

APPENDIX A

Photograph Log

Photo	Description
1	Early photograph of the smelter facility from the dock (circa 1907).
2	Later photograph of the smelter showing and expanded building (circa 1908).
3	1909 photographic mosaic of the smelter after cessation of activity. Note the long dock extending out into Lake Pend Oreille.
4	A pile of what appears to be unprocessed ore located to the southwest of the slag dump and at the terminus of the Corps Bank Stabilization project.
5	View of the last remaining portion of the smelter's structure. Looking north from the slag dump.
6	Slag dump looking north.
7	Site of the upper bench soil samples collected by DEQ. Note the lack of vegetative cover and numerous trails. This location also had fire rings and other signs of human habitation.
8	Looking south from the smelter site. Note new dock in center of picture.
9	Looking southeast from the smelter towards Lake Pend Oreille. Slag dump in center of picture.
10	Base of slag dump eroding into Lake Pend Oreille. This is the location of the slag dump sample.
11	Base of slag dump showing erosion.
12	Closeup of the slag dump surface.
13	Closeup of the slag dump cross section.
14	View of the smelter wall. Note the blue graffiti.
15	Looking south along the shore from atop the slag dump. Note the new dock in the foreground and the partially hidden Airstream camper in the center of the picture. This view is of the Corps Bank Stabilization project after it was completed. The dark grey "sand" at the bottom of the picture is eroded slag.

All photographs were taken by Robert Higdem, Idaho Department of Environmental Quality (DEQ) on 8/3/05.

APPENDIX B

ATTACHMENTS

Including:

1. DEQ 2005 Sampling Analytical Data
2. National Register of Historic Places Evaluation of the Panhandle Smelting and Refining Company Facility, Ponderay, Idaho
3. Black Rock Final Environmental Assessment, Ponderay, Idaho
4. Groundwater Monitoring Well Logs

1.
DEQ 2005 Sampling Analytical Data

SVL ANALYTICAL, INC.

One Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

Certificate: ID ID00019

CLIENT : IDEQ		SVL JOB: 118235
PROJECT: MINE PA		SAMPLE: 462165
CLIENT SAMPLE ID: BLACKROCK SHORE		
Sample Collected: 8/03/05 11:00		% Solids: 98.2%
Sample Receipt : 8/04/05		Matrix: SOIL
Date of Report : 8/19/05	As Received Basis	

RECEIVED

AUG 23 2005

IDEQ-Coeur d'Alene
Regional Office

Determination	Result	Units	Dilution	Method	Analyzed
Silver	64.1	mg/kg		6010B	8/13/05
Arsenic	109	mg/kg		6010B	8/13/05
Cadmium	3.64	mg/kg		6010B	8/13/05
Mercury	<0.0330	mg/kg		7471A	8/10/05
Lead	8910	mg/kg	10	6010B	8/14/05
Zinc	18900	mg/kg	10	6010B	8/14/05

Tests: IDEQ SOIL/MER|

Reviewed By: *Kirk Gray* Date 8/19/05
8/19/05 14:28

AZ: AZ0538 CA: NO. 2080 CD: 8/18/04 ID: ID00019 NV: 7/31/04 WA: C1268

SVL ANALYTICAL, INC.

One Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

Certificate: ID ID00019

CLIENT : IDEQ	SVL JOB: 118235
PROJECT: MINE PA	SAMPLE: 462166
CLIENT SAMPLE ID: BLACKROCK ORE	
Sample Collected: 8/03/05 11:00	% Solids: 99.1%
Sample Receipt : 8/04/05	Matrix: SOIL
Date of Report : 8/19/05	As Received Basis

Determination	Result	Units	Dilution	Method	Analyzed
Silver	<0.50	mg/kg		6010B	8/13/05
Arsenic	<2.5	mg/kg		6010B	8/13/05
Cadmium	1.08	mg/kg		6010B	8/13/05
Mercury	<0.0330	mg/kg		7471A	8/10/05
Lead	114	mg/kg		6010B	8/14/05
Zinc	114	mg/kg		6010B	8/14/05

Tests: IDEQ SOIL/MER|

Reviewed By: *Kirby Greg* Date 8/19/05
 8/19/05 14:28

AZ: AZ0538 CA: NO. 2080 CO: 8/18/04 ID: ID00019 NV: 7/31/04 WA: C1268

SVL ANALYTICAL, INC.

One Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

Certificate: ID ID00019

CLIENT : IDEQ	SVL JOB: 118235
PROJECT: MINE PA	SAMPLE: 462167
CLIENT SAMPLE ID: UPPER BENCH 1	
Sample Collected: 8/03/05 11:00	% Solids: 90.8%
Sample Receipt : 8/04/05	Matrix: SOIL
Date of Report : 8/19/05	As Received Basis

Determination	Result	Units	Dilution	Method	Analyzed
Silver	5.61	mg/kg		6010B	8/13/05
Arsenic	9.1	mg/kg		6010B	8/13/05
Cadmium	2.22	mg/kg		6010B	8/13/05
Mercury	<0.0330	mg/kg		7471A	8/10/05
Lead	710	mg/kg	5	6010B	8/14/05
Zinc	373	mg/kg	5	6010B	8/14/05

Tests: IDEQ SOIL/MER |

Reviewed By: *Kirby Gray* Date 8/19/05
8/19/05 14:28

AZ: AZ0538 CA: NO. 2080 CO: 8/18/04 ID: ID00019 NV: 7/31/04 WA: C1268

SVL ANALYTICAL, INC.

One Government Gulch ■ P.O. Box 929 ■ Kellogg, Idaho 83837-0929 ■ Phone: (208)784-1258 ■ Fax: (208)783-0891

Certificate: ID ID00019

CLIENT : IDEQ	SVL JOB: 118235
PROJECT: MINE PA	SAMPLE: 462168
CLIENT SAMPLE ID: UPPER BENCH 2	
Sample Collected: 8/03/05 11:00	% Solids: 98.3%
Sample Receipt : 8/04/05	Matrix: SOIL
Date of Report : 8/19/05	As Received Basis

Determination	Result	Units	Dilution	Method	Analyzed
Silver	63.7	mg/kg		6010B	8/13/05
Arsenic	184	mg/kg		6010B	8/13/05
Cadmium	4.14	mg/kg		6010B	8/13/05
Mercury	0.0516	mg/kg		7471A	8/10/05
Lead	6440	mg/kg	10	6010B	8/14/05
Zinc	774	mg/kg	10	6010B	8/14/05

Tests: IDEQ SOIL/MER |

Reviewed By: *Kirk Leag* Date 8/19/05
8/19/05 14:28

AZ: AZ0538 CA: NO. 2080 CO: 8/18/04 ID: ID00019 NV: 7/31/04 WA: C1268

08/31/2005 07:32 2082630724
 NP P00000118251 A MARTIN, DANA L & JUSTICE
 013-0000 RPP00000110250A & HALL, DANN
 205 N 4TH #123
 SANDPOINT ID 83864

IDLSANDPOINT PAGE 03
 11-878-2W 20 3.641
 GOV LOT 2 S & E OF NP R/W LESS 20 9.211
 TAX 87,90 & 91

641920 QC
 574228 SD
 348634 WD

8/13/2004
 9:42:35

UNIFORM ASSESSMENT DEVELOPMENT
 SOFTWARE SYSTEMS
 FMS001
 ALPHA ROLL

** PARCEL KEY **	NAME/ADDRESS	LEGAL DESCRIPTION	CAT	QUANTITY
TYPE PARCEL NO STATUS CODE OLD PARCEL NO MAP NUMBER 527642 SC 393172 QC	PROPERTY ADDR: CAMA AREA #: 1			12.650 ESTIMATED

Dann Hall 202 1/2 S. 1st Ave Sandpoint 263-4704

(*) Dana Martin
 " "

Marina Const.
 Marine

265-1574 -
 266-5624

meeting to discuss
 see railroad right of
 way

call 1st before mailing

Bonner County Hist. Society
 263-23844 611 S. Ella Ave.
 T-Sat
 10-4

2.

**National Register of Historic Places Evaluation of the
Panhandle Smelting and Refining Company Facility,
Ponderay, Idaho**

National Register of Historic Places Evaluation
of the
Panhandle Smelting and Refining Company
Facility, Ponderay, Idaho

Report Prepared by

Nancy F. Renk
Flume Creek Historical Services

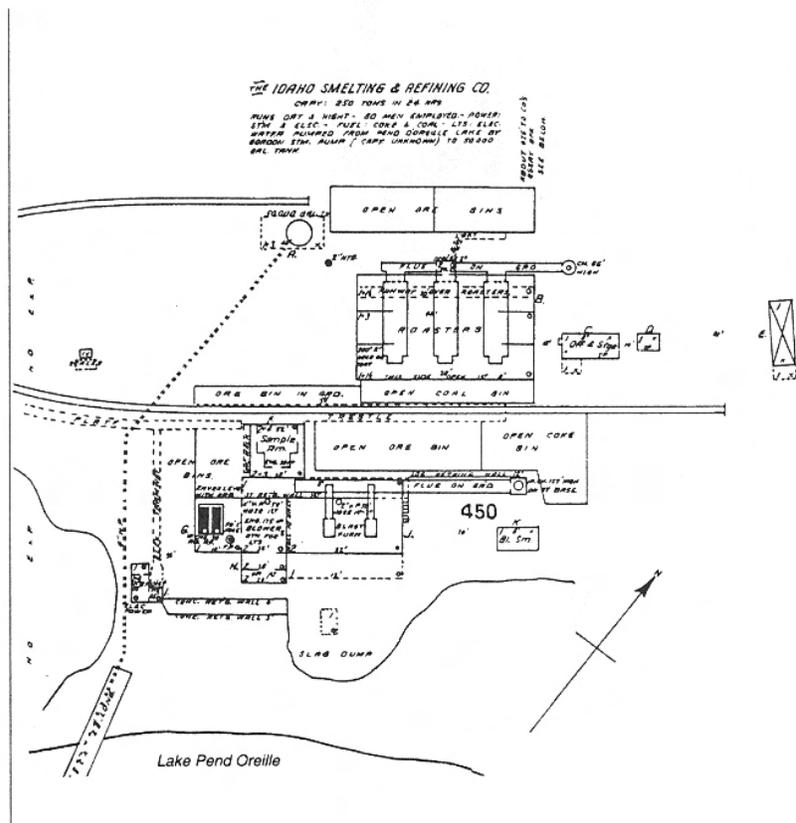
for

U.S. Army Corps of Engineers, Seattle District
Contract No. DACA67-99-D-1014-0002

February 13, 2001

Northwest Archaeological Associates, Inc.
5416½ 20TH Avenue NW
Seattle, Washington 98107

National Register of Historic Places Evaluation
of the
Panhandle Smelting & Refining Company
Facility, Ponderay, Idaho



February 13, 2001

TABLE OF CONTENTS

LIST OF FIGURES	i
INTRODUCTION	1
Location	1
HISTORICAL CONTEXT	4
The Plan	4
Town and Smelter	5
Operational Delays	8
The Smelter Blows	9
And Reblows	11
Foiled Again!	12
Settlement	13
The End	14
EVALUATION	15
REFERENCES CITED	16

LIST OF FIGURES

Figure 1. Overview of structural remains, slag, and dock pilings of the Panhandle Smelter	1
Figure 2. Location of the Panhandle Smelting and Refining Company	2
Figure 3. Map of the smelter from the 1909 Sanborn Fire Maps.	6
Figure 4. The Panhandle Smelter c. 1909.	10

INTRODUCTION

The U.S. Army Corps of Engineers, Seattle District (the Corps) requested National Register of Historic Places (the Register) evaluation of the remains of the Panhandle Smelting and Refining Company smelter, site 10BR539, in order to determine if proposed modifications to an adjacent railroad grade will affect elements of the site that make it significant. In order to complete the evaluation, preparation of an historical context for the smelter, including a history of the Panhandle Smelting and Refining Company, was proposed. The following text presents this context as well as recommendations for eligibility.

Location

The site is on the northwest shore of Lake Pend Oreille in Bonner County (Figure 2) and was recorded in 1985 as part of an inventory of non-federal lands affected by the operation of the Albeni Falls Dam Project (Miss and Hudson 1986). Not much remains above ground at the site of the Panhandle Smelting and Refining Company in Ponderay, Idaho. There are tall stone foundation walls, occasional piles of bricks, building depressions, piers from two docks, and a slag pile - a dark formation that gives rise to the local name, "Black Rock" (Figure 1). There is nothing to suggest the rocky and litigious history of the short-lived company that processed lead-silver ore on the shore of Lake Pend Oreille.

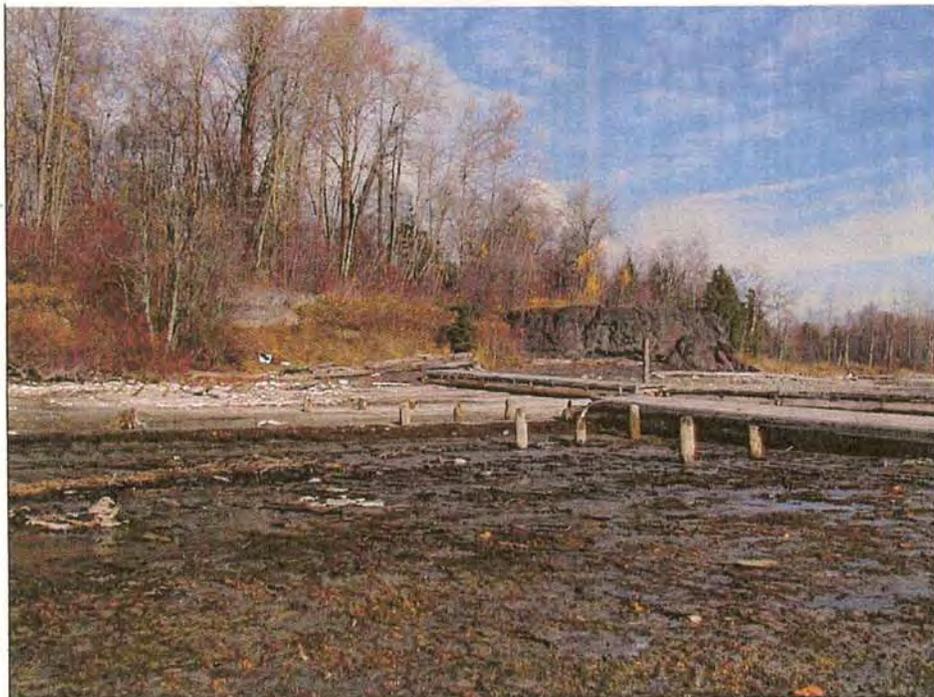


Figure 1. Overview of structural remains (left of center), slag (right of center), and dock pilings (foreground) of the Panhandle Smelter, direction: N.



Figure 2. Location of the Panhandle Smelting and Refining Company, site 10BR539 (USGS Sandpoint, ID-MT, 30x60' Quad., 1984).

HISTORICAL CONTEXT

The Panhandle Smelter's promoters planned to serve mining operations primarily in western Montana and northern Idaho, including the rich Coeur d'Alene region, at a time when there were no independent smelters between Helena, Montana, and Everett and Tacoma, Washington. Eleven companies had formed American Smelting and Refining Co. (AS&R) in 1899, known in the mining world as the smelter trust. Its power soon increased with the addition of the Guggenheim brothers and another five smelters, giving AS&R control of sixteen lead-silver smelters in the United States and Mexico. The smelter trust purchased three major independent smelters by 1905, in Tacoma, Everett, and Selby, near San Francisco. This concentration of smelting control in AS&R made an independent smelter very attractive for mine owners in the region, and although the Coeur d'Alene mines did not send ore to Ponderay, they did strongly consider this as an alternative to their existing arrangements. The operations of the smelter at Ponderay ultimately failed due to lack of capital, possible mismanagement, and repeated litigation that tied up company assets and personnel at critical times (Aiken 2000; Fahey 1978:67-73).

Rumors of a new smelter near Sandpoint began as early as 1902 when promoters took bonds on seven mining properties at Lakeview. Within a few months, the company had purchased property and was announcing grand plans for its smelter operations. For the next few years, however, more action took place in the newspapers than on the ground as the company promoted its smelter in an effort to raise capital (*Kootenai County Republican*, 14 November 1902, 1:4; *Spokesman-Review*, 18 February 1903, 5:5).

The Plan

The smelter was part of a larger development plan, controlled by three interlocking companies: Panhandle Smelting and Refining Company, Panhandle Development Company, and Ponderay Transportation Company. A group of capitalists, mostly from St. Paul and Minneapolis, organized the first company by early 1903. They incorporated in Washington, with their office in Spokane. Officials included Jacob Hines, president, Minneapolis; W. A. Murphy, vice president, St. Paul; W. E. Nelson, secretary and manager, Denver; and Henry M. Williams, superintendent, Spokane. The remainder of the board included T. W. Teasdale, Frank W. Condran, and E. J. Norton, all of St. Paul (*Spokesman-Review*, 18 February 1903, 5:5). Panhandle Development Co. followed ca. March 1903, with a starting capital of \$30,000. Promoters planned to use these funds to build the smelter, in exchange for half of the capital stock in the smelting company (*Spokesman-Review*, 11 March 1903, 5:2). For lake transportation, investors formed a third business, Ponderay Transportation Company, with capitalization of \$30,000. The newspaper reported that the new company had bought four steamboats from the Jeannot-Childs line in Hope. Later records list only one boat, the *City of Hope*, renamed the *Panhandle*, that had a carrying capacity of 500 tons. The company planned to construct docks extending 600 feet into the lake (*Spokesman-Review*, 18 February 1903, 5:5, 25 March 1903, 7:3). Although corporate records have not been checked, newspaper articles suggest that the same men probably controlled all three companies.

The companies acquired a large block of land northeast of Sandpoint early in February 1903 when Henry M. Williams, general manager of all three companies, purchased the W2 NE4 and Lot 2 in Section 11, T57N, R2W, from David E. and Nettie M. Biglow. In late March Williams then transferred essentially the same property (W2E2 Section 11) to the Panhandle Development Co., which at some point transferred it to Panhandle Smelting and Refining Co. (Bonner County Deed Record, Book 15:188-189, 231, Book 14:498-499; *Kootenai County Republican*, 6 February 1903, 1:3; *Spokesman-Review*, 25 March 1903, 7:3).

Initial plans for the smelter, announced in February 1903, called for one tuyere furnace with a capacity of 300 tons of ore each day. A month later the company contracted with Paul Johnson to serve as superintendent of construction for the smelter; Johnson had built the smelter at Greenwood and had operated it until hired for this new job. Manager Williams said that they would break ground in early April, with plans to be operating the smelter by September 1, 1903. The only thing holding them back from starting production sooner was a problem in acquiring the necessary electrical machinery (*Spokesman-Review*, 18 February 1903, 5:5, 25 March 1903, 7:3).

Town and Smelter

While the smelter company prepared for construction, Panhandle Development Co. worked on a townsite adjacent to the smelter. The new town was initially known as Panhandle, but the name changed to Ponderay at least by early 1905. Crews were reportedly busy building boarding houses, offices, and laboratories by late March 1903. Construction was not as extensive as suggested by press releases, however, and by the spring of 1905 the only buildings in Ponderay were the assay office and the men-only boarding house/hotel for the crews building the smelter. Activity picked up then, and the first store was completed in June 1905. Initially known as Swanson and Son, the name soon changed to Pioneer Store. The First Bank of Ponderay also had a building in town (*Engineering and Mining Journal* 79, 16 March 1905:544; *Northern Idaho News*, 15 December 1905, 29; *Spokesman-Review*, 25 March 1903, 7:3).

In addition to construction, the smelter company worked to procure ore to supply the smelter's projected operations. The company purchased several mines around Lake Pend Oreille, including the Venezuela group near Chloride, in the Lakeview area, and the Queen Ann mine on Trestle Creek; both of these mines contained iron ore needed for flux in the smelting process. By 1905 at least, the company also owned 415 acres of limestone, easily accessible along Lake Pend Oreille; lime rock was also used in the smelting process. Aside from the mines it owned, the company announced in February 1903 that it had dosed contracts with seventeen mines in both Montana and Idaho that agreed to ship ore to the smelter. A month later, officials claimed that mines had donated more than 50,000 tons of ore to get the smelter started. The company was to get the first \$15 in values from this ore, with the donors taking anything over this amount. It had increased the contracts to twenty-two mines, including the Blue Bird, Union Silver Star, Little Joe, Conquest Consolidated, and Bimetallic. In addition to

the ore, the smelter company secured more than 600 acres of coking coal in the Crow's Nest district of British Columbia to heat the furnace (*Northern Idaho News*, 15 December 1905, 29; *Spokesman-Review*, 18 February 1903, 5:5, 25 March 1903, 7:3).

The smelter construction did not proceed as planned, however, and operations did not start in the fall of 1903. Instead, the Idaho mine inspector reported at the end of 1904 that the company had made good progress in its construction. At that time, the ore bins, sampler, and furnace rooms were completed and machinery was expected during the next season (Bell 1904:89). The company changed names and management in February 1905 when Panhandle Smelting and Refining Co. transferred all of Lot 2 in Section 11, T57N, R2W, and four lode claims, to Panhandle Smelting Company. David W. Casseday, formerly land and immigration commissioner for the Soo Road in Minneapolis, took over as president of the new company by March 1905. Company directors met in Minneapolis that month to let contracts for sampling and electrical machinery, supposedly completing the necessary equipment. At that time, work had halted on the smelter while crews waited for the machinery to arrive (Bonner County Deed Record, Book 7:175-176; *Engineering and Mining Journal* 79, 16 March 1905:544).

By July 1905, the smelter was essentially complete (Figure 3). The main building had enough room to eventually house three furnaces, with a capacity of 250 to 300 tons. It also contained the equipment to run the electrical lights and power the facility. Adjoining the main building was the sampler building, with sampling rooms located above the storage bins; these bins could hold up to 3,500 tons of ore. The receiving and crusher building was located on the railroad spur. Incoming ore was to be crushed in this building and then moved by automatic conveyors to the sampling building. The boiler room joined the smelter building on the south side. The pump house was located south of this, to supply water from springs on the site (*Northern Idaho News*, Industrial Souvenir Edition, July 1905:12-13).

The basic equipment was already installed by July 1905. It included a tandem Corliss 150 horsepower engine to operate the sampling works, crusher, conveyors and trams, and electric lighting plant. A second engine, a Reliance Corliss with 75 horsepower, was to run the No. 7 Connelsville blower for the furnace. The standard lead-silver furnace with water jacket was equipped with a variety of attachments to increase productivity and decrease expenses. The furnace was connected to the stack with granite and brick dust chambers 8 x 10 feet and 190 feet long. The steel stack, 7 feet in diameter and 125 feet tall, was set on granite foundations (*Northern Idaho News*, Industrial Souvenir Edition, July 1905:13).

In addition to the smelter buildings and equipment, the company had developed its transportation connections by July 1905. It had one dock at the smelter site that extended 2,200 feet into the lake; this gave boats twelve feet of draw during low water season. The dock was twenty feet wide to accommodate a tram and railroad track. The company needed the tram to move ore from boats to the crusher house. In addition, the railroad track could

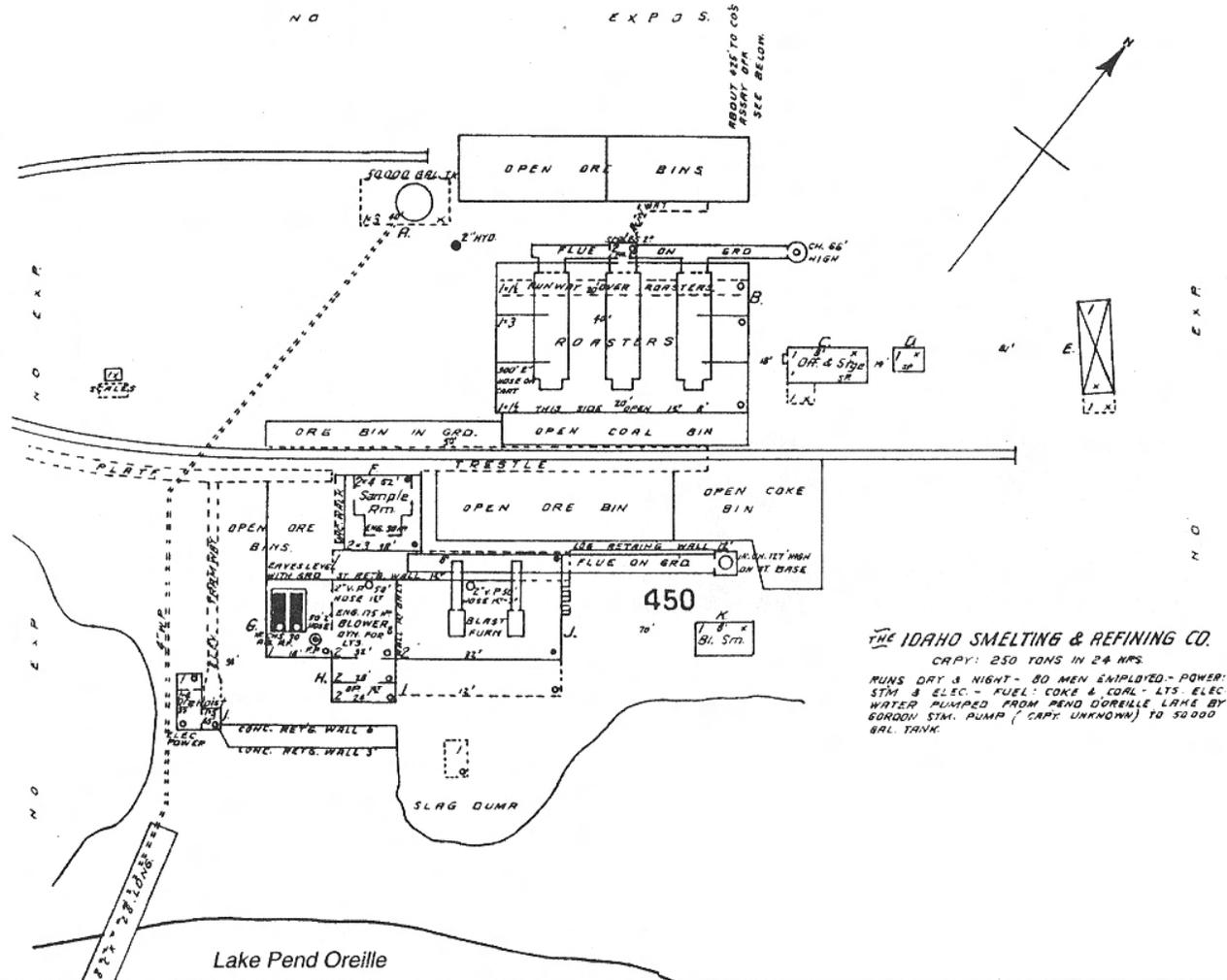


Figure 3. Map of the smelter from the 1909 Sanborn Fire Maps.

accommodate other commerce on the lake since there was no other dock with this capability at that time. The Ponderay Transportation Co. had been operating since ca. 1904, utilizing the steam tug *Ponderay* as well as a smaller steamboat, the *Belle*. It also had several barges and flat boats to transport ore or other goods on the lake. In 1905, the company had a contract to deliver mail to post offices around the lake (*Northern Idaho News*, Industrial Souvenir Edition, July 1905:13).

Operational Delays

While essentially complete, the smelter remained idle in 1905 as president Casseday tried to overcome financial difficulties. He went east in September 1905 to sell another \$100,000 in smelter stock to raise capital to purchase ore. Evidently the ore contracted by the earlier company did not materialize and the company was working on closing contracts for ore from the Murray region of Idaho as well as Phillipsburg in Montana. It did not want to depend on local ore from the Lake Pend Oreille district, Casseday explained, because it was low grade. Casseday succeeded in raising the necessary money and he announced that the smelter would blow in by the end of October 1905. Once again the company extended this date, saying in early November that operations could not start until January 1906 since the furnace had not yet arrived. Despite this setback, chemicals were in place in the assay office and a company official left to close contracts for ore in Montana (*Pend d'Oreille Review*, 15 September 1905, 1:4, 6 October 1905, 1:5, 3 November 1905, 1:3, 10 November 1905, 1:5).

Financial concerns were not all that was causing delays in the start of the smelter. The company had been in court with drawn-out litigation over water rights on west Sand Creek. T. H. Tandy and Peter Johnson of Sandpoint located water rights on Sand Creek, known then as Mill Creek, in December 1902. Working for the smelter company, they posted the notice and filed a copy with the county recorder, as required by the Act of February 25, 1899. The company began developing these rights in mid-January 1903. In September 1903, Sandpoint Water and Electric Company filed competing water rights on Sand Creek, following the Act of March 11, 1903, that required the applicant to get a permit from the state engineer; the smelter did not file with the state engineer until May 1904. The smelter company sued the water company and lost its case in district court. The water company then got an injunction against the smelter, forcing it to stop work on its flume. The litigation continued to the Idaho Supreme Court, where the smelter finally prevailed in November 1905 in the case of Sandpoint Water and Electric Co. v. Panhandle Smelting Co. The ruling noted that the two companies had filed claims under two different acts, causing the initial confusion. Despite the ruling, W. G. Malloy of the water company declared that the two companies were on good terms. He said that the smelter could now withdraw water above the company's dam on Sand Creek and he did not expect this to hurt the water supply. The smelter planned to build a power house below this dam and use the power for both the smelter and the town of Ponderay (Bonner County Deed Record, Book 11:503-504; *Pend d'Oreille Review*, 17 November 1905, 1:1).

With the litigation resolved, Panhandle Smelting Company announced the completion of its

smelter in December 1905. The ten-acre site on Lake Pend Oreille included essentially the same buildings and equipment described above. At that time, the smelter depended primarily on rail transportation. The Northern Pacific main tracks ran adjacent to the smelter, with side tracks into the grounds. In addition, the Great Northern ran just a mile away and had a spur line to join the Northern Pacific. The Spokane International, under construction in 1905, would give a connection to British Columbia and especially the coke ovens at Fernie. Along with the side tracks, the smelter grounds included railroad docks and wagon docks (*Northern Idaho News*, 15 December 1905, 29).

Despite periodic announcements that the smelter would blow in soon, the facility remained untested until mid-1907. Company management changed again in April 1906 when Frank W. Guilbert resigned as secretary and C. L. Pugh resigned as treasurer. They were replaced by George Heaton of St. Paul, who took over both jobs as well as the position of manager. J. Herbert Anderson, who had owned stock in the smelter from the beginning, began to quietly purchase additional shares until he had controlling interest by late 1906. This led to his election as president at the December 1906 meeting of stockholders, replacing George Heaton. Heaton then filed suit in District court claiming that the smelter company owed him \$4,000 for his services rendered between May 1, 1906 and January 1, 1907, along with \$2,851.30 that he had advanced to the company earlier in 1906 (*Pend d'Oreille Review*, 16 May 1907, 1:3, 13 June 1907, 1:3; *Spokesman-Review*, 25 April 1906, 8:3).

The Smelter Blows

The smelter finally came to life under Anderson's direction. By June 1907, the St. Eugene mine at Trail, B.C., had sent two carloads of lead concentrates to the smelter in Ponderay and had signed a contract for another 2,000 tons. The smelter expected to receive two carloads a day for an indefinite time. It was not relying on any local ore from around Lake Pend Oreille since it was not rich enough to pay for transportation. Thus the company steamer, *Ponderay*, was tied up and officials said that local mines would have to deliver their ore to either Hope or the company dock in Ponderay. Anderson arrived from Chicago and announced that the smelter would be running soon, sending stock prices up several points in one week (*Pend d'Oreille Review*, 6 June 1907, 4:2). Crews at the smelter started fires in the furnace on June 6, 1907. Five days later, they put the lead concentrates in the furnace; the following day, June 12, they removed the first lead bars. The machinery worked "like a charm" on this first run. Anderson was still trying to hire experienced smeltemen, but he had three shifts of fifteen men each to keep the smelter running. Anderson said that with present market conditions, he had no plans to shut down "for years to come," especially since he had \$40,000 worth of ore. In fact, Anderson had asked Allis-Chalmers Company to double the capacity of the smelter to 200 tons every 24 hours. The outlook for the smelter continued to look good through early July 1907 when it completed its largest run to date, producing 168 lead bars, weighing 115 pounds each, in 24 hours. Union Iron Works in Spokane was due to install a new furnace in 60 days, and rumors suggested that the company would order four more furnaces, increasing the smelter's labor force ultimately to 250 men (*Pend d'Oreille Review*, 13 June 1907, 1:3, 11 July 1907, 1:6).

All of this ended by mid-July when George Heaton's lawsuit brought a temporary halt to the smelting. In addition to his earlier claim, Heaton had filed a suit for \$50,000. He said that he had loaned the smelter more than \$8,600, at the company's request. In addition, he had invested more than \$39,000 of his own money in ore and flux; such investors were to pay part of the expense of smelting and then receive a share of the profits, but Heaton claimed that the company had been using the raw materials without payment. The outcome of Heaton's lawsuits is not known. Company officials attempted to make the best of the situation and announced that crews would use the shutdown to make a few repairs. At that time, the foundation was in place for a second furnace, and the company planned to add a matte furnace to smelt copper. The closure continued into August, with this prolonged inactivity blamed on a lack of coke (*Pend d'Oreille Review*, 18 July 1907, 1:3, 22 August 1907, 1:6).

It was a continuing lack of capital more than lack of materials that caused problems for the smelter. A number of mines that shipped ore to the smelter were unable to get paid according to their agreements. The plant remained closed in the fall of 1907. S. B. Phillips, company manager and/or secretary, came to Ponderay early in November to pay bills for labor. He was "sanguine" that the smelter would continue, and he noted that company president Anderson would be there the following day to settle with other creditors. The company apparently did not recover, however, and was forced to reorganize. All assets were turned over to a trustee, W. W. Hindman, in January 1908. Within a couple of weeks, he turned everything over to a new company, Idaho Smelting and Refining Company. Stockholders got one share in the new company for every five they held in the former company. Two brothers, Thomas L. and Wilbur D. Greenough, purchased 753,000 shares of stock in Idaho Smelting and Refining Co. in June and July 1908 and they gained control of the company the following month. In an effort to get the smelter running, they advanced \$50,000 to the company. In addition, Harry Day, manager of the famous Hercules mine in Burke, may have been involved at this time (Aiken 2000; Bell 1907:46; Bonner County Deed Record, Book 13:419-420, 448-449, 454-455; *Pend d'Oreille Review*, 7 November 1907, 1:5, 12 March 1909, 1:3-4)

New ownership and an influx of much needed capital brought a flurry of activity to the smelter in Ponderay. Construction of the new roaster building was nearly done by early October 1908, and the new stack was progressing well toward its completed height of sixty feet. The company had 2,500 tons of ore on hand, with more coming in daily. In contrast to earlier operations, much of this ore came from mines around Lake Pend Oreille; low transportation and smelting costs made it possible to process the low-grade ores that had previously been rejected. Local mines included the Blue Bird, Green Monarch, and Minerva; the last one, located on the east side of the lake at Granite Creek, shipped 25 tons of ore to the smelter in late October, with values over 1,000 oz. silver per ton (*Spokesman-Review*, 2 October 1908, 2:3, 21 October 1908, 10:3-4).

And Reblows

The rebuilt smelter was blown in on October 20, 1908, with great ceremony. The Montana Mine Owners Association ran a special train from Helena while other mining interests chartered a train from Spokane. So many came from Spokane that the local stock exchange closed for the day; they held a session aboard the train instead, trading 7,000 shares. Still others came by boat from around the lake, bringing more than 300 people to watch the first run at the smelter. The visitors got tours of the facility, watched the first slag tapped at noon, and then witnessed the tapping of the lead well to pour three bars (Figure 4). Several visitors dropped molten lead into sand to make a souvenir. At that time, the second furnace was not yet completed since crews were waiting for a shipment of firebrick. They expected to be done within three weeks, bringing the smelter's capacity up to 250 tons per day (*Spokesman-Review*, 18 October 1908, 2:1, 20 October 1908, 8:3, 21 October 1908, 10:3-4). It is not known when this second furnace was completed. In addition, it is not clear how long the smelter operated this second time. The local newspaper noted that the plant still had ore on its dump in March 1909 and planned to use this before shutting down, but it may have operated only sporadically after operations resumed in October 1908 (*Pend d'Oreille Review*, 12 March 1909, 1:3-4).

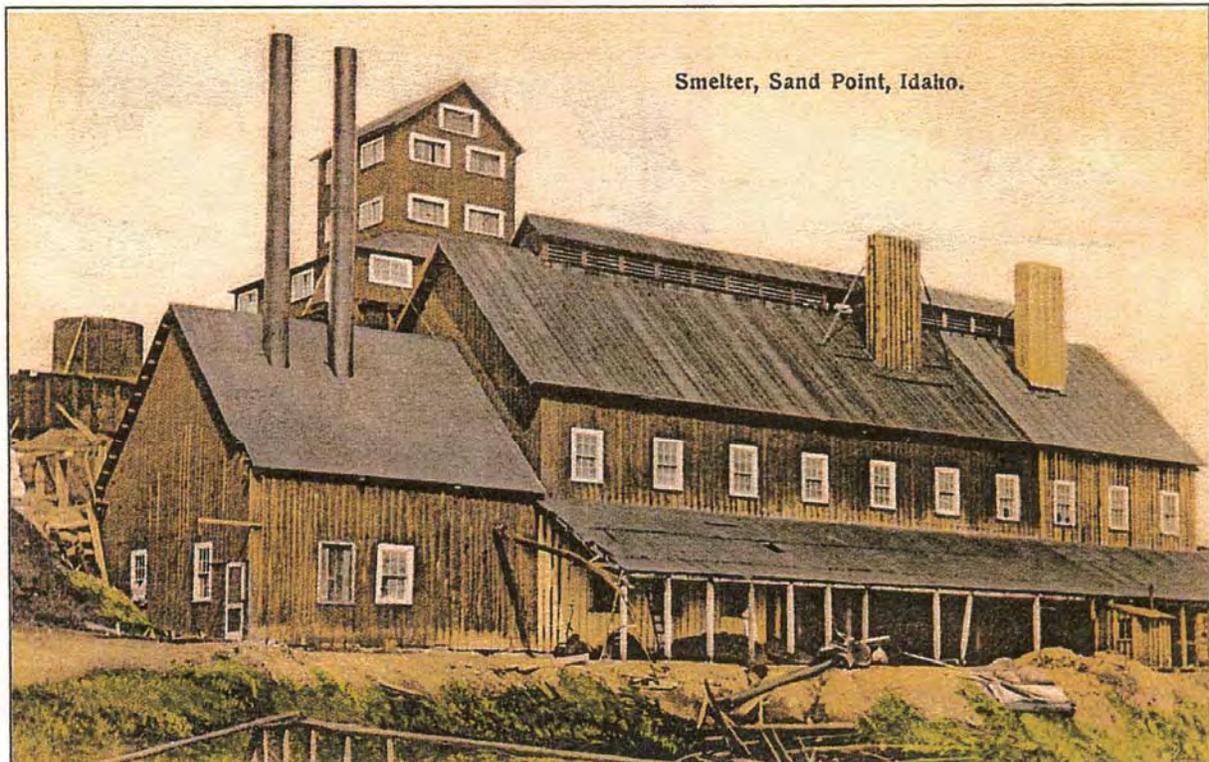


Figure 4. The Panhandle Smelter c. 1909.

Foiled Again!

Once again, a tangle of litigation brought work at the smelter to a halt. The Greenough brothers filed a suit in March 1909 against Idaho Smelting and Refining Co. and its president, J. Herbert Anderson, charging the company with over-issue of stock and Anderson with dishonesty. The district court responded by appointing John B. Mocine, an agent and employee of the Greenoughs, as receiver in the state of Idaho. A second suit against the smelter, presumably brought by the Greenoughs, was filed in Spokane, the company's principal place of business; this action resulted in the appointment of a second receiver for Washington state, A. Starke Oliver. W. A. Murphy, a stockholder and original vice president of Panhandle Smelting and Refining Co., filed a third lawsuit in Bonner County in April 1909 against the Greenough brothers and their agent, Mocine (*Pend d'Oreille Review*, 12 March 1909, 1:3-4, 23 April 1909, 5:1).

The Greenoughs' lawsuit had two major allegations. First, they claimed that they were given incomplete or inaccurate information concerning the smelter's creditors when they were investing heavily in the company. Second, they alleged that company officers issued 846,000 shares of stock more than the 5 million shares allowed, using these as security for their own private business deals. Anderson denied the charges. In explaining the over-issue of stock, he claimed that when stock in the new company was issued, approximately 800,000 shares of the old stock had been retained by attorney E. C. MacDonald instead of being canceled as required. Murphy, in his lawsuit, also denied most of the Greenoughs' allegations but admitted that smelter officials had not told the complete truth about company creditors. He asserted, however, that the Greenoughs had filed their lawsuit in an effort to close the company and force its sale, allowing them to take over (*Engineering and Mining Journal* 87, 24 April 1909:867; *Pend d'Oreille Review*, 12 March 1909, 1:3-4, 26 March 1909, 5:1-3, 23 April 1909, 5:1).

Allegations increased later that spring when smelter receiver Mocine charged Anderson with embezzlement. He claimed that company books indicated that Anderson had paid a Winnipeg firm \$1,750 using a Panhandle Smelter check when the bill was personal and not related to smelter business. S. B. Phillips, former secretary and treasurer for the smelter company, testified at Anderson's hearing in May 1909. He said that there were a number of checks written for companies that were not on company books. He described a personal account for Anderson that was maintained on company books, with both deposits and withdrawals made by Anderson. While Mocine suggested that Anderson had taken as much as \$50,000, Anderson's attorney claimed instead that his client had deposited \$198,000 and withdrawn only \$183,000. A witness for the state of Idaho claimed that Anderson had "insidiously and cunningly abstracted" \$50,000 in corporate funds in a "studied, educated fraud." The judge, however, was unable to determine if the evidence was sufficient to hold Anderson, so he was released. Anderson planned to sue Mocine for defamation of character as soon as charges were dismissed (*Engineering and Mining Journal* 87, 8 May 1909:970, 22 May 1909:1059; *Pend d'Oreille Review*, 7 May 1909, 1:1-3ff).

In defending himself against charges, Anderson countered that the Greenoughs were trying to

destroy the smelter company so they could buy it for the smelter trust. He said that while he was in New York having good success in raising money to keep the company going, Greenoughs applied for a receiver. Anderson believed they did this to hinder his fund raising and to keep him away from company affairs. With the company in receivership, investors did not want to provide capital. To stop the proceedings of both receivers, Anderson filed for bankruptcy. At that time, the company listed assets of \$201,065.92 and liabilities of \$498,952.18 (*Pend d'Oreille Review*, 7 May 1909, 1:1-3ff).

While the outcome of the charge of embezzlement is not known, the bankruptcy proceedings continued in U. S. District Court. Once the court found the company insolvent, it appointed Bruce Blake as receiver. All other actions against the smelter company were dismissed and Mocine was removed from his position of control. A trade journal wrote, "This is a virtual victory for President Anderson, who has, from the first, contended that those behind the previous actions brought against the company were actuated by personal motives." In July, Blake filed a report showing that the company's assets totaled \$222,244 and its liabilities \$501,559. The largest single debt was \$71,280 owed to Fidelity National Bank of Spokane and First National Bank of Ponderay. Bankruptcy proceedings were finally dismissed on November 2, 1909 (*Engineering and Mining Journal* 87, 12 June 1909:1207; 88, 10 July 1909:187, 13 November 1909:994).

Settlement

After the acrimonious battles of spring, Anderson and the Greenough brothers reached agreement in August 1909 to end their legal disputes, allowing work to begin on restarting the smelter. By fall, Anderson was back raising money in the East. He secured an agreement with interests connected with James J. Hill to provide enough capital to triple the smelter's capacity and keep it running as long as Anderson could contract for enough ore. By mid-December, Anderson had raised \$500,000 for operations. Prospects looked good for a while. J. J. Campbell, the new manager, arrived in Spokane in early December to begin work on ore contracts. Later that month he went to Ponderay to arrange for water for the smelter. A work crew was overhauling and repairing equipment at the facility (*Engineering and Mining Journal* 88, 14 August 1909:331, 28 August 1909:428, 9 October 1909:749, 25 December 1909:1288; *Spokesman-Review*, 6 December 1909, 8:3).

Stockholders of Idaho Smelting and Refining Co. held their annual meeting in January 1910 in Spokane. They elected Anderson as president, with the board of directors to include Anderson, Arthur B. Lee, E. K. Erwin, Thomas L. Greenough, W. J. C. Wakefield, W. W. Hindman, and J. L. Drumheller. The board announced that the creditors who furnished the \$500,000 in capital would have their investment secured by a lien on all the ore treated at the smelter. In addition, any improvements to the plant would be funded through liens on the property. The company reported plans by early March to add two furnaces to the smelter and 70 men to the crew, enabling the smelter to increase its capacity from 250 to 600 tons per day. Manager Campbell had a crew of twenty men at work getting the facility in order so that smelting could begin by

mid-March. They were waiting Anderson's arrival to put fifty men to work installing two copper furnaces. At that time, the smelter had two furnaces but used only one, giving it a capacity of 250-300 tons per day. Once again, the company officials delayed the start of operations, saying that they expected to begin on April 1. Apparently this never happened. The Idaho mining inspector noted in 1911 that Lake Pend Oreille mines had obtained a favorable shipping rate to the East Helena smelter, suggesting that they had no alternative available locally (Bell 1911:26; *Engineering and Mining Journal* 89, 22 January 1910:238, 5 March 1910:530, 19 March 1910:629; *Spokesman-Review*, 1 March 1910, 8:7).

The End

Two sheriff's sales brought an end to the smelter at Ponderay. The court ordered the first sale following foreclosure proceedings by Union Trust and Savings Bank against Idaho Smelting and Refining Co. At the sale on May 2, 1913, Union Trust paid \$250,000 for a block of properties including a number of townsite lots in Ponderay; Lot 2 and the W2NE of Section 11, T57N, R2W, with the "smelting plant, smelter, trackage and wharfage;" Lots 3, 5, and 8 in Section 4, T57N, R2W; E2NW of Section 11, T57N, R2W; associated water rights and flumes; steamboat and barges; and eight mining claims (Bonner County Deed Record, Book 31:583-585). A second sale of the same properties, on August 10, 1922, stemmed from a judgment against Ponderay Mining and Smelting Co. [sic] in favor of Union Trust Co. The sale took place on the courthouse steps and lasted just long enough for Attorney E. W. Wheelan to bid \$70,000. (Although a newspaper account claimed the bid was \$75,000, the deed record listed the amount as \$70,000.) Wheelan noted that his client, Union Trust Co., held paper covering more than \$53,000 in principal and \$22,000 in interests and costs; other expenses brought the total to more than \$80,000. He suggested that the smelter might be restored to use (Bonner County Deed Record, Book 42:157-161; *Pend d'Oreille Review*, 11 August 1922, 8:2).

The smelter did not return to use, however. Following the sheriff's sale, Union Trust Co. sold the facility to Union Iron Works of Spokane. Crews were busy by December 1922 dismantling the buildings and salvaging equipment like the Corliss engines. The crusher was sold to a road construction company, while brick from the roaster went to Humbird Lumber Co. for dry kilns and to Sandpoint Lumber and Pole Co. for its new sawmill at Troy, Montana. By that time, the town of Ponderay had fallen on hard times as well. The hotel had burned several years before, and buildings along two blocks of the main street were either collapsing or in poor repair. The bank building had been turned into a grocery store. Lots in town had lost value, with six lots selling for a total of \$30, just \$5 per lot. The big dreams hatched nearly twenty years before had come to naught (*Northern Idaho News*, 5 December 1922, 1:1).

EVALUATION

The goal of this study is to make a recommendation about the eligibility of the Panhandle Smelter. The criteria for evaluating eligibility are included in 36 CFR 60.4:

The Quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- a. That are associated with events that have made a significant contribution to the broad patterns of our history;
or
- b. That are associated with the lives of persons significant in our past; or
- c. That embody the distinctive characteristics of a type , period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. That have yielded, or may be likely to yield information important in prehistory or history.

For this historic site, research was conducted to develop an historical context as well to establish historical facts about construction and operation the Panhandle Smelter. The smelter is recommended as significant under Criterion A as the only example of an independent smelter operation in northern Idaho until the start of the Bunker Hill smelter in 1918. The site is also recommended eligible under Criterion D as an industrial archaeological site. The site retains the potential to inform about industrial construction and operation of a specialized process on a relatively small scale.

REFERENCES CITED

Aiken, Katherine.

2000 Personal communication with Nancy F. Renk, 29 November.

Bell, Robert N.

1904 *Report of the Mining Districts of Idaho for the Year 1904.*

1907 *Ninth Annual Report of the Mining Industry of Idaho for the Year 1907.*

1911 *Thirteenth Annual Report of the Mining Industry of Idaho for the Year 1911.*

Bonner County.

Deed Records, Books 7, 11, 13, 14, 15, 31, 42. Available at Recorder's Office, Bonner County Courthouse, Sandpoint.

Engineering and Mining Journal

79, 16 March 1905:544.

87, 24 April 1909:867.

87, 8 May 1909:970.

87, 22 May 1909:1059.

87, 12 June 1909:1207.

88, 10 July 1909:187.

88, 14 August 1909:331.

88, 9 October 1909:749.

88, 13 November 1909:994.

88, 25 December 1909:1288.

89, 22 January 1910:238.

89, 5 March 1910:530.

89, 19 March 1910:629.

Fahey, John.

1978 *The Days of the Hercules.* University Press of Idaho, Moscow.

Kootenai County Republican.

14 November 1902, 1:4, Smelter Looks Like Reality.

6 February 1903, 1:3, Looks Like Business.

Miss, Christian J. and Lorelea Hudson

1986 Cultural Resources Reconnaissance of the Albeni Falls Project, Northern Idaho. Technical Report Prepared by Cultural Resource Consultants, Inc., Sandpoint, Idaho for the U.S. Army Corps of Engineers, Seattle District, North Pacific Division, Contract No. DACW67-85-M-0024.

Northern Idaho News.

15 December 1905, 29, Ponderay & the Smelter.

5 December 1922, 1:1, Passing of the Old Smelter.

Pend d'Oreille Review.

- 15 September 1905, 1:4, For the Purchase of Ores.
- 6 October 1905, 1:5, Notes From the Smelter.
- 3 November 1905, 1:3, Blow In January 1.
- 10 November 1905, 1:5, Getting Ready To Smelt.
- 17 November 1905, 1:1, Smelter Wins Case.
- 16 May 1907, 1:3, Smelter Affairs Go To Court.
- 6 June 1907, 4:2, Is Ready To Smelt.
- 13 June 1907, 1:3, Smoke At Smelter.
- 11 July 1907, 1:6, Smelter Orders New Furnace.
- 18 July 1907, 1:3, Merry War Goes On.
- 22 August 1907, 1:6, Smelter Closes For Few Days.
- 7 November 1907, 1:5, Smelter Pays Labor Claims.
- 12 March 1909, 1:3-4, Receiver For Smelter.
- 26 March 1909, 5:1-3, Defends Anderson.
- 23 April 1909, 5:1, Merry War Goes On.
- 7 May 1909, 1:1-3ff, Anderson Is Dismissed.
- 11 August 1922, 8:2, Ponderay Smelter Changes Hands at Sheriff's Sale.

Spokesman-Review.

- 18 February 1903, 5:5, Will Blow In Smelter Sept. 1.
- 11 March 1903, 5:2, Smelter Work Starts Soon.
- 25 March 1903, 7:3, Paul Johnson Builds Smelter.
- 25 April 1906, 8:3, F. W. Guilbert and C. L. Pugh Resign.
- 2 October 1908, 2:3, Big Day At Ponderay.
- 18 October 1908, 2:1, Helena Men Go To Panhandle.
- 20 October 1908, 8:3, Mining Men View Smelter Start.
- 21 October 1908, 10:3-4, Smelter's Start Viewed By Scores.
- 6 December 1909, 8:3, Ponderay Smelter to Reopen.
- 1 March 1910, 8:7, Smelter Starts Operation Today.

3.
**Black Rock Final Environmental Assessment, Ponderay,
Idaho**

**BLACK ROCK
DRAFT ENVIRONMENTAL ASSESSMENT
PONDERAY, IDAHO**

RECEIVED
SEP 03 2003
DEQ-Coeur d'Alene
Regional Office



**US ARMY CORPS OF ENGINEERS
SEATTLE DISTRICT**

**ALBENI FALLS DAM
IDAHO**



**US Army Corps
of Engineers.**
Seattle District

List of Tables.....	ii
This page left blank intentionally.....	iii
1.0 INTRODUCTION.....	4
1.1 Background.....	4
1.2 Authority.....	5
2.0 PROPOSED ACTION.....	5
2.1 ALTERNATIVES.....	6
2.1.1 NO ACTION.....	6
2.1.2 PREFERRED ALTERNATIVE.....	6
3.0 EXISTING ENVIRONMENT.....	6
3.1 Hydrology and Geology.....	6
3.2 Ecology.....	7
3.3 Water Quality.....	7
3.4 Vegetation.....	8
3.5 Fish.....	8
3.6 Wildlife.....	8
3.7 Threatened and Endangered Species.....	9
3.8 Cultural and Native American Concerns.....	9
3.9 Land Use.....	10
3.10 Utilities and Public Service.....	10
3.11 Air Quality and Noise.....	10
3.12 Transportation.....	10
3.13 Socio-Economic.....	11
3.14 Recreation.....	11
3.15 Aesthetics.....	11
4.0 ENVIRONMENTAL EFFECTS.....	11
4.1 Geology and Hydrology.....	11
4.2 Ecology.....	12
4.3 Water Quality.....	12
4.4 Vegetation.....	12
4.5 Fish.....	13
4.6 Wildlife.....	13
4.7 Threatened and Endangered Species.....	13
4.8 Historic Properties (“Cultural Resources”) and Indian Tribal Concerns.....	14
4.9 Land Use.....	15
4.10 Utilities and Public Service.....	15
4.11 Air Quality and Noise.....	15
4.12 Transportation.....	15
4.13 Socio-Economic.....	16
4.14 Recreation.....	16
4.15 Aesthetics.....	16
5.0 UNAVOIDABLE ADVERSE EFFECTS.....	16
6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES.....	16
7.0 CUMULATIVE IMPACTS.....	17
8.0 COORDINATION.....	17
9.0 ENVIRONMENTAL COMPLIANCE.....	17
9.1 National Environmental Policy Act.....	17
9.2 Endangered Species Act Section 7 Consultation.....	17
9.3 Clean Water Act Compliance.....	18
9.4 Hydraulic Permit Approval.....	18
9.5 Fish and Wildlife Coordination Act.....	18
9.6 National Historic Preservation Act.....	18
9.7 Executive Order 12898, Environmental Justice.....	18
10.0 CONCLUSION.....	19
11.0 REFERENCES.....	19
Appendix A.....	20

List of Tables

Table 1. Threatened and Endangered Species of the Pend Oreille Lake and Albeni Fall Dam.....	9
Table 2. Effect Determination Summary.....	14

This page left blank intentionally.

1.0 INTRODUCTION

This Draft Environmental Assessment (EA) evaluates the impacts of Albeni Falls Project Black Rock Bank Stabilization project. The primary focus of the project is the construction of rock riprap bank stabilization along approximately 3,300 feet of shoreline. When complete, the structure will provide protection against erosion to an elevation of 2068.0 feet (MSL) or 5.5 feet above the regulated summer pool level, and will have a 12-foot wide maintenance trail running atop the length of the structure. Access for the construction will require the maintenance and restoration of approximately 2,000 feet of existing unpaved roadway and improvement, maintenance and restoration or removal of an additional 2,000 feet of dirt trail or primitive road. Three temporary railroad crossings will be installed to provide access to the work site during construction. The work will take place within easement areas acquired by the Corps for the purpose of bank stabilization on private, public, and railroad-owned lands being impacted by shoreline erosion.

Comments on this draft EA maybe sent to George A. Hart, 4735 East Marginal Way South Seattle, Washington 98134-2385 or via email George.A.Hart@usace.army.mil or phone 206-764-3641. Comments must be received by October 01, 2003

1.1 Background

Black Rock, sometimes called Ponder Point, is the name associated to the section of shoreline that is continuously eroding into Pend Oreille Lake and is located in Section 11, Township 57 North, Range 2 West Bonner County, Ponderay, Idaho.

This area is also the location of the once operational smelting company that was constructed in 1903 at a cost of \$110,000. This new company had chosen this site because it was on the Northern Pacific Railroad and was only one mile from the Great Northern, which intended to build a spur to the plant. The men behind the venture started a new town at the plant and called it "Panhandle" which later became Ponderay. Although the smelter planned to process 300 to 350 tons of ore a day, their plans never came to fruition as the mines started to close. The end of the local smelting business came as well.

What was left behind was a very large slag pile that is referred to as Black Rock. To the western most section of the proposed project are the piles of ash that were deposited by the coal burning locomotives during that era. When this proposed bank protection project came about in 1999, those two remnant areas were of concern for potential sources of chemical contamination. The U.S. Army Corps of Engineers (Seattle District) took samples of the area and submitted those to Sound Analytical Services, Inc., of Tacoma, Washington to run test for identification of potential chemicals that may be associated with the soils at Black Rock and the Ash Pit, plus soils between the two locations. The results (Appendix A) showed that major chemicals of concern were either not leaching

into the lake or were not in significant enough quantities to be of major concern. This was documented by an email from Idaho Department of Environmental Quality on May 05, 2000 after additional tests of the ground water, lake water, and spring water were made to determine levels of silver and arsenic. The United States Fish and Wildlife Service conducted similar test and they also gave a non-response to chemicals of concern.

Erosion from wave action and underground springs has caused incremental bank failure along the north shore of Pend Oreille Lake near the Black Rock site. The mainline tracks of the Burlington Northern Santa Fe Railroad (BNSFRR) and Montana Rail Link (MRL) run adjacent to the north shore of Pend Oreille Lake and the erosion and bank failure have progressed well outside of the flowage easement and encroached as much as 50 ft into the right of way of the BNSFRR/MRL over a length of 1500 ft, and is rapidly eliminating the narrow strip of private land between the reservoir and the railroad over another 1800 ft. Soils in this area are subjected to inundation during full pull elevation of the lake and are subjected to high winds and large waves during that period. During winter drawdown the soils have a tendency to slough off or erode as the soil is saturated; with water pressure holding the soil in place (at high pool) and then when removed the tendency is to erode or slough off onto the shallow areas vacated by the receding lake. This has lead to the potential for interruption of a mainline railroad if the erosion is not stopped at its current location, and the high bluffs between the lakeshore and the railroad are allowed to further de-stabilize. Reaches of the lake shoreline to the northeast and southwest of this project site have been stabilized in similar fashion through construction contracts or other agreements dating back to 1964.

1.2 Authority

The Albeni Falls Dam project was authorized under the Flood Control Act of 17 May 1950 (Public Law 516, 81st Congress, 2nd Session) in accordance with Senate Document 9, 81st Congress, First Session, as part of a comprehensive plan for the development of the Columbia River System. Funds are allocated each year via Congress for Operation and Maintenance of the Albeni Falls Dam Project.

The authority for this proposed project is Section 9 of the Flood Control Act of 1946, 33 USC 701(q):

"When the Chief of Engineers shall find that any highway, railway, or utility has been or is being damaged or destroyed by reason of the operation of any dam or reservoir project under the control of the Department of the Army, he may utilize any funds available for the construction, maintenance or operation of the project involved for the repair, relocation, restoration or protection of such highway, railway or utility".

2.0 PROPOSED ACTION

The proposed project is to stabilize approximately 3300 feet of shoreline to prevent further erosion of valuable riparian habitat and to stop further encroachment into BNSFRR property. Erosion and bank failure has progressed outside the flowage easement area and encroached approximately 50 feet into the right of way of the BNSFRR/MRL (Montana Rail Link) over a length of 1500 feet and is rapidly eliminating the narrow strip of private land between the reservoir and the railroad over another 1800 feet.

2.1 ALTERNATIVES

There were two alternatives considered for the proposed project. The no action alternative and the preferred alternative were reviewed for the proposed project. Those two alternatives are briefly discussed below.

2.1.1 NO ACTION

Under the no action alternative the shoreline would continue to erode and in the future would place the Burlington Northern Santa Fe Railroad (BNSFRR) and Montana Rail Link (MRL) in jeopardy. This action would also lead to a further reduction in riparian habitat along the 3300 feet of shoreline, as it exists today.

2.1.2 PREFERRED ALTERNATIVE

Bank stabilization was chosen at the proposed project site to prevent further erosion and encroachment onto BNSFRR properties, private lands and the complete loss of riparian habitat. This alternative was also chosen to comply with Section 9 of the Flood Control Act of 1946, 33 USC 701(q)

3.0 EXISTING ENVIRONMENT

3.1 Hydrology and Geology

The Pend Oreille River at Albeni Falls Dam has a watershed of about 24,200 square miles, which supplies an average stream flow of about 25,930 cubic feet per second. The Clark Fork River is the lake's largest tributary and contributes about 86 percent of the total flow. Pend Oreille Lake is one of the deepest and largest lakes in the western United States. Conditions in Pend Oreille Lake, such as the stage of the lake and timing of the inflow, are influenced not only by the project operation but also by the operation of upstream projects and basin hydrologic factors.

Pend Oreille Lake lies in the Purcell Trench, a deep, glacially carved, U-shaped valley separating the Cabinet, Selkirk, and Coeur d'Alene Mountain Ranges. Sheer rock slopes that continue steeply below the water surface towards the bottom bound much of the

lakes shoreline. The remainder of the perimeter is a combination of shifting river deltas, flood plain margin, and relict glacial terraces.

The section of shoreline that is exclusively glacial terrace runs from Dover northeast past Sandpoint to Kootenai. It is composed predominately of sand overlying silt and clay and is characterized by perched water tables and unstable, erosion-prone soil conditions. The Black Rock-Ponder Point area lies within this glacial terrace.

3.2 Ecology

The dominant vegetation type surrounding Pend Oreille Lake consists of coniferous forest with scattered stands of deciduous trees in the moist lowland areas adjacent to the lake. Much of the forest is second growth. Agricultural lands, particularly pastured meadows, have been developed on the once-forested flatlands. Unfortunately, large portions of these meadows have now been converted into housing developments. The entire lake has areas that are completely developed as housing areas, while other remote areas of the lakeshore still remain forested (mostly on the south side of the lake).

east?

The lake supports a large number of birds, some of which are permanent residents. The area is a major stop for migratory waterfowl in both spring and fall. This area also contains a high population of bald eagles that not only winter over but nest in the area as well; this is because the lake does not completely freeze over during the winter.

3.3 Water Quality

Pend Oreille Lake is a cool, temperate water body with partial mixing of the water column in midwinter and spring. Surface water temperature of 50 degrees F (10 degrees C) is usually reached by April-May and maximum summer temperatures of about 75 degrees F (24 degrees C) occur in July and August. Dissolved oxygen (DO) concentrations remain at or near 100 percent saturation at all depths year round. The high DO content, low organic production in the surface waters and low nutrient concentrations characterize Pend Oreille Lake as oligotrophic (i.e., having low nutrient supply).

The lake meets all Federal water quality goals and state standards. The State of Idaho has designated Pend Oreille Lake and certain tributaries as special resource waters, a classification that allows no reduction in water quality.

Localized turbidity due to wave erosion and sloughing of unconsolidated shoreline materials during summer pool levels is evident between Ponderay and Albeni Falls Dam. There is no apparent change in downstream water quality as a result of the operation of the dam.

really?!

3.4 Vegetation

Most of the area that comprises the approximately 3300 feet of shoreline and 100 to 300 feet landward consists of Cottonwood, Birch, western red cedar, and western hemlock mix in the moister, shadier interior, with some Douglas-fir, western larch, western white pine, and lodgepole pine in the drier areas. Utah honeysuckle, pachistma, black hawthorn, snowberry, huckleberry, Oregon grape, ocean-spray and ninebark are some of the under story shrubs found on the site. Forbs include western goldthread, bride's bonnet, common yarrow, starry Solomon-seal, trillium, and glacier lily. A field inspection determined that no impact to wetlands would occur. ?

3.5 Fish

The most important fishery in the lake is for the Kokanee salmon, but the lake sustains populations of rainbow (Kamloops) trout, Dolly Varden char (Bull Trout), and other species of fish.

Lake Pend Oreille is home to a variety of native and non-native fish and supports a significant recreational and sports fishery. Major species include the Bull Trout, Rainbow Trout, Lake Trout (Mackinaw), Cutthroat Trout, Kokanee (Sockeye Salmon), Bass, Whitefish, and Perch and Sunfish. Cold-water species tend to occupy the deeper waters of the main lake while the warm water species are more prevalent in the near-shore areas and the Pend Oreille River between Sandpoint and the Dam. The Black Rock area provides some habitat value, especially to the warm-water species, but the lakebed condition and turbidity during the summer season likely minimizes the benefits to fish. The lakebed is characterized by shallow water at summer pool and is exposed and dry during most of the drawdown period.

3.6 Wildlife

State and Federal agencies intensively monitor waterfowl for their importance to hunting as a recreational activity. The number of ducks can range from 47,500 to as high as 142,600 (entire lake).

While most of the 23 species of waterfowl recorded are migrants or winter residents, several resident species of ducks and Canada geese nest and rear their young on and around the lake. Mallards, three species of teal, widgeons, coots, and pied-billed grebes are among the many species reported to nest along the shoreline and/or in adjacent marshes.

Birds of prey such as hawks, owls, and bald eagles are associated with the Pend Oreille Lake and riparian areas. Bald eagles have been nesting in this area for as long as recorded history goes back.

Ospreys are found in the area from Mid-march through October. The osprey population of northern Idaho and northeastern Washington constitute the largest nesting concentration in the western states and perhaps the entire country.

3.7 Threatened and Endangered Species

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Several species listed as either threatened or endangered are potentially found near the project areas (see Table 1.).

Table 1. Threatened and Endangered Species of the Pend Oreille Lake and Albeni Fall Dam.

Scientific Name	Common Name	Listing Status
<i>Canus lupus</i>	Gray Wolf	Endangered
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Threatened
<i>Spiranthes diluvialis</i>	Ute ladies'-tresses	Threatened
<i>Salvelinus confluentus</i>	Bull trout	Threatened
<i>Lynx canadensis</i>	Lynx	Threatened
<i>Gulo gulo luscus</i>	Wolverine	Species of concern

Bald eagles and bull trout are known to occur in the vicinity of the project. The Gray wolf, Ute ladies'-tresses, wolverine, and Lynx do not have sufficient habitat to occur within the project vicinity.

Information on known occurrences of endangered and threatened species in the project vicinity, and the potential impacts of the proposed projects on these species are addressed in a separate Biological Assessment.

3.8 Cultural and Native American Concerns

The proposed project area is within the lands ceded by the Kalispel Tribe of Indians; the Kootenai Tribe of Idaho, Coeur d'Alene Tribe, Confederated Salish and Kootenai Tribes of the Flathead Reservation, and Spokane Tribe of Indians also have cultural interests in the area. The project area was surveyed in 1999 by an archaeologist with the U.S. Army Corps of Engineers, Seattle District; no prehistoric archaeological sites are present in the project area. An historic archaeological site (10-BR-539) in the project area comprises several concrete foundations, a slag heap ("Black Rock") and debris from industrial use

of the site in the early 20th century by the Ponderay Smelting and Refining Company (Renk 2001). The site has been recommended as eligible for the National Register of Historic Places based on Criteria A and D. A summary of findings will be attached to the final Environmental Assessment.

3.9 Land Use

Land use in the project area is not expected to change significantly as a result of the construction work. The underlying land will remain in the ownership of the railroad, City of Ponderay, or private parties with the Corps interest limited to easements allowing construction of the riprap structure or flowage associated with the reservoir. The shoreline will be stabilized, but the potential for development is limited by topography, water table, flood plain and building setback requirements, and lack of land access.

really? 4,000' new road +
dike on top of bank

3.10 Utilities and Public Service

There will be no disruption to local customers during this work. There are no utilities at the proposed project site, and care will be taken to protect utilities along the haul route to be used during the work. The local community should not experience any electrical disturbance from this construction activity. The railroad sidings adjacent to the haul route will remain active during the construction. Up-front and continuing coordination with Montana Rail Link and their lessee, Montana Rockies Rail Tours, will ensure that impacts on their operations is minimized.

3.11 Air Quality and Noise

Air quality meets the standards as set forth by the Idaho Department of Environmental Quality and will not be affected by the construction of the bank stabilization structure. Maintenance of unpaved haul roads and work during the winter months will minimize fugitive dust. Noise will be intermittent along the haul route and will vary at the work site depending on the type of equipment operating during construction. Work will be limited to daylight hours only thus eliminating disturbing noise during the nighttime hours. All noise factors have been addressed for their effect on threatened and endangered species.

3.12 Transportation

Trucks hauling material for this project will utilize public highways and secondary roads as necessary to travel to and from the quarry or materials pit. The number of trucks, and the time between loads will allow the haul to proceed with little or no impact on normal traffic during the winter season. Temporary access roads will be constructed or improved at the beginning of the project. Because most of the temporary road is south (beyond) the railroad crossings, the roads will be closed to the public and blocked when not in use by

occur over time with the reduction of sediment from the erosion process would be the potential for the area immediately in front of the bank stabilization structure to be deepened. As the wave and winds work this area after construction there is potential for the sediment that has settled in the shallow area to disperse into the deeper portions of Pend Oreille Lake. This sediment will disperse rapidly with the current and should pose no problem with hydrology or the geology of this location.

4.2 Ecology

what about riparian veg?

There will be a loss of approximately 3.4 acres of mud flat when the project is completed. But at the lost of three tenths of an acre each year the result will be a 3 to 4 acre loss of existing habitat within 10 years. The project, when completed, will prevent over the long-term further loss of the approximately 7.6 acres of existing riparian and understory habitat from eroding into the lake.

This will also stop the loss of potential eagle perch trees that will continue to fall or erode into the lake if the erosion process is not checked. The understory vegetation that supports other species of wildlife would be lost over time and subsequently the wildlife as well.

4.3 Water Quality

Since no in-water work will occur, no significant water quality impacts are expected to result from the proposed construction activities. The following management actions would be implemented during construction activities. These conditions are included in the project Construction Management Plan; a Corps inspector would be on-site to ensure that contractors abide by these requirements.

1. All grading and placement work will be accomplished in the dry.
2. Petroleum products and other toxic material will be stored in a staging area above summer pool elevation, and will be prevented from entering surface waters. Refueling of equipment will be restricted to areas at least 100 feet from the lakebed.
3. If the contractor observes distressed or dead fish, or any obvious sign of contamination such as oil sheen or odor, all work will cease and the inspector shall be notified.
4. A spill response plan will be prepared as required by the Corps, and the contractor(s) working on the placement of the rock will be required to have spill kits and trained employees on site at all times during active construction.

4.4 Vegetation

Care will be taken to minimize impact on vegetation along haul routes, and along the shoreline where the riprap will be placed. Trees that are currently down and lying on the lakebed will be cut or pulled. Much of this woody material will be incorporated into the

structure for fish habitat. The remainder will be removed from the site for disposal or salvage. Disturbed areas associated with the temporary access roads will be seeded to re-establish cover and prevent erosion.

4.5 Fish

Potential impacts to fishery resources were considered during the design of the proposed work, and steps have been taken to minimize construction impacts: no in-water work will occur during construction. Storm water run-off will be controlled via best management practices.

4.6 Wildlife

Several bird species inhabit the local bird population. However, these construction activities should not have a significant effect on the local bird population. No nesting or roosting habitat will be physically altered. Prey availability in any foraging habitat in the project area would be only temporally affected, if at all.

4.7 Threatened and Endangered Species

Potential impacts of the proposed projects on threatened and endangered species are addressed in a separate Biological Assessment (BA). This BA provides the Corps' rationale for the effect determinations briefly described below and summarized in Table 2.

Bald eagles are known to nest, winter over, and feed in the area near the project site; however, there is one known nest within two miles of the project site. Due to the concern for impacts on wintering bald eagles, the area near the construction work will be monitored on a daily basis for wintering eagles; no work will be conducted if it appears there will be a disturbance to eagles. They do winter over and therefore work will be monitored from January 1st through March 1st, the end of the wintering over period. Ute Ladies-tresses, gray wolf, Lynx, and wolverine are not known to inhabit the area where the project is located and the project will have no effect on the Lynx and not likely to adversely affect the Ute Ladies-tresses, gray wolf and wolverine. There will be no in-water work so the project will not likely adversely affect bull trout and not likely to jeopardize westslope cutthroat trout. The project is not likely to adversely affect bald eagles, and may be beneficial by preventing further loss of perch trees along the shoreline.

Table 2. Effect Determination Summary

Scientific Name	Common Name	Effect Determination
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Not likely to adversely affect
<i>Canus lupus</i>	Gray Wolf	Not likely to adversely affect
<i>Spiranthes diluvialis</i>	Ute Ladies-tresses	Not likely to adversely affect
<i>Salvelinus confluentus</i>	Bull Trout	Not likely to adversely affect
<i>Lynx canadensis</i>	Lynx	No Affect
<i>Gulo gulo luscus</i>	Wolverine	Not likely to jeopardize the continued existence

4.8 Historic Properties (“Cultural Resources”) and Indian Tribal Concerns

Federal, State and Indian tribal archaeologists have reviewed the proposed work and have concluded that construction has potential to affect site 10-BR-539, which is recommended as eligible for the National Register of Historic Places. The Corps has conducted archaeological investigations in all construction impact areas to identify whether the planned work actually would affect 10-BR-539, and if so, in what ways. The Corps has determined that earth disturbances associated with the construction will not affect 10-BR-539 in any way that will degrade the qualities that make it eligible for the National Register. The current design for the project causes no direct losses of undisturbed parts of the archaeological site, and construction of the project in fact would protect the site from further losses now being caused by bank erosion and slope failure.

The Corps has determined that the proposed federal action falls within the scope of the 1991 Federal Columbia River Power System Hydroelectric Operations Programmatic Agreement attached to an environmental impact analysis of the Intertie Development and Use program (“IDUPA”). In accordance with the provisions of that agreement, specifically Stipulation 3, Interim Management, the Corps will follow the procedures of 36 CFR Part 800 in effect in 1991 when the IDUPA was signed, in addition to other provisions of the IDUPA that may apply. The Corps has discussed the cultural and

historic aspects of the proposed action with the Albeni Falls Dam cultural resource management Cooperating Group, a technical-level panel of federal, tribal, state, and local subject-matter experts, and is communicating about the project separately with Indian tribal governments. The Corps has recommended that the proposed work proceed with a "no adverse effect" finding. To assure that the proposed work adheres to the conditions for "no adverse effect", the Corps will continue to monitor the design and construction. However, should any previously undiscovered historic properties or human remains inadvertently be encountered during construction, all work in the affected area will cease. The Corps promptly will notify the Idaho State Historic Preservation Officer and local Indian Tribes and will work with them to develop and coordinate a plan for treating the properties or remains.

4.9 Land Use

The construction activities will not change the land use designations on the property. Since Corps interests are limited to easement for the operation and maintenance of the bank protection structure, the underlying owners retain the rights to use the property consistent with laws and other regulations. There should be no direct increase in local development as a result of the construction of the bank protection or the maintenance the Corps will be performing in the future.

4.10 Utilities and Public Service

The current level of service for telephone, cable, and electric utilities would be maintained in the local community.

4.11 Air Quality and Noise

During construction, there would be a temporary and localized reduction in air quality due to emissions from equipment operation during hauling, down-tree removal, access road development, and general construction of the bank stabilization. However, these effects would be temporary and localized, and would occur only during daylight hours. As a result, impacts would not be significant.

4.12 Transportation

Construction vehicles may interrupt local traffic when entering or leaving the construction area and while on the city truck route. Interruptions are expected to be minimal. Any damages that may occur to the city truck route (Elm Street), or to existing improved roads within the railroad right-of-way, as a result of the Corps work, will be repaired at Corps expense. Repairs and restoration will be to a condition as good as that which was present prior to the start of the Corps work on this project.

4.13 Socio-Economic

Construction activities associated with this project will not adversely impact the two major sectors of the economy - tourism and recreation. The proposed project should have a positive economic effect in that contract equipment will be hired to perform the work, materials will be purchased from local quarries and other suppliers, and services and facilities in the greater Ponderay/Kootenai/ Sandpoint area will be utilized in support of the effort. The work will be done in the winter months, normally a slow period in the construction industry.

4.14 Recreation

There will be no negative impact on recreation due primarily to the season of the year - winter - and the fact the work will be done "in-the-dry" during annual reservoir drawdown. Recreation may benefit from the project somewhat due to elimination of sediment entering the water, stabilization of the shoreline, placement of large logs and root wads during the construction process for fish habitat, and better and safer access to the shoreline on public and private lands.

4.15 Aesthetics

During construction, there would be some disturbance from heavy equipment. Such disturbance is not expected to be significant. After construction is complete the site will look different immediately near the shoreline with a riprap bank stabilization structure in place of fallen trees. However, this structure will prevent further loss of trees and will maintain the remaining habitat in place. In the course of the landscape adjusting to the structure, the disturbance that will occur during construction will be negligible.

5.0 UNAVOIDABLE ADVERSE EFFECTS

Unavoidable adverse effects of the proposed projects include: 1) the disruption of local and tourist traffic by construction vehicles; 2) disruption to local birds in the area due to noise of construction activities; and 3) the loss of 3.4 acres of mud flat habitat. The area is a highly disturbed area already and birds are the most prevalent species on site. Some small mammals maybe disturbed. For reason discussed in this document, the Corps has determined that these effects are not significant.

6.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

No federal resources will be irreversibly and irretrievably committed to the projects until the EA is finalized and the FONSI has been signed.

7.0 CUMULATIVE IMPACTS

Any cumulative impacts of this maintenance project would be highly localized, and would not significantly affect the quality of the natural or built environments. In both cases, the inconvenience of minor short-term disruptions is outweighed by long-term potential benefits from bank stabilization and no further loss of trees or under story vegetation due to erosion.

8.0 COORDINATION

The following agencies and entities have been involved with the environmental coordination of the proposed project:

- U.S. Fish and Wildlife Service (USFWS)
- Idaho Department of Fish and Game (IDFG)
- Idaho Department of Lands (IDL)
- Idaho Department of Environmental Quality (IDEQ)
- COOP for Cultural Resources

The area of concern was the timing window of construction. Based on the USFWS concern for wintering eagles monitoring will occur daily during construction prior to the start of the day for eagles that may be within ¼ mile of the project area. It was also noted there is one eagle nest approximately two miles from the project site.

9.0 ENVIRONMENTAL COMPLIANCE

9.1 National Environmental Policy Act

This Environmental Assessment, prepared August 2003, is a compilation of environmental information on the project related to Black Rock Bank Stabilization. The BA is being coordinated with state, federal, and local agencies. Any comments or concerns will be contained in the Final Environmental Assessment.

9.2 Endangered Species Act Section 7 Consultation

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration

impacts to federally listed or proposed threatened or endangered species. A Biological Assessment was submitted to USFWS on July 18, 2003 for their concurrence of findings.

9.3 Clean Water Act Compliance

A 404(b)(1) evaluation, which demonstrates compliance with the substantive requirements of the CWA, is required for work involving discharge of fill material into the waters of the United States. Since there will be no in-water work but a portion of the structure will become wet during full pool, a 404(b)(1) evaluation was prepared for this project.

9.4 Hydraulic Permit Approval

No HPA was required.

9.5 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. This goal is accomplished through Corps funding of U.S. Fish and Wildlife Service habitat surveys evaluating the likely impacts of proposed actions, which provide the basis for recommendations for avoiding or minimizing such impacts. A Fish and Wildlife Coordination Act Report is not required for maintenance work.

9.6 National Historic Preservation Act

The National Historic Preservation Act (16 USC 470) requires that the effects of proposed undertakings or actions on properties (such as archaeological sites, buildings, structures, or objects) included or eligible for the National Register of Historic Places must be considered. Affected State and/or Tribal Historic Preservation Officers (SHPO) and the Advisory Council on Historic Preservation (ACHP) must be afforded an opportunity to comment on the undertaking, and the agency also must consult with affected Indian tribes. The proposed undertaking as described in this EA was reviewed by archaeologists of both the Corps and the Kalispel Tribe's Natural Resources Department. The review findings have been taken into account to develop a program of archaeological investigations and management measures that will prevent adverse effects of construction on eligible properties. Consultation with the Idaho SHPO, affected Indian Tribes and the ACHP on the proposed program will be documented in the Final Environmental Assessment.

9.7 Executive Order 12898, Environmental Justice

Executive Order 12898 directs every federal agency to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations.

The potentially affected community does include a minority and/or low-income population. A query of the Idaho Census for 1998 indicated that Bonner County contained a population of 98% Caucasian, and less than 16% of Bonner County's population had income below the poverty level.

The project does not involve the sighting of a facility that will discharge pollutants or contaminants, so no human health effects would occur. Maintenance of this structure would not negatively affect property values in the area, or socially stigmatize local residents or businesses in any way. No interference with local Native American Nation's treaty rights would result from the proposed project; construction activities would not physically interfere with fishing, or impact fishery resources.

Since no health and adverse effects are anticipated to result from the project, the Corps has determined that no disproportional impacts would occur.

10.0 CONCLUSION

Based on the above analysis, this project is not a major Federal action significantly affecting the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement

11.0 REFERENCES

Associates, Inc. Draft Report for the U.S. Army Corps of Engineers, Seattle District. Seattle.

Idaho Department of Environmental Quality. <<http://www2.state.id.us/deq>

Idaho State Census. <<http://www.venus.census.gov/>

Renk, N.F. 2001. National Register of Historic Places Evaluation of the Panhandle Smelting and Refining Company Facility, Ponderay Idaho. Northwest Archaeological Inc. Draft Report for the U.S. Army Corps of Engineers, Seattle District. Seattle.

the Corps contractors. Temporary roads placed on the railroad right-of-way will be restored or removed to satisfy the requirements of MRL. Temporary crossings will be removed by the railroad to prevent unauthorized access. Elm Street, the City truck route, will be repaired as necessary to restore it to a condition at least as good as that documented prior to Corps use.

3.13 Socio-Economic

The project is located adjacent to the city of Ponderay. The immediate Black Rock area is used as a primitive recreation and swimming area during the summer months, but is only infrequently used during the winter by hunters. Under agreement with the landowner at the site, placement of the riprap structure will end approximately 100 feet west of Black Rock and will not impact the area now used by swimmers and other users. The proposed project area holds no other significant socio-economic impact to the area.

3.14 Recreation

Recreation is very important industry for the local and county community governments. Fishing, water skiing, snow skiing, hunting, camping, and bird watching are important recreational activities. The undeveloped shoreline area that is being protected by the bank stabilization project is now lightly utilized as a recreational area by the owners and the public. A stabilized shoreline, and improved access along the maintenance trail, may help to provide economic benefits to the local community by providing access to the Pend Oreille Lake shoreline, subject to restrictions imposed by the various owners of the underlying properties.

3.15 Aesthetics

The proposed project area has the appearance of a shoreline without development but one that is in a state of constant erosion, continually loses trees and other vegetation, and suffers near-constant turbidity. The remaining upland area will eventually lose that undeveloped/wild appealing shoreline appearance if erosion is not checked and would disappear in time.

4.0 ENVIRONMENTAL EFFECTS

4.1 Geology and Hydrology

All of the work will be conducted in the dry for this proposed project. All major Best Management Practices will be in effect throughout the construction process. What may

Appendix A



Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: saincl@uswest.net



TRANSMITTAL MEMORANDUM

DATE: December 22, 1999

TO: David Rees
U.S. Army Corps of Engineers, Seattle District
P.O. Box C-3755
Seattle, WA 98124

PROJECT: Powers Pt. Bank Protection Invest.- Sandpoint, ID

REPORT NUMBER: 85895

Enclosed are the test results for two samples received at Sound Analytical Services on December 2, 1999.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

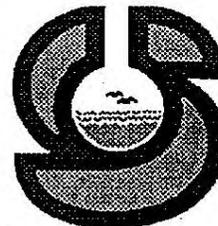
Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

A handwritten signature in cursive script that reads "Dawn Werner".

Dawn Werner
Project Manager

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: sainc1@uswest.net



ANALYTICAL NARRATIVE

Client: U.S. Army Corps of Engineers, Seattle District Date: December 22, 1999
Project: Powers Pt. Bank Protection Invest.- Sandpoint, ID Lab No.: 85895
Delivered By: Delivered by Submitter

Condition of samples upon receipt: Samples were received in good condition. The cooler temperatures are recorded on the cooler receipt forms included in the chain of custody section of the package. Chain of custody was in order.

Sample Identification:

<u>Lab. No.</u>	<u>Client ID</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>Description</u>
85895-1	PP-Slag 112499	11-24-99	solid	Black rocks
85895-2	PP-Ash 112499	11-24-99	solid	Moist, black/yellow/orange sand

SAMPLE EXTRACTION AND ANALYSIS

TOTAL METALS

Samples 85895-1 and 85895-2 were analyzed for total metals in accordance with EPA Methods 6010/6020/7471. The samples were digested on 12-6-99 and analyzed on 12-6-99 and 12-7-99, which was within the required holding time.

Low-level contamination was present in the method blanks associated with sample batches S735 and S725. The reported values are above the MDL, but below the PQL. The data are flagged "B1" or "B2" as appropriate.

The percent recoveries of aluminum, calcium and iron in the matrix spike analysis of sample 85895-2 exceeded the quality control limits due to high levels of target analyte in the original sample.

The percent recoveries of barium and lead in the matrix spike analysis of sample 85895-2 exceeded the quality control limits. Matrix interferences are indicated based on the blank spike percent recoveries.

The relative percent difference value for nickel and thallium in the duplicate analysis of sample 85895-2 exceeded the quality control limits due to analyte levels near the practical quantitation limit.

All other quality control was within the acceptance limits.

No other difficulties were encountered during the total metals analyses.

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-SLAG 112499
Lab ID:	85895-01
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/7/99
Dilution Factor	1
% Solids	100

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Aluminum	13000	36	13	
Barium	1800	0.89	0.21	
Beryllium	0.45	0.36	0.053	B1
Calcium	79000	89	0.8	B2
Chromium	16	1.8	0.37	
Cobalt	19	1.8	1.2	
Copper	930	3.6	2	
Iron	130000	8.9	1	B2
Lead	5100	8.9	7.2	
Magnesium	19000	89	5	
Manganese	25000	1.8	0.11	B2
Nickel	ND	8.9	3.2	
Potassium	4400	180	83	
Sodium	440	89	16	
Vanadium	40	3.6	3.3	
Zinc	18000	3.6	0.37	

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-SLAG 112499
Lab ID:	85895-01
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/6/99
Dilution Factor	5
% Solids	100

Metals by ICP-MS - USEPA Method 6020

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	33	0.89	0.09	
Antimony	31	2.7	0.43	B2
Cadmium	0.36	0.89	0.09	J
Selenium	0.86	2.7	0.58	J
Silver	42	0.45	0.027	
Thallium	0.71	0.89	0.02	J B1

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-SLAG 112499
Lab ID:	85895-01
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/6/99
Dilution Factor	1
% Solids	100

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	0.095	0.031	0.027	

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-ASH 112499
Lab ID:	85895-02
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/7/99
Dilution Factor	1
% Solids	55.36

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Aluminum	30000	68	25	
Barium	1300	1.7	0.41	
Beryllium	1.1	0.68	0.1	B1
Calcium	41000	170	1.5	B2
Chromium	14	3.4	0.71	
Cobalt	6.5	3.4	2.2	
Copper	31	6.8	3.8	
Iron	26000	17	1.9	B2
Magnesium	9800	170	9.6	
Manganese	770	3.4	0.2	B2
Nickel	6.4	17	6.1	J
Potassium	620	340	160	
Sodium	360	170	31	
Vanadium	30	6.8	6.2	
Zinc	20	6.8	0.71	

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-ASH 112499
Lab ID:	85895-02
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/6/99
Dilution Factor	5
% Solids	55.36

Metals by ICP-MS - USEPA Method 6020

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Arsenic	4.6	1.7	0.17	
Antimony	2.3	5.1	0.82	JB1
Cadmium	0.18	1.7	0.17	J
Lead	19	1.7	0.18	
Selenium	1.9	5.1	1.1	J
Silver	0.55	0.85	0.052	J
Thallium	ND	1.7	0.037	

SOUND ANALYTICAL SERVICES, INC.

Client Name	U.S. Army Corps of Engineers, Seattle District
Client ID:	PP-ASH 112499
Lab ID:	85895-02
Date Received:	12/2/99
Date Prepared:	12/6/99
Date Analyzed:	12/6/99
Dilution Factor	1
% Solids	55.36

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	MDL	Flags
Mercury	ND	0.064	0.055	

SOUND ANALYTICAL SERVICES, INC.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be $> 40\%$. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

4.
Groundwater Monitoring Well Logs

U. S. ARMY ENGINEER DISTRICT, SEATTLE

PROJECT ALBENI FALLS

SUBJECT R.R. SLIDE NEAR SANDPOINT

BY _____ DATE _____ CHECKED _____ PART _____ PAGE _____ OF _____

PIEZOMETER READINGS

DATE	78-RD-6		78-RD-7					
23 AUG 79	22.9	DRY	23.0	DRY				
6 SEPT 79	22.1		23.8					
20 SEPT 79	22.4		24.4					
4 OCT 79	22.9		24.9					
18 OCT 79	22.4		25.1					
1 NOV 79	23.8		25.2					
1 DEC 79	24.8		25.7					
1 JAN 80	25.2		25.3					
4 FEB 80	25.2		26.1					
6 MAR 80	25.2		26.3					
15 APR 80	25.9		26.5					
22 MAY 80	24.4		—					
17 JUL 80	22.3		23.7					
26 SEP 80	22.2		23.7					
8 JAN 81	24.2		24.9					
9 JUN 81	21.9	DRY	23.1	DRY				
6 FEB 82	24.0	17.0	25.0	10.6				
12 APR 82	23.8	17.1	24.9	10.3				
19 APR 82	23.6	17.0	24.7	10.1				
26 APR 82	23.5	16.4	25.0	10.1				
3 MAY 82	23.7	16.9	25.0	11.7				
10 MAY 82	23.2	18.1	25.0	12.0				
17 MAY 82	23.3	18.6	25.0	13.4				
24 MAY 82	23.9	19.2	25.0	15.7				
1 JUN 82	23.4	19.0	24.0	16.9				
7 JUN 82	23.4	19.1	24.5	17.0				
14 JUN 82	23.5	19.0	24.6	16.9				
28 JUN 82	22.4	19.6	23.5	13.7				
12 JUL 82	22.4	19.7	23.4	13.7				
26 JUL 82	22.2	19.9	23.2	14.2				
9 AUG 82	22.4	20.0	23.4	14.3				
23 AUG 82	22.5	20.0	23.5	14.3				

PROJECT ALBENI FALLS

SUBJECT R.R. SLIDE NEAR SANDPOINT

BY _____ DATE _____ CHECKED _____ PART _____ PAGE _____ OF _____

PIEZOMETER READINGS

DATE	78-RD-6		78-RD-7					
	6'	20'						
7 SEP 82	22.6	20.0	24.0	14.7				
20 SEP 82	22.5	20.0	24.1	14.8				
5 OCT 82	22.6	20.0	24.2	14.7				
25 OCT 82	22.7	20.0	24.1	14.5				
8 NOV 82	22.7	20.0	24.2	14.4				
22 NOV 82	22.6	20.0	24.3	14.3				
21 DEC 82	24.8	20.0	25.3	14.3				
24 JAN 83	23.2	19.3	23.7	12.8				
7 FEB 83	22.9	19.3	23.1	12.2				
22 FEB 83	22.2	19.3	23.7	9.6				
8 MAR 83	22.1	15.7	24.0	9.4				
22 MAR 83	22.7	16.0	24.2	11.3				
5 APR 83	23.0	18.0	23.6	13.0				
18 APR 83	23.1	18.6	23.9	13.4				
5 MAY 83	23.5	18.5	23.3	14.5				
1 JUN 83	24.1	18.9	23.7	15.0				
1 JUL 83	24.2	19.1	23.6	15.2				
1 AUG 83	24.2	19.6	23.7	15.4				
1 SEP 83	22.2	DRY	24.1	DRY				
30 SEP 83	22.1	15.2	21.9	"				
1 NOV 83	23.0	15.3	24.3	"				
21 NOV 83	24.4	DRY	22.8	15.0				
1 DEC 83	24.4		22.8	14.8				
12 JAN 84	24.4		22.7	14.9				
2 FEB 84	24.0		22.2	14.8				
15 FEB 84	23.9		23.5	14.8				
1 MAR 84	24.1	DRY	23.5	14.2				
15 MAR 84	24.0	18.9	23.1	13.9				
2 APR 84	24.0	17.5	23.3	14.0				
30 APR 84	24.1	18.0	24.6	14.2				
15 MAY 84	24.3	18.0	24.7	14.5				
1 JUN 84	23.7	18.5	24.3	14.3				

HOLE NUMBER 76-2D-2	
PROJECT Albat Falls Dam NWR Sloughs	
LOCATION	
N	E
DATE STARTED 16 Jan 1976	DATE COMPLETED 19 Jan 1976

ELEVATION	DESCRIPTION OF MATERIALS
2106.5	CL, Silty CLAY, soft, yellow
10	Sample A, N=2/18", 5-7'
15	SH, Silty SAND (fine), medium, brown
20	Sample B, N=14, 10-11.5'
25	CL, Silty CLAY, soft brown-gray
30	SP, SAND (fine), medium brown
35	Sample C, N=20, 11-16.5'
40	Sample D, N=24, 20-21.5'
45	Sample E, N=11, 25-26.5'
50	SH, Silty SAND (fine), medium brown
55	Sample F, N=1, 10-31.5'
60	CL, CLAY, very soft, gray
65	Sample G, N=0, 40-41.5'
70	Sample H, N=0, 50-51.5'
75	Sample I, N=0, 60-61.5'
80	Sample J, N=0, 70-71.5'
85	Sample K, N=0, 80.5-82'
90	Sample L, N=1/18", 90.5-92'
95	SP, SAND, medium, gray
100	Sample M, N=21, 100.5-102'
	CL, CLAY, gray
	Bottom at 102'

HOLE NUMBER 76-2D-3	
PROJECT Albat Falls Dam NWR Sloughs	
LOCATION	
N	E
DATE STARTED 8 Jan 1976	DATE COMPLETED 16 Jan 1976

ELEVATION	DESCRIPTION OF MATERIALS
2110.0	SP, CP, SAND and GRAVEL (FILL)
10	ML, Clayey SILT, yellow
15	Sample A, 5-8'
20	Sample B, N=5, 8-9.5'
25	Sample C, 10-13', Layers of sandy silt & sandy clay (LAB)
30	Sample D, N=18, 13-14.5'
35	Sample E, N=0, 15-16.5'
40	CL, CLAY, very soft, yellow
45	SH, Silty SAND (fine), brown
50	Sample F, N=19, 20.5-22' (LAB)
55	SP, SAND, clean, gray
60	Sample G, N=33, 25.5-27' (LAB)
65	Sample H, N=7, 30.5-32.5'
70	SH, Silty SAND (fine), medium, brown
75	CL, CLAY, very soft, gray
80	Sample K, 35.5-38.5'
85	Sample L, N=0, 38.5-40'
90	Sample M, 45.5-48.5' (LAB)
95	Sample N, N=0, 48.5-50'
100	Sample O, 50.5-53.5'
105	Sample P, 53.5-57.0' (LAB)
110	Sample Q, N=0, 57-58.5'
115	Sample R, 60.5-63.5' (LAB)
120	Sample S, N=0, 63.5-65'
125	Sample T, 70.5-73.5'
130	Sample U, N=0, 73.5-75'
135	Sample V, 80.5-83.5'
140	Sample W, N=0, 83.5-85'
145	Sample X, 95.5-98.5'
150	Sample Y, N=0, 98.5-100'
155	Bottom at 100'

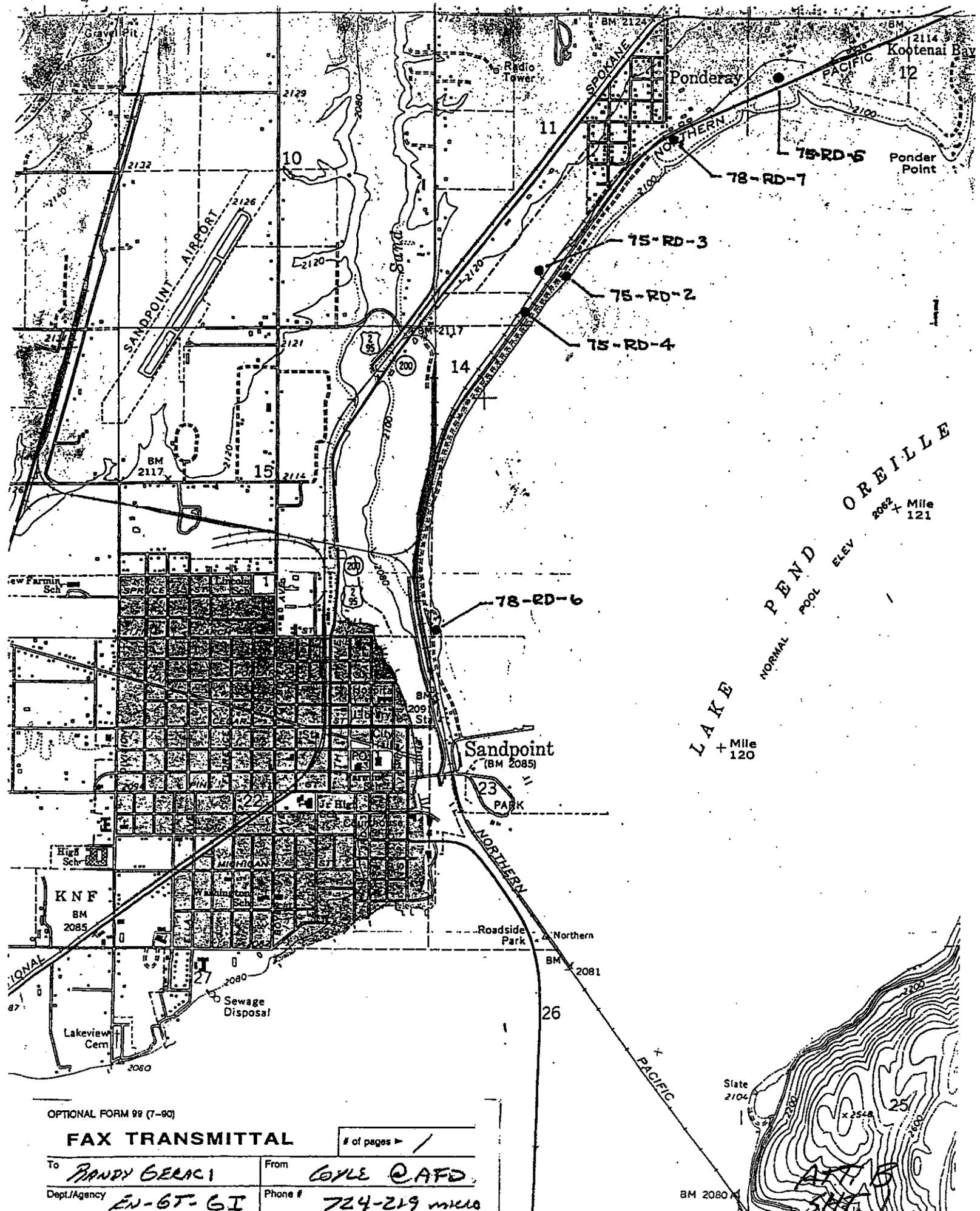
HOLE NUMBER 76-2D-4	
PROJECT Albat Falls Dam NWR Sloughs	
LOCATION	
N	E
DATE STARTED 2 Jan 1976	DATE COMPLETED 7 Jan 1976

ELEVATION	DESCRIPTION OF MATERIALS
2111.0	GP, Sandy GRAVEL (FILL) w/some ashes and cobbles
10	CL, Gravelly CLAY w. occ. small cobbles, moist, yellow
15	Sample A, N=6, 10-11.5'
20	Sample B, 12-14'
25	SP, SAND (fine), clean, brown
30	Sample C, N=27, 15-15.5'
35	CL, CLAY, soft, gray
40	Sample D, N=1/18", 20-21.5'
45	Sample E, 21.5-22'
50	SP, SAND (fine), clean, moist
55	Sample F, N=29, 23-24.5'
60	Sample G, 26.5-28'
65	SP, SAND (fine), clean, moist
70	Sample H, N=, 33-31.5'
75	Sample I, 31.5-32'
80	CL, CLAY, very soft, gray
85	Sample J, N=1/18", 35.5-37'
90	Sample K, 37-39'
95	Sample L, N=0, 40-41.5'
100	Sample M, 41.5-43'
105	Sample N, N=0, 50-51.5'
110	Sample O, 52-54.5'
115	Sample P, N=0, 60.5-62'
120	Sample Q, 62-64'
125	Sample R, N=0, 70.5-72'
130	Sample S, 72.5-75'
135	Sample T, N=0, 80.5-82'
140	Sample U, 82-84'
145	Sample V, N=0, 90.5-92'
150	Sample W, 92-94'
155	Bottom at 101'

HOLE NUMBER 76-2D-5	
PROJECT Albat Falls Dam NWR Sloughs	
LOCATION	
N	E
DATE STARTED 21 Jan 1976	DATE COMPLETED 23 Jan 1976

ELEVATION	DESCRIPTION OF MATERIALS
2115.5	GM, Silty GRAVEL (FILL), brown-black
10	CL, Silty CLAY, w/sand lenses, yellow-brown
15	Sample A, N=3, 5-6.5'
20	SH, Silty SAND (fine), brown
25	Sample B, N=24, 10-11.5'
30	CL, CLAY, yellow
35	CL, CLAY, yellow
40	Sample C, 1A, 3-11'
45	SH, Silty SAND (fine), gray
50	Sample D, 20-22'
55	CL, CLAY, soft-firm
60	SH, Silty SAND (fine), gray
65	Sample E, 20-22'
70	CL, CLAY, very soft, gray
75	Sample F, 25-27'
80	Sample G, N=0, 27-28.5'
85	Sample H, 30-33'
90	Sample I, 32-34'
95	Sample J, 34-36'
100	Sample K, 36-38'
105	Sample L, 40.5-43'
110	Sample M, 43-44.5'
115	Sample N, 44.5-46'
120	Sample O, 47-49.5'
125	Sample P, 52-55'
130	Sample Q, N=0, 55-56.5'
135	Sample R, 62-65'
140	Sample S, N=0, 65-66.5'
145	Sample T, N=0, 70.5-72'
150	Bottom at 72'

ART. B
SIT. 5



OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL

of pages **1**

To **BRANDY GERACI**
 Dept./Agency **EN-6T-GI**

From **COYLE @AFD**
 Phone # **724-219 miles**

BM 2080

HOLE NUMBER 78-RD-7

PROJECT Albeni Falls Dam
BNBR Sloughs

LOCATION

N E

DATE STARTED 28 Sept 1978
DATE COMPLETED 30 Sept 1978

ELEVATION 2093.5
DEPTH H
DESCRIPTION OF MATERIALS

GM, silty GRAVEL
 Sample A, N=7
 CL, silty CLAY, medium-hard, dry-moist, yellow-tan
 SM, silty SAND (fine)
 CL, silty CLAY, yellow-tan
 Sample B, N=16
 SM, silty SAND, Dense
 Grades in depth to
 SP-SM, SAND w/ silt
 Sample C, N=80
 Sample D, N=70
 Sample E, N=38
 Sample F, N=0
 CL, clay, Very soft,
 vert. gray.
 Sample G, N=0
 Sample H, N=0
 Sample I, N=0
 Sample J, N=0
 Sample K, N=0
 Sample L, N=0
 Sample M, N=0
 Sample N, N=0
 Sample O, N=0
 Sample P, N=0 Hole making
 Sample Q, N=0 a little
 water
 Bottom at 98.7'

HOLE NUMBER

PROJECT

LOCATION

N E

DATE STARTED
DATE COMPLETED

ELEVATION
DEPTH H
DESCRIPTION OF MATERIALS

Blank log section with a vertical depth scale on the left side of the main column.

ATT. B
SHT. 7

PROJECT	<i>R.R. Embankment Stabilization</i>	HOLE NO.	<i>78-RD-6</i>
LOCATION	<i>Sand point Idaho</i>	INSPECTOR	<i>Morgan</i>
DEPTH OF HOLE	<i>100.5'</i>	CONTRACTOR	<i>Garit</i>
DEPTH OF O.B.	<i>100.5'</i>	DATE STARTED	<i>5/24/78</i>
ROCK DRILLED	<i>—</i>	DATE COMPLETED	<i>5/26/78</i>
% CORE RECOVERED	<i>—</i>	SURFACE EL.	<i>2113⁺ Tspo</i>
DIAM. HOLE	<i>4"</i>	N	E
EQUIPMENT	<i>Jackhammer - Hand used Rotary Drill</i>		

ELEVATIONS	DEPTH	GRAPHIC LOG	CORE % 100 BLOWS /FT	DESCRIPTION OF MATERIALS Soils Classification Plasticity Condition Moisture Color	REMARKS Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
	0.0				Top 10' is in pasture.
	1.0	ML		Sandy silt, dry.	
	2.0				
	3.0				
	4.0	SM		Silty Sand, loose, dry.	
	5.0		A	Sample "A" 4-5.5'	
	6.0				
	7.0			Getting moist.	
	8.0			6" layer of CL-Clay.	
	9.0	SM		Silty Sand	
	10.0			CL-Clay, yellow-brown.	
	11.0			6" layer of clay	

ATT. B
SHT. B

PROJECT R.R. Embankment Stabilization HOLE NO. 78-RD-C
 LOCATION Sandpoint Lake SH 2 of 10

ELEVATIONS	DEPTH	GRAPHIC LOG	CORE	DESCRIPTION OF MATERIALS	REMARKS
			% 100 0		
			BLOWS /FT	Soils Classification Plasticity Condition Moisture Color	Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
	11			Samp "B" 10-11.5' N = 3/6, 3/6, 3/6	
	12				
	13	SM		Silty Sand, Brown.	
	14			CL	Thin layers of CL-clay.
	15			CL	
	16			CL	
	17			Samp "C" 15-16'	
	18			C	
	19				
	20				

Rods Wash in with
Their own Weight.

Casing is being
Reamed in, instead
of driven.

ATT. B
SHT. 9
SH 2 of 10

ELEVATIONS	DEPTH	GRAPHIC	CORE % 100 0	BLOWS /FT	DESCRIPTION OF MATERIALS Soils Classification Plasticity Condition Moisture Color	REMARKS Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
					30-21.5 Sample "D"	
	21	SM			Change Mat'l.	
	22	SP			Sand (fine) gray.	Fairly Clean.
	23					
	24					
	25					
	26				Stamp "E" 25.5-27.5 N = 3/20"	Pushed top 6" by hand-
	27	CL			Clay - soft, blue-gray. Few Sand Seams in the Clay.	
	28					
	29					
	30					

Pushed Casing in
w/ hydraulic ram
30' to 45' using
100-150# pressure.
ATT. B
SHT. 10 SH. 3 of 10

PROJECT R.R. EMBANKMENT STABILIZATION

HOLE NO. 78-RD-1

LOCATION SANDPOINT IDAHO

SH 4 of 10

ELEVATIONS	DEPTH	LOG GRAPHIC	CORE	DESCRIPTION OF MATERIALS	REMARKS
			% 100 0		
			BLOWS / FT		
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					

CL

Clay - Very soft, blue-gray.

Sample "F" 35-45' Mat'l. washed out alongside P.O.s in 4' streamers

ATT. B
SHT. 11

SH 4 of 10

U.S. GEOLOGICAL SURVEY

ELEVATIONS	DEPTH	GRAPHIC LOG	CORE % 100	DESCRIPTION OF MATERIALS Soils Classification Plasticity Condition Moisture Color	REMARKS Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
			BLOWS / FT		
41					
42					Water was at 8.3' when we packed P.C.s.
43		CL		Clay - Very Soft Blue-gray	Filled hole to top of pipe to stand overnight.
44					
45					End shift. <u>5/24/78</u> Begin 5/20/78 Water at Top of Casing
46					
47					
48		CL		Clay - Very Soft. Shiny - blue-gray	
49					
50					

ATT. B
 SHT. 12
 SH. 5 of 10

PROJECT R.R. EMBANKMENT STABILIZATION HOLE NO. 78-RD-6
 LOCATION SANDPOINT TRAIL SH. 6 of 10

ELEVATIONS	DEPTH	LOG GRAPHIC	CORE	DESCRIPTION OF MATERIALS	REMARKS
			% 0 100 BLOWS /FT.		
51					
52					
53					
54					
55		Ch		Clay - Very soft, blue-gray.	
56					
57					
58					
59					
60					

ATT. B.
SHT. 13

SH. 6 of 10

PROJECT R.R. Embankment Stabilization HOLE NO. 78-RD-6
 LOCATION Sandpoint Trans SH 7 of 10

ELEVATIONS	DEPTH	GRAPHIC LOG	CORE % 100	DESCRIPTION OF MATERIALS Soils Classification Plasticity Condition Moisture Color	REMARKS Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
			BLOWS / FT		
	61				
	62				
	63				
	64				
	65	Cl		Clay - Very Soft, blue-gray.	Sample "G" 60-65 from washed out material.
	66				
	67				
	68				
	69				
	70				

ATT. B
 SH. 1A

PROJECT R.R. Embankment Stabilization HOLE NO. 78-RD-6
 LOCATION SPINDRINT TOWNSHIP SH 8 of 16

ELEVATIONS	DEPTH	LOG	CORE	DESCRIPTION OF MATERIALS	REMARKS
			% 100 BLOWS / FT		
71					<p>No effort to drill the clay - very sticky w/ water.</p>
72					
73					
74		CL		Clay; Very soft, blue-gray.	
75					
76					
77					
78					
79					
80					
					Small seams of fine sand.

ATT. B
SHT. 15

SH 8 of 16

PROJECT R.R. EMBANKMENT STABILIZATION HOLE NO. 7E-RD-6
 LOCATION SANDPINE TRAIL SH. 9 of 10

ELEVATIONS	DEPTH	GRAPHIC	CORE	DESCRIPTION OF MATERIALS	REMARKS
			% 100 BLOWS /FT		

81					Small seams of fine sand.
82			H	5amp H ¹ 51-82.5 N = 2/30	
83				Gray fine sand on bottom of sample.	
84					RAN out of sand.
85			Ch.	Clay soft, blue-gray.	
86					
87					
88					
89					
90					

ATT. B
 SH. 16
 SH. 9 of 10

PROJECT R.R. Embankment Stabilization HOLE NO. 7F-RD-6
 LOCATION Sandpoint Idaho SH 10 of 10

ELEVATIONS	DEPTH	GRAPHIC LOG	CORE % 100	DESCRIPTION OF MATERIALS Soils Classification Plasticity Condition Moisture Color	REMARKS Casing Depth, Depth of Hole at Start & End of Shift, Water Level at Start & End of Each Shift & Run, Drilling Time, Size & Type of Bit, Action of Drill, Rate of Penetration, % Water Loss or Return, Water Color, Drilling Fluid Data, etc.
			BLOWS / FT		
91					
92					
93					
94					
95		CL		clay - soft, blue-gray	
96					
97					
98					
99					
100.5					
<p>I</p> <p>Bo H. at 100.5 - in same Chgs</p>			<p>Sample I: 99-100.5 N=2/18" Hit sample only twice - soft.</p>	<p>Ran sample tube in & punched out bottom to see if still in clay.</p>	

ATT. B
 SH. 17
 SH 10 of 10

PROJECT *R.R. Embankment Stabilization* HOLE NO. *78-RP-6*
 LOCATION *Sandpoint, IDAHO* SH of

ELEVATIONS	DEPTH	GRAPHIC	CORE		DESCRIPTION OF MATERIALS	REMARKS
			%	BLOWS		
			0	100		
					Seal to top.	<i>Piezometer Installation</i>
					<i>40'</i> <i>2.0' Backfilled to 40'</i>	
	<i>10</i>				<i>30' perforations</i> <i>26-6.0'</i>	
	<i>20</i>				<i>26.0'</i> <i>Backfill to 26.0'</i>	<i>Water to top in both piezometers</i> <i>5/26/78 after installation.</i>
	<i>30</i>				<i>30.0'</i> <i>5.0' Seal.</i>	
	<i>40</i>				<i>35.0'</i> <i>5.0' Grav. Backfill.</i>	
	<i>50</i>				<i>45.0'</i> <i>10.0' Cement & Sand slurry Seal. to 45'</i>	<i>Read again on</i> <i>5/29/78 when going to Lobby</i> <i>#1 - @ 85.0' -</i> <i>Water = 55.0' w/ 18" stick</i>
	<i>60</i>				<i>55.0'</i> <i>60'</i> <i>Perforated to 60'</i> <i>Backfilled w/ sand & pea gravel to 55.0'</i>	
	<i>70</i>					<i>#2 @ 26.0'</i> <i>Water = 10' w/ 18" stick</i>
	<i>80</i>					
	<i>90</i>				<i>Bottom of 1" PVC Piezometer Pipe.</i> <i>Backfilled w/ sand & pea gravel to 85.0'</i>	
	<i>100.5</i>					

ATT. B
SHT. 1B

SH of

MPS Form 101 a LOG OF DRILL HOLE (Continuation Sheet) NOV 1965

PROJECT RR Embankment Stabilization HOLE NO. 75-RD-7
 LOCATION Trail point Idaho INSPECTOR Morgan
 DEPTH OF HOLE _____ CONTRACTOR Court
 DEPTH OF O.B. _____ DATE STARTED _____
 ROCK DRILLED _____ DATE COMPLETED _____
 % CORE RECOVERED _____ SURFACE EL. _____
 DIAM. HOLE _____ N _____ E _____
 EQUIPMENT _____

ELEVATIONS	DEPTH	LOG	CORE % 100	BLOWS / FT	DESCRIPTION OF MATERIALS	REMARKS
					1.5' clay section top	
	20					
	30				20' of Perforations	
	35				25'	
	39				9.0' Current Court Seal	
	40				37'	
	45					
	50					
	60				Backfilled w/ clean pea gravel	
	70				60' of Perforations	
	80					
	90					
	99.0				99.0'	

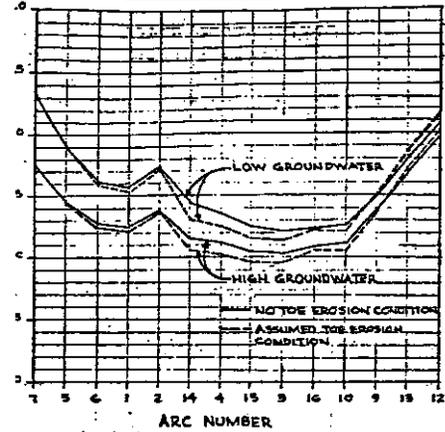
~~Pig #1~~
 #1 From 99.0 to Surface.
 Pig #2 From 28.0

RECEIVED
 NOV 24 2003
 Coeur d'Alene
 Office

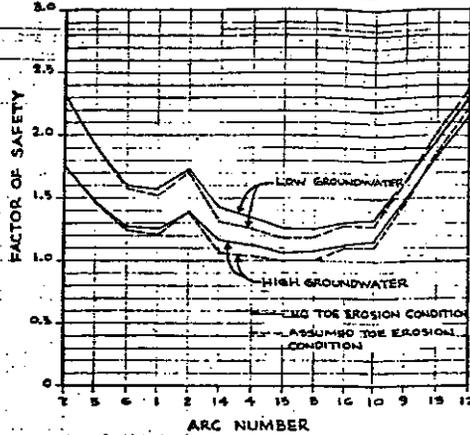
ATT. B
 SHT. 6

SLOPE STABILITY ANALYSIS SUMMARY PLOTS

LOW POOL CONDITION



HIGH POOL CONDITION



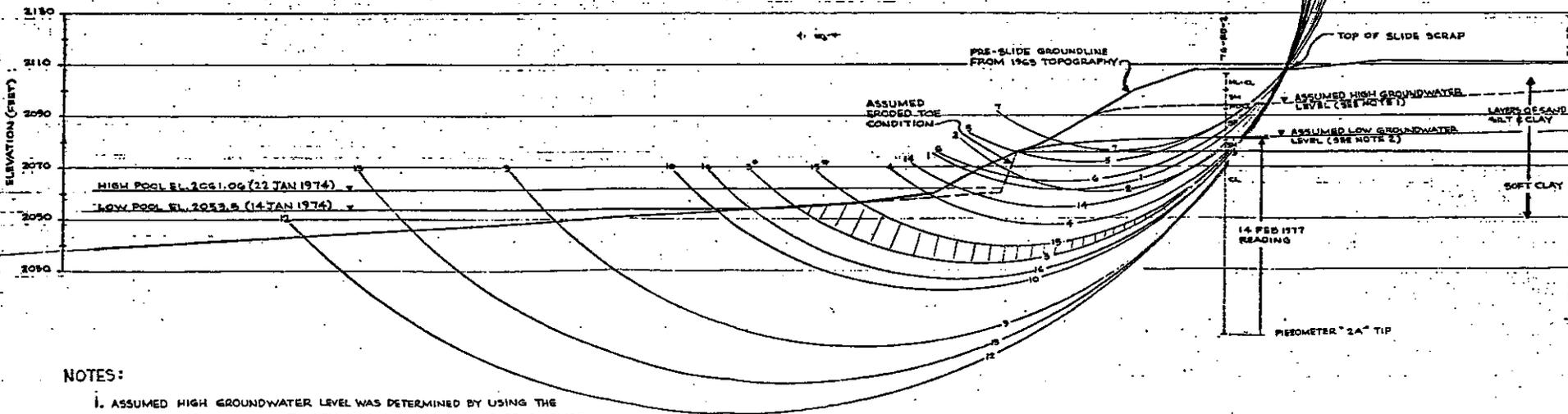
MATERIAL CHARACTERISTICS

MATERIAL	UNIT WEIGHT (PCF)		EFFECTIVE STRENGTH (DEGREES)
	MOIST	SATURATED	
LAYERS OF SAND SILT CLAY	120	122	33
CLAY	—	114	33

SUMMARY OF SLOPE STABILITY ANALYSIS

ARC NO.	FACTOR OF SAFETY			
	HIGH POOL / HIGH GROUNDWATER	HIGH POOL / LOW GROUNDWATER	LOW POOL / HIGH GROUNDWATER	LOW POOL / LOW GROUNDWATER
1	1.26	1.21	1.58	1.52
2	1.40	1.38	1.73	1.71
3*	1.08	1.01	1.25	1.19
4	1.18	1.04	1.34	1.25
5	1.48	1.46	1.90	1.90
6	1.28	1.25	1.62	1.59
7	1.77	1.77	2.32	2.32
9	1.43	1.47	1.63	1.58
10	1.16	1.10	1.35	1.28
12	2.16	2.22	2.30	2.57
13	1.84	1.87	1.99	2.02
14	1.17	1.06	1.43	1.31
15*	1.07	0.93	1.27	1.18
16	1.13	1.11	1.30	1.28

* CRITICAL ARCS



NOTES:

1. ASSUMED HIGH GROUNDWATER LEVEL WAS DETERMINED BY USING THE OBSERVED RELATIONSHIP BETWEEN 1976 AND 1977 PIEZOMETER READINGS AND PRECEDING PRECIPITATION AND PROJECTING FOR PRECIPITATION CONDITIONS PRECEDING JANUARY 1974 SLIDE.
2. ASSUMED LOW GROUNDWATER LEVEL REPRESENTS MINIMUM LEVEL OBSERVED IN PIEZOMETERS DURING 1976 AND 1977.

SECTION THROUGH 1974 SLIDE IN VICINITY OF BNRR STA 765+25

SCALE: 1" = 40'

ATT. B
SHT. 19