

**2008 ON-CALL ENVIRONMENTAL ENGINEERING SERVICES
ALASKAN WAY VIADUCT AND SEAWALL REPLACEMENT
PROGRAM**

**PHASE 1 CENTRAL TUNNEL EXPLORATIONS
UNDER AGREEMENT Y-10393
TASK NO. AC**

**SCOPE OF SERVICES
(EXHIBIT A)**

Summary

The STATE and the Alaskan Way Viaduct (AWV) Design Team are performing preliminary design for a proposed tunnel extending from near Railroad Avenue, along First Avenue and up to the Battery Street Tunnel (BST). The PROJECT includes a 54-foot-diameter bored tunnel and retained approach cuts at the south and north portals of the tunnel. This task order is requesting support from the CONSULTANT in performing subsurface explorations and testing for the proposed bored tunnel and approach cuts to support Environmental Impact Statement (EIS) and preliminary design studies.

This Task Order duration is from February 16, 2009 to December 31, 2009.

Objective

The objective of the services is to perform geotechnical and environmental explorations for the proposed bored tunnel and approach cuts to characterize the geologic, hydrogeologic, and environmental (potential contamination) conditions. The data will also be used to support preparation of EIS and preliminary design efforts for the PROJECT. The CONSULTANT will coordinate and observe the explorations, perform field testing, and perform geotechnical and environmental laboratory testing under this task order. The STATE shall provide the drillers to perform the field explorations.

Scope of Services

The CONSULTANT shall coordinate drilling for seventeen (17) explorations at general locations approved by the STATE (see Table 1 and Figure 1). Seven (7) of the explorations will be

performed in the tunnel portal areas for the retained approach cuts at the south and north end of the bored tunnel, and are termed as “*portal explorations*” in this exhibit. Ten (10) explorations will be performed along the bored tunnel portion of the alignment, and are termed “*tunnel explorations*” in this exhibit. A monitoring well will be installed in fourteen (14) of the explorations, and one to three (average of two) vibrating wire piezometers (VWPs) will be installed in fifteen (15) of the explorations. Soil samples will be obtained from the explorations for identification and testing. Groundwater samples and will be obtained at the monitoring well locations after installation and development. Groundwater monitoring will be performed for a period of one year. The scope of services will include the following general tasks:

- Project management including project tracking and meetings.
- Field coordination (including attendance at weekly AWW field coordination meetings).
- Field Explorations – 17 explorations and soil and groundwater testing (see Figure 1).
- Geotechnical and environmental laboratory testing.
- Geologic review of soil samples and preparation of one generalized subsurface profile.
- Compilation of the data for use by the STATE and AWW team.

Role of Consultant

The CONSULTANT will perform the services included in this task order. The STATE shall provide the drilling company to perform the borings and install the wells and VWPs. The STATE shall obtain access to private properties in the project area. The STATE shall provide technical support as necessary. The CONSULTANT will coordinate and observe the subsurface explorations and testing for the PROJECT, perform a geologic review of the soil samples, and prepare a generalized subsurface profile for use in the EIS and preliminary design efforts.

Approach

THE STATE shall manage this task order.

The following sections further describe the scope of the CONSULTANT’s services, including Tasks AC-1 through AC-4.

Task AC-1: Project Management and Meetings

This task includes services related to the management, administration, and coordination of the CONSULTANT’s activities from February 16, 2009 through December 31, 2009. The scope also includes preparation of required progress reports, attendance at meetings, and other project management activities during this time period.

Task AC-2: Field Explorations and Field Testing

The CONSULTANT will coordinate the drilling of seventeen (17) explorations, designated as TB-100 through TB-116, at general locations approved by the STATE (see Table 1 and Figure 1). Eight (8) of the explorations will be performed using sonic core exploration methods to depths ranging from 120 to 300 feet below the ground surface (bgs). Nine (9) of the explorations will be performed using mud rotary drilling techniques to depths ranging from 100 to 320 feet bgs. The proposed depths of the

tunnel explorations were selected such that the explorations will extend about one tunnel diameter below the proposed tunnel invert. The proposed depths of the portal explorations were selected based on anticipated depths of excavation support systems and dewatering issues. The proposed locations, depths below ground surface (bgs), well and VWP locations, and other information are listed on the Table 1. The proposed locations and depths are shown on the site plan in Figure 1.

Prior to performing the explorations, preparatory activities will be required. The CONSULTANT will prepare a Drilling and Sampling Plan (DSP) for the field activities. The DSP provides an outline of the exploration program including field coordination; utility locates; equipment and drilling procedures; field testing; monitoring well and VWP installation; project communication; handling of investigation-derived waste (IDW); reporting; soil sampling; and analytical testing. The DSP will be provided to the STATE and to the CONSULTANT'S field personnel. The CONSULTANT has previously prepared a Site Specific Health and Safety Plan (SSHSP). The CONSULTANT will update this SSHSP for the field activities outlined in this task order. This SSHSP will cover the CONSULTANT'S personnel only.

In 2001, the CONSULTANT collected data related existing explorations performed by others in the project area from various public sources. For this task order, the CONSULTANT will collect additional subsurface data for projects performed after the year 2000. The CONSULTANT will review information from the City of Seattle (City), King County, GeoMap NW, and the CONSULTANT's files. The data search will be performed for projects located within 200 feet of the proposed tunnel alignment. Subsurface exploration logs less than 20 feet deep will not be collected. Data collected will be added to the existing subsurface database prepared in 2001 for the project.

The STATE shall provide a drilling contractor to drill the explorations and provide necessary traffic control and railroad flagging services. Prior to performing the explorations in each area, the CONSULTANT will conduct the following:

- Perform a walk-through with the roadmaster of the Burlington Northern Santa Fe (BNSF) railroad company to determine access and operation restrictions at the TB-100 location.
- Coordinate with the STATE to obtain permission to drill in the Diamond Parking Service lot and along the east side of the WOSCA property (TB-101 and TB-102).
- Review site conditions at each exploration location, and mark locations with white paint.
- Obtain maps related to areaways (City), the Elliott Bay Interceptor (King County), and the BNSF railroad tunnel (BNSF). These maps are required to evaluate the proposed tunnel exploration locations and check for clearance.
- Contact the public utility locating service (One-Call) for utility locates. Coordinate with the public utility locators to clear alternate locations if initial locations conflict with existing utilities. The CONSULTANT will retain a private utility locator to perform a final locate at all exploration locations.
- Coordinate with STATE archeologists, as needed.

- Apply for street use permits from the City, including submittal of traffic control plans and coordinating with City personnel.
- Coordinate with the STATE viaduct inspection team to perform explorations north of the BST (TB-115 and TB-116) during the STATE viaduct inspection closure on March 21 and 22, 2009.
- Coordinate with the Seattle Department of Transportation (SDOT) to perform meter hooding at selected exploration locations.
- Coordinate with the STATE and PROJECT public relations team and the real-estate team for notification to the public. This task would include weekly meetings for the duration of the field effort as well as several weeks before the start of field activities.
- Confirm actual exploration locations (based on adjustments required for utilities, access, street use, bent locations, etc.) with the STATE.

This scope of services assumes that two mud rotary drill rigs and two sonic core drill rigs will be used to complete the field explorations. Based on the assumption that these rigs would generally operate concurrently, the field activities should be completed over a period of about six (6) to eight (8) weeks. This also assumes that there will be no delays during the field exploration process (i.e. baseball games, railroad operations). In addition to timing, actual progress will depend on access, schedule, and drilling productivity. Two of the explorations (TB-115 and TB-116) will be performed during the scheduled STATE viaduct inspection closure on March 21 and 22, 2009.

The STATE shall retain an experienced drilling contractor from its on call services listing to drill the borings, provide traffic control, and install monitoring wells and VWP's. The drilling contractor will core or saw-cut through the existing pavement (approximately 8 to 12-inch diameter hole) and vacuum excavate the upper approximately seven (7) feet of soil to inspect for absence of utilities. For sonic cores, soil samples will be collected in flexible plastic liners and stored in core boxes for subsequent geologic review. The sonic core samples will be transported to the STATE warehouse site on First Avenue S. for storage and geologic review. In the mud rotary tunnel borings, soil samples will be obtained at 5-foot-intervals, in general accordance with the Standard Penetration Test (SPT). In the mud-rotary portal borings, soil samples will be obtained in general accordance with the SPT at 2.5-foot intervals in the upper 20 feet and at 5-foot intervals thereafter. Up to three (3) thin-walled, tube samples (using Shelby, Osterberg, or Pitcher samplers, as appropriate) will be obtained in each mud rotary boring at selected depths depending on subsurface conditions encountered and proposed testing requirements. Environmental samples will be collected during the field exploration program and stored in a cool environment prior to analytical testing. Geotechnical samples will be stored in bags, jars, or tubes. At seven (7) of the mud rotary boring locations, the CONSULTANT will perform downhole shear wave velocity testing after the drilling is completed to the full depth of the hole.

The scope of services also includes the installation of one monitoring well in fourteen (14) of the explorations and one to three (an average of two) VWP's in fifteen (15) of the explorations to allow for measurement of groundwater levels and performance of groundwater testing. The monitoring wells will consist of 2-inch diameter PVC pipe with a 10-foot slotted portion. The well screen will generally be placed within approximately

30 feet of ground surface for the explorations located along the approach cuts and within the tunnel zone for the explorations located along the bored tunnel portion of the alignment. One well will also be installed below a depth of about 100 feet bgs in the south portal area (TB-102) to evaluate deep groundwater parameters. The wells and VWPs will be installed by the drilling company retained by the STATE. The CONSULTANT will observe the installations and prepare a record of the well and VWP installation. In addition, the CONSULTANT will develop the wells following installation and collect a groundwater sample from each well for analytical testing purposes. The CONSULTANT will obtain monthly readings until December 2009 in all of the wells and VWPs. Slug tests will be performed in each of the wells to evaluate the hydraulic conductivities of the soil. At four (4) exploration locations, relatively continuous groundwater monitoring will be performed in the well and VWPs over a period of about two weeks to evaluate groundwater fluctuations due to tides in Elliott Bay.

During the field activities, the CONSULTANT will perform the following:

- Coordinate traffic control and other access and site impact issues.
- Observe field activities (setup, vacuum excavation, drilling, well installation, field testing, and cleanup) and coordinate with the drillers.
- Perform preliminary environmental screening.
- Collect and organize soil samples for both geotechnical and analytical testing.
- Obtain, package, and deliver soil samples for testing.

The CONSULTANT will coordinate and provide disposal of non-hazardous IDW generated by the explorations based on the results of the analytical testing program. IDW will include soil generated during vacuuming, drilling, and coring operations; drilling mud used in the drilling operations; and water generated during monitoring well development. IDW will be transported in 55-gallon drums to the STATE warehouse site on First Avenue S. for storage until analytical test results have been received. If hazardous material is encountered during the field explorations, additional costs will be incurred for testing, handling, and disposal of the collected IDW. These additional costs are not included in this task order.

Finally, the CONSULTANT will coordinate with STATE and/or AWW archeologists to review soil samples retrieved from selected explorations. The STATE shall determine which explorations require archeological review. This task order assumes that the archeological review will not delay the field exploration process.

Task AC-3: Laboratory Testing

The CONSULTANT will perform or retain a qualified laboratory to perform geotechnical testing on the SPT samples collected from the mud rotary borings and grab samples obtained from the sonic cores. Grab samples from the sonic cores will generally be obtained from the core bags at approximately 5-foot-depth intervals. Geotechnical testing will consist of the following:

- Water content determinations to provide index parameters useful for correlating to soil behavior.

- Portal explorations – all samples except wood or gravel soils.
- Tunnel explorations – all samples within tunnel zone and 50 feet above and below tunnel zone.
- Grain-size determination to provide index parameters useful for correlating to soil behavior and soil gradation.
 - Portal explorations – From each exploration, five (5) samples will be tested using sieve analyses, and two (2) samples will be analyzed for the clay/silt range with a hydrometer. In addition, ten (10) samples will be tested from each south portal exploration for the percent passing the No. 200 sieve.
 - Tunnel explorations – From within or near the tunnel zone in each exploration, five (5) samples will be tested using sieve analyses; five (5) samples will be evaluated for quartz content; and two (2) samples will be analyzed for the clay/silt range with a hydrometer.
- Atterberg limits (plasticity) determinations to provide index parameters useful for correlating to soil behavior.
 - Portal explorations – five (5) samples from each exploration.
 - Tunnel explorations – From within or near the tunnel zone in each exploration, five (5) samples will be tested for Atterberg Limits and Sticky Limits.
- Permeameter tests on one sample of fine-grained soil from each mud rotary boring to evaluate soil hydraulic conductivity.
- Miller Abrasion tests on two samples from each tunnel sonic core within the tunnel zone to evaluate soil abrasivity.
- Corrosion testing to evaluate the soil pH, resistivity, sulfates, chlorides, and redox potential. Two (2) samples from within the excavation or tunnel zone from each exploration will be tested. Two (2) additional samples from each exploration will be tested for pH only.
- Salinity testing on two (2) fine-grained soil samples from each exploration within the upper 50 feet for portal explorations and from near or within the tunnel zone for tunnel explorations.
- Up to four (4) Consolidated-Undrained (CU) triaxial test series (3 CU tests per series) on the fine-grained glacial deposits encountered in the explorations to determine the static strength properties of the fine-grained glacial soils.
- Up to twelve (12) point load tests on samples of rock (e.g. cobbles, boulder pieces) to evaluate compressive strength.

Actual test quantities and locations may vary depending on the sample quality and soil conditions and encountered in each exploration.

The CONSULTANT will retain a local laboratory to perform environmental analytical testing on selected soil and groundwater samples. Data received from the local analytical testing laboratory will be entered into the environmental database prepared for

the PROJECT. The purpose of the analytical testing is to provide data for disposal of IDW as well as to provide information for characterization of the soil and groundwater that would be generated during construction of the tunnel and portals. This scope of services assumes that soil samples for environmental analyses will be selected based on: geographic location, historic information, and field screening. In general, the following tests will be performed:

- South portal explorations – tests will generally be performed on samples from the shallow fill zone (upper 10 feet); near the water table (between about 8 and 12 feet bgs); in the intermediate fill zone or at the fill/native contact (about 10 to 30 feet bgs); and just below the contact between the fill and native soil. Tests will include:
 - Northwest Total Petroleum Hydrocarbons as Diesel and Oil (NWTPH-Dx Extended)
 - Northwest Total Petroleum Hydrocarbons as Gasoline (NWTPH-Gx)
 - Model Toxics Control Act (MTCA) 5 Metals
 - Polynuclear Aromatic Hydrocarbons (PAHs)
 - Benzene, toluene, ethylbenzene, and xylenes (BTEX), depending on site history and screening,
 - Volatile Organic Compounds (VOCs); depending on site history and screening.
- Tunnel explorations – tests will generally be performed on two (2) samples from within the proposed tunnel zone and will include:
 - VOCs
 - MTCA 5 Metals
- North portal explorations – tests will generally be performed on samples taken from 10- to 20-foot depth intervals throughout the proposed excavation zone and will include:
 - NWTPH-Gx and NWTPH-Dx Extended
 - VOCs
 - MTCA 5 Metals
- Groundwater samples – tests will be performed on one sample from each monitoring well and will include:
 - VOCs
 - Priority pollutant metals (total and dissolved)
 - Sulfide
 - Salinity
 - Methane (from head space measurement in well)
 - Total sulfur
 - NWTPH-Gx and/or NWTPH-Dx Extended (if detected in associated soil samples)
 - PAHs (if detected in associated soil samples)
- Additional groundwater samples from two wells installed along the south portal area (TB-101 and TB-102, installed at different depths) will be tested to evaluate parameters necessary for a National Pollutant Discharge Elimination System (NPDES) discharge permit to Elliott Bay. Future dewatering efforts will likely

result in significant water volumes removed from the deep aquifer. The NPDES permit may be required to dispose of water generated by these dewatering activities. Additional tests performed on these groundwater samples will include:

- Low level mercury
 - Semi-volatile organic compounds (SVOCs)
 - Hardness
 - Ammonia
 - Total suspended solids
 - Total dissolved solids
 - Chloride
 - Biochemical demand
 - Chemical oxygen demand
 - Total residual chlorine
- IDW – one composite drilling mud sample will be obtained from the IDW drums generated from each tunnel mud rotary boring. Discrete samples may also be obtained from soil cuttings. To evaluate proper disposal of the IDW, the following tests will be performed:
 - NWTPH-Dx
 - MTCA 5 Metals

Soil or IDW samples found to contain heavy oil-range petroleum hydrocarbons will also be analyzed for Polychlorinated Biphenyls (PCBs). Soil or IDW samples containing greater than 100 milligrams per kilogram (mg/kg) of arsenic, lead, and/or chromium, 20 mg/kg of cadmium, 4 mg/kg of mercury, or 200 mg/kg of creosol will be analyzed for leachate using the Toxicity Characteristic Leachate Procedure (TCLP). Additional soil and groundwater analytical tests may be performed based on historic land use and conditions observed during the exploration program. Additional quality assurance samples of soil and groundwater (equal to approximately 5 percent of the number of analyzed samples) will be analyzed as blind field duplicates, and an equipment rinsate sample may be collected from hand tools used for shallow fill sampling.

Task AC-4: Geologic Review, Profile, and Data Compilation

The CONSULTANT will perform a geologic review of the soil cores retrieved from the sonic cores at the STATE warehouse on First Avenue S. Except for locations where environmental samples are required, the soil cores will not be opened until they have been transported from the field to the warehouse site. For environmental samples, a grab sample will be obtained from the specific core bag (typically a 3-foot section) corresponding to the environmental test location during drilling. Upon reaching the warehouse, the soil cores will be organized for use by the CONSULTANT's geologists. The CONSULTANT will open each soil core and use a photoionization detector (PID) to screen for potential contaminants. If potentially contaminated soil is suspected, the soil core will be set aside for testing prior to further evaluation. Following this environmental screening and testing, the CONSULTANT will photograph each soil core and prepare a log of the sonic core exploration which includes soil descriptions and estimated geologic unit boundaries. Following this geologic evaluation, the soil cores will be provided to the STATE archeologists for their use. Samples not used by the archeologists will be retained at the warehouse site for future examination by the STATE or potential contractors.

The CONSULTANT will perform a geologic review of the soil samples obtained from the mud rotary borings as they are collected during drilling, and then will transport the samples to the CONSULTANT's laboratory for further examination and testing. A geologist will visually examine each sample, classify the geologic unit, assign laboratory tests, and compile the log of the boring. The log of the boring will be based on the field notes and the visual examination of the soil samples.

After laboratory testing is complete, the CONSULTANT will update the logs of the borings and sonic cores to reflect the laboratory test results. The final logs will include soil descriptions and geology within generalized soil layers, the results of the SPT tests, and the results of laboratory index tests. The results of the groundwater measurements will also be plotted on the logs.

The CONSULTANT will prepare a site and exploration plan showing the locations of the explorations performed under this task order. The STATE will provide surveyed coordinates of the exploration locations. The CONSULTANT will prepare a generalized subsurface profile along the proposed tunnel alignment. The profile will incorporate subsurface information from historical information and previous and current explorations performed along the tunnel alignment.

The CONSULTANT will perform a Contract Compliance Screening of data quality on the analytical test results performed for this task order. Data will be reviewed for compliance with Washington Department of Ecology, Environmental Protection Agency (EPA) or ASTM method requirements and laboratory-specific control limits. Laboratory performance will be evaluated for completeness, chain-of-custody compliance, holding times, quality control results on summary forms, and detection limits. Instrument tuning and system performance and calibration results will not be reviewed; however, problems in analysis will be identified in the narrative provided by the laboratory. Field duplicate results will also be evaluated to assess data reproducibility. Data will be qualified based on the National Functional Guidelines for Organic Analysis and National Functional Guidelines for Inorganic Chemical Analysis.

The CONSULTANT will compile all of the field and laboratory data collected under this task order for future inclusion into a geotechnical and environmental data report that will be prepared under a subsequent task order. This compilation effort will include tabulation and plotting of data, preparation of boring logs, updating existing maps, and other reporting tasks. A geotechnical and environmental data report will not be prepared under this task order. The CONSULTANT will prepare an interim submittal of the data after the explorations and testing are complete. The data will be submitted to the STATE in the form of draft logs and data sheets. The CONSULTANT will also provide a Portable Document Format (PDF) file of the interim data submittal to the STATE.

Assumptions

- The CONSULTANT assumes that tunnel alignment information will be provided by the STATE so that the final exploration locations and depths can be confirmed.
- The STATE shall provide an experienced drilling contractor from its on call roster to perform the coring, vacuuming, traffic control, and drilling activities.

- The STATE shall provide railroad flaggers during drilling of boring TB-100, as required by the railroad company.
- The CONSULTANT will mark the completed exploration locations with white paint. The STATE shall survey the final locations and provide the location information to the CONSULTANT.
- The STATE shall provide right-of-entry to private properties, notify the public of the field activities, and provide permits to complete the services (except street use permits which will be obtained by the CONSULTANT).
- Archeological review of soil samples shall be performed by the STATE. The archeological review will not delay the field services. The results of the archeological review will be submitted in a separate report by the STATE or AWW archeologists under a separate task order.
- Testing, handling, and disposal of hazardous waste/material, if encountered, are not included in this scope of services. The CONSULTANT will keep the STATE apprised of these conditions and potential additional costs if hazardous waste/material is encountered.
- The CONSULTANT will follow the Inadvertent Discovery Protocol Plan developed by the STATE. This document outlines requirements for services stoppage and notification should potential artifacts or human remains be noted during field activities.
- The STATE will provide access to the north portal area of the BST during the planned viaduct inspection closure on March 21 and 22, 2009.
- The STATE will provide access to the warehouse on First Avenue S. for review and storage of soil samples. The STATE will also provide an area on the WOSCA site that can be used for storage of IDW drums. The CONSULTANT will provide the fencing around the drum storage area.

Deliverables

There are no deliverables for this task order. Data collected will be incorporated into a deliverable that will be prepared as part of a subsequent task order.

Costs shall be tracked by the following STATE cost control account numbers:

Task Numbers	MDL	Cost Code
AC-1 - Project Management	PC-21.05	MBP38.10393AC001.0000
AC-2 – Field Explorations	PC-21.05	MBP38. 10393AC002.0000
AC-3 – Laboratory Testing	PC-21.05	MBP38. 10393AC003.0000
AC-4 – Review, Profile, and Data Compilation	PC-21.05	MBP38. 10393AC004.0000
Other Direct Costs	PC-21.05	MBP38. 10393AC099.0000

Anticipated Schedule: The CONSULTANT is prepared to complete the services according to the following anticipated schedule, depending on notice to proceed, receipt of railroad temporary occupancy permits, field activity progress and timely receipt of design information from the STATE.

- Start of Drilling: March 9, 2009 (pending receipt of permits and access)
- Completion of Field Activities: May 1, 2009 (assuming use of four drill rigs)
- Completion of Laboratory Testing: May 29, 2009
- Completion of Generalized Subsurface Profile: June 12, 2009
- Completion of Data Compilation and Data Submittal: June 30, 2009
- Completion of Groundwater Measurements: December 31, 2009

Progress Reporting:

This is a Level-of-Effort task order; no deliverables are anticipated, Progress reports will be included with each invoice detailing activities completed during each period, anticipated tasks, and any issues encountered.

Progress milestones for all of the above deliverables are established as follows:

50 percent	Field Services Complete
75 percent	Generalized Surface Profile Complete
100 percent	Groundwater Monitoring complete

COST MANAGEMENT:

- A. The CONSULTANT shall establish a Cost Management System that allows for the collection, progressing, and reporting by hours and dollars on project deliverables as defined in WSDOT’s Master Deliverable List.
- B. Baseline Budget is defined as the original contract value.
- C. Current Approved Budget is defined as the original contract value plus approved change orders.
- D. Estimate at Completion is defined as the cumulative actual plus estimate to complete.
- E. Progress Methodology is defined for each deliverable in the WSDOT Master Deliverable List, or as listed in this task order under Progress Reporting.
- F. The CONSULTANT shall submit their monthly cost data to the AWVSR Program Management Office in an electronic and hard copy format that will be provided by the STATE, no later than the 7th servicesing day of each month.
 - a. Baseline Budget
 - b. Approved Budget
 - c. Period Actual
 - d. Cumulative Actual
 - e. Estimate to Complete
 - f. Estimate at Completion
 - g. Physical Percent Complete

WSDOT will email the CONSULTANT the appropriate cost data spreadsheet prior to the 7th servicesing day of each month.

- G. Timely submission of updates is of significant and crucial importance to the management of this project. Lack of or late receipt of updates diminishes their value

to the STATE.

H. Budget curve for the services described will be developed by the STATE.

CONSULTANT's Cost Computations:

The CONSULTANT's Cost Computations are included as Exhibit D and by reference are made part of this Task Order.

List of Attachments and Exhibits

Table 1 – Summary of Proposed Explorations

Figure 1 – Proposed Exploration Plan

Exhibit D – Prime Consultant's Cost Spreadsheets (cost estimate)