WORK PLAN FOR SOIL ASSESSMENT

Soil Boring Installation

ARCO Facility No 5810
2101 West 6th Street, Bremerton, Washington
Antea Group Project No. 05810DA111
April 25, 2011

Prepared for:
Atlantic Richfield Company
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Work Plan for Soil Assessment

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On behalf of Atlantic Richfield Company, Antea Group has prepared this site assessment work plan (work plan) for ARCO Facility No. 5810 located at 2101 West 6th Street in Bremerton, Washington (hereinafter referred to as the "site"). A Site Location Map and Site Aerial Map are attached as Figures 1 and 2, respectively.

PREVIOUS INVESTIGATIONS

Soil sampling was conducted during underground storage tank (UST) replacement activities in 1989. Samples collected from the UST basin indicated petroleum hydrocarbons above Washington State Department of Ecology's (Ecology) Model Toxic Control Act (MTCA) Method A cleanup levels. The impacted soil was over-excavated and a confirmatory soil sample indicated the impacts were removed.

Nine soil borings were installed and a soil vapor extraction system (SVE) evaluation was conducted in 1991. Soil samples collected during the boring installations indicated petroleum hydrocarbons in three of the nine borings at depths ranging from 10 feet to 30 feet below ground surface (bgs), located in the northeast corner of the property. The specific concentrations were not reported.

An SVE system operation and maintenance report indicated that an SVE system was installed in 1993. No report in Atlantic Richfield Company files or Ecology files could be found for the SVE system installation. The SVE system operated from February of 1995 to July of 1996. Operation of the SVE system removed a reported total of 308 gallons of hydrocarbons. Soil samples collected during facility upgrade activities in 2000 and 2005 did not contain petroleum hydrocarbons above MTCA Method A cleanup levels.

Groundwater was not encountered during any historical activities conducted at the site. The maximum depth historically explored was 48.5 feet bgs.

SITE DESCRIPTION

The site is an operating ARCO AM/PM retail gasoline facility located at the southwest corner of South 6th Street and Naval Avenue. The site vicinity is predominantly commercial and the topography of the site is generally flat. Site features include the station building, six dispenser islands under a single canopy, four underground storage tanks (USTs) and associated fueling system components. The surface of the site is concrete and asphalt with some landscaped areas around the perimeter.

PROPOSED BORINGS LOCATIONS

Antea Group proposes to drill four soil borings (B-1, B-2, B-3 and B-4) in order to investigate the current soil conditions with respect to hydrocarbon impacts. The proposed boring locations are presented on Figure 3. These borings will be completed as groundwater monitoring wells if shallow groundwater is encountered.

FIELD ACTIVITIES

Prior to conducting any work at the subject property, as-built drawings will be requested. The proposed boring locations will be marked and the Utility Underground Location Center will be contacted at least 72 hours before field work is to begin. Applied Professional Services (APS), or another private utility locating service, will also be utilized to identify subsurface utilities. APS will sweep a search zone 10 feet in all directions surrounding the proposed boring locations. APS uses Metrotech 810 multi-frequency locators to identify conductive subsurface utilities. Additionally, non-conductive piping and/or utilities indentified in the as-built drawings provided by Atlantic Richfield Company will be located using a Radio Detection (RD) 4000 detector in conjunction with a Sonde probe. The Sonde probe is a device that emits a low level frequency that can be detected by the RD-4000. To locate non-conductive piping, the Sonde must be inserted into the piping and pushed forward along the length of the pipe while the operator of the RD-4000 traces the path of the Sonde at the ground surface.

A site walk-over will be conducted to visually inspect for utility markers and indicators. Property owner and/or tenants will be contacted for their knowledge of utilities. All utilities will be marked in paint and recorded on a drawing/plot plan. Proposed boring locations that are within two feet of an identified utility it will be relocated three or more feet away from the identified utility. Per Remediation Management (RM) Defined Practice for Ground Disturbance (RM Ground Disturbance), all borings must be cleared to a minimum of 6.5 feet bgs utilizing a vacuum truck with air knife and/or hand tools. Once the borings are cleared to 6.5 feet bgs, a licensed driller will advance the borings using a truck mounted drill rig.

As part of soil boring and well drilling operations, the onsite Antea Group geologist will record a descriptive log of soils encountered and boring completion diagrams. Soil borings will be decommissioned by the licensed well driller by backfilling the borings with hydrated bentonite chips.

Soil cuttings and rinse water generated during this project will be stored onsite in secured and labeled Department of Transportation (DOT) approved 55 gallon steel drums. Following receipt of laboratory results, the drums and contents will be disposed of in accordance with Atlantic Richfield Company requirements.

SOIL SAMPLING AND ANALYSIS PLAN

To adhere with RM Ground Disturbance protocol, after the surface asphalt or concrete is cored through, the vacuum truck with air knife will be used to pothole to approximately 5 feet bgs. At 5 feet bgs a hand-auger equipped with a steel soil auger head and 5 foot extension rod or other hand tools deemed feasible will be used to collect an undisturbed soil sample. The soil auger head is approximately 3 inches in diameter and 12 inches long. Following sample collection, the vacuum truck and air knife will again be used to advance the pothole to a depth of at least 6.5 feet bgs and soil sampling will continue as detailed below.

Soil samples from the borings will be collected at 5 foot intervals to 50 feet bgs or the terminal depth of the boring. The proposed number of samples and soil sampling depth in the borings are subject to change based on field observations and static groundwater level. Soil samples collected from a depth greater than 6.5 feet bgs will be collected utilizing an 18 inch split spoon sampler attached to the hollow-stem auger drill rig. If warranted based on field measurements, soil conditions or varying water table depths, additional soil samples will be collected as determined in the field by Antea Group's onsite geologist.

All equipment used to collect soil samples will be decontaminated between sampling points. The soil auger head and/or split spoon will be washed with soap and water followed by a clean water rinse.

All soil samples will be collected utilizing EPA Method 5035A sampling techniques. The soil sample will be retained in laboratory-supplied sample containers. A portion of the soil sample will be field-screened using the headspace method. Soils will be placed, with a minimum of handling and atmospheric exposure, in clean sealed plastic bags. These bags will be filled to one-third to half capacity and then sealed. Soils in the bags will then be gently agitated to facilitate the break-up of any lumps and allowed to sit for approximately ten minutes prior to analyzing the air above the soil in the bag (headspace). The bagged soil samples will be screened for the presence of volatile organic compounds (VOCs) by inserting the probe of a Thermo 580B Photoionization Detector (PID) equipped with a 10.6 eV lamp through the seal into the headspace of the plastic bag. The PID will be calibrated using 100 parts per million (ppm) isobutylene gas. The maximum vapor concentrations will be recorded for each soil sample collected.

After soil sample collection, the samples will be placed in a cooler containing ice pending transport to TestAmerica Laboratories, Inc. (TestAmerica) in Fife, Washington. Chain-of-custody protocol will be used for all samples collected. Select soil samples will be analyzed for constituents listed in Table 830-1, Required Testing for Petroleum Releases, Gasoline Range Organics of the Ecology MTCA Cleanup Regulation, Chapter 173-340 WAC. The planned analyses and methods are:

- Gasoline range hydrocarbons by Northwest Method NWTPH-Gx;
- BTEX compounds and MTBE by EPA Method 8260B;
- Dibromoethane, 1-2 (EDB) and Dichloroethane, 1-2 (EDC) using EPA Method 8260B;
- Total lead using EPA 6000/7000 Series Methods;
- MTCA Method B criteria for petroleum, if applicable.

Additional testing for diesel range organics will be requested if the ARCO facility sells diesel or if field indications suggest diesel impacts in the soil.

In accordance with the time schedule for this project, all samples will be submitted for regular turn around analyses with TestAmerica. Rush analyses may be requested if field conditions or waste disposal profiling necessitates expedited analyses.

If groundwater is encountered during the drilling activities, monitoring wells will be installed. Groundwater will be sampled and submitted to TestAmerica to be analyzed for constituents listed in Table 830-1, Required Testing for Petroleum Releases, Gasoline Range Organics of the Ecology MTCA Cleanup Regulation, Chapter 173-340 WAC.

CONTROL OF WORK (COW) PROTOCOL

All field work will be implemented and completed in accordance with Atlantic Richfield Company's Control of Work (CoW) Defined Practices. All Antea Group personnel conducting field work during this investigation and all subcontractors (drilling and private utility locators) will be in compliance with CoW requirements. All staff and subcontractors will document training compliance with CoW protocol and provide training compliance certificates to Antea Group prior to field activities. The Work Risk Assessment Tool (WRAT) has been reviewed and modified with representatives from all participating companies to identify, document and mitigate any risks for this job prior to field activities.

Prior to starting field work, a daily safety meeting will be conducted and a Task Safety Environmental Analysis (TSEA) will be completed by all site personnel to document and mitigate all identified risks associated with the planned field activities. Work activities will be stopped and a safety meeting will be convened if any new risks are identified during site activities. All safety meeting discussions will be documented in the Toolbox Meeting Record prior to any field work. The site Health and Safety Plan (HASP) which includes the WRAT, the Emergency Response Plan (ERP) and the Simultaneous Operations Plan (SIMOP) is available in ENFOS at the site level for reference.

FIELD AND WORK PLAN CONTINGENCIES

Preparations for varying field conditions and potential change-in-conditions during field activities have been reviewed and planned for as referenced below:

- Historical distribution lines, pea gravel or fill material may be encountered requiring boring re-location;
- Boring locations may need to be moved or relocated based on identified subsurface utilities or surface structures in the immediate area of planned borings, and borings may be terminated at shallower or deeper depths than designated in this work plan based on field conditions;

- Soil sample collection techniques, depths and locations may be altered based on field conditions, and soil samples within the first 6.5 feet bgs may be collected directly from the boring cleared with the vacuum truck and air knife;
- Soil borings may be added and eliminated or increased in depth based on field conditions or RM guidance;
- Groundwater monitoring wells will be installed in the boring if groundwater is encountered while drilling;
- Scope changes to this work plan have been reviewed and have been planned for based on field conditions and typical drilling conditions. If site work is terminated based on unpredicted field conditions, a management of change (MOC) will be required prior to rescheduling site work or new site work will be addressed as a new project with a modified work plan.

PROJECT SCHEDULE/ REPORTING

The drilling activities are scheduled for May 9, 10 and 11, 2011 pending RM's review and approval of this work plan and the site specific HASP. Following completion of the field activities and upon receipt of the analytical data, a report will be prepared summarizing the activities and data collected. The report will include: a site description; a brief summary of past environmental activities; field activity procedures; a summary of soil and groundwater analytical results; and figures that will include a site map showing soil borings or monitoring well locations, analytical data and cross sections; and boring logs.

Antea Group appreciates the opportunity to provide services to Atlantic Richfield Company. If you have any questions, or if you require any additional information on this project, please contact Markham Hurd at (425) 882-3528.

Sincerely,

ANTEA GROUP

Prepared By:

Sarah Kennedy
Staff Professional

Date: 4/29/2011

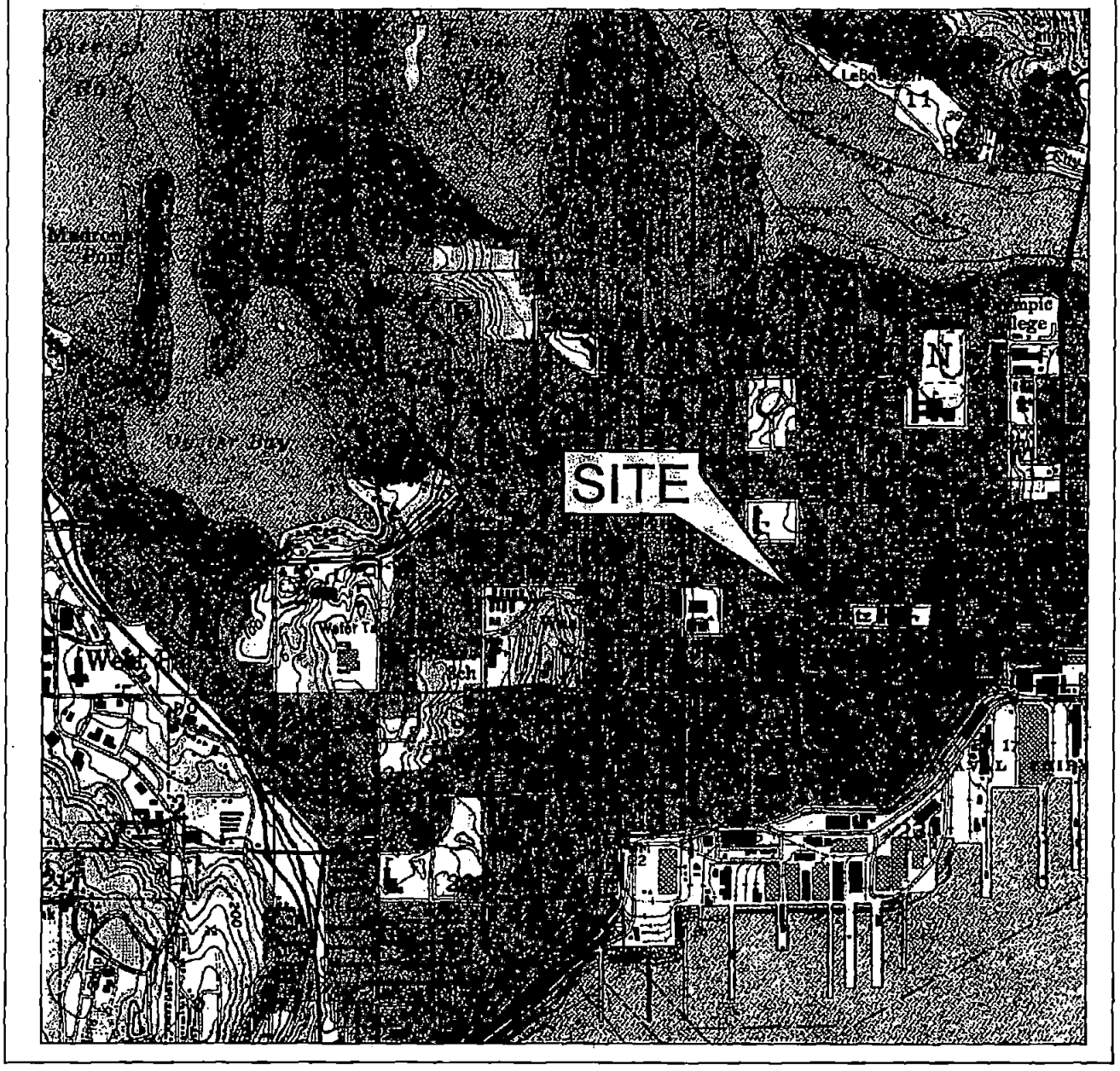
Reviewed By:

Markham Hurd, L.G.
Senior Project Manager

Date: 4/29/11

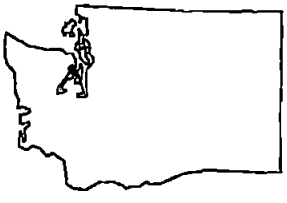
Enc:
Figure 1 - Site Location Map
Figure 2 - Site Aerial Map
Figure 3 - Proposed Monitoring Well Location Map

ENFOS Site Level:
Site Health and Safety Plan, including:
-Work Risk Assessment Tool (WRAT)
-Emergency Response Plan (ERP)
-Simultaneous Operations Plan (SIMOP)



0 .25 MI
SCALE

GENERAL NOTES:
BASE MAP FROM U.S.G.S.
EDMONDS EAST, WA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1983



QUADRANGLE LOCATION

North

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP, BREMERTON QUADRANT

FIGURE 1

SITE LOCATION MAP

ARCO FACILITY NO. 5810
2101 WEST 6TH STREET
BREMERTON, WA.

PROJECT NO. 05810DA111	DRAWN BY DGR 3/22/11
FILE NO. Site Locator 5810	PREPARED BY SBM
REVISION NO. 2	REVIEWED BY

anteagroup

GENERAL NOTES:
AERIAL PHOTOGRAPH
DATED 1994

N

0 200'

SCALE

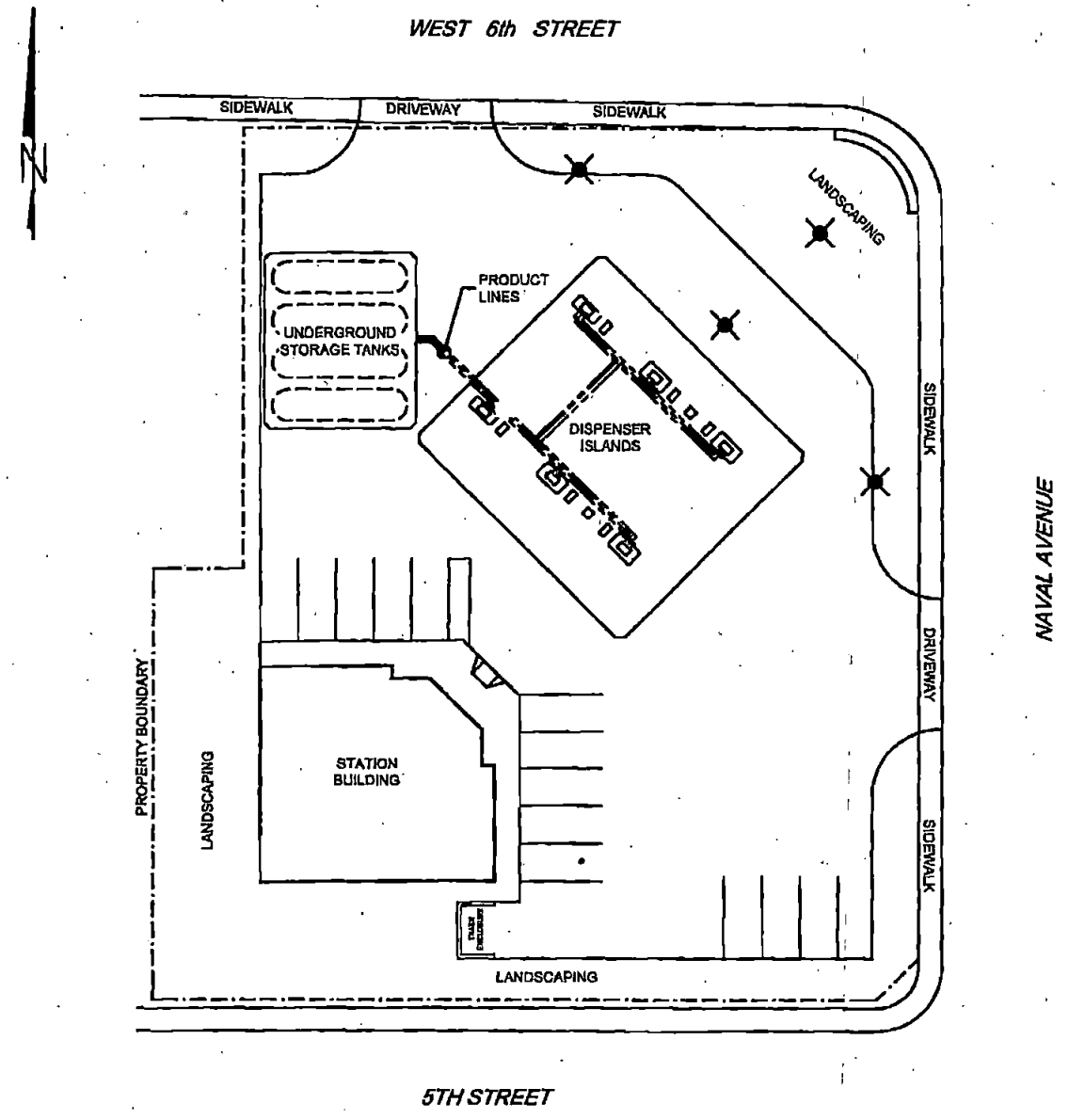
FIGURE 2

SITE AERIAL MAP

ARCO FACILITY NO. 5810
2101 WEST 6th STREET
BREMERTON, WA.

PROJECT NO. 05810DA111	DRAWN BY DGR 3/22/11
FILE NO. 5810-SAM	PREPARED BY SBM
REVISION NO. 1	REVIEWED BY

anteagroup



0 40 FT

APPROX. SCALE

LEGEND:

PROPOSED SOIL BORING LOCATION

FIGURE 3
SITE MAP WITH PROPOSED BORING LOCATIONS

ARCO FACILITY NO. 5810
2101 WEST 6th STREET
BREMERTON, WA.

PROJECT NO. 05810DA111	DRAWN BY S.KENNEDY
FILE NO. AR-5810	PREPARED BY S.KENNEDY
REVISION NO. 2	REVIEWED BY MW Prop

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