OPA Trench Work Plan

Prepared On Behalf of

Cotter Corporation (N.S.L)
Milling Facility
Canon City, CO

Prepared for

Colorado Department of Public Health and Environment

Prepared By

Wright Environmental Services, Inc.
201 Linden Street, Suite 301
Fort Collins, CO 80524

November 30, 2011

TABLE OF CONTENTS

1.0 INTRODUCTION 1

2.0 INVESTIGATION PURPOSE AND OBJECTIVES 2

3.0 PRE-DESIGN DATA NEEDS 3

3.1 Existing Data 3
3.2 Data Needs 4

4.0 PRE-DESIGN INVESTIGATIONS 4

4.1 Area Reconnaissance 4
4.2 Test Pit Excavation and Sampling Procedures 4
4.3 Geochemical Analyses 5

5.0 HEALTH AND SAFETY PLAN AND JOB SAFETY ANALYSES 6

6.0 REPORTING 6

7.0 SCHEDULE 7

8.0 REFERENCES 7

TABLES

Table 1 – DQO Process Summary for OPA Trench Investigation Work Plan

Table 2 – Comparison of Uranium and Molybdenum Concentrations with Depth (after HydroSolutions, 2009)

FIGURES

Figure 1 – Site Layout with Proposed Test Pit Locations

APPENDICES

APPENDIX A – OPA Trench Work Plan, Test Pit Excavation and Sampling Procedures

APPENDIX B – Hazardous Work Permit

1.0 INTRODUCTION

Uranium and molybdenum derived from historic activities at the Cotter Corporation (N.S.L.) (Cotter) Milling Facility, located south of Canon City, Colorado, have impacted groundwater beneath and downgradient of the site. Though extensive remedial actions have been performed over the past several decades to mitigate groundwater impacts, additional conceptual groundwater remediation strategies have been developed and preferred corrective measures have been selected for specific Remediation Areas (HydroSolutions, 2009). The development of the remediation strategies were completed in response to the Colorado Department of Public Health and Environment (CDPHE) requirement to provide a surety bond estimate for groundwater remediation.

One of the four Remediation Areas identified for further groundwater remedial action by the HydroSolutions (2009) report is the Facility Area (Mill Area). Specifically, the Old Pond Area (OPA) located directly east of the mill within the Facility Area previously contained unlined ponds that contributed contaminants to groundwater. The OPA has high residual groundwater concentrations of uranium and molybdenum and aquifer solids may continue to provide a source of contaminants to the groundwater system. HydroSolutions (2009) identified installation of an interceptor trench as the preferred alternative for this area as being practicable, implementable and providing a reasonable chance of achieving the objective of being protective of human health and the environment. As part of surety negotiations, Cotter has agreed to proceed aggressively with implementing groundwater corrective action in the OPA. The installation of an interceptor trench in the OPA will serve to control a major source of groundwater impact. This action may or may not constitute all or a portion of the final remedy.

This Work Plan presents the approach and methods to be used in further characterizing the geologic and hydrologic conditions in the OPA to support siting and design of the OPA interceptor trench system. Section 2 describes the investigation objectives while Section 3 summarizes the existing data and identifies additional data needs. Section 4 presents the pre-design investigation to acquire the needed data identified in Section 3. Specific exploration methods and sampling and laboratory testing procedures are outlined in this Work Plan. In addition, this Work Plan includes a field sampling and analysis plan to characterize the shallow groundwater and associated bedrock geochemistry in the OPA as a basis for developing recommendations for groundwater capture design in the OPA. Health and safety measures for the pre-design investigation are presented in Section 5 while

Section 6 identifies the investigation reporting and Sections 7 presents the pre-design investigation schedule.

2.0 INVESTIGATION PURPOSE AND OBJECTIVES

The purpose of the interceptor trench system is to collect the highest concentrations of contaminated groundwater in the OPA, removing mass from the groundwater system and reducing the amount of contaminants that could migrate down gradient to the Soil Conservation Service (SCS) Dam area and Lincoln Park. The purpose of the pre-design investigation is to collect sufficient geologic, hydrologic and geochemical data to design the interceptor trench system and assess the duration over which it may be required.

Problem Statement:

Heterogeneous and anisotropic hydrogeologic conditions as well as variable groundwater contaminant concentrations exist in the Facility Area and OPA. In order to ensure the interceptor trench system intercepts the maximum uranium and molybdenum groundwater concentrations and captures the appropriate portion of the groundwater flow system for maximum mass removal, additional geologic and water quality data are needed.

Groundwater transport of contaminants through the geologic unit may have loaded mass onto the geologic formation solids. The solids may serve as a long-term source of contamination to groundwater even after overlying tailings and contaminated soils and existing groundwater with high contaminant concentrations have been removed. In order to better predict how long groundwater interception and removal may be required, additional characterization of the amount and availability of contaminant mass on the OPA aquifer solids is needed.

Table 1 presents the data quality objective (DQO) process used to develop the investigation-specific DQOs. The goals of the Water Quality Investigation using Test Pits are as follows:

1. **Visually assess the bedrock geology and occurrence of associated shallow groundwater.** The results of previous investigations indicate that groundwater flow rates in the OPA are relatively slow (32 ft/yr) and groundwater flow in the uppermost water bearing bedrock unit (Poison Canyon Formation) are controlled by fractures in this unit (HydroSolutions,

2009). Additional data on the geologic conditions in the OPA and the occurrence and distribution of the associated shallow groundwater and its concentration will allow a better understanding of the relationship between the geologic media and groundwater contaminant flow in the OPA to support location of the collection trench system in or directly below the areas of highest groundwater concentration.

2. **Verify areas of highest uranium and molybdenum groundwater concentration in the OPA**. Additional characterization of groundwater concentrations of the primary contaminants uranium and molybdenum within the central portions of the OPA will support existing data and location of the collection trench system in or directly below the areas of highest groundwater concentration.
3. **Evaluate geochemical and radiological characteristics of shallow groundwater and associated bedrock.** Determine what concentrations of uranium and molybdenum are present on the aquifer solids and establish if the contaminants sorbed on the solids may serve as a long-term source to the groundwater. Better understanding of the geochemistry and radiological conditions of the shallow groundwater and subsurface solids in the OPA will allow assessment of available contaminant mass for potential future groundwater transport.

3.0 PRE-DESIGN DATA NEEDS

3.1 Existing Data

The OPA is geologically underlain by the Poison Canyon Formation. This formation is a sequence of silty sandstone, clay and conglomerate with limited lateral continuity approximately 350 to 700 feet thick (Hershey-Wooderson Associates, Inc. 1977). The majority of the OPA was excavated to bedrock or near bedrock in 2008 (HydroSolutions, 2009). Following the completion of excavation, groundwater was identified at or near the surface as pooled groundwater (HydroSolutions, 2009). During soil excavation in the OPA during 2008, impacted groundwater was identified near and at the bedrock interface. HydroSolutions (2009) noted that the primary source of groundwater contamination was the former unlined tailings impoundments. After excavation of much of the sediments in the OPA, residual contamination may remain in the bedrock subsurface (HydroSolutions, 2009). HydroSolutions (2009) estimated for the purposes of the surety estimate, that the extent of impacts in the subsurface was limited to the upper 25 feet of saturated bedrock. Table 2 summarizes

the data regarding vertical distribution of uranium and molybdenum in groundwater with depth. Additional data are available in site annual reports.

3.2 Data Needs

The locations of the highest concentrations of uranium and molybdenum in both the groundwater and the subsurface solids underlying the OPA must be verified in order to ensure that the Interceptor Trench is located within the area of highest groundwater concentrations. The goal of the investigation data collection is to secure sufficient information to design, construct and operate the corrective action. The specific data needed include the following:

- Distribution of subsurface geologic conditions (lithology, stratigraphy) in the OPA
- Distribution and occurrence of groundwater and selected analytes within the subsurface in the OPA. Laboratory reporting limits should be sufficiently below State water quality standards to allow meaningful assessment of the relative impacts of groundwater.
- Total mass and mass available of uranium and molybdenum for leaching into groundwater in the OPA. Laboratory reporting limits should be sufficiently low to allow meaningful assessment of the potential impacts of future leaching to groundwater with respect to State water quality standards.

4.0 PRE-DESIGN INVESTIGATIONS

4.1 Area Reconnaissance

Locations of test pits/trenches will be identified using data available from previous soil excavation work and site knowledge. These test pit locations will be staked in the field and initial GPS locations documented.

4.2 Test Pit Excavation and Sampling Procedures

The Standard Operating Procedure (SOP) for test pit excavation and sampling from test pits are provided as Appendix A. Test pit logs will be prepared and

documented in accordance with the SOP. Test pit locations will be identified in the field by the site geologist using a hand held GPS. Test pit locations will be clearly marked with stakes on completion and the final locations documented with GPS surveys. The test will be excavated with either a trackhoe or dozer with a toothed ripper to the final depth (Appendix A). Test pits will have approximate minimum dimensions of at least 10 feet long by 6 feet wide and may be up to 20 feet deep, though the excavation method may require test pit dimensions to vary.

Test pits will be logged and photographed. The occurrence of ground water will be recorded, including notes regarding if the water is occurring as a discrete seepage point associated with a specific lithology or structure or is generally pervasive. In addition, an estimate of the flow rate will be attempted by direct measurement (i.e., timing the filling of a 5 gallon bucket) or by visual estimate, depending on the nature of the discharge.

Groundwater and associated subsurface solids samples will be collected from one or more locations within each test pit. It is anticipated that at least two samples of groundwater and solids will be collected in each test pit, though actual ground water occurrence may allow greater of fewer samples to be collected from each pit. Groundwater samples will be collected from selected locations where noticeable groundwater seepage is observed. Subsurface solid samples will be collected from geologic materials in direct contact with groundwater where ground water samples are collected. Water and subsurface solid samples will be collected according to the specified procedures (Appendix A).

4.3 Geochemical Analyses

Geochemical analyses of both groundwater and associated subsurface solids will be completed in the Cotter laboratory. Seepage samples collected from the trenches will be filtered (0.45 um) and appropriately preserved prior to analysis for dissolved uranium, molybdenum, and major ion concentrations. Each solid sample will be air-dried and the moisture content will be determined. The dried solids will then be thoroughly homogenized and sieved (10 mesh) to isolate the reactive sand, silt, and clay components. A subsample of each solid will be analyzed for total uranium and molybdenum content following digestion with a strong acid.

Laboratory batch testing will be conducted to measure the readily-soluble fraction of uranium and molybdenum associated with the solids, in a manner consistent with prior methods developed for the dam-to-ditch area (DDA)

investigation (AMEC, 2011). However, batch testing of the OPA solids will utilize a larger sample size (500 g) and will evaluate several different ratios of solution:solid (dilution ratios): 1:1, 2:1, 3:1, 4:1:, 5:1, 10:1, 15:1, and 20:1. Testing with varying dilution ratios will provide information on potential uranium and molybdenum solid phase controls by comparison of the total content to the soluble mass released for the range of dilution ratios. Using a range in dilution ratios will also allow for extrapolation of the soluble uranium and molybdenum to very low dilution ratios, such that the measured soluble comparisons can be compared to initial pore volumes in the geochemical model. For example, assuming the solid contains 30% porosity and a bulk density of 2.1 g/cm^3, one pore volume would corresponds to a dilution ratio of 0.14 which, in the laboratory, would yield insufficient liquid sample for analysis.

The batch tests will initially be conducted using potable tap water as the extraction fluid, and the efficiency of uranium (and molybdenum) removal will be evaluated. Although citric acid was shown to increase uranium recovery in the DDA soils, uranium does not occur as a significant soluble contaminant in the DDA and therefore extraction recovery was <50%, even in the presence of citric acid. Depending on the form of uranium associated with the OPA solids, however, uranium extraction efficiency could be much greater. If low extraction efficiencies (<50%) are measured with clean water, the batch tests may be repeated using citric acid to evaluate the potential for enhanced uranium extraction from the OPA solids.

5.0 HEALTH AND SAFETY PLAN AND JOB SAFETY ANALYSES

All work performed under this work plan will conform to the existing Cotter Corporation Health & Safety Plan (HASP). In addition, test pit excavation and trenching activities and logging of test pits and trenches will be completed in accordance with the recommended actions or procedures that are outlined in the OPA Test Pit Hazardous Work Permit that is attached to this Work Plan as Appendix B.

6.0 REPORTING

The Draft Test Pit Investigation Report will include the following information:

- Maps showing the locations of the test pits
- Summaries of the investigation findings including test pit logs and laboratory testing data summaries for each test pit

- Recommendations on the location of the Interceptor Trench.

7.0 SCHEDULE

Identification of location and number of test pits/trenches will be initiated in early December 2011, tentatively December 12th. It is anticipated that the field investigations will take approximately 5 days and be completed before January 2012. The groundwater and bedrock samples will be submitted to Cotter's laboratory as the samples are collected and it is anticipated that analytical results will be complete by late-January 2012. The data will be compiled and evaluated in February and March 2012 and a draft report provided in March 2012.

8.0 REFERENCES

AMEC. 2011. Chemical extraction of uranium and molybdenum from vadose-zone soils and aquifer materials. November 9.

Hershey-Wooderson Associates, Inc. 1977. Geohydrology of the Cotter Mill Environment, Prepared by Loyd Hershey. July.

HydroSolutions, 2009. Site Conceptual Model and Proposed Corrective measures for the Canon City Milling Facility, Colorado, HydroSolutions, Inc., Golden CO. December 14.

TABLES

Table 1 DQO Process Summary for OPA Trench Investigation Work Plan

Step 1: Problem Statement	Step 2: Identify the Goal of the Study (Decision)	Step 3: Identify Information Inputs	Step 4: Define Boundaries of the Study	Step 5: Develop the Analytic Approach	Step 6: Specify Performance or Acceptance Criteria	Step 7: Develop the Plan for Obtaining Data
Heterogeneous and anisotropic hydrogeologic conditions as well as variable groundwater contaminant concentrations exist in the Facility Area and OPA. In order to ensure the interceptor trench system intercepts the maximum groundwater concentrations for maximum mass removal, additional geologic and water quality data are desired. Groundwater transport of contaminants through the geologic unit may have loaded mass onto the geologic formation solids. The solids may serve as a long-term source of contamination to groundwater even after existing groundwater with high contaminant concentrations has been removed. In order to better predict how long groundwater interception and removal may be required, additional characterization of the amount and availability of contaminant mass on the OPA aquifer solids is desired.	Verify occurrence of shallow groundwater and visual assessment of the geology OPA.	Shallow groundwater was identified during the excavation of soils in the OPA. The impacts to groundwater appear to decrease with depth (HydroSolutions, 2009).	The study area is within the OPA.	Key parameters: Visually assess the geology and associated groundwater in the OPA.	Non-random approach.	Develop test pits in bedrock to depths up to 20 feet depending on bedrock conditions. Trench locations are spaced to support likely locations for interceptor trenches and maximum ground water concentration. Approximately five to ten test pits will be completed.
	Verify areas of highest uranium and molybdenum in the groundwater of the OPA.	Shallow groundwater in the OPA likely contains elevated concentrations of uranium and molybdenum.	The study area is within the OPA.	Key parameters: uranium and molybdenum, major ions, pH and electrical conductance.	Non-random approach. Qualitative acceptance criteria to determine if the data sufficiently characterize the shallow groundwater quality to allow location of the interceptor trench at or below areas of maximum concentration of uranium and molybdenum in groundwater.	Sample discrete occurrences of groundwater within trench walls. Approximately one to three groundwater samples will be collected in each test pit. Lab reporting limits will be sufficiently below State water quality standards to allow meaningful assessment of relative water quality impacts.
	Determine to what concentrations uranium and molybdenum are present on the solids and establish if the contaminants sorbed on the solids may serve as a long-term source to the groundwater.	No analytical data are available for the concentrations of uranium and molybdenum on the remaining solids in contact with the local groundwater within the OPA. The amount and availability of contaminants as long-term groundwater contaminant sources is needed.	The study area is within the OPA.	Key parameters: readily-soluble fraction of uranium and molybdenum associated with the solids	Non-random approach. Qualitative acceptance criteria to determine if the data illustrate the quantity and potential availability of uranium, molybdenum mass on the solids.	Laboratory batch testing will be conducted to measure the readily-soluble fraction of uranium and molybdenum associated with the solids, in a manner consistent with prior methods developed in previous site investigations. Approximately one to three solids samples will be collected of the test pits solids in close proximity to the groundwater collection site in each test pit.

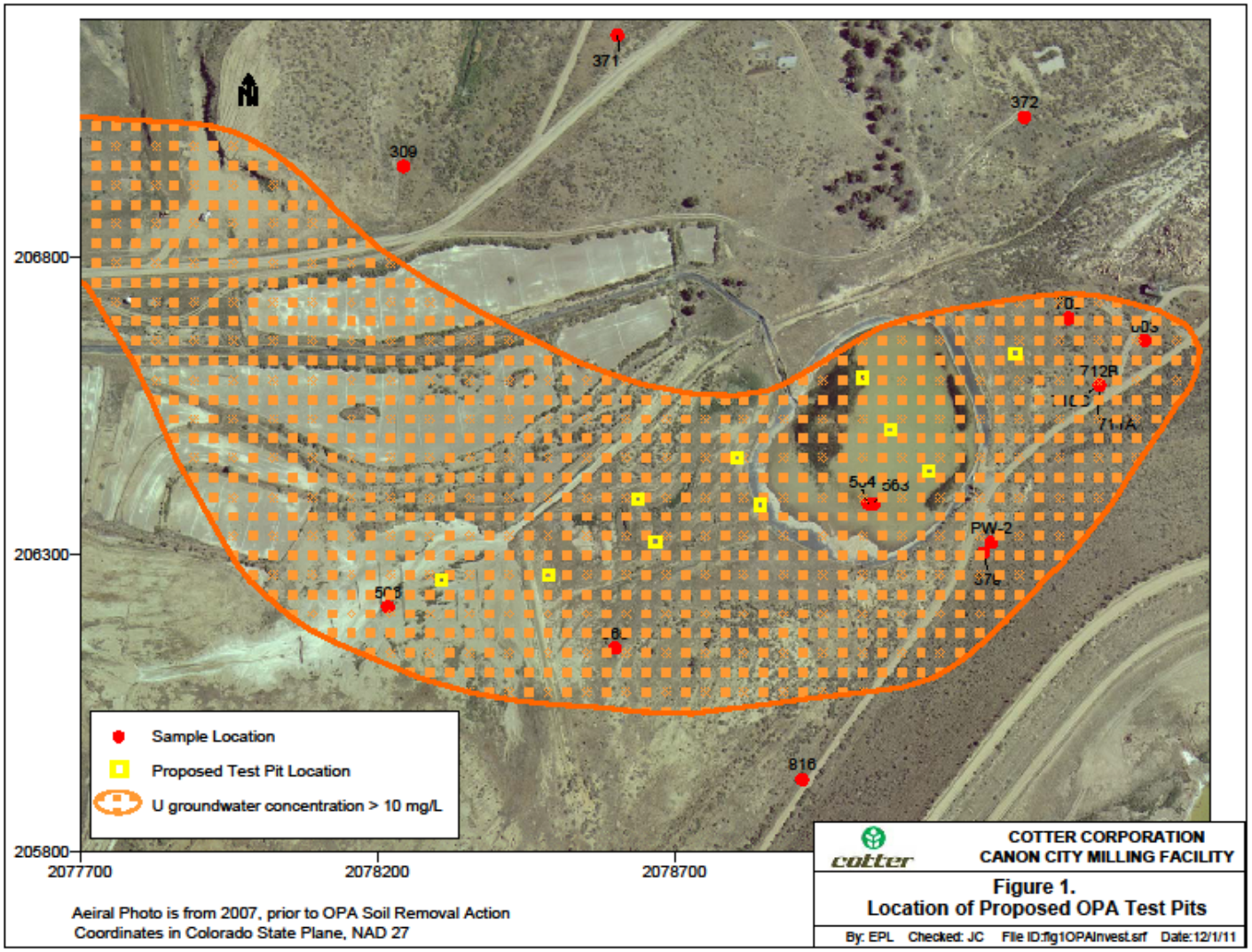
Table 2 Comparison of Uranium and Molybdenum Concentrations with Depth (after Hydrosolutions, 2009)

353 Well Cluster	Completion Depth (ft bgs)	Sample Date	Uranium (mg/l)	Molybdenum (mg/l)	TDS (mg/l)
353	9-10	9/19/84	7.4	8.9	10,450
353	9-10	12/27/84	7.7	9.9	12,220
352	16-17	9/19/84	0.14	0.9	2,930
352	16-17	12/27/84	0.09	0.6	2,580
351	29-30	11/19/84	0.11	0.8	1,870
351	29-30	12/27/84	0.028	0.7	3,240

350 Well Cluster	Completion Depth (ft bgs)	Sample Date	Uranium (mg/l)	Molybdenum (mg/l)	TDS (mg/l)
356	9-10	11/19/84	NM	54.0	8,310
355	19-20	9/19/84	0.270	5.1	2,640
355	19-20	12/27/84	0.130	3.7	2,260
350	29-30	9/19/84	0.042	0.8	1,840
350	29-30	12/27/84	0.048	0.6	1,860

309 Well Cluster	Completion Depth (ft bgs)	Sample Period	Uranium Range (mg/l)	Molybdenum Range (mg/l)	TDS Range (mg/l)
309	12-20	1/97-2/00	0.4 – 13.0	12.0 - 73.0	7,280-13,700
310	29-49	1/97-2/00	0.01 – 6.4	0.5 – 7.7	1,310-8,600
311	79-99	1/97-2/00	0.065 – 0.098	0.9 – 2.9	1,510-1,620

FIGURES



Aeiral Photo is from 2007, prior to OPA Soil Removal Action
Coordinates in Colorado State Plane, NAD 27

COTTER CORPORATION
CANON CITY MILLING FACILITY

Figure 1.
Location of Proposed OPA Test Pits

By: EPL Checked: JC File ID:fig1OPAInvest.srf Date:12/1/11

APPENDIX A

OPA Trench Work Plan

Test Pit Excavation and Sampling Procedures

OPA Trench Work Plan: Test Pit Excavation and Sampling Procedures

Prepared For

Cotter Corporation (N.S.L)
Milling Facility
Canon City, CO

Prepared By

Wright Environmental Services, Inc.
201 Linden Street, Suite 301
Fort Collins, CO 80524

November 30, 2011

TABLE OF CONTENTS

1.0 SCOPE AND APPLICABILITY 1

2.0 PROCEDURES 1

2.1 Test Pit Locations.....1
2.2 Test Pit Excavation 1
2.3 Test Pit Logging 1
2.4 Geochemical Sampling of Solids.....2
2.5 Geochemical Sampling of Groundwater.....2
2.6 Decontamination Procedures.....4
2.7 Field QA/QC Samples.....4
2.8 Health and Safety Procedures 4

3.0 DOCUMENTATION AND RECORDS MANAGEMENT 4

LIST OF TABLES

TABLE 1 – Sample Analytes, Containers, and Chemical Preservatives

LIST OF APPENDICES

ATTACHMENT A – Test Pit Log Form

9.0 SCOPE AND APPLICABILITY

This Standard Operating Procedure (SOP) describes the procedures for sampling test pits at the Cotter Corporation (N.S.L.) (Cotter) Milling Facility in Canon City, CO. The objective is to sample areas of groundwater containing high concentrations of uranium and molybdenum and to evaluate geochemical and radiological characteristics of shallow groundwater and associated bedrock.

10.0 PROCEDURES

10.1 Test Pit Locations

Test pits will be located by hand-held GPS. Locations may be adjusted as needed up to 50 feet in any direction from the preliminary location to facilitate excavator access. Actual locations based on GPS coordinates will be noted on the field logs at time of excavation. The pits will remain open and will be marked with a survey stake. Each stake will include the test pit number.

10.2 Test Pit Excavation

The test pits will be excavated using a either a trackhoe or dozer with a toothed ripper. The material excavated from the test pits will be placed to the side of each test pit at least two feet from the edge of the pit. The pits will be excavated to the depths specified in the Work Plan or as deep as field conditions allow.

10.3 Test Pit Logging

The test pit logging will be performed both during the excavation and upon completion of the test pit. The test pit lithologic profile will be obtained by observing the side walls of the excavation. A photograph of the test pit will be taken with a visible scale and a description of the test pit lithology will be recorded on the Test Pit Log (Attachment A) follow the Unified Soils Classification System (ASTM D-2487). Test pit location as collected by the hand-held GPS will be noted on the field log.

The occurrence of ground water will be recorded, including notes regarding if the water is occurring as a discrete seepage point associated with a specific lithology or structure or is generally pervasive. In addition, an estimate of the flow rate will be attempted by direct measurement (i.e., timing the filling of a 5 gallon bucket) or by visual estimate, depending on the nature of the discharge.

10.4 Geochemical Sampling of Solids

Solids samples will be collected at the intervals and for the parameters specified in the Work Plan. The solids samples will be collected using a decontaminated shovel/trowel/rock hammer to extract and place representative samples into clean plastic sample bags. The minimum sample size is 10 lbs. The sample will be labeled with the depth and the test pit number. Solids samples will submitted to the Cotter laboratory at the end of each day.

10.5 Geochemical Sampling of Groundwater

Groundwater and associated subsurface solids samples will be collected from one or more locations within each test pit. It is anticipated that at least two samples of groundwater and solids will be collected in each test pit, though actual ground water occurrence may allow greater of fewer samples to be collected from each pit. Groundwater samples will be collected from selected locations where noticeable groundwater seepage is observed. Subsurface solid samples will be collected from geologic materials in direct contact with groundwater where ground water samples are collected.

Samples of the groundwater seeping into the will be collected by driving clean stainless steel sampling pipe 6 inches to 12 inches long into the excavation wall area area where groundwater is observed. This pipe will serve as a discrete sampling point. A pilot hole may be drilled into the subsurface solids using an appropriately sized masonry drill bit and a battery powered rotary hammer drill to facilitate setting the stainless steel pipe. The drill bit will be clean and decontaminated between holes.

Water from the stainless steel sampling pipe will be collected directly into a sampling container. A subset of the sample will be placed in a separate container and field pH and field electrical conductance will be measured and recorded according to the appropriate Standard Operating Procedures (SOP). Groundwater samples will be immediately filtered with a 0.45 micron filter. Sample containers and preservation will be as per SOP EV-040, Appendix 3.2.1 and Table 1, below. Samples will be placed in coolers with ice or ice packs to maintain a temperature of between 0° F and 6° F. Groundwater samples will submitted to the Cotter laboratory at the end of each day.

Sampling will adhere to the appropriate aspects of the following SOPs:

- SOP EV-040 : Water Quality Monitoring
- SOP EV-041: Measurement of pH of Water Samples
- SOP EV-042: Measurement of the Electrical Conductivities of Water Samples
- SOP EV-044: Sampling Equipment Decontamination

Groundwater samples will be analyzed by the Cotter laboratory using approved methods for the constituents identified in Table 1.

Table 1 Sample Analytes, Containers, and Chemical Preservatives

Analytes	**Sample Container**[c]	**Preservative**
Metals & Radionuclides[a]	Two ½ gallon polyethylene One 250-milliliter polyethylene	HNO_3 (nitric acid)
Major Ions[b]	One 250-milliliter polyethylene	None

(a) Ca, Fe, Mn, K, Mg, Mo, Na, Unat.
(b) Carbonate, bicarbonate, chloride, fluoride, sulfate, TDS
(c) Number and size of sample containers subject to changes by laboratory

10.6 Decontamination Procedures

Geochemical sample collection equipment (shovels, trowels, stainless steel tubes, etc.) will be decontaminated following SOP EV-044 between samples. The trackhoe bucket or ripper will be decontaminated by removing visible material with a scraper or brush between test pits. The backhoe bucket or ripper will also be decontaminated between test pits by rinsing with potable water using a pressure washer or garden sprayer. Decontamination rinse water will be discharged to the ground surface at the test pit site.

10.7 Field QA/QC Samples

As per SOP EV-040, Section 8.11, a QA rinsate sample will be collected from non-dedicated sample equipment used as an equipment blank by using Type I reagent grade water. The rinsate water will either be run through or over the stainless steel sampling pipe and a sample collected for analysis. Field duplicates will not be collected. The field sampler shall check with the Cotter laboratory to determine if additional QA samples are be required as per SOP EV-040, Section 10.

10.8 Health and Safety Procedures

Field personnel will enter any excavation that is more than four feet deep in accordance with Cotter Safety Procedure SP-0011 *Trenching and Shoring*. Field personnel will review and follow appropriate Health and Safety procedures.

11.0 DOCUMENTATION AND RECORDS MANAGEMENT

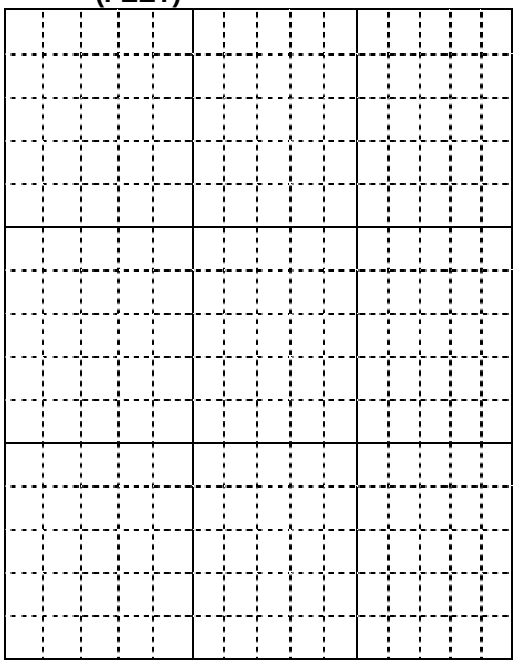
Field data will be recorded in bound field books and on the Test Pit Log form (Attachment A).

ATTACHMENT A

Test Pit Log Form

Wright Environmental Services, Inc.	TEST PIT LOG Project: _____ Page: _____ Project No.: _____ Date:_____	Test Pit No. _____

WIDTH/DIAMETER (FEET)



DEPTH	SAMPLE ID	SAMPLE TYPE

SOIL TYPE	SOIL DEPTH	SOIL DESCRIPTION AND EXCAVATION NOTES

NOTES

Wright Environmental Services, Inc.	TEST PIT LOG Page: _____ Date:_____	Test Pit No. _____

PROJECT INFORMATION

PROJECT:_____

PROJECT NO:_____

CLIENT: _____

OWNER:_____

LOCATION:_____

FIELD INVESTIGATION

DATE/TIME ARRIVED:_____

LOGGED BY:_____

VISITORS:_____

WEATHER:_____

TEST PIT LOCATION

EXCAVATION INFORMATION

EXCAVATION COMPANY:_____

START TIME:_____

TEST PIT DEPTH:_____ TEST PIT DIA:_____

EXCAVATION METHOD:_____

TIME EXCAVATION COMPLETE:_____

TEST PIT COMPLETION / ABANDONMENT INFORMATION

START TIME:_____ COMPLETE TIME:_____

INSTRUMENTATION:_____ BACKFILL:_____

GROUNDWATER CONDITIONS

_____

FOLLOWING FIELD WORK

TIME OF CLEAN-UP COMPLETE_____ TIME LEFT SITE_____

NOTES

APPENDIX B

Hazardous Work Permit

(*to be developed*)