 U	47
LC11187	RV	16	---	1.44	1.1	9		18	24000	23	500	0.03	0.01 U	48
LC11188	RV	16	---	1.15	1.1	7.6		17	24000	20	500	0.02	0.01 U	44
LC11188	RV	16	---	0	82	220	21	139	87000	* 5900	7600	2.7	19.1	2900
LC11188	RV	16	---	0.16	73	240	17	122	84000	4800	7400	2.6	14.1	2400
LC11188	RV	16	---	0.31	81	300	16	126	104000	4600	9100	2.7	18.3	2400
LC11188	RV	16	---	0.48	82	230	23	130	117000	* 6500	9900	2.1	16.3	2900
LC11188	RV	16	---	0.61	77	220	15	133	112000	4800	9200	2.5	17.1	2500
LC11188	RV	16	---	0.73	74	245	24	207	112000	4550	8800	3.7	16.4	3900
LC11188	RV	16	---	0.83	74	250	26	206	100000	4300	7000	4.4	19.5	3900
LC11188	RV	16	---	0.95	62	140	37	172	55000	3200	3300	4.3	12.5	3600
LC11188	RV	16	---	0.99	58	110	30	158	52000	2900	2900	4.3	11.3	3100
LC11188	RV	16	---	1.07	69	230	31	196	101000	4100	7300	3.4	15.7	3700
LC11188	RV	16	---	1.2	70	190	31	143	78000	* 5800	4800	6.7	19.4	3600
LC11188	RV	16	---	1.31	68	260	26	126	93000	4300	6100	3.3	16.1	2800
LC11188	RV	16	---	1.4	90	290	102	298	69000	* 5800	3300	* 18.7	21	6900
LC11188	RV	16	---	1.55	66	170	25	124	77000	4200	4600	3.4	13.9	4100
LC11188	RV	16	---	1.67	70	180	20	120	76000	4100	5100	3.6	16.3	6200
LC11188	RV	16	---	1.77	76	220	29	199	112000	4100	7300	3.2	16.8	8700
LC11188	RV	16	---	1.86	80	230	30	243	113000	4000	7600	2.6	17.9	7200
LC11188	RV	16	---	2.01	57	160	17	158	77000	3400	4500	3.4	10.3	3700
LC11188	RV	16	---	2.07	92	160	* 157	244	64000	* 7700	3000	13.1	13.8	17000
LC11188	RV	16	---	2.15	83	230	104	245	83000	* 6200	5200	8.8	17.1	13000
LC11188	RV	16	---	2.21	109	710	* 240	293	80000	* 8700	4100	* 18.3	20	19000
LC11188	RV	16	---	2.27	116	520	* 233	333	71000	* 8700	3900	* 19.8	21	* 23000
LC11188	RV	16	---	2.35	103	465	* 276	300	68000	* 7600	3600	* 19.1	19.5	* 33000
LC11188	RV	16	---	2.43	80	200	146	158	89000	* 7900	7200	9.7	19	10000
LC11188	RV	16	---	2.58	39	80	25	67	52000	3000	3000	3.2	6.2	2900
LC11189	RV	16	---	0	217	80	67	488	130000	* 26900	11100	* 18.1	71	9900
LC11189	RV	16	---	0.15	211	70	63	428	131000	* 28000	10900	16.8	70	8100
LC11189	RV	16	---	0.23	258	110	71	587	139000	* 39900	11900	17	77	9900
LC11189	RV	16	---	0.3	* 338	130	70	568	140000	* 38500	10100	* 21.2	95	7700
LC11189	RV	16	---	0.38	* 347	120	67	706	136000	* 35900	9900	* 21.4	103	7000
LC11189	RV	16	---	0.45	* 364	130	63	638	141000	* 40500	11300	* 25.1	120	6500
LC11189	RV	16	---	0.55	* 349	115	83	646	129000	* 47500	8500	* 21.9	112	10400
LC11189	RV	16	---	0.65	321	80	105	527	90000	* 45600	4100	12.5	101	10000
LC11189	RV	16	---	0.73	265	70	73	273	79000	* 24100	5200	15.8	95	6500

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Sediment (mg/kg)														
LC11189	RV	16	---	0.91	29	18.3	126	65	36000	* 5900	12000	1.3	8.5	3600
LC11189	RV	16	---	1	5.1	18.6	67	19	32000	160	4400	0.09	0.01 U	2500
LC11189	RV	16	---	1.07	6.2	24.4	86	23	33000	530	6000	0.14	0.6	3100
LC11189	RV	16	---	1.23	5.9	30	79	24	34000	490	4800	0.16	0.6	2900
LC11189	RV	16	---	1.39	6.3	17.5	45	23	33000	600	2500	0.37	0.9	1900
LC11189	RV	16	---	1.56	30	18	46	73	41000	3800	3700	3	8.6	2900
SF501	HA	2	12/12/1997	0	29.3 J	75.1 J	18.6 J	164 J	48300 J	4100	4640	3.1	17.7	2490 J
SF502	HA	2	12/12/1997	0.25	56.4 J	146 J	* 191 J	157 J	127000 J	* 42000	13300	5.52	149	* 27000 J
SF503	HA	2	12/12/1997	0	20 J	63.3 J	10.8	92.8 J	49000	1530	3850	0.251	8.32 J	1610
Groundwater - Total Metals (ug/l)														
SF151	MW	6	10/19/1996		41 U	0.84	3.1 U			3.9		0.23		231
Groundwater - Dissolved Metals (ug/l)														
SF105	MW	6	10/22/1996		40 U	34	* 53.8			52.9		0.2 U		* 10100
SF105	MW	6	04/24/1997		45 U	22				31.4		0.2 U		* 13000
SF105	MW	6	04/24/1997				* 73.2							
SF105	MW	6	02/06/1997		45 U	26	* 68.7			60.6		0.2 U		* 12900
SF106	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		40 J
SF106	MW	6	09/01/1997			1 U	2 U			1 U				54
SF106	MW	6	10/12/1997		50 U	5 U	5 U	12 U		3 U		0.2 U		30
SF106	MW	6	11/01/1997			5 U	4 U			3 U				30
SF106	MW	6	12/01/1997			5 U	4 U			3 U				20
SF106	MW	6	---			5 U	4 U			3 U				20 U
SF106	MW	6	10/19/1996		45	0.1 U	3 U			0.22		0.42		56.2
SF106	MW	6	04/24/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		23.8
SF106	MW	6	02/05/1997		45 U	1.5 U	3 U			1.5 U		0.2 U		18
SF113	MW	6	10/17/1996		40 U	0.23	15.3			0.17		0.2 U		1880
SF113	MW	6	04/24/1997		45 U	4.5 U	11.1			1.5 U		0.2 U		1450
SF113	MW	6	02/07/1997		45 U	1.5 U	13.6			1.5 U		0.2 U		1810
SF114	MW	6	02/17/1998		50 U	5 U	38	12 U		5		0.2 U		* 6960
SF114	MW	6	10/12/1997		50 U	5 U	* 40 J	12 U		6		0.2 U		* 6100
SF114	MW	6	10/25/1996		40 U	0.14	34.6			12.3		0.2 U		* 6730
SF114	MW	6	04/24/1997		45 U	4.5 U	* 49.6			7.14		0.2 U		* 9530
SF114	MW	6	02/12/1997		45 U	4.5 U	* 66.2			6.37		0.35		* 12300
SF115	MW	6	02/17/1998		50 U	5 U	* 75	12 U		3 U		0.2 U		* 20400

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF115	MW	6	10/12/1997		50 U	5 U	* 94 J	12 U		3 U		0.2 U		* 17800
SF115	MW	6	10/25/1996		40 U	0.38	* 106			0.83		0.2 U		* 20700
SF115	MW	6	04/24/1997		45 U	4.5 U	* 97			1.5 U		0.2 U		* 21000
SF115	MW	6	02/12/1997		45 U	4.5 U	* 106			1.5 U		0.31		* 21900
SF117	MW	6	02/17/1998		50 U	5 U	* 70	12 U		3 U		0.2 U		* 19900
SF117	MW	6	10/12/1997		50 U	5 U	* 90 J	12 U		3 U		0.2 U		* 16500
SF117	MW	6	10/25/1996		40 U	0.34	* 107			0.29		0.2 U		* 20600
SF117	MW	6	04/24/1997		45 U	4.5 U	* 94.1			1.5 U		0.2 U		* 18600
SF117	MW	6	02/12/1997		45 U	4.5 U	* 98.1			1.5 U		0.25		* 19100
SF119	MW	6	02/17/1998		50 U	5 U	* 111	12 U		3 U		0.2 U		* 21600
SF119	MW	6	10/12/1997		50 U	5 U	* 99 J	12 U		3 U		0.2 U		* 16600
SF119	MW	6	10/25/1996		40 U	0.32	* 118			0.46		0.2 U		* 21100
SF119	MW	6	04/24/1997		45 U	4.5 U	* 105			1.5 U		0.2 U		* 19600
SF119	MW	6	02/12/1997		45 U	4.5 U	* 110			1.5 U		0.47		* 20500
SF121	MW	6	04/24/1997		45 U	4.5 U	* 309			* 110		0.2 U		* 36200
SF121	MW	6	02/09/1997		45 U	19.6	* 203			* 161		0.2 U		* 30300
SF130	MW	6	02/17/1998		60	26 J	4 U	12 U		3 U		0.2 U		* 4560
SF130	MW	6	10/12/1997		50 U	13	5 U	12 U		3 U		0.2 U		3140
SF130	MW	6	10/24/1996		40 U	18.7	3 U			0.74		0.2 U		4090
SF130	MW	6	04/24/1997		45 U	16	3 U			1.5 U		0.2 U		3870
SF130	MW	6	02/11/1997		45 U	14.7	3 U			1.5 U		0.4		* 4580
SF131	MW	6	02/17/1998		50 U	5 U	* 58	16		3 U		0.2 U		* 10500
SF131	MW	6	10/12/1997		50 U	5 U	* 40	12 U		3 U		0.3		* 9780
SF131	MW	6	10/28/1996		40 U	0.27	* 42.7			0.2		0.2 U		* 8400
SF131	MW	6	04/24/1997		45 U	4.5 U	* 43.5			1.5 U		0.2 U		* 9380
SF131	MW	6	02/10/1997		45 U	1.5 U	* 43.4			1.5 U		0.2		* 8840
SF135	MW	6	02/17/1998		50 U	5 U	18	12 U		3 U		0.2 U		* 7700
SF135	MW	6	10/12/1997		50 U	5 U	22 J	12 U		3 U		0.2 U		* 7880
SF135	MW	6	10/23/1996		40 U	0.23				0.18		0.2 U		* 8350
SF135	MW	6	10/23/1996				18.1							
SF135	MW	6	04/24/1997		45 U	4.5 U	16.2			1.5 U		0.2 U		
SF135	MW	6	04/24/1997											* 8280
SF135	MW	6	02/11/1997		45 U	28.1	* 502			* 119				* 59800
SF135	MW	6	02/11/1997									0.34		
SF139	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		* 5700
SF139	MW	6	10/12/1997		50 U	5 U	5 UJ	12 U		3 U		0.2 U		* 5660
SF139	MW	6	10/24/1996		40 U	0.14	3 U			0.15		0.2 U		* 5630

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF139	MW	6	04/24/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		* 5480
SF139	MW	6	02/11/1997		45 U	1.5 U	3 U			1.5 U		0.32		* 5790
SF141	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.3		3440
SF141	MW	6	10/12/1997		50 U	5 U	8 J	12 U		3 U		0.2 U		3670
SF141	MW	6	10/24/1996		40 U	0.13	3 U			1.2		0.2 U		2480
SF141	MW	6	04/24/1997		45 U	4.5 U	3 U			2.9		0.2 U		3950
SF141	MW	6	02/11/1997		45 U	1.5 U	3 U			5		0.46		2720
SF143	MW	6	02/17/1998		50 U	5 U	* 181	12 U		3 U		0.2 U		* 25000
SF143	MW	6	10/12/1997		50 U	5 U	* 175 J	12 U		3 U		0.2 U		* 23000
SF143	MW	6	10/25/1996		40 U	0.29	* 182			0.39		0.2 U		* 25200
SF143	MW	6	04/24/1997		45 U	4.5 U	* 209			1.5 U		0.2 U		* 30300
SF143	MW	6	02/12/1997		45 U	4.5 U	* 208			1.5 U		0.31		* 28800
SF144	MW	6	02/17/1998		50 U	39	* 177	14		5		0.2 U		* 113000
SF144	MW	6	09/01/1997			36	* 73			4				* 63100
SF144	MW	6	10/12/1997		50 U	23	* 72	12 U		6		0.2 U		* 72200
SF144	MW	6	11/01/1997			81	* 97			4				* 72500
SF144	MW	6	12/01/1997			61	* 90			4				* 65800
SF144	MW	6	---			41	* 136			6				* 105000
SF144	MW	6	10/29/1996		40 U	34.8	* 46.3			4.85		0.2 U		* 62100
SF144	MW	6	04/24/1997		45 U	30	* 58.7			2.3		0.2 U		* 59200
SF144	MW	6	02/12/1997		45 U	23.9	* 59			4.4		0.2 U		* 69900
SF145	MW	6	02/17/1998		50 U	5 U	19	12 U		3 U		0.2 U		1150
SF145	MW	6	10/12/1997		50 U	5 U	24 J	12 U		3 U		0.2 U		1460
SF145	MW	6	10/25/1996		40 U	0.14	22.9			0.1 U		0.2 U		1890
SF145	MW	6	04/24/1997		45 U	4.5 U	8.1			1.5 U		0.2 U		913
SF145	MW	6	02/12/1997		45 U	1.5 U	12.8			1.5 U		0.39		1270
SF146	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		230
SF146	MW	6	09/01/1997			1 U	2 U			1 U				250
SF146	MW	6	10/12/1997		50 U	5 U	5 U	12 U		3 U		0.2 U		250
SF146	MW	6	11/01/1997			5 U	4 U			3 U				220
SF146	MW	6	12/01/1997			5 U	4 U			3 U				240
SF146	MW	6	---			5 U	4 U			3 U				320
SF146	MW	6	10/19/1996		40 U	0.1 U	3 U			0.1		0.2 U		235
SF146	MW	6	04/24/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		257
SF146	MW	6	02/08/1997		45 U	1.5 U	3 U			1.5 U		0.2 U		272
SF148	MW	6	02/17/1998		50 U	6	* 1400	12 U		3		0.2 UJ		* 35500
SF148	MW	6	09/01/1997			6	* 1540			5				* 37700

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF148	MW	6	10/12/1997		50 U	5	* 1530	12 U		5		0.2 U		* 38800
SF148	MW	6	11/01/1997			5 U	* 1810			3				* 41200
SF148	MW	6	12/01/1997			5 U	* 1430			4				* 38900
SF148	MW	6	---				* 1480			5				* 43800
SF148	MW	6	---			10								
SF148	MW	6	10/20/1996		40 U	14.3	* 478			14.4		0.2 U		
SF148	MW	6	10/20/1996											* 15200
SF148	MW	6	04/24/1997		45 U	4.5 U	* 824			49.9		0.2 U		* 20600
SF148	MW	6	02/06/1997		45 U	5.4	* 612			45.5		0.2 U		* 17400
SF150	MW	6	02/17/1998		50 U	5 U	* 1570	12 U		3 U		0.2 UJ		* 43800
SF150	MW	6	10/12/1997		50 U	5 U	* 1180	12 U		3 U		0.8		* 31600
SF150	MW	6	10/19/1996		40 U	0.79	* 1950	19.9		0.1		0.23		* 52500
SF150	MW	6	04/24/1997		45 U	4.5 U	* 3070			1.5 U		0.2 U		* 85500
SF150	MW	6	02/08/1997		45 U	1.5 U	* 2380			1.5 U		0.2 U		* 67600
SF151	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 UJ		250
SF151	MW	6	10/12/1997		50 U	5 U	5 U	12 U		3 U		0.3		260
SF151	MW	6	10/19/1996		40 U	0.1 U	3.3			0.1 U		0.2 U		276
SF151	MW	6	04/24/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		306
SF151	MW	6	02/08/1997		45 U	1.5 U	3 U			1.5 U		0.2 U		301
SF153	MW	6	02/17/1998		50 U	49	* 1190	12 U		3 U		0.2 U		* 20400
SF153	MW	6	10/12/1997		50 U	5 U	* 2300	12 U		3 U		0.2 U		* 41300
SF153	MW	6	10/18/1996		40 U	0.71	* 2590	15		1.09		0.874		* 34000
SF153	MW	6	04/24/1997		45 U	4.5 U	* 1320			1.5 U		0.2 U		* 20700
SF153	MW	6	02/08/1997		45 U	1.5 U	* 1480	9.8		1.5 U		0.2 U		* 21800
SF154	MW	6	02/17/1998		50 U	5 U	* 39	12 U		3 U		0.2 U		* 17900
SF154	MW	6	10/12/1997		50 U	5 U	16	12 U		3 U		0.2 U		* 7440
SF154	MW	6	10/23/1996		40 U	0.29	* 59.6			0.54		0.2 U		* 21100
SF154	MW	6	04/24/1997		45 U	4.5 U	19.9			1.5 U		0.2 U		* 8320
SF154	MW	6	02/11/1997		45 U	4.5 U	* 38.9			1.5 U		0.24		* 15800
SF155	MW	6	02/17/1998		50 U	5 U	21	12 U		3 U		0.2 U		1840
SF155	MW	6	10/12/1997		50 U	5 U	14	12 U		3 U		0.2 U		920
SF155	MW	6	10/18/1996		44	0.23	11.2			0.3		0.2 U		737
SF155	MW	6	04/24/1997		45 U	4.5 U	10.8			1.5 U		0.2 U		779
SF155	MW	6	02/08/1997		45 U	1.5 U	14.3			1.5 U		0.2 U		978
SF156	MW	6	02/17/1998		50 U	5 U	* 230	12 U		3 U		0.2 U		* 15200
SF156	MW	6	10/12/1997		50 U	5 U	* 219	12 U		3 U		0.2 U		* 15100
SF156	MW	6	04/24/1997		45 U	4.5 U	* 280			1.5 U		0.2 U		* 18800

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF156	MW	6	02/08/1997		45 U	1.5 U	* 283			1.5 U		0.2 U	4 U	* 18500
SF157	MW	6	02/17/1998		50 U	5 U	21	12 U		3 U		0.2 U		* 4460
SF157	MW	6	10/12/1997		50 U	5 U	14	12 U		3 U		0.2 U		2550
SF157	MW	6	10/17/1996		40 U	0.1 U	13.3			0.27		0.2 U		
SF157	MW	6	10/17/1996											2580
SF157	MW	6	04/24/1997		45 U	4.5 U	21.1			1.5 U		0.2 U		* 4280
SF157	MW	6	02/07/1997		45 U	1.5 U	26.9			1.5 U		0.2 U		* 5500
SF159	MW	6	02/17/1998		50 U	100	4 U	12 U		3 U		0.2 UJ		* 25000
SF159	MW	6	10/12/1997		50 U	120	5 U	12 U		3 U		0.2 U		* 37400
SF159	MW	6	10/20/1996		42	102	3 U			2.77		0.2 U		* 24400
SF159	MW	6	04/24/1997		45 U	117	3 U			6.76		0.2 U		* 44600
SF159	MW	6	02/09/1997		45 U	109	3 U			7.2		0.2 U		* 28700
SF160	MW	6	02/17/1998		50 U	5 U	* 45	12 U		3 U		0.2 U		* 14700
SF160	MW	6	10/12/1997		50 U	5 U	38	12 U		3 U		0.2 U		* 9660
SF160	MW	6	10/28/1996		40 U	0.21	* 39.6			0.24		0.2 U		* 7430
SF160	MW	6	04/24/1997		45 U	4.5 U	* 51.8			1.5 U		0.2 U		* 14800
SF160	MW	6	02/12/1997		45 U	3 U	* 42.8			1 U		0.2 U		* 12000
SF161	MW	6	02/17/1998		50 U	5 U	* 1380	190		* 1000		0.2 UJ		* 51500
SF161	MW	6	10/12/1997		50 U	5 U	* 943	180		* 630		0.2 U		* 31900
SF161	MW	6	10/19/1996		40 U	0.4	* 747			* 333		0.2 U		* 25500
SF161	MW	6	04/24/1997		45 U	4.5 U	* 1790			* 584		0.2 U		* 54300
SF161	MW	6	02/08/1997		45 U	1.5 U	* 2670			* 690		0.2 U		* 82900
SF162	MW	6	02/17/1998		50 U	18	* 886	180		3 U		0.2 U		* 43000
SF162	MW	6	10/12/1997		50 U	8	* 796	220		3 U		0.2 U		* 43300
SF162	MW	6	10/23/1996		40 U	11.7	* 1100	249		0.78		0.24		* 48500
SF162	MW	6	04/24/1997		45 U	7.7	* 899			1.5 U		0.2 U		* 43500
SF162	MW	6	02/08/1997		45 U	6.4	* 1080			1.5 U		0.2 U		* 49600
SF163	MW	6	02/17/1998		50 U	5 U	* 189	12 U		13		0.2 U		* 36600
SF163	MW	6	10/12/1997		50 U	5 U	* 192	12 U		39		0.2 U		* 24800
SF163	MW	6	10/18/1996		40 U	0.56	* 191			28.9		0.2 U		* 29300
SF163	MW	6	04/24/1997		45 U	4.5 U	* 142			15.8		0.2 U		* 24900
SF163	MW	6	02/07/1997		45 U	1.5 U	* 235			35.5		0.2 U		* 39600
SF163	MW	6	02/09/1997		45 U	55	* 77.3			* 131		0.2 U		* 43500
SF164	MW	6	02/17/1998		50 U	5 U	* 49	12 U		3 U		0.2 U		* 13000
SF164	MW	6	10/12/1997		50 U	5 U	* 49	12 U		3 U		0.2 U		* 12900
SF164	MW	6	10/17/1996		40 U	0.24	* 50.5			0.28		0.2 U		* 14000
SF164	MW	6	04/24/1997		45 U	4.5 U	* 48.5			1.5 U		0.2 U		* 13700

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF164	MW	6	02/08/1997		45 U	1.5 U	* 50.4			1.5 U		0.2 U		* 14100
SF166	MW	6	02/17/1998		50 U	5 U	34	12 U		3 U		0.2 U		* 11300
SF166	MW	6	10/12/1997		50 U	5 U	36	12 U		3 U		0.2 U		* 12000
SF166	MW	6	10/17/1996		40 U	0.21	* 41.1			0.24		0.2 U		* 12900
SF166	MW	6	04/24/1997		45 U	4.5 U	* 40.5			1.5 U		0.2 U		* 12400
SF166	MW	6	02/08/1997		45 U	1.5 U	* 40.9			1.5 U		0.2 U		* 12700
SF167	MW	6	02/17/1998		50 U	5 U	16	12 U		3 U		0.2 U		2080
SF167	MW	6	10/12/1997		50 U	5 U	13	12 U		3 U		0.2 U		2000
SF167	MW	6	10/16/1996		40 U	0.16	15			3.27		0.2 U		2260
SF167	MW	6	04/24/1997		45 U	4.5 U	28.9			4.3		0.2 U		* 4700
SF167	MW	6	02/07/1997		45 U	1.5 U	25.3			4.1		0.2 U		3920
SF168	MW	6	02/17/1998		50 U	5 U	15	12 U		4		0.2 U		2090
SF168	MW	6	10/12/1997		50 U	5 U	15 J	12 U		3 U		0.2 U		2300
SF168	MW	6	10/16/1996		40 U	0.58	16.7			1.61		0.2 U		3190
SF168	MW	6	04/24/1997		45 U	4.5 U	29.7			1.6		0.2 U		* 6410
SF168	MW	6	02/07/1997		45 U	1.5 U	20.5			1.5 U		0.2 U		* 4570
SF170	MW	6	02/17/1998		50 U	5 U	30	12 U		3 U		0.2 U		* 8260
SF170	MW	6	10/12/1997		50 U	5 U	* 39	12 U		3 U		0.2 U		* 8700
SF170	MW	6	10/28/1996		40 U	2.9	25.1			0.23		0.2 U		* 8890
SF170	MW	6	04/24/1997		45 U	4.5 U	26.1			1.5 U		0.2 U		* 10600
SF170	MW	6	02/12/1997		45 U	3.3	23			1 U		0.2 U		* 10900
SF171	MW	6	02/17/1998		50 U	72	11	12 U		3 U		0.2 U		* 26000
SF171	MW	6	10/12/1997		50 U	55	8	12 U		3 U		0.2 U		* 29400
SF171	MW	6	10/29/1996		40 U	85.2	3.8			0.23		0.2 U		* 22500
SF171	MW	6	04/24/1997		45 U	101	8.7			1.5 U		0.2 U		* 45800
SF171	MW	6	02/12/1997		45 U		10			1 U		0.2 U		
SF171	MW	6	02/12/1997			70.8								* 32600
SF173	MW	6	02/17/1998		160	46	13	12 U		3 U		0.2 U		* 98000
SF173	MW	6	10/12/1997		50 U	40	9	12 U		3 U		0.2 U		* 40500
SF173	MW	6	10/29/1996		40 U	62.2	6.3			0.33		0.2 U		* 46000
SF173	MW	6	04/24/1997		45 U	55.8	4.2			1.5 U		0.2 U		* 43600
SF173	MW	6	02/12/1997		45 U	43.8	5.1			1 U		0.2 U		* 44900
SF174	MW	6	02/17/1998		50 U	82	* 51	12 U		* 110		0.2 U		* 30700
SF174	MW	6	10/12/1997		50 U	64	* 71	12 U		105		0.2 U		* 43800
SF174	MW	6	10/20/1996		40 U	62.6				* 123		0.2 U		
SF174	MW	6	10/20/1996				* 55.9							* 41200
SF174	MW	6	04/24/1997		45 U	54	* 141			* 168		0.2 U		* 63500

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF175	MW	6	02/17/1998		50 U	5 U	* 733	12 U		3 U		0.2 U		* 61800
SF175	MW	6	10/12/1997		50 U	5 U	* 759	12 U		3 U		0.2 U		* 75800
SF175	MW	6	11/01/1997			5 U	* 870			3 U				* 82500
SF175	MW	6	12/01/1997			5 U	* 775			3 U				* 77900
SF175	MW	6	---			5 U	* 650			3 U				* 75400
SF175	MW	6	10/22/1996		40 U	0.92	* 965			0.92		0.2 U		* 73900
SF175	MW	6	04/24/1997		45 U	4.5 U	* 458			1.5 U		0.2 U		* 42600
SF175	MW	6	02/07/1997		45 U	4.5 U	* 398			1.5 U		0.2 U		* 36300
SF175	MW	6	02/09/1997		45 U	58.1	4.7			53.3		0.2 U		* 47800
SF176	MW	6	02/17/1998		50 U	41	* 609	60		* 1720		0.2 U		* 39000
SF176	MW	6	10/12/1997		50 U	30	* 1730	70		* 1720		0.2 U		* 41700
SF176	MW	6	10/21/1996		40 U	27.8	* 1940			* 709		0.2 U		* 36900
SF176	MW	6	04/24/1997		45 U	23 J	* 2610			* 1280		0.2 U		* 30700
SF176	MW	6	02/10/1997		45 U	23.6	* 2350	57.6		* 1220		0.2 U		* 29300
SF179	MW	6	02/17/1998		50 U	5 U	* 503	12 U		30		0.2 U		* 19500
SF179	MW	6	09/01/1997			104	* 552			43				* 22700
SF179	MW	6	10/12/1997		50 U	120	* 638	12 U		45		0.2 U		* 24600
SF179	MW	6	11/01/1997			120	* 511			30				* 18900
SF179	MW	6	12/01/1997			80	* 524			30				* 21000
SF179	MW	6	---			100	* 539			36				* 24200
SF179	MW	6	10/20/1996		40 U	93.6	* 537			41.6		0.2 U		* 21000
SF179	MW	6	04/24/1997		45 U	23	* 618			58.7		0.2 U		* 30400
SF179	MW	6	02/07/1997		45 U	24	* 622			63.5		0.2 U		* 31400
SF188	MW	6	02/17/1998		50 U	5 U	* 958	12 U		3 U		0.2 U		1340
SF188	MW	6	10/12/1997		50 U	5 U	* 1020	10		3 U		0.2 U		1530
SF188	MW	6	11/01/1997			5 U	* 1200			3 U				1670
SF188	MW	6	12/01/1997			5 U	* 996			3 U				1450
SF188	MW	6	---			5 U	* 1050			3 U				1380
SF188	MW	6	10/20/1996		40 U	0.55	* 562			0.29		0.2 U		1350
SF188	MW	6	04/24/1997		45 U	4.5 U	* 945			1.5 U		0.2 U		1270
SF188	MW	6	02/06/1997		45 U	4.5 U	* 1430			1.5 U		0.2 U		2280
SF189	MW	6	02/17/1998		50 U	5 U	* 2840	13		50		0.2 U		* 34000
SF189	MW	6	09/01/1997			2	* 5310			* 288				* 51600
SF189	MW	6	10/12/1997		50 U	5 U	* 5170	70		* 600		0.2 U		* 74000
SF189	MW	6	11/01/1997			5 U	* 4100			* 590				* 57600
SF189	MW	6	12/01/1997			5 U	* 2700			* 110				* 32400
SF189	MW	6	---			5 U	* 2970			* 150				* 35200

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Groundwater - Dissolved Metals (ug/l)														
SF189	MW	6	10/23/1996		40 U	1.3	* 3380			* 152		0.2 U		* 32900
SF189	MW	6	04/24/1997		45 U	4.5 U	* 8640			* 376		0.2 U		* 88400
SF189	MW	6	02/06/1997		45 U	4.5 U	* 8540	72.4		* 430		0.2 U		* 91700
SF190	MW	6	02/17/1998		50 U	5 U	9	12 U		3 U		0.2 U		240
SF190	MW	6	10/12/1997		50 U	5 U	5 U	12 U		3 U		0.2 U		210
SF190	MW	6	11/01/1997			5 U	4 U			3 U				230
SF190	MW	6	12/01/1997			5 U	4 U			3 U				190
SF190	MW	6	---			5 U	7			3 U				210
SF190	MW	6	10/22/1996		40 U	0.4	3 U			0.21		0.2 U		126
SF190	MW	6	04/24/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		160
SF190	MW	6	02/06/1997		45 U	4.5 U	3 U			1.5 U		0.2 U		136
SF192	MW	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		790
SF192	MW	6	10/12/1997		50 U	5 U	9 J	12 U		3 U		0.2 U		970
SF192	MW	6	10/25/1996		40 U	0.23	8.4			3.23		0.2 U		1150
SF192	MW	6	04/24/1997		45 U	4.5 U	5.8			1.5 U		0.2 U		609
SF192	MW	6	02/12/1997		45 U	4.5 U	5.5			1.5 U		0.29		1170
SF193	MW	6	10/25/1996		40 U	0.14	24.6			0.54		0.2 U		3840
SF193	MW	6	02/12/1997		45 U	4.5 U	34.9			1.5 U		0.24		* 5430
SF194	MW	6	02/17/1998		50 U	5 U	* 121	12 U		18		0.2 U		* 133000
SF194	MW	6	10/12/1997		50 U	5 U	* 85 J	12 U		10		0.2 U		* 35000
SF194	MW	6	10/25/1996		40 U	0.4	15.8			26.7		0.2 U		* 32600
SF194	MW	6	04/24/1997		45 U	4.5 U	* 88.2			16.6		0.2 U		* 9630
SF194	MW	6	02/12/1997		45 U	4.5 U	* 76.6			8.88		0.3		* 79200
SF197	MW	6	02/17/1998		50 U	5 U	* 189	12 U		3 U		0.2 U		1680
SF197	MW	6	09/01/1997			1 U	* 367			1 U				3580
SF197	MW	6	10/12/1997		50 U	5 U	* 395	12 U		3 U		0.2 U		3740
SF197	MW	6	11/01/1997			5 U	* 464			3 U				4020
SF197	MW	6	12/01/1997			5 U	* 405			3 U				3660
SF197	MW	6	---			5 U	* 284			3 U				2730
SF197	MW	6	04/24/1997		45 U	4.5 U	* 131			1.5 U		0.2 U		1370
SF197	MW	6	02/06/1997		45 U	1.5 U	* 172			1.5 U		0.2 U		1910
Surface Water - Total Metals (ug/l)														
SF100	RV	6	02/17/1998		50 U	18	* 209	15		30		0.2 U		* 11700
SF100	RV	6	10/12/1997		50 U	5 U	75	12 U		120		0.2 U		* 4160
SF100	RV	6	04/24/1997		47 U	4.7 U	85.8	8.3		108		0.2 U		* 5460
SF100	RV	6	02/05/1997		45 U	6.2	80.6	14.4		266		0.29		* 9540

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF101	RV	6	02/17/1998		50 U	5 U	24	12 U		30		0.2 U		* 9140
SF101	RV	6	10/12/1997		50 U	5 U	4 U	12 U		20		0.2 U		630
SF101	RV	6	04/24/1997		45 U	4.5 U	3 U	3		4.3		0.2 U		320
SF102	RV	6	02/17/1998		50 U	5 U	4 U	12 U		150		0.2 U		800
SF102	RV	6	04/24/1997		45 U	4.5 U	4.5	3 U		266		0.2 U		607
SF103	RV	6	02/17/1998		50 U	5 U	* 240	12 U		30		0.2 U		* 5090
SF103	RV	6	10/12/1997		15 U	23	* 808	12 U		150		0.2 U		* 10100
SF103	RV	6	04/24/1997		45 U	18	184	7.6		73.6		0.2 U		* 3760
SF104	RV	6	02/17/1998		50 U	5 U	4 U	12 U		170		0.2 U		1370
SF104	RV	6	10/12/1997		50 U	5 U	4 U	12 U		39		0.2 U		470
SF104	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		33		0.2 U		130
SF107	SP	6	02/17/1998		50 U	39	15	12 U		9		0.2 U		* 18300
SF107	SP	6	10/12/1997		50 U	57	16	12 U		20		0.2 U		* 23200
SF108	RV	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		20 U
SF108	RV	6	10/12/1997		50 U	5 U	4 U	12 U		3 U		0.2 U		20 U
SF108	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		1.5 U		0.2 U		11
SF108	RV	6	02/05/1997		45 U	4.5 U	3 U	3 U		1.5 U		0.2 U		13
SF110	RV	6	02/17/1998		50 U	5 U	* 354	32		110		0.2 U		* 11900
SF110	RV	6	10/12/1997		50 U	5 U	131	12 U		20		0.2 U		* 3150
SF110	RV	6	04/24/1997		45 U	4.5 U	41.1			24.5		0.2 U		1450
SF110	RV	6	04/24/1997					8.7						
SF110	RV	6	02/05/1997		45 U	21.4	* 259	* 169		602		3.43		* 10400
SF183	RV	6	02/17/1998		50 U	5 U	12	13		620		0.2 U		2790
SF183	RV	6	10/12/1997		50 U	5 U	8	12 U		960		0.2		1590
SF183	RV	6	04/24/1997		45 U	4.5	25	14.8		573		0.2 U		* 7930
SF183	RV	6	02/04/1997		45 U	4.5 U	9.6	7.7		718		0.2 U		2500
SF184	RV	6	02/17/1998		50 U	5 U	8	12 U		710		0.2 U		2810
SF184	RV	6	10/12/1997		50 U	5 U	9	12 U		1240		0.2		1680
SF184	RV	6	04/24/1997		45 U	8.1	24.4	14.3		505		0.2 U		* 8290
SF184	RV	6	02/04/1997		45 U	4.5 U	10.5	8.4		880		0.2 U		2860
SF185	RV	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		40
SF185	RV	6	10/12/1997		50 U	5 U	4 U	12 U		5		0.2 U		20 U
SF185	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		3.5		0.2 U		17
SF186	RV	6	02/17/1998		50 U	5 U	28	13		* 1670		0.2 U		* 6610
SF186	RV	6	10/12/1997		50 U	5 U	8	12 U		* 1890		0.2 U		2340
SF187	RV	6	02/17/1998		50 U	5 U	4 U	12 U		210		0.2 U		360
SF187	RV	6	10/12/1997		50 U	5 U	4 U	12 U		20		0.2 U		80

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF191	RV	6	02/17/1998		50 U	5 U	14	12 U		40		0.2 U		1480
SF191	RV	6	10/12/1997		50 U	5 U	7	12 U		80		0.2 U		380
SF191	RV	6	04/24/1997		45 U	4.5 U	4.9	3 U		11.6		0.2 U		1400
SF191	RV	6	02/05/1997		45 U	4.5 U	6.6					0.2 U		
SF191	RV	6	02/05/1997					3.9		14.9				1820
SF195	RV	6	02/17/1998		50 U	5 U	4 U	12 U		17		0.2 U		960
SF195	RV	6	10/12/1997		50 U	5 U	7	12 U		20		0.2 U		1150
SF196	RV	6	02/17/1998		70	5 U	8	12 U		22		0.2 U		1640
SF196	RV	6	10/12/1997		50 U	5 U	9	12 U		40		0.2 U		2080
SF268	RV	2	11/05/1997		6.9	0.89 J	7.4	1.3 J	38.1 J	19.3	47.6	0.1 UJ	0.22 U	1190
SF268	RV	4	05/15/1991				2.4			14				458
SF268	RV	4	05/16/1991				1.9			13				439
SF268	RV	4	05/17/1991				2.1			10				417
SF268	RV	4	05/14/1991				4.7			328				744
SF268	RV	5	10/01/1991				12.5			14				1620
SF268	RV	5	10/02/1991				14			14				
SF268	RV	5	10/03/1991				8			10				1750
SF268	RV	5	10/04/1991							12				
SF268	RV	5	10/05/1991											1640
SF268	RV	5	10/04/1991				8							1720
SF268	RV	7	10/29/1993				7.7			11				1280
SF268	RV	7	12/01/1993				8.6			7				1350
SF268	RV	7	12/21/1993				11			5 J				1590
SF268	RV	7	01/21/1994				6.7			5 J				1090
SF268	RV	7	02/17/1994				8.6			10				1380
SF268	RV	7	03/07/1994				5.3			16				1030
SF268	RV	7	03/23/1994				6.5			17				1130
SF268	RV	7	04/06/1994				5.1			23				754
SF268	RV	7	04/18/1994				4.8			170				677
SF268	RV	7	05/03/1994				4			12				522
SF268	RV	7	05/20/1994				4.1			15				536
SF268	RV	7	06/08/1994				5.2			15				761
SF268	RV	7	06/24/1994				6.6			12				904
SF268	RV	7	07/23/1994				7.8			16				950
SF268	RV	7	08/16/1994				10.4			14				1330
SF268	RV	7	10/05/1994				11			15				1680
SF268	RV	7	11/16/1994				13			16				1710

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF268	RV	7	12/14/1994				13			13				1730
SF268	RV	7	01/11/1995				6.1			33				820
SF268	RV	7	02/09/1995				5.8			26				841
SF268	RV	7	03/08/1995				6.8			9				897
SF268	RV	7	03/23/1995				7			22				855
SF268	RV	7	04/14/1995				5.9			17				840
SF268	RV	7	04/27/1995				5.2			13				767
SF268	RV	7	05/11/1995				5			38				551
SF268	RV	7	05/24/1995				3.6			14				476
SF268	RV	7	06/13/1995				3.7			14				526
SF268	RV	7	06/28/1995				6.5			15				694
SF268	RV	7	07/12/1995				6.5			10				824
SF268	RV	7	07/26/1995				7.4			12				1020
SF268	RV	7	08/15/1995				7.8			11				1120
SF268	RV	7	09/14/1995				8.2			11				1270
SF268	RV	7	01/18/1996				9.4			65				1390
SF268	RV	7	02/28/1996				5.6			42				740
SF268	RV	7	03/27/1996				4.8			20				722
SF268	RV	7	04/18/1996				3			43				525
SF268	RV	7	05/09/1996				7.8			38				1260
SF268	RV	7	06/19/1996				18			28				540
SF268	RV	7	07/24/1996				9.6			20				721
SF268	RV	7	08/21/1996				8.8			22				939
SF268	RV	7	09/26/1996				8.6			18				1080
SF268	RV	7	10/18/1995				9.1			42				1100
SF268	RV	7	11/22/1995				8.2			45				827
SF268	RV	7	12/27/1995				6.7			18				897
SF268	RV	7	10/29/1996				10			19				1320
SF268	RV	7	11/26/1996				9.2			16				1400
SF268	RV	7	12/17/1996				9			17				1400
SF268	RV	7	01/29/1997				7.8			11				951
SF268	RV	7	02/19/1997				4.8			44				691
SF268	RV	7	03/27/1997				4.2			30				674
SF268	RV	7	04/17/1997				6.6			31				598
SF268	RV	7	05/16/1997				6.2			1180				855
SF268	RV	7	06/25/1997				3.2			19				374
SF268	RV	7	07/24/1997				4.6			40				661

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF268	RV	7	08/13/1997				5.6			18				773
SF268	RV	7	09/04/1997				6.9			26				900
SF268	RV	7	10/17/1997				8.6			19				1150
SF268	RV	7	11/25/1997				6.6			21				892
SF268	RV	7	12/18/1997				8			52				948
SF268	RV	7	01/22/1998				7.5			14				1000
SF268	RV	7	02/26/1998				6.8			13				926
SF268	RV	7	03/19/1998				5.1			22				743
SF268	RV	7	04/24/1998				6.8			526				694
SF268	RV	18	10/19/1998				9			10				1000
SF268	RV	18	11/17/1998				9			14				1400
SF268	RV	18	12/15/1998				7			8				1100
SF268	RV	18	01/21/1999				5			8				820
SF268	RV	18	02/10/1999				7			8				1100
SF268	RV	18	03/09/1999				7			11				1000
SF268	RV	18	04/12/1999				5			130				730
SF268	RV	18	04/20/1999				5			260				670
SF268	RV	18	05/06/1999				4		100	16	41			500
SF268	RV	18	05/25/1999				4		4800	340	570			600
SF268	RV	18	05/27/1999				2		1400	180	170			330
SF268	RV	18	06/01/1999				2		270	39	43			250
SF268	RV	18	07/15/1999				3.5			14.6				432
SF268	RV	18	08/09/1999				5.8			14.4				655
SF268	RV	18	08/30/1999				6.6			11.6				728
SF268	RV	7	05/28/1998				4.3			28				458
SF268	RV	7	06/25/1998				4.9			15				678
SF268	RV	7	07/27/1998				6.5			14				763
SF268	RV	7	08/25/1998				7.2			13				1050
SF268	RV	7	09/23/1998				8.6			14				1070
SF268	RV	7	10/27/1998				8.1			10				1130
SF268	RV	7	11/24/1998				10			14				1560
SF268	RV	7	01/04/1999				7.5			12				989
SF268	RV	7	01/14/1999				5.2			16				766
SF268	RV	7	02/22/1999				8.1			146				1070
SF268	RV	3	05/11/1998		1.4	2 U	2.3	2 U	76	19.1	24	0.2 U	0.2 U	370
SF268	RV	3	05/18/1998		4.1	1 U	3.2	3 U	1010	13.7	30.5	0.2 U	0.3 U	426
SF269	RV	2	11/05/1997		0.46 U	0.16 U	0.32 J	2.6 J	31 J	1.1	2.7 J	0.1 UJ	0.22 U	45.6

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF270	RV	2	11/04/1997		6.4	1.2 J	11	1.3 J	359	30.6	598	0.1 UJ	0.22 U	2110
SF270	RV	7	10/29/1993				10.6			13				2370
SF270	RV	7	12/01/1993				12.2			36				2300
SF270	RV	7	12/21/1993				17.1			13				2600
SF270	RV	7	01/21/1994				18			13				2110
SF270	RV	7	02/17/1994				14			13				2490
SF270	RV	7	03/07/1994				10			21				1400
SF270	RV	7	03/23/1994				10			19				1490
SF270	RV	7	04/06/1994				7.1			23				100
SF270	RV	7	04/18/1994				6			227				820
SF270	RV	7	05/03/1994				5.6			19				723
SF270	RV	7	05/20/1994				5.1			30				739
SF270	RV	7	06/08/1994				6.5			21				1120
SF270	RV	7	06/24/1994				8.9			16				1410
SF270	RV	7	07/23/1994				9.8			19				1750
SF270	RV	7	08/16/1994				10.6			16				2160
SF270	RV	7	09/09/1994				11.2			21				2420
SF270	RV	7	10/05/1994				12			15				2450
SF270	RV	7	11/16/1994				29			27				2600
SF270	RV	7	12/14/1994				30			19				2580
SF270	RV	7	01/11/1995				18			171				1540
SF270	RV	7	02/09/1995				7.9			21				1190
SF270	RV	7	03/08/1995				7.9			20				1330
SF270	RV	7	03/23/1995				10			30				1180
SF270	RV	7	04/14/1995				11			25				1300
SF270	RV	7	04/27/1995				7.6			22				1190
SF270	RV	7	05/11/1995				6.4			58				745
SF270	RV	7	05/24/1995				4.7			20				749
SF270	RV	7	06/13/1995				6			21				918
SF270	RV	7	06/28/1995				7.2			37				1250
SF270	RV	7	07/12/1995				9.8			23				1590
SF270	RV	7	07/26/1995				10			30				1930
SF270	RV	7	08/15/1995				11			31				2010
SF270	RV	7	09/14/1995				11			31				2310
SF270	RV	7	10/18/1995				18			45				1760
SF270	RV	7	11/22/1995				13			319				1310
SF270	RV	7	12/27/1995				8.5			28				1530

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF270	RV	7	01/18/1996				11			36				1130
SF270	RV	7	02/28/1996				7.8			33				1400
SF270	RV	7	03/27/1996				9			27				1660
SF270	RV	7	04/18/1996				6			52				996
SF270	RV	7	05/09/1996				7.8			38				1260
SF270	RV	7	06/20/1996				6.8			24				1230
SF270	RV	7	07/23/1996				1.1			11				145
SF270	RV	7	08/21/1996				12			66				2720
SF270	RV	7	09/26/1996				14			107				2450
SF270	RV	7	10/29/1996				22			76				2970
SF270	RV	7	11/26/1996				30			110				* 3260
SF270	RV	7	12/17/1996				31			43				* 3360
SF270	RV	7	01/29/1997				14			26				2060
SF270	RV	7	02/19/1997				21			354				1640
SF270	RV	7	03/27/1997				7.9			51				1080
SF270	RV	7	04/17/1997				7.6			96				930
SF270	RV	7	05/16/1997				9.2			* 1880				1690
SF270	RV	7	06/25/1997				6.2			40				793
SF270	RV	7	07/24/1997				7.3			31				1310
SF270	RV	7	08/13/1997				9			32				1700
SF270	RV	7	09/04/1997				9.8			41				1900
SF270	RV	7	10/17/1997				14			33				2300
SF270	RV	7	11/25/1997				12			103				1770
SF270	RV	7	12/18/1997				17			60				2000
SF270	RV	7	01/23/1998				24			22				2460
SF270	RV	7	02/26/1998				14			26				1980
SF270	RV	7	03/19/1998				11			43				1400
SF270	RV	7	04/24/1998				7.5			542				831
SF270	RV	18	05/25/1999				2		7800	900	49			290
SF270	RV	7	04/17/1998				12			17				1290
SF270	RV	7	05/02/1998				4.2			76				541
SF270	RV	7	05/29/1998				6.6			32				667
SF270	RV	7	06/25/1998				7.2			24				1250
SF270	RV	7	07/27/1998				11			23				1580
SF270	RV	7	08/25/1998				12			38				1930
SF270	RV	7	09/23/1998				12			23				2140
SF270	RV	7	09/29/1998				13			22				2220

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF270	RV	7	10/08/1998				15			45				2190
SF270	RV	7	10/27/1998				14			20				2350
SF270	RV	7	11/24/1998				24			38				2450
SF270	RV	7	01/04/1999				12			14				1580
SF270	RV	7	01/14/1999				16			252				1590
SF270	RV	7	02/22/1999				15			20				1830
SF270	RV	7	03/09/1999				13			15				1640
SF270	RV	3	05/11/1998		2.5	2 U	3.1	2 U	157	7.7	130	0.2 U	0.2 U	559
SF271	RV	2	11/04/1997		5.3	1.1 J	8.5	1.3 J	256	28.2	472	0.1 UJ	0.22 U	1670
SF271	RV	4	05/14/1991				2.9			41				538
SF271	RV	4	05/15/1991				2.8			28				503
SF271	RV	4	05/16/1991				2.5			24				565
SF271	RV	4	05/17/1991				2.9			15				534
SF271	RV	4	05/18/1991				20.9			169				531
SF271	RV	5	10/01/1991				15			20				2530
SF271	RV	5	10/02/1991				14			22				2560
SF271	RV	5	10/03/1991				8			18				2700
SF271	RV	5	10/04/1991				9			18				2830
SF271	RV	5	10/05/1991				9			21				2660
SF271	RV	7	10/29/1993				8.9			17				2290
SF271	RV	7	11/30/1993				10.4			23				2290
SF271	RV	7	12/21/1993				11.8			15				2150
SF271	RV	7	01/21/1994				9.8			13				1640
SF271	RV	7	02/17/1994				14			16				2370
SF271	RV	7	03/07/1994				7.2			23				1040
SF271	RV	7	03/23/1994				7.1			21				1130
SF271	RV	7	04/06/1994				5.7			22				828
SF271	RV	7	04/18/1994				4.6			195				606
SF271	RV	7	05/03/1994				4.8			16				718
SF271	RV	7	05/20/1994				4.8			24				752
SF271	RV	7	06/08/1994				6.7			20				1120
SF271	RV	7	06/24/1994				7.3			18				1360
SF271	RV	7	07/23/1994				8.4			2.5 U				1450
SF271	RV	7	08/16/1994				8.6			24				1600
SF271	RV	7	09/09/1994				10.6			24				2400
SF271	RV	7	10/05/1994				12			26				2540
SF271	RV	7	11/16/1994				19			17				2060

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF271	RV	7	12/14/1994				16			24				2030
SF271	RV	7	01/10/1995				13			127				1140
SF271	RV	7	02/09/1995				7.1			25				1010
SF271	RV	7	03/07/1995				7.6			23				1250
SF271	RV	7	03/23/1995				8.8			47				927
SF271	RV	7	04/14/1995				8.6			26				1040
SF271	RV	7	04/27/1995				6.8			36				927
SF271	RV	7	05/11/1995				4.8			65				622
SF271	RV	7	05/24/1995				6.6			22				660
SF271	RV	7	06/13/1995				5.8			31				929
SF271	RV	7	06/28/1995				6			21				1100
SF271	RV	7	07/12/1995				8.7			22				1470
SF271	RV	7	07/26/1995				10			31				1850
SF271	RV	7	08/15/1995				9.8			27				1950
SF271	RV	7	09/14/1995				8.8			25				1850
SF271	RV	7	10/29/1996				15			33				2590
SF271	RV	7	11/26/1996				17			28				2380
SF271	RV	7	12/17/1996				17			28				2160
SF271	RV	7	03/27/1997				6.3			157				896
SF271	RV	7	04/17/1997				6.5			248				790
SF271	RV	7	05/16/1997				7			1120				1270
SF271	RV	7	06/25/1997				5.8			43				722
SF271	RV	7	07/24/1997				6.7			38				1170
SF271	RV	7	08/14/1997				8.6			34				1450
SF271	RV	7	09/04/1997				8.7			46				1710
SF271	RV	7	10/17/1997				11			35				1910
SF271	RV	7	11/25/1997				12			611				1500
SF271	RV	7	12/18/1997				11			48				1280
SF271	RV	7	01/23/1998				12			19				1680
SF271	RV	7	02/26/1998				10			39				1350
SF271	RV	7	03/19/1998				7.2			43				1010
SF271	RV	7	04/24/1998				6.9			688				758
SF271	RV	18	10/26/1998				14			150				2300
SF271	RV	18	11/17/1998				16			63				2100
SF271	RV	18	11/17/1998				15			61				2000
SF271	RV	18	12/09/1998				13			34				1800
SF271	RV	18	12/09/1998				13			32				1800

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF271	RV	18	12/30/1998				6			200				700
SF271	RV	18	02/08/1999				11			16				1300
SF271	RV	18	03/09/1999				9			15				1200
SF271	RV	18	04/13/1999				7			21				950
SF271	RV	18	04/20/1999				4			190				540
SF271	RV	18	05/06/1999				4		340	44	140			590
SF271	RV	18	05/25/1999		8	13	5	14	5700	790	650	0.66	2	670
SF271	RV	18	05/27/1999		5								1 U	450
SF271	RV	18	06/02/1999				3		1100	130	170			360
SF271	RV	18	07/15/1999				5			29				660
SF271	RV	18	08/09/1999				8			26				1100
SF271	RV	18	09/07/1999				8			19				1400
SF271	RV	7	04/17/1998				5.8			20				1010
SF271	RV	7	05/01/1998				4.1			117				475
SF271	RV	7	05/29/1998				5.2			55				624
SF271	RV	7	07/27/1998				9.2			26				1290
SF271	RV	7	08/25/1998				12			44				1980
SF271	RV	7	09/23/1998				14			35				2510
SF271	RV	7	09/29/1998				16			28				2690
SF271	RV	7	10/08/1998				16			36				2480
SF271	RV	7	10/27/1998				13			52				2060
SF271	RV	7	11/24/1998				17			35				1780
SF271	RV	7	01/04/1999				8.6			23				1130
SF271	RV	7	01/14/1999				8.8			51				1100
SF271	RV	7	02/22/1999				11			15				1410
SF271	RV	3	05/11/1998		2.4	2 U	3.5	5	747	58.4	175	0.2 U	0.2 U	572
SF271	RV	3	05/18/1998		3.5	1.1	4.5	3 U	315	32.6	194	0.2 U	0.3 U	704
SF3	OF	8	06/15/1996				12			174				78
SF3	OF	8	07/15/1996				* 209			166				* 3770
SF3	OF	8	08/15/1996				6			146				116
SF3	OF	8	09/15/1996				5			132				105
SF3	OF	8	10/15/1996				24			125				174
SF3	OF	8	11/15/1996				26			132				446
SF3	OF	8	12/15/1996				22			99				640
SF3	OF	8	01/15/1997				14			82				358
SF3	OF	8	02/15/1997				16			87				216
SF3	OF	8	03/15/1997				37			94				1050

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Surface Water - Total Metals (ug/l)

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
SF3	OF	8	04/15/1997				30			107				2450
SF3	OF	8	05/15/1997				43			128				* 4560
SF3	OF	8	06/15/1997				22			128				* 3930
SF3	OF	8	07/15/1997				7			122				1060
SF3	OF	8	08/15/1997				7			112				583
SF3	OF	8	09/15/1997				2			130				156
SF3	OF	8	10/15/1997				2			138				168
SF3	OF	8	11/15/1997				6			102				327
SF3	OF	8	12/15/1997				3			109				244
SF3	OF	8	01/15/1998				2			88				215
SF3	OF	8	03/15/1998				3			113				214
SF3	OF	8	04/15/1998				2			115				152
SF3	OF	8	05/15/1998				3			117				153
SF3	OF	8	06/15/1998				2			112				45
SF3	OF	8	06/30/1996				25			577				281
SF3	OF	8	07/30/1996				* 1990			205				* 19600
SF3	OF	8	08/30/1996				12			165				259
SF3	OF	8	09/30/1996				6			148				168
SF3	OF	8	10/30/1996				46			155				317
SF3	OF	8	11/30/1996				41			168				1220
SF3	OF	8	12/30/1996				44			143				2850
SF3	OF	8	01/30/1997				33			119				1410
SF3	OF	8	02/28/1997				86			107				646
SF3	OF	8	03/30/1997				115			134				* 4190
SF3	OF	8	04/30/1997				65			142				* 5360
SF3	OF	8	05/30/1997				* 341			158				* 34100
SF3	OF	8	06/30/1997				44			150				* 9700
SF3	OF	8	07/30/1997				37			188				* 5070
SF3	OF	8	08/30/1997				62			153				* 5440
SF3	OF	8	09/30/1997				4			464				523
SF3	OF	8	10/30/1997				4			375				560
SF3	OF	8	11/30/1997				20			127				2710
SF3	OF	8	12/30/1997				9			137				1840
SF3	OF	8	01/30/1998				6			113				917
SF3	OF	8	03/30/1998				9			169				705
SF3	OF	8	04/30/1998				4			145				540
SF3	OF	8	05/30/1998				15			163				1990

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Total Metals (ug/l)														
SF3	OF	8	06/30/1998				2			142				274
SF620	OF	8	04/04/1996		5 U	5 U	5 U	6.36		32.2	152	0.2 U	1 U	475
SF622	OF	8	03/25/1998		45 U	40 U	2 U	6.4		31 J	126	0.2 U	4 U	234
SF623	OF	8	03/26/1998		45 U	40 U	15.4	5.7		25 U	386	0.2 U	4 U	2210
SF630	OF	8	03/23/1998		45 U	40 U	2 U	3 U		25 UJ	494	0.2 U	4 U	59 J
SF631	EF	8	03/23/1998		90 U	80 U	133	6 U		50 UJ	* 208000	0.2 U	30 U	* 55200
SF632	EF	8	03/23/1998		90 U	80 U	58.8	6 U		50 UJ	* 165000	0.2 U	14 U	* 9450
SF633	EF	8	03/23/1998		90 U	100	156	* 155		676 J	* 260000	0.2 U	50 U	* 95800
SF655	RV	18	05/25/1999				4		5300	720	690			670
Surface Water - Dissolved Metals (ug/l)														
SF100	RV	6	02/17/1998		50 U	15	* 152	12 U		3 U		0.2 U		* 9910
SF100	RV	6	10/12/1997		50 U	5 U	* 71	12 U		20		0.2 U		4000
SF100	RV	6	04/24/1997		45 U	4.5 U	* 86.8	3 U		12.7		0.2 U		* 5220
SF100	RV	6	02/05/1997		45 U	4.5 U	* 83.9	3.2 J		8.94		1.38		* 9660
SF101	RV	6	02/17/1998		50 U	5 U	26	12 U		32		0.2 U		* 9130
SF101	RV	6	10/12/1997		50 U	5 U	5	12 U		9		0.2 U		600
SF101	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		1.5 U		0.2 U		322
SF102	RV	6	02/17/1998		50 U	5 U	4 U	12 U		11		0.2 U		720
SF102	RV	6	04/24/1997		45 U	4.5 U	5.3	3 U		* 191		0.2 U		630
SF103	RV	6	02/17/1998		50 U	5 U	* 173	12 U		11		0.2 U		3890
SF103	RV	6	10/12/1997		50 U	23	* 736	12 U		* 110		0.2 U		* 10000
SF103	RV	6	04/24/1997		45 U	12	* 195	4.3		29.3		0.2 U		3960
SF104	RV	6	02/17/1998		50 U	5 U	5	12 U		4		0.8 UJ		1300
SF104	RV	6	10/12/1997		50 U	5 U	6	12 U		22		0.2 U		440
SF104	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		25.9		0.2 U		129
SF107	SP	6	02/17/1998		50 U	41	18	12 U		3 U		0.2 U		* 14200
SF107	SP	6	10/12/1997		50 U	57	14	12 U		3 U		0.2 U		* 23400
SF108	RV	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		20 U
SF108	RV	6	10/12/1997		50 U	5 U	4 U	12 U		3 U		0.2 U		20 U
SF108	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		1.5 U		0.2 U		6.9
SF108	RV	6	02/05/1997		45 U	1.5 U	3 U	3 U		1.5 U		0.2 U		9.4
SF110	RV	6	02/17/1998		50 U	5 U	* 306	14		21		0.2 U		* 10500
SF110	RV	6	10/12/1997		50 U	5 U	* 124	12 U		3 U		0.2 U		3010
SF110	RV	6	04/24/1997		45 U	4.5 U	* 40.8	3 U		1.5 U		0.2 U		1400
SF110	RV	6	02/05/1997		45 U	1.5 U	* 244	12.6 J		6.6		0.2 U		* 9240
SF183	RV	6	02/17/1998		50 U	5 U	10	12 U		* 380		0.2 U		2390

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF183	RV	6	10/12/1997		50 U	5 U	10	12 U		* 520		0.2 U		1560
SF183	RV	6	04/24/1997		45 U	4.5 U	24.1	12.8		* 494		0.2 U		* 7880
SF183	RV	6	02/04/1997		45 U	1.5 U	11.4	3.1 J		* 533		0.2 U		2520
SF184	RV	6	02/17/1998		50 U	5 U	4 U	12 U		* 480		0.2 U		2620
SF184	RV	6	10/12/1997		50 U	5 U	11	12 U		* 860		0.4		1590
SF184	RV	6	04/24/1997		45 U	4.5 U	25.7	12.8		* 454		0.2 U		* 8300
SF184	RV	6	02/04/1997		45 U	1.5 U	12.3	6 J		* 778		0.24		2970
SF185	RV	6	02/17/1998		50 U	5 U	4 U	12 U		3 U		0.2 U		40
SF185	RV	6	10/12/1997		50 U	5 U	4 U	12 U		3 U		0.2 U		20 U
SF185	RV	6	04/24/1997		45 U	4.5 U	3 U	3 U		1.5 U		0.2 U		18
SF186	RV	6	02/17/1998		50 U	5 U	21	12 U		* 1520		0.2 U		* 6000
SF186	RV	6	10/12/1997		50 U	5 U	12	12 U		* 1730		0.2 U		2330
SF187	RV	6	02/17/1998		50 U	5 U	4 U	12 U		* 180		0.2 U		270
SF187	RV	6	10/12/1997		50 U	5 U	5 J	12 U		33		0.2 U		80
SF191	RV	6	02/17/1998		50 U	5 U	4 U	12 U		12		0.2 U		1300
SF191	RV	6	10/12/1997		50 U	5 U	4 U	12 U		7		0.2 U		360
SF191	RV	6	04/24/1997		45 U	4.5 U	4.8	3 U		1.5 U		0.2 U		1400
SF191	RV	6	02/05/1997		45 U	1.5 U		3 U		1.9		0.2 U		1810
SF191	RV	6	02/05/1997				6.7							
SF195	RV	6	02/17/1998		50 U	5 U	4 U	12 U		6		0.2 U		940
SF195	RV	6	10/12/1997		50 U	5 U	9	12 U		10		0.2 U		1160
SF196	RV	6	02/17/1998		50 U	5 U	16	12 U		5		0.2 U		1520
SF196	RV	6	10/12/1997		50 U	5 U	12	12 U		3 U		0.2 U		1740
SF268	RV	2	11/05/1997		6.59	0.77	8.39	1	15	13.1	44.7	0.2 U	0.03 U	1190
SF268	RV	4	05/14/1991				2.2							391
SF268	RV	4	05/15/1991				2.2			3 U				
SF268	RV	4	05/15/1991											451
SF268	RV	4	05/16/1991				1.8			3 UJ				430
SF268	RV	4	05/17/1991				1.9			3 U				368
SF268	RV	4	05/14/1991							3				
SF268	RV	5	10/01/1991				11			5				1520
SF268	RV	5	10/02/1991				11							
SF268	RV	5	10/03/1991				14			4				1650
SF268	RV	5	10/04/1991							4				
SF268	RV	5	10/05/1991							4				
SF268	RV	5	10/02/1991											1660
SF268	RV	5	10/04/1991				14							1750

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF268	RV	7	10/29/1993				7.5			6				1300
SF268	RV	7	12/01/1993				8.7			5				1340
SF268	RV	7	12/21/1993				11.4			6				1520
SF268	RV	7	01/21/1994				6.4			6				1080
SF268	RV	7	02/17/1994				9			5				1410
SF268	RV	7	03/07/1994				5.3			5				1020
SF268	RV	7	03/23/1994				6.5			8				1130
SF268	RV	7	04/06/1994				6			6				735
SF268	RV	7	04/18/1994				3.2			5				494
SF268	RV	7	05/03/1994				4.2			7				541
SF268	RV	7	05/20/1994				4.1			6				526
SF268	RV	7	06/08/1994				5.5			8				800
SF268	RV	7	06/24/1994				6.8			6				932
SF268	RV	7	07/23/1994				7.4			5				984
SF268	RV	7	08/16/1994				10.5			7				1380
SF268	RV	7	10/05/1994				11			7				1720
SF268	RV	7	11/16/1994				12			8				1770
SF268	RV	7	12/14/1994				13			6				1780
SF268	RV	7	01/11/1995				5.6			4				780
SF268	RV	7	02/09/1995				5.5			6				842
SF268	RV	7	03/08/1995				5.8			7				876
SF268	RV	7	03/23/1995				7.2			10				820
SF268	RV	7	04/14/1995				6.4			8				843
SF268	RV	7	04/27/1995				5.5			7				780
SF268	RV	7	05/11/1995				4.4			6				427
SF268	RV	7	05/24/1995				3.6			6				465
SF268	RV	7	06/13/1995				3.8			10				526
SF268	RV	7	06/28/1995				6			9				699
SF268	RV	7	07/12/1995				6.6			7				841
SF268	RV	7	07/26/1995				7.6			9				1010
SF268	RV	7	08/15/1995				7.8			8				1160
SF268	RV	7	09/14/1995				8.6			7				1280
SF268	RV	7	01/18/1996				9.2			26				1420
SF268	RV	7	02/28/1996				4.5			11				763
SF268	RV	7	03/27/1996				4.7			44				726
SF268	RV	7	04/18/1996				3			11				520
SF268	RV	7	05/09/1996				7.4			8				1260

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF268	RV	7	06/19/1996				6.6			54				756
SF268	RV	7	07/24/1996				9.4			12				719
SF268	RV	7	08/21/1996				8.4			15				948
SF268	RV	7	09/26/1996				9.1			12				1070
SF268	RV	7	10/18/1995				8.8			15				1100
SF268	RV	7	11/22/1995				6.6			13				813
SF268	RV	7	12/27/1995				6			11				942
SF268	RV	7	10/29/1996				10			12				1310
SF268	RV	7	11/26/1996				9.6			10				1430
SF268	RV	7	12/17/1996				8.4			9				1430
SF268	RV	7	01/29/1997				7.2			8				949
SF268	RV	7	02/19/1997				4.8			6				678
SF268	RV	7	03/27/1997				4.2			8				657
SF268	RV	7	04/17/1997				4.5			8				561
SF268	RV	7	06/25/1997				5.2			9				391
SF268	RV	7	07/24/1997				4.5			10				672
SF268	RV	7	08/13/1997				5.7			14				803
SF268	RV	7	09/04/1997				7			18				916
SF268	RV	7	10/17/1997				8.6			14				1190
SF268	RV	7	11/25/1997				6.5			10				924
SF268	RV	7	12/18/1997				7			16				938
SF268	RV	7	01/22/1998				7.6			9				1020
SF268	RV	7	02/26/1998				7			7				949
SF268	RV	7	03/19/1998				5.2			6				735
SF268	RV	7	04/24/1998				3.8			15				425
SF268	RV	18	10/19/1998				8.4			4.6				1130
SF268	RV	18	11/17/1998				9.8			4.6				1410
SF268	RV	18	12/15/1998				7.4			4.1				1110
SF268	RV	18	01/21/1999				5.4			4				778
SF268	RV	18	02/10/1999				6.7			2.7				1060
SF268	RV	18	03/09/1999				6.2			3.6				1060
SF268	RV	18	04/12/1999				4.4			4.8				662
SF268	RV	18	04/20/1999				3			3.7				505
SF268	RV	18	05/06/1999				3.6		5	3.7	31			561
SF268	RV	18	05/25/1999				1.4		6.9	3.1	18			184
SF268	RV	18	05/27/1999				1.7		5	4.1	16			228
SF268	RV	18	06/01/1999				1.7		6.1	4	14			237

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF268	RV	18	07/15/1999				3			6				444
SF268	RV	18	08/09/1999				6			8				714
SF268	RV	18	08/30/1999				6			8				819
SF268	RV	7	05/28/1998				3.5			10				468
SF268	RV	7	06/25/1998				4.9			10				708
SF268	RV	7	07/27/1998				6.9			11				748
SF268	RV	7	08/25/1998				7.5			9				1020
SF268	RV	7	09/23/1998				8.6			8				1100
SF268	RV	7	10/27/1998				8.7			6				1290
SF268	RV	7	11/24/1998				10			8				1580
SF268	RV	7	01/04/1999				7.4			5				1010
SF268	RV	7	01/14/1999				5.1			3 U				762
SF268	RV	7	02/22/1999				6.9			16				939
SF268	RV	3	05/11/1998		2.3	2 U	2.2	2 U	20 U	6	15	0.2 U	0.2 U	324
SF268	RV	3	05/18/1998		4.1	1 U	3.2	3 U	20 U	5.9	20.1	0.2 U	0.3 U	416
SF269	RV	2	11/05/1997		0.5 U	0.12	0.43	0.66	10 U	0.24	1 U	0.2 U	0.03 U	24.5
SF270	RV	2	11/04/1997		5.99	1.2	12.9	1.3	259	12.4	609	0.2 U	0.03 U	2010
SF270	RV	7	10/29/1993				9.9			2 J				2370
SF270	RV	7	12/01/1993				12.3			1.5 U				2300
SF270	RV	7	12/21/1993				17.2			1.5 U				2640
SF270	RV	7	01/21/1994				17			3 J				2170
SF270	RV	7	02/17/1994				14			1.3 U				2500
SF270	RV	7	03/07/1994				10			4				1420
SF270	RV	7	03/23/1994				11			9				1510
SF270	RV	7	04/06/1994				8.2			8				1010
SF270	RV	7	04/18/1994				6.3			7				610
SF270	RV	7	05/03/1994				5.4			9				740
SF270	RV	7	05/20/1994				5.1			9				746
SF270	RV	7	06/08/1994				7			9				1090
SF270	RV	7	06/24/1994				8.9			4				1430
SF270	RV	7	07/23/1994				8			1.5 U				1680
SF270	RV	7	08/16/1994				10.2			2.5 J				2090
SF270	RV	7	09/09/1994				10.5			1.5 U				2380
SF270	RV	7	10/05/1994				11			1.5 U				2430
SF270	RV	7	11/16/1994				30			4				2540
SF270	RV	7	12/14/1994				31			3 J				2620
SF270	RV	7	01/11/1995				17			9				1410

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF270	RV	7	02/09/1995				8.1			16				1190
SF270	RV	7	03/08/1995				7.9			8				1290
SF270	RV	7	03/23/1995				10			10				1140
SF270	RV	7	04/14/1995				7.9			11				1260
SF270	RV	7	04/27/1995				7.4			10				1210
SF270	RV	7	05/11/1995				5.8			11				623
SF270	RV	7	05/24/1995				5.4			10				741
SF270	RV	7	06/13/1995				5.3			13				923
SF270	RV	7	06/28/1995				7.7			13				1230
SF270	RV	7	07/12/1995				9.7			13				1610
SF270	RV	7	07/26/1995				10			8				1910
SF270	RV	7	08/15/1995				11			6				2010
SF270	RV	7	09/14/1995				11			5				2260
SF270	RV	7	10/18/1995				16			19				1730
SF270	RV	7	11/22/1995				13			15				1240
SF270	RV	7	12/27/1995				9.1			14				1560
SF270	RV	7	01/18/1996				11			12				1120
SF270	RV	7	02/28/1996				7.6			9				1430
SF270	RV	7	03/27/1996				9.1			11				1660
SF270	RV	7	04/18/1996				6			12				985
SF270	RV	7	05/09/1996				7.4			8				1260
SF270	RV	7	06/20/1996				6			9				1180
SF270	RV	7	07/23/1996				1.2			5				140
SF270	RV	7	08/21/1996				13			7				2600
SF270	RV	7	09/26/1996				14			16				2470
SF270	RV	7	10/29/1996				21			18				2920
SF270	RV	7	11/26/1996				29			14				3250
SF270	RV	7	12/17/1996				30			10				3390
SF270	RV	7	01/29/1997				15			9				2070
SF270	RV	7	02/19/1997				20			15				1530
SF270	RV	7	03/27/1997				7.8			12				1080
SF270	RV	7	04/17/1997				7			20				853
SF270	RV	7	06/25/1997				6.9			13				797
SF270	RV	7	07/24/1997				7.5			10				1360
SF270	RV	7	08/13/1997				8.8			10				1690
SF270	RV	7	09/04/1997				9.7			16				1970
SF270	RV	7	10/17/1997				13			9				2360

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF270	RV	7	11/25/1997				12			9				1720
SF270	RV	7	12/18/1997				17			13				1980
SF270	RV	7	01/23/1998				23			6				2480
SF270	RV	7	02/26/1998				15			11				2060
SF270	RV	7	03/19/1998				12			10				1380
SF270	RV	7	04/24/1998				4.8			15				524
SF270	RV	18	05/25/1999				1.7		9.5	4.7	38			253
SF270	RV	7	04/17/1998				12			9				1300
SF270	RV	7	05/02/1998				4.6			13				525
SF270	RV	7	05/29/1998				6.7			11				686
SF270	RV	7	06/25/1998				7.5			10				1240
SF270	RV	7	07/27/1998				12			8				1530
SF270	RV	7	08/25/1998				12			5				1860
SF270	RV	7	09/23/1998				12			4				2100
SF270	RV	7	09/29/1998				13			4				2210
SF270	RV	7	10/08/1998				14			6				2180
SF270	RV	7	10/27/1998				14			3				2390
SF270	RV	7	11/24/1998				24			8				2490
SF270	RV	7	01/04/1999				12			6				1660
SF270	RV	7	01/14/1999				13			8				1350
SF270	RV	7	02/22/1999				16			5				1820
SF270	RV	7	03/09/1999				12			6				1600
SF270	RV	3	05/11/1998		2.5	2 U	3.4	2	54	23.4	118	0.2 U	0.2 U	525
SF271	RV	2	11/04/1997		4.9	0.63	9.83	0.82	61.7	3.64	454	0.2 U	0.03 U	1540
SF271	RV	4	05/14/1991				2.8			3 U				513
SF271	RV	4	05/15/1991				2.5			3 U				508
SF271	RV	4	05/16/1991				2.4			3 J				585
SF271	RV	4	05/17/1991				2.2			3 U				498
SF271	RV	4	05/18/1991				1.6			3 U				345
SF271	RV	5	10/01/1991				9.1			3				2640
SF271	RV	5	10/02/1991				12			1 U				2620
SF271	RV	5	10/03/1991				14			1 U				2590
SF271	RV	5	10/04/1991				9			1 U				2920
SF271	RV	5	10/05/1991				8.1			2				2810
SF271	RV	7	10/29/1993				8.8			1.5 U				2350
SF271	RV	7	11/30/1993				10			1.5 U				2310
SF271	RV	7	12/21/1993				12.4			1.5 U				2100

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF271	RV	7	01/21/1994				9.5			1.5 U				1660
SF271	RV	7	02/17/1994				14			1.5 U				2460
SF271	RV	7	03/07/1994				7.8			5				1060
SF271	RV	7	03/23/1994				7.1			7				1160
SF271	RV	7	04/06/1994				6.3			6				819
SF271	RV	7	04/18/1994				2.7			6				417
SF271	RV	7	05/03/1994				5			8				737
SF271	RV	7	05/20/1994				5.2			8				788
SF271	RV	7	06/08/1994				6.7			6				1130
SF271	RV	7	06/24/1994				7.2			3 J				1360
SF271	RV	7	07/23/1994				7.2			1.5 U				1380
SF271	RV	7	08/16/1994				7.8			2.5 J				1510
SF271	RV	7	09/09/1994				10.1			1.5 U				2450
SF271	RV	7	10/05/1994				11			3 J				2520
SF271	RV	7	11/16/1994				18			1.5 U				2030
SF271	RV	7	12/14/1994				17			12				2020
SF271	RV	7	01/10/1995				10			10				1040
SF271	RV	7	02/09/1995				7			7				1030
SF271	RV	7	03/07/1995				8.3			11				1250
SF271	RV	7	03/23/1995				7.9			10				901
SF271	RV	7	04/14/1995				7.4			9				1000
SF271	RV	7	04/27/1995				6			0.8 U				906
SF271	RV	7	05/11/1995				4.6			10				499
SF271	RV	7	05/24/1995				4.2			11				646
SF271	RV	7	06/13/1995				5.2			11				908
SF271	RV	7	06/28/1995				5.8			5				1100
SF271	RV	7	07/12/1995				8.6			7				1480
SF271	RV	7	07/26/1995				10			6				1860
SF271	RV	7	08/15/1995				10.2			1.5 U				1920
SF271	RV	7	09/14/1995				8.5			1.5 U				1790
SF271	RV	7	10/29/1996				15			7				2540
SF271	RV	7	11/26/1996				18			4				2360
SF271	RV	7	12/17/1996				17			6				2250
SF271	RV	7	03/27/1997				5.8			12				845
SF271	RV	7	04/17/1997				4.2			7				671
SF271	RV	7	06/25/1997				* 60			12				729
SF271	RV	7	07/24/1997				6.5			8				1210

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF271	RV	7	08/14/1997				7.9			7				1440
SF271	RV	7	09/04/1997				11			4				1800
SF271	RV	7	10/17/1997				11			6				2020
SF271	RV	7	11/25/1997				6.8			14				1200
SF271	RV	7	12/18/1997				10			11				1280
SF271	RV	7	01/23/1998				13			6				1700
SF271	RV	7	02/26/1998				10			10				1330
SF271	RV	7	03/19/1998				7.4			9				974
SF271	RV	7	04/24/1998				4.1			9				415
SF271	RV	18	10/26/1998				11			14				2130
SF271	RV	18	11/17/1998				15			5.7				1910
SF271	RV	18	11/17/1998				15			5.5				1930
SF271	RV	18	12/09/1998				13			3.3				1750
SF271	RV	18	12/09/1998				13			3.1				1900
SF271	RV	18	12/30/1998				4.9			2.7				661
SF271	RV	18	02/08/1999				11			3.3				1180
SF271	RV	18	03/09/1999				8.7			5.1				1310
SF271	RV	18	04/13/1999				6.2			3.6				979
SF271	RV	18	04/20/1999				3			5.4				453
SF271	RV	18	05/06/1999				3.8		30	5	112			601
SF271	RV	18	05/25/1999		1.1	1 U	1.5	1 U	13	4.6	42		1 U	227
SF271	RV	18	05/27/1999		2.6	1 U		1.6	8	2.8	49		1 U	274
SF271	RV	18	06/02/1999				2.1		14	3.6	62			317
SF271	RV	18	07/15/1999				4.2			6.7				714
SF271	RV	18	08/09/1999				7.4			7.9				1210
SF271	RV	18	09/07/1999				7.5			4.5				1340
SF271	RV	7	04/17/1998				6.2			7				1020
SF271	RV	7	05/01/1998				3.5			9				418
SF271	RV	7	05/29/1998				5.4			11				633
SF271	RV	7	07/27/1998				9			6				1210
SF271	RV	7	08/25/1998				11			8				1900
SF271	RV	7	09/23/1998				14			13				2030
SF271	RV	7	09/29/1998				16			4				2700
SF271	RV	7	10/08/1998				15			7				2530
SF271	RV	7	10/27/1998				13			8				2010
SF271	RV	7	11/24/1998				17			7				1840
SF271	RV	7	01/04/1999				9.4			5				1170

Data Summary Table
South Fork - segment MidGradSeg02

Boxed Sample Results Exceed Screening Level By More Than 1X

Shaded Sample Results Exceed Screening Level By More Than 10X

Shaded Results With (*) Exceed Screening Level By More Than 100X

Location	Location Type	Ref	Date	Depth In Feet	Antimony	Arsenic	Cadmium	Copper	Iron	Lead	Manganese	Mercury	Silver	Zinc
Surface Water - Dissolved Metals (ug/l)														
SF271	RV	7	01/14/1999				8.1			5				1040
SF271	RV	7	02/22/1999				10			6				1460
SF271	RV	7	11/18/1992				12.42			1				2184.9
SF271	RV	7	12/09/1992				15.28			5.4				2583.7
SF271	RV	7	01/21/1993				20.05			9.5				2683.4
SF271	RV	7	02/23/1993				15.28			6.3				2683.4
SF271	RV	7	03/23/1993				8.6			13.1				1088.2
SF271	RV	7	04/05/1993				4.79			6.4				759.2
SF271	RV	7	04/20/1993				4.79			4.2				699.4
SF271	RV	7	05/03/1993				4.79			11.1				699.4
SF271	RV	7	05/19/1993				4.79			13.8				639.6
SF271	RV	7	06/02/1993				5.74			6.9				829
SF271	RV	7	06/23/1993				7.65			5.7				1287.6
SF271	RV	7	07/21/1993				11.47			5.9				1387.3
SF271	RV	7	08/25/1993				11.47			5				1985.5
SF271	RV	7	09/21/1993				8.6			5.4				1985.5
SF271	RV	7	10/08/1995				11.47			16				1487
SF271	RV	7	11/07/1995				6.98			9				969.6
SF271	RV	7	12/27/1995				8.41			11				1457.1
SF271	RV	7	01/18/1996				8.22			11				842.9
SF271	RV	7	02/28/1996				7.74			6				1387.3
SF271	RV	7	03/27/1996				6.22			10				1128.1
SF271	RV	7	04/18/1996				4.98			9				883.8
SF271	RV	7	05/09/1996				6.6			7				1098.2
SF271	RV	7	06/20/1996				5.55			8				1080.2
SF271	RV	7	07/23/1996				8.41			2				2304.5
SF271	RV	7	08/21/1996				10.51			2				2165
SF271	RV	7	09/26/1996				9.56			4				2354.4
SF271	RV	3	05/11/1998		2	2 U	3.1	2 U	24	5.3	118	0.2 U	0.2 U	502
SF271	RV	3	05/18/1998		3.4	1 U	4.2	3 U	47.3 U	4.4	175	0.2 U	0.3 U	674
SF655	RV	18	05/25/1999				1.5		7.9	4.6	19			187

ATTACHMENT 3
Statistical Summary Tables for Metals

Statistical Summary of Total Metals Concentrations in Surface Soil
Segment MidGradSeg01
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	212	192	0.67	233	10.6	2.21	31.3	11	0	0
Arsenic	237	236	2.8	1,060	44.7	2.53	22	68	9	0
Cadmium	237	235	0.06	90.8	7.79	1.48	9.8	46	0	0
Copper	237	237	9.3	1,260	75.1	1.49	100	45	1	0
Iron	237	237	6,370	113,000	25,100	0.76	65,000	18	0	0
Lead	264	264	26.4	74,700	2,920	2.46	171	221	75	11
Manganese	237	237	35	12,800	1,430	1.25	3,597	17	0	0
Mercury	217	193	0.06	11.9	0.914	2.18	23.5	0	0	0
Silver	217	196	0.34	131	5.67	2.13	391	0	0	0
Zinc	237	237	23	18,000	1,150	1.79	280	164	26	0

Statistical Summary of Total Metals Concentrations in Subsurface Soil
Segment MidGradSeg01
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	606	484	0.66	261	11.1	2.05	31.3	43	0	0
Arsenic	644	644	1.8	796	23.4	2.3	22	167	7	0
Cadmium	644	575	0.09	81	5.86	1.57	9.8	83	0	0
Copper	644	644	5.1	886	56	1.39	100	80	0	0
Iron	644	644	5,360	152,000	22,200	0.52	65,000	9	0	0
Lead	698	698	9.9	56,900	2,180	2.51	171	467	162	18
Manganese	644	644	122	18,200	1,170	0.98	3,597	15	0	0
Mercury	644	527	0.05	31.1	1.52	2.24	23.5	2	0	0
Silver	644	511	0.27	194	6.79	2.09	391	0	0	0
Zinc	644	644	19.8	14,655	923	1.85	280	355	48	0

Statistical Summary of Total Metals Concentrations in Sediment
Segment MidGradSeg01
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	36	24	0.93	174	28.7	1.15	3.3	21	4	0
Arsenic	36	36	3.81	184	43.9	0.89	13.6	28	1	0
Cadmium	36	34	1.1	112	16	1.33	1.56	33	10	0
Copper	36	36	21.4	823	137	1.1	32.3	31	3	0
Iron	36	36	19,500	57,200	35,300	0.31	40,000	11	0	0
Lead	36	36	45.3	14,800	3,120	0.91	51.5	34	31	6
Manganese	36	36	394	6,620	2,850	0.54	1,210	30	0	0
Mercury	36	33	0.096	12.5	2.38	1.39	0.179	27	14	0
Silver	36	34	0.76	72.9	12.3	1.08	4.5	25	1	0
Zinc	36	36	66.4	11,500	2,560	1.05	200	34	14	0

Statistical Summary of Total Metals Concentrations in Surface Water
Segment MidGradSeg01
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	84	51	0.2	331	12.2	4.11	6	10	2	0
Arsenic	102	44	0.2	60.9	3.34	2.81	50	1	0	0
Cadmium	560	326	0.1	28	6.54	0.57	2	283	1	0
Copper	103	54	0.095	44	5.22	2.13	1	35	6	0
Iron	116	82	5.8	5,900	675	1.99	300	24	7	0
Lead	642	569	0.16	2,160	50.7	2.39	15	488	30	1
Manganese	122	99	0.83	1,200	107	1.92	50	31	5	0
Mercury	102	1	0.84	0.84	0.84	< 0.001	2	0	0	0
Zinc	680	637	1.8	2,800	472	1.3	30	485	251	0

Statistical Summary of Dissolved Metals Concentrations in Surface Water
Segment MidGradSeg01
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	77	65	0.2	9.8	2.1	1	2.92	10	0	0
Arsenic	77	47	0.11	8.6	1.12	1.79	150	0	0	0
Cadmium	331	254	0.033	18	6.81	0.54	0.38	243	188	0
Copper	96	42	0.22	12	1.38	1.42	3.2	3	0	0
Iron	115	61	5.2	3,080	128	3.66	1,000	2	0	0
Lead	312	252	0.069	474	12.7	2.37	1.09	228	120	1
Manganese	115	80	0.11	1,100	51.2	2.87	20.4	31	4	0
Mercury	77	2	0.506	2.61	1.56	0.96	0.77	1	0	0
Silver	77	1	0.34	0.34	0.34	< 0.001	0.43	0	0	0
Zinc	331	281	1	2,840	887	0.7	42	238	202	0

Statistical Summary of Total Metals Concentrations in Surface Soil
Segment MidGradSeg02
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Arsenic	16	16	89.1	312	195	0.33	22	16	5	0
Cadmium	16	16	18.1	95.7	50.2	0.39	9.8	16	0	0
Copper	16	16	111	443	291	0.39	100	16	0	0
Iron	16	16	41,400	177,000	118,000	0.31	65,000	15	0	0
Lead	20	20	3,450	22,100	12,600	0.55	171	20	20	8
Manganese	16	16	3,990	20,200	12,100	0.36	3,597	16	0	0
Zinc	16	16	2,130	14,200	6,650	0.45	280	16	14	0

Statistical Summary of Total Metals Concentrations in Subsurface Soil
Segment MidGradSeg02
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Lead	8	8	3,450	20,600	9,390	0.65	171	8	8	1

Statistical Summary of Total Metals Concentrations in Sediment
Segment MidGradSeg02
Units: mg/kg

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	87	87	0.9	364	81.3	1.04	3.3	77	65	4
Arsenic	87	87	5.2	710	133	0.87	13.6	75	35	0
Cadmium	81	81	1	472	62.9	1.26	1.56	77	64	8
Copper	87	87	16	706	186	0.89	32.3	73	14	0
Iron	86	86	1.79	141,000	61,400	0.67	40,000	57	0	0
Lead	87	87	16	60,600	9,330	1.43	51.5	81	73	33
Manganese	84	84	400	13,300	5,340	0.6	1,210	72	1	0
Mercury	79	78	0.02	25.1	6.77	1.08	0.179	66	59	13
Silver	85	74	0.6	171	30.7	1.19	4.5	69	15	0
Zinc	87	87	44	51,000	5,960	1.35	200	77	62	5

Statistical Summary of Total Metals Concentrations in Groundwater
Segment MidGradSeg02
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Arsenic	1	1	0.84	0.84	0.84	< 0.001	50	0	0	0
Lead	1	1	3.9	3.9	3.9	< 0.001	15	0	0	0
Mercury	1	1	0.23	0.23	0.23	< 0.001	2	0	0	0
Zinc	1	1	231	231	231	< 0.001	30	1	0	0

Statistical Summary of Dissolved Metals Concentrations in Groundwater
Segment MidGradSeg02
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	229	5	42	160	70.2	0.72	2.92	5	5	0
Arsenic	266	97	0.13	120	32.2	1.12	150	0	0	0
Cadmium	266	218	3.3	8,640	578	2.01	0.38	218	216	153
Copper	94	17	9.8	249	85.1	0.98	3.2	17	10	0
Lead	266	113	0.1	1,720	130	2.45	1.09	86	52	25
Mercury	229	23	0.2	0.874	0.362	0.46	0.77	2	0	0
Zinc	266	265	18	133,000	22,100	1.1	42	259	235	183

Statistical Summary of Total Metals Concentrations in Surface Water
Segment MidGradSeg02
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	66	11	1.4	70	10.5	1.89	6	4	1	0
Arsenic	65	15	0.89	100	20.8	1.3	50	2	0	0
Cadmium	379	360	0.32	1,990	25.3	4.66	2	348	48	8
Copper	65	25	1.3	169	21.3	2.01	1	25	10	2
Iron	18	18	31	7,800	1,660	1.46	300	11	4	0
Lead	379	369	1.1	1,890	110	2.15	15	299	56	3
Manganese	25	25	2.7	260,000	25,500	2.79	50	18	7	3
Mercury	65	5	0.2	3.43	0.956	1.46	2	1	0	0
Silver	18	1	2	2	2	< 0.001	100	0	0	0
Zinc	380	377	11	95,800	2,190	2.86	30	374	347	31

Statistical Summary of Dissolved Metals Concentrations in Surface Water
Segment MidGradSeg02
Units: ug/L

Analyte Name	Quantity Tested	Quantity Detected	Minimum Detected Value	Maximum Detected Value	Average Detected Value	Coefficient of Variation	Screening Level (SL)	Quantity Exceeding 1X the SL	Quantity Exceeding 10X the SL	Quantity Exceeding 100X the SL
Antimony	59	10	1.1	6.59	3.55	0.51	2.92	5	0	0
Arsenic	59	9	0.12	57	16.7	1.22	150	0	0	0
Cadmium	347	332	0.43	736	15.4	3.16	0.38	332	297	12
Copper	59	14	0.66	14	5.44	0.96	3.2	6	0	0
Iron	19	15	5	259	34.6	1.86	1,000	0	0	0
Lead	348	305	0.24	1,730	35.3	4.53	1.09	303	88	13
Manganese	19	18	14	609	109	1.5	20.4	12	2	0
Mercury	57	3	0.24	1.38	0.673	0.92	0.77	1	0	0
Zinc	348	345	6.9	23,400	1,620	1.23	42	340	317	12

ATTACHMENT 4
Screening Levels

SCREENING LEVELS

Based on the results of the human health and ecological risk assessments, 10 chemicals of potential concern (COPCs) were identified for inclusion and evaluation in the RI. The COPCs and appropriate corresponding media (soil, sediment, groundwater, and surface water) are summarized in Table 1. For each of the COPCs listed in Table 1, a screening level was selected.

The screening levels were used in the RI to help identify source areas and media of concern that would be carried forward for evaluation in the feasibility study (FS). The following paragraphs discuss the rationale for the selection of the screening levels.

Applicable risk-based screening levels and background concentrations were compiled from available federal numeric criteria (e.g., National Ambient Water Quality Criteria), regional preliminary remediation goals (PRGs) (e.g., EPA Region IX PRGs), regional background studies for soil, sediment, and surface water, and other guidance documents (e.g., National Oceanographic and Atmospheric Administration freshwater sediment screening values). Selected RI screening levels are listed in Tables 2 through 4.

For the evaluation of site soil, sediment, groundwater, and surface water chemical data, the lowest available risk-based screening level for each media was selected as the screening level. If the lowest risk-based screening level was lower than the available background concentration, the background concentration was selected as the screening level.

Groundwater data are screened against surface water screening levels to evaluate the potential for impacts to surface water from groundwater discharge.

For site groundwater and surface water, total and dissolved metals data are evaluated separately. Risk-based screening levels for protection of human health (consumption of water) are based on total metals results, therefore, total metals data for site groundwater and surface water were evaluated against screening levels selected from human health risk-based screening levels. Risk-based screening levels for protection of aquatic life are based on dissolved metals results, therefore, dissolved metals data for site groundwater and surface water were evaluated against screening levels selected from aquatic life risk-based screening levels.

Table 1
Chemicals of Potential Concern

Chemical	Human Health COPC			Ecological COPC		
	Soil/Sediment	Groundwater	Surface Water	Soil	Sediment	Surface Water
Antimony	X	X				
Arsenic	X	X	X	X	X	
Cadmium	X	X	X	X	X	X
Copper				X	X	X
Iron	X					
Lead	X	X	X	X	X	X
Manganese	X		X			
Mercury			X		X	
Silver					X	
Zinc	X	X	X	X	X	X

Table 2
Selected Screening Levels for Groundwater and Surface Water—Coeur d'Alene River Basin and Coeur d'Alene Lake

Chemical	Surface Water Total (µg/L)	Surface Water Dissolved (µg/L)	Groundwater Total (µg/L)	Groundwater Dissolved (µg/L)
Antimony	6[a]	2.92[b]	6[a]	2.92[b]
Arsenic	50[a]	150[c,d]	50[a]	150[c,d]
Cadmium	2[e]	0.38[b]	2[e]	0.38[b]
Copper	1[e]	3.2[c,d]	1[e]	3.2[c,d]
Iron	300[a]	1,000[c,d]	300[a]	1,000[c,d]
Lead	15[a]	1.09[b]	15[a]	1.09[b]
Manganese	50[a]	20.4[b]	50[a]	20.4[b]
Mercury	2[a]	0.77[c,d]	2[a]	0.77[c,d]
Silver	100[a]	0.43[c,d]	100[a]	0.43[c,d]
Zinc	30[e]	42[c,d]	30[e]	42[c,d]

[a]40 CFR 141 and 143. National Primary and Secondary Drinking Water Regulations. U.S. EPA Office of Water. Office of Groundwater and Drinking Water. http://www.epa.gov/OGWDW/wot/appa.html. October 18, 1999.
[b]Dissolved surface water 95th percentile background concentrations calculated from URS project database.
[c]Freshwater NAWQC for protection of aquatic life are expressed in terms of the dissolved metal in the water column.
[d]Freshwater NAWQC for cadmium, copper, lead, silver, and zinc are expressed as a function of hardness (mg/L of CaCO3) in the water column.
Values above correspond to a hardness value of 30 mg/L.
[e]Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. U.S. Department of Energy. Office of Environmental Management. ES/ER/TM-96/R2. Value based on total metals concentration.

Note:
µg/L - microgram per liter

Table 3
Selected Screening Levels for Surface Water—Spokane River Basin

Chemical	SpokaneRSeg01		SpokaneRSeg02		SpokaneRSeg03	
	Surface Water Total (µg/L)	Surface Water Dissolved (µg/L)	Surface Water Total (µg/L)	Surface Water Dissolved (µg/L)	Surface Water Total (µg/L)	Surface Water Dissolved (µg/L)
Antimony	6[a]	2.92[b]	6[a]	2.92[b]	6[a]	2.92[b]
Arsenic	50[a]	150[c]	50[a]	150[c]	50[a]	150[c]
Cadmium	2[e]	0.38[b]	2[e]	0.38[b]	2[e]	0.38[b]
Copper	1[e]	2.3[c,d]	1[e]	3.8[c,d]	1[e]	5.7[c,d]
Iron	300[a]	1,000[c]	300[a]	1,000[c]	300[a]	1,000[c]
Lead	15[a]	1.09[b]	15[a]	1.09[b]	15[a]	1.4[c,d]
Manganese	50[a]	20.4[b]	50[a]	20.4[b]	50[a]	20.4[b]
Mercury	2[a]	0.77[c]	2[a]	0.77[c]	2[a]	0.77[c]
Silver	100[a]	0.22[c,d]	100[a]	0.62[c,d]	100[a]	1.4[c,d]
Zinc	30[e]	30[c,d]	30[e]	50[c,d]	30[e]	75[c,d]

[a]40 CFR 141 and 143. National Primary and Secondary Drinking Water Regulations. U.S. EPA Office of Water. Office of Groundwater and Drinking Water. http://www.epa.gov/OGWDW/wot/appa.html. October 18, 1999.
[b]Dissolved surface water 95th percentile background concentrations calculated from URS project database. Technical Memorandum. Estimation of Background Concentration in Soils, Sediments, and Surface Waters. Coeur d'Alene Basin RI/FS. URS. May 2001.
[c]Freshwater NAWQC for protection of aquatic life are expressed in terms of the dissolved metal in the water column.
[d]Freshwater NAWQC for cadmium, copper, lead, silver, and zinc are expressed as a function of hardness (mg/L of CaCO3) in the water column.
[e]Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. U.S. Department of Energy. Office of Environmental Management. ES/ER/TM-96/R2. Value based on total metals concentration.

Note:
µg/L - microgram per liter

Table 4
Selected Screening Levels—Soil and Sediment

Chemical	Upper Coeur d'Alene River Basin		Lower Coeur d'Alene River Basin		Spokane River Basin	
	Soil (mg/kg)	Sediment (mg/kg)	Soil (mg/kg)	Sediment (mg/kg)	Soil (mg/kg)	Sediment (mg/kg)
Antimony	31.3[a]	3.30[b]	31.3[a]	3[c]	31.3[a]	3[c]
Arsenic	22[b]	13.6[b]	12.6[b]	12.6[b]	9.34[b]	9.34[b]
Cadmium	9.8[d]	1.56[b]	9.8[d]	0.678[b]	9.8[d]	0.72[b]
Copper	100[d]	32.3[b]	100[d]	28[c]	100[d]	28[c]
Iron	65,000[b]	40,000[c]	27,600[b]	40,000[c]	25,000[b]	40,000[c]
Lead	171[b]	51.5[b]	47.3[b]	47.3[b]	14.9[b]	14.9[b]
Manganese	3,597[b]	1,210[b]	1,760[a]	630[c]	1,760[a]	663[b]
Mercury	23.5[a]	0.179[b]	23.5[a]	0.179[b]	23.5[a]	0.174[c]
Silver	391[a]	4.5[c]	391[a]	4.5[c]	391[a]	4.5[c]
Zinc	280[b]	200[b]	97.1[b]	97.1[b]	66.4[b]	66.4[b]

[a]U.S. EPA Region IX Preliminary Remediation Goals for Residential or Industrial Soil http://www.epa.gov/region09/wasate/sfund/prg. February 3, 2000.
[b]Technical Memorandum. Estimation of Background Concentration in Soils, Sediments, and Surface Waters. Coeur d'Alene Basin RI/FS. URS. May 2001.
[c]Values as presented in National Oceanographic and Atmospheric Administration Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle, WA. M. F. Buchman, 1999. Values generated from numerous reference documents.
[d]Final Ecological Risk Assessment. Coeur d'Alene Basin RI/FS. Prepared by CH2M HILL/URS for EPA Region 10. May 18, 2001. Values are the lowest of the NOAEL-based PRGs for terrestrial biota (Table ES-3).

Note:
mg/kg - milligram per kilogram