

PRELIMINARY ASSESSMENT

PA

AVERY RAILROAD DUMP AND ROUNDHOUSE

IDD 984666313

T45N R5E NE 1/4 SEC. 16

AVERY, IDAHO 83802

May 9, 1991

Prepared for: U.S. Environmental Protection Agency  
Region 10  
Superfund Program Management Section  
Seattle, Washington 98101

Prepared by: Idaho Department of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706-1253

### Executive Summary

The abandoned Avery Railroad Dump and Roundhouse facility is located in Avery, Idaho on the north bank of the St. Joe River. The natural setting consists of a narrow river valley confined by very steep, forested mountains. The site served as a switching station and light maintenance facility for the Chicago, Milwaukee, St. Paul and Pacific Railroad Company from 1909 to 1977. The site is now owned and managed by Potlatch Corporation.

Presently, a portion of the riverbank on the southern boundary of the site is covered by a tarry black substance, and an oily seep can be observed in the river in this same area.

A two-phase environmental assessment of the site was completed in the fall of 1989 by Hart Crowser for Potlatch. Initially, a sample was collected from a free-floating oily layer in monitoring well MW-11, an existing well from a previous study. The sample was analyzed for chlorinated volatiles, cadmium, chromium, lead and PCBs. Chromium, lead and PCBs were detected in the sample leading Hart Crowser to characterize the floating layer as a waste oil. In the second phase of this study, the installation of four monitoring wells and subsequent sampling of these wells, and chemical analyses of both groundwater and the waste oil from these wells were completed. The ground water samples were analyzed for total petroleum hydrocarbons (TPH) and dissolved metals (arsenic, cadmium, chromium, and lead). The waste oils were analyzed for EP Tox metals, PCBs, PNAs, total halogenated hydrocarbons, and total metals (cadmium, chromium, lead and arsenic).

Chemical analyses of these ground water samples did not detect any TPH. Of the dissolved metals only arsenic was detected (0.009 ppm). Analyses of the waste oil found in the wells indicated no detectable concentrations of PNA compounds, PCBs and total halogenated compounds. Of the EP tox metals only barium was detected (0.005 ppm). Total chromium and total lead were detected at 1ppm and 5ppm, respectively. These results are inconclusive, however, as detection limits for the PCBs were higher than the reported values from the earlier phase of the study. PNAs were not detected, but detection levels for these compounds were high, ranging from 200 to 1400 ppm and did not provide meaningful results for these parameters.

Preliminary Assessment  
of  
Avery Railroad Dump & Roundhouse  
IDD984666313  
Avery, Idaho 83802

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Avery Railroad Dump & Roundhouse

Introduction

Pursuant to Cooperative Agreement V000409-01 between the U.S. Environmental Protection Agency (EPA) and the Idaho Division of Environmental Quality (DEQ), the DEQ conducted a Preliminary Assessment (P.A.) at the site known as Avery Railroad Dump and Roundhouse.

PA's are intended generally to identify potential hazards at sites, to identify sites that may require immediate action where a substantial danger to public health or environment exists, and to establish priorities for sites requiring further investigations (Site Inspections) under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA), possibly leading to placement of the site on the National Priorities List (NPL). The

PA is based on readily available information about the site including some limited field reconnaissance and investigation and is not a full investigation or characterization of the site.

The Avery Railroad Dump and Roundhouse PA is conducted to identify potential public health and environmental threats related to the site. The PA is based on data derived from the sources listed in Section I.

#### A. General Site Data

Site Name: Avery Railroad Dump and Roundhouse  
Location: Avery, Idaho  
Owner: Potlatch Corporation  
PO Box 386  
St. Maries, Idaho 83861  
Operator: Site is not operational  
Contact: Mike Fish  
Potlatch Corporation  
PO Box 386  
St. Maries, Idaho 83861  
(208) 245-2585

#### B. Site Description

The site is the former location of the Chicago, Milwaukee, St. Paul and Pacific Railroad Company's roundhouse, turntable, and maintenance facilities in Avery (Township 45 N, Range 5 E Sections 15 and 16 - Attachment 2). The site comprises approximately 7 acres. The railroad facilities appear to have consisted of (from a plat dated October 5, 1915 - Attachment 3) a turntable, a

roundhouse (consisting of a machine shop, fan house and engine house), a boiler house, various store houses, a coal dock, an oil house, oil tanks (including a 500,000 gallon fuel oil tank), oil "sinks", various "drains", and a pump house.

The closest permanent structures to the site are the various homes and buildings comprising the town of Avery (on both sides of the St. Joe River). The nearest permanently occupied building is located 600 feet west of the site. The majority of the buildings comprising Avery are spread along both the north and south banks of the St. Joe River for approximately one mile upstream (east) and one-quarter mile downstream (west). The site itself is currently used for a staging and parking area by Potlatch. Potlatch has also used the site for temporary storage of logs. There are currently two temporary "camp" buildings ( approximately 10' x 20') on site. The western side of the facility, immediately north of where the St. Joe River curves to the northwest, has been leased in the past to contractors needing to locate trailers for workers. The same area may again be leased for the upcoming summer construction season. A trailer park was located here from May through October, 1990. The area near the site is mountainous, with steep forested slopes rising immediately on both the north and south sides of the town. The site is bordered on the south in its entirety by the St. Joe River (1). The north side is bordered by the newly constructed St. Joseph River road and the steep south facing slope of Avery Hill. The east and west sides of the site both narrow to

a point bordered on the south by the St. Joe River and on the north by the slope of Avery Hill with only the road right-of-way separating the river and the slope. (1, Attachment 1)

#### C. Ownership Information

Potlatch Corporation obtained ownership of the approximate western two-thirds (5 acres) of the Avery site in 1980. The eastern third, including an area of riverbank contaminated by the oil seep, is owned by a David Thierault who inherited this property from his grandfather, Harold Thierault. The strip of land comprising the northern boundary of the site was sold by the Thierault Estate to the Federal Highway Administration in 1986 for construction of the St. Joe River Road (10). Prior to 1980, the site was owned by the Chicago, Milwaukee, St. Paul and Pacific Railroad ("Milwaukee Road"). The railroad operated the rail yard from 1909 till approximately 1977. The Milwaukee Road was in reorganization under bankruptcy from 1977 to 1985 and afterwards emerged as the CMC Real Estate Corporation. The CMC Real Estate Corporation was merged into the Chicago Milwaukee Corporation (CMC) in 1989, and has since undergone further corporate restructuring into Heartland Partners and CMC Heartland, collectively known as "Heartland" (10).

#### D. Hazardous Substance Activities and Potential Problems

An area of concern is associated with a 500,000 gallon fuel oil tank, formerly located in a gully on the north side of the site, to the northeast of the turntable and roundhouse complex. The tank

held product used to refuel trains and was used from 1909 until the its removal in the 1970s (1). The contents of this tank, through spillage or leakage, may have found its way to the river by the groundwater route. An oily substance was observed during a site visit on October 15, 1990, to be entering the river near an abandoned pumphouse on the south side of the site. Here, the river bank is covered by a black tarry residue. The material can be observed seeping into the river creating a downstream slick. As explained in greater detail later in this section under the heading "Transformer Oils," a similar oily substance encountered in an on-site monitoring well was found to be contaminated by both PCBs and heavy metals (6). The floating layer found in the well is assumed to be the same substance as that emanating from the river bank and derived from the same source. However, at this time, this substance can not be definitely connected to the tank contents as no chemical analyses of the former tank contents exists and the tank itself has long since been removed. This river bank "seep" could result from cumulative dumping or spillage of waste oils and ponding beneath the site on the water table. Given this lack of information, we cannot determine exactly where the source for the hazardous constituents (PCBs, heavy metals) is located.

#### Solvents

The actual use or alleged improper disposal of solvents has not been documented at this site. However, the use of solvents for cleaning engine parts and even hosing down the locomotive was

common practice in the past at similar railroad facilities around the country containing both a turntable and roundhouse. However, Chet Johnson, an Avery resident and retired railroad worker, stated otherwise. Mr. Johnson worked on the Chicago, Milwaukee, St. Paul and Pacific Railroad in both Montana and Idaho (Avery) for a total of nearly 30 years. He stated that most of the heavy maintenance was conducted at Deer Lodge, Montana. The facilities in Avery conducted only minor repairs and he could not recall the use of any degreasing agents or their disposal (5). No chemical analyses completed to date have revealed any halogenated volatile compounds commonly found in solvents. The only volatile compounds detected are the BETX (benzene, ethylbenzene, toluene, xylenes) petroleum constituent (Attachment 5).

#### Transformer Oils

Because Avery was the end of the electric line for trains heading east, a substation is reported by Mr. Stranohon of the United States Forest Service (USFS) to have been located near the Avery town well located approximately three-fourths of a mile east of the site near the confluence of Avery Creek and the St. Joe River (1, Attachment 1). This substation included stored transformers and tanks or vaults for storing transformer oil. Whether or not these were PCB containing oils has not been determined (1). Mr. Johnson stated that he recalled transformers were stored at various locations on-site, but could not remember what happened to them or where exactly they had been stored relative to the facilities shown



on the 1915 plat map. He also could not recall any spills of transformer oils or improper dumping on the ground (5). Chemical analyses of the floating layer obtained from the top of the water column in monitoring well MW-11 on-site did indicate a PCB concentration in the sample of 1.4 parts per million (6). The USEPA Water Quality Criteria for PCBs is .079 nanograms per liter (ng/l), substantially less than the PCB concentration detected in MW-11.

#### E. Other Suspected Hazardous Substances of Concern

No other hazardous substances of concern have been identified at this site due to the lack of a definitive facility history. However, features on the 1915 plat map such as "oil sinks", oil drains, tanks and lines may be indicative of waste oil disposal facilities. This appears to be supported by the chemical analyses completed by Hart Crowser indicating small concentrations in oil product collected from monitoring wells on-site of both metals (chromium and lead) and PCBs (6, 7). Some waste oils contain a myriad of wastes including heavy metals and PCBs.

#### F. Demographic Information

The site is located in a narrow river valley with both commercial and residential areas nearby (Attachment 1). The most accurate figures were arrived at from conversations with Peggy Vipond, a US Postal Service employee and member of the Avery Water Board. Ms. Vipond is involved with billing for water and has an excellent

knowledge of the wells in the area and the number of people using each well. Based on her estimates the Avery population varies from approximately 98 to 185 persons, the difference due to seasonal variations and associated employment (4).

#### G. Routes of Exposure

The information required to assess the groundwater, surface water, soil and air exposure routes is presented below:

##### Groundwater

A release to groundwater has been documented based on chemical analyses (6, 7).

Soils in the area consist of the Pywell Series (organic soil, very poorly drained) in the river bottoms, and the Vay Series (erodible volcanic ash surface soil) on the mountain slopes (2). However, neither may be applicable to the site (or "landing" as commonly referred to in Avery) as it appears to be comprised mainly of fill materials. This observation is supported by the drilling log from the closest (approximately 300 yards to the west of the site) domestic well, the Potlatch well (Attachment 1,3), which indicates approximately 18 feet of fill, and personal communication with Mr. Mike Fish of Potlatch concerning installation of the Hart-Crowser monitoring wells (1). Mr. Fish stated that installation of those wells was complicated due to the presence of railroad

debris in the subsurface. Encountering this debris in the well bore often necessitated changing well location before final depth could be obtained. As indicated in the Potlatch well log, the fill appears to be underlain by a layer of gravel, probably deposited by the river (Attachment 3). The locally utilized aquifer does not have a formally designated name and is essentially unclassified valley fill alluvium (12). This valley fill alluvium rests on bedrock consisting of mudstones and shales of the Precambrian Belt formation (14).

Static water levels in monitoring wells on-site are typically 12-15 feet below grade, which also corresponds closely to river level (7).

There are six wells within a four mile radius of the site that furnish water to Avery residents for domestic purposes. The Avery Water and Sewer well, located east of the site approximately three-quarters of a mile near the mouth of Avery Creek, serves 65 people on a regular basis, and upwards of 75 during the summer. This includes the Avery Community Center, and an 8 space trailer court occupied on a seasonal basis which accounts for the higher summer estimate. The Potlatch well, cited earlier, serves only one residence (one person usually occupies this house) through most of the year except when

construction crews and their trailers utilize the area just west of the site. Then a maximum of 20 people may utilize this well during the construction season. One well serves the Log Cabin Inn and Motel located directly across from the site on the south side of the river. The well serves one residence and is used by the restaurant, bar and motel (1 apartment, 4 rooms). There is also space for eight trailers on the premises. These are occupied only seasonally. A USFS well is located above the Avery Water and Sewer well, on the divide between Avery Creek and Fortynine Gulch (Attachment 1). This well is utilized seasonally, with no use in the winter and a maximum of approximately 10 USFS workers in the summer. The Avery school well, located across the river and southeast of the site, serves 21 residents, in addition to the children and personnel at the school which at present totals 29. The sixth well is located approximately one and one-quarter miles west of the site near the confluence of Fishhook Creek and the St. Joe River. This well supplies domestic water for a residence at that location (4). For the required distances from the site, the wells and estimated associated populations are as follows:

<u>Distance from Site (Miles)</u>	<u># of wells</u>	<u>Estimated Population (Includes seasonal range)</u>
0 - 1/4	2	8 - 48
1/4 - 1/2	0	
1/2 - 1	2	86 - 125
1 - 2	2	4 - 12
2 - 3	0	
<u>3 - 4</u>	<u>0</u>	
Total	<u>6</u>	<u>98 - 185</u>

The average annual precipitation for the area, as measured at St. Maries downriver, is 30.1 inches (3). The annual free water surface evaporation is 28 inches (11), which results in an annual net precipitation of 2.1 inches. However, the evaporation measurement reflects a recording period from May through October, the driest period of the year. Although rain is common in the summer, the highest precipitation is during the winter months when evaporation is minimal, thus resulting in increased infiltration or actual net precipitation.

No wellhead protection areas have been designated.

#### Surface Water

There are no quantitatively documented known releases to surface water other than the oily substance described in

Section D. The presence of chromium, lead, and PCBs in the sample obtained from monitoring well MW-11 raises questions as to the presence of waste oils at the site and in the river (6).

The main contaminants of concern would be PCBs and heavy metals entrained in an oily base, possibly waste oil.

There are no obvious overland surface migration paths at the site for contamination to enter surface waters and no current operations at the site that could serve as a source for contamination to surface waters (1). The same groundwater flow that is transporting product into the St. Joe River could be capable of contributing other contaminants, such as those detected in the floating layer (PCB, lead, chromium) to the river. The site itself lies adjacent to the St. Joe River in the east-west direction for approximately 1500 feet (Attachments 1, 2). There are no records to indicate whether or not the site lies within the St. Joe River flood plain for any particular event (25 year, etc.). The Shoshone County Zoning and Planning Department has no flood plain data for the upper St. Joe above Calder (9). However, a rain event in November, 1990 created one of the highest flows (higher than peak spring runoff) in recent memory according to long time Avery residents. The town and

specifically the site remained well above the high water mark (8, 9).

The average monthly flow for the St. Joe River as measured at Calder (30 miles downstream) varies from an average September low flow of 500 cubic feet per second (cfs) to an average May high flow of 8560 cfs. The average annual flow is 2408 cfs (3).

There is no known use of the river for drinking water immediately downstream of Avery. Calder (30 miles downstream) does not utilize the river for potable water and neither does St. Maries, another 20 miles downstream beyond Calder (8).

The St. Joe River is popular for sport fisheries and is classified as a "Special Resource Water" by the State of Idaho. Based on a 1990 fish count conducted between Calder and Avery, the fish production in pounds per mile of stream in the 15 miles below Avery is estimated to be 710 lbs/mile. This is based on an average of 947 fish/mile at 3/4 lb. per fish (approximately 10-12 inches). The species counted include cutthroat and rainbow trout and whitefish. No wetlands are indicated in the 15 miles below Avery (1, Attachment 1).

### Soils

A release of hazardous substances to surface soils has not been documented. Only groundwater and product samples have been subjected to chemical analyses (Attachment 4). However, the presence of PCBs and heavy metals in the waste oil recovered from beneath the site suggest the possibility of soil contamination through the dumping or spilling of waste oil on the site. Some dark gray staining of soils was observed during the October 1990 site visit in the vicinity of the small camp buildings located in the middle of the site, and west of those buildings near the then present temporary trailers. Some remnant patches of asphalt were observed at the site beneath the more recently laid gravel.

There have been, and will again be during the summer construction season, temporary populations (in trailers) adjacent to the site as described in section B. However, no schools or day care centers are located near the site. The nearest regularly (year-long) occupied structure is a residence owned by a Mr. Bernie Benson, located approximately 200 yards west of the site. There is also the Log Cabin Inn & Motel located just to the south-southeast, across the river, again approximately 200 yards distance from the site (1).

Access by humans and animals to the site is both possible and very easy. There are no fences or other barriers present at the site.



#### H. Summary

This site is a former switching station and apparently "light" maintenance facility for the railroad. The facility operated from 1909 to the late 1970s. No records exist that document hazardous substance releases to groundwater, surface water, or soils, with the exception of relatively recent chemical analyses indicating groundwater contamination by petroleum constituents, and oily wastes contaminated with both lead, chromium and PCBs. The hazardous substances of concern are solvents for degreasing engine parts, transformer cooling oils containing PCBs, and waste oils. Major presumed routes of exposure which will require further analysis include groundwater, surface water, and soil. The surface water of concern is the St. Joe River flowing adjacent to the site. Bioaccumulation of PCBs in aquatic species which are part of the human food chain should be further evaluated. Possible contamination of this resource may have occurred mainly through the groundwater to surface water pathway.

## RECOMMENDATIONS

It is recommended that a site inspection of this facility be conducted in order to collect data necessary to complete the Hazard Ranking System (HRS) evaluation for this site. The following recommendations are to assist EPA in determining the eligibility for placement on the National Priorities List (NPL).

1. Undertake a sampling effort at visually impacted areas of the site to further document the presence of CERCLA regulated substances in soil, surface water, groundwater and air through all HRS exposure pathways.
2. To date one sample from MW-11 indicates that CERCLA regulated substances have been released to the environment. Presently, the source for these contaminants is unknown. The source(s) will need to be identified if additional waste quantity is needed to enhance the pathway scores.
3. Given that the floating oil layer on the groundwater has been documented as being contaminated by PCBs, lead, and chromium, we feel sampling of the nearest water supply wells should be conducted to determine if the release is impacting human health. This will be necessary to document a threat to the human target population.

## I. References

1. Site visit (October 15, 1990) by Clyde Cody (IDEQ) and personal observations, and on-site discussions with Terry Stranohon and Gary Reynolds USFS (245-4517) Avery; Mike Fish, Potlatch Corporation (245-2585), St. Maries, Idaho.
2. Barker, R.J., et al., Idaho Soils Atlas, The University Press of Idaho, Moscow, Idaho 1983.
3. Personal communication with Tom Eggers, Hydrologist and Lead Forecaster, National Weather Service (334-9860), Boise, Idaho.
4. Personal communication with Peggy Vipond, U.S. Post Office (245-3557), Avery, Idaho.
5. Personal communication with Chet Johnson (contacted at Avery Trading Post, 245-3996), retired railroad worker, Avery, Idaho.
6. "Task 2 - Regulatory Assessment" August 23, 1989, completed by Hart Crowser, Inc., Seattle, Washington.
7. "Site Exploration Report" October 27, 1989, completed by Hart Crowser, Inc., Seattle, Washington.

8. Personal communication with Steve Tanner, Water Quality Compliance Officer, Coeur D'Alene Field Office (667-3524) IDEQ.
9. Personal communication with Pat Allen, Public Works (753-5475), Shoshone County Zoning and Planning Department, Wallace, Idaho.
10. Personal communication with Doug Conde, State of Idaho Deputy Attorney General, IDEQ (334-0497), Boise, Idaho.
11. Personal Communication with Myron Molnau, State Climatologist, University of Idaho (885-6182), Moscow, Idaho.
12. Personal communication with Brian Painter, Environmental Hydrogeologist, Coeur D'Alene Field Office (667-3524) IDEQ.
13. Unpublished data provided by Dr. Ted C. Bjornn, Idaho Cooperative Fish and Wildlife Research Unit, College of Forestry, Wildlife and Range Science, University of Idaho (885-6336) Moscow, Idaho.
14. Alt, D.D., Hyndman, D.W., Roadside Geology of Idaho, Mountain Press Publishing Company, Missoula, Montana, 1989.

## ATTACHMENTS

Attachment 1: Location Maps

Attachment 2: Facility Map (1915 Plat Map)

Attachment 3: Well logs, Idaho Dept. of Water Resources, Boise  
Idaho.

Attachment 4: Hart-Crowser Reports and Chemical analysis  
completed by State of Idaho.

Attachment 5: Fish Count Data and Associated Calculations.

**Attachment 1**

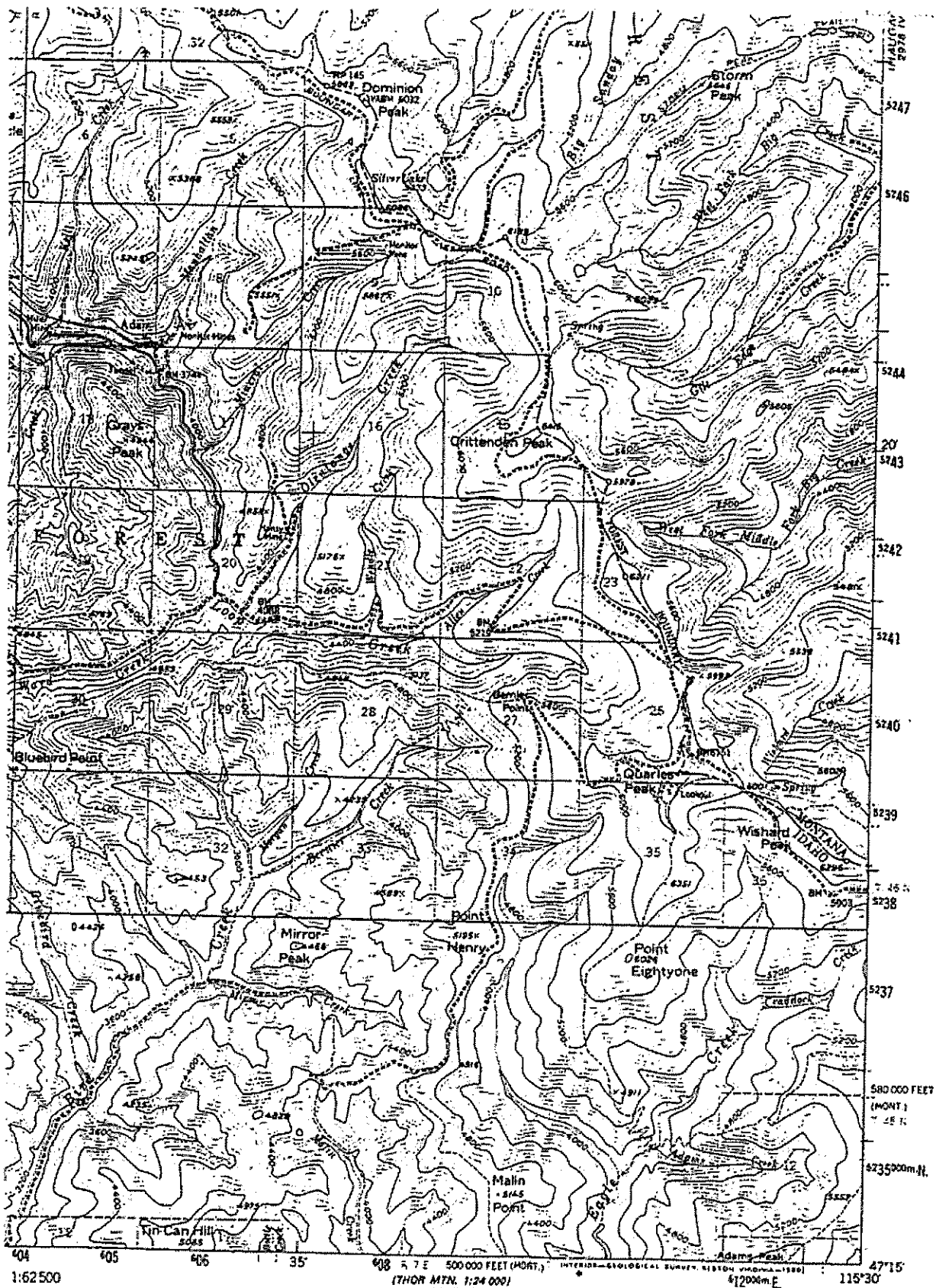
UMTRA Project  
Quarterly Report  
Cooperative Agreement No: DE-FC04-85AL 20535  
Report Period: January, February, March, 1991

I. Progress Summary for Reporting Period

- Continued assistance to MK-F with VP remediations, signing off on RAAs, and processing site logistics and permitting. Key VP properties have been the Sawtooth Lodge, South Fork Lodge including the cabins and motel, and the Anger property.
- Participated in DOE/<sup>D</sup>/NRC meeting in February in Washington, D.C. Assisted in resolving groundwater contamination issue for processing site.
- Completed review of Remedial Action Plan (RAP) in January.

II. Problems Encountered or Anticipated

- No problems anticipated at this time.



1:62500  
0 1000 2000 3000 4000 5000 FEET  
0 1 2 3 4 5 KILOMETERS

VERTICAL DATUM OF 1929



QUADRANGLE LOCATION

ATIONAL MAP ACCURACY STANDARDS  
R. COLORADO 80225, OR RESTON, VIRGINIA 22092  
S AND SYMBOLS IS AVAILABLE ON REQUEST

#### ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———  
Medium-duty ——— Unimproved dirt ———

U.S. Route

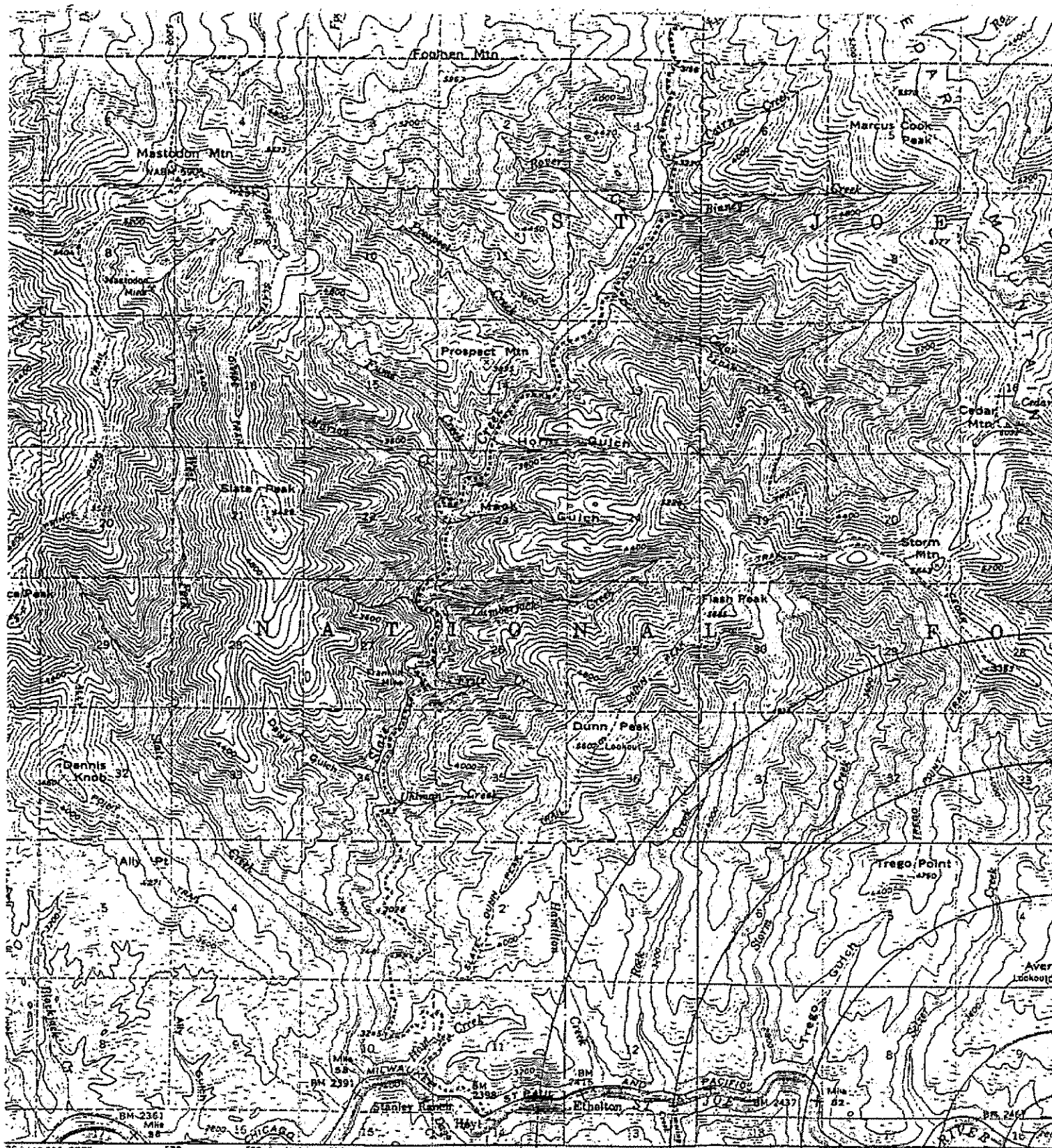
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N4715-W11530/15

1956







ed, edited, and published by the Geological Survey  
by USGS and USC&GS

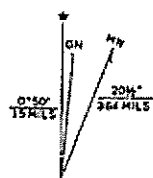
aphy from aerial photographs by ER-55 plotter  
photographs taken 1954. Field check 1957

nic projection. 1927 North American datum  
0-foot grid based on Idaho coordinate system, west zone  
meter Universal Transverse Mercator grid ticks,  
1, shown in blue

11 indicates areas in which only  
ark buildings are shown

3 land lines indicate approximate locations  
cked elevations are shown in brown

(HOYT MOUNTAIN 1:24 000)  
2878 III NW



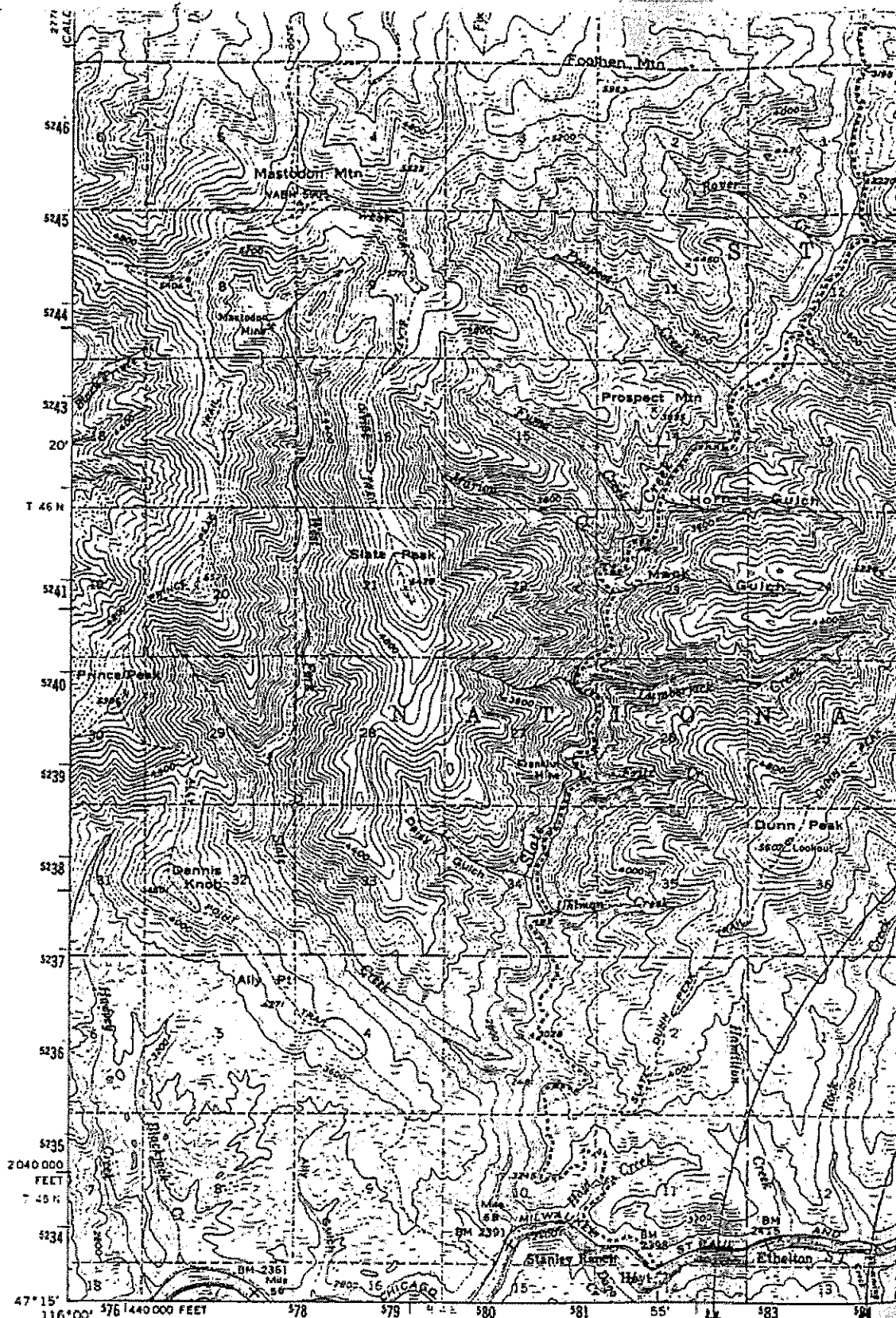
UTM GRID AND 1957 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

SCALE 1:62500



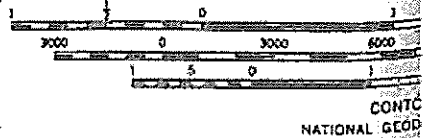
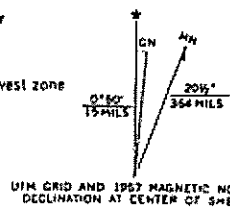
CONTOUR INTERVAL 80 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



2778 (1 NE)  
(MARBLE MTN)  
1:24 000

Mapped, edited, and published by the Geological Survey (HOYT MOUNTAIN 1:24 000)  
Control by USGS and USC&GS  
Topography from aerial photographs by ER-55 plotter  
Aerial photographs taken 1954 Field check 1957  
Polyconic projection. 1927 North American datum  
10,000-foot grid based on Idaho coordinate system, west zone  
1000-meter Universal Transverse Mercator grid ticks,  
zone 11, shown in blue  
Red tint indicates areas in which only  
landmark buildings are shown  
Dashed land lines indicate approximate locations  
Unchecked elevations are shown in brown



THIS MAP COMPLIES WITH  
FOR SALE BY U.S. GEOLOGICAL SURVEY  
A FOLDER DESCRIBING TOPOGRAPHY

PA/SI Program  
Quarterly Report  
Cooperative Agreement No: V-000409-01-2  
Report Period: January, February, March, 1991

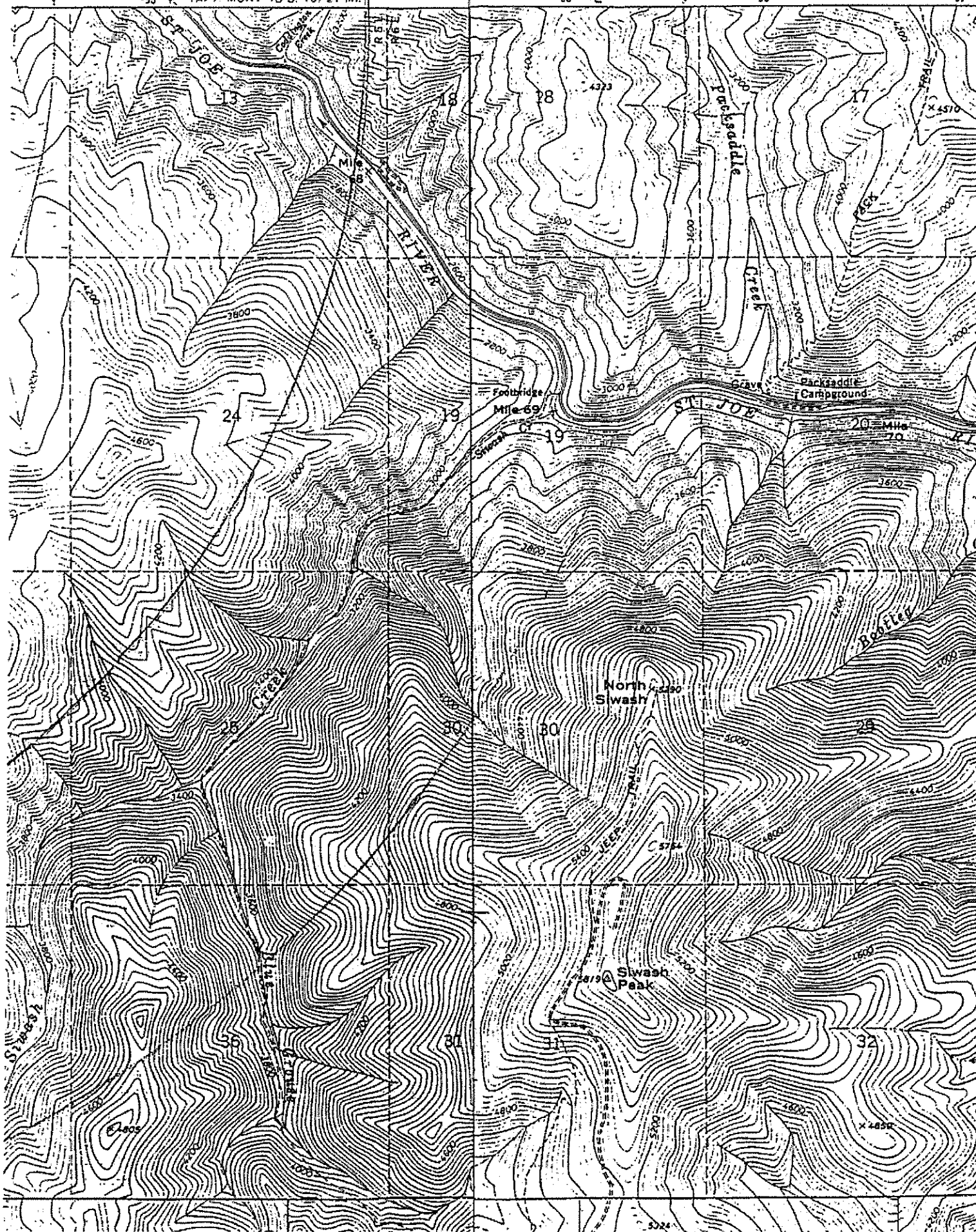
I. Progress Summary for Reporting Period

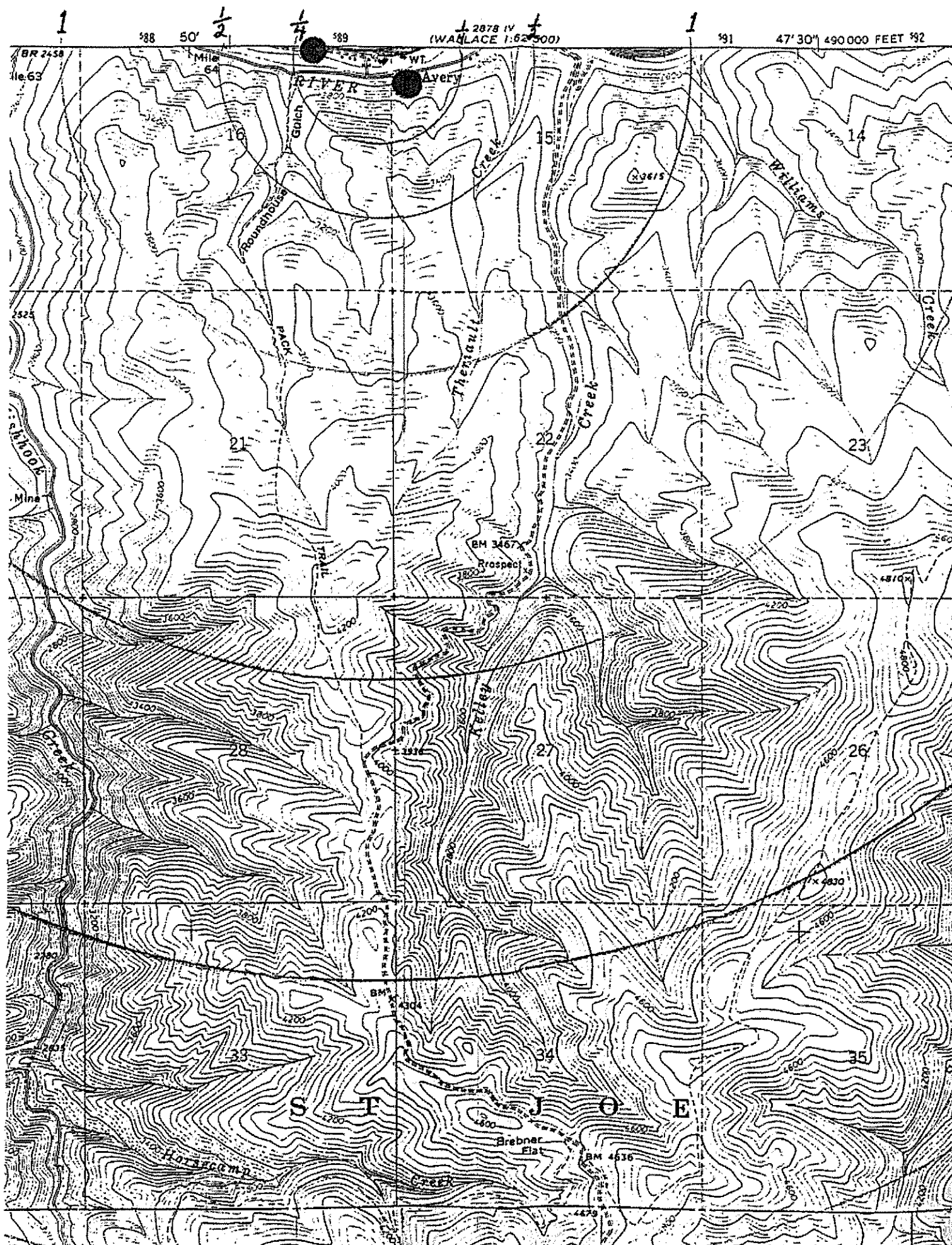
- Draft PA completed for Avery Roundhouse and Dump. Draft was reviewed by Region 10. Avery PA, including incorporation of revisions and Prescore, to be completed in April.
- Potlatch - Large Mill site draft completed, to be revised in light of information gained from review of Avery PA.
- Gathered initial information for Mountain Home Landfill, AEI, and Simplot Fertilizer Plant PAs. Draft partially completed for Mountain Home Landfill.
- Assisted E & E personnel with planning for Deming Industries, Coeur d' Alene site visit. Received and reviewed Geophysical Survey report for the Triumph Mine Dump site completed by E & E.

II. Problems Encountered or Anticipated

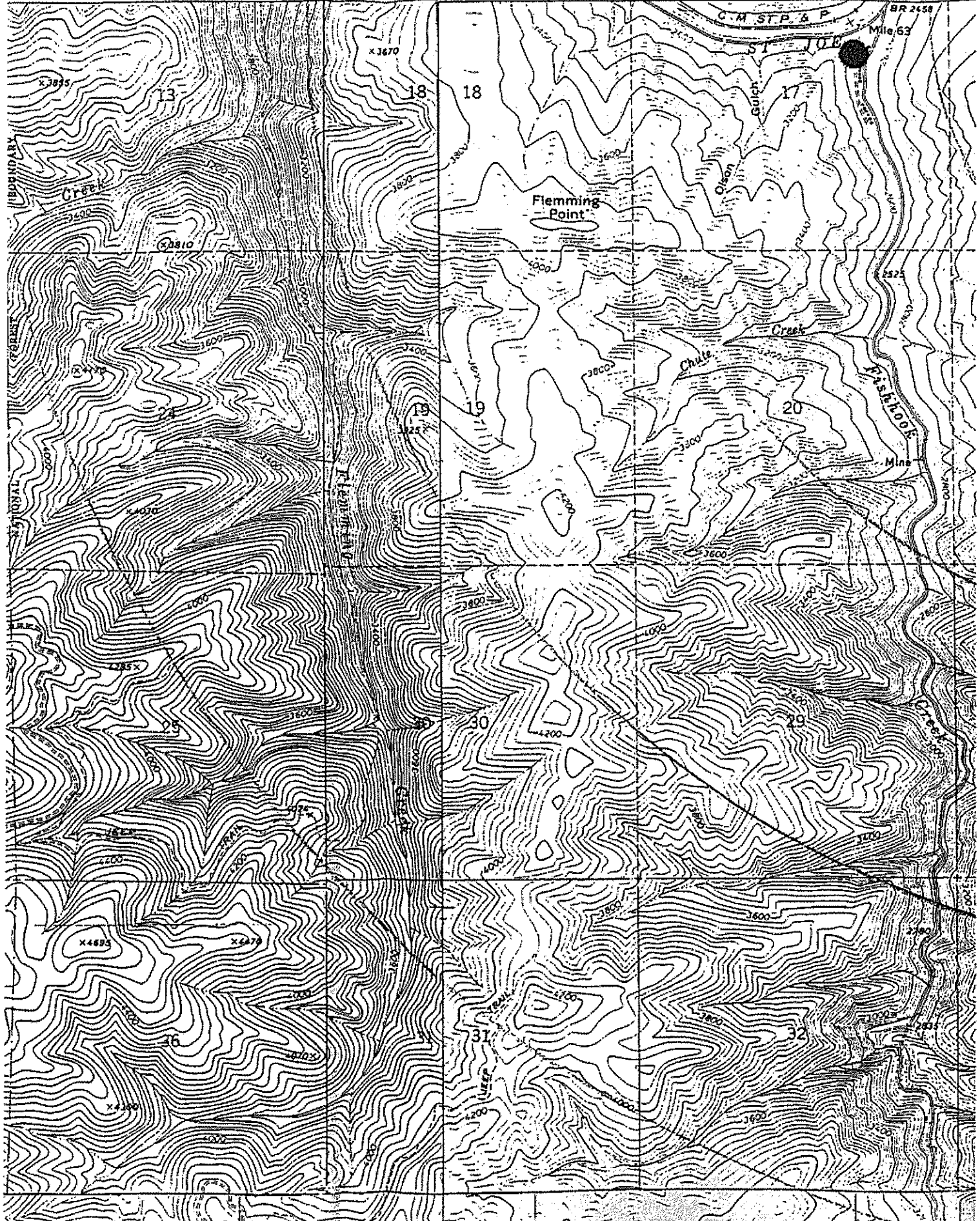
- Need to modify HRS scoring method for Prescore. Prescore not yet available for use.



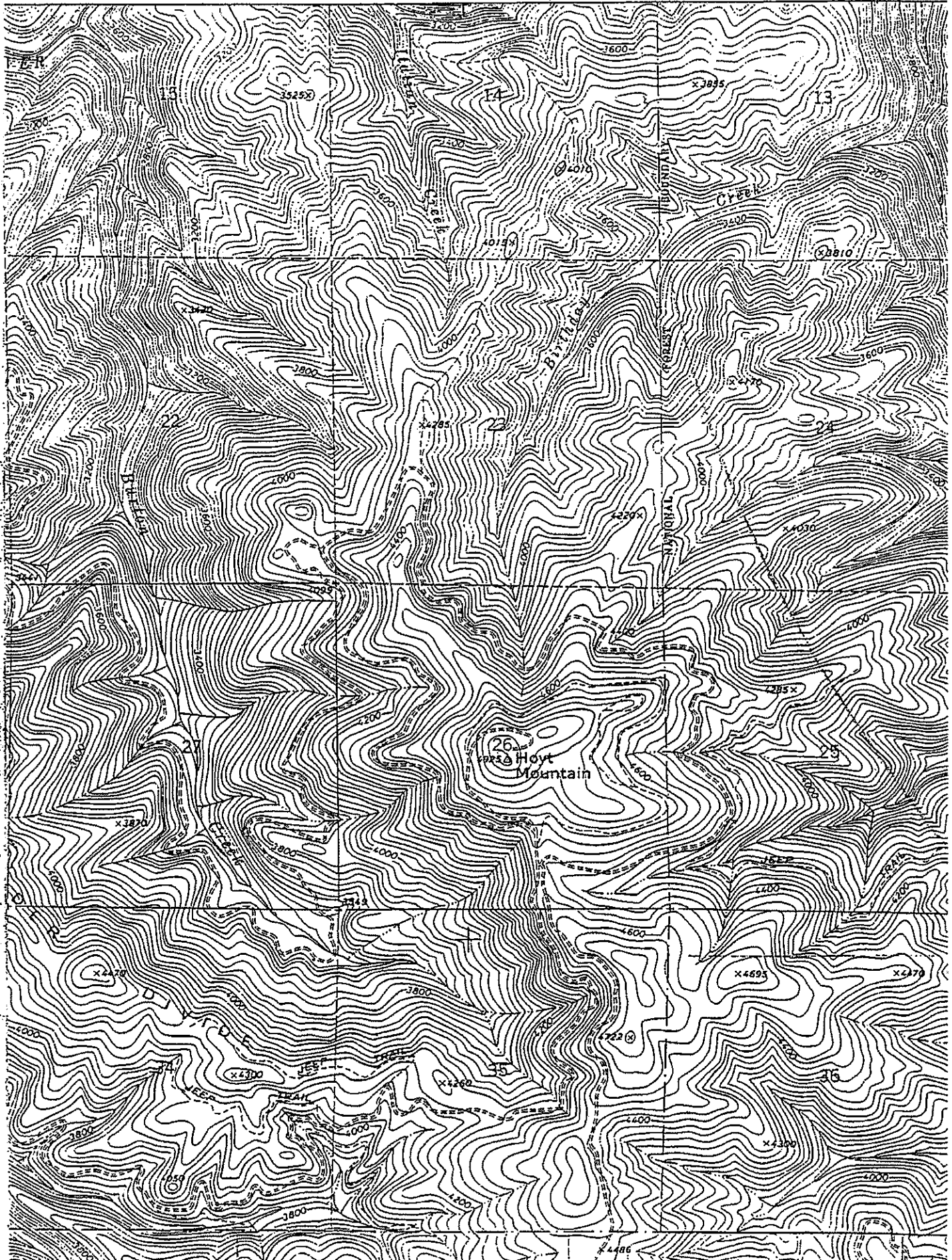




583 584 R. 4 E. R. 5 E. 115° 52' 30" 5860000 E. CALDER 20 MI 587









**Attachment 2**



[illegible]

**Attachment 3**

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
**WELL DRILLER'S REPORT**

USE TYPEWRITER OR  
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources  
within 30 days after the completion or abandonment of the well.

<p><b>1. WELL OWNER</b></p> <p>Name <u>Curry School District</u></p> <p>Address <u>Curry, Idaho</u></p> <p>Owner's Permit No. _____</p>	<p><b>7. WATER LEVEL</b></p> <p>Static water level <u>5</u> feet below land surface.</p> <p>Flowing: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No G.P.M. <u>166 gpm</u></p> <p>Artisan closed in pressure _____ p.s.i.</p> <p>Controlled by <input type="checkbox"/> Valve <input type="checkbox"/> Cap <input type="checkbox"/> Plug</p> <p>Temperature _____ OF Quality _____</p>																																
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STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
**WELL DRILLER'S REPORT**

USE TYPEWRITER OR  
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources  
within 30 days after the completion or abandonment of the well.

<p><b>1. WELL OWNER</b></p> <p>Name <u>Richard N. or T. L. Parker</u></p> <p>Address <u>Box 16 Arco, ID 83502</u></p> <p>Owner's Permit No. _____</p>	<p><b>7. WATER LEVEL</b></p> <p>Static water level <u>16</u> feet below land surface.</p> <p>Flowing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No G.P.M. flow _____</p> <p>Artesian closed-in pressure _____ p.s.i.</p> <p>Controlled by <input type="checkbox"/> Valve <input checked="" type="checkbox"/> Plug <input type="checkbox"/> Plug</p> <p>Temperature <u>62</u> of Quality <u>Good</u></p> <p><small>Describe location of observation point's surface</small></p>																															
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USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

State of Idaho  
Department of Water Conservation  
**WELL DRILLER'S REPORT**

## WELL DRILLER'S REPORT

[illegible]

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
**WELL DRILLER'S REPORT**

USE TYPEWRITER OR  
BALLPOINT PEN

State law requires that this report be filed with the Director, Department of Water Resources  
within 20 days after the completion or abandonment of the well.

**1. WELL OWNER**

Well: **Potlatch Corp. Northern Unit Logging**  
Address: **Box 386 St. Maries, Idaho 83861**  
Owner: Permit No. \_\_\_\_\_

**7. WATER LEVEL**

Static water level **20** feet below land surface.  
Flowing? ☐ Yes ☒ No G.P.M. flow \_\_\_\_\_  
Artesian condition pressure \_\_\_\_\_ P.S.I.  
Controlled by: ☐ Valve ☐ Cap ☐ Plug  
Temperature cold of \_\_\_\_\_ Quality **good**

**2. NATURE OF WORK**

☒ New well ☐ Deepened ☐ Replacement  
☐ Abandoned (describe method of abandoning) \_\_\_\_\_

**8. WELL TEST DATA**

☐ Pump ☐ Bailer ☒ Air ☐ Other \_\_\_\_\_

Discharge G.P.M.	Pumping Level	Hours Pumped
<b>50 G.P.M.</b>		

**3. PROPOSED USE**

☐ Domestic ☐ Irrigation ☐ Tree ☐ Municipal  
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection  
☒ Other **commercial Logging (specify type)**  
**camp**

**4. METHOD DRILLED**

☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary  
☐ Cable ☐ Dug ☐ Other \_\_\_\_\_

**5. WELL CONSTRUCTION**

Casing schedule: ☒ Steel ☐ Concrete ☐ Other \_\_\_\_\_  
Thickness \_\_\_\_\_ Diameter \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
250 inches **8** inches **1** feet **28** feet  
250 inches **6** inches **3** feet **17** feet  
\_\_\_\_\_ inches \_\_\_\_\_ inches \_\_\_\_\_ feet \_\_\_\_\_ feet  
\_\_\_\_\_ inches \_\_\_\_\_ inches \_\_\_\_\_ feet \_\_\_\_\_ feet  
Was casing drive shoe used? ☒ Yes ☐ No  
Was a packer or seal used? ☐ Yes ☒ No  
Perforated? ☒ Yes ☐ No  
How perforated? ☐ Factory ☐ Knife ☐ Torch  
Size of perforation **1/4** inches by **12** inches

60 \_\_\_\_\_ perforations **47** feet **67** feet  
\_\_\_\_\_ perforations \_\_\_\_\_ feet \_\_\_\_\_ feet  
\_\_\_\_\_ perforations \_\_\_\_\_ feet \_\_\_\_\_ feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name \_\_\_\_\_

Type \_\_\_\_\_ Model No. \_\_\_\_\_

Diameter \_\_\_\_\_ Slot size \_\_\_\_\_ Set from \_\_\_\_\_ feet to \_\_\_\_\_ feet

Diameter \_\_\_\_\_ Slot size \_\_\_\_\_ Set from \_\_\_\_\_ feet to \_\_\_\_\_ feet

Gravel packed? ☐ Yes ☒ No ☐ Size of gravel \_\_\_\_\_

Placed from \_\_\_\_\_ feet to \_\_\_\_\_ feet

Surface seal depth **18** Material used in seal: ☐ Cement grout

☒ Puddling clay ☐ Well cuttings

Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing

☒ Overbore to seal depth

Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent

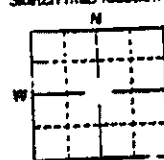
Weld \_\_\_\_\_

☐ Cemented between joints

Describe access port \_\_\_\_\_ **welded**

**6. LOCATION OF WELL**

Sketch map location must agree with written location.



Subdivision Name \_\_\_\_\_

Lot No. **1** Block No. \_\_\_\_\_

County **Shoshone** Shoshone

\_\_\_\_\_ % \_\_\_\_\_ % Sec. **16** T. **45** N. R. **5** E. W.

**10.**

Work started **11/16/79** finished **11/26/79**

**11. DRILLERS CERTIFICATION**

I/We certify that all minimum well construction standards were  
complied with at the time the rig was removed.

Firm Name **American Drilling** Firm No. **269**

Address **P.O. Box 14977 Spokane** Date **12/10/79**

Signed by (Firm Official) **James Murphy**

and **B.D. Murphy**

(Operator)

USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

300  
*under downgrading roughly, well still in use well routine tested*



**Attachment 4**



**HART CROWSER**

Earth and Environmental Technologies

Hart Crowser, Inc.  
1910 Fairview Avenue East  
Seattle, Washington 98102-3699  
FAX 206.328.5531  
206.324.9530

J-2296-02

August 23, 1989

Mr. Mike Fish  
Potlatch Corporation  
Northern Woodlands Division  
P.O. Box 386  
Saint Maries, Idaho 83861

Re: Avery Idaho Site  
Preliminary Environmental Service  
Task 2 - Regulatory Assessment

Dear Mr. Fish:

This letter report presents our findings for Tasks 1 and 2 of the above referenced project. We performed this work per our signed contract dated July 19, 1989, and referenced as Hart Crowser Job J-2296-02.

Our work included:

**Task 1**

- o Obtain samples of waste oils from monitoring well MW-11 on-site and any other available sources; and

**RECEIVED**

**JAN 11 1991**

IDHW - Div. of Environ. Qual.  
Water Quality Bureau



Potlatch Corporation  
August 23, 1989

J-2296-02  
Page 2

- o Analyze the sample for chlorinated volatiles, cadmium, chromium, lead, and PCBs.

#### Task 2

- o A preliminary assessment of how recovered oily wastes may be regulated;
- o A regulatory assessment of possible disposal options for the oily wastes that may be collected from this site cleanup; and
- o A general review of other regulatory considerations.

This work was performed and this report prepared in accordance with generally accepted professional practices related to the nature of the work accomplished in the same or similar localities, at the time the services were performed. This letter report is intended for the exclusive use of Potlatch Corporation for specific application to the Avery Idaho site. This report is not meant to represent a legal opinion. No other condition, express or implied, should be understood.

#### RESULTS OF CHEMICAL ANALYSES

Current information from previous sampling and the Task 1 sampling and analysis indicates the oily materials found floating on the upper saturated soil horizon to be a petroleum product, probably waste oils.



Potlatch Corporation  
August 23, 1989

J-2296-02  
Page 3

A sample of the floating petroleum product was obtained from monitoring well MW-11 during a site visit made on July 26, 1989. No other wells contained floating free phase hydrocarbons at that time. Considerable evidence was observed along the river bank of recent and continuing hydrocarbon seeps along the river bank. However, there was not sufficient flow or accumulation to sample from the seeps. The samples were analyzed using Hart Crowser's FAST mobile laboratory. Results of the chemical analyses performed are summarized on Table 1. The laboratory report is attached. Also shown for comparison purposes are the waste oil specification limits contained in 40 CFR 266 Subpart E.

Table 1 - Chemical Analysis Results and Waste Oil  
Specification Limits - parts per million (ppm)

<u>Parameter</u>	<u>Concentration in Sample</u>	<u>Specification Limit</u>
Arsenic	NA	5
Cadmium	ND	2
Chromium	20	10
Lead	30	100
Total Halogens	ND	4,000
PCBs	1.4	NS

NA = Not analyzed

ND = Not detected in sample

NS = No specification in 40 CFR 266



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These results indicate that the oil is slightly out of specification due to chromium. The sample was not analyzed for arsenic due to limitations of the laboratory, however, based on past history of the site it seems unlikely that arsenic would be a significant factor. There is not a specification limit for PCBs in 40 CFR 266. However, the 1.4 ppm level in this sample is well below regulatory criteria of the Toxic Substances Control Act (TOSCA).

Although the single sample may not be totally representative of the petroleum products which may be recovered by the proposed interception trench, the results are encouraging for reuse as waste oil burned for energy. The high chrome value is still within limits for out of specification oil, or the oil could be blended down as discussed in the following section.

The railroad's past maintenance activities on this site are obviously the most likely source of these oily wastes. These activities would certainly have included oil changing, storage of heating oils and locomotive fuels, and other lubrication and petroleum product related maintenance activities.

#### PRELIMINARY ASSESSMENT OF RECOVERED OILY WASTES

The definition of a used oil from 40 CFR 266:



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"Used oil" means any oil that has been refined from crude oil, used, and as a result of such use, is contaminated by physical or chemical impurities.

Current information suggests that the oily material at the Avery Site is simply "used oil". Based on the sampling information, the oily waste has no detected chlorinated solvents and no significant PCB concentrations. Further, the only heavy metal of significance found was chrome, a common contaminate in used oils. Our limited sampling results show no unusual contaminate not common to used oils. Historical knowledge of the site's activities also suggests significant sources of used oils.

#### REGULATORY ASSESSMENT OF DISPOSAL OPTIONS

Options for the recovered oily waste vary depending on whether it is hazardous or non-hazardous waste. With limited data, the oily waste does not appear to be hazardous, except possibly for chrome. Obvious disposal options are:

- o Recycling
  - Treatment and reuse
  - Energy recovery by burning
- o Treatment
  - Biological, landfarming



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- o Disposal
  - Incineration

Preliminary screening of the above options for cost, long term liability, permanence of solution, and ease of implementation (both physically and regulatory) concluded that energy recovery by burning effective met all the criteria.

The following is a brief description of the regulatory decision tree for oily waste (used oil) burned for energy recovery.

1. Is the waste a hazardous waste under Subpart O? If the waste has a listed hazardous waste, then it must be sent to a permitted Treatment, Storage, or Disposal (TSD) facility. Our waste predates the lists, and has no known source.
2. Has the waste been mixed with a hazardous waste? If yes, it may be burned as a hazardous waste fuel, under Subpart D, 40 CFR 266. Our waste has unknown source, so this question is not applicable.
3. Does the oily waste have greater than 1000 ppm total halogens? If yes, 40 CFR 266.40 (c) presumes that the used oil has been mixed with halogenated hazardous wastes. Go to 1. above or rebut this presumption by demonstrating otherwise. Our initial sampling detected no halogens.



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4. Is the oil waste ONLY as a hazardous waste because of characteristics (e.g., heavy metals), or because of contaminants included from Small Quantity Generators (SQG)? Because we do not know the source of this oil waste, SQG's are not an issue. However, characteristics of chrome could possibly cause our waste to be designated a hazardous waste (based on our limited sampling). If this were the only reason for designation as hazardous waste, it could still be burned using Subpart E standards. If not, go to 2. above.
5. Does the oily waste meet the Specifications? The Specification in 40 CFR 266.40 include allowable levels for Arsenic, Cadmium, Chromium, Lead, Flash Point, and Total Halogens. Note our sampling results above.
  - A. Yes it does. Then the only management that is required is to keep records and analyze the material. Our waste slightly exceeds the Chrome levels, but you are allowed to blend this waste with other fuels to lower the total blended levels.
  - B. No it does not. The used oil fuel will be termed off-specification. 40 CFR 266.41 limits the types and design standards for boilers and industrial furnaces and requires that the burner notify EPA. Also recordkeeping and analysis of above are required.





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### Options

The oily waste is most likely covered under 5.A. above. There is minimal requirement and the boiler at your facility can be used to burn the waste. Should the waste initially or partially be off-specification, blending with other recovered oily waste or blending with your current fuels may bring it into specification.

Should it be impossible to blend, treat, or process the oily wastes, they may still be marketed to others who may be able to blend before burning, or your boilers or industrial furnaces may meet the more limited boiler/furnace standard listed under 40 CFR 266.41 and 260.10.

### OTHER REGULATORY ISSUES

Given the current analytical data, EPA is not likely to be concerned or get involved in this cleanup. Should human health or environmental damage occur, then EPA would reconsider there role. Also should the cleanup stall or slow significantly, EPA may increase their involvement. Their clearest authority to become involved would be through the use of the Clean Water Act as a consequence of seepage into the river.

An emergency cleanup under CERCLA does not appear likely. Petroleum spills are generally exempt from CERCLA. However, should high concentrations of Appendix VIII constituents be discovered, EPA has taken action.

?  
will have



Potlatch Corporation  
August 23, 1989

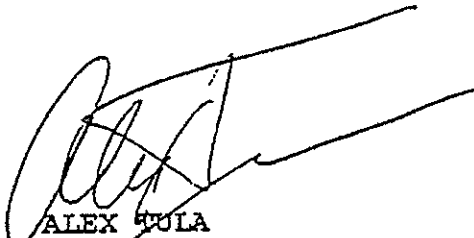
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We appreciate the opportunity to assist you on this project. If you have any questions, please call.

Sincerely,

HART CROWSER

RICHARD D. PIERCE  
Associate



ALEX TULA  
Associate

RDP/AT:jal  
L229601A/JOBS

Attachment:

FAST Laboratory Analytical Report

cc: Potlatch Corporation, Lewiston, Idaho,  
Attn: William O. Daneworth

## FAST Laboratory Analytical Report

FROM: Thomas Cammarata, Environmental Geochemist  
TO: Alex Tula, Associate  
DATE: August 1, 1989  
SITE: Potlatch  
RE: 2296-02  
CC: Philip Spadaro, Sr. Project Environmental Chemist

Attached are the compiled results from field screening analysis conducted on one oil sample received on 7/26/89. Screening analysis was performed for PCBs, Chlorinated Screen, and metals (Cd, Cr, and Pb). This report contains:

- o Results for 1 oil sample
- o Results for 1 method blank
- o Results for 1 spike

The appendix to this report contains:

- o Detection limits
- o A description of the analytical method

### Analytical Limitation

Analyses of the samples were performed using screening techniques. Quantitations are estimated, compounds identification are tentative.

### Analytical Comments

Methodologies for analyses of PCBs, chlorinated compounds and metals in oil have been modified from those in the appendix. PCBs were extracted using a one gram sample and no methanol. For chlorinated compounds six tenths of a gram of oil was extracted into 3 ml of methanol. An aliquot of the extract was then taken into 15 ml of carbon free water. Metals were prepared using a half gram of oil into 12 ml of concentrated nitric acid.

The metals analysis data for oil does not reflect the total metal content of the oil. After sample digestion and prior to analysis, the digestate is filtered. Filtering removes material which may contain metals.

## Analytical Results

Sample	Analysis	Matrix	mg/Kg
mw-11	Cd	oil	-
mw-11	Cr	oil	20
mw-11	Pb	oil	30
mw-11	PCBs	oil	1.4
mw-11	Chlorinated Volatiles	oil	-

- = below detection limits

All quantitation are estimates

All identifications are tentative

## Quality Control

Sample	Analysis	mg/Kg	% Rec
Method Blank	Cd	-	
	Cr	0.48	
	Pb	1.9	
Method Blank	PCBs	-	
Method Blank	Chlorinated Volatiles	-	
mw-11	Cd		91
mw-11	Cr		109
mw-11	Pb		91
mw-11	PCBs		65

%Rec = percent spike recovery

- = below detection limits

Hart Crowser F.A.S.T. Laboratory  
VOLATILES SCREEN

Volatiles are analyzed using an automated headspace system connected to a gas chromatograph. Compounds are detected with a Photon Ionization Detector (PID) and an Electrolytic Conductivity Detector (Hall or ELCD). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 601, 602, 624, 8010, 8015, 8020, or 8240.

Detection Limits

Compound	Routine Detection Limits'	
	ppb in soil	water
Methylene Chloride	20	20
1,1-Dichloroethylene	20	20
1,1-Dichloroethane	20	20
Chloroform	10	10
Carbon Tetrachloride	10	10
1,2-Dichloropropane	20	20
Trichloroethylene	10	10
1,1,2-Trichloroethane	10	10
Dibromochloromethane	20	20
Tetrachloroethylene	10	10
Chlorobenzene	20	20
Trichlorofluoromethane	10	10
trans-1,2-Dichloroethylene	20	20
1,2-Dichloroethane	20	20
1,1,1-Trichloroethane	10	10
Bromodichloromethane	20	20
cis and trans-1,3-Dichloropropene	40	40
Bromoform	40	40
1,1,2,2-Tetrachloroethane	20	20
Benzene	10	10
Toluene	10	10
Ethylbenzene	10	10
Xylenes	10	10

\* = Wet Weight Basis

Volatiles Screen

Sample Extraction Technique

Fifteen gms of soil or 15 ml of water are placed in a 20 ml headspace vial. Carbon free water saturated with sodium sulfate is added to soils until a set volume of headspace is left in each vial. Sodium sulfate is added to each water sample vial to assist in developing the headspace. Soil samples are shaken after capping. The vials are heated prior to analysis in an automated

headspace sampler. The headspace sampler transfers a set volume of the headspace to the chromatograph.

#### Chromatography Equipment

Analysis is performed using a Hewlett Packard 5890A gas chromatograph. The analytical column is a fused silica capillary column. The detectors are a Photoionization Detector (PID) and an Electrolytic Conductivity Detector (ELCD or Hall) connected in series.

#### Identification and Quantitation

Identification of the volatiles are made by retention time comparisons to standards run during the analytical sequence. All identifications are tentative. Quantitation of volatiles are made using a single external concentration calibration standard. All quantitations are estimates.

#### Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix
Target QC Values	Recovery +/- 50% Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.

Hart Crowser F.A.S.T. Laboratory  
PESTICIDE / PCBs SCREEN

Polychlorinated Biphenyls (PCBs) and Pesticides are analyzed using a simple solvent extraction and acid cleanup procedure to prepare the sample. Quantitation and identification are performed using a gas chromatograph (GC) with an Electron Capture Detector (ECD). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 608, 612, 617, 625, 8120, or 8270.

Detection Limits

Compound	Routine Detection Limits'	
	ppb in soil	water
Aroclor 1016	500	4.0
Aroclor 1221	500	4.0
Aroclor 1232	500	4.0
Aroclor 1242	500	4.0
Aroclor 1248	200	2.0
Aroclor 1254	200	2.0
Aroclor 1260	200	2.0
Aroclor 1262	200	2.0
Aldrin	20	0.1
alpha-BHC	20	0.1
beta-BHC	20	0.1
gamma-BHC (Lindane)	20	0.1
delta-BHC	20	0.1
4,4'-DDD	30	0.2
4,4'-DDE	30	0.2
4,4'-DDT	30	0.2
Dieldrin	30	0.2
Endosulfan I	20	0.1
Endosulfan II	30	0.2
Endosulfan Sulfate	30	0.2
Endrin	30	0.2
Endrin Aldehyde	30	0.2
Heptachlor	20	0.1
Heptachlor Epoxide	20	0.1

\* = Wet Weight Basis

Sample Extraction Technique

Five gms of soil are placed in culture tube. One half ml of methanol is added to bind water. Five mls of hexane are added to the sample. The tube is capped and agitated for fifteen minutes. The tube is then placed in a centrifuge to settle particulates and separate the phases.

For PCB analysis, a two ml aliquot of the extract is transferred to a second container. One ml of concentrated sulfuric acid is added and the extract agitated. The vessel is placed in a centrifuge to settle the acid.

For pesticide analysis acid cleanup procedure is not used. Acid causes degradation of some pesticides.

#### Analytical Equipment

Analysis is performed using a Hewlett Packard 5890A gas chromatograph with an autosampler. The analytical column is a fused silica capillary column. The detector is an Electron Capture Detector (ECD). Sample capacity 35 samples per day.

#### Identification and Quantitation

Identification of PCBs are made by comparison to chromatograms of PCB standards analyzed on our GCs. All identifications are tentative. Quantitation of PCBs are made using a single concentration calibration standard for each PCB and five characteristic peaks for each standard. All quantitations are estimates.

Identification of pesticides are made by retention time comparisons to standards run during the analytical sequence. All identifications are tentative. Quantitation of volatiles are made using a single external concentration calibration standard. All quantitations are estimates.

#### Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix.
Target QC Values	Recovery +/- 50% Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.



Hart Crowser F.A.S.T Laboratory  
METALS

Metals analysis is performed using a quick microwave digestion, if necessary, to prepare the sample. Quantitation and identification are performed using a flame atomic absorption spectrophotometer (flame AA). Approximate concentrations and tentative identifications derived from this screening method should be confirmed using EPA method 6010 or 7000.

Detection Limits

Metal	Routine Detection Limit	
	ppm in soil	ppb in water
Cadmium	1.5	15
Chromium	0.5	5
Copper	1.0	10
Lead	10	100
Nickel	1.5	15
Zinc	3.6	36

\* = Wet Weight Basis

Sample Preparation

A one gm soil sample is placed in a teflon vessel with ten mls of concentrated nitric acid. The vessel is place in a microwave oven for twelve minutes. The vessel is allowed to cool and five mls of concentrated hydrogen peroxide is added. After bubbling ceases the digestate is filtered through 0.45 micron filter paper and diluted to 100 ml.

If digestion is requested for waters, fifty mls of sample is placed in a teflon vessel with three mls of concentrated nitric acid and two mls of hydrochloric acid. The vessel is placed in a microwave oven for thirty minutes. The vessel is allowed to cool, then shaken for thirty seconds and digestate filtered through 0.45 micron filter paper.

MIBK Water Extraction

An alternative method of water sample preparation is by treatment of 100 mls water with seven mls of chelating agent (diethyldithiocarbamate) followed by extraction with fifteen mls of Methyl Isobutyl Ketone (MIBK).

## Spectrophotometer

Analysis of soil, water and MIBK extracted water samples is performed on a Perkin Elmer 2380 Flame Atomic Absorption Spectrophotometer. Sample capacity for flame AA performing a single metal analysis is 50 samples per day.

## Identification and Quantitation

Samples are analyzed at the primary absorption frequency of the metal specific hollow cathode lamp. A single standard is analyzed at a concentration within the proven linear range of the instrument and or sufficient to give an absorbance of 0.2. All quantitations are estimates.

## Quality Control

Method blank	One per day or matrix
Matrix spike	One per 20 samples, sample set or matrix
Duplicate	One per 20 samples, sample set or matrix
Target QC Values	Recovery +/- 50% Relative Difference <25%
Confirmation Samples	Recommend 10 to 20% samples split to confirming lab.

# **HART CROWSER**

Earth and Environmental Technologies

Hart Crowser, Inc.  
1910 Fairview Avenue East  
Seattle, Washington 98102-3699  
FAX 206.328.5581  
206.324.9530

J-2296-01

October 27, 1989

RECEIVED  
OCT 13 1989  
ENVIRONMENTAL QUALITY  
SOILS FIELD OFFICE

Potlatch Corporation  
P. O. Box 386  
St. Maries, Idaho 83861

Attn: Mr. Mike Fish

Re: Site Exploration Report  
Avery Landing Site  
Avery, Idaho

Dear Mr. Fish:

Hart Crowser, Inc., is pleased to submit this letter report for work completed to date at the Avery Landing site in Avery, Idaho. Our work was completed as outlined in Task 1 of our revised scope of work letter dated June 30, 1989. Additional water and product sampling was completed as discussed in our memorandum to Mr. Mike Fish of Potlatch Corporation dated September 15, 1989.

The scope of Task 1 work involved monitoring well installation, groundwater and free-phase hydrocarbon sampling, and laboratory analysis. Field sampling of

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October 27, 1989

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free-phase hydrocarbons was not completed during our August site visit due to absence of free product in the newly installed wells at that time. Product sampling was completed during our September visit.

The purpose of our field work to date has been to determine the extent of the free-phase hydrocarbon lens and potential groundwater contamination. Water and free product samples were analyzed to determine the level of dissolved hydrocarbons in the groundwater and the suitability of the hydrocarbon material for burning as boiler fuel.

The following report will cover:

- o Monitoring well installation;
- o Groundwater and free-phase hydrocarbon sampling;
- o Laboratory analysis results; and
- o Conclusion and recommendations.

Appendix A contains a discussion of field procedures and well installation logs. Laboratory analysis certificates are presented in Appendix B.

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### *Installation of Monitoring Wells*

Four monitoring wells were installed at the Avery Landing site on August 22 and 23, 1989. The Hart Crowser on-site representative was Bruce McDonald, Senior Staff Engineering Geologist. The subcontracted drillers were Soil Sampling Service of Puyallup, Washington. All drilling was completed with air rotary drilling methods. Monitoring well locations are shown on Figure 1. Well construction data are presented on Figures A-2 through A-5. A key displaying the symbols used to describe well installation logs is presented on Figure A-1.

### *Groundwater and Free-Phase Hydrocarbon Sampling*

Groundwater samples were collected on August 23, 1989, from each of the four monitoring wells installed by Hart Crowser. Monitoring wells HC-1 and HC-3 had no noticeable sheen on purged water. Heavy sheens were observed on purged water from monitoring wells HC-2 and HC-4, a strong odor was noted from HC-4. Free-phase hydrocarbons were not present in any of the new wells at that time. Water samples from HC-1 and HC-3 were submitted to Analytical Resources Incorporated of Seattle, Washington, under contract with Hart Crowser, for analysis of total petroleum hydrocarbons (TPH) and dissolved metals (arsenic, cadmium, chromium, and lead).

*MW's HC-1 through HC-4*

A representative from Hart Crowser returned to the Avery Landing site on September 26, 1989. Free-phase hydrocarbons thickness was measured at approximately 4 feet in monitoring well HC-4. Free-phase hydrocarbons were not detected in HC-2 or HC-3. According to trailer park residents living adjacent to the site, monitoring well HC-1 had been removed to repair water and sewer lines.

Groundwater samples were collected from HC-2 and HC-3, purge water from both wells had a slight odor and a light sheen. Samples were analyzed for fuel hydrocarbons using the free-product from HC-4 as a standard. Free-phase hydrocarbons were collected from HC-4 and analyzed for total extraction procedure toxicity (EP Tox) metals, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PNAs), total halogenated hydrocarbons (TOX), total metals and flashpoint.

All samples were submitted to Analytical Resources Incorporated (ARI) for analysis, some analyses were subcontracted by ARI to Spectrum Laboratories, Inc., of Seattle. Sampling procedures may be found in Appendix A.

#### Laboratory Analysis Results

##### Groundwater

Water samples collected from HC-1 and HC-3 on August 23, 1989, were analyzed for TPH (EPA Method 418.1) and dissolved

metals. TPH was nondetectable in HC-1 and HC-3, all metals were also nondetectable except arsenic in HC-3 at 0.009 parts per million (ppm).

Water samples collected September 26, 1989, from HC-2 and HC-3 were analyzed for fuel hydrocarbons by Gas Chromatograph (EPA Method 8015) using the free-phase hydrocarbons from HC-4 as a standard. Fuel hydrocarbons were nondetectable in both samples.

Table 1 summarizes the groundwater analysis results. Laboratory data sheets may be found in Appendix B.

#### Free-phase Hydrocarbons

Analysis of free-phase hydrocarbons in HC-4 resulted in nondetectable concentrations of all PNA compounds, PCBs, and total halogenated hydrocarbons. All EP Tox metals were also nondetectable except for barium at 0.005 ppm. The flash point of the free-phase hydrocarbons is reported as greater than 210 degrees Fahrenheit. The sample was also analyzed for total metals: cadmium (not detected), chromium (1 ppm), lead (5 ppm), and arsenic (not detected).

Potlatch Corporation  
October 27, 1989

Summary

#### CONCLUSIONS AND RECOMMENDATIONS

The analytical results indicate the following:

- o The groundwater in well HC-1 at the west property line does not appear to be impacted by the petroleum hydrocarbons;
- o The majority of the free-phase petroleum appears to lie beneath the eastern part of the site;
- o The free-phase petroleum is not a characteristic hazardous waste as determined by the EP Toxicity test as defined under federal law;
- o The free-phase petroleum appears suitable for use by burning for fuel in energy recovery boilers;
- o Our prior concept for an interception recovery trench to prevent migration of the petroleum to the St. Joe River still appears appropriate and practical.

Our work has been performed in accordance with generally accepted professional practices in the same or similar localities, related to the nature of the work accomplished at the time the services were performed. It is intended for the exclusive use of Potlatch Corporation, for specific



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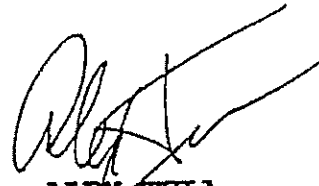
application to the project site. No other conditions, express or implied, should be understood.

Any questions regarding this report are welcome and should be referred to Alex Tula, Project Manager.

Sincerely,

HART CROWSER, INC.

  
JERI L. MASSENGILL  
Staff Geologist

  
ALEX TULA  
Associate

JLM/AT:cmr/sde  
LR22961A/JOBS

Attachments:

- Table 1 - Groundwater Analysis Summary
- Figure 1 - Site and Exploration Plan
- Appendix A - Field Procedures
- Figure A-1 - Key to Exploration Logs
- Figure A-2 - Well Construction Data
- through A-5 for Monitoring Well HC-1 through HC-4
- Appendix B - Laboratory Data Sheets
- Analytical Resources Incorporated
- and Spectra Laboratories, Inc.

Table 1 - Groundwater Analysis Summary

Well	Date Sampled	Analysis Performed	
		TPH	Dissolved Metals
HC-1	August 23, 1989	(EPA Method 418.1)	
		< 10.0	< 0.001 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-3	August 23, 1989		< 0.001 Lead
		< 10.0	0.009 Arsenic
			< 0.002 Cadmium
			< 0.005 Chromium
HC-2	September 26, 1989	TPH (EPA Method 8015)	< 0.001 Lead
		< 50.0 *	
HC-3	September 26, 1989	< 50.0 *	

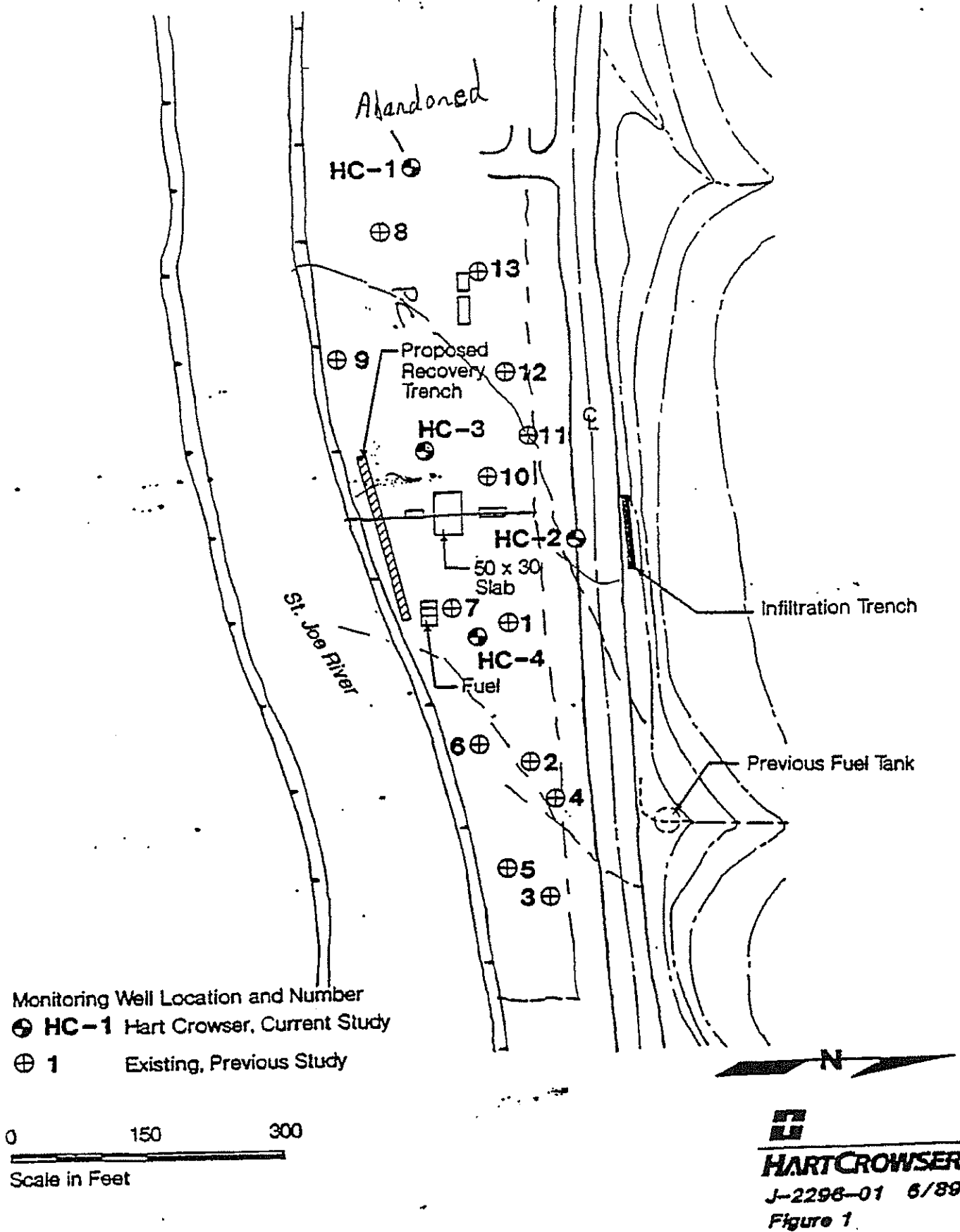
Results reported in parts per million (ppm)

\* Analyses performed using free-phase hydrocarbons collected in HC-4 as a standard.

< Not detected at analytical detection limit indicated.

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# Site and Exploration Plan



## APPENDIX A FIELD PROCEDURES

### INTRODUCTION

Field work was completed between August 22, 1989 and September 26, 1989, by Hart Crowser, Inc., and their subcontractor. Hart Crowser's field representatives for this project were Bruce McDonald, Senior Staff Engineering Geologist and Jeri Massengill, Staff Geologist.

Soil Sampling Services, Inc., of Puyallup, Washington, under subcontract to Hart Crowser, completed the drilling and well installation activities on all wells. Groundwater samples were submitted to Analytical Resources, Inc., of Seattle, Washington, for chemical testing.

The program of well installation included the completion of four borings, all of which were completed with air rotary drilling methods using compressed air to lift cuttings from the boring.

The monitoring well locations are presented on Figure 1. Locations were established by hand taping or pacing from existing physical features.

#### *Air Rotary Borings*

All borings were completed using percussion bit rotary drilling and air lifted cuttings. Borings were drilled between August 22 and 23, 1989, and completed within a range of depths from 18.5 feet to 23.4 feet below the ground surface. Borings were advanced with a truck-mounted drilling rig using an air-driven percussion bit inside a six-inch inside diameter driven casing. Drilling was accomplished under the continuous observation of a Hart Crowser field representative.

#### *Well Installations*

All wells are of 2-inch inside diameter Schedule 40 PVC single well construction and have 10-foot screened sections with 0.020-inch slot size. Wells were installed by lowering the casing to the desired depth. Aqua 8 sand was used to backfill the annulus around the screen to a level 2 feet above the top of the screen. Bentonite chips were used to backfill and grout

the borehole to a depth of 1 foot below the surface. All wells have a concrete surface seal and are protected by either a flush or stickup locking steel monument. Well construction information is presented on Figures A-2 through A-5.

#### Water Level Measurements

Water level measurements were made for each boring at the time water was first observed during drilling, and immediately prior to placement of the well screen. Subsequent sets of water level measurements were made of all wells installed. These were made before well development and sampling.

Water levels were measured to an accuracy of 0.01 foot using an Olympic Model 300 Electric Well Probe and a decimally graduated tape measure. The tip of the well probe was routinely rinsed with deionized water between wells in order to prevent chemical cross contamination.

#### Well Development

Development of wells was accomplished by hand bailing. Wells were developed by purging at least four casing volumes of water to remove the fine-grained silt and sand and suspended clay from the well bottom. The wells retained a slight degree of turbidity after development with the exception of HC-3 which remained very turbid.

#### Groundwater and Free-Phase Hydrocarbon Sampling for Chemical Analysis

Groundwater samples were obtained from the 4 monitoring wells on August 23, 1989. Free-phase hydrocarbon from HC-4 and groundwater samples from HC-2 and HC-3 were collected on September 26, 1989.

Groundwater samples from monitoring wells were obtained using a stainless steel or teflon bailer. To obtain representative groundwater samples, at least 3 casing volumes of water were purged prior to actual sampling. Water was then poured from the bailer into appropriate laboratory provided bottles.

Free-phase hydrocarbons were detected in monitoring well HC-4 during our September 26, 1989, visit. HC-4 was not purged prior to sampling; in this case, the free-phase hydrocarbons were poured from a plastic disposable bailer into a laboratory provided bottle.

All samples were labeled and placed on an ice insulated cooler. Sample custody was documented at all times.

#### *Decontamination Procedures*

Drilling, sampling, and testing equipment were routinely decontaminated in the field. Decontamination of drilling equipment between explorations consisted of steam cleaning followed by a tap water rinse. PVC components (screen, riser, and end caps) used in well construction were also steam cleaned and rinsed in tap water prior to installation.

The well probe and sampling bailers were decontaminated with a wash of distilled water and detergent followed by two distilled water rinses.

#### *Chain of Custody*

All sample jars were pre-labeled with well number, job number, date, and the samplers initials. Chain of custody forms were filled out, signed, and countersigned for transfers of samples from the possession of Hart Crowser field representatives to personnel at Analytical Resources, Inc. Chain of custody documents are maintained in the QA/QC records of Hart Crowser.

## Sample Descriptions

\*Soil descriptions consist of the following:  
Density/consistency, moisture, color, minor constituents, MAJOR CONSTITUENT, additional remarks.

### Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits is estimated based on visual observation and is presented parenthetically on the test pit logs.

SAND or GRAVEL	Standard Penetration Resistance in Blows/Foot	SILT or CLAY	Standard Penetration Resistance in Blows/Foot	Approximate Shear Strength in TSF
Density		Consistency		
Very loose	0 - 4	Very soft	0 - 2	<0.125
Loose	4 - 10	Soft	2 - 4	0.125 - 0.25
Medium dense	10 - 30	Medium stiff	4 - 8	0.25 - 0.5
Dense	30 - 50	Stiff	8 - 15	0.5 - 1.0
Very dense	>50	Very stiff	15 - 30	1.0 - 2.0
		Hard	>30	>2.0

## Moisture

Dry	Little perceptible moisture
Damp	Some perceptible moisture, probably below optimum
Moist	Probably near optimum moisture content
Wet	Much perceptible moisture, probably above optimum





### Minor Constituents

Minor Constituents	Estimated Percentage
Not identified in description	0 - 5
Slightly (clayey, silty, etc.)	5 - 12
Clayey, silty, sandy, gravelly	12 - 30
Very (clayey, silty, etc.)	30 - 50

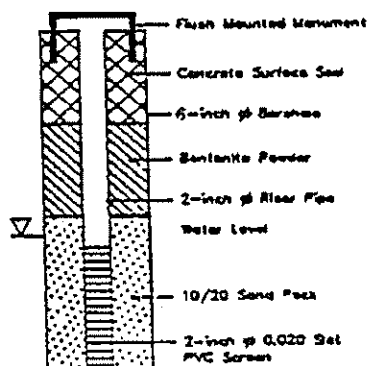
## Legends

## Sampling

## BOHRING SAMPLES

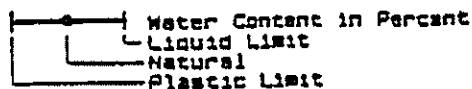
	Split Spoon
	Shelby Tube
	Cuttings
	Core Run
*	No Sample Recovery
P	Tube Pushed, Not Driven

## Ground Water Observations



## Test Symbols

GS	Grain Size Classification
CN	Consolidation
TUU	Triaxial Unconsolidated Undrained
TCU	Triaxial Consolidated Undrained
TCO	Triaxial Consolidated Drained
QU	Unconfined Compression
DS	Direct Shear
K	Permeability
PP	Pocket Penetrometer
TV	Approximate Compressive Strength in TSF Torvane
CBR	Approximate Shear Strength in TSF California Bearing Ratio
MO	Moisture Density Relationship
AL	Atterberg Limits

**LU**

# HART CROWSER

J-2298-01 10/89

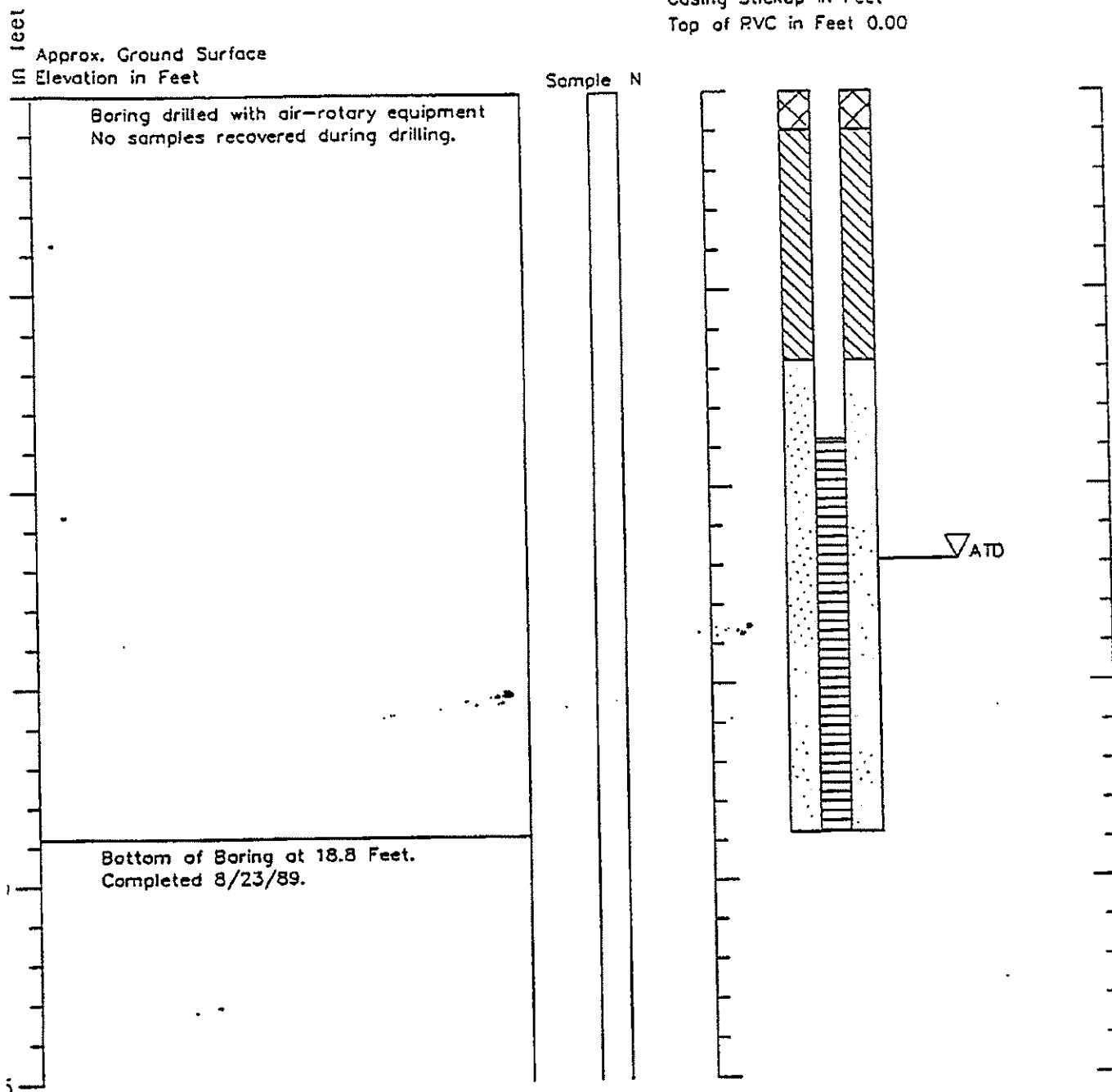
**Figure A-1**

# Boring Log and Construction Data for Monitoring Well HC-1

## Geologic Log

## Monitoring Well Design

Casing Stickup in Feet  
Top of RVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



**HARTCROWSER**

J-2296-01

8/89

Figure A-2

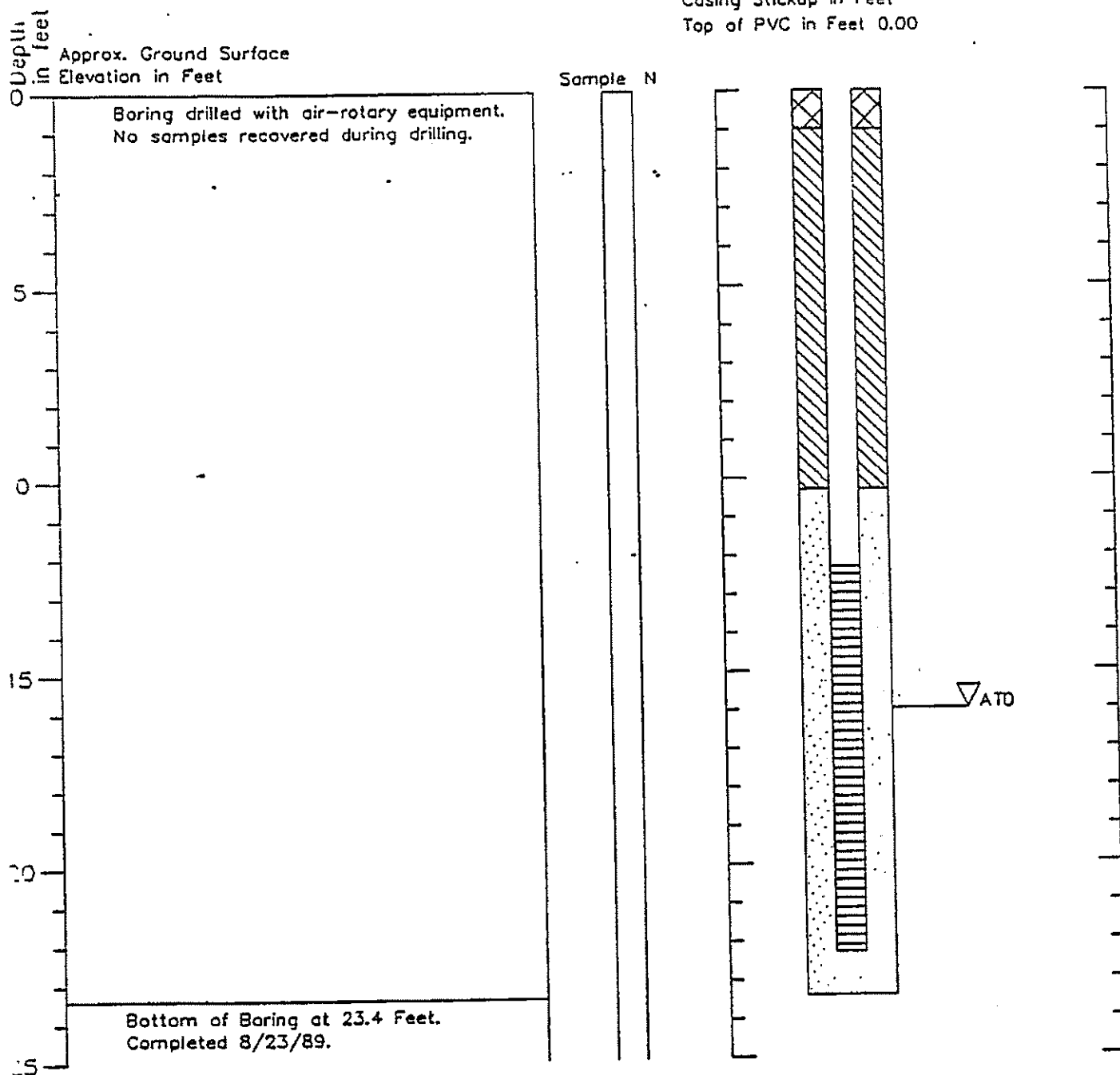


# Boring Log and Construction Data for Monitoring Well HC-2

## Geologic Log

## Monitoring Well Design

Casing Stickup in Feet  
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



**HARTCROWSER**

J-2296-01

8/89

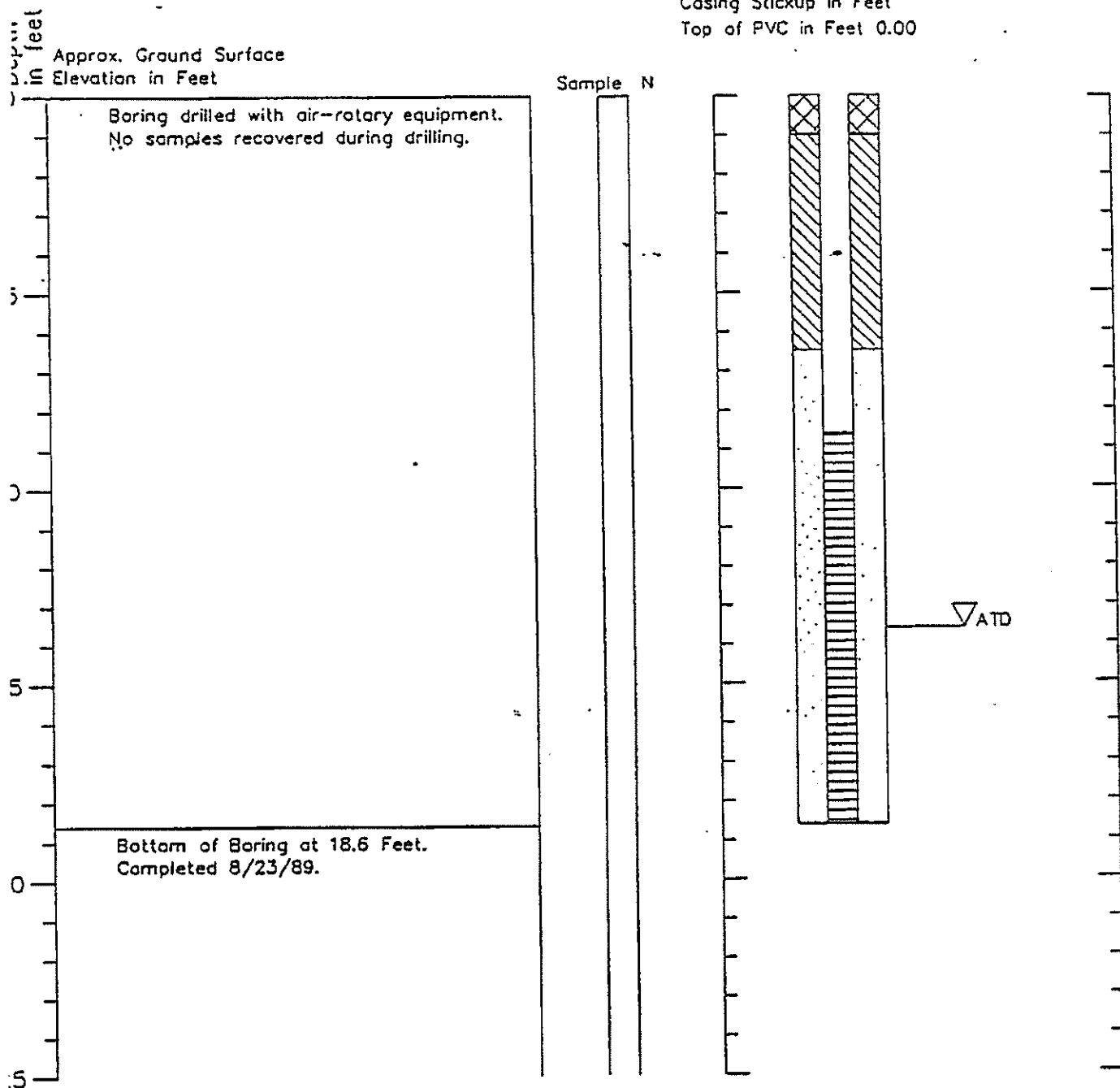
Figure A-3

# Boring Log and Construction Data for Monitoring Well HC-3

## Geologic Log

## Monitoring Well Design

Casing Stickup in Feet  
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



**HARTCROWSER**

J-2296-01

8/89

Figure A-4

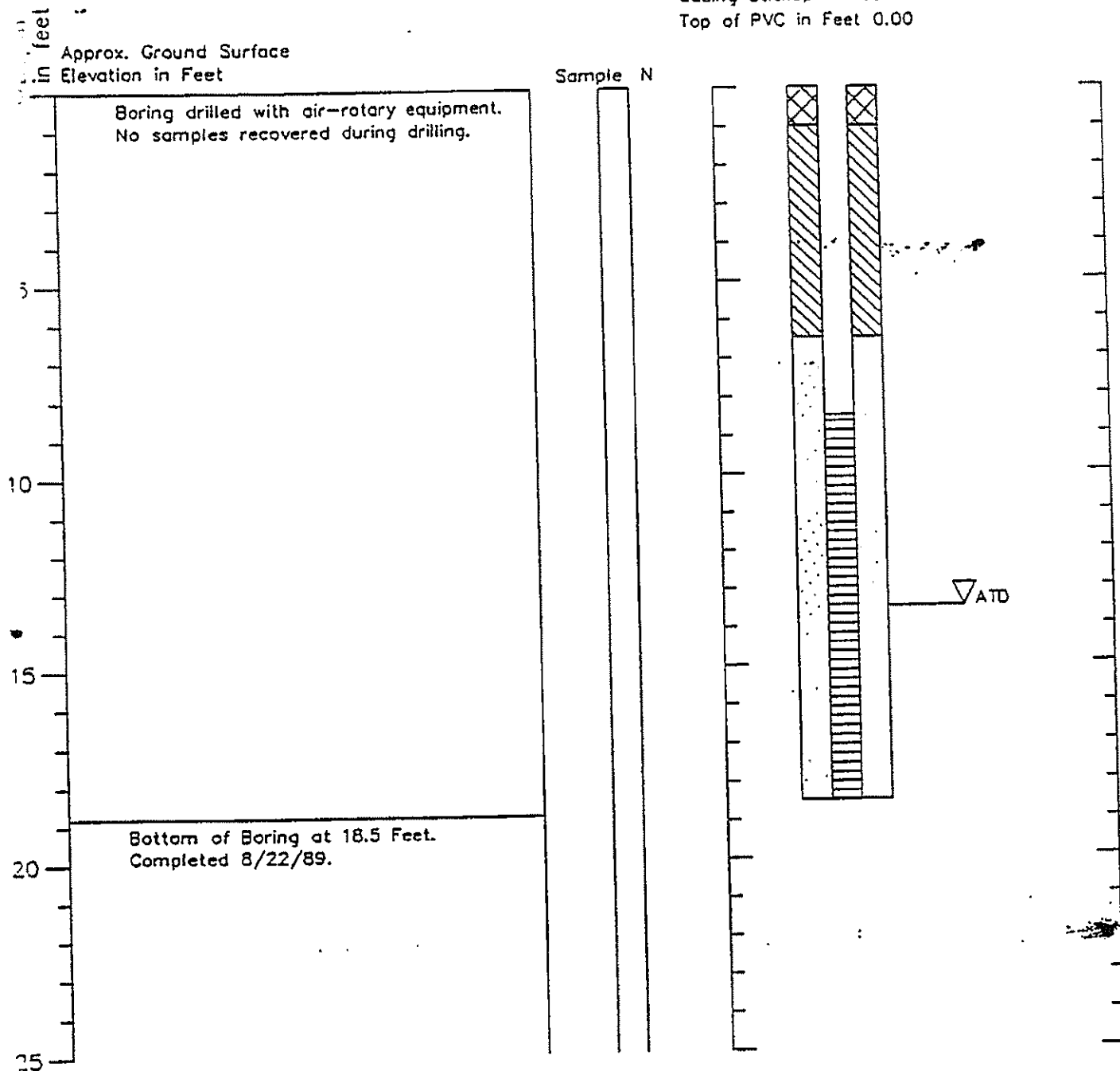
# Boring Log and Construction

## Monitoring Well HC-4

### Geologic Log

### Monitoring Well Design

Casing Slickup in Feet  
Top of PVC in Feet 0.00



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Ground water level, if indicated, is at time of drilling (ATD) or for date specified. Level may vary with time.



**HARTCROWSER**

J-2296-01

8/89

Figure A-5



**ANALYTICAL  
RESOURCES  
INCORPORATED**

Analytical  
Chemists &  
Consultants

333 Ninth Ave. North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

**TOTAL PETROLEUM HYDROCARBONS by IR Scan  
Modified EPA Method 418.1**

Matrix: Water

Project: Potlatch Corp.  
#J-2296-01

QC Report No: 3540-Hart Crowser  
VTSR: 08/28/89

Data Release Authorized 

Data Prepared: 08/29/89 - MAC/C C.G.

Date of Analysis: 08/29/89  
Date Prepared: 08/29/89

	Lab ID	Client Sample ID	Dilution Factor	TPH (ppm)
1	3540 MB	Method Blank	1	10 U
2	3540 A	HC-1	1	10 U
3	3540 B	HC-3	1	10 U

Values reported in ppm (mg/Kg) based on wet weight of sample

U Indicates compound was analyzed for but not detected at the given  
detection limit.

ANALYTICAL RESOURCES, INC.  
Inorganic Laboratory Data Report  
09/05/89  
10:58:34

Client: HART CROWSER  
Contact: SCOTT FERRIS  
Project: POTLATCH CORP  
ID number: HC-1  
Description:  
Sampled: / /  
Matrix: WATER

ARI job number: 3540  
ARI sample number: A

Released by: NRW

A N A L Y T I C A L   R E S U L T S

CAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.001 mg/L	L	DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA

ANALYTICAL RESOURCES, INC.  
Inorganic Laboratory Data Report  
09/05/89  
10:58:41

Client: HART CROWSER  
Contact: SCOTT FERRIS  
Project: POTLATCH CORP  
ID number: HC-3  
Description:  
Sampled: / /  
Matrix: WATER

ARI job number: 3540  
ARI sample number: B

Released by: NEW

A N A L Y T I C A L   R E S U L T S

IAS Number	Analyte	Concentration	C	Prep	M
7440-38-2	Arsenic	0.009 mg/L		DMN	GFA
7440-43-9	Cadmium	0.002 mg/L	L	DMN	ICP
7440-47-3	Chromium	0.005 mg/L	L	DMN	ICP
7439-92-1	Lead	0.001 mg/L	L	DMN	GFA



ANALYTICAL  
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INCORPORATED

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Chemists &  
Consultants

333 Ninth Ave. North  
Seattle, Wa 98109-5187  
(206) 621-6490

DATA REPORT SHEET  
Product Analysis

CLIENT: Hart Crowser  
ARI JOB #: 284503747  
VTSR: 09/28/89  
PROJECT: 2296-02  
Avery Landing

<u>ARI SAMPLE #</u>	<u>CLIENT SAMPLE #</u>	<u>Product (ppm)</u>
3747 A	MW-2/S-1	50 UJ
3747 B	MW3/S-1	50 UJ
3747 MB	Method Blank	50 UJ

DATA QUALIFIER

- U Indicates compound analyzed for but not detected at the given detection limit.
- J Indicates value is estimated, based on results of client-supplied product which was used for a standard.

Date Release Authorized: Peter M. Kyrle  
Report prepared 10/27/89 - MAC:B



# SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 5, 1989

Analytical Resources Inc.  
333 Ninth Ave North  
Seattle, WA 98109-5187  
Customer #81570

Sample ID: MW 4/S-1  
ARI #3747-C  
Spectra #26941


Attn: Catherine Greer

Total halogens, ppm <1  
Flash Point, FMCC °F >210

EP Toxicity Metals, mg/l

Lead	(Pb)	<0.01
Chromium	(Cr)	<0.002
Silver	(Ag)	<0.004
Barium	(Ba)	0.005
Cadmium	(Cd)	<0.005
Arsenic	(As)	<0.08
Mercury	(Hg)	<0.02
Selenium	(Se)	<0.1

SPECTRA LABORATORIES, INC.

  
Steven G. Hibbs, Chemist





ANALYTICAL  
RESOURCES  
INCORPORATED

Analytical  
Chemists &  
Consultants

333 Ninth Ave. North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

# ORGANICS ANALYSIS DATA SHEET

3 Analysis

Matrix: Oil

QC Report: 3747-Hart Crowser  
Project No: 2296-02/Avery Landing  
Date Received: 09/28/89

Release Authorized *[Signature]*  
Report prepared: 10/04/89 - MAC:C

Sulfur Cleaned: NO  
Alumina Cleaned: NO  
GPC Cleaned: NO

Reported in ppm (mg/Kg)

Sample #:	Method Blk.	MW-4/S-1
ARI Lab ID:	3747MB	3747C
Date Extracted:	10/03/89	10/03/89
Date Analyzed:	10/03/89	10/03/89
Sample Weight:	5.0 g	5.04 g
Dilution:	1:40	1:40

1016/1242	1.0U	2.0U
1248	1.0U	2.0U
1254	1.0U	2.0U
1260	1.0U	2.0U

DBC %Rec	55%	78%
----------	-----	-----

## Data Reporting Qualifiers

U Indicates compound was analyzed for  
but not detected at the given detection  
limit.

NR Indicates compound not reported due  
to chromatographic interference  
and/or dilution.



ANALYTICAL  
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Consultants

333 Ninth Ave. North  
Seattle, WA 98109-5187  
(206) 621-6490  
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 3747 C  
Matrix: Product

Sample No: MW-4/S-1  
QC Report No: 3747-Hart Crowser  
VTSR: 09/28/89

Date Extracted: 10/03/89  
Date Analyzed: 10/05/89  
Conc/Dil Factor: 1:100  
Dry Weight: 1.24 grams

Data Release Authorized: *Pete M. Lynch*

PORT PREPARED: MAC: C - C.G. (10/05/89) ✓

Reported in ppm(mg/kg)

CAS Number		mg/kg
91-20-3	Naphthalene	1000 U
208-96-8	Acenaphthylene	1300 U
83-32-9	Acenaphthene	1400 U
86-73-7	Fluorene	1300 U
85-01-8	Phenanthrene	1200 U
120-12-7	Anthracene	1000 U
206-44-0	Fluoranthene	200 U
129-00-0	Pyrene	200 U
56-55-3	Benzo(a)Anthracene	200 U
218-01-9	Chrysene	200 U
205-99-2	Benzo(b)Fluoranthene &	
207-08-9	Benzo(k)Fluoranthene	300 U
50-32-8	Benzo(a)Pvrene	300 U
193-39-5	Indeno(1,2,3-cd)Pyrene	500 U
53-70-3	Dibenz(a,h)Anthracene	500 U
191-24-2	Benzo(ghi)Perylene	600 U

SURROGATE PERCENT RECOVERY

Terphenyl	103%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for  
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to  
dilution and/or matrix interference.

//



ANALYTICAL  
RESOURCES  
INCORPORATED

Analytical  
Chemists &  
Consultants

333 Ninth Ave. North  
Seattle, WA 98109-5  
(206) 621-6490  
(206) 621-7523 (FAX)

ORGANICS ANALYSIS DATA SHEET- PNA by GC-FID

Lab Sample ID: 1003MB  
Matrix: Product

Date Extracted: 10/03/89  
Date Analyzed: 10/05/89  
Conc/Dil Factor: 1:10  
Dry Weight: 4.0 grams

Sample No: Method Blank  
QC Report No: 3747-Hart Crowser  
VTSR: 09/28/89

Data Release Authorized:  
PORT PREPARED: MAC:C - C.G. (10/05/89)

Reported in ppm(mg/kg)

CAS Number		mg/kg
91-20-3	Naphthalene	2.0 U
208-96-8	Acenaphthylene	2.0 U
83-32-9	Acenaphthene	2.0 U
86-73-7	Fluorene	2.0 U
85-01-8	Phenanthrene	2.0 U
120-12-7	Anthracene	2.0 U
206-44-0	Fluoranthene	2.0 U
129-00-0	Pyrene	2.0 U
56-55-3	Benzo(a)Anthracene	2.0 U
218-01-9	Chrysene	2.0 U
205-99-2	Benzo(b)Fluoranthene	2.0 U
207-08-9	Benzo(k)Fluoranthene	3.0 U
50-32-8	Benzo(a)Pyrene	3.0 U
193-39-5	Indeno(1,2,3-cd)Pyrene	5.0 U
53-70-3	Dibenz(a,h)Anthracene	5.0 U
191-24-2	Benzo(ghi)Perylene	6.0 U

SURROGATE PERCENT RECOVERY

Terphenyl	109%
-----------	------

Data Qualifiers

- U Indicates compound was analyzed for  
but not detected at the given detection limit.
- NA Indicates compound not analyzed.
- NR Indicates compound not reported due to  
dilution and/or matrix interference.

# SPECTRA Laboratories, Inc.

5013 Pacific Hwy. E. #12 • Tacoma, WA 98424 • (206) 922-5120

October 17, 1989


Analytical Resources Inc.  
333 Ninth Avenue North  
Seattle, WA 98109-5187  
Customer #81570

Sample ID: MW-4/5-1 3747-C  
Desc: Oil  
Spectra #27474  
RUSH

Attn: Dave Mitchell

Cadmium	(Cd), ppm	<1
Chromium	(Cr), ppm	1
Lead	(Pb), ppm	5
Arsenic	(As), ppm	<1

SPECTRA LABORATORIES, INC.

  
Steven G. Hibbs, Chemist

## Geoff Harvey

---

**From:** XEROX-COLOR-TS-SCAN [Xerox@deq.idaho.gov]  
**Sent:** Friday, October 23, 2009 12:34 PM  
**To:** Geoff Harvey  
**Subject:** Scan from a Xerox WorkCentre

**Attachments:** img-X23143420-0001.pdf



img-X23143420-000  
1.pdf (156 KB...

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Number of Images: 6  
Attachment File Type: PDF

Device Name: XEROX-COLOR-TS-SCAN  
Device Location: Next to the other TS Xerox

For more information on Xerox products and solutions, please visit <http://www.xerox.com/>

BUREAU OF LABORATORIES  
2220 Old Penitentiary Road, Boise, Idaho 83712  
334-2235

ORGANIC CHEMISTRY REPORT - VOLATILE ORGANIC COMPOUNDS

Sample: WATER (HC-4) Log No.: 90-1467  
Analyst: W. BAKER Date Analyzed: 10.23.90 Date Reported: 10.26.90

	Results (ug/l)*	Maximum Contaminant Level (ug/l)
<u>THM'S (Trihalomethanes)</u> [Method: 502.2 ]		
Bromodichloromethane	( u )	Total THM's 100.00
Bromoform	(   )	
Chloroform	(   )	
Dibromochloromethane	(   )	

<u>REGULATED VOC'S</u> [Method: 502.2 ]		
Vinyl chloride	( u )	2.00
1,1-Dichloroethylene	(   )	7.00
1,1,1-Trichloroethane	(   )	200.00
Carbon tetrachloride	(   )	5.00
Benzene	( 58.6 )	5.00
1,2-Dichloroethane	( u )	5.00
Trichloroethylene "Trike"	(   )	5.00
p-Dichlorobenzene	(   )	75.00

<u>UNREGULATED VOC'S</u> [Method: 502.2 ]		
Bromobenzene	( u )	5.0**
Bromochloromethane	(   )	5.0**
Bromomethane	(   )	5.0**
n-Butylbenzene	(   )	5.0**
sec-Butylbenzene	(   )	5.0**
tert-Butylbenzene	(   )	5.0**
Chlorobenzene	(   )	100.0***
Chloroethane	(   )	5.0**
Chloromethane	(   )	5.0**
o-Chlorotoluene	(   )	5.0**
p-Chlorotoluene	(   )	5.0**
1,2-Dibromo-3-chloropropane (DBCP)	(   )	5.0**
Ethylene dibromide (EDB)	(   )	5.0**
Dibromomethane	(   )	5.0**
m-Dichlorobenzene	(   )	5.0**
o-Dichlorobenzene	(   )	600.0***
Dichlorodifluoromethane	(   )	5.0**
1,1-Dichloroethane	(   )	5.0**
cis-1,2-Dichloroethylene	(   )	70.0***
trans-1,2-Dichloroethylene	(   )	100.0***
1,2-Dichloropropane	(   )	5.0***
1,3-Dichloropropane	(   )	5.0**
2,2-Dichloropropane	(   )	5.0**
1,1-Dichloropropane	(   )	5.0**

(OVER)

OCT 29 1990

	Results (ug/l)*	Maximum Contaminant Level (ug/l)
ylbenzene	( 1.04 )	700.0***
achlorobutadiene	( )	5.0**
propylbenzene	( )	5.0**
isopropyltoluene	( )	5.0**
ethylene chloride	( )	5.0**
phthalene	( )	5.0**
Propylbenzene	( )	5.0**
ylene	( )	5.0**
1,1,2-Tetrachloroethane	( )	5.0**
1,2,2-Tetrachloroethane	( )	5.0***
trachloroethylene "PERK"	( 3.97 )	2000.0***
luene	( )	5.0**
1,3-Trichlorobenzene	( )	5.0**
2,4-Trichlorobenzene	( )	5.0**
1,2-Trichloroethane	( )	5.0**
ichlorofluoromethane	( )	5.0**
2,3-Trichloropropane	( )	5.0**
2,4-Trimethylbenzene	( )	5.0**
,3,5-Trimethylbenzene	( )	
-Xylene + p-Xylene	( u )	Total xylenes
-Xylene	( 0.88 )	10000.0***
	( )	
	( )	
	( )	
	( )	
	( )	
	( )	

All analytical results less than MDL will be listed as U.

- \*\* Laboratory assumed MCL (not officially established as MCL by EPA)
- \*\*\* EPA proposed MCL
- U - < MDL (Minimum Detectable Limit)

**Attachment 5**



IDAHO COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT  
COLLEGE OF FORESTRY, WILDLIFE AND RANGE SCIENCE  
UNIVERSITY OF IDAHO  
MOSCOW, IDAHO 83843  
(208) 885-6336

April 4, 1991

Clyde Cody  
Department of Health and Welfare  
Division of Environmental Quality  
1410 N. Hilton, Suite 101  
Boise, ID 83706-1253

Dear Clyde:

Attached you will find information you can use to calculate fish densities for sections of the St. Joe River up and downstream from Avery. You should be aware that the lower densities of cutthroat trout in the lower St. Joe River is at least partly due to high water temperatures. Most of the Cutthroat Trout move upstream to cooler areas in summer.

Sincerely,

Ted C. Bjorn  
Assistant Leader

SW

RECEIVED

APR 10 1991

DIVISION OF  
ENVIRONMENTAL QUALITY  
BOISE FIELD OFFICE

COOPERATORS:



  
University of Idaho



Fish and Wildlife Service • University of Idaho • Department of Fish and Game • Wildlife Management Institute

The University of Idaho is an equal opportunity/affirmative action employer and educational institution.

Avery to Prospector Ck. during August 1989

Transects 29 - 35 = Calder to Avery  
 Transects 1 - 7 = Avery to Prospector Ck.

Trnsct No.	Trnsct Length(m)	Mean Width(m)	Surface Area(m2)	TOTAL COUNTED AUGUST 1989				
				CUTT	RAINBOW	BULL T	WF	
29	96.0	7.6	731.5	0	0	0	3	
30	57.0	9.5	541.5	1	0	0	1	
31	92.0	7.6	701.0	0	1	0	5	
32	100.0	8.0	800.0	1	0	0	5	
33	87.0	8.0	696.0	1	6	0	8	
34	166.0	8.0	1328.0	1	5	0	26	
35	129.0	8.0	1032.0	3	1	0	11	
1	148.0	37.6	5564.8	1	1	0	0	
2	204.0	28.4	5793.6	4	2	0	129	
3	59.4	12.5	743.0	10	0	0	14	
4	40.0	12.8	512.0	8	0	0	9	
5	135.0	25.1	3388.5	7	0	0	10	
6	243.0	34.7	8432.1	2	12	0	27	
7	134.0	32.1	4301.4	19	64	0	13	

Trnsct No.	Trnsct Length(m)	Mean Width(m)	Surface Area(m2)	TOTAL COUNTED AUGUST 1990				
				CUTT	RAINBOW	BULL T	WF	
29	96.0	7.6	731.5	0	1	0	10	
30	57.0	9.5	541.5	0	2	0	1	
31	92.0	7.6	701.0	2	2	0	5	
32	100.0	8.0	800.0	0	2	0	7	
33	87.0	8.0	696.0	5	20	0	108	
34	166.0	8.0	1328.0	2	0	0	125	
35	129.0	8.0	1032.0	2	6	0	52	
1	148.0	37.6	5564.8	7	7	0	17	
2	204.0	28.4	5793.6	13	17	0	217	
3	59.4	12.5	743.0	NO DATA DUE TO ROAD CONSTRUCTION				
4	40.0	12.8	512.0	NO DATA DUE TO ROAD CONSTRUCTION				
5	135.0	25.1	3388.5	15	2	0	8	
6	243.0	34.7	8432.1	5	91	0	57	
7	134.0	32.1	4301.4	20	2	0	12	

## Fish Production Estimator (using August, 1990 data)

- 15 mile stream segment below Avery includes transects 31-35.
- These transects total 338 fish per 574 meters of stream.
- 15 miles = 24,135 meters

$$\frac{574 \text{ m (transects)}}{24,135 \text{ m (total)}} = \frac{338 \text{ fish (transects)}}{X \text{ fish (total)}}$$

$$574 \times = 8157630$$

$$X (\text{total fish}) = 14,212$$

$$\text{Divide by 15 miles} = 947 \text{ fish/mile}$$

Using an average length of 10-12 inches  
and average weight of  $\frac{3}{4}$  lb per fish

$$.75 \text{ lb} \times 947 \text{ fish/mile} = 710 \text{ lbs fish/mile}$$