



RFQ No. DACW67-02-Q-0003

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

AMENDMENT 0001

Project: SUNSHINE ROTOSONIC & AUGER DRILLING

Location: COEUR D'ALENE, IDAHO

**SERVICES SOLICITATION
AND SPECIFICATIONS**

Closing Date: 23 OCTOBER 2001
Closing Time: 3:00 PM LOCAL TIME

REMARKS: Quotes may be faxed to (206) 764-6817, Attention: Susan Newby, or mailed to US Army, Corps of Engineers, Seattle District, Attention: Susan Newby, P.O. Box 3755, Seattle, WA 98124-3755.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NO. 0001		3. EFFECTIVE DATE 19-Oct-2001	4. REQUISITION/PURCHASE REQ. NO. W68MD9-1271-4075		5. PROJECT NO.(If applicable)
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT P.O. BOX 3755 SEATTLE WA 98124-3755		CODE DACW67	7. ADMINISTERED BY (If other than item 6) See Item 6		CODE
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. DACW67-02-Q-0003	
			X	9B. DATED (SEE ITEM 11) 11-Oct-2001	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended.					
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A.THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B.THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C.THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D.OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) SEE ATTACHED CONTINUATION SHEET ACKNOWLEDGEMENT OF THIS AMENDMENT MUST BE SIGNED AND SUBMITTED WITH THE QUOTE. POC: SUSAN NEWBY (206) 764-6780					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA		16C. DATE SIGNED
_____ (Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		22-Oct-2001

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

- a. This amendment is issued to extend the required response date/time, change the start date of the period of performance, change the bid schedule, and reflect revisions of the Scope of Work.
- b. The required response date/time has changed from 19-Oct-2001 10:00 to 23-Oct-2001 3:00PM local time.
- c. The start date of the period of performance is changed to reflect 5 November 2001, and the end date remains as 31 December 2001.
- d. Pages 7, 8 and 9 of 27 of the solicitation has changed to reflect the attached Bid Schedules A, Rotosonic Drilling, and Schedule B, Auger Drilling.
- e. The Scope of Work has been amended to reflect changes as identified below:
1. The vertical lines on the right side of each page, reflect the changes in the Scope of Work, as indicated below:
 - a) Deleted statements are reflected as a line across the letters and words, on the following pages:
 - 1) Page 2 and 3, Table of Contents has been changed to reflect the correct contents on page 2, top portion; From the middle of page 2 to the end of page 3, beginning with "INTRODUCTION" on page 2, are deleted.
 - 2) Page 7, Paragraph 4.1, Task 1 – Prepare Work Plan; Delete the statement of the first paragraph, "and an Investigation Derived Waste Plan (IDWP).", and the Second and Third paragraphs in its entirety.
 - 3) Page 9, Paragraph 4.1.4, Health & Safety; Delete in its own entirety.
 - 4) Page 17, Schedule, Delete the statement, "Delivery Order (DO) Award" of the first Activity, and Delete the statement, "DO Award" of the first Remarks.
 - b) Additional information to the Scope of Work are bolded and underlined, on the following pages:
 - 1) Page 7, paragraph 4.1, Task 1 – Prepare Work Plan, the last sentence of the first paragraph reflects an addition to the paragraph.
 - 2) Page 13, paragraph 4.4, Task 4 – Investigation Derived Waste, the paragraph in its entirety is added to the Scope of Work.
- f. Delete the note stated on page 2 of 27 of the solicitation:
- "NOTE** Responses via Non-Facnet and Facnet will be accepted through the Seattle District office. Contractors must quote on all line items..."
- And revise as follows:
- "NOTE** Responses via Non-Facnet and Facnet will be accepted through the Seattle District office. Contractors may quote on all line items on both Schedule A and B, or may quote on all line items for Schedule A or all line items for Schedule B. This Request for Quotations (RFQ) is considered for Small Business Set-Aside Only; Large Business will not be considered."
- g. Delete the following paragraph on page 3 of 27 of the solicitation, number 3, Price:
- "Price** : Price of the contract is considered secondary to the technical factors and will be independently evaluated. Price will be evaluated but will not be scored... Offerors must quote all items in the schedule."
- And revise as follows:
- "Price** : Price of the contract is considered secondary to the technical factors and will be independently evaluated. Price will be evaluated but will not be scored... Offerors must quote on all items for both Schedule A and B, or may quote on all line items for Schedule A, or all line items for Schedule B."
- h. Delete the first paragraph, under Instructions on FAR 52.212-2, Evaluation – Commercial Items (Jan 1999), on page 3 of 27:
- "This request for quotation contains Evaluation Factors for the Rotosonic and Auger Drilling methods at Coeur d'Alene Basin, identified in the Scope of Work. The Government reserves the right to make an award..."
- And revise as follows:
- "This request for quotation contains Evaluation Factors for the Rotosonic and Auger Drilling methods at Coeur d'Alene Basin, identified in the Scope of Work. The Government reserves the right to make an award, or multiple awards, which will be determined, the most advantageous to the Government based on Best Value evaluation factors."
- i. There are no other changes as a result of this amendment.

SCHEDULE A: ROTOSONIC DRILLING

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	Work Plan for Rotosonic Drilling to be done for the Time Critical Action work of site investigation of Sunshine Former Tailings Pond.	1	EA	\$ _____	\$ _____
0002	Mob/Demob Rotosonic Drill	1	RT	\$ _____	\$ _____
0003	Mob/Demob Water Truck	1	RT	\$ _____	\$ _____
0004	Monitoring Well Drilling & Installation -- 2" casing (30ft/hole)	7	EA	\$ _____	\$ _____
0005	Bentonite Grout Annular Sealant Furnished and Installed (1SK/4ft)	52.5	Sack	\$ _____	\$ _____
0006	Above Ground Monitoring Well Protection Features, Furnished and installed.	7	Sack	\$ _____	\$ _____
0007	Drill Borings -- Rotosonic Drilling (60ft/hole) Equipment and Labor	11	EA	\$ _____	\$ _____
0008	Cement Bentonite Grout Furnished and Installed (1SK/3ft), Supply and Closure Borings	220	Sack	\$ _____	\$ _____
0009	Standby Time	10	HRS	\$ _____	\$ _____
0010	Investigative Derived Waste (IDW) for Rotosonic Drilling Waste	1	Lump Sum	\$ _____	\$ _____

SCHEDULE B: AUGER DRILLING

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011	Work Plan for Piezometer Installation (Auger) to be done for the Time Critical Action work of site investigation of Sunshine Former Tailings Pond.	1	EA	\$ _____	\$ _____
0012	Mob/Demob Auger Drill	1	RT	\$ _____	\$ _____
0013	Mob/Demob Water Truck	1	RT	\$ _____	\$ _____
0014	Piezometer Installation -- 2" casing (50ft/hole)	8	EA	\$ _____	\$ _____
0015	Bentonite Grout Annular Sealant Furnished and Installed (1SK/4ft)	100	Sack	\$ _____	\$ _____
0016	Above Ground Piezometer Protection Features, Furnished and installed.	8	Sack	\$ _____	\$ _____
0017	Drill Borings -- Auger Drilling (50ft/hole) Equipment and Labor	12	EA	\$ _____	\$ _____
0018	Bentonite Grout Furnished and Installed (1SK/3ft) 4 borings	67	Sack	\$ _____	\$ _____
0019	Standby Time	10	HRS	\$ _____	\$ _____
0020	Investigative Derived Waste (IDW) for Auger Drilling Waste	1	Lump Sum	\$ _____	\$ _____



SCOPE OF WORK

Coeur d'Alene Basin Time Critical Removal Action

Proposed Sunshine Repository
Preliminary Site Investigation

Final

October ~~3~~ 19, 2001

Prepared by:



Seattle District Corps of Engineers



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STATEMENT OF WORK

Coeur d'Alene Basin
Time Critical Action
Proposed Sunshine Repository
Big Creek, Idaho

1. INTRODUCTION

The Seattle District, U.S. Army Corps of Engineers (USACE), is assisting the U.S. Environmental Protection Agency (EPA) with conducting an investigation for the feasibility of a repository at the Sunshine Mine former tailings pond for remedial activities, Big Creek, Shoshone County, Idaho. Soils and groundwater at the site are suspected to be contaminated with heavy metals and possible explosive compounds. All work shall be performed in accordance with all applicable federal, state, and local regulations and requirements, the Geology Supplement to the Scope of Services (Attachment 1), USACE Engineering Manual (EM) 1110-1-1804 01 January 2001. The contractor shall immediately inform the USACE Project Manager of any discrepancies between these regulations and requirements and this Statement of Work (SOW).

This SOW describes, in general terms, the work required to be performed by Contractor personnel, which includes, to install soil borings, construct monitoring wells and piezometers, collect soil samples for geotechnical and chemical analysis to be used by the USACE to perform these analyses, obtain standard penetration test (SPT) for settlement analysis, and possible in-situ tests (Table 1). The new wells will be installed in the unconfined aquifer adjacent to the former tailings pond structure. Installation of these wells will follow Idaho State Regulations.

The Geology Supplement to the Scope of Services describes in greater detail the work to be performed by contractor personnel. In the event differences between the SOW and the Geology Supplement to the Scope of Services are identified, the SOW shall prevail and the contractor shall implement the SOW.

Table 1: General Activities

Item	Depths (ft)	Base #	Base Total (ft)	Remarks
Monitoring Wells Drilling & Installation (Rotosonic)	30	7	210	Installed along perimeter of site.
Borings (Rotosonic)	60	11	660	
Piezometers Installation	50	8	400	Installed in 8 of the 12 auger borings.
Borings (Auger)	50	12	600	

1.1. Background

A Remedial Investigation/Feasibility Study (RI/FS) has been completed for the Coeur d'Alene Basin to investigate and evaluate contamination due to mining activities. The dominant site is the Bunker Hill Superfund Site. The Sunshine Former Tailings Pond is located in Shoshone County, Idaho, just off of I90 on Big Creek, near Bunker Hill. The Bunker Hill Mine operated from 1895 until 1981 and then was reopened in 1988. The adjacent lead and zinc smelter complex operated from 1916 until 1981. The Bunker Hill Mine operation grew to a maximum milling capacity of 2,500 tons of ore per day, typically employed approximately 2,000 people, and produced one-fifth of the refined lead, zinc, and silver in the U.S. Facility activities stopped in 1981 from the combined effects of lower market prices and increased operations costs.



From 1886 until 1917, the lead and silver concentrates produced at the Bunker Hill Complex were shipped to offsite smelters for processing. Construction of the lead smelter began in 1916 and the first blast furnace went online in 1917 producing lead, cadmium, silver, and alloys of these heavy metals. Smelting operations resulted in fugitive and stack emission of metals and sulfur dioxide that were deposited throughout the site.

The electrolytic zinc plant was put into production at the site in 1928. Sullivan Mining Company operated the zinc plant until 1955. Both the Bunker Hill and Sullivan Mining Company and the Hecla Mining Company each had a 50 percent interest in the Sullivan Mining Company. By 1956, the zinc plant was wholly owned by Bunker Hill. Two sulfuric acid plants, a phosphoric acid plant, and a fertilizer plant were added to the zinc plant. A sulfuric acid plant was added to the lead plant. The mining and metallurgical complex closed in 1981. The Bunker Hill Mine has subsequently re-opened.

The mining and metallurgical complexes (also called the Industrial Complex) and the surrounding communities and hillsides were placed on the National Priorities List (NPL) of hazardous waste sites in 1983 and called the Bunker Hill Superfund Site. The original focus of cleanup activities have been concentrated in the Smelterville and Kellogg area, an area encompassing approximately 21 square miles. However, the focus is now being expanded to include the entire Coeur d'Alene River Drainage Basin from the headwaters in Idaho-Montana border to the Idaho-Washington border, including Lake Coeur d'Alene to. Mining activities throughout the area are also known to have resulted in metals contamination in rivers, floodplains, residence and common areas. The Coeur d'Alene Basin TCRA are mostly intended to address removal of contaminants from yards and common areas. A repository for the disposal of the resulting waste is needed to allow continued completion of this Time Critical Removal Actions (TCRA).

Proposed exploration shall collect data that shall assist in the engineering evaluation of the site for suitable use. This project is considered time-critical task. This project is considered a Time-Critical Removal Action by the Environmental Protection Agency (EPA) and the Idaho Department of Environmental Quality (IDEQ). Planned use of the site is by 01 June 2002. Therefore, all subsurface exploration must begin by no later than mid- to late October 2001. This will ensure all geotechnical and chemical laboratory analytical results are received by mid-December 2001 to meet design schedule needs.

1.2. Site History

The former Sunshine Mine Tailings Pond Repository Site (SMTPR) is located at the confluence of Big Creek and the Couer d'Alene River, approximately 4 miles east of Kellogg, Idaho. It is bounded on the east by Big Creek Road (County Route 264), on the west by Big Creek, on the north by the Coeur d'Alene River and the Union Pacific Railroad right-of-way, and on the south by the active Sunshine Mine Tailings Pond. If feasible, the SMTPR will be constructed on an old tailings pond, which is not in use and is filled with mine tailings, covered by mine waste material. In recent years, small quantities of construction debris has been place on the site. The approximate dimension of the rectangular site is 20 to 50 feet high by 600 feet (E-W) by 1400 feet (N-S) (Woodward Clyde, 1976).

The tailings dam was report to be constructed in 1968. The height of the dam was 10 to 40 feet with slopes 1.4H:1V and was constructed with sub-rounded to sub-angular sand, gravel and cobbles. The interior pond was approximately 14 acres and filled with tailings composed of fine sands to silt and minor amounts of clay. The dam was raised 10 feet in 1973 using angular mine waste. Seepage was observed on three sides of the tailings dam at the crest of the original dam. In 1975, bentonite was placed in the pond in an attempt to prevent seepage, which was reported to be unsuccessful. (Woodward Clyde, 1976). The pond was removed from service in 1979. A cover of probable mine waste was placed on top of the mine tailings at closure.

Table 2: Dam description (Woodward Clyde, 1976)

Location	Original Dam Height (ft)	Last Dam Height (ft)
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North (A – top)	40	50
East (C – road side)	20	30
South (D – bottom)	10	20
West (B – creek side)	30	40

1.3. Site Conditions

1.3.1. Topography

The site is located in the flat-bottom valley bounded by Big Creek in the west and steep slopes on the east. The valley has steep side slopes and Big Creek flows year round. The elevation of the valley floor at the site is approximately 2400-2440 feet above mean sea level. The former tailings pond is approximately 22 acres with steep sides and a flat top. There is sparse vegetation cover of aspens and alders in the interior and pine along the perimeter.

1.3.2. Access

Access to the site is good, from an all-weather well-maintained asphalt road (Big Creek Road). An exit from US Interstate 90 is within a 100 yards of the site. A number of gravel roads are located throughout the site, and are best accessed during dry conditions. Track mounted rigs may be required during wet conditions.

1.3.3. Geology

The site is underlain by recent alluvial material (Qal) consisting of gravel, cobbles and minor amounts of boulders, sand, silt and clay. The recent alluvium is approximately 40 feet thick. The side slopes of the valley consist of colluvium (Qc). The bedrock beneath the site is highly fractured and jointed and composed of Precambrian Belt Series (Prichard Formation) of meta-sedimentary rocks. The rocks consist of argillite, quartzose argillite, and quartzite (Figure 1).

1.3.4. Hydrogeology

Based on the previous study done in 1976, groundwater levels are estimated at 2420 feet elevation in the south end of the site and 2400 feet elevation in the north. Groundwater gradient is to the north.

1.4. Previous Site Activities

A geotechnical investigation was performed to determine the feasibility of raising the existing tailings dam to increase storage capacity (Woodward-Clyde, 1976). The investigation consisted of field work, review of historical information, seismic refraction traverses, drilling and sampling of 18 test holes, permeability tests, piezometers, laboratory testing of samples, and stability analysis.



2. SCOPE

All work shall be completed within 60 calendar days following notice to proceed.

2.1. Rotosonic

Seven monitoring wells will be installed using Rotosonic drilling methods along the perimeter of the site. In addition, eleven borings will be drilled through out the site at designated locations (Figure 2).

2.2. Auger

Twelve auger borings will be drilled at designated locations (Figure 3). Auger borehole drilling shall be used to explore the interior of the former tailings pond. In addition, eight piezometers shall be installed in 8 of the 12 auger borings (Figure 3).

3. QUALITY ASSURANCE

Quality Assurance will be accomplished in the field by USACE personnel providing 100% oversight of contractor tasks.

4. SPECIFIC TASKS

4.1. Task 1 - Prepare Work Plan

The Contractor shall prepare a Work Plan (WP) to be approved by the government prior to commencement of field work. This plan shall include a detailed description of the work to be performed including Drill Borings, Monitoring Well and Piezometer Installation, and Closure of Borings, an Accident Prevention Plan (APP), ~~and an Investigation Derived Waste Plan (IDWP)~~. Water generated during this effort (e.g., well development, equipment and personnel decontamination) shall be containerized and be disposed of by the contractor at the lined pond at the Bunker Hill Project Site, in coordination with the Contracting Officer's Representative. Soil generated may be disposed of onsite unless suspected to be highly contaminated, **in which such highly contaminated soils shall be disposed at the Bunker Hill repository.**

~~The Contractor shall prepare a WP that defines the objectives of monitoring well and piezometer installations, boring closures (not planned to have piezometers installed). In addition, it will provide details of work proposed to be performed to meet these objectives. The WP shall describe site conditions and discuss the necessary data collection requirements. The WP shall include a detailed discussion of the technical approach to be used. At a minimum, the WP shall contain: an Introduction; a Background of the Site and Existing Conditions; a Rationale for the WP; a Description of the Proposed Tasks; a Schedule for Conducting the tasks described in this SOW.~~

~~The Work Plan shall identify key personnel working on this project by functional roles, organization, qualifications, training, and resume indicating experience relating to the respective task being performed for this delivery order. The project organization for the prime Contractor and any sub-Contractors shall be clearly defined with a discussion of Quality Control (QC) responsibilities. The Contractor's QC officer shall report to a responsible senior officer of the company (i.e. QC management shall be separate from project management). The listing of key individuals shall include QC officers for all project components.~~

The Work Plan shall follow the requirements listed in this SOW. The Contractor shall provide the draft Work Plan to USACE within 7 Calendar Days (CD) of Notice to Proceed, and shall provide the Final Work Plan to USACE within 3 CD of receipt of draft Work Plan comments from USACE.



4.1.1. Drill Boring, Monitoring Well (Piezometer) Installation, and Boring Closure Plan

The monitoring well and piezometer installation, boring installation and closure portion of the Work Plan shall include a description of the closure method including material to be used to seal borings, and contamination prevention methods. The monitoring well and piezometer installation portion shall describe the drilling methods, construction and development of wells and piezometers. If drilling fluid additives are to be used, then the additive name and the manufacturer's data shall be submitted for COR approval.

The following requirements shall be incorporated into the Contractor's Monitoring Well and Piezometer Installation, and Boring Installation and Closure portion of the Management Plan and shall be followed in the field. Guidance for performing the installation and closure can be found in Attachment B. The plan shall include, but not be limited to, a discussion of the following:

- (a) Description of well (piezometer) drilling methods, and installation procedures, including any temporary casing used, placement of filter pack and seal materials, drill cuttings and fluids disposal, and soil sample disposition.
- (b) Description of well(piezometer) construction materials, including well screen, riser pipe, centralizers (if used), tailpiece, filter pack, bentonite, drilling water, cement, and well protective measures.
- (c) Description of quality control procedures to be used for placement of filter pack and seals in the boring, including depth measurements.
- (d) Description of contamination prevention and well (piezometer) materials and equipment decontamination procedures.
- (e) Description of protective cover surface completion procedures, including any special design criteria/features relating to frost heave prevention. The maximum frost penetration for the site shall be included in this description.
- (f) Description of well development methods development criteria to be used.
- (g) List of personnel assignments for this project, and personnel qualifications.
- (h) Description of boring closure methods to be used.

Catalog data for monitoring well (piezometer) screens, riser pipe, filter pack material, bentonite, cement, centralizers, surface protective covers, well vaults, locking caps, airline oil filters for pneumatic drilling, and chemical specifications on drill lubricants shall be included. Catalog data shall be available upon request by USACE. This data would include any information, written or otherwise, supplied by the manufacturers or suppliers of the above listed items.

All well (piezometer) drilling, installation, and abandonment activities shall comply with IDAPA 37.02.09 and EM 11101-4000, Table 3.



4.1.2. Disturbed Samples

The Contractor shall collect disturbed soil samples from the Rotosonic bore holes from surface to the total depth of the bore hole as a function of core retrieved from the bore hole. Disturbed samples from auger boreholes shall be collected from 0'-2.5', 5'-7.5', 10'-12.5', and every 5 feet thereafter to the total depth of the bore hole. In addition, to the specified intervals, samples shall be collected whenever a change in material is observed by the USACE Geologist. A confirmation sample shall be collected at the total depth of the bore hole. The disturbed samples from auger boreholes shall be collected using a 24' long split spoon driven 24" using a 140-pound hammer falling 30 inches. Hammer stoke and weight shall be calibrated before the start of work. The driller shall provide the sample to the USACE geologist immediately after being retrieved from the bore hole. The contact between the overburden and top of tailings and between the tailings and native material shall be noted by the driller based on drill action if these contacts are not observed in samples.

4.1.3. Undisturbed Samples

Up to three undisturbed soil samples shall be collected from each Rotosonic or auger bore hole depending on material type. The undisturbed samples shall be collected using an 18' long thin walled 3' diameter Shelby Tube pushed into the ground. No undisturbed sample shall be collected within 1-foot of the end of a drive of a disturbed sample. Pressure to drive the sample into the soil shall be recorded on the drill log. The sample penetration rate shall not be more than 1-foot per minute. The undisturbed sample shall be delivered to the geologist or geotechnical engineer immediately after being removed from the bore hole. After logging and preparation, the Shelby tube shall be transferred to a cushioned shipping box and shipped immediately to the analytical laboratory. Extreme care will be taken during handling and packing of the sample to prevent jarring or vibration, which could degrade sample properties. The samples shall be protected from freezing at all times. The sample must be extruded from the Shelby tube within twenty-four (24) hours of the time of collection.

If the sample can not be extruded from the Shelby tube within twenty-four (24) hours of collection, then the sample shall be extruded in the field. A detailed log shall be made of the sample and the sample shall be sealed in alternating layers of muslin cloth and tin foil sealed with melted wax as soon as possible after extrusion. The sample shall be protected from any damage, moisture, frost, and dirt during the extrusion and waxing process. The Driller shall provide extrusion and waxing stations and supplies if required.

4.1.4. Health & Safety

~~The Contractor shall ensure that all work carried out is performed in a manner that is safe and protective of human health and the environment. This work shall be performed in accordance with these specifications, 29 CFR 1926 and the US Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1, 3 September 1996). The Contractor shall develop an Accident Prevention Plan (APP). All personnel shall understand, be familiar with, and conform to site safety procedures presented in the accepted Accident Prevention Plan (APP) developed by the Contractor for site activities. The information contained in this Section is provided to assist in the development of the APP. The Contractor will be held responsible for ensuring that operations under its control do not jeopardize the health and safety of public or private sector workers, members of the public at large, or the environment.~~

~~As a result it is most important that the Contractor develop and enforce the safety and health requirements specified in this section, EM 385-1-1, including Appendix A thereof, and 29 CFR 1926.62 (hazardous waste operations and emergency response) and 29 CFR 1926.62 (Lead). The Contractor's Accident Prevention Plan shall also clearly state, in enforceable language, the corrective measures which will be taken to preclude workers and equipment from being damaged or imperiled by the work activities required to perform the work.~~



4.1.5.4.1.4. Contaminant Characterization

There is the potential presence of elevated levels of antimony, arsenic, cadmium lead and zinc in the soil, groundwater and surface water. This is the result of over 100 years of mining and 65 years of smelting activity in the region. Heavy metals contamination has also extended into several communities. In addition to total suspended particulates (TSP), which includes respirable crystalline silica, there are four (4) chief metals of concern for the area. The metals are antimony (Sb), arsenic (As), cadmium (Cd) and lead (Pb). Arsenic is not technically a metal. However, the USEPA considers it as such and therefore includes it as one of the four chief metals of concern. The Contractor shall control dust level of soil to the Corps mandated level of 1 mg/m³, which will result in a maximum airborne lead level well below 50 µg/m³ (the PEL for lead.) The breathing atmosphere for the workers shall be controlled such that the indigenous dusts and the respirable crystalline silica do not equal or exceed the one half the value posted for the materials by either OSHA, ACGIH, or NIOSH. In addition, there is the potential of explosive material present in the former tailings pond site. The Accident Prevention Plan shall include, in the following order, the written requirements for the engineering controls, administrative controls and personal protective equipment which shall be used in order to ensure that the Contractor's employees will be protected from these materials.

4.1.6.4.1.5. Decontamination

The Contractor shall decontaminate all equipment used for the soil sampling and support equipment between sampling events. Support equipment includes vises, work tables, brushes, buckets, tubs, and tools. The drill crew shall decontaminate their outer rubber gloves between sampling events. Clean (surgical type) outer gloves shall be used when handling the sampling equipment for each sample collected. Contractor shall properly dispose of gloves, wipes, plastic scoops, pans, or other disposable material and shall ensure that all wash liquids are captured. The cleaning of soil sampling tools shall be accomplished as follows: a) Wash with soapy water (lab-grade phosphate-free detergent; tap, distilled or deionized water); b) Rinse with distilled water and wash again with soapy water; c) Rinse with distilled or deionized water; and d) Air dry. Deionized water means water that contains less than 50 milligrams per liter of dissolved solids.

OR

Drive samplers used to sample overburden materials shall be cleaned between each sampling event by washing the samplers in a phosphate free detergent and rinsing in clean water from an approved source. If samplers are used to collect soil samples for laboratory analysis, the samplers will be turned over to the Government's sampling contractor for additional cleaning and then shall be handled by the Contractor using clean surgical gloves.

4.1.7.4.1.6. Health and Safety and Accident Prevention

Prior to initiating on-site work the Contractor shall submit, for Government Acceptance, a written APP which meets all of the basic requirements as delineated in Section 1 (01.A.07) and Appendix A, of EM 385-1-1 (Appendix A of this SOW is requirement for the Monitoring Well Installation), as well as Site Safety and Health Plan requirements of 29 CFR 1926.65 and the Lead Compliance Program of 29 CFR 1926.62. The Contractor shall include the APP with the WP. The Contractor shall not commence on-site work activities, with the exception of mobilization to the work site, until such time as USACE has formally accepted the APP. The APP shall be made available to all persons entering onto the work site(s) in accordance with EM 385-1-1 (1996). A copy of the written APP shall be maintained onsite. All site workers shall be current in the training requirements specified in 29 CFR 1926.62 and 29 CFR 1926.65 and proof of said training, for both supervisory personnel as well as non-supervisory personnel, shall be included in the APP. The Accident Prevention Plan shall also include all of the activities of any sub-Contractors and shall demonstrate and ensure the safety and health of sub-Contractor personnel. The Accident Prevention Plan shall include a detailed Work Plan which includes all activities of both Contractor and Subcontractor personnel.



In addition to the specific requirements delineated in EM 385-1-1, the APP shall include and incorporate the lead compliance program specified in 29 CFR 1926.62(e), as well as specify and delineate the personal hygiene facilities which will be used. The Contractor's APP shall demonstrate those steps which will be taken to also enforce the safety and health regulations of 29 CFR 1926, with special attention to subpart .62 (Lead) for its employees as well as Subcontractor personnel.

The APP shall also demonstrate what steps (engineering controls, administrative controls and PPE) the Contractor and Subcontractor(s) will take to ensure that site workers are not exposed to atmospheres containing toxic materials. This includes chemical hazards, indigenous dust, arsenic, cadmium, lead and/or respirable silica (Class 1 carcinogen) at or above the ½ of the published Permissible Exposure Level (PEL) or the Threshold Limit Value (TLV) whichever is lower. The APP shall delineate how the workers will be monitored. For respirable silica, arsenic, cadmium and lead, the Contractor shall perform both real-time and 8 hour TWA monitoring for workers on the site. The results of personal sampling shall be included in the Daily Work Log. The Accident Prevention Plan shall provide the name(s) and credentials of the Lead Competent Person(s) who will be conducting the personal and area lead, arsenic, cadmium and respirable silica exposure monitoring, as well as the AIHA certified laboratory to be performing the analyses.

The APP shall include either a medical clearance report from a medical physician for the site workers or a written affidavit, on company letterhead, which attests, by name, that all site workers are medically qualified to use the required PPE (including respirators) and work on lead containing sites, in accordance with 29 CFR 1926.62 (including the appendices thereof). The Accident Prevention Plan shall clearly show the name of the of the Board (American Board of Preventative Medicine) Certified/Board Eligible Occupational Health Physician making the medical determination for each Contractor/Subcontractor employee who is to be used for this work.

The Accident Prevention Plan shall describe the procedures that will be taken to ensure that clothing contaminated with lead, arsenic, cadmium, and/or respirable silica, bearing soils, will not be carried off site. In addition, with specific steps which will be taken to ensure that the environment and groundwater are not contaminated with lead containing materials as a result of the procedures used during well installation.

In accordance with the contract Clause, "Accident Prevention," the Contractor shall provide and maintain work environments and procedures which will safeguard the public, Government personnel, Contractor personnel, property, materials, supplies and equipment exposed to Contractor operations and activities.

4.1.8.4.1.7. Activity Hazard Analysis (AHA)

The AHA, submitted as part of the APP, shall specifically list, in chronological order, the specific steps of each task, the specific hazard(s) associated with the task, the specific engineering control technique(s)/ method(s) which will be used to mitigate the hazards administrative controls (including work practices) and specific personal protective equipment (PPE) which will be used to mitigate said hazards. The AHA shall be laid out in chronological order and presented in the table format depicted in Figure 1-1 of Section 1 of EM 385-1-1 (1996). The Activity Hazard Analysis shall include all work which is to be performed by Subcontractors. Compliance with the accident prevention plan and safety requirements by Subcontractors shall be the responsibility of the Contractor.

4.1.9.4.1.8. Notice of Violations

Whenever the Contracting Officer detects and noncompliance with Contractual, Corps or OSHA health and safety compliance, or any condition which poses a serious or imminent danger to the health or safety of personnel on the site, the Contracting Officer will notify the Contractor in writing and request immediate initiation of corrective action. Lack of notice from the Contracting Officer does not relieve the Contractor from compliance requirements and responsibility. Such notice, when delivered to the Contractor at the site of the work, shall be deemed sufficient for the purpose of notification. After receipt of the written notice, the



Contractor shall immediately take corrective action and report said actions in writing to the Contracting Officer who will then document said corrective action, in writing, for the Contractor or the on-site representative of the Contractor. If the Contractor fails, or refuses, to comply promptly, the Contracting Officer may issue and order stopping all or part of the work until satisfactory corrective action has been taken. No part of the work stoppage, resulting from the "Stop Work" directive, shall be made the subject of claim for extension of time or for additional costs or damages by the Contractor.

4.1-10.4.1.9. Reporting

In addition to the other documents required, the Contractor shall include all personal exposure assessments/monitoring data and results for all materials of occupational health concern (including a letter from an Occupational Medicine physician, which attests that each person working on this project has received a final medical clearance for lead in accordance with 29 CFR 1926.62 along with accident reports, near-miss reports, accident investigation reports and laboratory analytical reports for any exposure monitoring.

5.4.2. Task 2 – Rotosonic Drilled Borings and Monitoring Well Installation

The proposed project involves work along and within the former tailings pond in the Big Creek drainage. The work consists of installation of 8 monitoring wells and 11 borings. It consists of drilling through overburden soils and tailings presumed to be contaminated with antimony, arsenic, cadmium, copper, lead, mercury, and zinc. The Contractor shall allow collection of soil samples for soil classification and analysis during drilling of boring and well construction in accordance with the approved WP. During drilling operations, soil samples shall be classified in the field by USACE Geologist.

The well installation method shall prevent the collapse of formation material against the PVC well screen and PVC casing. The inside diameter of any temporary steel casing (or hollow stem auger flight) used shall be sufficient to allow accurate placement of the screen, riser, filter pack, seal and grout. The screen material shall be non-contaminating, non-clogging, continuous slot (10-slotted), wire wrap design. Well screens shall be 10 feet in length. Each well shall be installed in a dedicated borehole and shall be constructed to yield chemically representative ground water samples of the screened interval for chemical analysis and to allow for the accurate measurement of ground water depths relative to the top of the well riser. Lead has been identified as the primary contaminant of concern based on health studies, therefore all monitoring well site workers shall have a background test for blood lead level prior to commencing work and a final test following completion of the contract work. The general locations of the monitoring wells are shown on Figure 2. Drilling shall be by Rotosonic drilling methods and documented in the WP. The monitoring wells at the site are to be screened in an unconfined aquifer, ten feet below the static water table. The work consists of furnishing all plant, labor, materials, transportation, supplies, and accessories to accomplish the work in accordance with the specifications herein. Please refer to Attachment A.

Each well is assumed to be 4-inch diameter and made of Schedule 40 PVC. The Contractor shall assume that there will be a total of 210 linear feet (LF) of well installation and a total of 660 LF of borings. Wells and borings shall be installed at locations described in the WP and/or determined in the field by USACE. Monitoring wells will be labeled 01-SR-MW-02 (Year Constructed – 01, SR – Sunshine Repository, MW – monitoring well, and 02 – well number). Contractor shall collect drill energy data during drilling for estimation of Standard Penetration Test (SPT) results by new state of the art methods.

6.4.3. Task 3 – Auger Drilled Borings and Piezometer Installation

The proposed piezometer installation and drilling program involves work within the former tailings pond in the Big Creek drainage. The work consists of installation of 12 borings with 8 of these borings having piezometer installed. It consists of drilling through overburden soils and tailings presumed to be



contaminated with antimony, arsenic, cadmium, copper, lead, mercury, and zinc. The Contractor shall allow collection of soil samples using a 2" diameter (24" long) stainless steel split-spoon sampler for soil classification and analysis during drilling of boring and well construction in accordance with the approved WP. Standard Penetration Test (SPT) will be obtained according to the ASTM D 1586. Contractor shall sample on 2.5 feet intervals from the surface to the top tailings, and collect continuous split spoon samples there after to total depth of borehole. Boreholes will be terminated at least 10 feet below bottom of the former tailings pond. During drilling operations, soil samples shall be classified in the field by USACE Geologist as indicated in this Statement of Work.

The piezometer installation method shall prevent the collapse of formation material against the PVC well screen and PVC casing. It shall follow monitoring well installation procedures found in Appendix A. The inside diameter of any temporary steel casing (or hollow stem auger flight) used shall be sufficient to allow accurate placement of the screen, riser, filter pack, seal and grout. The screen material shall be non-contaminating, non-clogging, continuous wrap (10-slotted) design. Well screens shall be 10 feet in length. Each well shall be installed in a dedicated borehole and shall be constructed to yield chemically representative ground water samples of the screened interval for chemical analysis and to allow for the accurate measurement of ground water depths relative to the top of the well riser. The general locations of the piezometer wells are shown on Figure 3. Drilling shall be by auger drilling methods and documented in the WP. The piezometer wells at the site are to be screened in an unconfined aquifer to straddle the static water table to allow for seasonal groundwater fluctuations. The work consists of furnishing all plant, labor, materials, transportation, supplies, and accessories to accomplish the work in accordance with the specifications herein. Please refer to Appendix A.

Lead has been identified as the primary contaminant of concern based on health studies, therefore all monitoring well site workers shall have a background test for blood lead level prior to commencing work and a final test following completion of the contract work.

Each piezometer is assumed to be 2-inch diameter and made of Schedule 40 PVC. The Contractor shall assume that there will be a total of 400 linear feet (LF) of piezometer installation and a total of 600 linear feet (LF) of auger drilling. Wells shall be installed at locations described in the WP and/or determined in the field by USACE. Piezometer will be labeled 01-SR-PZ-01 (Year Constructed – 01, SR – Sunshine Repository, PZ – Piezometer, and 01 – well number).

4.4. Task 4 – Investigation Derived Waste

Water generated during this effort (e.g., well development, equipment and personnel decontamination) shall be containerized and be disposed of by the contractor at the lined pond at the Bunker Hill Project Site, in coordination with the Contracting Officer's Representative. Soil generated may be disposed of onsite unless suspected to be highly contaminated, in which such highly contaminated soils shall be disposed at the Bunker Hill repository .



7.5. APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. These are referred to by basic designation only.

Table 8: Applicable Publications

Title	Reference No.	Description
American Society For Testing Materials (ASTM)	ASTM C 387	(1987; R 1995, 2000) Specification C387-00e1 Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete
	ASTM D 1586	(1999) Test Method D1586-99 Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
	ASTM D 1587	(2000) Practice D1587-00 Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
	ASTM D 1785	(1999) Poly (Vinyl Chloride)(PVC) Plastic Pipe, Schedules 40, 80, and 120
	ASTM D 4220	(2000) Practice D4220-95(2000) Standard Practices for Preserving and Transporting Soil Samples
	ASTM D 5088	(1990) Decontamination of Field Equipment Used at Non-radioactive Waste Sites
	ASTM D 5092	(1990, 1995) D5092-90(1995)e1 Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers
	ASTM D 2488	(1998) Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
	ASTM F 480	(2000) Specification F480-00 Standard Specification for Thermoplastic Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), SCH 40 and SCH 80
American National Standards Institute (ANSI)	Z 535.1-91	Safety Color Code
Code Of Federal Regulations (CFR)	49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials, Communications, Emergency Response Information, and Training Requirements
	29 CFR 1926	Safety and Health in Construction
National Sanitation Foundation Standard (NSF)	NSF Std 14	(Nov 1990) Plastics Piping Components and Related Materials
State Of Idaho, Department of Water Resources	IDAPA 37.03.09	Well Construction Standards Rules Title 03, Chapter 09
U.S. Army Corps. Of Engineers (USACE)	EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
	EM 1110-1-4000	(Nov 1998) Monitoring Well, Design, Installation, and Documentation at Hazardous, Toxic, and Radioactive Waste Sites
Environmental Protection Agency (EPA)	540-G-91-009	(1991) Management of Investigation-Derived Wastes During Site Inspections





8.6. ENVIRONMENTAL PROTECTION

The Contractor shall take all precautions as may be required to prevent contaminated water or water having undesirable physical or chemical characteristics from entering the water supply stratum through the boring. Care shall be taken to preserve the natural barriers to ground-water movement between aquifers and to seal aquifers or strata penetrated during drilling operations which might impair water quality or result in cascading water. A plastic sheeting pad with berm shall be placed under and around the drill rig and under all supporting equipment to prevent spilled or leaking fuel and lubricants from entering the soil cover or staining the pavement surface. The Contractor shall cover the boring at all times when not at the work site. The cover shall be secured in place or weighted down so that it cannot be removed except with the aid of drilling equipment or through the use of drill tools. Demonstration of said protective measures shall be described in the Contractor's Accident Prevention Plan, see paragraph HEALTH AND SAFETY.

9.7. PERMITS AND PERFORMANCE REQUIREMENTS

The Contractor shall be responsible for obtaining permits, licenses, and other requirements necessary for execution of the work and paying all costs thereof. Real Estate Right of Entry will be provided by the Contracting Officer and must be in place prior to drilling. All activities will be located on Sunshine Mines property. All work and materials for the construction of the monitoring wells shall conform to the requirements of IDAPA37 Title 03 Chapter 09. Access to each monitoring well site, including underground utility clearances, is the responsibility of the Contractor. Prior to commencing work, the Contractor shall obtain written approval from the local utility companies to drill at each site, to avoid disturbing buried utilities. Any items damaged by actions of the Contractor shall be repaired to the satisfaction of the COR at the expense of the Contractor. The Government geologist inspecting the drilling operations will be responsible for answering questions from the inquiring public. Utility clearances and Right of Entry to be obtained by USACE. The USACE will stake all monitoring wells, piezometers, and borings in the field prior to commencement of work.

10.8. PERSONNEL REQUIREMENTS

Each drill shall be manned with an experienced and qualified crew to ensure efficient and timely execution of the work. The minimum acceptable crew for each drill shall be a qualified driller experienced in the installation, repair and abandonment of monitoring wells and an experienced and qualified helper. Qualified driller shall possess all licenses required to drill subsurface borings and wells in the State of Idaho. The Contractor shall provide sufficiently experienced supervisory staff to direct all phases of work under this contract.

11.9. SANITARY PROVISIONS, WATER AND ELECTRICITY

Contractor shall provide such sanitary accommodations for use of his employees as may be necessary and shall maintain same in a neat and sanitary condition. Such accommodations shall comply with requirements and regulations of EM 385-1-1, and state health department, local ordinances, and other authorities having jurisdiction. All electrical current and water required by the Contractor will be furnished by the Contractor.



12.10. DRILLING, INSTALLATION, AND CLOSURE RECORDS

Records to be completed by Contractor. The following record keeping requirements apply to this Statement of Work.

12.1-10.1. Daily Logs (GA)

The Contractor's drill operator shall maintain an accurate and precise chronological daily driller's log of events which shall be submitted to the Contracting Officer's Representative at the conclusion of each boring or as otherwise directed. The following items shall be included in this daily log:

- (a) Beginning of work shift (time, date, and location)
- (b) Measure static water level at beginning of each shift
- (c) Delays in work (times and circumstances)
- (d) Any significant occurrence in performing work
- (e) Start and stop time of hourly payment items
- (f) Equipment failures
- (g) End of shift casing depth and height left above ground surface
- (h) End of work shift (time and date)
- (i) Movements to new boring location,
- (j) Daily tabulation of quantities for each pay item
- (k) Any pertinent comments concerning the daily performance.
- (l) Drilling lithologic log by driller.

The presence of a Government geologist or the keeping of separate drilling records by Contracting Officer personnel shall not relieve the Contractor of the responsibility for the work specified. Contractor shall furnish a water level measuring device accurate to 0.01 foot and capable of measuring water level to 100 feet depth in order to accomplish sub-item (b) above.

12.2-10.2. Notification or Non-Compliance/Corrective Action Report

The Contractor shall notify the CO verbally and in writing within two working days of any and all deviations or non-compliance events relating to chemical data quality management requirements. Similarly, the CO will notify the Contractor of any detected non-compliance with the foregoing chemical data requirements. Failure of the Contractor to report or respond to such non-compliance does not relieve the Contractor from the non-compliance requirements. At any time during the process if corrective action is required according to this Statement of Work, base contract, Corps audit, or good laboratory practices, a corrective action report shall be submitted to the CO for approval.

The Contractor shall, after notifying the CO of any and all deviations or non-compliance events relating to chemical data quality management requirements or receipt of such notice from the CO, immediately take corrective actions. If the Contractor fails to comply promptly, the CO may issue an order to stop all or part of the work until satisfactory corrective action has been taken. Such an order shall encompass activities of both the Contractor and Subcontractors. No part of such time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

13.11. SCHEDULE

The Contractor shall furnish sufficient technical, supervisory and administrative personnel to ensure completion of the work in accordance with the following schedule. The Contractor shall keep the COR fully



advised at all times, concerning delays or difficulties which may prohibit completion of any or all of the work according to the following schedule:

	Activity	Days*	Remarks
1	Delivery Order (DO) Award Notice to Proceed (NTP)	0	DO Award NTP Date
2	Submit Draft WP	4 CD	After Notice to Proceed Date
3	Submit Final WP	3 CD	After Receipt of Comments
4	Field Work initiated	7 CD	After Approval of Work Plan
5	Field Work Complete	22 CD	After Initiation of Field Work
5	Reports and Records Due	14CD	After Completion of Field Work

*CD - Calendar Days, WD - Work Days (Mon.-Fri)

14.12. MEASUREMENT AND PAYMENT

14.1.12.1. General

The contract price for each item shall constitute full compensation for furnishing all plant, labor, materials, and incidentals, and performing all operations necessary to construct and complete the items in accordance with the specifications. Payment for each item shall not be considered as full compensation, notwithstanding that minor features may not be specifically mentioned herein. Materials and work paid for under one item will not be paid for under any other item. The Contractor shall not be compensated for loss of time or equipment due to breakdown of equipment, lack of proper equipment as determined by the Contracting Officer, labor shortages or disputes, delay in obtaining materials, or for any other reason not directly the fault of the Government. Items for which no separate payment is provided shall be considered as incidental to the performance of the work which it is mentioned.

Payment will be made at the contract unit price for each line item listed in the Cost Schedule, payment of which shall constitute full compensation for plant, material, equipment, supplies, and transportation of such to and from the site of work.

14.2.12.2. Measurement

Measurement of the units of work shall be made as hereinafter specified. Measurement by linear feet will be measured for payment to the nearest linear foot. Depth, installation, PVC well casing, and well screen shall be measured by linear distance. Measurement of well depth shall be vertical measurement in linear feet (LF) from original ground surface. Measurement by volume of bentonite grout will be by direct count of 94-pound sacks (SK) placed in the well. Measurement by the hour will be to the nearest whole hour. The time necessary to wait for grout to set will not be measured for payment. Standby time will be measured by the number of hours that crew and/or equipment are specifically directed by the Contracting Officer's Authorized Representative to standby until notified to resume work.



14.3.12.3. Payment

14.3.1.12.3.1. Item No. 0001, Work Plan/ Project Summary Report

Payment will be made at the contract lump sum price All Work for the Preliminary Site Investigation of the Sunshine Property, Big Creek, Idaho. Work under this item includes all labor, travel, materials, supplies, equipment, permits, and all incidentals necessary to complete the Work Plan and Project Summary Report.

14.3.2.12.3.2. Item No. 0002, Monitoring Well Installation (Base)

14.3.3.12.3.3. Item No. 0002A, (Rotasonic) Mobilization and Demobilization (Base)

The contract unit price for Item 0002A shall include transportation of all plant, material, equipment, and supplies to and from the site of work (including those necessary for monitoring well repairs, monitoring well closures, and groundwater sampling.) Sixty percent of Item: Mobilization and Demobilization will be paid following completion of mobilization to the work area, including furnishing complete assembly in working order of all equipment necessary to perform the required drilling, sampling and monitoring well construction. The preparation, submittal, and necessary revisions for the required Accident Prevention Plan and Activity Hazard Analysis will be incidental to this item of work. The remaining 40 percent of Item: Mobilization and Demobilization will be paid when all equipment has been removed from the area, cleanup accomplished to the satisfaction of the Contracting Officer, and demobilization is complete.

14.3.4.12.3.4. Item No. 0002B, Monitoring Well Drilling and Installation (Base)

The contract unit price for Item 0002B, Monitoring Well Drilling and Installation, shall include costs for equipment, materials and labor for drilling; furnishing and the disposal of temporary casing, drill return water, sample handling, and sample containers and drumming of drill cuttings. No payment will be allowed for monitoring wells abandoned due to construction practices not in accordance with this specification, or for the convenience of the Contractor. Interim mobilization on each boring, sanitation of equipment, and the furnishing, installing, removing of ground protection materials and disposal of ground protection materials will be incidental to this item of work. When the total cumulative depths of the eight monitoring wells exceeds a total drilled footage of 240 linear feet, then additional depth will be paid for at the contract unit price for Item 0002B: Additional Monitoring Well Depth. In addition payment shall constitute full compensation for furnishing all plant, labor, PVC materials, catalog data, equipment, supplies, decontamination, and performing all work necessary to install screen and blank 2-inch-nominal diameter PVC pipe. The furnishing of filter pack, bentonite chip well seal, centralizers, tail pipe, and end caps in the aquifer and the installation of said materials while simultaneously removing the temporary steel casing or auger flights from the drilled borings will be incidental to the this item of work. The furnishing and placing of bentonite backfill material within the aquitard is also incidental to this item of work. Payment for furnishing and placing bentonite grout annular sealant will be made under Item: Bentonite Grout Annular Sealant, Furnished and Installed.

14.3.5.12.3.5. Item No. 0002C, Bentonite Grout Annular Sealant Furnished & Installed (Base).

The contract unit price for Item 0002D, Bentonite Grout Annular Sealant, Furnished and Installed, shall include costs to furnish all plant, labor, grout materials, catalog data, equipment, supplies, and performing all work necessary to install annular sealant. Simultaneously removal of the temporary steel casing or auger flights from the drilled borings will be incidental to this item of work. The cement bentonite grout used in the annulus above the bentonite seal will be paid by direct count of 94-pound sacks used. Payment will include compensation for furnishing bentonite grout, mixing of the grout, and pumping of grout, necessary for the work. No payment will be made for bentonite to backfill or plug a boring or well rejected by the Contracting Officer's Authorized Representative and/or abandoned by the Contractor.



14.3.6-12.3.6. Item No. 0002D, Above Ground Monitoring Well Protection Features, Furnished and Installed.

The contract unit price for Item 0002F, Above Ground Monitoring Well Protection Features, Furnished and Installed, shall include costs associated with furnishing all plant, labor, materials, equipment, supplies and catalog data and providing all work to install monitoring well protection features as specified. Payment shall constitute full compensation for furnishing and installing concrete pad, four guard posts, metal protection casing, watertight lockable security plug for the PVC well riser, keyed-alike padlocks, commercially manufactured locking cover, and the furnishing and installation of the well identification tag.

14.3.7-12.3.7. Item No. 0003, (Rotasonic) Drilling Borings (Base)

14.3.8-12.3.8. Item No. 0003A, (Rotasonic) Drilling (Base)

The contract unit price for Item 0003A, drilling, shall include costs for all labor, equipment, and incidentals necessary to drill borings as specified. Interim mobilization on each boring, sanitation of equipment, and the furnishing, installing, removing of ground protection materials, and disposal of ground protection materials, will be incidental to this item of work.

14.3.9-12.3.9. Item No. 0003B, Bentonite Grout Furnished and Installed for Boring Closure (Base).

The contract unit price for the portion of the No. 0003B Item, to close (decommission) Soil Borings, shall include costs associated with furnishing all plant, labor, material, catalog data, equipment, supplies, and performing all work necessary to decommission the soil borings as specified. The cement bentonite used in the closure of the soil borings will be paid by direct count of 94-pound sacks used. The furnishing of water to hydrate the bentonite will be incidental to this item of work.

14.3.10-12.3.10. Item No. 0003C, Standby Time.

The contract unit price for Standby Time, shall include cost associated with the standing by of equipment and crew only when the Contracting Officer's Authorized Representative requests that the Contractor stop doing work on the well due to the Government's need to make decisions. No more than 10 hours of standby time will be paid. Standby time will not be allowed during periods when the equipment would have otherwise been in idle status.

14.3.11-12.3.11. Item No. 0004, (Auger) Piezometer Installation (Base)

14.3.12-12.3.12. Item No. 0004A, (Auger) Mobilization and Demobilization (Base)

The contract unit price for Item 0004A, Mobilization and Demobilization, shall include costs for transportation of all plant, material, equipment, and supplies to and from the site of work (including those necessary for monitoring well repairs, monitoring well closures, and groundwater sampling). Sixty percent of Item: Mobilization and Demobilization will be paid following completion of mobilization to the work area, including furnishing complete assembly in working order of all equipment necessary to perform the required drilling, sampling and monitoring well construction. The preparation, submittal, and necessary revisions for the required Accident Prevention Plan and Activity Hazard Analysis will be incidental to this item of work. The remaining 40 percent of Item: Mobilization and Demobilization will be paid when all equipment has been removed from the area, cleanup accomplished to the satisfaction of the Contracting Officer, and demobilization is complete.

14.3.13-12.3.13. Item No. 0004B, Piezometer Installation (Base)

The unit price for Item 0002B, Piezometer Installation, shall include costs for equipment, materials and labor for installation; No payment will be allowed for piezometer abandoned due to construction practices not in accordance with this specification, or for the convenience of the Contractor. Interim mobilization on each boring, sanitation of equipment, and the furnishing, installing, removing of ground protection materials and disposal of ground protection materials will be incidental to this item of work. When the total cumulative depths of the 10 piezometer wells exceeds a total drilled footage of 600 linear feet. In addition payment shall



constitute full compensation for furnishing all plant, labor, PVC materials, catalog data, equipment, supplies, decontamination, and performing all work necessary to install screen and blank 2-inch-nominal diameter PVC pipe. The furnishing of filter pack, bentonite chip well seal, centralizers, tail pipe, and end caps in the aquifer and the installation of said materials while simultaneously removing the temporary steel casing or auger flights from the drilled borings will be incidental to the this item of work. The furnishing and placing of bentonite cement backfill material within the aquitard is also incidental to this item of work. Payment for furnishing and placing cement bentonite grout annular sealant will be made under Item: Cement bentonite Grout Annular Sealant, Furnished and Installed.

14.3.14.12.3.14. Item No. 0004C, Cement Bentonite Grout Annular Sealant Furnished & Installed (Base).

The contract unit price for Item 0004D, Cement Bentonite Grout Annular Sealant, Furnished and Installed, shall include costs for furnishing all plant, labor, grout materials, catalog data, equipment, supplies, and performing all work necessary to install annular sealant. Simultaneously removal of the temporary steel casing or auger flights from the drilled borings will be incidental to this item of work. The cement bentonite grout used in the annulus above the bentonite seal will be paid by direct count of 94-pound sacks used. Payment will include compensation for furnishing bentonite grout, mixing of the grout, and pumping of grout, necessary for the work. No payment will be made for cement bentonite to backfill or plug a boring or well rejected by the Contracting Officer's Authorized Representative and/or abandoned by the Contractor.

14.3.15.12.3.15. Item No. 0004D, Above Ground Piezometer Protection Features, Furnished and Installed.

The contract unit price for Item 0002F, Above Ground Monitoring Well Protection Features, Furnished and Installed, shall include costs for furnishing all plant, labor, materials, equipment, supplies and catalog data and providing all work to install monitoring well protection features as specified. Payment shall constitute full compensation for furnishing and installing metal protection casing, watertight lockable security plug for the PVC well riser, keyed-alike padlocks, commercially manufactured locking cover, and the furnishing and installation of the well identification tag.

14.3.16.12.3.16. Item No. 0005, (Auger) Drilling Borings (Base)

14.3.17.12.3.17. Item No. 0005A, (Auger) Drilling (Base)

The contract unit price for Item 0005A, drilling, shall include costs for all labor, equipment, and incidentals necessary to drill borings as specified. Interim mobilization on each boring, sanitation of equipment, and the furnishing, installing, removing of ground protection materials, and disposal of ground protection materials, will be incidental to this item of work.

14.3.18.12.3.18. Item No. 0005B, Bentonite Grout Furnished and Installed for Boring Closure (Base).

The contract unit price for the portion of the No. 0005B Item, to close (decommission) Soil Borings, shall include costs for furnishing all plant, labor, material, catalog data, equipment, supplies, and performing all work necessary to decommission the soil borings as specified. The cement bentonite used in the closure of the soil borings will be paid by direct count of 94-pound sacks used. The furnishing of water to hydrate the bentonite will be incidental to this item of work.

14.3.19.12.3.19. Item No. 0005C, Drive Samples (Base)

The contract unit price for Item 0005C, Drive Samples, shall include costs for all labor, equipment, and incidentals necessary to sample each soil boring as directed. Payment will be made in cases of no recovery providing sampling procedures have been in accordance with the specifications and sampling equipment retainer springs are in working order. The sanitation of sampler equipment will be incidental to this item of work.



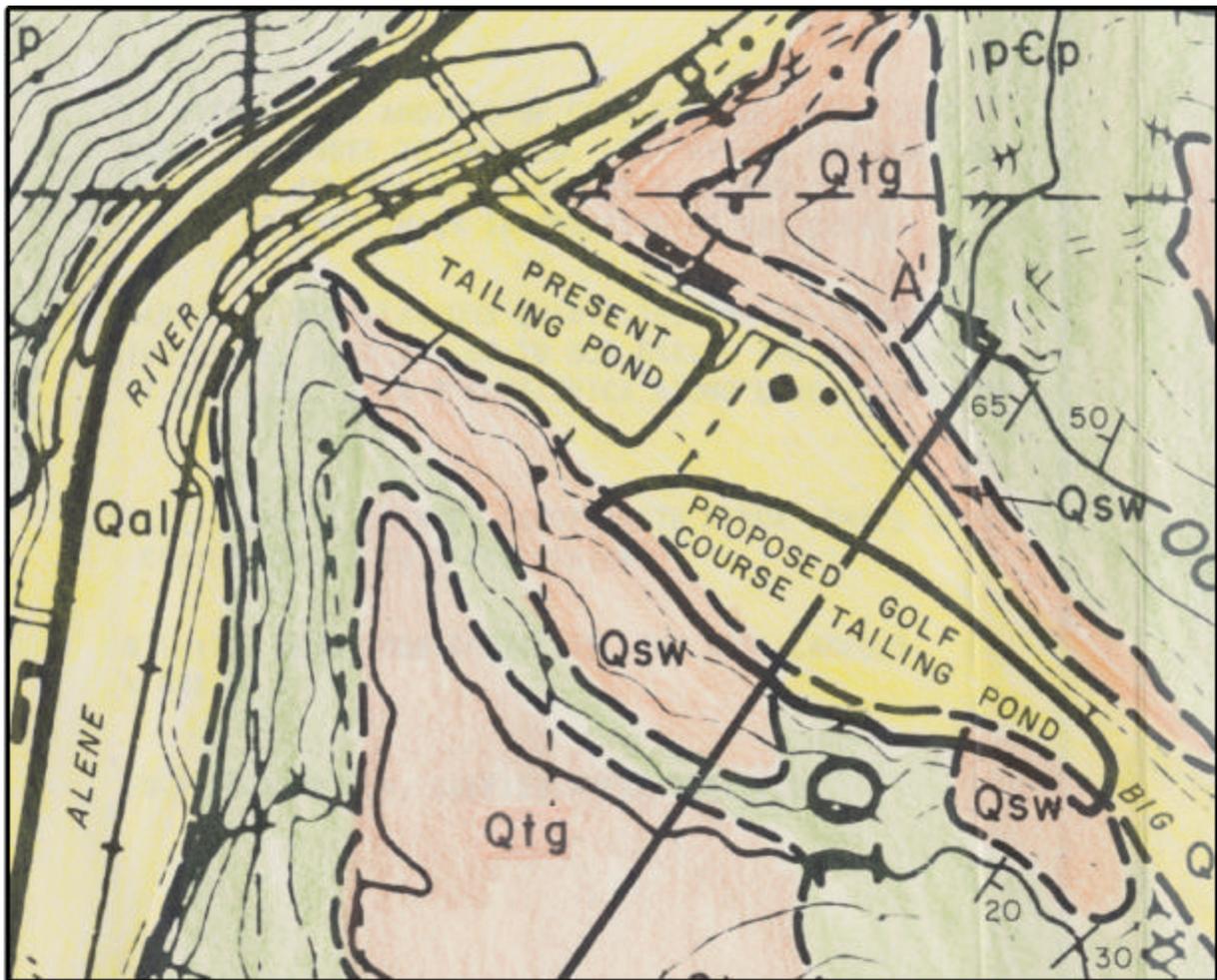
14.3.20-12.3.20. Item No. 0005D, Undisturbed Sampling.

The contract unit price for Undisturbed Sampling, shall include costs for all labor, equipment, and incidentals necessary to sample each soil boring as directed using a Shelby Tube. The Driller shall provide extrusion and waxing stations and supplies if required. Payment will be made in cases of no recovery providing sampling procedures have been in accordance with the specifications and sampling equipment. The sanitation of sampler equipment will be incidental to this item of work.

14.3.21-12.3.21. Item No. 0005E, Standby Time.

The contract unit price for Standby Time, shall include costs for the standing by of equipment and crew only when the Contracting Officer's Authorized Representative requests that the Contractor stop doing work on the well due to the Government's need to make decisions. No more than 10 hours of standby time will be paid. Standby time will not be allowed during periods when the equipment would have otherwise been in idle status.

FIGURES



Qal Recent Alluvium - Gravels minor amounts of cobbles, boulders, sand, silt, and clay.

Qsw Slope Deposits - Angular quartzite, argillaceous quartzite, argillite rock fragments.

Qtg Older Channel and Terrace Gravels - Gravel with minor amounts of silt and clay.

p-εp Precambrian Prichard Formation - Argillite, quartzose argillite and argillaceous quartzite.

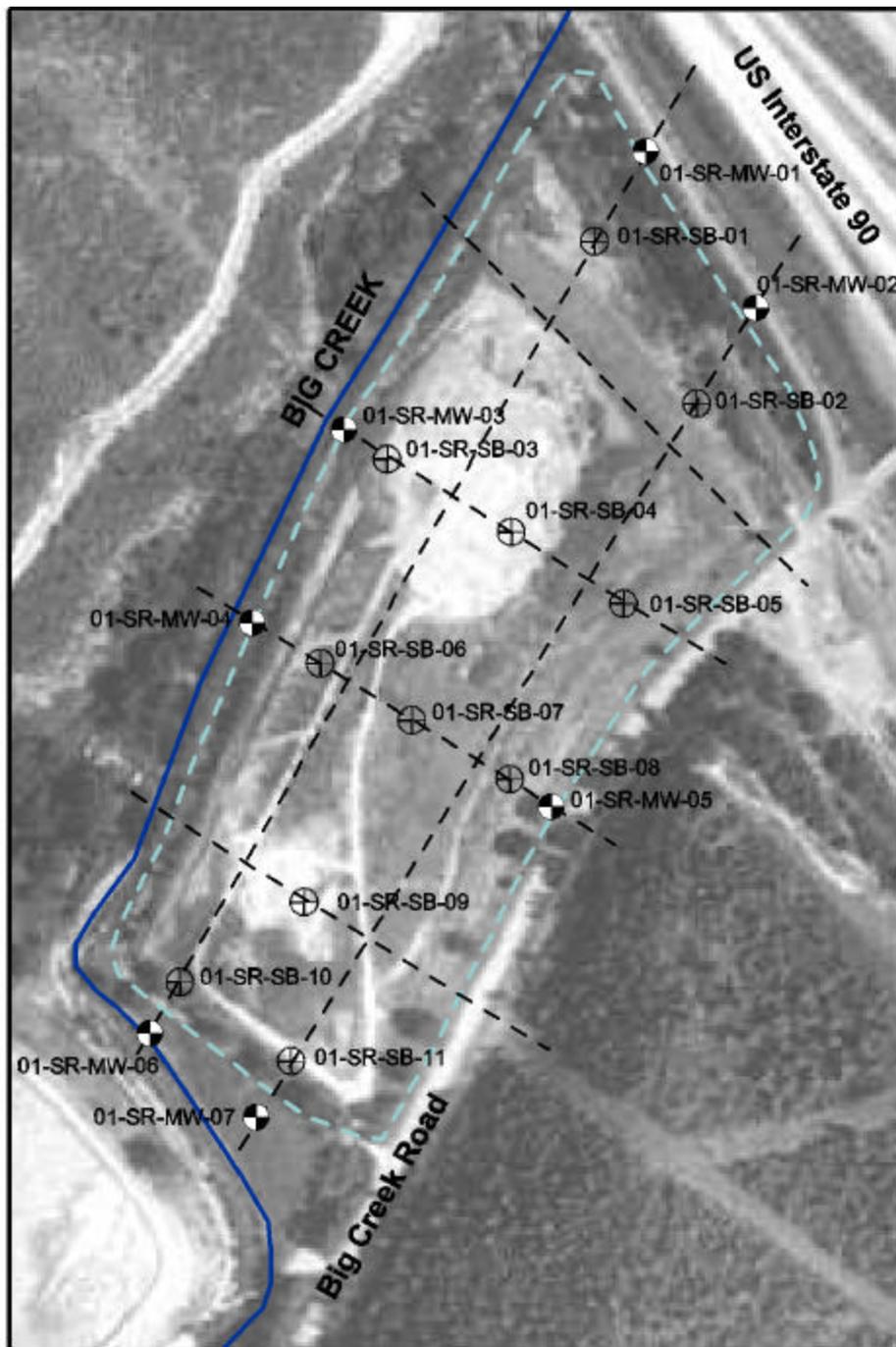
Reference: Woodward-Clyde Consultants,
"Geologic Map and Proposed Tailing
Dam Sites, Sunshine Mine" Fig. 1, Job No.
18252, Denver, CO, 5/30/75.



Geology of the Former Tailings Pond
Preliminary Site Investigation
Proposed Sunshine Repository
Bunker Hill Superfund Site
Big Creek, Idaho

Prepared by:
L.M. Scott
25 Sept 01

FIGURE 1



LEGEND

- 01-SR-SB-01
⊕ **Rotosonic Soil Boring**
- 01-SR-MW-01
⊗ **Monitoring Well**
- Former Tailings Pond Boundary**
- Perennial Stream**

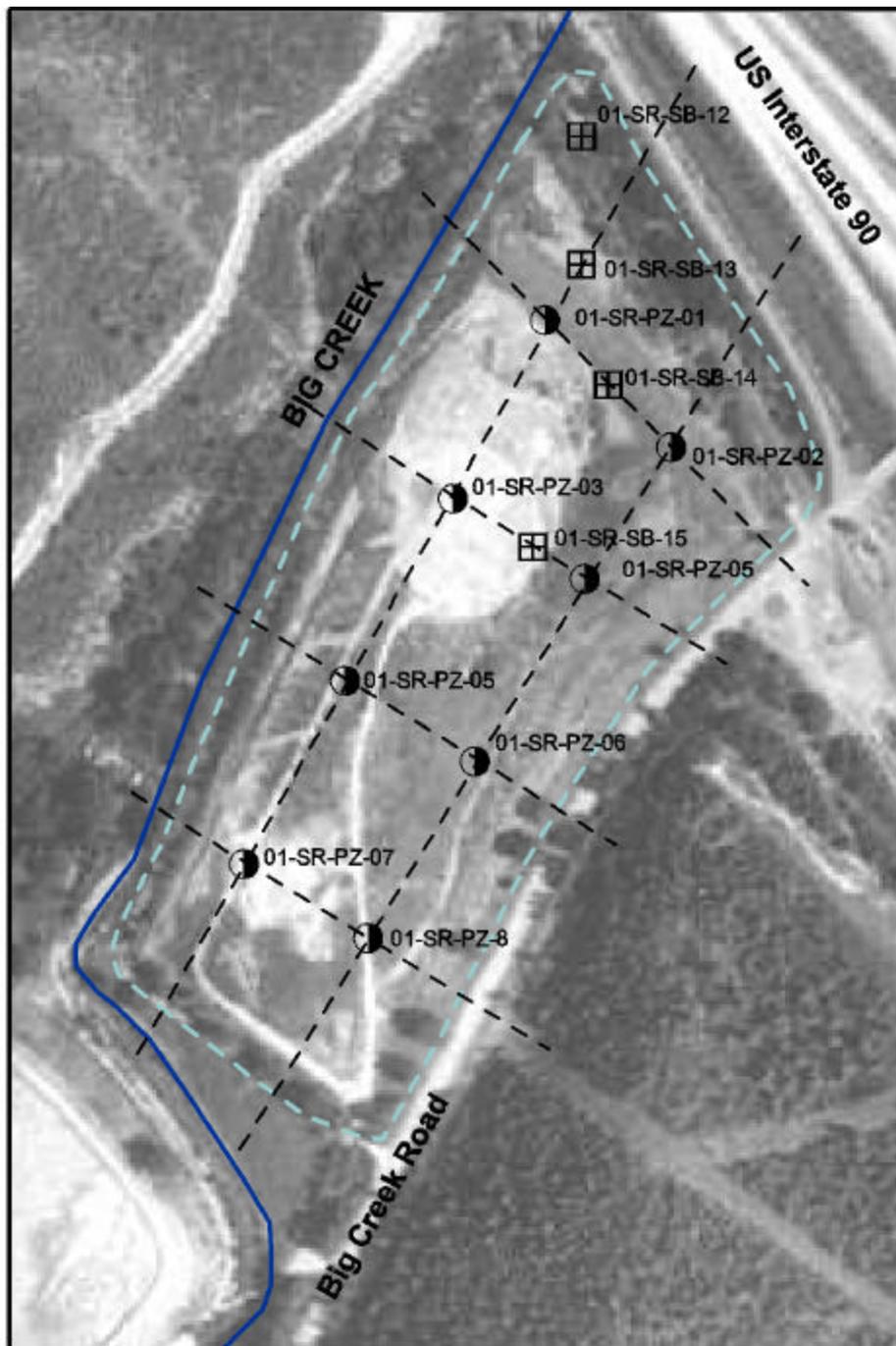
Rotosonic Soil Borings and Monitoring Well Locations
 Coeur d'Alene Basin Time Critical Removal Action
 Proposed Sunshine Repository
 Preliminary Site Investigation
 Big Creek, Idaho

Prepared by:
 L.M. Scott
 28 Sept 01

FIGURE 2



US Army Corps
 of Engineers
 Seattle District



LEGEND

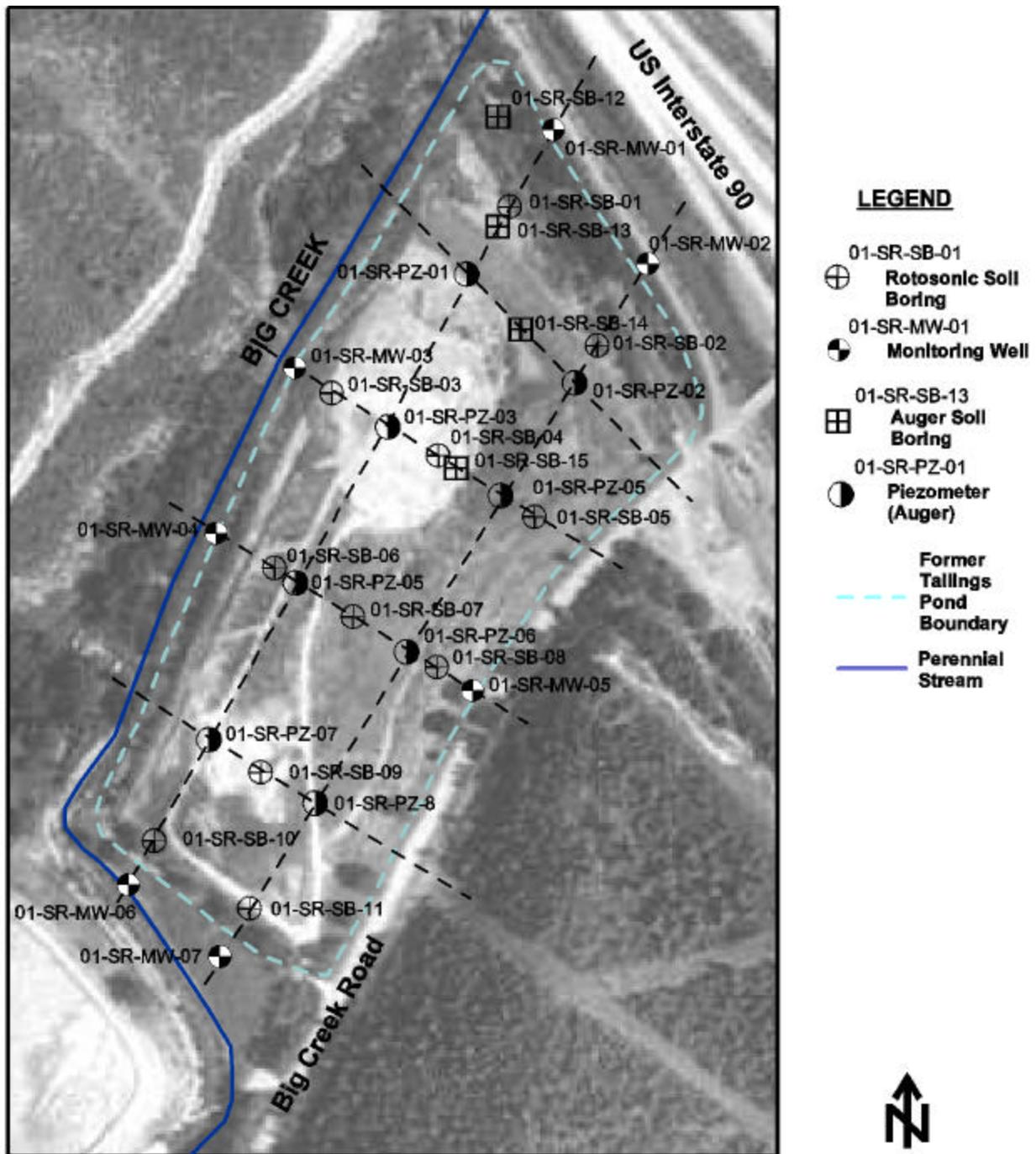
- 01-SR-SB-01 **Rotosonic Soil Boring**
- 01-SR-MW-01 **Monitoring Well**
- 01-SR-SB-13 **Auger Soil Boring**
- 01-SR-PZ-01 **Piezometer (Auger)**
- Former Tailings Pond Boundary**
- Perennial Stream**

Auger Soil Borings and Piezometer Locations
 Coeur d'Alene Basin Time Critical Removal Action
 Proposed Sunshine Repository
 Preliminary Site Investigation
 Big Creek, Idaho

Prepared by:
 L.M. Scott
 28 Sept 01

FIGURE 3





All Soil Borings, Piezometer, and Monitoring Well Locations
Coeur d'Alene Basin Time Critical Removal Action
Proposed Sunshine Repository
Preliminary Site Investigation
Big Creek, Idaho

Prepared by:
L.M. Scott
28 Sept 01

FIGURE 4



ATTACHMENTS