## LIMITED PHASE III

Limited & Targeted Subsurface Investigation

Performed at: Calhoun's Service Station 4540 Pacific Avenue Tacoma, WA 98401

# AEROTECH\_ Environmental Consulting Inc.

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### LIMITED PHASE III

## Limited & Targeted Subsurface Investigation

Performed at: Calhoun's Service Station 4540 Pacific Avenue Tacoma, WA 98401

Voluntary Cleanup Program Site No. SW-1180

February 27, 2012

Performed by:
Aerotech Environmental Consulting, Inc.
19600 International Blvd., Suite No.101
SeaTac, Washington 98188
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#### PHASE III

### **TARGETED & TARGETED** SUBSURFACE INVESTIGATION

performed for:

Client:

Calhoun Family, LLC

P.O. Box 1929

Tacoma, Washington 98401

Point of Contact:

Ms. Karen Calhoun Calhoun Family, LLC

P.O. Box 1929

Tacoma, Washington 98401

Property:

Calhoun's Service Station

4540 Pacific Avenue Tacoma, WA 98401

VCP Project No. SW1180

County:

Pierce County Assessor Parcel Nos: 7470024720 and 7470024730

Commercial Activity:

Retail Used Tire Store

Licensed Geologist:

Michael McGowan

State of Washington License No. 1737

Project Number:

No. 212 - 6142

Report Date:

February 28, 2012

### **EXECUTIVE SUMMARY**

The subject of this Limited and Targeted Phase III Subsurface Investigation<sup>1</sup> is comprised of two contiguous tax parcels located on the northwest corner of Pacific Avenue and South 46<sup>th</sup> Street in Tacoma, Washington. The eastern Parcel which houses the building, is approximately 0.17-acres; the western Parcel, an asphalt-paved storage yard, is approximately 0.10-acres. East 56<sup>th</sup> Street is two-thirds of a mile south; and Interstate 5 is one mile west.

The subject Property is located in a mixed-use commercial and residential area. To the north is a one-lane alley followed by single-family residences; to the south is South 46<sup>th</sup> Street followed by the Flowerland Store; to the east is Pacific Avenue followed by single-family

residences; and to the west are single-family residences.

The subject Property is occupied by a tire sales and automotive repair facility operated as

Llantera Sinaloa Tire Sales & Service.

The building is a concrete slab on grade, wood framed and sided structure facing east towards Pacific Avenue. On the south end of the east side of the building is the customer entrance into the service counter and customer waiting room. Adjoining on the north side is the two bay service shop; each bay is equipped with an in-ground hydraulic lift. A recessed floor pipe located adjoining each service bay likely served as the remote fill pipes for the underground waste oil tank located on the exterior north side of the building. Directly in front of the building to the east is the former concrete base of the pump dispenser islands. Adjoining the south side of the station building is the former location of the three underground storage tanks.

The subject Property was commercially developed prior to 1926 as the *Melvin Tveten Gasoline Station*. By 1951, the station was reconfigured as *Calhoun's Tourist Service Station*. In 1954, the existing building was demolished and a new station building constructed as *Calhoun's Richfield Oil*. In 1991, four underground tanks were removed from the Site<sup>1</sup>; the pumps were removed in 2005. The Site currently operates as a tires sales and an automotive service business.

During the 1991 removal of the four underground tanks petroleum-impacted soils were encountered at the "fill end of the tank" (the specific tank was not identified). The tank excavation was over excavated by three feet; the bottom of the excavation to a reported fourteen feet below ground surface. A total of approximately 250 cubic yards of petroleum-impacted soils were removed from the excavation and place along the southwestern Property boundary – the dimensions were approximately 55.5 feet north to south and 43.5 feet east to west, to at least a three foot depth<sup>2</sup>. Laboratory analyses of composite soil samples collected by Tacoma Pierce County Health Department ("TPCHD") personnel in the tank excavation reported "N.End Excav." (7,500 mg/kg Total Petroleum); "Middle Excav." (6,800 mg/kg); and "South End" (22 mg/kg); BTEX constituents were also elevated. On April 29, 1991, the TPCHD approved backfill of the excavation. It appears that the excavation was subsequently backfilled.

In the spring of 1992, the Site Owner Donald Calhoun was instructed by TPCHD "not to aerate" the stockpiled soils. In March of 1993, six soils samples were collected from the stockpiled soils; all sample results were below the laboratory limits of detection. The final

disposition of the stockpiled soils is unknown.

In 2011 the Site entered the State of Washington Ecology Voluntary Cleanup Program; the initial Ecology determination requested Further Investigative Actions and Characterizations at the Site.

<sup>&</sup>lt;sup>1</sup> Two 4,000-gallon gasoline tanks; one 6,000-gallon gasoline tank; and one 50 to 200-gallon (description varies) waste oil tank.

<sup>&</sup>lt;sup>2</sup> A stock pile with these dimensions is approximately 268 cubic yards.

#### Conclusions:

### Area of Concern No.1 - Former Underground Storage Tank Pit.

The original tank excavation appears to have varied from 12 to 14 feet below ground surface. This Phase III Investigation identified levels of gasoline in the soils above the Model Toxics Control Action ("MTCA") most stringent Cleanup Levels in the center of the former tank pit of 150 parts per million ("ppm") at 12 feet below grade; however at 18 feet below grade the gasoline was non-detect. Two boring locations adjoining the north edge of the former tank identified gasoline concentrations of 73 ppm and 66 ppm at 14 feet below grade; however these locations were both non-detect at 18 feet below grade. The MTCA Cleanup Level for gasoline is 100 ppm when no benzene is present, and 30 ppm when benzene is present. The soils in the tank pit are all non-detect for benzene; however, the groundwater samples collected to the east of the tank pit – in the assumed downgradient location – exhibited levels of benzene above the MTCA Cleanup Level. Groundwater was not encountered at any of the boring locations inside the former tank pit.

- It is unclear whether the Department of Ecology will allow the Site to use the 100 ppm gasoline soil Cleanup Level, or will require the 30 ppm soil Cleanup Level due to the presence of benzene in the groundwater. If Ecology requires a soil Cleanup Level of 30 ppm, then the lateral extent of contamination to the north (perhaps underneath the building) has not been determined.
- Since the elevated levels of gasoline in sol are present at 12 feet below grade, but nondetect at 18 feet – and the general Ecology Point of Compliance for soils is ground surface to 15 feet below ground surface – it is unclear if Ecology will require remediation of the soils in the center of the tank pit.

#### Area of Concern No.2 - Former Pump Island:

The area adjoining the former dispenser island has never been excavated. Borings around the former pump island revealed gasoline presence in the soils between 36 and 99 ppm at 8 feet below grade; however gasoline in soil was non-detect at 10 to 17 feet below grade. Benzene was non-detect at all of the boring locations.

Groundwater was encountered at three of the four boring locations adjoining the pump island, and at two boring locations between the pump island and the sidewalk to the east (assumed down gradient location) varying from 5 to 6.5 feet below ground surface. Based upon observed Site conditions, it is likely this water is actually perched within the area of the original pump island installation excavation, and may not be representative of overall Site groundwater conditions.

The groundwater gasoline concentrations around the pump island were 1,500, 4,300, and 12,000 parts per billion ("ppb"); the MTCA Cleanup Level is 800 ppb since benzene was also identified in the groundwater. The assumed down gradient boring located adjoining the sidewalk reported 11,000 ppb

It is possible that the source of contamination may be both the historical leakage of the pumps and connecting piping, and the presence of abandoned piping with residual petroleum leakage.

- Due to the presence of elevated levels of gasoline in the water, and the presence of gasoline in the soils, excavation of soils and removal of the abandoned piping underneath and around the former pump island is advisable.
- The groundwater gasoline concentrations indicate that the plume of contamination may extend off Site to the east, underneath the sidewalk and possibly South Pacific Street.

### Area of Concern No.3 - Southeastern Property Quadrant:

This Area of Concern is south of the pump island and east of the former tank pit extending to South Pacific Street on the east and South 46<sup>th</sup> Street on the south. It is assumed to be down gradient from the former tank pit and cross gradient from the pump island.

Three borings were performed in this area to an average depth of 13 to 20 feet below ground surface. Boring location SB-25, located east of the former tank pit, reported elevated gasoline in soils concentrations (4,900 ppm) at 8 feet below grade, and non-detect at 13 feet below grade. This gasoline

in soil concentration is the highest reported concentration measured on the Site.

Groundwater was encountered at two boring locations east of the former tank pit. The location the closest to the former tank pit (Boring SB 28) reported gasoline in water of 12,000 ppb, while the location further east (SB 25) reported gasoline in water of 18,000 ppb. This may indicate that the plume of groundwater contamination is increasing in concentration as it nears South Pacific Street.

- Due to the presence of elevated levels of gasoline and benzene in the water, and the presence of gasoline in the soils, excavation of the soils in this area is advisable.
- The groundwater gasoline concentrations indicate that the plume of contamination may extend off Site to the east, underneath the sidewalk and possibly South Pacific Street.

### Area of Concern No.4 - Deep Perched Groundwater Zone:

The Department of Ecology Further Action Determination dated November 8, 2011, expressed a concern that even though the nearby information suggested that groundwater is located a depths greater than 100 feet below ground surface, a subsurface boring should be advanced to at least 40 feet below ground surface to "identify any perched zones of groundwater that may be present in the area." The Ecology Determination additional stated that "[i]f groundwater is found, it is recommended that temporary wells be completed with the boring and samples be collected and tested for the constituents of concern including the fuel additives 1-2 dibromoethane, 1-2 dichloroethane, and methyl tertiary-butyl ether."

• The investigation of Site conditions to 40 feet below ground surface has not been performed. Due to the presence of gasoline contamination in the Site groundwater, it is anticipated that Ecology will require such an investigation to be performed prior to the issuance of Site Closure.

### ECOLOGY MODEL CLEANUP REQUIREMENTS

"Standard points of compliance have been established for the Site. The point of compliance for protection of groundwater is established in the soils throughout the Site. For soil cleanup levels based on human exposure via direct contact or other exposure pathways where contact with the soil is required to complete the pathway, the point of compliance is established in the soils throughout the Site from the ground surface to 15 feet below ground surface. In addition, the point of compliance for the groundwater is established throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site. Once the Site cleanup strategy has been executed, soil confirmation samples will need to be evaluated and approved by Ecology. Quarterly groundwater monitoring will be needed at the Site at least until four consecutive quarters of clean groundwater analytical results are attained."

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#### **INTRODUCTION**

Aerotech Environmental Consulting Inc., performed this Limited and Targeted Phase III Subsurface Investigation of the subject Property described as Calhoun's Service Station located at 4540 Pacific Avenue, Tacoma, Washington. The objective of this Investigation was to evaluate the condition of the subsurface soils for the Recognized Environmental Conditions in the Areas of Concern to determine if the subject Property had in fact, been impacted by that specific Recognized Environmental Condition. On November 29, 2011, Ms. Karen Calhoun, representative of Calhoun Family LLC (owner of the subject Property) engaged Aerotech Environmental Consulting, Inc. to perform a Limited and Targeted Environmental Investigation of the Site – the Scope of Work of said Investigation as delineated in Service Agreement No. 2011-11-29.1. Additional Investigative work was authorized on January 28, 2012, in Service Agreement No. 2012-01-24.1, Phase III Limited and Targeted Environmental Investigation. The Site work was performed on February 1 & 2, 2012.

#### PROJECT SCOPE OF WORK

#### PHASE II LIMITED & TARGETED SUBSURFACE INVESTIGATION

Scope. By this Agreement and relative to environmental issues raised in the *Phase I Environmental Site Assessment* on September 15, 2011, Project No. 211 - 5306 and the *Limited and Targeted Phase II Subsurface Investigation* on December 1, 20011, Project No. 211 - 7002. Both reports were performed by Aerotech Environmental Consulting, Inc The Scope of Services on this Project is limited to:

SITE SUBSURFACE CHARACTERIZATION – Prior to the start of on Site boring activities, (1) a Ground Penetrating Radar Survey of the Area of Concern will be performed by properly trained third-party professionals; and (2) an on Site Utilities Locate will be performed by third-party professionals in addition to the Location Services performed the potentially affected public and private utilities.

AREA OF CONCERN NO.1: FORMER UNDERGROUND STORAGE TANK LOCATIONS – Objective to determine the likely presence of subsurface contamination originating from the former operations of three underground storage tanks located generally on the south side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located south of the station building to South 46<sup>th</sup> Street. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a) gasoline, and (b) fuel additives;

This Phase II Site Assessment is "targeted" as defined by the ASTM Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, Designation E 1903-97 (Reapproved 2002); "an assessment performed in accordance with the process described in this [E 1903-97] practice, which addresses only certain releases or potential releases, or certain target analytes, at a property as selcted by the User but which does not address all releases, potential releases, and target analytes. [E 1903-97, § 3.1.43]"

(ii) borings at AOC locations to be performed to an average twelve to twenty foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between six and seven;

(iii) independent laboratory analysis of at least six soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX

(Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

(iv) independent laboratory analysis of at two soil (or in the alternative groundwater) samples for COCs for State of Washington protocol gasoline fuel additives;

(v) independent laboratory analysis of two soil (or in the alternative groundwater)
 samples for COCs for RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep
 EPA SW-846 Method 1311;

(vi) analytical response time 7 business days from sample submission, report

preparation as delineated in the Schedule section of this Agreement;

(vii) a report of activities, observations, and findings will be prepared and delivered

as agreed in the Schedule section of this Agreement;

(viii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.2: LOCATION OF THE FORMER PUMP ISLAND -

Objective to determine the likely presence of surface and/or subsurface contamination originating from location of the original two pump dispenser located on the east side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located along the eastern Property boundary. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a)

gasoline and (b) diesel fuel;

(ii) borings at AOC locations to be performed to an average four to eight foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between four and five;

(iii) independent laboratory analysis of at least four soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX

(Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

(iv) independent laboratory analysis of at least one soil (or in the alternative groundwater) samples for COCs for State of Washington protocol gasoline fuel additives;

(v) independent laboratory analysis of one soil (or in the alternative groundwater) sample for COCs for State of Washington RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;

(vi) analytical response time 7 business days from sample submission, report

preparation as delineated in the Schedule section of this Agreement;

(vii) a report of activities, observations, and findings will be prepared and delivered

as agreed in the Schedule section of this Agreement;

(viii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.3: HYDRAULIC LIFTS – Objective to determine the likely presence of subsurface contamination originating from operations of the two hydraulic lifts located inside the building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located inside the service bays. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including

hydraulic fluid;

(ii) borings at AOC locations to be performed to an average six to eight foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between two and three;

(iii) independent laboratory analysis of at least two soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Diesel via EPA SW-

846 Method 8020;

(iv) independent laboratory analysis of one soil (or in the alternative groundwater)
 sample for COCs for State of Washington PCB's;

v) analytical response time 7 business days from sample submission, report

preparation as delineated in the Schedule section of this Agreement;

(vi) a report of activities, observations, and findings will be prepared and delivered

as agreed in the Schedule section of this Agreement;

(vii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.4: FORMER UNDERGROUND WASTE OIL TANK and POSSIBLE REMOTE FILL LINES – Objective to determine the likely presence of subsurface contamination originating from the former location of the underground waste oil tank and possible remove fill lines located on the north exterior side of the station building a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located on the north side of the building and in the existing service bays. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a)

gasoline and (b) diesel fuel;

(ii) borings at AOC locations to be performed to an average twelve to sixteen foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between three and five;

(iii) independent laboratory analysis of at least three soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX

(Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

(iv) independent laboratory analysis of at least three soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Diesel via EPA SW-846 Method 8020:

(v) independent laboratory analysis of one soil (or in the alternative groundwater) samples for COCs for Polynuclear Aromatic Hydrocarbons ("PAHs") via EPA Method 8270 SIMS;

(vi) independent laboratory analysis of one soil (or in the alternative groundwater) sample for COCs for State of Washington "MTCA Five Metals" via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;

- (vii) independent laboratory analysis of one sample for COCs for State of Washington protocol Chlorinated Volatile Organic Compounds by EPA Method No.SW-8260B/624 "Short List Chlorinated Volatiles";
- (viii) analytical response time 7 business days from sample submission, report preparation as delineated in the *Schedule* section of this Agreement;

(ix) a report of activities, observations, and findings will be prepared and delivered as agreed in the Schedule section of this Agreement;

(x) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.5: FORMER SOIL AERATION and POSSIBLE DISPOSAL LOCATION – Objective to determine the likely presence of subsurface contamination originating from the former aeration and disposal of previously excavated petroleum-impacted soils via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located along the western Property boundary on the southern end. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a)

gasoline and (b) diesel fuel;

(ii) borings at AOC locations to be performed to an average four to eight foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between four and six;

(iii) independent laboratory analysis of at least four soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX

(Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

(iv) independent laboratory analysis of two soil (or in the alternative groundwater) samples for COCs for State of Washington Lead via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;

(v) analytical response time 7 business days from sample submission, report

preparation as delineated in the Schedule section of this Agreement;

(vi) a report of activities, observations, and findings will be prepared and delivered as agreed in the *Schedule* section of this Agreement;

(vii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.6: POSSIBLE SITE GROUNDWATER IMPACT—Objective to determine the likely presence of groundwater impacts originating from the former station operations via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located adjoining the former underground tank pit. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

(i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a)

gasoline, (b) diesel, and (c) fuel additives;

(ii) borings at AOC locations to be performed to an average forty foot depth below

ground surface by powered drilling equipment. Total number of subsurface penetrations is one;

independent laboratory analysis of at least one soil (or in the alternative (iii) groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX (Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-\$46 Method 8020;

independent laboratory analysis of at least one soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Diesel via EPA SW-

846 Method 8020;

independent laboratory analysis of one soil (or in the alternative groundwater)

sample for COCs for gasoline fuel additives;

independent laboratory analysis of one soil (or in the alternative groundwater) sample for COCs for State of Washington "MTCA Five Metals" via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;

analytical response time 7 business days from sample submission, report

preparation as delineated in the Schedule section of this Agreement;

a report of activities, observations, and findings will be prepared and delivered (viii)

as agreed in the Schedule section of this Agreement;

site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions - It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

#### PHASE III LIMITED & TARGETED SUBSURFACE INVESTIGATION

Scope. By this Agreement and relative to environmental issues raised in the Phase I Environmental Site Assessment performed by Aerotech Environmental Consulting, Inc., on November 28, 2011, Project No.211 -5233; and the Phase II Limited & Targeted Subsurface Investigation performed by Aerotech Environmental Consulting, Inc., dated December 15, 2011, Project No.211 - 7002

Additionally, the Scope of Work follows the recommendations of the State of Washington Department of Ecology Southwest Regional Office regarding the subsurface investigation of former gasoline service stations.

The Scope of Services on this Project is limited to:

SITE SUBSURFACE CHARACTERIZATION - Prior to the start of on Site boring activities, (1) a Ground Penetrating Radar Survey of the Areas of Concern will be performed by properly trained third-party professionals; and (2) an on Site Utilities Locate will be performed by third-party professionals in addition to the Location Services performed th e potentially affected public and private utilities.

AREA OF CONCERN NO.1: FORMER UNDERGROUND STORAGE TANK LOCATIONS -Objective to characterize the subsurface contamination originating from the former operations of three underground storage tanks located generally on the south side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located south of the station building to South 46 Street. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a) gasoline; and (b) fuel

additives

borings at AOC locations to be performed to an average fourteen to eighteen foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between five and six;

independent laboratory analysis of at least eighteen soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX (Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

independent laboratory analysis of at least four soil (or in the alternative groundwater) samples for COCs for State of Washington protocol Fuel Additives (1-2 dibromoethane; 1-2 dichlorethane, and methyl tertiary-butyl ether ("MTBE"));

- independent laboratory analysis of four soil (or in the alternative groundwater) samples for COCs for RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;
- analytical response time 7 business days from sample submission, report preparation as delineated in the Schedule section of this Agreement;

a report of activities, observations, and findings will be prepared and delivered as (vii) agreed in the Schedule section of this Agreement;

site activities may produce soil spoils that will be drummed and left on-site. (viii) Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions - It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO.2: LOCATION OF THE FORMER PUMP ISLAND - Objective to characterize the subsurface contamination originating from location of the original two pump dispenser located on the east side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located along the eastern Property boundary. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a) gasoline and (b) fuel

additives;

borings at AOC locations to be performed to an average four to ten foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between eight and ten;

independent laboratory analysis of at least sixteen soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX (Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;

independent laboratory analysis of at least two soil (or in the alternative groundwater) samples for COCs for State of Washington protocol Fuel Additives (1-2 dibromoethane; 1-2 dichlorethane, and methyl tertiary-butyl ether ("MTBE"));

independent laboratory analysis of two soil (or in the alternative groundwater) samples for COCs for State of Washington RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep

EPA SW-846 Method 1311;

analytical response time 7 business days from sample submission, report preparation as (vi) delineated in the Schedule section of this Agreement;

a report of activities, observations, and findings will be prepared and delivered as (vii)

agreed in the Schedule section of this Agreement;

site activities may produce soil spoils that will be drummed and left on-site. (viii) Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions - It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

# SECTION I. SITE DESCRIPTION

### **Site Exterior Description:**

The subject of this Limited and Targeted Phase III Subsurface Investigation is comprised of two contiguous tax parcels located on the northwest corner of Pacific Avenue (State Route 509) and South 46<sup>th</sup> Street in Tacoma, Washington. The eastern Parcel – which houses the building – is approximately 0.17-acres; the western Parcel – an asphalt-paved storage yard – is approximately 0.10-acres. East 56<sup>th</sup> Street is two-thirds of a mile south; Interstate 5 is one mile west; and Interstate 705 is one and one-quarter of a mile north.

The subject Property is occupied by a tire sales and automotive repair facility operated as

Llantera Sinaloa Tire Sales & Service.

The building is a concrete slab on grade, wood framed and sided structure facing east towards Pacific Avenue. On the south end of the east side of the building is the customer entrance into the service counter and customer waiting room. Adjoining on the north side is the two bay service shop, with access to each service bay via overhead roll up doors on the east and west ends of the bays. Each bay is equipped with an in-ground hydraulic lift. A recessed floor pipe is located adjoining each service bay, the pipes appear to have been used as remote fill pipes for the former underground waste oil tank.

Directly in front of the building to the east is the concrete base of the former pump dispenser island. Adjoining the south side of the station building is a large area of patched asphalt over the former location of the three underground storage tanks. The rear of the building is surrounded by a chain link security fence; this fenced storage contains well in excess of 1,000 used tires. The remainder of the Property is a combination of concrete and asphalt-paved surfaces.

The subject Property is located in a mixed-use commercial and residential area. To the north is a one-lane alley followed by single-family residences; to the south is South 46<sup>th</sup> Street followed by the Flowerland Store; to the east is Pacific Avenue followed by single-family residences; and to the west are single-family residences.

#### **Site Development Description:**

The subject Property was commercially developed prior to 1926 as the *Melvin Tveten Gasoline Station*. By 1951, the station was reconfigured as *Calhoun's Tourist Service Station*. In 1954, the existing building was demolished and a new station building constructed as *Calhoun's Richfield Oil*. A canopy was added in 1963.

In 1991, four underground tanks were removed from the Site and petroleum-impacted soils were encountered. In 2011 the Site entered the State of Washington Ecology Voluntary Cleanup Program; the initial Ecology determination requested Further Investigative Actions and Characterizations at the Site.

In 2005 the pumps were removed. The Site is currently operated as a tires sales and automotive service business.

#### **Site Observations and Reported Conditions:**

No additional Recognized Environmental Conditions or concerns identified as potential impacts to the Property.

#### SECTION II. FIELD WORK

#### **Notifications - "Public" Utilities:**

Due to the developmental nature of the Site, a "public" utilities notification was performed prior to the start of work. The "public" utilities notification was performed on November 23, 2011 by Aerotech Environmental Consulting, Inc. 4 to the Utilities Underground Location Center. Ticket number 11258856.

An additional "public" utilities notification was performed for the Phase III investigation

performed on February 1, 2012.

### **Notifications - Private Utilities Location:**

Due to the developmental nature of the Site, a "private" utilities notification was performed prior to the start of work. The Site exterior and building interior utilities were located by personnel engaged by Aerotech Environmental Consulting, Inc, and employed by Mountain View Utilities Detection Service, Inc., of Bonney Lake, Washington on December 1, 2011 and on February 1, 2012., prior to the start of the on Site drilling activities.

No unanticipated or unexpected situations were discovered or encountered during the

"private" locating activities.

## **Ground Penetrating Radar Subsurface Investigation:**

A Ground Penetrating Radar Study was performed in the Areas of Concern on December

1, 2011, February 1 and 2, 2012 by an independent third-party geophysical firm.

A Ground Penetrating Radar ("GPR") Study is a geophysical methodology which uses radar pulses to reflect off of subsurface structures and thus provide an image of the subsurface conditions and The possible presence of subsurface objects. The depth of GPR Survey is determined by the electrical conductivity of the ground and the survey equipment transmitting frequency, and is limited to eight to thirteen feet below ground surface. However, the presence of significant subsurface obstructions or concrete rebar may limit the depth and effectiveness of the accuracy of the object identification. Additionally, surficial obstructions may limit the depth and effectiveness of the accuracy of the object identification.

No further Recognized Environmental Concerns or issues were revealed.

## **Magnetometer Investigation:**

Due to the nature of the anticipated Constituents of Concern, a magnetometer investigation was also performed prior to the initiation of the Site subsurface investigation by personnel from Mountain View Location, Inc.

#### Site Activities:

The Limited & Targeted Phase III Subsurface Investigation was performed on February 1 and 2, 2012, under contract with Aerotech Environmental Consulting, Inc. All the work was performed during normal business hours No unusual or unforeseen circumstances occurred during

<sup>&</sup>lt;sup>4</sup> Aerotech Environmental Consulting, Inc., was previously issued Contractor Identification Number 58972 by the non-profit Utilities Underground Location Center (www.callbeforeyoudig.com).

the Site activities.

The subsurface borings were performed by equipment owned by and operated by Licensed Drillers from ESN Northwest Drilling, Inc. The on Site drilling equipment was operated by personnel employed by ESN Northwest Drilling, Inc. The laboratory analytical services were performed by the ESN Northwest Chemistry Laboratories in Bellevue and Lacey, Washington.

### **Drilling and Excavation Activities:**

Due to the nature of the Site surfaces and working spaces around the Areas of Concern, drilling operations employed both a Geoprobe® style direct push truck mounted drill rig (on December 1, 2011) and a motorized auger truck mounted drill rig (December 2, 2011, February 1 and 2, 2012) were employed for the Site work.

#### **Groundwater Flow:**

The principal aquifers in the Puget Sound Region occur in glacial drift, that along with finer grained interglacial sediments, underlies the basin lowland to depths of more than 1,00 feet. The sand and gravel units in the glacial drift form the principle aquifers. These aquifers receive ample recharge from the typically heavy precipitation characteristic of western Washington. The glacial drift in the Puget Sound region varies greatly in composition and water yielding capacity. Typically, wells in glacial drift that tap silt, clay, or till in the Region at approximately 75 to 100 feet below ground surface may have yields of 100 gallons or more per minute. Deeper wells tapping thick, saturated layers of highly permeable gravel and coarse sand, typically at depths greater than 250 feet below ground surface, can yield more than 1,000 gallons per minute. Based on topography the assumed general groundwater flow is to the north.

### **Sample Collection:**

Samples were hand collected at locations and at depths as identified by the Aerotech Licensed Hydrogeologist. Samples were collected from two to twenty foot depths. A total of ninety-eight discrete samples were collected on December 1 and 2, 2011 for the *Limited & Targeted Phase II Subsurface Investigation*. Ninety-five soil samples and three water samples were obtained.

A total of seventy-nine discrete samples were collected on February 1 and 2, 2012 for the Limited & Targeted Phase III Subsurface Investigation. Seventy-five soil samples and four water samples were obtained.

In some situations the upper elevation sample was analyzed as being the most representative of surficial and subsurface conditions – considering the most likely source of possible contamination was surficial releases. In other locations, lower elevation samples were collected as representative of the assumed Site conditions.

Soils collected from each excavation location were physically observed for composition and odor. Samples were placed in sterile glass jars with teflon sealed lids. All sampling equipment for soil sampling, drive rods, and probes were decontaminated after each sampling point by washing with soapy distilled water and rinsing with distilled water. After washing, all external surfaces are wiped with clean paper towels. Plastic tubing is used only once.

Each sample was given a unique identifier number and placed in an iced cooler for sample preservation. A Chain of Custody recorded the collection and handling of every sample. As a result of the Site observations and recorded data, discrete soil and water samples were selected for laboratory analysis. The remaining soil samples were retained by the laboratory for analysis in the event that the groundwater or soil samples selected for laboratory analysis revealed elevated levels of constituents. Following the production of the initial Site sample results, followup laboratory

analysis was requested and performed for the subject Site.

When applicable, water samples were collected from temporary wells that utilized the soil boring locations. The groundwater were collected employing the insertion of sterile, slotted tubing to screen the boring penetration at the appropriate depths. Generally, sample locations were screened at the six to ten foot below ground surface depth range. A sample screening tubing was disposed of after a single use.

### **Sample Screening:**

The soil samples are topically collected from each excavation location were recorded and decided in a field log. The soil samples are placed in sterile glass jars with resealabe Teflon lids. Each sample jar is sealed and labeled.

## **Equipment Decontamination:**

All sample acquisition equipment was decontaminated before and after each boring to eliminate the potential for cross-contamination between subsurface borings, as required. Since sample media was primarily collected by virgin polyurethane tubes and clean latex gloves, sample equipment decontamination was not required; and all sampling equipment was single-use only.

#### **Site Restoration:**

Due to the nature of the site some boring locations required penetrating concrete slabs and asphalted areas making restoration was necessary. For boring locations on a concrete slab the boring hole was filled with bentonite slurry mixture, and the final 3 to 4 inches were filled with a cement mixture. For boring locations into an asphalt paved area was the hole was filled with bentonite slurry mixture, and the final 6 to 8 inches were filled with "cold patch" asphalt – a quick set asphalt that matched the surrounding surficial conditions.

## SUMMARY OF SAMPLE ACQUISITION

A total of twenty-nine discrete sample acquisition locations were advanced in the Areas of Concern to a maximum depth of twenty-two feet below ground surface at the subject Property. The following is a detailed description of each boring location, observations made during the acquisition, sampling information, and the field screening process. lease refer to the Boring Location maps in the Appendix for detailed soil boring locations.

# Sample Acquisition Area No. SB-01 -The Former Underground Waste Oil Tank (Southeast Corner):

The Area of Acquisition was located three feet north and four feet east of the northwest corner of the building. This location was on the on the site of the former underground waster oil storage tank. The tank was covered by a concrete slab. The slab was in poor condition with numerous cracks. Boring operations revealed the site was underlain by a brown silty sand without gravel followed by a tan silty sand with occasional gravel. Gravel became less common with depth. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-02 -The Former Underground Waste Oil Tank (Center):

The Area of Acquisition was located seven feet north and six feet east of the northwest corner of the building. This location was on the on the site of the former underground waste oil storage tank. The tank was covered by a concrete slab. The slab was in poor condition with numerous cracks. Boring operations revealed the site was underlain by a brown silty sand without gravel followed by a similar brown silty sand with occasional rock fragments. By the 12 foot depth there were no rock fragments only the brown silty sand. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-03 – The Former Underground Waste Oil Tank (Northeast Corner):

The Area of Acquisition was located nine north and eight feet east of the northwest corner of the building. This location was on the on the site of the former underground waste oil storage tank. This tank was covered with by a concrete slab. The slab was in poor condition with numerous cracks. Boring operations revealed the site was underlain by a brown silty sand without gravel followed by a tan silty sand with occasional gravel. Gravel became less common with depth. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. Groundwater was not encountered.

## Sample Acquisition Area No. SB-04 - North Hydraulic Lift:

The Area of Acquisition was located five feet south and nine feet east of the northwest corner of the building. This location was the on the site of the hydraulic lift inside garage area.

The boring location was covered by a concrete slab floor. Boring operations revealed the site was underlain by a brown silty sand without gravel followed by a dark brown silty sand with occasional gravel followed by a tan silty sand with occasional gravel. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 11 feet. Groundwater was not encountered.

## Sample Acquisition Area No. SB-05 - South Hydraulic Lift:

The Area of Acquisition was located five north and nine feet east of the interior wall separating the garage area from the office area. This location was the on the site of the second hydraulic lift located inside the garage area. The boring location was covered with by a concrete slab floor. Boring operations revealed the site was underlain by a brown silty sand without gravel followed by a dark brown silty sand with occasional gravel followed by a tan silty sand with occasional gravel. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 11 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-06 - Former Soil Aeration and Possible Disposal Location (North):

The Area of Acquisition was located three feet south and twelve feet east of the chain-link fence enclosing the tire storage area. This location was the on southwest side of the paved parking area. This area was used in a previous soil remediation action to store, aerate and possible disposal of previously excavated petroleum-impacted soils. The area was covered with asphalt. Boring operations revealed the site was underlain by a brown silty sand with gravel. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 8 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-07 - Former Soil Aeration and Possible Disposal Location (Center):

The Area of Acquisition was located sixteen feet south of SB-06. This location was the on southwest side of the paved parking area. This area was used in a previous soil remediation action to store, aerate and possible disposal of previously excavated petroleum-impacted soils. The area was covered with asphalt. Boring operations revealed the site was underlain by a grey silty sand with gravel. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 8 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-08 - Former Soil Aeration and Possible Disposal Location (South):

The Area of Acquisition was located sixteen feet south of SB-07. This location was the on southwest side of the paved parking area. This area was used in a previous soil remediation action to store, aerate and possible disposal of previously excavated petroleum-impacted soils. The area is covered with asphalt. Boring operations revealed the site was underlain by a brown silty sand with gravel. No Petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 8 feet. Groundwater was not encountered.

# Sample Acquisition Area No. SB-09 - Location of the Former Pump Island:

The Area of Acquisition was located fourteen feet north of SB-10 or thirteen feet east of the garage's door. This location was at the northwest corner of the former fuel pump island and was covered with concrete. Boring operations revealed the site was underlain by a grey silty sand gravel with occasional gravel. Petroleum-like odors were detected at approximately 6 feet below ground surface and continued to the 11 foot level. Groundwater was encountered at approximately the 6 foot depth. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 17 feet. Groundwater samples were collected.

## Sample Acquisition Area No. SB-10 - Location of the Former Pump Island:

This location was northeast corner of the former fuel pump island and was covered with concrete. Boring operations revealed the site was underlain by a dark brown silty sand gravel with occasional gravel followed by a light brown silty sand with increasing gravel content. Petroleum-like odors were detected at approximately 14 feet below ground surface. Groundwater was encountered at approximately the 6 foot depth. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 16 feet. Groundwater samples were collected.

## Sample Acquisition Area No. SB-11 - Location of the Former Pump Island:

The Area of Acquisition was located fifteen feet south of SB-10. This location was southeast corner of the former fuel pump island and was covered with concrete. Boring operations revealed the site was underlain by a brown silty sand with occasional gravel followed but a light brown silty sand with decreasing gravel with depth. No Petroleum-like odors were detected. Groundwater was encountered at approximately the 6.5 foot depth. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 17 feet. Groundwater samples were collected.

# Sample Acquisition Area No. SB-12 - Location of the Former Pump Island:

The Area of Acquisition was located fourteen feet east of the southeast corner of the building. This location was at the southwest corner of the former fuel pump island and was covered with concrete. Boring operations revealed the site was underlain by a brown silty sand with occasional gravel followed but a tan light brown silty sand without gravel followed by a grey silty sand with no gravel. No petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 17 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-13 - Former Underground Storage Tank Locations:

The Area of Acquisition was located fifteen feet west of SB-15. This location on the northwest perimeter of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a brown silty sand with occasional gravel. No petroleum-like odors were detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 22 feet. No groundwater was encountered.

## Sample Acquisition Area No. SB-14 - Former Underground Storage Tank Locations:

The Area of Acquisition was located eleven feet south and five feet east of the southeast corner of the building. This location on the northeast perimeter of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a grey silty sand without gravel. At 22 feet, the point of drilling termination, a layer of gravel was encountered. A petroleum-like odor was detected at the 14 foot below ground surface. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 22 feet. No groundwater was encountered.

## Sample Acquisition Area No. SB-15 – Former Underground Storage Tank Locations:

The Area of Acquisition was located five feet south and fourteen feet east of the southeast corner of the building. This location on the northern side of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a brown well sorted sand that could be imported fill followed by a grey silty sand without gravel. A petroleum-like odor was detected at the 14 foot below ground surface. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered.

## Sample Acquisition Area No. SB-16 – Former Underground Storage Tank Locations:

The Area of Acquisition was located ten feet south of SB-15. This location is approximately in the center of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a brown well sorted sand that could be imported fill followed by a brown silty sand and clay mix. No petroleum-like odor was detected. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered

## Sample Acquisition Area No. SB-17 - Former Underground Storage Tank Locations:

The Area of Acquisition was located thirteen south of SB-16. This location is on the southern side of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a brown well sorted sand that could be imported fill followed by a brown silty sand and clay mix. There was a slight petroleum-like odor detected at 14 feet below ground surface. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered

# Sample Acquisition Area No. SB-18 - Former Underground Storage Tank Locations:

The Area of Acquisition was located thirteen south of SB-16. This location is on the southern side of the former gasoline underground storage tanks pit and was covered with asphalt. Boring operations revealed the site was underlain by a brown silty sand with occasional gravel followed by a grey silty sand without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 22 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-19 – Former Underground Storage Tank Locations:

Boring operations revealed the site was underlain by a brown silty sand with occasional gravel followed by a tan silty sand without gravel. This could be imported fill. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-20 – Former Underground Storage Tank Locations:

Boring operations revealed the site was underlain by a brown silty sand with occasional gravel at 4 feet, followed by a grey silty sand without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-21 - Former Underground Storage Tank Locations:

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a brown silty sand with gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 18 feet. No groundwater was encountered.

## Sample Acquisition Area No. SB-22 - Location of the Former Pump Island:

Boring operations revealed the site was underlain by a dark brown silty sand with gravel, followed by a brown silty sand with gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. Groundwater was encountered at 5 feet. A water sample was collected.

## Sample Acquisition Area No. SB-23 - Location of the Former Pump Island:

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a dark brown silty sand without gravel, followed by light brown silty sand without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 10 feet. Groundwater was encountered at 5 feet. There was a strong petroleum odor at 6 feet. A water sample was collected.

# Sample Acquisition Area No. SB-24 - Location of the Former Pump Island:

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a grey silty sand without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 10 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-25 - Southeast Corner Of The Site (Outside the Tank Pit):

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a grey silty sand also without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 13 feet. Groundwater was encountered at 5 feet. A water sample was collected. There was a petroleum odor at both 10 and 13 feet.

# Sample Acquisition Area No. SB- 26 - Location of the Former Pump Island:

Boring operations revealed the site was underlain by a dark brown silty sand without gravel, followed by a grey silty sand without gravel, followed by a grey silty sand. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. No groundwater was encountered.

## Sample Acquisition Area No. SB-27 -Location of the Former Pump Island :

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a grey silty sand without gravel. Soil samples were collected at 2 foot intervals starting at 2 feet below ground surface with penetration terminated at 12 feet. No groundwater was encountered.

# Sample Acquisition Area No. SB-28 - Southeast Corner Of The Site (Outside the Tank Pit):

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a brown well sorted sand without gravel. Soil samples were collected at 2 foot intervals starting at 14 feet below ground surface with penetration terminated at 20 feet. No groundwater was encountered but there was water leakage that collected into the boring hole and a water sample was collected. There was a strong petroleum odor at 14 feet, a slight petroleum odor at 16 feet and no odor at 18 feet.

# Sample Acquisition Area No. SB-29 - Near The Lamp Post In The Southeast Corner::

Boring operations revealed the site was underlain by a brown silty sand without gravel, followed by a brown silty sand with occasional gravel. Soil samples were collected at 2 foot intervals starting at 10 feet below ground surface with penetration terminated at 20 feet. No groundwater was encountered.

#### SECTION III. ANALYTICAL RESULTS

## ANALYSIS OF WATER SAMPLES:

# Gasoline, Diesel & Oil (TPH) Constituents in Water:

All samples were compared to the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	Gasoline Range Organics
SB-9-W	12-7-11	12,000 ug/L
SB-10-W	12-7-11	4,300 ug/L
SB-11-W	12-7-11	1,500 ug/L
SB-22-W	2-2-12	630 ug/L
SB-23-W	2-2-12	11,000 ug/L
SB-25-W	2-2-12	18,000 ug/L
SB-28-W	2-2-12	12,000 ug/L
MTCA Cleanup Levels		800/1,000 ug/L

<sup>\*</sup> ug/L is the same as parts per billion ('ppb')

# Fuel Additives in Water (Method 8260):

Sample Number	Date Analyzed	MTBE	1,2 Dichloroethane
SB-28-W	2-2-12	ND	ND
MTCA Cleanup Levels		20 ug/L*	5 ug/L

<sup>\*</sup> ug/L is the same as parts per billion ('ppb')

# Ethylene Dichloroethane (EDC) in Water by Method 8011:

All samples were compared to the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels

Sample Number	Date Analyzed	Ethylene Dichloroethane
SB-28-W	2-2-12	ND
		0.01 ./ [*
MTCA Cleanup Levels		0.01 ug/L*

<sup>\*</sup> ug/L is the same as parts per billion ('ppb')

All samples were compared to the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

# Benzene, Toluene, Ethylbenzene & Xylenes (BTEX) Constituents in Water Concentrations:

Sample Number	Date Analyzed	Benzene	Toluene	Ethylbenzene	Xylenes
SB-9-W	12-7-11	5.8 ug/L	1.7 ug/L	5.2 ug/L	2.3 ug/L
SB-10-W	12-7-11	2.8 ug/L	ND	2.6 ug/L	7.6 ug/L
SB-11-W	12-7-11	ND	ND	ND	ND
SB-12-W	12-7-11	ND	ND	ND	ND
SB-22-W	2-2-12	ND	ND	ND	ND
SB-23-W	2-2-12	ND	ND	ND	ND
SB-25-W	2-2-12	3.3 ug/L	1.6 ug/L	21 ug/L	15 ug/L
SB-28-W	2-2-12	22g/L	16g/L	130g/L	200g/L
MTCA Cleanup Levels		5.0 ug/L*	1,000 ug/L	700 ug/L	1,000 ug/L

<sup>\*</sup> ug/L is the same as parts per billion ('ppb')

#### **ANALYSIS OF SOIL SAMPLES:**

## Diesel & Oil (TPH) Constituents in Soil:

All samples were below the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	Diesel Range Organics	Lube Oil Range Organics
SB-1-12	12-5-11	ND	ND
SB-2-12	12-5-11	ND	ND
SB-3-12	12-5-11	ND	ND
SB-4-11	12-5-11	ND	ND
SB-5-8	12-5-11	ND	ND
MTCA Cleanup Levels		2,000 mg/kg	2,000 mg/kg

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

## Gasoline (TPH) Constituents in Soil:

Sample Number	Date Analyzed	Gasoline Range Organics
SB-1-12	12-8-11	ND
SB-2-12	12-8-11	ND
SB-3-12	12-8-11	ND
SB-4-11	12-8-11	ND g
SB-5-8	12-8-11	ND
SB-6-4	12-8-11	ND
SB-7-4	12-8-11	ND
SB-8-4	12-8-11	ND
SB-9-8	12-8-11	99 mg/kg

SB-9-17	12-8-11	ND
SB-10-10	12-8-11	17
SB-10-16	12-9-11	ND
SB-11-17	12-9-11	ND
SB-12-8	12-9-11	36 mg/kg
SB-12-14	12-9-11	ND
SB-13-14	12-9-11	ND
SB-14-14	12-9-11	73 mg/kg
SB-14-17.5	12-9-11	ND
SB-15-14	12-9-11	66
SB-15-18	12-9-11	ND
SB-16-12	12-9-11	150 mg/kg
SB-16-18	12-9-11	15 mg/kg
SB-17-14	12-9-11	14 mg/kg
SB-17-18	12-9-11	ND
SB-18-14	2-1-12	ND
SB-19-14	2-1-12	ND
SB-20-14	2-1-12	ND
SB-20-18	2-1-12	ND
SB-21-10	2-1-12	ND
SB-21-18	2-1-12	ND
SB-22-8	2-2-12	ND
SB-22-10	2-2-12	ND
SB-23-8	2-2-12	ND
SB-23-10	2-2-12	ND
SB-25-2	2-2-12	ND
SB-25-8	2-2-12	4,900 mg/kg
SB-25-13	2-2-12	ND
SB-26-8	2-2-12	ND

SB-27-8	2-2-12	ND
SB-27-14	2-2-12	ND
SB-28-14	2-2-12	ND
SB-28-18	2-2-12	ND
SB-29-12	2-2-12	ND
SB-29-18	2-2-12	ND
MTCA Cleanup Levels		30 / 100 mg/kg**

## Benzene, Toluene, Ethylbenzene & Xylenes (BTEX) Constituents in Soil **Concentrations:**

Sample Number	Date Analyzed	Benzene	Toluene	Ethylbenzene	Xylenes
SB-1-12	12-8-11	ND	ND	ND	ND
SB-2-12	12-8-11	ND	ND	ND	ND
SB-3-12	12-8-11	ND	ND	ND	ND
SB-4-11	12-8-11	ND	ND	ND	ND
SB-5-8	12-8-11	ND	ND	ND	ND
SB-6-4	12-8-11	ND	ND	ND	ND
SB-7-4	12-8-11	ND	ND	ND	ND
SB-8-4	12-8-11	ND :	ND	ND	ND
SB-9-8	12-8-11	ND	ND	ND	ND
SB-10-10	12-8-11	ND	ND	ND	ND
SB-10-16	12-9-11	ND	ND	ND	ND
SB-11-17	12-9-11	ND	ND	ND	ND

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

\*\* MTCA cleanup levels for gasoline without benzene is 100 mg/kg but for gasoline with benzene cleanup levels are 30 mg/kg. Refer to sample SB-9-W.

SB-12-8	12-9-11	ND	ND	ND	ND
SB-12-14	12-9-11	ND	ND	ND	ND
SB-13-14	12-9-11	ND	ND	ND	ND
SB-14-14	12-9-11	ND	ND	ND	ND
SB-14-17.5	12-9-11	ND	ND	ND	ND
SB-15-14	12-9-11	ND	ND	0.14 mg/kg	0.64 mg/kg
SB-15-18	12-9-11	ND	ND	ND	0.07
SB-16-12	12-9-11	ND	ND	ND	ND
SB-16-18	12-9-11	ND	ND	ND	ND
SB-17-14	12-9-11	ND	ND	ND	ND
SB-17-18	12-9-11	ND	ND	ND	ND
SB-18-14	2-1-12	ND	ND	ND	ND
SB-19-14	2-1-12	ND	ND	ND	ND
SB-19-14	2-1-12	ND	ND	ND	ND
SB-21-10	2-1-12	ND	ND	ND	ND
SB-21-18	2-1-12	ND	ND	ND	ND
SB-20-14	2-1-12	ND	ND	ND	ND
SB-20-18	2-1-12	ND	ND	ND	ND
SB-22-8	2-2-12	ND	ND	ND	ND
SB-22-10	2-2-12	ND	ND	ND	ND
SB-22-8	2-2-12	ND	ND	ND	ND
SB-23-8	2-2-12	ND	ND	ND	ND
SB-23-10	2-2-12	ND	ND	ND	ND
SB-25-2	2-2-12	ND	0.08 mg/kg	0.56 mg/kg	0.58 mg/kg
SB-25-8	2-2-12	ND	ND	ND	ND
SB-25-13	2-2-12	ND	ND	ND	ND
SB-26-8	2-2-12	ND	ND	ND	ND
SB-27-8	2-2-12	ND	ND	ND	ND

SB-27-14	2-2-12	ND	ND	ND	ND
SB-28-14	2-2-12	ND	ND	ND	ND
SB-28-18	2-2-12	ND	ND	ND	ND
SB-29-12	2-2-12	ND	ND	ND	ND
SB-29-18	2-2-12	ND	ND	ND	ND
MTCA Cleanup Levels		0.03 mg/kg	7.0 mg/kg	6.0 mg/kg	9.0 mg/kg

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

# Analysis of Polynuclear Aromatic Hydrocarbons (PAH's) in Soil by Method 8270:

All samples were below the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	PAHs	
SB-2-12	12-7-11	ND	

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

# Analysis of Chlorinated Volatile Organic Compounds (VOC's) in Soil by Method 8260CL:

Sample Number	Date Analyzed	VOCs	
SB-2-12	12-8-11	ND	

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

## MTCA 5 Metals in Soil Concentrations by Method 6020:

All samples were below the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	Lead	Cadmium	Chromium	Arsenic	Mercury
SB-2-12	12-8-11	ND	ND	32 mg/kg**	ND	ND
MTCA Cleanup Levels		250 mg/kg	2.0 mg/kg	19 / 2,000 mg/kg	20.0 mg/kg	2.0 mg/kg

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

# Hexavalent Chromium in Soil Concentrations by Method SM3500Cr-D/SW846 7196A:

All samples were below the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	Hexavalent Chromium
SB-2-12	12-9-11	ND
MTCA Cleanup Levels		19 mg/kg

# Analysis of Lead in Soil by Method 8260:

Sample Number	Date Analyzed	Lead
SB-6-4	12-7-11	78 mg/kg
SB-9-8	12-7-11	ND
SB-15-14	12-7-11	ND
MTCA Cleanup Levels		250 mg/kg

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

<sup>\*\*</sup> sample was tested for Hexavalent Chromium on 12-9-11. Refer to the chart below.

## Analysis of Polychlorinate Biophenyls (PCB's) in Soil by Method 8082:

All samples were below the most stringent State of Washington Model Toxics Control Act Method "A" Residential Unrestricted Use cleanup levels.

Sample Number	Date Analyzed	PCB's
SB-2-12	December 9, 2011	ND
MTCA Cleanup Levels		1.0 mg/kg

<sup>\*</sup> mg/kg is the same as parts per million ('ppm')

#### APPLICABLE ANALYTICAL METHODOLOGIES AND PARAMETERS

The analysis parameters requested were chosen to provide a comprehensive characterization of the subsurface soils and/or water present at the Site Areas of Concern and to comply with State of Washington recommended analysis parameters.

## **Analytical Methodology:**

### **Gasoline Range Organics**

Northwest Total Petroleum Hydrocarbons (Method NWTPH-Gx)

### Diesel & Oil Range Organics

State of Washington NWTPH-Dx/Dx Extended

#### **Residual Range Organics**

State of Washington NWTPH-Dx/Dx Extended

## **Volatile Organic Compounds**

EPA Method 8260B

## **Laboratory Analysis:**

Laboratory analysis was provided by:

ESN Northwest Chemistry Laboratory 1210 Eastside Street S.E., Suite No.200 Olympia, Washington 98501 (360) 459-4670

#### SECTION IV. CONCLUSIONS

#### Conclusions:

#### Area of Concern No.1 - Former Underground Storage Tank Pit.

The original tank excavation appears to have varied from 12 to 14 feet below ground surface. This Phase III Investigation identified levels of gasoline in the soils above the Model Toxics Control Action ("MTCA") most stringent Cleanup Levels in the center of the former tank pit of 150 parts per million ("ppm") at 12 feet below grade; however at 18 feet below grade the gasoline was non-detect. Two boring locations adjoining the north edge of the former tank identified gasoline concentrations of 73 ppm and 66 ppm at 14 feet below grade; however these locations were both non-detect at 18 feet below

ppm and 66 ppm at 14 feet below grade; however these locations were both non-detect at 18 feet below grade. The MTCA Cleanup Level for gasoline is 100 ppm when no benzene is present, and 30 ppm when benzene is present. The soils in the tank pit are all non-detect for benzene; however, the groundwater samples collected to the east of the tank pit – in the assumed downgradient location – exhibited levels of benzene above the MTCA Cleanup Level. Groundwater was not encountered at any of the boring locations inside the former tank pit.

#### Area of Concern No.2 - Former Pump Island:

The area adjoining the former dispenser island has never been excavated. Borings around the former pump island revealed gasoline presence in the soils between 36 and 99 ppm at 8 feet below grade; however gasoline in soil was non-detect at 10 to 17 feet below grade. Benzene was non-detect at all of the boring locations.

Groundwater was encountered at three of the four boring locations adjoining the pump island, and at two boring locations between the pump island and the sidewalk to the east (assumed down gradient location) varying from 5 to 6.5 feet below ground surface. Based upon observed Site conditions, it is likely this water is actually perched within the area of the original pump island installation excavation, and may not be representative of overall Site groundwater conditions.

The groundwater gasoline concentrations around the pump island were 1,500, 4,300, and 12,000 parts per billion ("ppb"); the MTCA Cleanup Level is 800 ppb since benzene was also identified in the groundwater. The assumed down gradient boring located adjoining the sidewalk reported 11,000 ppb gasoline.

It is possible that the source of contamination may be both the historical leakage of the pumps and connecting piping, and the presence of abandoned piping with residual petroleum leakage.

#### **Area of Concern No.3 - Southeastern Property Quadrant:**

This Area of Concern is south of the pump island and east of the former tank pit extending to South Pacific Street on the east and South 46<sup>th</sup> Street on the south. It is assumed to be down gradient from the former tank pit and cross gradient from the pump island.

Three borings were performed in this area to an average depth of 13 to 20 feet below ground surface. Boring location SB-25, located east of the former tank pit, reported elevated gasoline in soils concentrations (4,900 ppm) at 8 feet below grade, and non-detect at 13 feet below grade. This gasoline in soil concentration is the highest reported concentration measured on the Site.

Groundwater was encountered at two boring locations east of the former tank pit. The location the closest to the former tank pit (Boring SB 28) reported gasoline in water of 12,000 ppb, while the located further east (SB 25) reported gasoline in water of 18,000 ppb. This may indicate that the plume of groundwater contamination is increasing in concentration as it nears South Pacific Street.

#### STATEMENT OF THE LICENSED GEOLOGIST

As stipulated in the Regulatory Code of the State of Washington Title 18, Chapter 18.220, the undersigned is a licensed Geologist in the State of Washington, and has met the statutory requirements of RCW § 18.220.060 for such licensing including, but not limited to, educational requirements, work and field experience, examination proficiency, and acceptance by the State Licensing Board.

The undersigned Licensed Geologist has supervised the geological work performed as described in attached Report – a majority of said work being performed by employees of the firm which employs undersigned Licensed Geologist – as delineated in RCW Title 18, Chapter 18.220, Paragraph 190.

Signature of:

Licensed Professional Geologist: Licensed Professional Hydrogeologist: Licensed Professional Engineering Geologist:

Michael McGowan State of Washington License No 1737

## DEFINITIONS SPECIFIC TO LIMITED & TARGETED PHASE II ASSESSMENT

**Background Concentration....** the concentration of a target analyte in groundwater, surface water, air, soil gas, sediment, or soil at a referenced location near a release or potential release area under investigation, which is not attributable to the release under investigation. Background samples may contain the target analyte, due to either naturally occurring or manmade sources, but not due to the release(s) in question. (See, E 1903-97, § 3.1.3).

Phase III Environmental Site Assessment.... This practice (ASTM E 1903-97, Reapproved 2002) defines a commercially practical process for sound Phase II investigation that includes sampling and chemical testing. Such Phase II investigation is performed, at a minimum, to confirm the actual presence of contamination in environmental media at a property where prior assessment had indicated that contaminants may occur due to releases or potential releases of substances to the environment at the property, or to demonstrate prior to property acquisition that contamination by targeted analytes is absent. (See, E 1903-97, § 1.1.1).

Phase III Environmental Site Assessment Limitations.... "This practice [ASTM E1903-97, Reapproved 2002] recognizes that the *Phase II ESA* process can be applied either to an overall assessment of a property with respect to all releases and potential releases at the property, or to an evaluation targeted to a specific release or potential release. It a property-wide assessment is not necessary to meet the particular *User* objective, then the Phase II investigation process described herein should be applied to generate sound information regarding the specific question of problem to be resolved. If a Phase II investigation does not address all releases and potential releases identified at a property, the report of the assessment must be denoted as a "*Targeted Phase II*" Environmental Site Assessment. [E 1903-97, § 1.1.3]"

Phase III Targeted Environmental Site Assessment.... This Phase II Site Assessment is "targeted" as defined by the ASTM Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, Designation E 1903-97 (Reapproved 2002); "an assessment performed in accordance with the process described in this [E 1903-97] practice, which addresses only certain releases or potential releases, or certain target analytes, at a property as selcted by the User but which does not address all releases, potential releases, and target analytes. [E 1903-97, § 3.1.43]"

**Prior Knowledge...** "This Standard Practice [ASTM E 1903-97, Reapproved 2002] assumes ... that all reasonably ascertainable information, including but not limited to prior Phase I Environmental Site Assessment Reports, will be considered in conducting a Phase II ESA and interpreting its results. [E 1903-97, § 1.1.2]."

Targeted Analytes.... substances that have been released or potentially have been released to environmental media at the site, and which are of interest in the context of the particular Phase II ESA and its objectives, the presence of which will be sought and concentrations of which will be quantified through field screening or chemical testing. (See, E 1903-97, § 3.1.63).

## **REPORT ENDNOTES**

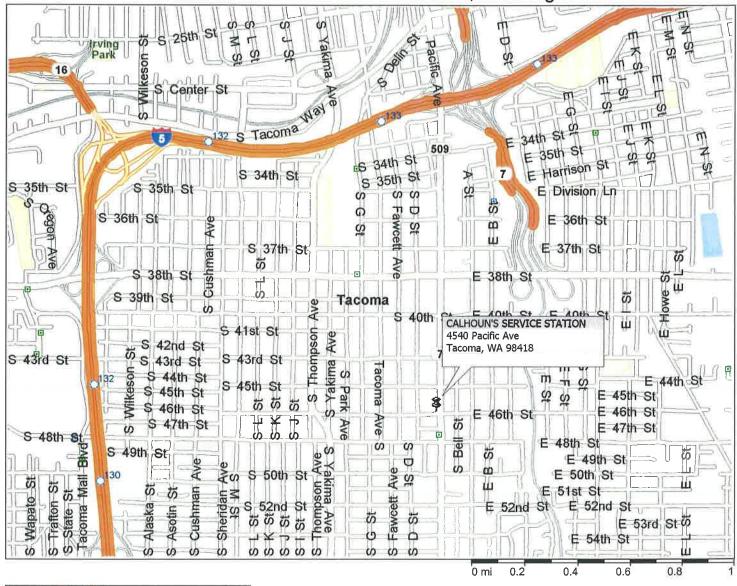
1. This Phase II Site Assessment is "targeted" as defined by the ASTM Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, Designation E 1903-97 (Reapproved 2002); "an assessment performed in accordance with the process described in this [E 1903-97] practice, which addresses only certain releases or potential releases, or certain target analytes, at a property as selected by the User but which does not address all releases, potential releases, and target analytes. [E 1903-97, § 3.1.43]"

# **APPENDIX**

- Site Location and Photographs
- Project Contract Documents
- Project Correspondence / Boring Logs
- Analytical Results
- Chain of Custody

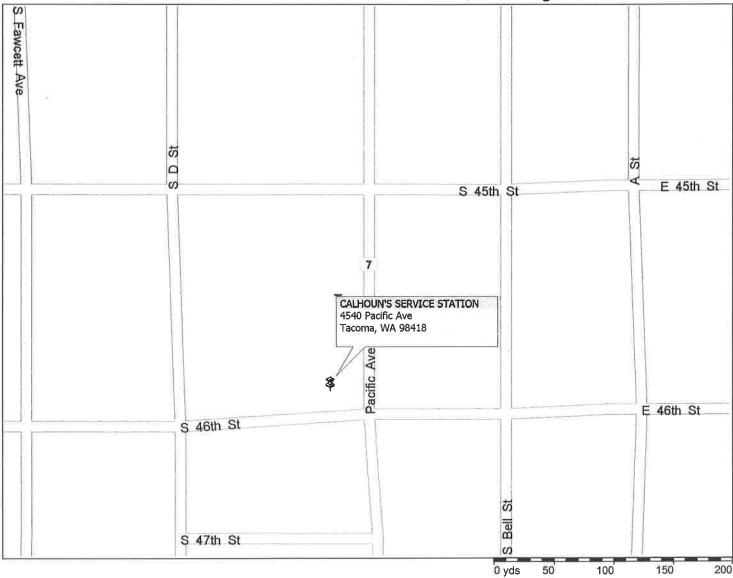
• Site Location and Photographs

# Calhoun's Service Station - Tacoma, Washington



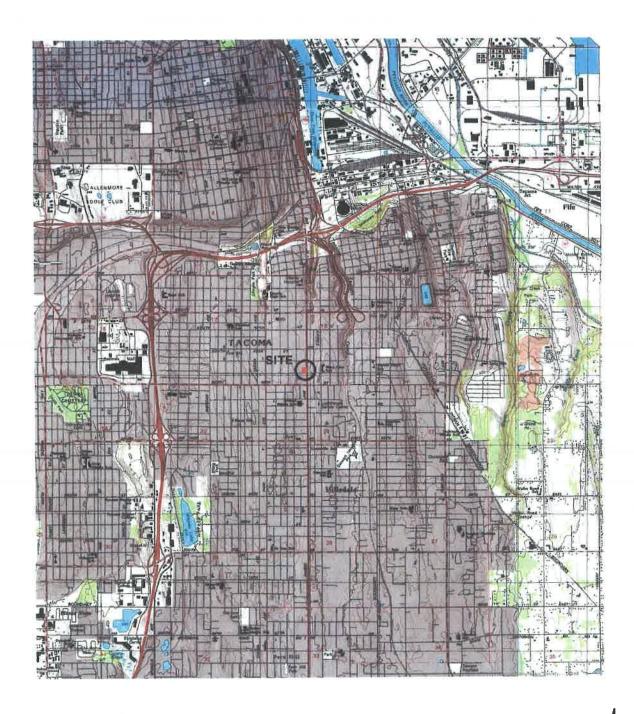


Calhoun's Service Station - Tacoma, Washington



## **Pushpins**

My Pushpins





Aerotech Environmental Consulting, Inc 19600 International Blvd., Ste. 101

Seattle, Washington

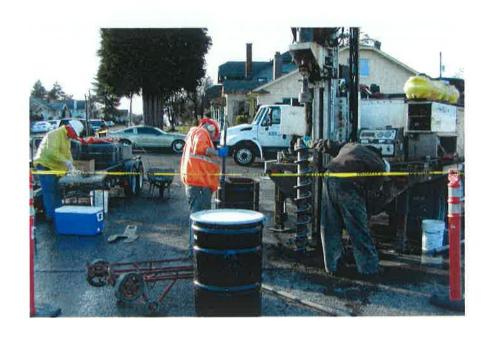
Drawing by McDermott | 5 Dec 2011

NORTH

# USGS Topographic Map

Calhoun Service Station 4540 Pacific Avenue, Tacoma, WA Calhoun's Service Station
Phase 3 Investigation
Page 1 of 2

Boring Location SB-14





Boring Location SB-22





Calhoun's Service Station Phase 3 Investigation Page 2 of 2

Boring Location SB-26





**Boring Location SB-25** 





• Project Contract Documents

### AEROTECH ENVIRONMENTAL CONSULTING, INC.

Professional Service Agreement
Limited and Targeted
Phase III Environmental Investigation

Parties. This Agreement is made this 24th day of January, 2011 between:

P.O. Box 1929 928 Tacoma, Washington 98401

subsequently referred to as "Client", and Aerotech Environmental Consulting, Inc., subsequently referred to as "Aerotech".

Subject Project. By joining in this Agreement, Client retains Aerotech to provide services in regard to the Project located at and referred to as:

Callhoun's Service Station 4540 Pacific Avenue Tacoma, Washington 98418

Scope. By this Agreement and relative to environmental issues raised in the *Phase I Environmental Site Assessment* performed by Aerotech Environmental Consulting, Inc., on November 28, 2011, Project No.211 - 5233; and the *Phase II Limited & Targeted Subsurface Investigation* performed by Aerotech Environmental Consulting, Inc., dated December 15, 2011, Project No.211 - 7002

Additionally, the Scope of Work follows the recommendations of the State of Washington Department of Ecology Southwest Regional Office regarding the subsurface investigation of former gasoline service stations.

The Scope of Services on this Project is limited to:

SITE SUBSURFACE CHARACTERIZATION – Prior to the start of on Site boring activities, (1) a Ground Penetrating Radar Survey of the Areas of Concern will be performed by properly trained third-party professionals; and (2) an on Site Utilities Locate will be performed by third-party professionals in addition to the Location Services performed the potentially affected public and private utilities.

AREA OF CONCERN NO. 1: FORMER UNDERGROUND STORAGE TANK LOCATIONS — Objective to characterize the subsurface contamination originating from the former operations of three underground storage tanks located generally on the south side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located south of the station building to South 46th Street. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

- (i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a) gasoline; and (b) fuel additives
- (ii) borings at AOC locations to be performed to an average fourteen to eighteen foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between five and six;
- (iii) independent laboratory analysis of at least eighteen soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX (Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;
  - (iv) independent laboratory analysis of at least four soil (or in the alternative

groundwater) samples for COCs for State of Washington protocol Fuel Additives (1-2 dibromoethane; 1-2 dichlorethane, and methyl tertiary-butyl ether ("MTBE"));

- (v) independent laboratory analysis of four soil (or in the alternative groundwater) samples for COCs for RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;
- (vi) analytical response time 7 business days from sample submission, report preparation as defineated in the Schedule section of this Agreement;
- (vii) a report of activities, observations, and findings will be prepared and delivered as agreed in the Schedule section of this Agreement;
- (viii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions — It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

AREA OF CONCERN NO. 2: LOCATION OF THE FORMER PUMP ISLAND — Objective to characterize the subsurface contamination originating from location of the original two pump dispenser located on the east side of the station building via a Limited and Targeted Subsurface Investigation. The Area of Concern (AOC") is located along the eastern Property boundary. Investigation may or may not delineate the extent of contamination. Scope of Work to include:

- (i) soil explorations at Site AOC location to identify the existence of contamination as determined by the Scope of Work for Site-related constituents, including: (a) gasoline and (b) fuel additives;
- (ii) borings at AOC locations to be performed to an average four to ten foot depth below ground surface by powered drilling equipment. Total number of subsurface penetrations between eight and ten;
- (iii) independent laboratory analysis of at least sixteen soil (or in the alternative groundwater) samples for COCs for State of Washington protocol THP-Gas and BTEX (Benzene, Toluene, Ethylbenzene, Xylene) via EPA SW-846 Method 8020;
- (iv) independent laboratory analysis of at least two soil (or in the alternative groundwater) samples for COCs for State of Washington protocol Fuel Additives (1-2 dibromoethane; 1-2 dichlorethane, and methyl tertiary-butyl ether ("MTBE"));
- (v) independent laboratory analysis of two soil (or in the alternative groundwater) samples for COCs for State of Washington RCRA TCLP Lead via EPA SW-846 Method 6010/GFAA with prep EPA SW-846 Method 1311;
- (vi) analytical response time 7 business days from sample submission, report preparation as delineated in the Schedule section of this Agreement;
- (vii) a report of activities, observations, and findings will be prepared and delivered as agreed in the Schedule section of this Agreement;
- (viii) site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Groundwater Sampling Exclusions – It is possible that groundwater will be encountered during the subsurface boring activities; samples will be collected. As a result, groundwater well installation and permanent groundwater monitoring is excluded from the Scope of Work of this Proposal.

Potential Client Reporting Responsibilities: As a result of State of Washington requirements under the Leaking Underground Storage Tank regulation and other environmental regulations, site owners and/or operators may have responsibility for notification to local, State, or Federal agencies of suspected releases. The Client is advised to make their own determination of the necessity for reporting under applicable regulations.

Potential Waste Disposal: Site activities may produce soil spoils that will be drummed and left on-site. Management and disposal of this material is not the responsibility of Aerotech.

Client's Responsibilities: As applicable to this Agreement the Client will (i) provide all information available to Client pertinent to the Project, including previous reports and any other data, and Aerotech may rely on such information without confirmation; (ii) provide rights of access or permission to enter the property or to enter upon public or private lands as required for Aerotech to perform its services under this Agreement; (iii) designate a person to act as the Client's Key Site Manager with respect to the services to be rendered under this Agreement; (iv) where applicable identify known underground utilities and subsurface structures; and (v) to supply Aerotech a steady and sufficient source of potable water and electrical power.

Conditions: Prior to the start of work, Aerotech will contact the appropriate Utility Locating Information Service for Excavators to request identification of underground utilities located at the Site. Aerotech cannot be held responsible for utilities not identified by Service, the owner, or owner's designee. The Scope of Work may include activities that require the use of heavy equipment which may cause damage to deciduous vegetation, shrubs, small trees, landscaped, or paved surfaces. The Scope of Work may include equipment that requires significant amounts of water for proper operation. While Aerotech will make an effort to avoid damage or impact, Aerotech cannot be held responsible for damages due to equipment operation, weight, or by water.

Representations and Warranties of Third Parties: Aerotech may rely without confirmation upon information provided by others and federal, state, and local agencies, pertinent to the project. When applicable, Aerotech will contact the Utility Locating Service prior to subsurface activities. Underground utilities not identified by the Locating Service or the Key Site Manager are not the responsibility of Aerotech.

Standard of Care/Warranty: Aerotech shall perform its services in accordance with generally accepted practices and standards prevailing in the locality of the Project current at the time the services are performed and not according to later standards.

Ownership and Use of Documents: Reports are prepared for the exclusive use by, and are the property of the Client, but may be used or referred to by Aerotech for like or similar work for others. Client shall hold harmless and indemnify Aerotech from and against any and all claims for damages arising out of, or in any way connected with, the use of reports by any person, corporation, agency or partnership not a party to this Agreement.

Successor and Assigns: Neither the Client nor Aerotech shall assign, sublet or transfer any rights under or interest in this Agreement without the written consent of the other and except to the extent that this limitation may be restricted by law. Nothing herein shall be construed to give any rights or benefits to anyone hereunder other than the Client or Aerotech.

Fee: This offer is valid for 30 days from the date of offering of this agreement. Aerotech agrees to provide the services described in this Agreement for the stipulated fee of:

#### Schedule of Fees:

Phase II Scope of Work: Underground Private Utilities Locate Ground Penetrating Radar:

#### Total Phase II Investigation:

Payment: Client shall pay to Aerotech the sum stipulated within 20 days of receipt of completed Report.

Schedule: Aerotech agrees to provide 2 copies of the report or document no later than 20 business days following receipt of this signed Professional Service Agreement at Aerotech offices.

Limitations: This Phase 3 Limited and Targeted Environmental Site Investigation is an intrusive examination of Site conditions. As such, it cannot be a full and complete assessment of every possible environmental condition. Adverse conditions may exist that could not be discovered by the Investigation; however, Aerotech has made every reasonable effort within the confines of the Scope of Work to discover and interpret the information and current conditions regarding the site within the time period available. This Assessment must not be regarded as a guarantee that no further contamination exists beyond what may have been suspected or detected by the Investigation. Any and all liability for damages, injury, or harm, either direct, indirect, or consequential are hereby limited to the direct damages or ten times the Aerotech fee for services, whichever is smaller. In no situation, will the Aerotech liability exceed the available insurance coverage available to Aerotech, and in effect at the time of the claim.

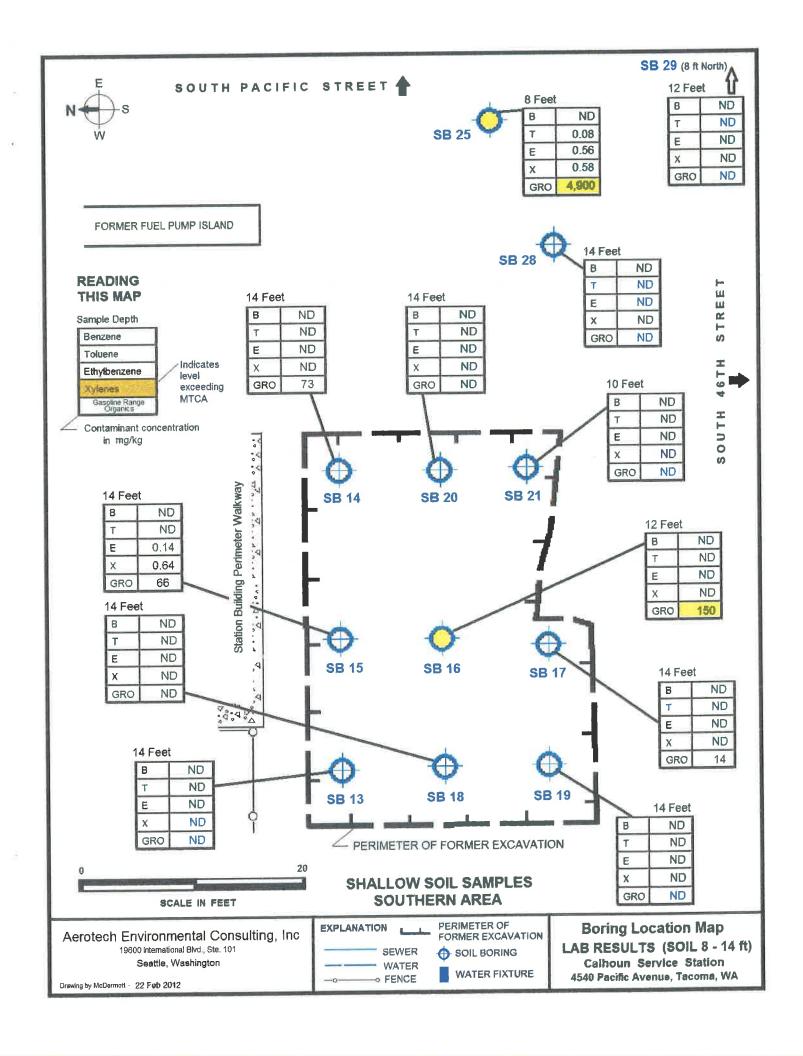
Authorized Representative: Client designates the undersigned or another as directed, as Client's authorized representative to act in Client's behalf with respect to the services to be performed by Aerotech.

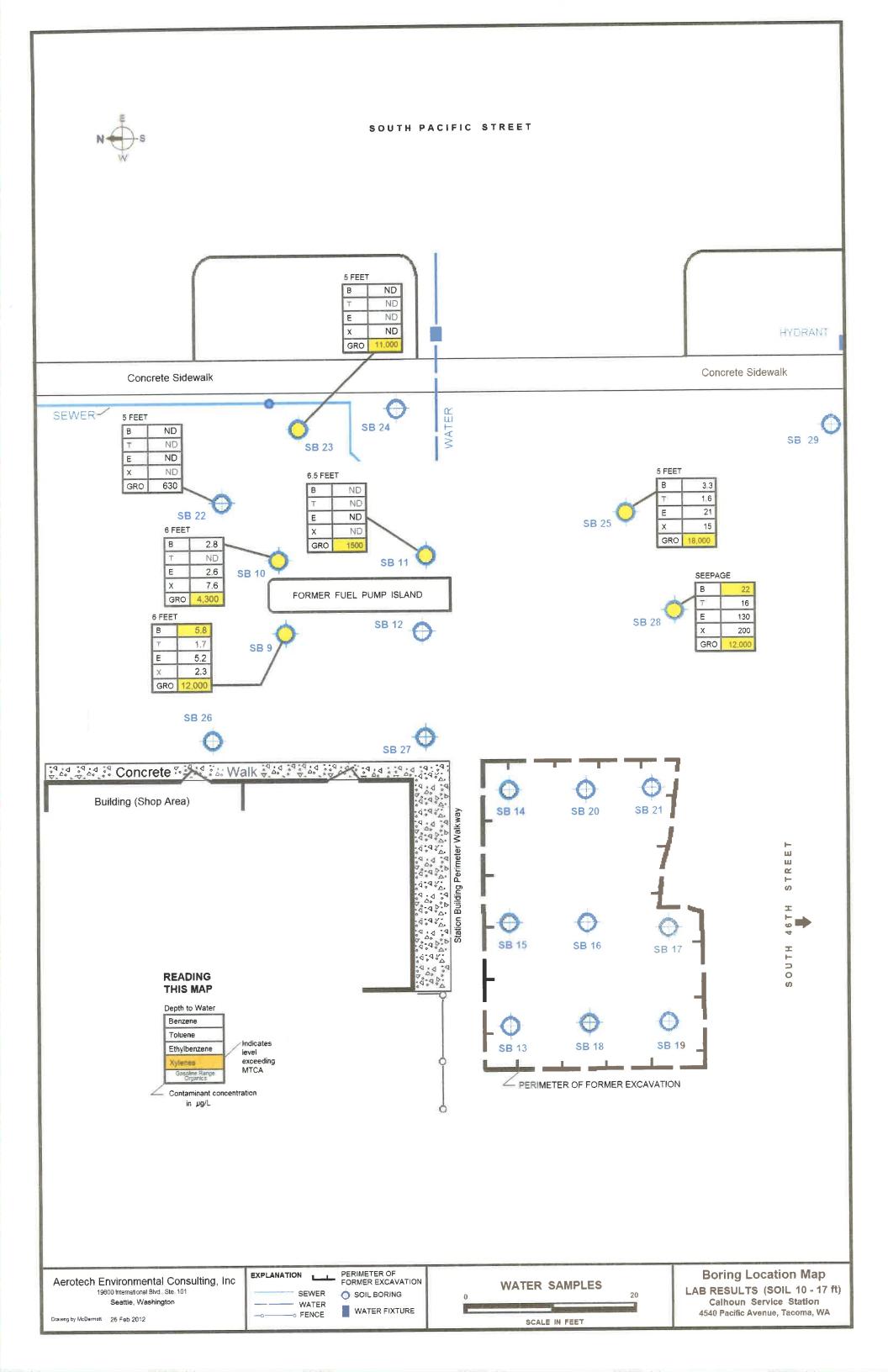
Governing Law: This Agreement made under and shall be governed by and construed and enforced under the laws of the state of Washington, County of King. By signing this Agreement, the undersigned affirms possession of the required authority to executed this Agreement on behalf of the named parties.

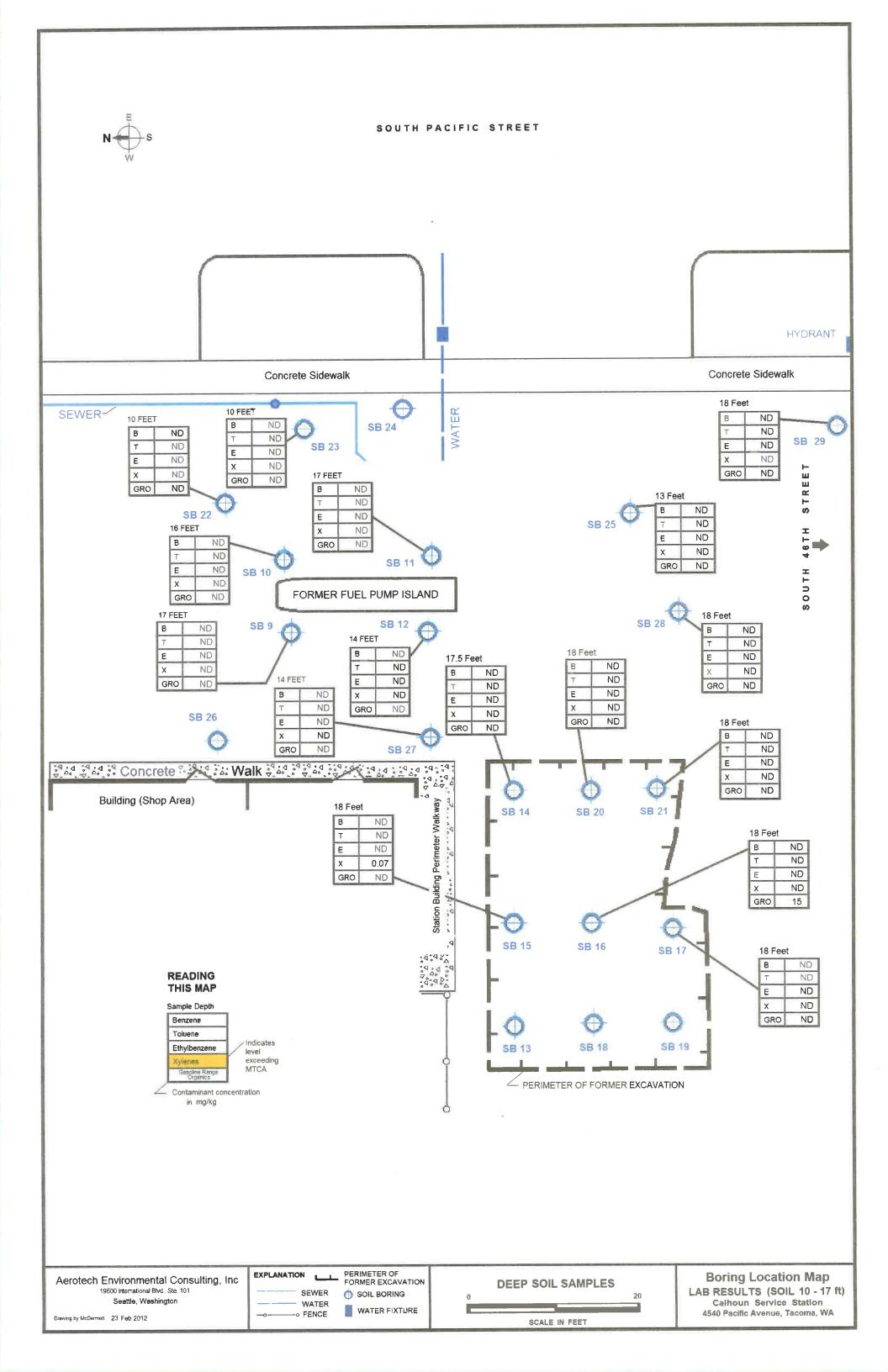
Authorized by: Acapted by	Accepted by: Anthorized by
AEROTECH ENVIRONMENTAL CONSULTING INC.	· CALHOLIN FAMILY, LLE AFROTERIA
(Signature) CALLION FAMILY	(Signature)
Atlan T. Blotch Karen Colhan	(Print name)
President	・ (Print title)
1/28/2 (Date)	Date   12

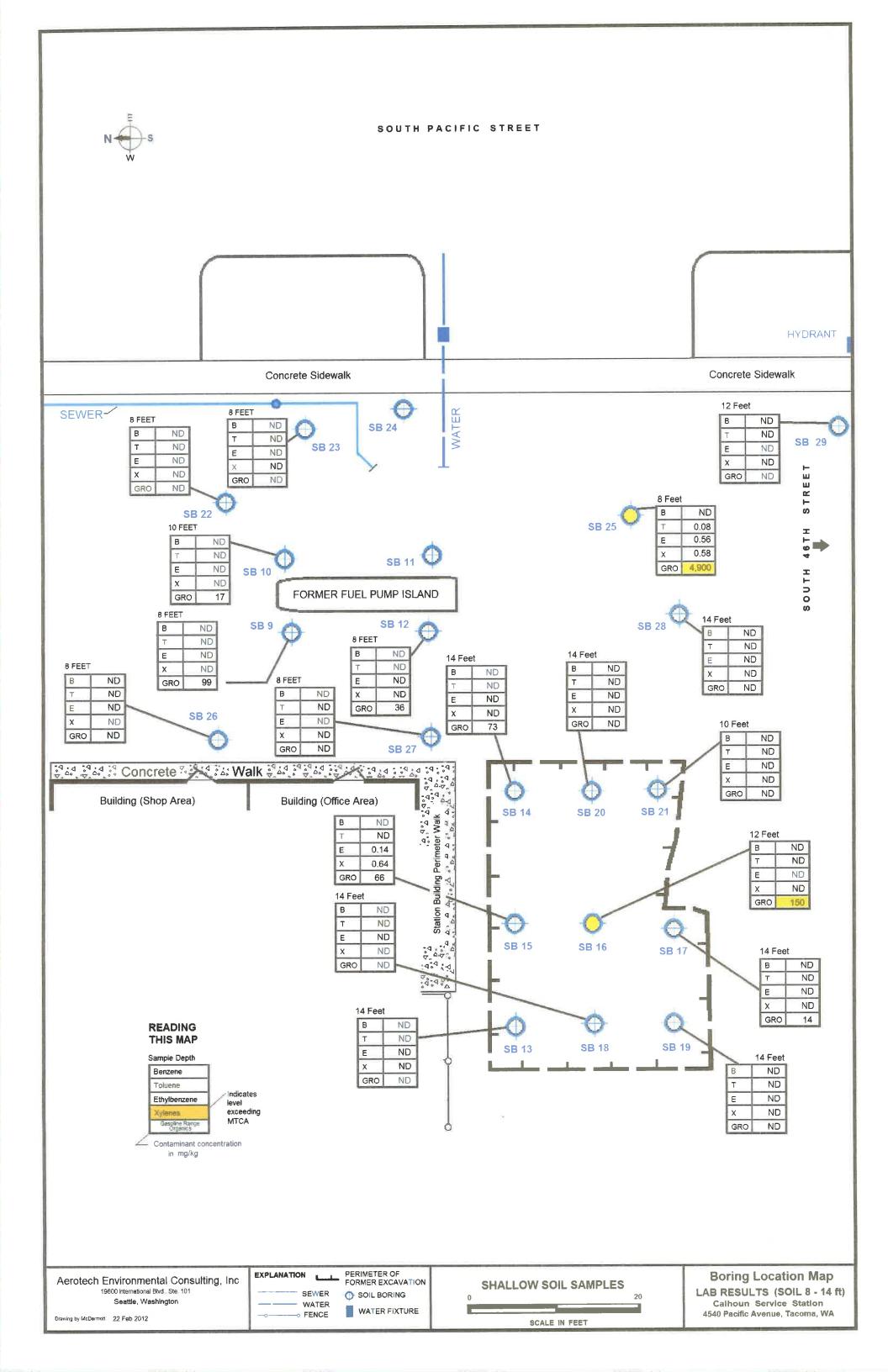
Service Agreement No. 2012-01-24.1
AEROTECH ENVIRONMENTAL CONSULTING, INC.
19600 International Blvd., Suite 101
Sea Tac, Washington 98188

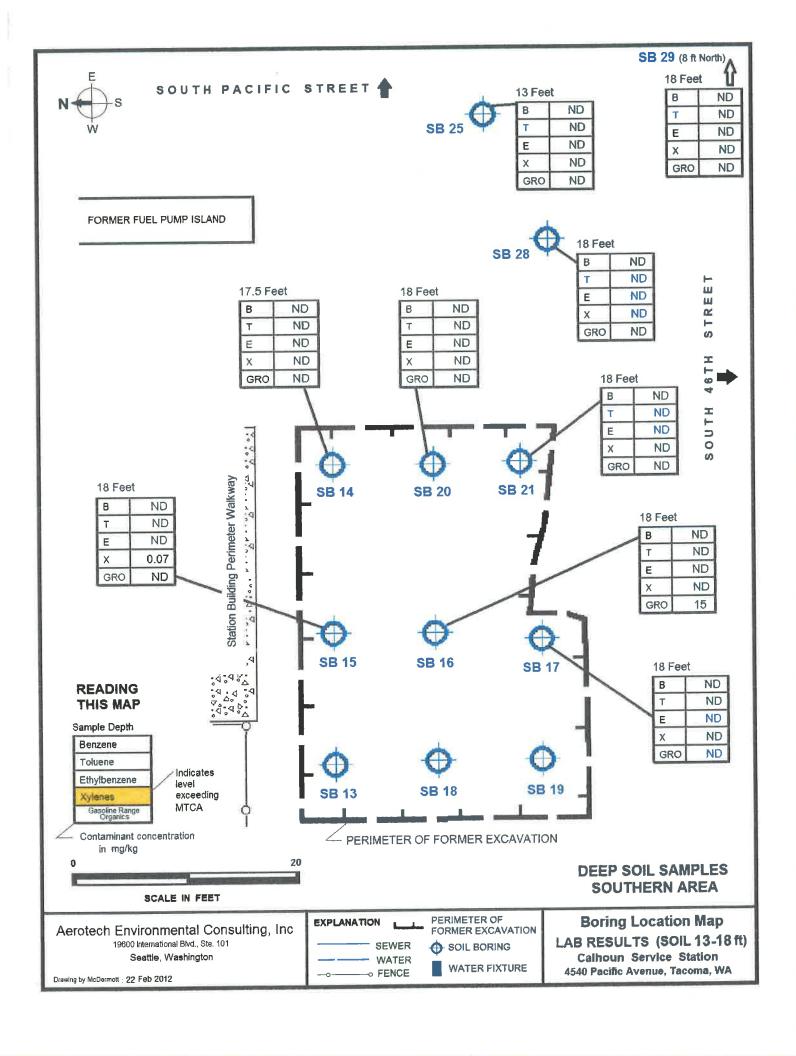
Phone: (360) 710-5899 Fax: (206) 402-3473 • Project Correspondence & Boring Logs











	-			-	BOI	RING LOG #: SB-1	Page 1 of 1
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Project Number: 211-7002 Drilling Method: Geoprobe Drillers Name: Borshole Dlameter: Sampler Type: Sampler Type: Sampler Type: Sampler Type: Surface Elevation: Static GW Level: Notes: Static GW Leve	AEROTE	CH		Proje	ct Nan	ne: Calhoun's Service Station		
Location: 4540 Pacific Avenue Sornhole Diameter: So			,			044 7000		
Logged by: Boring Depth: 15		===	_	Proje	et Nun	nper: 211-7002		
Tacoma, WA  Event Information  Logged by: Michael W. McGowan Boring Depth: 12 Feet GW Encountered No State GW Level: T2-1-11 State Date: T2-1-11 End Date: T2-1-11 State D				Loc	ation	4540 Pacific Avenue		
Logged by: Michael W. McGowan Boring Deptit: 12 Seet GW Encountered No Static GW Level: Notes:    Surface Elevation: State Date:   Surface Elevation:   Surface Elevatio	ľ						Sampler Type:	
Logged by: Michael W. McGowan Boring Deptit: 12 Seet GW Encountered No Static GW Level: Notes:    Surface Elevation: State Date:   Surface Elevation:   Surface Elevatio						Event Info	mation	
Boring Depth: T2 feet No Start Date: Start Date: Start Date: Start Date: Start Date: Start Date: Ind Date: Start Date: Ind Dat		10 3		odraz be				
GW Encountered Static GW Level: 12-1-11 End Date: 12-1-11 End Date		Logged	by:			cGowan		
Notes:    Color   Colo		GW En	counte	red	No		Start Date:	12-1-11
Soli Classification/   Description   Soli Classification/   Description			W Lev	el:			End Date:	
SM		NOTES:		_				
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SM		2	띁	iệ	1 2			
SM	E	50	ğ	[ §	SS			-
SM	5	Ţ	₹	Ē	5		Description	
SM	"	de l	蓄	5	%			
SM	11	San		6	3			
SM		-			1	Brown silty sand, no grave	l (2 and 4 feet bgs).	
SM						50		
SM SM Signature Some sold of Some sold seed by Signature Some sold seed by Signature Some sold seed by Signature Some sold seed seed Sold seed Sold seed Sold seed Sold seed Sold seed Sold seed seed Sold see	25	2	1		SM	ļ		-
SM   5-10' bgs: Brown silty sand, no gravel (6 and 8 feet bgs). Increase in denseness with depth. Some rock fragments at 8 feet    SM   10-12' bgs: Brown silty sand, no gravel. Increase in denseness with depth. Drilling terminated at 12 feet. No groundwater encounter.  SM   10-12' bgs: Brown silty sand, no gravel. Increase in denseness with depth. Drilling terminated at 12 feet. No groundwater encounter.  SM   20-25' bgs:   20-25' b	2.0			1	1			
SM   5-10' bgs: Brown silty sand, no gravel (6 and 8 feet bgs). Increase in denseness with depth. Some rock fragments at 8 feet    SM   10-12' bgs: Brown silty sand, no gravel. Increase in denseness with depth. Drilling terminated at 12 feet. No groundwater encounter.  SM   10-12' bgs: Brown silty sand, no gravel. Increase in denseness with depth. Drilling terminated at 12 feet. No groundwater encounter.  SM   20-25' bgs:   20-25' b				١.	L			
SM   SM   SM   SM   SM   SM   SM   SM	- 5 -	4'			SM	Z 401 hans. Drawn silly con	d as graval /C and 0 for	( hos) Ingransa in
- 7.5 - a' - 10 - 10 - 10 - 12' bgs: Brown silty sand, no gravel. increase in denseness with dapth. Drilling terminated at 12 feet. No groundwater encounter.  SM SM SM - 15 17.5 20 22.5 22.5 25 - 25 25 -		6		ì	SM	donceness with denth Sol	me rock fragments at 8 fe	eel
SM					1	General gos with gobin.	ille toek itaginiente at e k	
- 10 - 10   SM   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   SM   SM   SM   SM   SM   SM   S	<b>-</b> 7.5 -				1			· -
10   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   Drilling terminated at 12 feet. No groundwater encounter.   Drilling terminated at 12 feet.   Drilling terminated at 12	11	8,		1	SM			
10   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   SM   Drilling terminated at 12 feet. No groundwater encounter.   Drilling terminated at 12 feet. No groundwater encounter.   Drilling terminated at 12 feet.   Drilling terminated at 12	l I		1	1				
- 12.5 - 12'  - 15 17.5 20 22.5 25.5 - 25.5	- 10 -			1	CM	10-12' bgs: Brown silly sai	nd, no gravel. Increase l	n denseness with depth.
- 12.5 -	11	10		1	1	Drilling terminated at 12 fe	et. No groundwater enco	ounter.
- 15 17.5 20 22.5 22.5 -	125-	12'	1		SM			
- 17.5 - - 20 - - 22.5 - 20-25' bgs:	12.5		1	1				
- 17.5 - - 20 - - 22.5 - 20-25' bgs:			1					
- 17.5 - - 20 - - 22.5 - 20-25' bgs:	- 15 -	1	1	1				
- 20 - 20-25' bgs:	11		1	1				
- 20 - 20-25' bgs:	11		1	1		N.		
- 22.5 -	17.5 -	1	1					***
- 22.5 -	П							
- 22.5 -		1						
	20 -	1	1			20-25' bgs:	3	
		l	1	1	1			
	22 5-	1						
25 – (25-30' bas:			1	1	1			
25 - 25 - 25-30' bas:	11				1			
	_ 25 -	-	1		-	25-30' has:		
		1	1			LU UU UJU.		
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	_	-				В	ORING LOG #: SB-3	Page 1 of 1			
AEROTE	СН		1	ct Nan ct Nun		in's Service Statio	Drilling Information Drilling Contractor: Drilling Method:	ESN Geoprobe			
			Loc		4540 Pacific / Tacoma, WA		Drillers Name: Borehole Diameter: Sampler Type:	Don			
						Event Infor	mation				
	Logged Boring ( GW End Static G Notes:	epth: counter	12 feet		cGowan		MW Number: Surface Elevation: Start Date: End Date:	12-1-11 12-1-11			
Depth (ft)	Sample Type/Number	Blow Counts	PID/FID Readings	USCS Classification		Soil Classification/ Description					
- 2.5 -	2			SM	Brown silty content	sand, no grave	(2 feet bgs). Tan silty s	sand with a lot of silt			
- 5 -	4' 6			SM SM	5-10' bgs: '	-10' bgs: Tan silty sand, some rock fragments! (6 and 8 feet bgs).					
- 7.5 -	8'			SM				-			
- 10 -	10			SM	10-12' bgs: depth. Dri	0-12' bgs: Tan silty sand, some rock fragments. Increase in denseness with lepth. Drilling terminated at 12 feet. No groundwater encounter.					
<b>- 12.6 -</b>	12'			SM				•			
- 15 -											
- 17.5 -								÷			
- 20 -	-				20-25' bgs						
- 22.5 -											
- 25 -				-	25-30' bgs						
1 275.	]				1			,			

	- 7					BOF	RING LOG #: SB-4	Page 1 of 1
AEROTE	ЕСН		Proje	ct Na	ne: Calhoun's S	ervice Station	Drilling Information	The same of the sa
					-		Drilling Contractor:	ESN
			Proje	ot Nu	mber: <u>211</u> -	7002	_ Drilling Method:	Geoprobe
			72				Orillers Name:	Don
			Loc	:ation:	4540 Pacific Avenu	ie .	Borehole Diameter:	
					Tacoma, WA		Sampler Type:	
						Event Informa	tion	
	Logged	lhv	Michae	ni W. A	IcGowan		MW Number:	
	Boring	Depth:	11 fee		100011411		Surface Elevation:	
	GW En	counter	ed	No			Start Date:	12-1-11
	Static C Notes:	3W Lev	el:				End Date:	12-1-11
	140103.							
	ğ		<u>••</u>	8				
_	Sample Type/Number	報	PID/FID Readings	USCS Classification				j
Depth (ft)	§	Blow Counts	3	1 15		5	Soil Classification/	i i
l td	🖺	0	6				Description	
4	용	8		Š				<b>I</b>
	5	-	ਵ	छ				
	S		<u> </u>	Ļ			A. A. L. D. L. D.	- 1100
		1				i, no gravei (2	teet bgs). Dark brown	silty sand, no gravel (4
				l	feet bgs)			
_ 2.5 _	2			SM				
	1							
- 5 -	4"			SM				
	6			SM		n silty sand, cl	ay like traits. Densier	with depth (6 and 8 feet
	ľ				bgs).			
7.5 -	1			l				
1.0	8'		1	SM				
}	"		1					
- 10 -	]							
	1			SM	10-12' bgs: Light	brown slity se	and, sncrease in dens	eness with depth.
		1		1	Juniung terminate	ed at 11 feet.	No groundwater enco	unter.
12.5	11	1		SM	1			_
		1			1			
				1	1			
15 -	1							
- 18 -				1				
	i			1	1			
17.5 -	]			1	1			_
1 7.5		1	1	1				
	[		1					
20 -	1	1	1					
1 - 20 -			1		20-25' bgs:			
		1			1			
22.5 -	]				1			
			1	1	1			
		1		1	1			
- 25 -	1	1						
-		1			25-30' bgs:			
	1	1		1	1			
1 L 275-		1	1		1			_

	-					Walter Bridge Co.	В	ORING LOG#: SB-5	Page 1 of 1
AEI	ROTE	CH		Proje	ct Nan	ne: <u>Calho</u>	oun's Service Statio	n Drilling Information	E WAY AND SHOW THE PERSON NAMED IN COLUMN
								Orilling Contractor:	ESN
				Proje	ect Nun	nber:	211-7002	Drilling Method:	Geoprobe
								Drillers Name: Borehole Diameter:	Don
				Loc	ation:	4540 Pacific		Sampler Type:	
						Tacoma, WA			
							Event Infor	mation	
	7	Logged	by:	Michae	el W. M	lcGowan		MW Number:	
		Boring (	Depth:	11 fee				Surface Elevation:	30.141
		GW End Static G			No			Start Date: End Date:	12-1-11
		Notes:	TT LOV				_		
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П	- 1	츁		8	<u>Ş</u>	1			
	.	Ž	Blow Counts	埬	₽				
	<u> </u>	3	ខ្លី	8	88	ĺ		Soil Classification/	
}	₹	Ę	) N	은	💆			Description	
П ,	- 1	Sample Type/Number	ă	PID/FID Readings	USCS Classification				
	1	3		4	1 3				
						Brown ailt	sand, no gravel	(2 and 4 feet bgs).	
					10		200		
١١.	ا ء	2			SM	Ü			-
	.5 -				1				
11					1				
IL.	5	4			SM				
IF.	٠ - ٦	6			SM	5-10' bgs:	Brwon silty sand	, no gravel. (6 and 8 fee	t bgs).
Ш		0		1					
7	.5 -			1					P=
11.		8			SM				
11	(1)			1					
- 1	10 -		1	1		10 12 5	· I labé beaum cité	/ sand, Increase in dens	eness with denth
			i	1		Drilling ten	, Light brown sitt	t. No groundwater ence	ounter.
Ш				1	SM	Criming ton		8	
- 13	2.5 -	11		1	PIN				
				1					
11			1	1	1				
- 1	15 -			1	_	-			
				1		1			
			1	1		1			2
-1	7.5 -	1		1	1	1			•
			l	1					
- :	20 -	1	1	1		20-25' bgs	i:		
				1					
11.	A = -	1	1		1	1			4
1   2	2.5 -	1	1			1			
11		1	1						
11.	ne =	1	1						
	25 -	1				25-30' bgs	B:		
11			1						
11		1	1	1					19

						BORING LOG #: SB-6	Page 1 of 1
AEROTE	CH		Proje	ct Nam	e: Calhoun's Service S	Station Drilling Information	
						Drilling Contractor:	ESN Geoprobe
			Proje	ct Nun	ber: 211-7002	Drilling Method:	4-14
					45.40 D10 - 4	Drillers Name: Borehole Diameter:	Don
			Loc		4540 Pacific Avenue Tacoma, WA	Sampler Type:	
					Event I	nformation	
	Logged	by	Michae	el W. M	cGowan	MW Number:	
	Borina (	Deoth:	8 feet			Surface Elevation:	
	GW En	counter	ed	No		Start Date: End Date:	12-1-11 12-1-11
	Static G Notes:	W Lev	el:			End Date.	12-1-11
	NOISS.	_		_			
	per		1 12	5			
	<u> </u>	ন	PID/FID Readings	8			11
Depth (ft)	\$	Blow Counts	<b>3</b>	l ig		Soil Classification/	
<b>1</b> \$	Σ.	Ş	ے ا	쁑		Description	ľ
	2	욻	\(  \)	×			
	Sample Type/Number	-	품	USCS Classification			
L	S			<del>_</del>	Design allby and annual	sional gravel (2 and 4 feet b	as)
					Brown silty sand, occar	Sional graver (2 and 4 leet b	ge).
- 2.5 -	2		1	SM			-
		1	1	l	· ·		
		1	1				
- 5 -	4		1	SM	E 401 have Brown cilly	sand, occasional gravel. (6	and 8 feet bgs). Drilling
	6	1		SM	0-10 bgs: brown sitty	t. No groundwater was enc	
1 1	1	1	1		Mas fattimitatan at o lee	to grounding the city	
- 7.5 -	1		1		ł.		· ·
	8	1		SM	1		
11	1	1					
- 10 -	-		1	_	10-12' bgs:		
			1		10-12 bgs.		
13	1	1	1				
- 12.5 -	-	1					
1	1	1	1	1	1		
11	l						
15 -	-{	1					
11	1	1	1				
- 17.5	-	1		1			
11		1	1				
11	1	1	1				
- 20	4	1	1		120.25' hae'		
	1	1	1	1	20-25' bgs:		
11	1			1	1		
- 22.5	-						•
					1		
					1		
- 25	4			-	25-30' bgs:		
				1	2.0-00 Ugo.		
1 1							
1 1 27 5	_	ı	1	ı	Ţ		

	1	BORING LOG #: SB-7 Page 1 of 1
AEROTECH	Project Nan	e: Calhoun's Service Str Drilling Information
		Drilling Contractor: ESN  Drilling Method: Geoprobe
	Project Nun	nber: 211-7002 Drilling Method: Geoprobe  Drillers Name: Don
	Iiloni	4540 Pacific Avenue Borehole Dismeter:
		Tacoma, WA Sampler Type:
		Event information
		Event information
Logged by:	Michael W. M	cGowan MW Number:
Boring Depth:	8 feet	Surface Elevation: Start Oate: 12-1-11
GW Encounte Static GW Le	red No	End Date: 12-1-11
Notes:	vei.	
T T		
Depth (ft) Sample Type/Number Blow Counts	PID/FID Readings USCS Classification	1
	PID/FID Readings SCS Classification	
E   E   N	3   S	Soil Classification/
Depth (ft) ple Type/Nun Blow Counts	₽   ₫	Description
	=   B	
	<del>                                     </del>	Brown silty sand, occasional gravel (2 and 4 feet bgs).
	1 1	
2	SM	Ves
- 2.5 - 4		-
11 1 1	1 1	
	SM	
- 5 - 1 4		5-10' bgs: Brown silty sand, occasional gravel. (6 and 8 feet bgs). Drilling
6	SM	was terminated at 8 feet. No groundwater was encountered
	1 1	
7.5		1
8	SM	
	1 1	
- 10 -		10-12' bgs:
II I I		14 12 2021
H 1 1		
<b>- 12.5 -</b>		
- 15 -		
11 1 1		
11 1 1		1
17.5		1
11 1 1	1 1	
	1 1	
- 20 -		20-25' bgs:
	1 1	
	1 [	
- 22.5 -	1 1	
	1 1	
- 25 -		25-30' bgs:
		22 .
	1 1	
1 - 27 5 - 1	1 1	1

-					_		BOR	ING LOG #: SB-8	Page 1 of 1
v.	AEROTE	CH		Proje	ct Nan	ne: Calhoun's Service		Drilling Information	
			1				A STATE OF THE PARTY OF THE PAR	Drilling Contractor:	ESN
				Proje	ct Nur	nber: 211-7002	2	Drilling Method:	Geoprobe
								Drillers Name:	Don
				Loc	ation:	4540 Pacific Avenue		Borehole Diameter:	
						Tacoma, WA		Sampler Type:	
						Eve	nt Informat	tion	
r									
1		Logged	by:	Michae	W. W	lcGowan		MW Number:	
П		Boring			N-			Surface Elevation: Start Date:	12-1-11
П		GW En			No			End Date:	12-1-11
П		Notes:		<u></u>					
ř		_							
П		Sample Type/Number		1 8	<u>,</u> <u>5</u>	120			LI LI
П	2	5	된	PID/FID Readings	<u> </u>				1
П	Depth (ft)	5	Blow Counts	ا ۾ ا	1 1 1		8	Soll Classification/	li li
Н	Td.	E	3	٥	명			Description	(:
П	۵	용	욺	Y	18				Į.
И		Ę		=	USCS Classification				l l
l		8							10.00000
П						There was no sample	recovery	at 2 feet. At 4 feet in	ere was brown slity sand
Н			1			intermixed with grave	91)		
П	- 2.5 -	2			SM				_
H	_ 2.0 -					Į.			
П			1						
П		4		Į.	SM				
П	- 5 -		l	1	-	5-10' bgs: Light brow	vn silty sa	nd, occasional gravel	(6 feet bgs). At 8 feet
П		6		i	SM	tan silty sand, no gra	vel. Drilli	ng was terminated at	8 feet. No groundwater
Н		1	1	1		was encountered			
П	- 7.5 -		1						
П		8	1	1	SM				
П					1	i			
П	- 10 -	ł	,		_	10-12' bgs:			
П		1			1	10-12 bgs.			
П		1	1	1					
П	- 12.5 -	1	1		1				-
П		1			1				
		1							
	: 15 ····	1							
		1	1	1					
			1			1			
	<b>–</b> 17.5 –	]	1	1					_
	E 17.0 F	1	1			V			
1			1	1		ł.			
1	L		1			1	22		
	- 20 -	1	1			20-25' bgs:			
1			1			E E			
1			1	1		8			F1.6
1	- 22.5 -	1	1	1	1				
			1	1	1	Ė			
1			1		1				
1	- 25 -	-	1	1	-	25-30' bgs:			
1			1		1	range offer			
1			1		1				
1	275-	1		1	1	1			-

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							BORING LOG #: SB-9	Page 1 of 1
AEROTI	ECH		Proje	ct Nan	ne:	FOU		
			Prole	ct Nur	nher	211-7002	Orilling Contractor: Drilling Method:	ESN Geoprobe
			Fiole	ICT ING	iibei.	211-7002	Drillers Name:	Don
			Loc	ation:	4540 Pacific	Avenue	Borehole Diameter:	
					Tacoma, WA		Sampler Type:	
						Event Info	ormation	
			MIAMORE			-		
	Logged	by:	Michae	al W. N	IcGowan	-	MW Number: Surface Elevation:	
	Boring I	Depin: countei	17 100	Yes		-	Start Date:	12-1-11
	Static C					_	End Date:	12-1-11
	Notes:							
	à			5				
	<b>E</b>	20	PID/FID Readings	漢	l			
£	3	Blow Counts	1 8	) iğ	l		Soil Classification/	
Depth (ft)	<u>\$</u>	ğ	R	#	1		Description	
8	<u> </u>	뤛	ਵ	S	1			
	Sample Type/Number	_	문	USCS Classification				
	S		ļ	凗			the accordance resuct (Ol or	-d 40
1					U-4' bgs: G	rey silly sand v	vith occasional gravel (2' a	10 <b>1</b> )
	١			SM				
- 2.5 -	2			2M	1			( <del>21</del>
	Ι.			SM	1			
- 5 -	1 1				5-10' has:	Gray cilty cano	with occasional gravel (6'	and 8'). Groundwater
	6			SM	was at app	roximately 6 fe	et. There was a strong pa	troleum-like odor at
11	1			1	approximat		••• ••• ••• •• •• •• •• •• •• •• •• ••	
- 7.5 -	1	i)			1-66-	-		-
11	8			SM	ŀ			
	1		1	1	1			
- 10 -	1		1	200	10-14' bgs:	: Grey sitly san	d with less gravel (11' and	15'). Petroleum-like odor
11	11	1		SM		t less strong		
			1					
12.5 -	1	1	1		į.			
11		1	1					
	14			SM				
- 15 -	1	Į.		SM	10-16' bgs	Grey silly san	d some gravel, odor is gor	e. Drilling terminated at
	15	1	1	1	17' Grou	ndwater was e	ncountered at approximate	ly o reet.
- 17.5	17	1	1	SM	1			ţ <del>.</del>
I [ ""			1	1				
11			1	1				
- 20 -	1		ſ	_	00.00		- iniv	
	1		1		20-25' bgs	i:		
11				1	1			
- 22.5	-	1		1				1.
		1			1			
П		1			1			
- 25	-	1	T	$\vdash$	25-30' bgs		- viswayara	
11	1	1		1	20.00 080			
11		1		1	1			13
1 L 27 5	_	1	1	1	1			3.

AEROTE	CH		Proje	ct Nam	ie:		ORING LOG #: SB-10		
			Project Number:			211-7002	Drilling Contractor: Orilling Method:	ESN Geoprobe	
			Proje	ct Num	iber:	211-7002	Drillers Name:	Don	
			Location: 4540 Pa			\venue	Borehole Diameter:		
					Tacoma, WA		Sampler Type:		
						Event info	ormation	· · · · · · · · · · · · · · · · · · ·	
	Logged b	y:			cGowan	•	MW Number: Surface Elevation:		
	Boring D	epth: cunter	16 fee	Yes		•1	Start Date:	12-1-11	
	Static GV	N Lev	el:				End Date:	12-1-11	
	Notes:								
	Sample Type/Number		8	USCS Classification					
£	출	Blow Counts	PID/FID Readings	Į₽	1		Soil Classification/	(96)	
Depth (ft)	<u>§</u>	ပို	1 %	ă			Description		
8	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	80	Ĕ	l &					
	夏		\forall	👸	<b>1</b> 5:				
	0,		-	-	0-5' bgs: Da	ark brown silty	sand with occasional grav	rel (2' and 4')	
			1			**************************************			
_ 2.5 -	2		1	SM					
T 2.5 -			1						
	,		1	SM					
- 5 -	4		1		5-10' bas: [	Dark brown silt	y sand with occasional gr	avel, less silt more san	
	6		1	SM	(6'). At 8' there was light brown silty sand with occasional gravel. Groundwater was encountered at approximately 6'				
7.	9				Groundwat	er was encoun	itered at approximately 6'		
- 7.5 -	1 .			SM					
		[] []	1	1	1				
- 10 -	-				10-15' bgs:	Light brown a	ilty with occasional grave	(10'), light brown silty	
	10		l	SM	sand, no g	ravel. There w	/as a silght petroleum-like	odor (13' and 14').	
_ 12.5 -				1					
12.5	13								
				SM					
15 -	- 14		1		15-20 has	: Light brown	silly sand no gravel. Ther	e was a slight petroleur	
1				SM	like odor.	Drilling termin	ated at 16'. Groundwater	was encountered at	
- 17.5	16	1		SM	approxima	tely 6 feet.			
[ 17.8			1						
1	1				1				
_ 20 ·	-			-	20-25' bgs	:			
	1	1				100			
22 8			1		1				
- 22.5					1				
	1								
- 25	-				25-30' bgs	3:			
	1				2007 St 20 8				
		1		1	1				

					BORI	NG LOG#: SB-11	Page 1 of 1
AEROTE	СН		Proje	ct Nam		Drilling Information Drilling Contractor:	ESN
			Basis	-A Bleen	ber: 211-7002	Drilling Method:	Geoprobe
-			<b>Liole</b>	ct Num	211-1002	Drillers Name:	Don
			Loc	etion:	4540 Pacific Avenue	Borehole Diameter:	
			200		Tacoma, WA	Sampler Type:	
				Al.	Event Informa		
1	Logged	by:			cGowan	MW Number: Surface Elevation:	
	Boring D	Japin: counter	17 100	Yes		Start Date:	12-1-11
1	Static G	W Lev	el:	111		End Date:	12-1-11
L	Notes:				7,000		
Depth (ft)	Sample Type/Number	Blow Counts	PID/FID Readings	USCS Classification	0-4' bgs: Brown silly sand with	Soil Classification/ Description	ere is less gravel at the 4'
					depth (2' and 4')	i occasional graver, in	CIG IO IDOG GIETOI AL IIIO T
73			1	l	depth (2° and 4)		
- 2.5 -	2		1	SM			~~
			1				
			1	l			
- 5 -	4	1	i	SM	5-10' bgs: White porrly sorted	eand with occasions	gravel (6'). At 8' there
	8	1	1	SP	was brown silty sand with no	graval Groundwater	was encountered at
	"		1	-	approximately 6.5'	Aimair Otogitonoio.	
- 7.5 -	1		1		approximatory 0.5		-
7.0	В		1	SM	l,		
	"		1				
- 10 -	Į.	1	1	-	10-15' bgs: Light brown silty,	no gravel (11' and 14'	١
	11	1	1	SM	10-15 bgs: Light brown sity,	no grator (11 and 11	
	l	1	1		1		
- 12.5 -	1	1					
/=.0	1						
11		1		014			
- 15 -	14	1	1	SM	15-20 ' bgs: Light brown slity	send some gravel. D	rilling terminated at 17'.
'	15			SM	Groundwater was encounter	ed at approximately 6.	5 feet.
	1	1		SM	A. A. de	SW1535V 373	12
- 17.5	17	1	1	13IVI	1		
	1			1			
	1	1		1			<u> </u>
- 20	-	1	1		20-25' bgs:		
		1		1	ma ma ma.		
H							
- 22.5	-		1		1		
					1		
11							
25	7	1			25-30' bgs:		
П		1		1	-0		
27.5	_	1		1	1		1

	1 %					ВО	RING LOG #: SB-12	Page 1 of 1						
AEROTECH			Proje	ct Nam	e: <u>Calhoun</u>	's Service Statio	n Drilling Information							
						44 7000	Drilling Contractor:	ESN Geoprobe						
		_	Proje	ct Num	iber: 2	11-7002	Drilling Method: Drillers Name:	Don						
			Loc	atlon	4540 Pacific Av	mnue	Borehole Diameter:	-						
			600	Tacoma, WA			Sampler Type:							
					•	Event Infon	mation							
Logged by: Michael W. McGowan MW Number:														
	Boring C	Jepth:	17 fee	No			Surface Elevation: Start Date:	12-1-11						
	Static G	W Lev	el:	110			End Date:	12-1-11						
	Notes:													
	Sample Type/Number	en .	PID/FID Readings	USCS Classification				H						
Ê	₹	Ę	<u>8</u>	¥			Soil Classification/							
Depth (ft)	ا څ	ğ	Ř	8 8			Description	11						
8	9	Blow Counts	Ĭ.	ပ္က			,	1						
11			문	୪				'II						
	Ø				0.011		th receiped grount m	\ Ten silly sand with						
					0-5' bgs: Brown silty sand with occasional gravel (2') Tan silty sand with heavy silt content (4')									
	l _			SM	neavy siit coi	nent ( 4 )		-						
- 2.5 -	2			SM				-						
					l.									
11	١		1	sм										
5 -	4	1			5-10' has: Da	rk brown silty	sand with occasional gra	avel (6'). At 8' there was						
	6	1		SM	5-10' bgs: Dark brown silty sand with occasional gravel (6'). At 8' there was grey silty san, no gravel. Dense.									
	1	l		1										
7.5 -	1	1	1	l	l .									
	8		1	SM	Į.									
1 40	1		1											
- 10 -	1	1	1	SM	A 10-15' bgs: Grey silty sand no gravel (10', 11' and 14')									
11	10			SIM										
12.5	11	1	1	1	1									
- 12.5 -	1	1	i		1									
	1		1	1.										
- 15 -	14	1	1	SM	45.0011	Ö	Les arouel Orilling Lores	insted at 17'						
		1			15-20 bgs: Grey silty sand no gravel. Drilling terminated at 17 Groundwater was not encountered.									
11	1		1	014	Giodriawale	AGG HOL SHOO	(a) 1 ( a) 1 (5 (a)							
- 17.5	17			SM	l .									
		1		1	1									
$\Box$														
20	-				20-25' bgs:									
			1											
11	1	1	1	1										
- 22.5		1												
			1											
0.00														
- 25	٦				25-30' bgs:									
	1	1		1										
L 27.5				1	i			-						

		BORING LOG #: SB-13 Page 1 of 1													
AEROTECH			Proje	ct Nam	10:	Calhoun's Service Str Drilling Information									
						044 7000	Drilling Contractor: Drilling Method:	ESN Auger							
			Proje	ct Nun	iber:	211-7002	Drillers Name:	Vallet							
			Loc	atlan.	4540 Pacific	Avenue	Borehole Diameter:								
			LUC		Tacoma, WA		Sampler Type:								
					12001110, 1111		formation								
1 1	Logged	by:	Michae	W. M	cGowan	_	MW Number: Surface Elevation:								
	Boring E	Depth:	18 fee	No		-(	Surface Elevation. Start Date:	12-2-11							
	Static G			140		<del></del> !	End Date:	12-2-11							
Notes:															
b     e															
	₽	160	PID/FID Readings	욽											
€	₹	E E	<u>\$</u>	뜵			Soil Classification/								
Depth (R)	Ĕ	ပိ	<u> </u>	12			Description								
	9	Blow Counts		SC											
	Sample Type/Number	ш	<b>  €</b>	USCS Classification											
	Ø			1			dude consisted marrel /Al	) Drawn allty send no							
						rown silty san	d with occasional gravel (2	) Brown sitty saild, no							
					gravel (4')										
- 2.5 -	2			SM	İ			\(\end{array}\)							
					l										
- 5 -	4			SM	E 40 has:	Dark brown e	lity sand, more silt (6'). At	8' there was tan silly sand							
	6	l		SM	gravel	Daik blown a	my saira, more em (e).								
				1	gravo.										
- 7.5 -			ł	1				-							
	8		1	SM											
				i											
- 10 -		1			10-15' bgs	: Brown silly	sand , high silt content (10"	. At 14' there was brown							
	10	1		SM	silty sand										
l		1	İ	1				-							
12.5 -	ĺ			1	1										
		1													
- 15 -	14			SM	-			Wind and add at 401							
1 10 -	1	1	1		15-20 bg	s: brown silty	send, occasional gravel. D	ritting terminated at 10°.							
			1	-227900	Groundwa	ter was not e	ncountered.	A)							
17.5 -	]		1	SM											
F 17.3	18														
	1 10														
- 20 -	1	1	1	_	00 0511										
					20-25' bgs	5.									
			1	1	1										
22.5 -	-				1										
1		1	1	1	1										
	1	1		1	1										
- 25 -	1				25-30' bg	s:									
	1														
				0.	1			,							
1 L 27 5 -	-J	<b>7</b>													

				-	·		BORING LOG #: SE	3-14 Page 1 of 1
AEROTI	CH.	1	Prole	ct Nam	e: Calhot	ın's Service Sta		
AEROII	:Cn		1 , 10,0		SCHOOL STATE	The Ballion of the State of the	Drilling Contractor:	ESN
			Proje	ct Num	ber:	211-7002	Drilling Method:	Auger
Annual Value	-						Drillers Name:	
	Location: 4540 Pacific						Borehole Dismeter:	
				,	Tacoma, WA		Sampler Type:	
						Event Info	ormation	
			4-1-1		004		MW Number:	
	Logged Boring D	by: Jenth:	77 tee	I VV. M	cGowan	-	Surface Elevation:	
	GW En	counte	red	No		-	Start Date:	12-2-11
(a)	Static G	W Lev	el:			_	End Date:	12-2-11
	Notes:							
	ž		60	8				
	Sample Type/Number	蜂	PID/FID Readings	JSCS Classification				
€	\$	ĕ	%	iệ.			Soil Classification/	
Depth (ft)	<u> </u>	ğ	١٣	ᅤ			Description	
8	<u> </u>	Blow Counts	🖳	N N				ll l
	Ĕ	_	분	ğ				ll l
I	Ö			Ľ		william . no state of	with a secological arrival / d	<u></u>
	,				0-5, pgs: Br	own silty sand	with occasional gravel (4	"
H	1		l l	l	1			
2.5 -	_		1	SM	l			8=
	1							
	1			l				
- 5 -	1 4		II.	SM		****	nd as around (OI)	
	6	1	1	SM	5-10' bgs: t	Brown silly sa	nd, no gravel (8').	
	1	l	1					
<b>- 7.5</b> -		1	1	1				=
	8	1		SM				
11	"	l						
- 10	1	1	i		40 451 5		covery at 12 feet. Grey sill	w sand at 14 feet. There
11 "	1	1		ISM	10-15 bgs:	it patrolaum-lik	A odor	y ballo at 14 look 11010
	1	1	1		Was a sugn	ir ban oledi i i a	4 0001	
- 12.5	4	10		1				-
	12	1						
11	1	1	1	lou	ì			
- 15	- 14			SM	15.20 ! has	· Grev cilly ea	nd, no gravel.	
					15-20 098	, Grey andy an	in lin Binanti	
	1			SM				
- 17.5	16			SIVI				*
	17.5							
	1	1	1					
- 20	-			_	20-25' has	Gray silty san	d no gravel. At 22 feet th	nere appeared to a layer of
	20				gravel Dr	illing terminals	ed at 22 feet due to refusal	. Groundwater was not
	1	1			encounten	ed		0.5
- 22.5	-		1					1
11	22							
								1.72
- 25	-				25-30' bgs	i:		
11								
11		1	1		1			

						ORING LOG #: SB-15	Page 1 of 1			
AEROTE	:CH		Proje	ct Nam	10:	Calhoun's Service Str Drilling Information				
			· · · · · · · · · · · · · · · · · · ·				Drilling Contractor:	ESN		
			Proje	ct Nun	nber:	211-7002	Drilling Method:	Auger		
			TH.				Drillers Name: Borehole Diameter:			
Locatio					Eggenolii 4040 i dallarii alia			The state of the s		
					Tacoma, WA		Sampler Type:			
						Event in	formation			
	Logged	hv.	Michae	IW. M	cGowan		MW Number:			
	Boring I	Depth:				•(	Surface Elevation:			
	GW En			No		2	Start Date:	12-2-11 12-2-11		
	Static G Notes:	W Lev	el:	-		-	End Date:	18-2-11		
	Sample Type/Number		2	٥						
	1	#	PID/FID Readings	3				l l		
Depth (ft)	🕈	Blow Counts	1 20				Soil Classification/	l l		
ti	<u>F</u>	Š	6	흥			Description			
4	홍	8	또	S						
	E	-	불	USCS Classification						
	S		-		0 El b D-	and aller and	d with occasional gravel (4	<u> </u>		
	1			1	O-9. pgs: Br	own silly salk	With occasional graver ( -	''		
				014						
- 2.5 -	4		1	SM				-		
	1		1							
11	1				l					
- 5 -	4		SM				d = 2 = = = 1 (40) (5) = = d	445. Thora was a slight		
			SM 5-10' bgs: Grey silty s			arey silty san	d, no gravei (10, 12, and	14) There was a siight		
li					petroleum-l	IKO OGOF		4		
7.5 -	1	l	ı	l	l			: Ban		
F 1.0 =	1	1	1	зм	1			7		
H	l	1			1					
- 10 -	1						110 ( )	and at 44 fact. There		
10.	10		1	SM	10-15' bgs:	no sample re	covery at 12 feet. Grey silf	y sand at 14 leet. There		
	انا	1	1		was a sligh	t petroleum-li	ke odor			
40.5		1	1	1				7		
12.5 -	1	1								
11	12			1						
48	14	1	1	SM				~		
- 15 -	1	1			16-20 ' bgs	: Grey slity sa	and, no gravel (16' and 18')	There was no odor.		
11	1	9		1	Drilling terr	ninated at 18	feet. No groundwater was	auconutated		
11 426	16			SM						
- 17.5	7				vi.					
	18				1					
1		1					******			
- 20	1	1	1		20-25' bgs	Grey silty sar	nd, no graval. Drilling termi	nated at 22 feet.		
			1		Groundwa	ler was not er	ncountered			
20.5		1	1	1						
- 22.5		1								
- 25										
	1	1	1		25-30' bgs	•				
		)								
27 5	J	1	1	1	1					

		_	BORING LOG #: SB-16 Page 1 of 1						
AEROTE	CH		Proje	ct Nan			ESN		
			Proje	ct Nun	ther: 211-7002	Drilling Method: Auger			
	20.11		-			Drillers Name: Borehola Diameter:			
			Location: 4540 Pacific Avenue Tacoma, WA			Sampler Type:			
					Event Inform				
				_	EASUS INIOUS				
	Logged	by:			cGowan	MW Number: Surface Elevation:			
	Boring I	Depin: counter	ed lee	No		Start Date:	12-2-11		
	Static G Notes:	W Lev	el:			End Date:	12-2-11		
		_	_						
1	Sample Type/Number		8	USCS Classification					
2	5 ¥	Blow Counts	PID/FID Readings	2		Soil Classification/			
Depth (ft)	<u>\$</u>	Š	%	N S		Description			
8	)e 1	툻		N S		<b>,</b>			
	Ė	-	문	1 8					
	8	-	┼─	-	0-5' bgs: No samples recove	red			
- 2.5 -			l l	SM					
- 2.5 -	1								
		}	1	014					
- 5 -			1	SM	5-10' bgs: Grey Brown silty	and, occasional grav	el (6') Gravel is larger at		
			1	SM	the 8' level				
	6		1				9		
- 7.5 -	8		1	SM					
	ľ	1							
- 10 -	-	Ì		-	10-15' bgs: Brown silly sand	with occasional gravel	(10' and 12') At 14 feet		
	10			SM	there was grey silty sand wit	h some clay fines.			
			1						
- 12.5 -	1	1		1					
	12		1		1				
- 15 -	14	1	1	SM	15-20 bgs: Grey silty sand,	no gravel (16' and 18'	Drilling terminated at 18		
	1	1	1		feet. No groundwater was	encountered			
	16	1		SM					
- 17.5 -	1								
	18			1					
20 -	-	1	U	$\vdash$					
			1						
- 22.5	1								
- 25 -	1		1		25-30' bgs:				
1	1				20-30 Uga.				
	1		1						
L 27 K.		3			. <del>.</del>				

							ORING LOG #: SB-17	Page 1 of 1		
AEROTE	CH		Project Name:			Calhoun's Sen	Calhoun's Service Str Drilling Information Drilling Contractor: ESN			
			Project Number:			211-7002	Drilling Contractor: Drilling Method:	Auger		
			Proje	ict ital	nou.	211-1002	Drillers Name:	110801		
			Loc	ation:	4540 Pacific	Avenue	Borehole Diameter:			
					Tacoma, WA		Sampler Type:	•		
						Event Inf	ormation			
		_				2.000		1		
	Logged	by:	Michae	el W. N	IcGowan	_	MW Number: Surface Elevation:			
	Boring I GW En	Jepin: counter	18 100	No			Start Date:	12-2-11		
	Static G	W Lev	el:			<u>-</u> ,	End Date:	12-2-11		
L	Notes:									
	Sample Type/Number	ध	PID/FID Readings	USCS Classification						
Depth (ft)	Se l	Blow Counts	889	1 58			Soil Classification/			
B	Ę		Ş	경			Description			
-	ajdu	8	፮	្ត្រ						
	S		□	2						
					0-5' bgs: Br	rown slity sand				
25				SM				-		
- 2.5 -	1							V.=		
- 5 -	4									
L	1				5-10' bgs: (	Gravel (6')				
1										
_ 7.5 <b>-</b>	6			GM				-		
7.0	8									
	•			1						
- 10 -				<b>—</b>	40.45l hoos	Drawe aithe ag	nd with occasional gravel	/10' and 12') At 14' there		
	10		1	SM	10-15. Dgs:	ilty sand, no gr	und mittu occasiotisi disvei	(10 and 12). At 14 there		
	ı,		l		Mas dial s	nty saitu, ilo gi	avei			
- 12.5 -	1		1					-		
	12		1							
	14	1	1	зм						
- 15 -	·"		1	5141	15-20 ' bos	: Grey silty sai	nd, no gravel (16' and 18')	Drilling terminated at 18		
			1		feet. No o	roundwater wi	s encountered	•		
H	16		1	SM						
- 17.5 -	1		1							
	18		1							
			1				VIII.			
- 20 -	1				20-25' bgs	*				
	1									
- 22.5 -	1	1						-		
		1			1					
		1								
- 25 -	-	Ī	25-30' bgs							
		1			20-30 bgs	•				
			1		1					
L 27 5-	1	ı	1	1	ı			-		

				BOR	RING LOG #: SB-18	Page 1 of 1				
AEROTE	CH		Proje	ot Nan	ne: Calhoun's Service Station	Drilling Information				
				-4 41	nber: 212-7008	Drilling Contractor: Drilling Method:	ESN Auger			
		and the latest terminal	Proje	ict Nur	712-7008	Drillers Name:	Vođet			
			Loc	ation:	4540 Pacific Avenue	Borehole Diameter:				
					Tacoma, WA	Sampler Type:				
				Event Information						
				CTS= 240						
1	Logged Boring (	by:	Michae	el W. N	cGowan	MW Number: Surface Elevation:				
	<b>GW End</b>	counter	ed	No		Start Date:	2-1-12			
	Static G	W Lev	el:			End Date:	2-1-12			
<u> </u>	Notes:	_		_						
1	Sample Type/Number		I AL	<u>.</u> 5						
	\$	#	PID/FID Readings	USCS Classification						
Depth (ft)	2	Blow Counts	2	1 T		Soil Classification/				
E	ا جَ	₹	5	강		Description				
"	출	番	💆	X						
	Sar		۵.	🕱						
				0-5' bgs: Brown silty sand at both 2 and 4 feet						
2.5 -	2			SM			_			
2.5 -	1									
			1	1	ł					
- 5 -	4			SM			foot Down Oilly and			
			1	SM	5-10' bgs: (6') Brown silty sand with more fines, at 8' feet Brown Silty sand					
		1			with some gravel					
- 7.5 -	8			l			-			
	8			SM						
- 10 -	1		1	_	10-15' bgs: Grey sand, no g	ravel (10') and at (12	and at 14' there was			
	10		1	SM	Brown sitty sand, no gravel					
	12		1	SM	- Interest -		14 (2)			
- 12.5 -	1 -	1								
		l								
- 15 -	14			SM		1777				
		1			15-20 ' bgs: Grey silty sand, I	no gravel (16' and 16')				
			1							
<b> </b>	16	1	1	SM			/ <del>=</del>			
	18	1	1	SM						
_ 20 -	-	1	1		20-26' bgs: at 20 ' and 22' fee	at Brown silty sand. no	gravel. Drilling			
	20			SM	terminated at 22' feet. No gi	roundwater was encou	ntered			
	22	1		SM						
- 22.5 -	1 "	1	1	1			•			
		1	1		*					
		1								
- 25 -	1				25-30' bgs:					
	1		1							
<sub>  07</sub> =		1 "	1	1	I		-			

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(i) (i) (ii) (ii)

						BOR	ING LOG #: SB-19	Page 1 of 1
AEROTI	CH		Proje	ect Nar	ne: <u>Calhoun's S</u>	Service Station	Drilling Information	
			D I	4 80	040	7000	Drilling Contractor:	ESN
			Proje	oct Nu	nder: 212	7008	Drilling Method: Drillers Name:	Auger
			Lou	nation	4540 Pacific Avenu		Borehole Diameter:	
			LOC	<b>PEUVII</b>	Tacoma, WA	70	Sampler Type:	
					1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Event Informati		
			-	097		Event Intorna	uon	
	Logged				fcGowan		MW Number:	
	Boring I	Depth:	18 fee	No No			Surface Elevation: Start Date:	2-1-12
	Static G			NO			End Date:	2-1-12
	Notes:	5295	-					
	Sample Type/Number		8	5				
₽	5	뢑	PID/FID Readings	USCS Classification	ł			
Depth (ft)	2	Blow Counts	2	<u> </u>		8	Soil Classification/	
8	15	1 8	l 6	מֻ	}		Description	
1 -	È	西	Ď	ן עֱ	1			
Į.	S		"	5				
		Ì	ĺ		0-5' bgs: Brown	silty sand with	some gravel at 2'. To	an silty sand, no gravel
ŀ				1	at 4 feet			
- 2.5 -	2			SM	1			
2.5				1	1			
1				1				
- 5 -	4			SM				
		1	l		5-10' bgs: (6')Ta	n silty sand , n	o gravel; at 6' Tan SI	ity Sand, no gravel
		1		l	İ			
7.5 -	6	1		SM				-
1.0	l a			Ism	1			
1	"							
- 10 -					40 451 h Oran		uni (40) and at ( 43)	and at 4 41 Tax allies
	10			SM	sand, some grav		vel (10') and at ( 12'	and at 14 Tan Silty
1					SELIGISOTIA SIEV	701		
- 12.5 -	-							#
	12			SM				
i	1	1	ſ	SM				
- 15 -	14			SIVI	15-20 ' hae' Ten	silty sand, no	gravel (16' and 18'\	Drilling terminated at 18
1	1			1	feet. No ground	iwaler was en	countered	
	16	1		SM			· · · · · · ·	
<b>– 17.5 –</b>	1							( <del>-</del>
	18			SM				
- 20 -	1							
1		1			V			
00 =		1	1	1				-
- 22.5 -	1	1	1	1				-
		1	1	1				
_ 25 -		1	1					
L 59 -	1	1	1		25-30' bgs:			
		1	1					
L 27 5-	1	1	1	1	I			-

							ING LOG #: SB-20	Page 1 of 1
AEROTE	CH		Proje	oct Nar	ne: <u>Calho</u>	un's Service Station	_ Drilling Information	CON
		1	Prole	ect Nu	nher:	212-7008	Drilling Contractor: Orilling Method:	ESN Auger
			, .				Drillers Name:	110001
			Loc	Location: 4540 Pacific Avenue			Borehole Diameter:	
			Tacoma, WA				Sampler Type:	
						Event Informa	ition	
	Logged	by:			<b>Ic</b> Gowan	_	MW Number:	
1	Boring I			No			Surface Elevation: Start Date:	2-1-12
	W Lev		110		-	End Date:	2-1-12	
	Notes:							
Depth (ft)	Sample Type/Number	Blow Counts	PID/FID Readings	USCS Classification			Soli Classification/ Description	
- 2.5 -	2			SM	0-5' bgs: Br 4 feel	own silty sand , no	gravel at 2'. Brown s	silty sand with gravel at
	4			SM				
- 5 -	1				5-10' bgs: (	6')Brown silty sand	with gravel; at 8' Brow	wn Silty Sand, no gravel
				SM			_	
- 7.5 -	6		,					_
1.5	8			SM				
				1				
- 10 -	10			SM		Brown silty sand r Grey silty sand.	no gravel (10'). There	was no sample recovery
- 12.5 -								-
	12			SM	i.			
45	14			SM				
15 -					15-20 bgs	: Grey silty sand, n	o gravel (16' and 18')	Drilling terminated at 18
					jieet. No g	roundwater was en	countered	
<b>- 17.5 -</b>	16	1		SM				-
	18			SM				
20								
20 -	20							
	20	l	1					
- 22.5 -	22		1					-
			1	1				
- 25 -	1				25-30' bgs:			

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	-	BOR	ING LOG #: SB-21 Page 1 of 1			
AEROTECH	Project Nan		Drilling information			
	72	-	Drilling Contractor: ESN			
	Project Nun	nber: 212-7008	Orilling Method: Auger			
		45.46 Par 15 a 4	Drillers Name:			
		4540 Pacific Avenue Tacoma, WA	Borehole Diameter: Sampler Type:			
		Event Informa	ition			
Logged by:	Michael W. M	cGowan	MW Number:			
Boring Depth:	18 feet		Surface Elevation:			
GW Encounter Static GW Leve			Start Date: 2-1-12 End Date: 2-1-12			
Notes:	91.		2110			
			LOCAL DATE OF THE PARTY OF THE			
Depth (ft) Sample Typer/Number Blow Counts	PID/FID Readings USCS Classification					
Depth (ft) ple Type/Nun Blow Counts						
Depth (ft) e Type/N	8 8	1	Soil Classification/			
			Description			
	PID/FID Readings ISCS Classification					
8	"   5					
		0-5' bgs: Brown silty sand , no	gravel at 2'. Brown silty sand with occasional			
		gravel at 4 feet				
2	SM					
2.5 - 2						
11 1 1						
	SM					
- 5 -   `	5-10' bgs: et 8' Brown Slity Sand, more slit					
7.5			9			
	sм					
8	l low					
- 10 -			See Suit			
10 10	SM	10-15 bgs: Brown silty sand	no gravel (10'). There was no sample recovery			
"		12'. At 14' Grey silty sand.				
- 12.5 -						
	1					
- 15 -		45 00 I have Light Drawn Olley	Sand with gravel (16' and 18') Drilling			
		terminated at 18 feet. No gro	oundwater was encountered			
	SM	Tallimieras et 10 ider. 140 Bre				
- 17.5 - <sup>16</sup>	1 1	1				
18	SM					
		1				
20 -			7			
20						
22						
22.5 - 22	1 1					
11   1			*			
- 25 -		25-30' bgs:				
	1	III				

		200	_	15 - 27 -	BOR	RING LOG #: SB-22	Page 1 of 1		
AEROTE	CH		Prole	ct Nam	The second secon	Drilling Information			
						Drilling Contractor:	ESN Auger		
			Proje	ct Num	ber: 212-7008	Orilling Method: Drillers Name:	Wndat		
				-41	4540 Pacific Avenue	Borehole Diameter:			
			LOC		Tacoma, WA	Sampler Type:			
						ation			
Event Information									
	Logged	by:	Michae	W. M	cGowan	MW Number: Surface Elevation:			
	Boring C	epth:	12 fee	Yes		Start Date:	2-2-12		
	Static G	W Lev	el:	103		End Date:	2-2-12		
	Notes:	1,753.407							
	25			c					
1	Sample Type/Number		PID/FID Readings	USCS Classification					
l €	3	Ş	, g	<u>s</u>		Soil Classification/			
Depth (ft)	ğ.	ပ္မ	1 5	1 2		Description	1		
8		Blow Counts	ĮĘ	8					
	Ē		8	िछ			l l		
	ß			1_	5 1.5	al with ground at Ot C	From eithy sand With		
				1	0-5' bgs: Dark Brown silty san occasional gravel at 4 feet.	io with graver at z Goundwater was enco	ountered at 5'		
	1		1		Occasional Blaver at 4 leer.	Conjunity was one			
2.5 -	2	1		SM			-		
				CM					
- 5 -	4	1	1	SM	5-10' bgs: at 6' and 8' Brown	Silty Sand, more sill	APRIL SA		
	8	1	1	SM	5-10 bgs. at 0 and 0 brown	only const, more on			
H	ŀ		1						
- 7.5 -	-	1	1						
	8		1	SM					
11	1	1	1						
- 10 -	1	1	1	-	10-15' bgs: Brown silty sand	no gravel (10'). Ther	e was no sample recovery		
	10			SM	12'. Drilling terminated at 12	feet. Groundwater w	ras encountéred at 5'		
	12		1	SM			*		
- 12.5 -	1								
			1						
l I		1		77		and the same of th			
- 15	1	1			15-20 ' bgs:				
11									
17.5		1		1			+		
I [ 17.8	1				li .				
11	1			1					
- 20	1	1							
		1	1	1					
			1						
_ 22.5	4	1							
- 25	-			-	25-30' bgs:				
11				1					
	1	1		1			,		

new Year of

BORING LOG #: SB-23 Page 1 of 1									
AEROTECH	Project Nan	ne: Calhoun's Service Station	Drilling Information Drilling Contractor: ESN Drilling Method: Auger						
	Project Nur Location:	4840 Pacific Avenue Tacoma, WA  Event Informa	Drillers Name: Borehole Diameter: Sampler Type:	Vodes					
Logged by: Boring Depth: GW Encounter Static GW Leve Notes:	ed Yes		MW Number: Surface Elevation: Start Date: End Date:	2-2-12 2-2-12					
Depth (ft) Sample Type/Number Blow Counts	PID/FID Readings USCS Classification	5	Soil Classification/ Description						
- 2.5 - 2	SM	0-5' bgs: Dark Brown silty san at 4 feet. Goundwaler was en	d no gravel at 2'. Gre accuntered at 5'	ey silty sand no gravel					
- 5 - 4	SM SM	5-10' bgs: at 6' Dark Brown There was a strong petroleum	Silty Sand. At 8' Light nodor at 6'.	nt Brown silty sand.					
- 7.5 - 8	SM			og a Saladama					
10 - 10 - 10 - 12.5 -	SM	10-15' bgs: Light Brown silty feet. Groundwater was enco	sand no gravel (10'). cuntered at 5'	Drilling terminated at 10					
- 15 -		15-20 * bgs:							
- 17.5 -				_					
_ 20 _	-		4						
- 22.5 -									
25 -		25-30' bgs:	West of St						

A THE CONTRACT OF SECURITION

	r	BOR	ING LOG #: SB-24	Page 1 of 1					
AEROTECH	Project Nam		<b>Drilling Information</b>						
	Project Num	ber: 212-7008	Drilling Contractor: Drilling Method:	ESN Auger					
	I stolect tran	212-7000	Drillers Name:						
		4540 Pacific Avenue	Borehole Diameter:						
		Tacoma, WA	Sampler Type:						
Event information									
Logged by:	Michael W. M	cGowan	MW Number:						
Boring Depth:	10 feet		Surface Elevation: Start Date:	2-2-12					
GW Encounte Static GW Let		i diament	End Date:	2-2-12					
Notes:									
<b>6</b>	. 5								
Depth (ft) Sample Type/Number Blow Counts	PID/FID Readings USCS Classification								
E   §   §	S   Se		Soil Classification/						
Depth (ft) ple Type/Nun Blow Counts	□ B		Description						
으   홀   %	P   S			1					
l g	-   2	740-5							
		0-5' bgs: No sample recovery	at 2' due to possible e	ncounter with a concrete					
		pad. Brown sand sand no gi	ravol at 4 teet.						
- 2.5 - 2	SM			-					
	1 1								
	SM								
- 5 - 4		5-10' bgs: at 6' Brown Silty	Sand. At 8' Grey silty	sand (possible till).					
6	SM	62)		24.2					
	1 1			-					
7.5 -	SM								
8									
- 10 -		10-15' bgs: Grey silty sand r	o gravel at 10', possi	ble till. Drilling terminated					
10	SM	at 10 feet. No groundwater	was encountered						
		at 10 1000 tto ground the		r=					
<u> - 12.5 -                                    </u>									
11 1									
- 15 -		15-20 ' bgs:							
11 1 1									
17.5				•					
	1								
- 20 -									
_ 22.5 _		1		14					
[ - 22.0 ]				2					
				·					
- 25 -	-	25-30' bgs:		, , , , , , , , , , , , , , , , , , ,					
11 1 1									
	1 1								

	BORING LOG #: SB-25 Page 1 of 1								
AEROTECH	Project Nam	e: Calhoun's Service S	Station						
	Project Nun	nber: 212-7008	Drilling Contractor: Drilling Method:	Auger					
	Fiolection	2127000	Drillera Name:						
		4540 Pacific Avenue	Borehole Diameter:						
		Tacoma, WA	Sampler Type:						
Event Information									
Logged by:	Michael W. M	cGowan	MW Number:						
Boring Depth: GW Encounter	13 feet		Surface Elevation: Start Date:	2-2-12					
Static GW Lev		- Way	End Date:	2-2-12					
Notes:									
2	v 8			1					
Depth (ft) Sample Type/Number Blow Counts	PID/FID Readings USCS Classification								
Depth (ft) ple Type/Nun Blow Counts	Rea Issif		Soil Classification/						
	5 2		Description						
	A   B			1					
, s	] ]								
		0-5' bgs: 2' and 4' Brow	n silty sand. Groundwater e	encountered at 5					
	SM								
- 2.5 - <sup>2</sup>	Jaim			7					
	SM		- wante						
- 5 - 6	SM	5-10' bgs: at 6' and 8'	Brown Silty Sand. Petroleu	ım odor at 6' and 8'					
11 1 0									
7.5				-					
8	SM								
11 1 . 1		2 W44							
- 10 -	SM	10-15' bgs: Brown silty	sand at 10' annd 13', possi	ble till. Slight petroleum					
10	SIM	ordor at both 10' and 1 encountered at 5'	3'. Drilling terminated at 13	1661. Groundwater was					
12.5		euconutered st 2.		-					
13	SM								
- 15 -	-	15-20 ' bgs:							
		1							
17.5				_					
H + H									
- 20 -									
- 22.5 -				:-					
ZZ.5		l	*						
	}								
25 -		25-30' bgs:							
	1 1								
	1 1	1		_					

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							BORING LOG #: SB-26	Page 1 of 1
AEROTE	CH		Proje	ct Nan	ne: <u>Calho</u>	un's Service Sta	ation	COM
			Doolo			212-7008	Drilling Contractor: Drilling Method:	ESN Auger
			Lucie	ct Nun	nger:	212-7008	Drillers Name:	rager
			Loc	ation:	4540 Pacific	Avenue	Borehole Diameter:	
					Tacoma, WA		Sampler Type:	***
						Event In	formation	
		-						
	Logged Boring (	by:	Michae	IW.M	cGowan	3	MW Number: Surface Elevation:	F
1	GW En	counter	ed 100	No			Start Date:	2-2-12
	Static G					-	End Date:	2-2-12
	Notes:							
	ğ			E				775,4
1	Sample Type/Number	92	PID/FID Readings	USCS Classification				
Depth (ft)	Š		ğ	Æ			Soil Classification/	
\ <del>§</del>	2	ğ	K	Ā			Description	
ا ۵	ě	Blow Counts		၂ တ္က			•	
	E	_	!!	ਲ				ľ
	S			<u> </u>			-th	hi sand no graval
					0-5' bgs: at	2' dark brown	silty sand and 4' Brown sil	ty sand, no gravel.
			i					
_ 2.5 -	2	1	1	SM				-
		1						
- 5 -	4			SM	C 4011	t Ol and Ol O	ray Cliny Cand	
	6			SM	0-10. pgs: s	it o and o Gi	rey Silty Sand.	
	ľ		1					
- 7.5 -								-
	8	1	1	SM				
11		1	1					
- 10 -		1	ŀ		10-18' has	Brown silly s	sand at 10' annd 12'. Drillin	o terminated at 12 feet.
	10			SM	Groundwat	er was not en	countered.	
		1		1	0.00			
- 12.5 -	ł	l			1			
	12			SM	1			
		1		1	1			
- 15 -	1				15-20 bas	1:		
1 1	1	1	1	1				
		1	1					
17.5 -	1	1			1			
	1	1	1	1	l,			
	1	1						
- 20 -	1	1			1			
	1	1		1				
00.5	1			1				í( <del>-</del>
1 - 22.6	1	1			1			
11	1				1			
L 25 -	_		1					****
1 23 .	1	}	1		25-30' bgs	ti.		
		1	1					
- 12.5 -				SM	10-15' bgs: Groundwat 15-20 ' bgs	er was not en	sand at 10' annd 12'. Dhilin countered.	g terminated at 12 feet.

						E	BORING LOG #: SB-27	Page 1 of 1
AEROTEC	H		Proje	ct Nan	ne: <u>Calho</u>	un's Service Sta	tion	
			l			040 7000	Drilling Contractor:	ESN Auger
			Luole	et Nua	nder:	212-7008	Drilling Method: Drillers Name:	Vrides
			Loc	etlon:	4540 Pacific	Avenue	Borehole Diameter:	
			400		Tacoma, WA		Sampler Type:	•
						Event Info	ormation	
F					-		510-107-0010-010-010-010-010-010-010-010-	
l L	ogged	by:	Michael 12 fee	ol W. M	cGowan	-	MW Number: Surface Elevation:	
	W En	counter	ed	No		<b></b>	Start Date:	2-2-12
		W Lev	el:			=	End Date:	2-2-12
	lotes:							
l° l	Sample Type/Number		g	<u>8</u>				1
	5	ş	PIDVFID Readings	USCS Classification				
Depth (ft)	2	Blow Counts	2	35.			Soil Classification/	
8	Ę	36	<u> </u>	2			Description	Į.
	age	8	Įξ	ايزا				
	S			5				
					0-5' bgs: at	2' brown silty s	sand and 4' silty sand, no	gravel.
					l			
2.5	2		1	SM	}			
					1			
II I		1		SM				
- 5 -	4		l		5.10 has s	at 6' brown eilt	y sand and at 8' grey silt	v sand
	6		1	SM	2-10 page: 6	at O Diomitiani,	y senia enia en a gray sin	y vallet
				1	1			
7.5 -				l				1
	8			SM	1			
				1				
10	40		1	SM			ty sand (possible till) at 10	) and at 12 brown silty
	10			3141	sand, at 14	grey silly san	d.	
12.5				1				-
""	12		į .	SM				
11 1			1					
- 15 -	14		1	SM	16.20 three	e at 18' arou all	lty sand. Drilling terminate	ed at 16 feet
		1			Groundwal	er was not end	countered.	on at 10 mon
	16	1		SM				
<b>17.5</b>	,5							-
11 1				1				
- 20 -								
			1					
22.5			1					
			1	1				
		1	1					
- 25 -				-	25-30' bgs		444004	
			ſ	1	20.00 089	•:		
			1	1	ļ.			
L L 27 6 J								-

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					В	ORING LOG #: SB-28	Page 1 of 1
AEROTEO	CH	1	Proje	ct Nan	The state of the s	on	
						Drilling Contractor:	ESN
		-	Proje	ct Nun	1ber: 212-7008	Drilling Method: Drillers Name:	Auger
			Loc	etlanı	4540 Pacific Avenue	Borehole Diameter:	
			Loc		Tacoma, WA	Sampler Type:	
					Event Info		
r	_				PAGII HIIO		
1	Logged	by:	Michae	W. M	cGowan	MW Number:	
	Boring ( GW End	Depth:	20 fee	No		Surface Elevation: Start Date:	2-2-12
	Static G	W Lev	el:	NO		End Date:	2-2-12
	Notes:						
	ă			_			
	Sample Type/Number	66	PID/FID Readings	USCS Classification			
8	\$	Ē	S S	iệ		Soil Classification/	11
Depth (ft)	, Joe	ಕ್ಷಿ	S	120		Description	
8	- F	Blow Counts	빝	SC			
		ш	문	<u>8</u>			
	ΐ					7.1	
					0-5' bgs: No samples colle	cted	
- 2.5 -							-
	1						
5 -					5-10' bgs: No samples col	locted	
					  0-10, alia: Ma estublee col	lacran	
(A)#							
- 7.5 -							-
11 1						,	
- 10 -					10-15' bgs: Brown well so	rted sand. There was a s	trong petroleum odor
				Į.	10 10 bgs. brown non se		
H 1			1	1			
- 12.5 -							•
				1			
	14			sw			
15 -					15-20 ' bgs: at 16' brown v	vell sorted sand. A slight	patroleum odor. At 18'
			1	1	brown silty sand, no odor.	At 20' brown slity sand	with some gravel. Drilling
	16	Į.		sw	terminated at 20 feet. Gr	oundwater was not encou	ntered. There was
<b>- 17.5</b> -		1			leakage into the hole that	allowed a water sample to	De Collected.
	18			SM			
	20			SM			
- 20 -							
				1			
202 5				1			_
- 22.5 -				1			
			1		1		
_ 25 _			1				
			1		25-30' bgs:		
				1			
1 L 27 K		1	1	1	1		-

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			-				BORING LOG #: SB-29	Page 1 of 1
AEROTE	CH		Proje	ct Nan	ne:	Calhoun's Se	ervice St	
			- 2				Drilling Contractor:	ESN
			Proje	ct Nun	nber:	212-7008	Drilling Method:	Auger
							Drillers Name:	
			Loc	ation:	4540 Pacific . Tacoma, WA		Borehole Diameter: Sampler Type:	
					TACOMIA, VVA		• • • • • • • • • • • • • • • • • • • •	
	_					Event II	nformation	
	Logged	by:	Michae	IW. M	IcGowan		MW Number:	
	Boring [	Depth:	20 fee			_	Surface Elevation: Start Date:	2-2-12
	GW End Static G			No		-	End Date:	2-2-12
	Notes:	(10.5%)						
	7:							
1 1	Sample Type/Number		8	USCS Classification				
8	Ž	stra	100	1€ 12	ļ		6 H.6L 18-41-4	·
Depth (ft)	<u>8</u>	8	8	25			Soil Classification/ Description	
اقا	E T	Blow Counts		သွ	1		Description	
1 1	Ē		PID/FID Readings	ပ္တြ				
	ß			2				
					0-5' bgs: No	o samples co	lected	
- 2.5 -		1		1				**
2.0					1			
					10			
- 5 -					G 4014	- 1 401 1	-30	
					5-10' bgs:	at 10' brown	silly sand	
- 7.5 -			1	1				-
				l .				
				CAA				
- 10 -				SM	10.15' bas:	at 12' brown	silty sand, at 14' brown silty	sand with some gravel
1			Ĭ.		10-10 Dgs.	at 12 DIOWII	ally sails, at 14 010000 sity	adila with come graves
	40			SM	1			
- 12.5 -	12			CIVI				
				1				
	14			SM				
- 15 -	•••	1			15-20 ' bas	: at 16' brown	n silty sand. At 18' and 20' b	rown silly sand with
				1	heavy grav	rel content. D	Orilling terminated at 20 feet.	Groundwater was not
	16			SM	encountere			
<b>- 17.5 -</b>			1					
	18		1	SM				
	20	1	ĺ	SM		177		
- 20 -								
			1		1			
- 22.5 -			1		Ī			
22.5			1					
	1		1					
_ 25 -			1		05 0011			
			1		25-30° bgs	ř		
11		1	1		1			

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• Analytical Results

Aerotech
CALHOUN'S SERVICE STATION PROJECT
Tacoma, Washington

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(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

#### Analysis of Gasoline Range Organica & BTEX in Soil by Method NWTPH-Gx/8260

Sample Number	Date Prepared	Date Analyzed	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Gasoline Range Organics (mg/kg)	Surrogate Recovery (%)
Method Blank	2/2/2012	2/2/2012	nd	nd	nd	nd	nd	112
LCS	2/2/2012	2/2/2012	98%	88%	91%	90%	107%	104
LCSD	2/2/2012	2/2/2012	99%	90%	95%	93%	-	110
SB-21-10	2/2/2012	2/2/2012	· nd	nd	nd	nd	nd nd	113
SB-21-18	2/2/2012	2/2/2012	nd	nd	nd	nd	nd	116
SB-21-18								
Reporting Limits	06.3	. Di G	0.02	0.05	0.05	0.15	10	-V

<sup>&</sup>quot;nd" Indicates not detected at the listed detection limits.

<sup>&</sup>quot;int" Indicates that interference prevents determination.

Aerotech Consultants
CALHOUN'S SERVICE STATION PROJECT
Tacoma, Washington

ESN Northwest 1210 Eastside Street SE Suite 200 Olympia, WA 98501 (360) 459-4670 (360) 459-3432 Fax lab@esnnw.com

### Analysis of Gasoline Range Organics, BTEX in Water by Method NWTPH-Gx/8260

Sample Number	Date Analyzed	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	Gasoline Range Organics (ug/L)	Surrogate Recovery (%)
Method Blank	2/11/2012	nd	nd	nd	nd	nd	112
LCS	2/11/2012	99%	119%	106%	108%	79%	99
LCSD	2/11/2012	96%	97%	100%	115%		100
SB-22	2/11/2012	nd	nd	nd	nd	630	117
SB-23	2/11/2012	nd	nd	nd	nd	11,000	114
SB-25	2/11/2012	3.3	1.6	21	15	18,000	116
SB-28	2/11/2012	22	16	130	200	12,000	116
Trip Blank	2/11/2012	nd	nd	nd	nd	nd	114
Reporting Limit	S	1.0	1.0	1.0	3.0	100	314 II 3 1 1

<sup>&</sup>quot;nd" Indicates not detected at the listed detection limits.

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### Analysis of Fuel Additives in Water by Method 8260

Sample Number	Date Analyzed	MTBE (ug/L)	1,2-Dichloroethane (ug/L)	Surrogate Recovery (%)
Method Blank	2/11/2012	nd	nd	112
LCS	2/11/2012	105%	107%	99
LCSD	2/11/2012	111%	108%	100
SB-28	2/11/2012	nd	nd	116
Trip Blank	2/11/2012	nd	ńđ	114
Reporting Limits	Ngjaran karangan	1.0	1.0	· · · · · · · · · · · · · · · · · · ·

<sup>&</sup>quot;nd" Indicates not detected at the listed detection limits.

<sup>&</sup>quot;int" Indicates that interference prevents determination.

Aerotech Consultants CALHOUN'S SERVICE STATION PROJECT Tacoma, Washington ESN Northwest 1210 Eastside Street SE Suite 200 Olympia, WA 98501 (360) 459-4670 (360) 459-3432 Fax lab@esnnw.com

### EDB in Water by Method 8011

Sample	Date	Date	1,2-Dibromoethane (EDB)	Surrogate
Number	Prepared	Analyzed	(ug/L)	Recovery (%)
Method Blank	2/9/2012	2/10/2012	nd	110
LCS	2/9/2012	2/10/2012	108%	99
LCSD	2/9/2012	2/10/2012	126%	111
SB-28	2/9/2012	2/10/2012	nd	70
Reporting Limits	10.11		0.02	

Acceptable Recovery limits: 65% TO 135%

Acceptable RPD limit: 35%

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Tacoma, Washington

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#### Analysis of Gasoline Range Organics & BTEX in Soil by Method NWTPH-Gx/8260

Sample	Date	Date	Benzene	Toluene	Ethylbenzene	Xylenes	Gasoline Range Organics	Surrogate
Number	Prepared	Analyzed	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	Recovery (%)
Method Blank	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	116
LCS	2/6/2012	2/9/2012	89%	91%	92%	91%	101%	111
LCSD	2/6/2012	2/9/2012	84%	89%	94%	86%		112
SB-18-14	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	109
SB-18-14 Duplicate	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	110
SB-19-14	2/6/2012	2/9/2012	nd	nd	nd	nd	nď	110
SB-20-14	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	112
SB-20-18	2/6/2012	2/9/2012	nd	ňď	nd	nd	nid	113
SB-22-8	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	112
SB-22-10	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	108
SB-23-8	2/6/2012	2/9/2012	nd	rid	nd	ńd	nd	107
SB-23-10	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	108
SB-25-2	2/6/2012	2/9/2012	nd	nd	nd	nd	nd	112
SB-25-8	2/6/2012	2/9/2012	nd	0.08	0.56	0.58	4900	124
SB-25-13	2/6/2012	2/10/2012	nd	nd	nd	nd	ind	114
SB-25-13 Duplicate	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	117
SB-26-8	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	116
SB-27-8	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	118
SB-27-14	2/6/2012	2/10/2012	nd	nd	nd	nd	ńd	121
SB-28-14	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	117
SB-28-18	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	116
SB-29-12	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	118
SB-29-18	2/6/2012	2/10/2012	nd	nd	nd	nd	nd	119
Reporting Limits	W 11-2		0.02	0.05	= 0.05	0.15	10	

<sup>&</sup>quot;nd" Indicates not detected at the listed detection limits.

<sup>&</sup>quot;int" Indicates that interference prevents determination.

Calhoun's Service Station ...... February 6, 2012 4540 Pacific Avenue Tacoma, Washington Samples collected: February 1 & 2, 2012 All samples 5-day turn around Water Samples - NWTPH-Gx/BTEX SB-22 SB-23 SB-25 **SB-28** Water Samples - Fuel Additives (MTBE / EDB / EDC 8260) SB-28 Can we run additional fuel additives after we receive the initial gas water results? Soil Samples - TPH Gas and BTEX SB-18-14 SB-19-14 SB-20-14 SB-20-18 SB-22-8 SB-22-10 SB-23-8 SB-23-10 SB-24-2 SB-25-8 SB-25-13 SB-26-8 SB-27-8 SB-27-14 SB-28-14 SB-28-18 SB-29-12 SB-29-18

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21-12 Total Numbers
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112-2 Turn Around Time: 24 HR 48 HR 5 DAY At Tallen しょく こうしょ マナラ Total Number enertiating to DATE OF COLLECTION \_ となら 6 LABORATORY NOTES: 0000 NOTES Jan 2 LOCATION: 45 to Ruc 1 fc PAGE PROJECT NAME: COMPICUS COLLECTOR: M. Mc Joury DATE: 2-7-19 CHAIN OF CUSTODY SEALS YAUNA TOTAL NUMBER OF CONTAINERS RECEIVED GOOD COND./COLD. SAMPLE RECEIPT SEALS INTACT? YANA NOTES PROJECT MANAGER: M. Mc GOLD Sept ac DATE/TIME DATE/TME 10/ RECEIVED BY (Signature) RECEIVED BY (Signature) C ESN DISPOSAL @ \$2.00 each C Return C Pickup 20 SAMPLE DISPOSAL INSTRUCTIONS PHONE: 425 - 644 - 868 - 00, 2 2 3 30C/ 34 300 S ADDRESS: 19600 INTRATIGATION ントマ W. C. Sample DATE/TIME 108 DATE/TIME 200 1000 2.7 500 2 Depth | Time ri 18.54. 28- 13/13 CLIENT: MODKCH RELINCUISHED|BY\_(Signature) J J × CLIENT PROJECT #: RELINOUISHED BY (Signatur 0-82-8 4-1 9-42-48 Sample Number 16.

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