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FINAL

2021 SITE CHARACTERIZATION WORK PLAN
Shopper's Forum Mall
FAIRBANKS, ALASKA

SHANNON & WILSON

April 2021

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Submitted To: City of Fairbanks
800 Cushman Street
Fairbanks, Alaska 99701
Attn: Andrew Ackerman

Subject: FINAL 2021 SITE CHARACTERIZATION WORK PLAN, SHOPPER'S FORUM MALL, FAIRBANKS, ALASKA

Shannon & Wilson has prepared this site characterization work plan as an environmental consultant to the City of Fairbanks. Our scope of services was specified in our January 8, 2021 proposal. This work plan presents a plan for soil, groundwater, soil-gas, and indoor air sampling to delineate chlorinated solvent contamination at the Shopper's Forum Mall and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this work plan, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Dana Fjare
Environmental Scientist

Christopher Darrah, CPG, CPESC
Vice President

DHF:CBD/dhf

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ACRONYMS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
ºC	degrees Celsius
COC	Chain-of-Custody
COPC	contaminants of potential concern
CSM	Conceptual Site Model
DO	dissolved oxygen
EPA	U.S. Environmental Protection Agency
Eurofins	Eurofins Air Toxics, LLC.
ºF	degrees Fahrenheit
Gavora	Gavora, Inc.
ICA	Independent Consultants Associated
MeOH	methanol
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mL	milliliters
mL/min	milliliters per minute
mV	millivolts
PCE	tetrachloroethene
PID	photoionization detector
ppm	parts per million
QA	quality assurance
QC	quality control
QEP	Qualified Environmental Professional
RCRA	Resource Conservation and Recovery Act
SGS	SGS North America, Inc.
S&W	Shannon & Wilson, Inc.
TCE	trichloroethene
TPECI	Travis/Peterson Environmental Consultants, Inc.
TWP	temporary well point
VOC	volatile organic compounds
WELTS	Well Log Tracking System
YSI	YSI Pro Plus
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µS	microSiemens

1 INTRODUCTION AND DATA QUALITY OBJECTIVES

This work plan describes our proposed approach for additional site characterization at the Shopper's Forum Mall in Fairbanks, Alaska (Figure 1). Our proposed approach builds on previous sampling performed at the site and includes soil and groundwater sampling and a vapor intrusion assessment.

Our services will be performed in general accordance with our proposal dated January 8, 2021. This work plan has been prepared, and the sampling described in this work plan will be performed, by Shannon & Wilson personnel who are Qualified Environmental Professionals (QEPs) as defined in Title 18 Chapter 75 of the Alaska Administrative Code (18 AAC 75.333). The Shopper's Forum Mall is an active Alaska Department of Environmental Conservation (ADEC) contaminated site (ADEC File Number 102.38.100).

1.1 Project Purpose

The ADEC has requested the responsible parties (first Gavora, Inc. [Gavora], then the City of Fairbanks) provide information on the following:

- An assessment of all potential contaminant source areas on site.
- The horizontal and vertical extent of soil and groundwater contamination at the suspected source areas.
- The off-site, downgradient extent of groundwater contamination.
- An assessment of sewer lines south of the property along Kennicott Avenue.
- Vapor intrusion assessment and mitigation measures at the Annex on the southern end of the property.

As described in Section 2 of this work plan, several of these requests have been addressed through investigations and site activities. A site-wide soil-gas investigation in 2019 assessed potential source areas; Annex sub-slab and indoor air quality have been monitored since 2011 and mitigation measures have been in place since 2013; and several soil, groundwater, and soil-gas investigations have taken place across the property since 2010.

The purpose of the site characterization activities described in this work plan is to fill remaining data gaps for soil, groundwater, and vapor-intrusion potential to address the remainder of ADEC's requests. This includes:

- Additional soil and groundwater sampling at potential source areas on the property.

- Soil and groundwater sampling near sewer lines along Kennicott Avenue. Groundwater sampling downgradient of the property.
- Soil-gas and crawlspace air sampling in the main mall building.

This information will be used to determine what future efforts should be taken to protect human health and the environment.

1.2 Information Inputs

To evaluate the site for the presence of contaminants of potential concern (COPCs), we propose the following:

- Collect groundwater samples from new and existing monitoring wells, and from temporary well points;
- Advance and sample soil borings;
- Sample soil-gas; and
- Sample crawlspace air.

We describe sample locations in Section 3 and proposed sample locations are presented in Figure 2.

1.3 Study Boundaries

The study boundaries include the Shopper's Forum Mall property, the sewer line south from the property along Kennicott Avenue, and residential and commercial parcels on Airport Way downgradient (northwest) of the property.

1.4 Project Objectives

The objectives of this project are to obtain soil, groundwater, soil-gas, and air data to supplement existing data. These data include:

- Soil and groundwater data along Kennicott Avenue to evaluate the southern extent of contamination around the Annex, and the potential for sewer lines to be a conduit for contamination.
- Soil and groundwater data at the western end of the Annex to determine current conditions in this source area.
- Soil and groundwater data at the north property boundary to evaluate contamination at the property boundary.
- Soil and groundwater data from the central portion of the parking lot to evaluate suspected source areas identified during the 2019 passive soil gas survey.

- Groundwater data from the north side of Airport Way to evaluate the presence of groundwater contamination downgradient of the property.
- Soil-gas and crawlspace air data from the main mall building to evaluate the potential for vapor intrusion into that building.

1.5 Proposed Analytical Approach

The focus of our site characterization activities is on chlorinated solvents and petroleum hydrocarbons. COPCs and proposed cleanup levels are described in Section 3.3. Analytical methods are presented in Section 6.

1.6 Acceptance Criteria

The project data-quality objective is to assure environmental data are of known and acceptable quality. For analytical data, the objective is to meet quality assurance standards of precision, accuracy, representativeness, comparability, and completeness.

Laboratory and field quality control (QC) measures, quality assurance objectives for analytical data, and data review procedures are described in Section 7.

1.7 Data Collection Methods and Procedures

Sample collection and handling procedures are described in Section 5.

2 BACKGROUND

The Shopper's Forum Mall is located at 1255 Airport Road and consists of two commercial structures. The main mall structure occupies the western portion of the property, housing a variety of commercial businesses. A smaller annex along the southern property boundary also houses several businesses.

Historical site use has been commercial. The property was first developed in the mid-1950s. The original building, shown in Figure 2, housed various businesses through time, including two laundries, a grocery, and the Fairbanks North Star Borough School District offices. The first of the laundries began operating around 1961 and was demolished circa 1966 to make way for the Airport Road frontage road. A second laundry moved into the building in the 1970s. The original building was later split; half was moved off-site and the other half (the Annex) was moved to its current location along the southeast portion of the property. The current mall structure was built in two phases in the mid-1970s. A dry-cleaning facility operated in the western end of the Annex from the mid-1970s until about 2000.

Chlorinated solvent contamination was first discovered in the area during a groundwater investigation at Fairview Manor Apartments, across Airport Way from Shopper's Forum Mall. Groundwater samples collected in 2000 from the Fairview Manor Apartments south property boundary along Airport Way contained tetrachloroethene (PCE) and trichloroethene (TCE) at concentrations exceeding ADEC cleanup levels. Because the groundwater contamination was identified at the upgradient property boundary, an off-site source of contamination was indicated.

In 2007, Oasis Environmental, Inc. conducted an area-wide site characterization of chlorinated solvent contamination near Airport Way for the ADEC. They installed seven soil borings/temporary well points (TWPs) along the Airport Way frontage road north of Shopper's Forum Mall. Four of the TWPs north from the main mall and one TWP to the west had PCE and/or TCE detections in groundwater (Figure 3). Soil samples collected from three of these borings/TWPs had PCE and/or TCE exceeding cleanup levels (Figure 4). The highest results were in a TWP north and center from the former Gottschalks building, which had PCE detected at 130 micrograms per liter (µg/L) and TCE detected at 97 µg/L, which exceed the current ADEC groundwater cleanup levels of 41 and 2.8 µg/L, respectively. Two TWPs west from the property along Airport Way did not have detections for PCE or TCE. These results suggested that a plume of solvent contamination was leaving the Shopper's Forum north property boundary. In addition, TCE contamination was identified in deeper groundwater on the adjacent property to the west.

In 2010, S&W performed a site characterization to determine the extent of PCE and TCE contamination in groundwater at the property, and whether PCE was present in near-slab soil gas along the north end of the main mall and northwest corner of the Annex. S&W advanced five TWPs in the parking lot in the center of the property (Figure 3), installed one monitoring well on the north property boundary, advanced seven near-slab soil-gas probes around the former Gottschalks building (Figure 5), and collected one soil-gas sample from the Gottschalks crawlspace. We identified PCE and TCE-contaminated soil, groundwater, and soil-gas along the northern property boundary and high concentrations of PCE and TCE in soil-gas near the west end of the Annex, consistent with the location of a loading dock used by the most recent dry-cleaning business.

In 2011, S&W conducted a vapor intrusion assessment at the Annex. We installed soil-gas sampling ports on the building west side in Miguel's restaurant, and in the former Curves unit on the building east side. We also collected indoor air samples from both Miguel's and the former Curves. PCE concentrations in sub-slab soil-gas at the Annex were several orders of magnitude higher than the ADEC soil-gas Target Level, and PCE also exceeded the ADEC Target Level in indoor air. TCE and cis-1,2-dichloroethylene were also detected in soil-gas above ADEC Target Levels. In 2011, Gavora installed a vapor barrier and heat-

recovery ventilation in the Annex crawlspace beneath the two easternmost businesses. In 2013, Gavora installed a sub-slab depressurization system beneath the floor slab in the west side of the Annex. These mitigation measures remain active.

In August 2011, Aurora Energy excavated within Kennicott Avenue (south from the Annex) for a steam line extension to provide heat to the Chief Andrew Isaac Medical Center. The Shopper's Forum Annex and Mall were connected to the new steam line. During excavation, Independent Consultants Associated (ICA) field-screened the soil for chlorinated solvents and collected three analytical soil samples from within the steam line excavation near the Annex. Chlorinated solvents were detected in 11 field-screening readings collected along Kennicott Avenue, and PCE exceeded ADEC cleanup levels in three soil samples collected near the Annex (Figure 4). Solvents were not identified in field-screening samples collected from the excavation along the west side of the Shopper's Forum property.

In February 2012, S&W collected two indoor (crawlspace) air samples from the main mall crawlspace and conducted follow-up air sampling at the Annex. PCE and TCE were detected at concentrations less than ADEC Target Levels in the Mall crawlspace air. The Annex sampling results confirmed the 2011 soil-gas and indoor air results.

In 2015, the City of Fairbanks became involved in litigation with Gavora over responsibility for characterization and cleanup costs associated with chlorinated solvent contamination at the Shopper's Forum Mall property. By this time the extent of solvent contamination at the property was partially established: contaminated soil and groundwater had been identified near the Annex building west end and at the north property boundary by the former Gottschalks building but not in groundwater at the west and east property boundaries. Vapor intrusion of solvents had been identified for the Annex building, with sub-slab and indoor air PCE and TCE concentrations well above ADEC Target Levels for commercial air. It was suspected that there were multiple source areas at the site. The off-site extent of contamination was unknown but suspected to extend downgradient of the north property boundary. The main mall building had not been investigated for solvent vapor intrusion using multiple lines of evidence (i.e., measuring soil-gas concurrently with indoor air). In addition, ADEC and the U.S. Environmental Protection Agency (EPA) had requested an investigation into whether solvent contamination had migrated off-site to the south following the sewer line from the Annex towards Kennicott Avenue.

In 2017, a judgement in the litigation apportioned past and future costs between the City and Gavora. Furthermore, an agreement was reached in which the City of Fairbanks was responsible for additional site characterizing of the Shopper's Forum Mall property, and Gavora was responsible for mitigating indoor air contamination in the Annex building.

In October 2019, Travis/Peterson Environmental Consulting, Inc. (TPECI) conducted a passive soil-gas investigation across the property. Results of that investigation suggested three likely solvent source areas on the property: the west end of the Annex, the center of the property east from the former Gottschalks, and the north end of the property north from the former Gottschalks. They also identified areas of total petroleum hydrocarbon and benzene contamination in the middle of the property near the main mall building and at the northwest and southwest property boundary. TPECI resolved the question of source areas but not other questions regarding contaminant concentrations, vertical extent of contamination, or off-site impacts.

2.1 Data Gaps

The field sampling program described in this work plan is intended to fill the following data gaps:

- Vertical and horizontal extent of groundwater contamination at the property. Groundwater samples have not yet been collected from the additional source areas identified by TPECI in the central and northeast portions of the property, and there is currently only one monitoring well nest at the north (downgradient) property boundary. Chlorinated solvents are slightly denser than water and, as a result, can migrate deep in the groundwater aquifer. This necessitates the collection of groundwater samples from varying depths to characterize the impact of solvents to groundwater. In addition, repeated groundwater sampling from monitoring wells will be required to understand contaminant trends at the site.
- Vertical and horizontal extent of chlorinated solvent soil contamination at the property and in affected off-site areas. To-date, soil samples have been collected from the north property boundary (S&W 2010), south from the Annex (S&W 2013) and within Kennicott Avenue (ICA 2011), and near the west and north side of the Annex (S&W 2013). Shannon & Wilson was also involved in an unrelated chlorinated solvent release site on the north side of Airport Way adjacent to the Shopper's Forum Mall property (Fairview Manor Apartments, ADEC File Number 102.38.040 and 102.57.004). Soil samples collected on the north side of Airport Way for that project had detections for PCE less than the ADEC cleanup level. As a result, it is our opinion the contaminated soil boundary does not extend downgradient of Shopper's Forum Mall across Airport Way.
- Off-site impacts to groundwater downgradient from the property across Airport Way. We do not have enough recent information on off-site groundwater contamination to recommend a residential well search and sampling effort, though this may be considered in the future based on the results of this site characterization.
- Off-site impacts to soil and groundwater south of the property along the Kennicott Avenue sewer line alignment near the Annex. The sewer line connected to the Annex is

believed to have been constructed from wood-stave piping during the years the dry cleaner operated, and the sewer may have been used for solvent disposal.

- Vapor intrusion pathway for the main mall building. At present, we do not have sufficient off-site groundwater data to inform whether vapor intrusion may be a potential complete exposure pathway for off-site receptors.

3 PROJECT DESCRIPTION

The goal of this project is to characterize the vertical and horizontal extent of petroleum and solvent-contamination within the study boundary by collecting soil and groundwater samples. Prior data collected at the site indicate that solvents have migrated in groundwater to the downgradient, northern property boundary and that soil south from the Annex has been impacted by solvents. In addition, we will investigate the vapor intrusion pathway for potential on-site receptors in the main mall building. The Annex building is currently monitored for vapor intrusion by Gavora. To achieve our project goal, we propose the following scope of services:

a. Install one monitoring well nest on the Shopper's Forum Mall property in the presumed source area near the Annex and one monitoring well nest at the north property boundary. Each monitoring well or temporary well nest will contain two wells screened at different depths: one well will be screened near the top of the groundwater table, anticipated to be approximately 15 feet below ground surface (bgs), and the second well will be screened at approximately 45 to 50 feet bgs.

b. Advance three soil borings and one temporary well point nest on the property.

c. Advance three temporary well point nests downgradient from the property on Airport Way.

d. Sample groundwater from the existing monitoring wells MW-01A and MW-01B at the downgradient property boundary, north from the Mall. If MW-01A and MW-01B monitoring wells cannot be located and sampled, we will install a new monitoring well nest on the north property boundary.

e. Advance three soil borings and three temporary well points along Kennicott Avenue south from the Annex. Temporary well points will be screened near the top of the groundwater table, anticipated to be approximately 15 feet bgs.

f. Install and sample three soil-gas sample probes in the main mall crawlspace.

g. Collect three indoor air samples from the main mall crawlspace.

3.1 Reporting

Following our field activities and receipt of analytical results, we will prepare a summary report documenting field observations and sampling results following the ADEC's *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*, dated March 7, 2017. It will include copies of our field notes and photo-documentation as attachments. We will tabulate sample results and include:

- A narrative of work performed;
- Analytical data table summarizing results;
- Figures showing site vicinity, sample locations and analytical results;
- The laboratory analytical reports;
- ADEC laboratory data-review checklists;
- A discussion of analytical results and data quality in the context of cleanup levels presented in the work plan;
- Site photographs;
- Copies of field notes;
- A description of deviations from our work plan, if any;
- Our conclusions and recommendations; and
- A revised conceptual site model (CSM).

We will submit to you a draft of the summary report within four weeks after receipt of the final laboratory results. Upon receipt of your comments, we will incorporate your revisions and submit the plan to the ADEC for their review. Following any ADEC requested revisions and subsequent approval, we will finalize the report and provide you a copy for your records.

3.2 Project Team

This project will be managed out of the S&W Fairbanks office. Chris Darrah will serve as the Principal-in-Charge and Dana Fjare will serve as the Project Manager. S&W's project team also includes other State of Alaska QEPs from our Fairbanks office to support the various field and reporting tasks required to achieve the project objectives. Fawn Glassburn will act as the S&W project safety officer responsible for maintaining safe work practices for S&W personnel. The site safety and health plan for site-assessment field activities is included in Appendix A. The project team and their associated responsibilities are summarized below.

Exhibit 3-1: Project Team

Member	Responsibility	Representative	Contact Number
Client	Responsible Party Representative	Andrew Ackerman	907-459-6836
ADEC	Project Manager	Laura Jacobs	907-451-2911
Shannon & Wilson, Inc.	Principal-in-Charge	Chris Darrah	907-458-3113
	Project Manager	Dana Fjare	907-458-3152
	Safety Officer	Fawn Glassburn	907-458-3133
SGS North America, Inc.	Analytical Laboratory Services	Jen Dawkins	907-474-8656
Eurofins Air Toxics, LLC.	Analytical Laboratory Services	Alexandra Winslow	916-985-1000
GeoTek Alaska, Inc.	Drilling Services	Scott Vojta	907-569-5900
Gavora, Inc.	Property Owner	Matt Gavora	907-452-6422
Design Alaska, Inc.	Surveyor	Bill Kinne	907-452-1241

3.3 Contaminants of Potential Concern and Cleanup Levels

Based on the sampling history for this site, which has identified chlorinated solvent contamination in soil, groundwater, and air, we consider the COPCs for this site to be volatile organic compounds (VOCs). Petroleum VOCs have been identified in soil and groundwater near the Annex at concentrations less than ADEC cleanup levels, and naphthalene was identified in one soil boring on the west side of the Annex at a concentration exceeding the ADEC cleanup level. These detections may be related to the past operation of an unregulated heating oil tank on the Annex west side, which we presume was taken out of use in 2011 when the Annex was connected to the Aurora Energy steam line. Naphthalene and other petroleum compounds are included in the VOC analyte list. Consequently, we believe that the VOC analyte list will be sufficient to detect petroleum contamination if it is encountered during site characterization.

To evaluate soil analytical data, we will compare the sample results to Alaska's 18 AAC 75.341 Table B1. Method Two – *Soil Cleanup Levels Table, Migration to Groundwater*, and Table B2. Method Two – *Petroleum Hydrocarbon Soil Cleanup Levels, Under 40 Inch Zone, Migration to Groundwater*. To evaluate groundwater analytical data, we will compare sample results to Alaska's 18 AAC 75.345 Table C, *Groundwater Cleanup Levels*. To evaluate air analytical data, we will compare sample results to the screening levels in the ADEC November 2017 Vapor Intrusion Guidance Appendix D: *Target Levels for Indoor Air (Commercial)* and Appendix E: *Target Levels for Exterior or Subslab Soil Gas (Commercial)*. Exhibit 3-2 below summarizes the regulatory levels for the site COPCs.

Exhibit 3-2: Regulatory Cleanup Levels

Contaminant	Soil Regulatory Level (mg/kg)	Groundwater Regulatory Level (µg/L)	Soil-Gas Target Level (µg/m^3)	Indoor Air Target Level (µg/m^3)
Tetrachloroethene (PCE)	0.19	41	1,800	41
Trichloroethene (TCE)	0.011	2.8	84	2.2
1,1-Dichloroethene	1.2	280	8,800	79
cis-1,2-dichloroethene	0.12	36	n/a	n/a
trans-1,2-dichloroethene	1.3	360	n/a	790
Vinyl chloride	0.0008	0.19	280	28
Naphthalene	0.038	1.7	36	3.6
Other VOCs	(Analyte Dependent)	(Analyte Dependent)	(Analyte Dependent)	(Analyte Dependent)

NOTES:
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
n/a = not applicable; ADEC Target Level not established
µg/m^3 = micrograms per cubic meter

3.4 Project Schedule and Submittals

The project submittals will include a site characterization summary report. Field work dates will be coordinated with the City of Fairbanks and our drilling subcontractor.

The tentative project schedule is:

- Early April 2021 – submit work plan to ADEC
- Late-April 2021 – submit final work plan to ADEC (dependent on ADEC review and scheduling)
- Late-April 2021 – submit proposal for site characterization to City of Fairbanks
- May 2021 – submit contained-in request to EPA
- June - August 2021 – schedule site characterization field work (dependent on EPA review of contained-in request)
- September 2021 – conduct vapor intrusion assessment in main Mall building
- October 2021 – submit draft summary report to City of Fairbanks
- November 2021 – submit final summary report to ADEC

4 PRELIMINARY CONCEPTUAL SITE MODEL

A CSM describes potential pathways between a contaminant source and possible receptors (i.e., people, animals, and plants) and is used to determine who may be at risk of exposure to those contaminants. In our CSM, we describe the suspected contaminant sources, migration and exposure pathways, and potential receptors. This information is summarized on the ADEC *Human Health Conceptual Site Model Scoping and Graphic Forms* in Appendix B. This CSM will be modified following the 2021 site characterization field activities, and a revised version will be included in our final report.

4.1 Potentially Contaminated Media

Dry-cleaning businesses, the presumed source of the solvent contamination, have operated at various locations on the property since the 1960s, most recently operating out of the west end of the Annex building (Figure 2). Based on our understanding of site conditions from previous sampling efforts and historical information, potentially contaminated media include surface and subsurface soil, groundwater, and both indoor and outdoor air.

4.2 Potential Exposure Pathways and Receptors

Potential exposure routes include dermal contact with, and incidental ingestion of, contaminated soil and groundwater, as well as exposure to outdoor vapors, inhalation of volatile compounds in water, and inhalation of indoor air. Potential receptors include construction workers, commercial and/or industrial workers, site visitors, and residents of the neighborhoods northwest (downgradient) and south from the Shopper's Forum Mall property.

4.3 Direct Contact with Soil

Dermal absorption and direct ingestion may be direct-contact exposure pathways for soil. Direct contact with the contaminated subsurface soil at the site is unlikely at present because it is covered by pavement or buildings. However, future excavation at the property could result in dermal contact or ingestion of soil by construction workers. Solvent-contaminated soil has been identified at the north property boundary near Airport Way at 15 feet bgs (S&W 2010) and at the south property boundary near Kennicott Avenue at seven feet bgs (ICA 2011). Soil contaminated with naphthalene was identified at 12.5 to 15 feet bgs adjacent to the Annex west end near a former heating oil tank location. The possible extent of off-site soil contamination is unknown.

4.4 Direct Contact with Groundwater

Direct contact with groundwater is an unlikely exposure pathway because businesses and residences in the area are currently connected to the local water utility, and a search of the Alaska Department of Natural Resources Well Log Tracking System (WELTS) did not reveal nearby downgradient residential wells. However, residential wells that are not recorded in WELTS may still exist in the area.

4.5 Inhalation

Inhalation of indoor and outdoor air may be potential exposure pathways because PCE and its related compounds, which have been identified at various locations around the site (TPECI 2020), can volatilize from the subsurface. In addition, the petroleum VOC naphthalene has been identified in soil near the Annex. An active sub-slab depressurization system is currently operating in the Annex building to mitigate chlorinated solvent vapor intrusion (S&W 2014).

5 SAMPLING AND ANALYSIS PLAN

This section describes our field-screening and analytical sampling approach to investigate the presence of soil, groundwater, soil-gas, and indoor air contamination at the site. Based on the results of the sampling described in this work plan, we expect to draw conclusions regarding the inferred extent of soil, groundwater, and air contamination. Our field activities will include soil, groundwater, soil-gas, and indoor (crawlspace) air sampling activities as described below.

An ADEC-qualified sampler will field-screen, collect, and handle samples for this project in accordance with 18 AAC 75, the ADEC's *Field Sampling Guidance*, and our approved work plan. We will document our field activities in our field notes, on sample collection logs as applicable, and with photographs. We have included copies of our field forms in Appendix C.

We will depend on Gavora personnel to supply information for utility service locations on the property.

5.1 Soil Borings

We will subcontract with GeoTek Alaska, Inc. to advance six soil borings to the groundwater table, anticipated to be up to 15 feet bgs., with a Geoprobe® drill rig equipped with direct-push technology. They will retrieve soil samples in continuous five-foot

intervals with a Macro-Core® sampling system. During soil boring we will log soil types, field-screen soils with a photoionization detector (PID), and select soil samples for laboratory analysis. We will visually classify soil cores in accordance with the American Society for Testing and Materials Standard Practice for Description and Identification of Soils (ASTM D 2488-06). Field-screening samples will be taken at each change in lithology, or at a maximum interval of two feet, and within the first six inches above the groundwater table. We will log soil from both borings at each monitoring well nest and field-screen to the groundwater table but will collect analytical samples from only one boring per location. Two analytical samples will be collected from each location: one at the highest field-screening result, and one above the groundwater interface, for a site total of 12 soil samples not including additional duplicate samples.

5.2 Field-Screening

We will use a hand-held MiniRae 3000 Portable VOC monitor manufactured by Rae Systems, Inc. equipped with an 11.7 electron-Volt lamp to check for the possible presence of VOCs within the soil boring core samples. The PID measures total volatile compounds present as vapors, which is a semi-quantitative indication of chlorinated solvents and hydrocarbons present. The MiniRae 3000 provides a three-second response time up to 15,000 parts per million (ppm). We will calibrate the PID daily, or more often as needed, to a 100-ppm isobutylene-in-air standard in accordance with the manufacturer's instructions. Shannon & Wilson field personnel are trained and experienced in calibration, operation, routine maintenance, and troubleshooting of the PID, as well as interpretation of PID results. We will collect PID field-screening samples from soil cores immediately after retrieval using the procedures summarized below.

We will collect headspace samples from freshly uncovered soil using a clean, stainless-steel spoon and place the soil in a clean, sealable plastic bag, filling it one-third to one-half full and quickly sealing it closed. We will allow potential vapors to develop in the headspace (unfilled portion of the bag) by warming it to at least 40 degrees Fahrenheit (°F) for 10 minutes to one hour, shaking for 15 seconds at the beginning and end of the period to assist volatilization. We will open the bag just enough to allow insertion of the PID probe at about one-half the headspace depth, taking care to avoid uptake of water droplets and soil particles. We will record the maximum PID reading observed, noting any erratic meter response at high-organic vapor concentrations or conditions of elevated headspace moisture.

5.2.1 Soil Sample Collection Procedure

Field personnel will wear a new pair of disposable nitrile gloves during collection and handling of each soil sample to prevent cross-contamination. Samples will be collected

using a new stainless-steel spoon, after which the soil will be quickly placed into new, laboratory-supplied jars appropriate for the analysis to be performed. We will collect each grab sample from the selected soil boring interval and will not collect samples as composites or homogenize the samples. We will label jars in the field, using permanent, waterproof ink, with the following information: the unique sample identifier, date and time of sampling, initials of sample collector, S&W project number, and the desired laboratory-analysis and method.

We will collect soil samples for VOC analysis with the following procedure:

- Using a clean, stainless-steel spoon, place approximately 50 grams of soil into the pre-weighed, 4-ounce, amber-glass sample jar provided by SGS Environmental Services, Inc. (SGS).
- Carefully add 25 milliliters (mL) of methanol to the jar.
- Use a clean paper towel to remove soil from the threads of the sample containers and caps, as needed.
- Use waterproof ink to complete the sample label attached to the jar by the laboratory (do not place a label, tape, or other material on the sample jar).
- Seal the jar and place into the sample cooler with frozen ice-substitute.

Sample depths, field-screening results, and encountered soils will be recorded on our standard boring log (Appendix C).

Immediately after collection, the samples will be placed into a designated sample cooler and maintained at approximately 4 degrees Celsius (°C) with frozen ice substitute. Field duplicate samples will be collected from the same location and according to the same procedure as original samples at a rate of one field duplicate per day or ten percent of total samples. A trip blank will accompany the samples marked for volatile analyses at all times.

5.3 Groundwater Sampling

Our proposed groundwater activities include sampling six monitoring wells and 11 temporary well points under the current scope. At each well sampled, we will record the following on a standard Shannon & Wilson Monitoring Well Sampling Log (Appendix C):

- fluid levels prior to sampling;
- groundwater parameters;
- measurements of the well casing and monument relative to the ground surface;
- total volume of water purged; and
- odor, color, sheen, or other apparent groundwater characteristics.

We will purge each TWP using a peristaltic pump, and we will sample each TWP using a Geoprobe® inertial bladder pump (preferred) or a peristaltic pump and new, disposable tubing. We will place the tubing within the screened interval in each well for purging and sampling activities. We will measure groundwater parameters during purging using a YSI Pro Plus or equivalent (YSI) inserted into a flow-through cell attached to the pump discharge line. Shannon & Wilson field personnel are trained to calibrate and use the YSI.

5.3.1 Temporary Well Points

We plan to install and sample 11 temporary well points within the project boundary to evaluate groundwater quality. Four wells will be co-located with soil boring locations and there will be five temporary well point nests (Figure 2). Temporary well points will be constructed of one-inch diameter steel pipe with a 44-inch long section of 0.004-inch well screen. Wells south from the Shopper's Forum Mall property will be installed to approximately 15 feet bgs, as determined by the depth to the water table observed during the well installations. Wells installed on the property and downgradient to the north will be installed in nests of two wells, with the first well screened at the groundwater table at about 15 feet bgs and the second well screened at 50 feet bgs.

5.3.2 Monitoring Wells

Monitoring wells will be designed, constructed, and installed in accordance with the ADEC 2013 *Monitoring Well Guidance*. We will record well construction measurements relative to the ground surface including the total well depth, screened interval depth, and interval of sand-pack and annular seal, on our standard Shannon & Wilson Monitoring Well Construction Details (Appendix C).

Monitoring wells will be constructed of 2-inch-diameter Schedule 40 PVC pipe. Wells will be installed in nests of two wells, with one well installed at approximately 15 feet bgs, to span the top of the groundwater table, and the second well installed at approximately 40 feet bgs. The shallow well will be installed with a ten-foot long section of 0.010-inch, machine-slotted, threaded well screen to span the groundwater table, and the deeper well will be installed with a five-foot long screen. The lower terminus of the wells will be completed with a threaded Schedule 40 PVC cap.

We will install silica-sand packs (10/20 or 20/40 gradation) around, and a minimum of two feet above, the wells' screened intervals. We will fill the remaining annulus with bentonite chips or grout. We will install expandable well caps in the top of the PVC well casings. We will complete the well installations with water-tight, flush-mount monuments set into concrete. The concrete will be sloped away from the wells to shed water away from the

monuments, except in asphalt where the wells will be recessed to avoid damage by plowing.

5.3.3 Well Development

We will develop temporary well points immediately after installation using a peristaltic pump. We will develop the new monitoring wells no sooner than 24 hours following installation, using a combination of alternating purging and surging. We will use a diaphragm or foot valve pump to purge water from the well and use a surge block attached to rigid poles to surge. Development will continue until the discharged water is free from sediment and visually clear. The water generated during well development will be contained in 55-gallon drums. Before and after well-development activities, we will use a water-level meter to collect depth-to-water measurements and a total-well-depth tape to collect well-depth measurements. We will record the well measurements, purged water volumes, and other pertinent data on our standard Well Development Log (Appendix C).

5.3.4 Groundwater-level Monitoring

We will measure the static groundwater level in each well prior to sampling using an electronic water-level indicator. The probe of the water-level indicator will be slowly lowered down the well until it produces the distinct tone indicating contact with the water surface. We will measure the depth to water from the top of the well casing to the nearest 0.01 foot. The probe will be decontaminated prior to each use and between each well to prevent the addition of external or cross-contamination into a well. Details and results of water-level measurement will be recorded on the Monitoring Well Sampling Log (Appendix C).

We will subcontract a surveyor to conduct a vertical and horizontal survey of the monitoring wells. Latitude and longitude information will be reported to the nearest 0.1 foot and the top-of-casing elevation will be reported to the nearest 0.01 foot. We will use an Eos Arrow GPS to record the location and elevation of the TWPs. Water level elevation data collected from the wells will be used to calculate groundwater gradient information using the hydraulic gradient calculator available at the Environmental Protection Agency (EPA) On-line Tools for Site Assessment Calculation website. Survey information and the calculated groundwater gradient will be included in our final report.

5.3.5 Groundwater Parameters Stabilization Criteria

We will measure temperature in °C, pH, conductivity in microSiemens (µS), dissolved oxygen (DO) in milligrams per liter (mg/L), and redox potential in millivolts (mV) using a water quality meter to determine the point at which sample collection can begin. We will

purge each well until three consecutive readings (taken at least three minutes apart) of temperature, pH, conductivity, DO, and redox potential have stabilized, or after three well-casing volumes are purged.

We will begin sampling when the well reaches stabilization. The following values are used to indicate stability: ±3 percent °C, ±0.1 pH; ±10 percent DO, ±3 percent conductivity; and ±10mV redox. Water clarity (visual) will also be recorded during purging.

5.3.6 Water Sample Collection Procedure

Once water quality parameters are stable, we will collect groundwater samples into laboratory-supplied containers. We will wear a new pair of disposable nitrile gloves during the collection and handling of each groundwater sample to prevent cross-contamination. We will fill sample containers directly from the discharge line. Samples will be labeled with a unique identifier, collection date and time, and all requested analyses.

5.4 Soil-Gas and Indoor Air Sampling and Analysis Procedures

We plan to conduct our vapor intrusion assessment of the main Mall building in the fall, the season which typically presents the greatest risk for vapor intrusion in Alaska. We plan to collect three soil-gas and three indoor (crawlspace) air samples from the main Mall building. While the crawlspace is not occupied as often as the ground floor of the Mall, it is likely to have higher VOC concentrations if vapor intrusion is occurring because it is the lowest level of the building.

We plan to install and collect subsurface soil-gas samples from three locations inside the crawlspace and collect crawlspace air samples concurrently with the soil-gas locations (Figure 2). We will collect the soil-gas and indoor air samples in accordance with the ADEC November 2017 *Vapor Intrusion Guidance for Contaminated Sites*. One field duplicate sample for each matrix will be submitted to the laboratory for quality control purposes. The air samples will be sent to Eurofins Air Toxics, Inc. in Folsom California (Eurofins) for determination of VOCs by a modified EPA Method TO-15. Our field forms are in Appendix C.

We acknowledge that our proposed sampling frequency is less than the ADEC-recommended frequency of one sample per 1,000 square feet of floor space; the size of the Mall crawlspace makes meeting the ADEC's recommendation impractical. The crawlspace below the Mall is one continuous airspace and so we believe that the number of samples we have proposed will be adequate to characterize the area. We also acknowledge that ADEC recommends collecting outdoor air samples concurrently with indoor air samples as part of a "multiple lines of evidence" strategy. We will not collect an outdoor air sample as part of

this sampling effort because we do not expect PCE, TCE, and related compounds to be present in outside air at this site and because the samples will be collected from a crawlspace with limited outdoor air infiltration.

5.4.1 Subsurface Point Installation

We will install the sampling points by pre-drilling a small hole into the dirt floor of the crawlspace with an electric drill to 18 inches bgs, then completing the installation by driving a stainless-steel soil-gas point to at least 24 inches bgs. The top of the hole will be sealed into place with bentonite and allowed to equilibrate at least one day before sampling. The stainless-steel sample point will be fitted with Teflon air-sampling tubing and serve as the sampling point from which we will collect soil-gas samples.

5.4.2 Soil-gas Point Leak Detection

We will place a leak-detection shroud over the sample point, connecting the sample point tubing through the shroud using the built-in fittings (see page 32 of the November 2017 ADEC *Vapor Intrusion Guidance for Contaminated Sites* for a schematic). The tubing connects to a sampling "T" outside the shroud, to which we connect a peristaltic pump, rotameter, and helium detector on one side, and the sample canister on the other. Connections outside the shroud will be leak-tested using a shut-in test; a vacuum (approximately 30 inches mercury) will be applied with the pump and shut-in using the valves on the sampling train. We will monitor the vacuum gauge on the sampling "T" to check that the vacuum is sustained for at least one minute. If a leak is detected, we will retighten the connections and perform a second shut-in test, repeating until we have a leak-free sampling train.

Once we complete the shut-in test, we will then purge the sample point at the same rate at which the sample will be collected (no more than 200 milliliters per minute [mL/min]) using the peristaltic pump; during purging, we will flood the shroud with 99.99% helium while monitoring the helium detector. We will continue purging until approximately one volume of the sample train has been purged. If at any point a helium reading on the detector exceeds five percent of the concentration flooding the shroud, the soil-gas sampling point will have failed the leak check. Leaks detected in this way are either in the connection from the sample-point tubing to the fitting on the inside of the shroud, or the seal around the sample point. If we determine there is a leak, we will check our connections and reseal the sample point with bentonite; if we are unable to eliminate the leak, we may need to reinstall the sample point.

5.4.3 Soil-gas Point Sampling

We will use methods outlined in the *Eurofins Sorbent & Solution Sampling Guide*, summarized in this paragraph, to collect the soil-gas samples. The sample canister will be attached to the sample point via the sampling shroud and the flow rate will be set at 200 mL/min. When sampling is complete, the canister will be closed and stored at room temperature before shipment to Eurofins. We will use custody seals when shipping the samples to the laboratory via FedEx. We will request a standard data turnaround time for these samples, which is typically two weeks.

5.4.4 Indoor (Crawlspace) Air Sampling

We plan to collect indoor (crawlspace) air samples from the crawlspace of the Mall building. We will collect indoor air samples over a 24-hour period using 6-liter canisters with laboratory-supplied flow controllers from locations along the north and east sides of the crawlspace; these locations are closest to the suspected groundwater contamination source areas at the site.

We note ADEC guidance recommends background sources that could potentially contribute to indoor air measurements should be removed 24 hours prior to indoor air sampling. We will request that the building management refrain from the following activities prior to and during the sampling event:

- Opening any windows, fireplace dampers, openings or vents;
- Operating ventilation fans unless special arrangements are made;
- Smoking in the building;
- Painting;
- Using wood stoves, fireplaces or other auxiliary heating equipment (e.g., kerosene heaters);
- Allowing containers of gasoline, diesel fuel or heating oil to remain in the building, except for fuel oil tanks;
- Cleaning, waxing or polishing furniture or floors with petroleum- or oil-based products;
- Using air fresheners or odor eliminators.

The 24-hour flow controller will be connected to the canister and the canister valve will then be opened to begin sampling crawlspace air. Samples will be collected about two feet off the ground; the crawlspaces have approximately four feet of clearance. The canister valve will be closed when the desired time interval is met and the final vacuum measured and recorded; the target vacuum is 5 to 10 inches of mercury.

6 ANALYTICAL METHODS

We will submit soil and groundwater samples to the SGS receiving office in Fairbanks, Alaska, and we will ship air samples to the Eurofins laboratory in Folsom, California. SGS and Eurofins meet ADEC-acceptance criteria and have received National Environmental Laboratory Accreditation Program validation. We will request a standard data-turnaround time for the analysis, which is typically around two weeks.

Exhibits 6-1 and 6-2 summarize the analytes, laboratory methods, sample containers and volumes, and preservation methods for soil, groundwater, and air samples. Except where noted, sample containers will be filled to their approximate capacity.

Exhibit 6-1: Sample Containers, Preservation, and Holding Time Requirements

Media	Contaminant	Method	Container	Preservation	Holding Time
Soil	VOCs	EPA 8260D	Pre-weighed 4-oz amber glass jar with septa	25mL MeOH 0 °C to 6 °C	14 days
Water	VOCs	EPA 8260D	3 x 40-mL amber VOA vials w/septa	HCl 0 °C to 6 °C	14 days
Soil-gas	VOCs	Modified TO-15 Low Level	1-L canister	None	30 days
Indoor Air	VOCs	Modified TO-15 SIM	6-L canister	None	30 days

NOTES:
L = liter
mL= milliliter
MeOH = methanol
HCl = hydrochloric acid
°C = degrees Celsius

Exhibit 6-2: Analytical Sample Location, Frequency, and Analysis

Sample Matrix	Location	Analytical Method	Number of Samples
Soil	On-site: Two samples per soil boring; one at the highest PID reading and one at the groundwater interface	EPA 8260D	6 + 1 DUP
	Off-site: One sample per soil boring at the groundwater interface	EPA 8260D	6 + 1 DUP
Groundwater	Existing monitoring wells	EPA 8260D	2
	New monitoring wells (2 wells per nest)	EPA 8260D	4 + 1 DUP + 1 EB
	Temporary well points	EPA 8260D	11 + 1 DUP
Soil Gas	Main Mall Building	EPA Modified TO-15 Low Level	3 + 1 DUP
Indoor Air	Main Mall Building	EPA Modified TO-15 SIM	3 + 1 DUP

NOTES:
DUP = field duplicate
EB = equipment blank

7 LABORATORY AND FIELD QUALITY-CONTROL MEASURES

7.1 Decontamination of Sampling Equipment

All non-disposable sampling equipment introduced into or contacting soil or groundwater at the site will be decontaminated prior to reuse. We will decontaminate all non-disposable sampling equipment using a three-part process as follows:

- a thorough non-phosphate detergent wash;
- tap water rinse; and
- distilled-water rinse.

7.2 Field-Instrument Calibration

Field equipment will be calibrated daily, or more often as needed, in accordance with manufacturer instructions. We will document calibrations in the field notes.

7.2.1 PID

We will complete a calibration once per day, or more often as necessary. We will calibrate the PID with a 100-ppm isobutylene-in-air standard and adjust it to operate within the manufacturer's specifications. The calibration results, as well as any instrument maintenance and error messages, will be recorded in a designated logbook kept with the instrument. We will charge the PID battery prior to use, check that the sensor and lamp are clean, and replace the inlet filter regularly.

According to the manufacturer's information, the measurement accuracy of the MiniRae 3000 PID is ±10 percent of a reading or ±2 ppm, whichever is greater, between 0 and 2,000 ppm. The accuracy is ±20 percent of a reading above 2,000 ppm. The precision is one percent of calibration (calibrated with 100 ppm isobutylene).

7.2.2 YSI

We will check the YSI for parameters of conductivity, temperature, pH, and oxidation/reduction potential against a standard solution prior to arrival on the site. The YSI will be calibrated daily for dissolved oxygen and will be calibrated for other parameters at the manufacturer-recommended frequency or as-needed. The instrument will be calibrated with standards recommended or approved by the manufacturer. Calibration standards that have reached their expiration dates will not be used for calibration.

7.3 Temperature Blanks

Analytical soil and groundwater samples will be placed into separate sample coolers containing a temperature blank and artificial ice. Temperature blanks will consist of a jar filled with water and packed with the samples in each cooler. We will add artificial ice as necessary to maintain an interior cooler temperature within the EPA's specified range of 0 °C to 6 °C (EPA publication SW-846); ADEC has approved this range. The laboratory will document sample and cooler conditions, including temperature, upon sample receipt.

7.4 Trip Blanks

We will use trip blanks to detect and quantify potential organic chemical cross-contamination between samples or contamination originating from an outside source. The laboratory will create one trip-blank set for each matrix (soil and groundwater) and one for each cooler containing VOC samples. Field personnel will transport trip blanks to the sampling location and return them to the laboratory in the same cooler as their associated project samples. The laboratory will analyze trip blanks for VOCs using the same analytical

method as the project samples. The concentration of any VOC artifact found in the trip blank will be noted and compared to the project-sample results.

7.5 Field Duplicates

We will collect one field-duplicate per day for each matrix sampled and for each target analyte, at a minimum rate of ten percent of total samples. If possible, we will collect duplicates from locations most likely to be contaminated because a calculation of duplicate precision is not possible for samples with contaminants below detection limits. We will assign duplicates a unique sample number and submit them "blind" to the laboratory. We will use duplicate-sample results to test the comparability of analytical data.

We will collect field-duplicate samples by filling an additional, complete set of sample containers with soil or groundwater from the selected boring interval or well. Duplicates will be analyzed using the same analytical method used for the primary sample.

We will collect one field-duplicate for indoor air and one duplicate for soil-gas by connecting two sample canisters to the same sample port using a duplicate sampling "T".

7.6 Sample Custody, Storage and Shipping

After collection, we will place the soil and groundwater samples in hard plastic coolers with adequate quantities of ice substitute to maintain sample temperatures between 0 °C and 6 °C until the samples reach the laboratory. A temperature blank and trip blank will be packed with the samples in each cooler. We will keep air sample canisters at room temperature. We will maintain custody of the samples in our Fairbanks office prior to submitting them to the laboratory for analysis. We will affix custody seals to the outside of the package with air samples when we ship them to Eurofins.

We will complete Chain-of-Custody (COC) forms at the time each cooler is packed or shipment is prepared, placing the COC forms in plastic bags inside each cooler or box. The COC forms document sample possession from the point of collection to the time of receipt by the laboratory sample control center. The original forms will accompany the shipment; we will retain a copy to document sample accountability between field and laboratory.

7.7 Laboratory Quality-Control Samples

The analytical laboratory will perform QC measurements to determine precision and accuracy of the entire measurement system, including initial and continuing calibration checks, analysis of method blanks, analysis of spiked samples, duplicate analyses, and evaluation of surrogate-analyte recoveries. Method blank results, spiked sample recoveries,

duplicate analyses, and surrogate-recovery data will be presented within the laboratory report. The laboratory will apply their in-house procedures for QC reporting.

7.8 Equipment Rinsate Samples

We will collect one equipment blank during our groundwater sampling activities. We will not perform decontamination of disposable soil-sampling equipment such as Macro-Core® liners; therefore, we do not plan to collect equipment rinsate blanks in conjunction with soil samples collected for this project.

7.9 Sample Preservation Methods

The laboratory will supply sample bottles containing the appropriate preservatives as applicable (e.g., hydrochloric acid for VOC groundwater samples). We will add 25 mL of methanol to the VOC soil-sample containers during sampling (field extraction). Samples will be kept chilled to a temperature between 0 °C to 6 °C.

7.10 Data Reduction, Evaluation, and Reporting

Data evaluation procedures will include quality assurance (QA) checks to verify holding times have been met, duplicate samples have been collected, and checks for other QA parameters have been performed. We will complete an ADEC laboratory data review checklist as part of our data review process. The S&W project manager will check field data during preparation of the final report.

Laboratory tests will be validated by the laboratory supervisor or other responsible party and include evaluation for precision and accuracy of the data set. The laboratory QC officer or other responsible party will review and sign analytical data before its release. Data reporting will comprise laboratory reports to be submitted to S&W. The individual laboratory reports will be included with our summary report; the data will be summarized in tables for convenient reference. We will prepare a draft and final report presenting the results of the field activities, as well as soil, water, and air analytical results in tabular form.

We will check analytical data generated by the laboratory for precision, accuracy, and completeness. Numeric quality-assurance objectives for this project are presented in Exhibit 7-1 below. Consistency in sampling procedures, sample-preservation methods, analytical methods, and data-reporting units will maintain comparability among samples.

Exhibit 7-1: Quality Assurance Objectives for Samples

Matrix	Analyte	Method	Precision	Accuracy	Completeness
Soil	VOCs	EPA 8260D	±50%	(analyte dependent)	85%
Groundwater	VOCs	EPA 8260D	±30%	(analyte dependent)	85%
Air	VOCs	EPA Modified TO-15	±25%	(analyte dependent)	85%

8 INVESTIGATION-DERIVED WASTE

The source of the chlorinated solvent contamination at the site is presumed to be from discarded, waste solvent from dry cleaning business operations. As a result, environmental media (soil and groundwater) contaminated with the waste solvent at this site are subject to RCRA regulation as an F-listed hazardous waste; specifically F002, which is the hazardous waste category for spent halogenated solvents including PCE, TCE, and daughter products. When detectable concentrations of these wastes are contained in environmental media such as soil and groundwater, EPA then considers those media to be hazardous wastes.

The EPA may issue a Contained-in Determination that allows certain soil and groundwater investigation-derived wastes (IDW) contaminated with hazardous waste to be handled as if they were not hazardous wastes. This would apply to IDW with concentrations of F002-listed wastes that are reported above the detection level but below their respective ADEC cleanup levels. It is possible that some IDW generated during this project will contain solvent concentrations that are less than the most stringent ADEC cleanup levels. As a result, we recommend petitioning EPA for a Contained-in Determination before commencing site characterization activities. IDW meeting these criteria can be handled and disposed using less stringently regulated and less costly methods.

We will containerize soil cuttings separately into drums by boring location. Likewise, purge water, development water, and decontamination rinsate will be containerized separately by location into drums or buckets. If analytical results indicate that soil or water is classified as hazardous waste, we will consolidate the soil or water into 55-gallon drums for transport to the appropriate disposal facility. We will comply with the applicable state and federal regulations for disposal of contaminated environmental media.

Prior to transport and disposal of contaminated soil and water, we will submit an ADEC *Transport, Treatment, and Disposal Approval Form for Contaminated Media* to the ADEC project manager for approval (Appendix C). Other investigation-derived waste will consist of

disposable sampling equipment (i.e. nitrile gloves, pump tubing, and soil boring sleeves) and will be disposed of at the Fairbanks North Star Borough Landfill.

9 FIELD DOCUMENTATION

We will maintain field notes throughout the project to document our field activities, procedures, and observations. The field notes will be written in a notebook or on appropriate field forms in waterproof ink, including at least:

- Sampling team member(s)
- Weather and other salient observations
- Documentation of instrument calibration
- Location of activity and site conditions
- GPS coordinates (if used)
- Site sketches
- Field observations and comments
- Field measurements
- Changes to sampling protocol
- Sample identification
- Sample date and time
- Site photographs
- Location of sampling points

We will prepare field activity reports for each day we are in the field. Samples of our standard field forms are included in Appendix C.

10 REFERENCES

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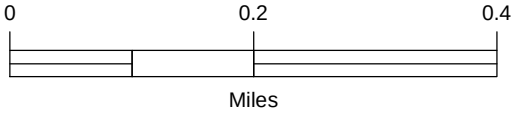
Map adapted from aerial imagery provided by Pictometry International Corporation, 2017.



N

Shopper's Forum Mall
Site Characterization Work Plan
Fairbanks, Alaska

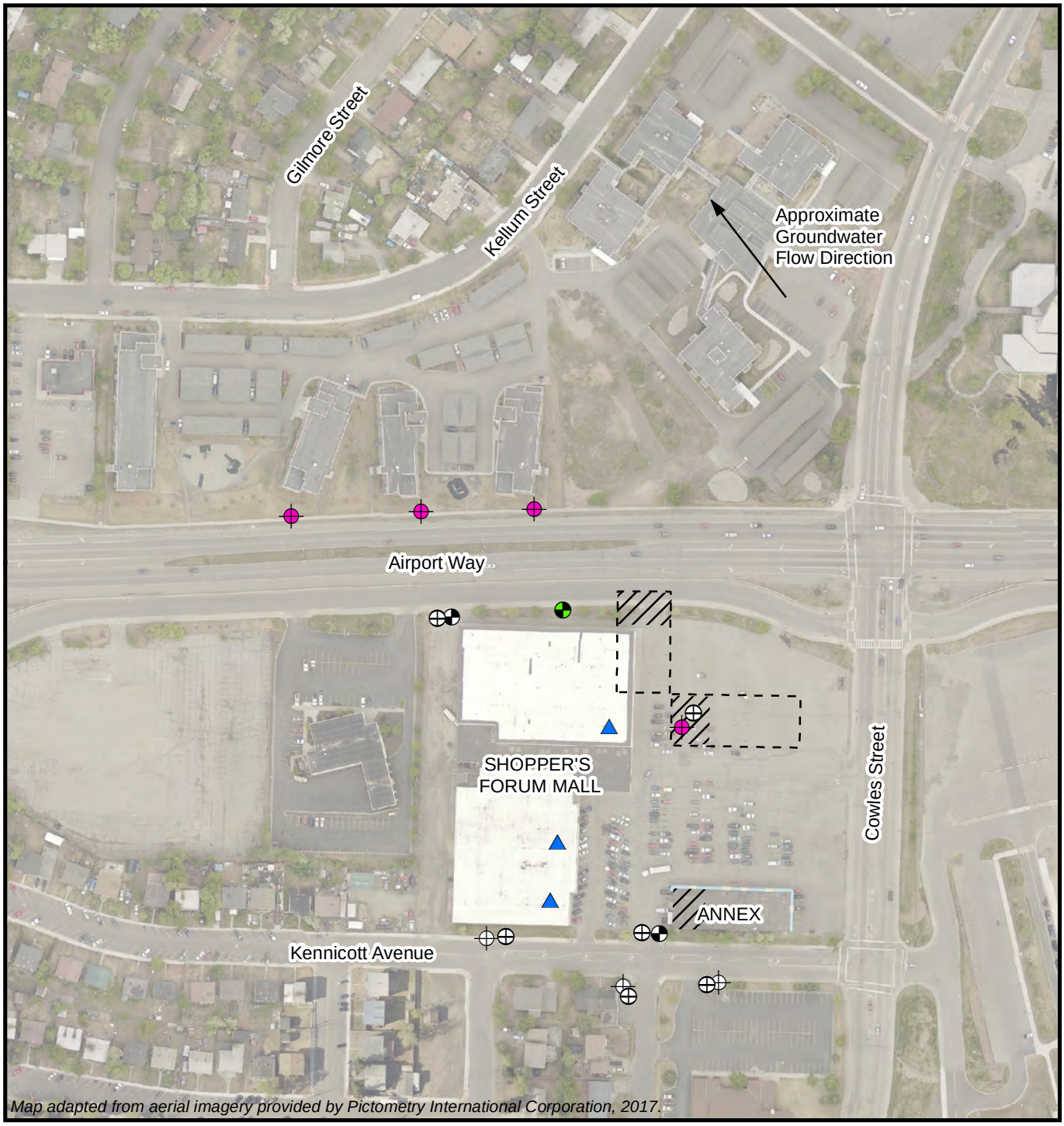
VICINITY MAP

April 2021

106568-001

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1



0 300 600

Feet

LEGEND

- Soil Boring
- Temporary Well Point
- Temporary Well Point Nest
- Existing Monitoring Well MW-01A and MW-01B
- Monitoring Well Nest
- Crawlspace Air and Soil-Gas
- Former Building
- Former Laundry

N

Shopper's Forum Mall
Site Characterization Work Plan
Fairbanks, Alaska

PROPOSED SAMPLE LOCATIONS

April 2021 106568-001

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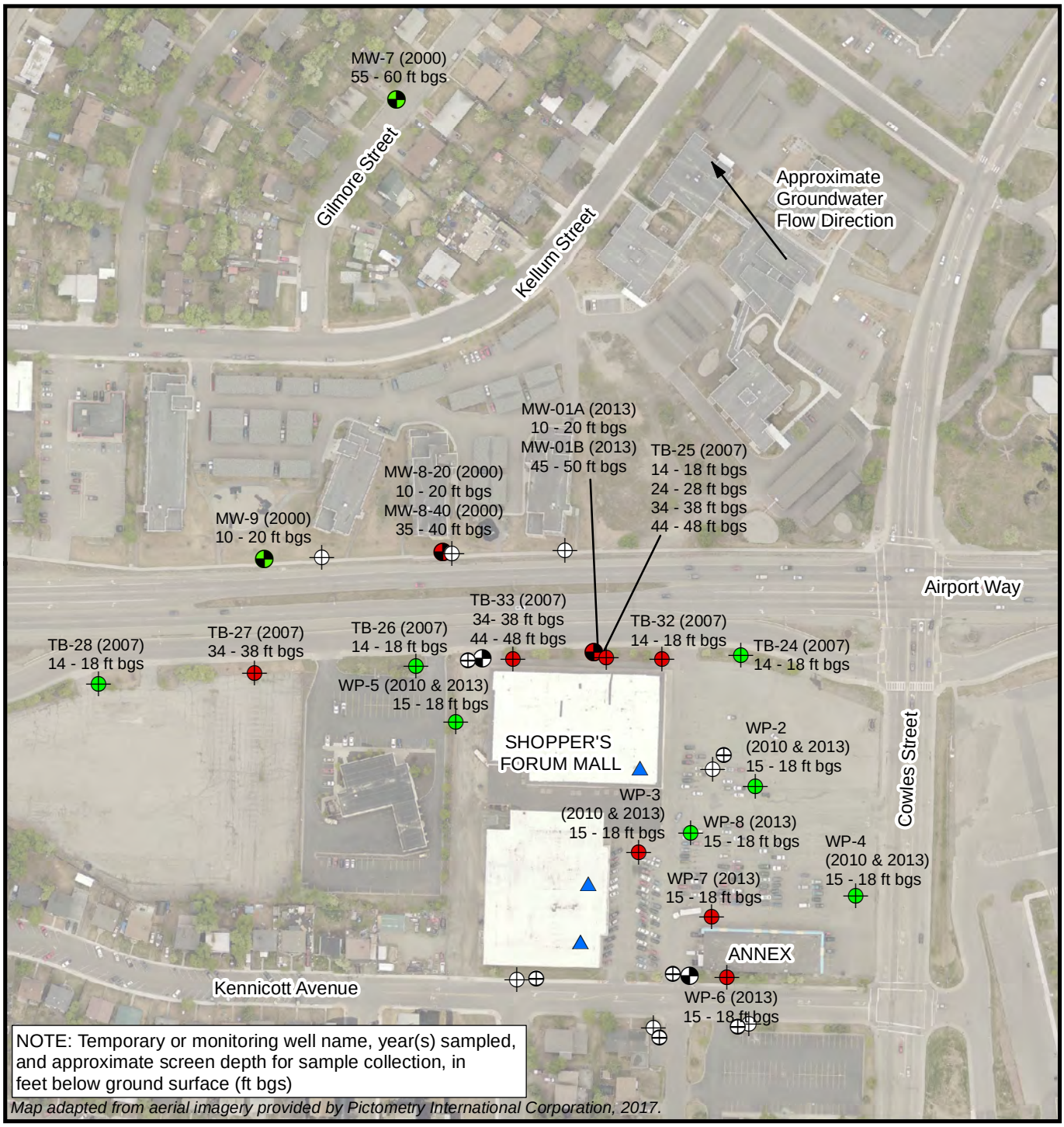
Figure 2



Map adapted from aerial imagery provided by Pictometry International Corporation, 2017.

LEGEND

- Proposed Crawlspace Air and Soil-Gas Sample Location
- Proposed Soil Boring Location

Temporary Well Point

- Result Exceeds ADEC Cleanup Level (CUL) for PCE and/or TCE
- Result Less than ADEC CUL for PCE and/or TCE
- Proposed Temporary Well Point Location

Monitoring Well

- Result Exceeds ADEC CUL for PCE and/or TCE
- Result Less than ADEC CUL for PCE and/or TCE
- Proposed Monitoring Well Location

0 300 600

Feet

N

Shopper's Forum Mall
Site Characterization Work Plan
Fairbanks, Alaska

HISTORIC GROUNDWATER RESULTS

April 2021 106568-001

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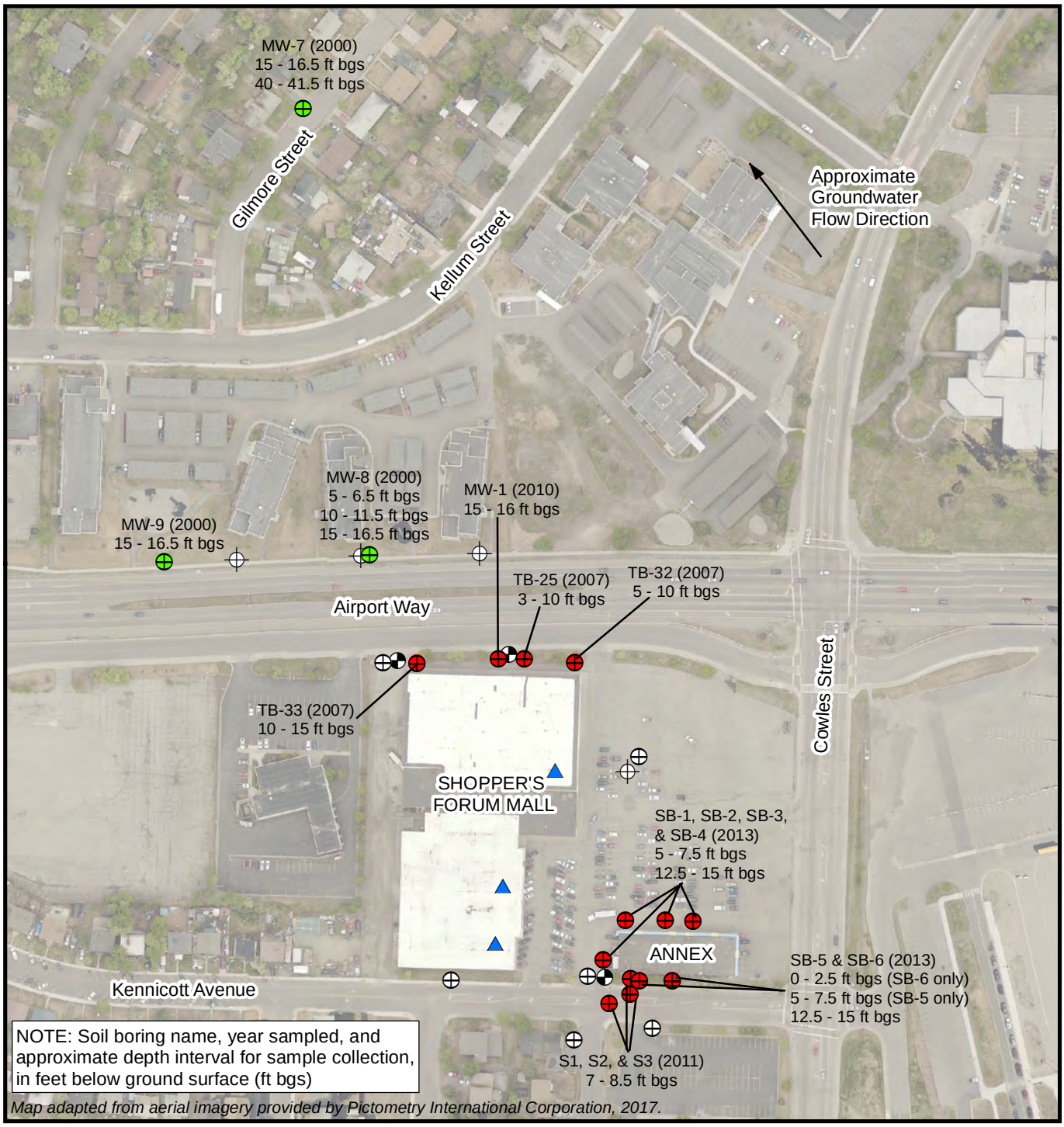
Figure 3



LEGEND

Soil Boring

- Result Exceeds ADEC Cleanup Level (CUL) for PCE and/or TCE
- Result Less than ADEC CUL for PCE and/or TCE
- Proposed Soil Boring Location
- Proposed Temporary Well Point Nest Location
- Proposed and Existing Monitoring Well Location
- Proposed Crawlspace Air and Soil-Gas Sample Location

0 300 600

Feet

N

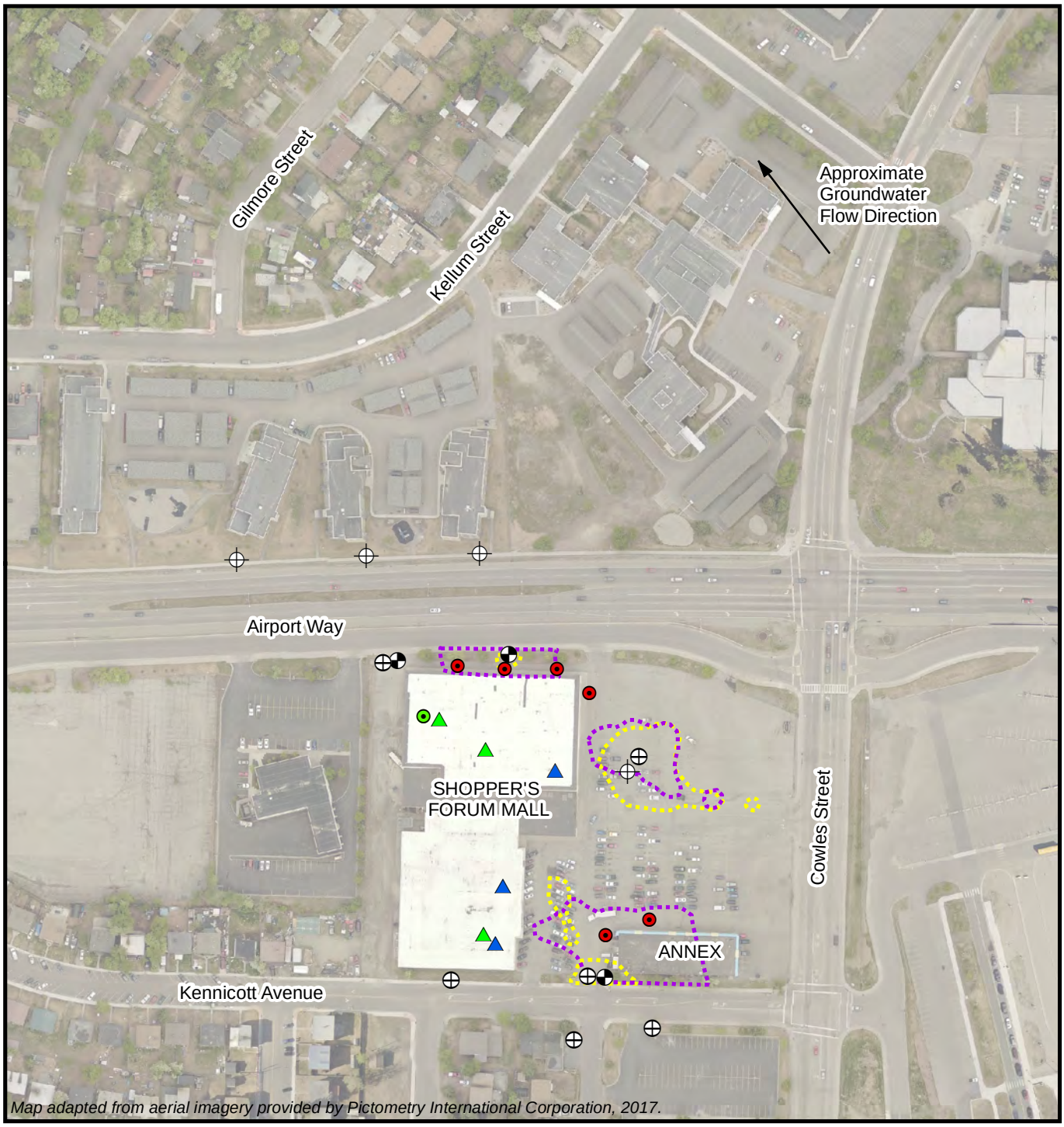
Shopper's Forum Mall
Site Characterization Work Plan
Fairbanks, Alaska

HISTORIC SOIL SAMPLE RESULTS

April 2021 106568-001

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 4



LEGEND

Indoor Air (February 2012)

- PCE and TCE Results Less than ADEC Commercial Target Levels

Near-Slab Soil-Gas Sample Locations (July 2010)

- PCE and TCE Results Less than ADEC Commercial Target Levels
- PCE and/or TCE Results Exceed ADEC Commercial Target Levels

- Proposed Soil Boring Location
- Proposed Temporary Well Point Nest
- Proposed and Existing Monitoring Well Location
- Proposed Crawlspace Air and Soil-Gas Sample Locations

Approximate Soil-Gas Contamination Areas (October 2019)

- PCE Exceeding ADEC Commmercial Target Level
- TCE Exceeding ADEC Commercial Target Level

0 300 600

Feet

N

Shopper's Forum Mall
Site Characterization Work Plan
Fairbanks, Alaska

HISTORIC SOIL-GAS AND AIR SAMPLE RESULTS

April 2021 106568-001

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 5

APPENDIX A: SITE SAFETY AND HEALTH PLAN

Appendix A

Site Safety and Health Plan

CONTENTS

APPENDIX A: SITE SAFETY AND HEALTH PLAN

Shannon & Wilson prepared this Site Safety and Health Plan (SSHP) for the site characterization activities at the Shopper's Forum Mall in Fairbanks, Alaska. The purpose of this SSHP is to protect the health and safety of field personnel from physical and chemical hazards associated with work at this site.

The provisions of this plan apply to Shannon & Wilson personnel who will potentially be exposed to safety and/or health hazards during this investigation. Shannon & Wilson employees are covered under a Corporate Safety and Health Program. General safety and health requirements described in that program will be met. Each Shannon & Wilson employee on the site will sign the personal acknowledgement form documenting they have read and understand this SSHP and agree to abide by its requirements. A copy of this SSHP will be kept on-site throughout the duration of sampling operations.

A.1 SITE HAZARD ANALYSIS

There are two categories of hazards that may occur during the field work: potential chemical exposure hazards and physical hazards associated with site characterization activities. These hazards are discussed below.

A.1.1 Chemical Exposure Hazards

Contaminated soil and water may be encountered during site exploration activities. Chlorinated solvent and petroleum compounds are believed to be the primary contaminants of potential concern at the site and may be encountered in soil and groundwater at unknown concentrations.

Shannon & Wilson personnel will implement skin protection when they are to contact potentially contaminated soil or water. Field personnel will wear work gloves or nitrile gloves as needed, and Level D personal protective equipment (PPE). Field personnel will not require respiratory protection based on the current understanding of site conditions and scope of services.

A.1.2 Physical Hazards

Primary physical hazards associated with site characterization activities include drilling equipment and other heavy equipment; vehicle traffic; temperature stress; lifting, slipping, tripping, falling; insects; and noise hazards. The best means of protection against accidents related to physical hazards are careful control of equipment activities in the planned work area and use of experienced and safety- and health-trained field personnel.

Field personnel will not enter confined spaces for site characterization activities, nor will they enter trenches or excavations greater than four feet in depth.

A.1.2.1 Drilling Activities and Heavy Equipment

Drill rigs have lots of moving parts and are very loud. Field personnel will wear proper PPE including appropriate hearing protection. Field personnel will maintain a safe distance from the drill rig and will be aware of drill rig operations and crew movements. Practice good housekeeping around the work areas. Know where the drill rig's emergency shut-off switch(es) are located in order to shut the rig down in an emergency situation.

Underground utilities are present at the site and off-site. Utility locates will be requested by Shannon & Wilson prior to conducting any ground-penetrating work.

A.1.2.2 Temperature Stress

The field effort discussed in this Work Plan will occur during the summer. However, in Interior Alaska, cold, wet, and/or windy conditions are possible. In addition, hot weather or wildfire smoke are also possible. Cold stress or heat stress will be guarded against by wearing appropriate clothing, having warm or cool shelter available, scheduling rest periods, adequate hydration, and self-monitoring physical and mental conditions.

A.1.2.3 Lifting Hazards

Moving coolers of soil samples or other heavy objects presents a lifting hazard. Personnel will use proper lifting techniques and obtain assistance when lifting objects weighing more than 40 pounds.

A.1.2.4 Slips, Trips, and Falls

The most common hazards on a job site are typically slips, trips, and falls. These hazards will be reduced through the following practices:

- Personnel will stay alert.
- All pathways will be kept free of materials, supplies, and obstructions at all times.
- Tools and other materials will be located as not to cause tripping or other hazards.
- Personnel should be aware of potential tripping hazards associated with vegetation, debris, and uneven ground.
- Personnel should be aware of limitations imposed by work clothing and PPE.

The project site may be inherently hazardous due to the potential presence of rain, snow, and ice, which can alter the character of the ground surface. The risk for slips, trips, and falls

by site workers is increased due to wet or icy surfaces; therefore, workers will use caution when walking at the site.

A.1.2.5 Insects and Animals

During the summer months, mosquitoes and other insects are common in Interior Alaska. Wearing PPE should be sufficient to protect site workers. Animals are not expected to present a site hazard because the site is in an urban area.

A.1.2.6 Congested Areas

The site investigation may at times require field personnel to work adjacent to or in roadways. Field personnel will observe the speed and frequency of traffic proximal to the work site. Appropriate cones, barricades, or signs to secure the work area will be used when required.

Pedestrians will be present at the site during drilling activities and field personnel will be alert for pedestrian traffic near the drilling area.

A.1.2.7 Noise Hazards

Hearing protection will be used as necessary by field staff when near heavy equipment, drill rigs, or other loud equipment during drilling activities. Disposable earplugs will be used to reduce noise levels. Disposable earplugs will have the capacity to reduce noise by at least 30 decibels (dB), and below the OSHA PEL (eight-hour TWA) of 85 dB.

A.1.3 COVID-19 and Other Hazards

Employees will not report to work if they are experiencing symptoms of COVID-19, see the enclosed *Guidance for Field Work During the COVID-19 Pandemic*. Field staff will screen themselves for COVID-19 symptoms included in the attachment prior to arriving on the job site each day. If field staff contract symptoms of COVID-19 they will not report to work, notify their supervisor and the project manager, and seek appropriate medical care.

Biological, ionizing radiation, and other hazards are not expected to be present. However, be aware of the surroundings and maintain safe work practices in accordance with Shannon & Wilson's Corporate Health & Safety Plan.

A.2 PERSONAL RESPONSIBILITIES, TRAININGS, AND MEDICAL SURVEILLANCE

Below is a summary of the assignment of responsibilities, training requirements, and medical surveillance information for Shannon & Wilson personnel.

A.2.1 Assignment of Responsibilities

Shannon & Wilson is responsible for understanding and complying with the requirements of this SSHP. Following is a list of responsibilities of all Shannon & Wilson personnel working on the site:

Shannon & Wilson is responsible for understanding and complying with the requirements of this SSHP. Following is a list of responsibilities of all Shannon & Wilson personnel working on the site:

- Review and follow this SSHP.
- Attend and participate in safety meetings.
- Take appropriate action as described in this SSHP regarding accidents, fires, or other emergency situations.
- Take all reasonable precautions to prevent injury to themselves and their fellow workers.
- Perform only those tasks they believe they can do safely, and immediately report any accidents or unsafe conditions to Shannon & Wilsons's Project Manager or Office Health and Safety Manager.
- Halt work, by themselves or by others, when they observe an unsafe act or potentially unsafe working condition.
- Report accidents, illnesses, and near-misses to the local contact and to Shannon & Wilson's Fairbanks office Health and Safety Manager.

A.2.2 Personal Training

Shannon & Wilson personnel performing activities on this site and under this plan have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual has completed an annual eight-hour refresher-training course and/or initial 40-hour training course within the last year.

A personal acknowledgement form will be completed by field personnel prior to commencing field activities. This acknowledgment form will document that they have read and understand this SSHP.

A.2.3 Medical Surveillance Program

All field personnel performing activities on this site covered by this SSHP have undergone baseline and annual physical/medical examinations as part of Shannon & Wilson's Corporate Health and Safety Program. All field personnel are active participants in Shannon

& Wilson's Medical Monitoring Program or in a similar program, which complies with 29 CFR 1910.120(f).

A.3 PERSONAL PROTECTIVE EQUIPMENT

PPE will be required during the course of the field work. PPE selection will be based primarily on work-task requirements and potential exposure. Field personnel will use Level D protective equipment during normal work activities. Personnel are trained in the use of PPE that is, or may be, required. All personnel shall wear Level D PPE as a minimum:

- standard work clothes or cotton overalls;
- reflective, high-visibility safety vest;
- safety-toe boots;
- safety glasses
- cloth and/or disposable face mask
- hearing protection (on hand if needed);
- gloves; and,
- hard hat.

Disposable nitrile gloves will be worn during any activity that may require dermal contact with potentially contaminated media.

A.4 DECONTAMINATION PROCEDURES

Equipment decontamination procedures are necessary for any reusable equipment that comes into contact with contaminated soil and/or water. Decontamination procedures will consist of a rinse with non-phosphate-based detergent, a second rinse with plain tap water, and a final rinse with distilled water. Sampling equipment and PPE that is expendable will be disposed of at the site or in a landfill off-site.

Shannon & Wilson will conduct all site characterization activities in Level D PPE. Personnel decontamination will consist of the following:

- At the conclusion of site work each day, disposable PPE (likely limited to nitrile gloves) will be placed in trash bags for off-site disposal.
- Employees will wash their hands and face with soap and water before eating, drinking, smoking, or applying cosmetics.

A.5 ACCIDENTS AND EMERGENCIES

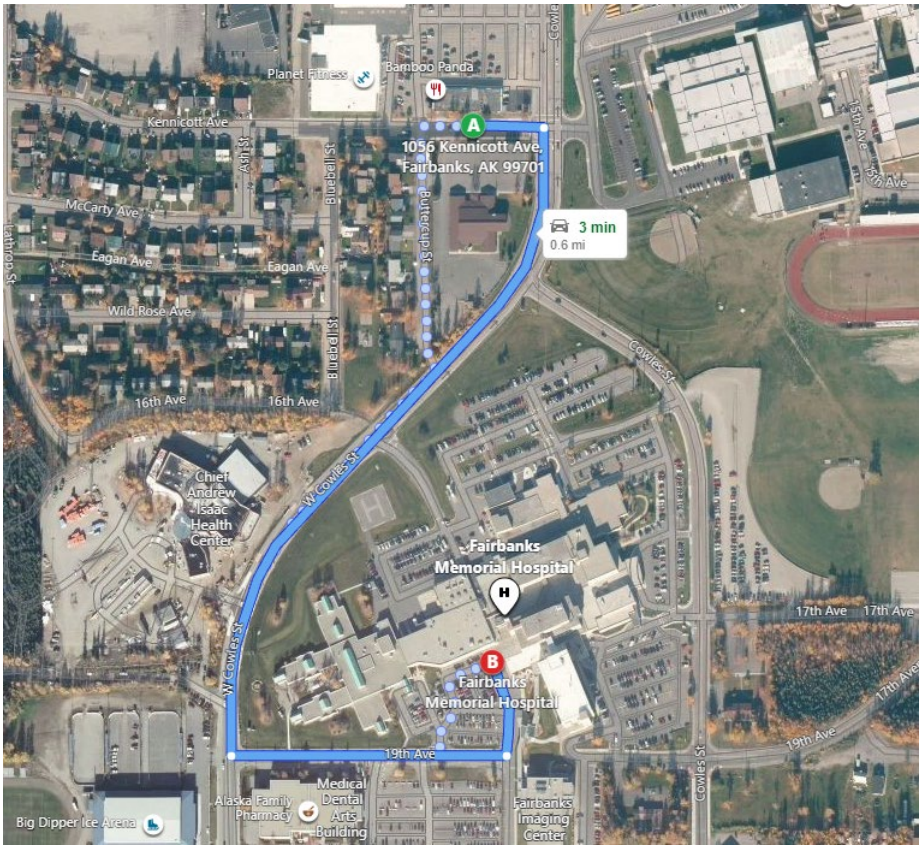
Shannon & Wilson field personnel are current in first aid and cardiopulmonary resuscitation (CPR) training. At a minimum, the following site safety equipment and first aid supplies shall be available in the field:

- PPE and clothing specialized for known site hazards;
- first aid kit, including first aid booklet;
- portable eye wash;
- clean water in portable containers; and
- other decontamination supplies.

The primary emphasis of any health and safety plan is accident prevention. If an injury or illness occurs during the course of field work, the severity of the problem will dictate the level of response. Minor injuries or illness will be addressed with basic first aid measures as recommended by a registered nurse through Shannon & Wilson's corporate Medcor service (1-800-775-5866).

More serious injuries will require assistance from the medical staff at the Fairbanks Memorial Hospital located at 1650 Cowles Street in Fairbanks, Alaska. The hospital provides 24 hours per day emergency care services. The general call line for the Fairbanks Memorial Hospital is (907) 452-8181. Field phones will be kept easily accessible in the case of an emergency.

Exhibit A-1: Directions to the Fairbanks Memorial Hospital



Shannon & Wilson's Corporate Health and Safety Program requires accident reporting when there is a site-related accident, near-miss incident, or medical emergency. If an employee is treated by medical personnel, the medical attendant will complete an Incident Medical Treatment Documentation form. Completion of an Alaska Department of Labor Report of Occupational Injury or Illness is also required within 10 days for any work-related injury or illness.

A.6 GENERAL SITE SAFETY REQUIREMENTS

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- Field personnel should avoid contact with potentially contaminated surfaces such as: walking through puddles or pools of liquid; kneeling on the ground; or leaning, sitting, or placing equipment on contaminated soil or containers.
- Field personnel will be familiar with procedures for initiating an emergency response.
- Hazard assessment is a continual process; personnel must be aware of their surroundings and any chemical/physical hazards present.

- Personnel in the exclusion area shall be the minimum number necessary to perform work tasks in a safe and efficient manner.
- The use of contact lenses is prohibited; soft lenses may absorb irritants, and all lenses concentrate irritants.
- Equipment contacting potentially contaminated soil or water must be decontaminated or properly discarded before leaving the site.

Field personnel will be familiar with the physical characteristics of the work site including wind direction, site access, and location of communication devices and safety equipment.

SITE SAFETY AND HEALTH PLAN PERSONAL ACKNOWLEDGEMENT FORM

SHOPPER'S FORUM 2021 SITE CHARACTERIZATION WORK PLAN

I have reviewed this document and understand its contents and requirements. A copy of the above-referenced document has been made available to me. I agree to abide by the requirements of this Site Safety and Health Plan.

_____	_____	_____
Signature	Name (printed)	Date
_____	_____	_____
Signature	Name (printed)	Date
_____	_____	_____
Signature	Name (printed)	Date
_____	_____	_____
Signature	Name (printed)	Date

GUIDANCE FOR FIELD WORK DURING THE COVID-19 PANDEMIC

The purpose of this document is to provide guidance to individuals conducting field work during the outbreak of the coronavirus disease (COVID-19). COVID-19 is a respiratory illness spread by person-to-person contact. In order to slow and prevent the spread of COVID-19, Shannon & Wilson project managers (PM)s and staff shall stay informed with local, state and federal agencies regarding the rapidly changing COVID-19 health mandates, and screening protocols. Field personnel shall adhere to the guidelines provided by the Center for Disease Control (CDC). Shannon & Wilson staff shall also adhere to client safety and COVID-19 requirements.

Symptoms of COVID-19 include:

- Fever,
- Cough,
- Shortness of breath,
- Trouble breathing,
- Persistent pain or pressure in the chest,
- New confusion or inability to arouse, and
- Bluish lips or face.

If field personnel experience any of these symptoms or are feeling sick, they should immediately report their symptoms to the (PM) or their supervisor.

Field personnel should check their internal temperature prior to departing to the work site. If a member of the field personnel's household is sick, field personnel should inform the PM or their supervisor.

Field personnel should not report to work if they are ill.

The following practices should be followed as applicable:

- Travel to and from the work site in separate vehicles.
- Wipe down surfaces with sanitizing wipes prior to touching them.
- Maintain a social distance of 6 feet apart, if possible. When not possible, wear a mask. Acceptable masks include manufactured particulate masks, hand-sewn ("homemade") cloth masks, or other styles that cover the wearer's mouth and nose.

- Air purifying respirators with HEPA filter cartridges may be used if the employee has received medical clearance to do so and uses a properly fitted respirator.
- Avoid touching face, especially mouth, nose and eyes.
- Cover sneezes or coughs.
- Assign separate tasks to avoid sharing tools.
- Wash hands with soap and water for at least 20 seconds, when possible.
- Use hand sanitizer with at least 60% alcohol when soap and water are not available.
- Wear disposable gloves, and dispose of them in a trash receptacle after use.
- Stay informed, monitor local conditions, and stay up to date on policy changes enacted by the local, state and federal government.

Additional Information

Additional information regarding what to do if you are experiencing symptoms you suspect are related to COVID-19 can be found on the following websites: https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/index.html

Alaska Department of Health and Social Services COVID-19 website: http://dhss.alaska.gov/dph/Epi/id/Pages/COVID-19/default.aspx.

Alaska Office of the Governor website: https://gov.alaska.gov/.

For current information related to COVID-19 in Alaska you can dial 211 or 1-800-478-2221 from 7am to 8 pm 7 days a week.

PROPER DISINFECTION OF VEHICLES, SHARED EQUIPMENT, AND COMMON SURFACES

- Create a cleaning/disinfecting plan including:
    - What is being cleaned;
    - When cleaning is to occur;
    - Who is responsible for cleaning what; and
    - How to do it.

- Cleaning (dirt and dust removal by wiping or vacuuming) followed by disinfection must always be performed before and after each day and again if there are known or suspected infectious materials, such as if an employee has a highly contagious infection (e.g. COVID-19). All surfaces must be coated with a disinfectant product, remain wet for at least 5 minutes and allowed to air dry.

  Disinfection is to be done using cleaning wipes, spray, or fresh bleach solution. All surfaces must be coated with the product and allowed to air dry. Bleach solution is made by combining ¼ cup bleach with 1 ¼ gallons of water (https://www.cdc.gov/disasters/bleach.html). Any solution less than 10% may not be an effective disinfectant.

  Bleach solutions must be freshly made immediately prior to decontamination and must be discarded after use. Solutions older than 24 hours may not be effective.
  https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2

- Assign one individual to clean each piece of equipment (or a defined set of pieces) upon arrival each day and on a regular basis during the day, including sinks, copiers, tables, interior and exterior door handles, door-push panels, coffee pots, microwave control panel and door, refrigerator handle, light switches, etc.

COVID-19 compared to other common conditions

SYMPTOM	COVID-19	COMMON COLD	FLU	ALLERGIES
Fever	Common	Rare	Common	Sometimes
Dry cough	Common	Mild	Common	Sometimes
Shortness of breath	Common	No	No	Common
Headaches	Sometimes	Rare	Common	Sometimes
Aches and pains	Sometimes	Common	Common	No
Sore throat	Sometimes	Common	Common	No
Fatigue	Sometimes	Sometimes	Common	Sometimes
Diarrhea	Rare	No	Sometimes*	No
Runny nose	Rare	Common	Sometimes	Common
Sneezing	No	Common	No	Common

*Sometimes for children

Sources: CDC, WHO, American College of Allergy, Asthma and Immunology

BUSINESS INSIDER

- Post signs in common areas reminding everyone to keep them clean.
- Truck users should be responsible for cleaning trucks before and after each day.
- Stock trucks with gloves, wipes, sanitizer, and disinfectant spray.
- Use wipes for localized surficial cleaning while in transit, such as after getting gas or food.
- Consider purchasing redundant pieces of equipment that might limit shared usage (field tools, common-area tools such as staplers, etc.).
- Please reference the *COVID-19 Best Practice Guidelines* for site-specific health & safety plans. The language for both these forms should be added to the JHA section of your SSHSP. Instruct all field staff and/or subcontractors to review at the beginning of each shift.

APPENDIX B: PRELIMINARY CONCEPTUAL SITE MODEL

Appendix B

Preliminary Conceptual Site Model

CONTENTS

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Shopper's Forum Mall

File Number: 102.38.100

Completed by: Dana Fjare; Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Dry cleaning waste disposal

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☐ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☒ Other: Undocumented releases to the soil surface or to the sewer

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☐ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

PCE and TCE were detected in subsurface soil near the Annex building on the south end of the property and near the former Gottschalks building at the north end. In addition, naphthalene was detected in subsurface soil near the Annex building west end. Soil is not currently exposed at the surface but could be unearthed during future construction activities

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Naphthalene is listed in Appendix B as a contaminant known to permeate the skin; however, PCE and TCE are not listed in Appendix B.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The businesses and residences in the area are connected to the local water utility. However, it is possible that private wells exist in the area, and the groundwater could be a current and future drinking water source.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

The closest surface water body is the Chena River, approximately 1/2 mile distant.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

The site is in an urban area.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Inhalation of outdoor air could be a concern if future construction projects at the site unearth contaminated soil and bring it to the surface.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

The Annex building at the south property boundary has an active vapor mitigation system for chlorinated solvents in indoor air. The crawlspace air and near-slab soil gas has been previously sampled in the main Mall building, but a vapor intrusion investigation involving concurrent soil gas and indoor air sampling has not yet occurred. In addition, air samples have not yet been collected during the fall, which could represent a worst-case scenario for vapor intrusion.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

PCE and TCE are not listed as contaminants known to permeate the skin.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Residences in the area are connected with the local water utility.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

The soil in the area is covered by buildings or pavement.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

The site is not located near surface water bodies or sediment.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Shopper's Forum Mall

Completed By: Dana Fjare; Shannon & Wilson, Inc.

Date Completed: March 2021

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)

Check the media that could be directly affected by the release.

(2)

For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)

Check all exposure media identified in (2).

(4)

*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)

Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion				F			
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil				F			
	☑ Migration to groundwater — check groundwater		☐ Inhalation of Fugitive Dust							
	☑ Volatilization — check air									
	☐ Runoff or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater	F			F			
	☑ Migration to groundwater — check groundwater		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Ground-water	☐ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air				F			
	☐ Volatilization — check air		☑ Inhalation of Indoor Air		C/F	C/F	C/F			
	☐ Flow to surface water body — check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Surface Water	☐ Direct release to surface water — check surface water	☐ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization — check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Sediment	☐ Direct release to sediment — check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ Resuspension, runoff, or erosion — check surface water									
	☐ Uptake by plants or animals — check biota	☐ biota	☐ Ingestion of Wild or Farmed Foods							
	☐ Other (list):									

Revised, 10/01/2010

APPENDIX C: FIELD FORMS

Appendix C

Field Forms

CONTENTS

SHANNON & WILSON

DAILY FIELD ACTIVITY REPORT

PROJECT NO.: [Project No]
REPORT DATE: Click or tap to enter a date.
REPORT NO.: [Report No.]
SW FIELD REP.: [SW Field Rep]
PERMIT NO.: [Permit No.]

Project Name/Location	[Project Name Location]

Report Distribution		Contractor Name and Contact		Weather and Temperature	
Client:		General:			
c:		Subcontractors:		Times of Site Visits	
c:				from:	to:
c:				from:	to:
Meetings Attended:				from:	to:
				from:	to:

No.	Construction Observations
1.	Topic and Location
	Description of Field Activity and Observations
	Further Action Recommended to Owner
2.	Topic and Location
	Description of Field Activity and Observations
	Further Action Recommended to Owner
3.	Topic and Location
	Description of Field Activity and Observations
	Further Action Recommended to Owner
4.	Topic and Location
	Description of Field Activity and Observations
	Further Action Recommended to Owner
5.	Topic and Location
	Description of Field Activity and Observations

LIMITATIONS: The Shannon & Wilson field representative is present on site solely to observe the field activities of the contractor identified and keep our client informed of the progress and quality of the work. The presence and activities of the Shannon & Wilson field representative and our acceptance of any non-conforming work or failure to reject any non-conforming work does not relieve the contractor from complying with its contract documents. Shannon & Wilson does not have the authority to direct the contractor's work. Any information provided by the Shannon & Wilson field inspector is intended solely to advise the contractor of the technical requirements of the plans and specifications and/or design concept. The contractor is solely responsible for its means, methods, sequences, construction site safety, quality of work, and adherence to the contract documents.

REVIEW BY (PM initial/date)

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

DAILY SAFETY MEETING LOG

JOB NAME: _____ JOB NO: _____ BORING NO: _____

LOCATION: _____ DATE: / / TIME: :

SUBCONTRACTOR: _____ S&W REP: _____ S&W PM: _____

WORK DESCRIPTION: _____

CHECK APPLICABLE HAZARDS: Heavy Equipment ☐, Vehicles ☐, Overhead ☐, Tools ☐, Temperature ☐, Lifting ☐ (Use Mechanical Means Instead), Site Housekeeping ☐ (Clear Walkways to Prevent Slips, Trips, Falls), Awkward Work Area ☐, Public ☐, Security ☐, Plants ☐, Animals ☐, Noise ☐, Vibration ☐, Dust ☐, Radiation ☐, UV exposure ☐, Repetitive Motion ☐, Suspected Contamination ☐, Chemical Exposure ☐, Flammable/Explosive ☐

OTHER HAZARDS: _____

EQUIPMENT ON SITE: _____

DOCUMENTATION:	Present	PPE:	Present
SSHSP On Site?	☐	Boots - Safety Toe / Other	☐
Hospital Map On Site?	☐	Safety Glasses	☐
Fall Protection Plan On Site?	☐	Vest - Class II / Class III	☐
Respiratory Protection Plan On Site?	☐	Hard Hat	☐
Confined Space Entry Plan On Site?	☐	Ear - Plugs / Muffs / Both	☐
Traffic Control Plan?	☐	Gloves - Type: _____	☐
Other Plan? _____	☐	Face Shield	☐
Current Fit Test?	☐	Respirator	☐

Cards/Certs Required? *List Below*

_____

_____

Other PPE? *List Below*

_____

_____

Hazards & Controls Discussed? ☐ Need to Update SSHSP? ☐

My signature below confirms that the above hazards, controls and plans have been discussed and that I understand them.

PRINT NAME	SIGNATURE	COMPANY	HAS ALL CARDS	PPE On?
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐

SAMPLE COLLECTION LOG

Project Number: Location: Page of

Date:

Sampler:

Sample Number	Location	Sample Time	Depth Interval (ft) top	Depth Interval (ft) bottom	Matrix Type	Sampling Method	Sample Type	PID Reading	Analyses

Matrix Type		Sampling Method		Sample Type	
AR	Air	B	Bailer/Coliwas	ES	Environmental sample
GW	Groundwater	D	Drill cuttings	ER	Equipment rinsate
PR	Product	G	Grab sampling	FB	Field blank
SB	Subsurf. soil	H	Hand auger	FD	Field duplicate
SE	Sediment	L	Tube liner	FM	Field measurement
SG	Sludge	P	Pump (liquid)	FR	Field replicate
SS	Surface soil	SS	Split spoon	MD	Matrix spike duplicate
SW	Surface water	T	Shelby tube	MS	Matrix spike duplicate
WR	Water	V	Vacuum (gas)	TB	Trip blank
		W	Wipe sampling		

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIELD LOG OF BORING

DRILL COMPANY/DRILLER: _____
DRILL RIG EQUIPMENT: _____
DRILLING METHOD: _____
HAMMER TYPE: _____ ROD TYPE/DIA.: _____
HAMMER WEIGHT: _____ HAMMER DROP: _____
CASING SIZE/TYPE: _____ HOLE SIZE: _____

JOB NO: _____ BORING NO: _____
JOB NAME: _____
LOGGED BY: _____
LOCATION: _____ ELEV.: _____
START DATE: _____ END DATE: _____
WEATHER DURING DRILLING: _____

SAMPLE DATA

TIME / DATE	SAMP. NO. / TYPE	DEPTH FROM / TO	DRIVING RESISTANCE BLOWS / 6 INCH	L. REC. / # JARS	DRILL ACTION	CONTACTS / GROUNDWATER	PID	ENV. SAMPLE	FIELD CLASSIFICATION [density/consistency; color; slightly, minor, MAJOR, then trace constituents; moisture; structure; other; USCS classification (geology)]

SUMMARY FIELD LOG OF BORING

DEPTH FROM	DEPTH TO	USCS CLASSIF.	GENERALIZED SOIL DESCRIPTION FOR DRAFTED GINT LOG

COMMENTS (i.e. materials used, visitors, problems, etc.):

GROUNDWATER DATA

WATER DEPTH	TIME	DATE

SUMMARY OF TIME AND FOOTAGE

FOOTAGE DRILLED: _____ SAMPLES: _____ Attempted _____ Recovered

DRILL/SAMPLE _____ hrs. STANDBY: _____ hrs.

SETUP/CLEANUP: _____ hrs. WELL INSTALL: _____ hrs.

OTHER: _____

BORING: _____ SHEET _____ OF _____

MONITORING WELL CONSTRUCTION DETAILS

Monitoring Well No. _____ Date Installed _____
Project Name _____ Logged By _____
Project Number _____ Driller _____

I. TOP SECTION (CASING)

Initial Pipe Length _____
Cuttoff Length _____
Add-on Length _____
Total Length _____

+

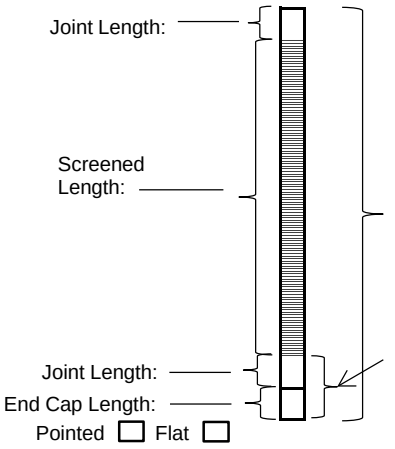
II. MID SECTION (CASING)

Number of Blank Sections _____
Length of Section(s):

Sum of Lengths: _____

+

III. SCREENED SECTION(S)



Total Pipe Length: _____

=

TOC to BOW: _____

IV. WELL DATA

Pipe Type: PVC ☐ SS ☐ Other _____
Diameter: 2" ☐ 4" ☐ Other _____
Slot Size: 0.01 ☐ 0.02 ☐ Other _____
Joint Pin End: Up ☐ Down ☐ Type _____

V. BACKFILL

	Depth Below GS Bottom	Top
CEM (No Pipe)		
CEM_PB		
*SLUF_PB/FIL_PB		
BCH_PB		
*SLUF_PB/FIL_PB		
BGR_PB		
*SLUF_PB/FIL_PB		
*SLUF_PS/FIL_PS		
*SLUF/FIL (No Pipe)		
*SLUF_PB/FIL_PB		

Filter Pack Type or Gradation _____

VI. MONUMENTS

Stuckup ☐ Flushmount ☐
TOM to GS _____
TOM to TOC _____
^TOC to GS _____
Lock type _____

VII. MOISTURE CONTENT

Depth to Water Below GS _____

	Frozen Soil Below GS Bottom	Top
Seasonal 1		
Seasonal 2		
Permafrost 1		
Permafrost 2		

BCH = Bentonite Chips (gINT code)
BGR = Bentonite Grout (gINT code)
bgs = Below Ground Surface
BOS = Bottom of Screen
BOW = Bottom of Well
CEM = Cement (gINT code)
FIL = Sand Pack (gINT code)
GS = Ground Surface
SLUF = Natural Collapse/ Pea Gravel (gINT code)
SS = Stainless Steel
TOC = Top of Casing
TOM = Top of Monument
TOS = Top of Screen
PB = Blank Pipe (gINT code)
PS = Slotted Pipe (gINT code)
* Circle filter-pack type
^ Flushmount = Negative Number
Stickup = Positive Number

VIII. CALCULATIONS BELOW GROUND SURFACE

TOC to BOW _____
- BOW to BOS _____
= TOC to BOS _____

TOC to BOS _____
- Screened Length _____
= TOC to TOS _____

TOC to BOW _____
- TOC to GS _____
BOW bgs _____

TOC to TOS _____
- TOC to GS _____
TOS bgs _____

TOC to BOS _____
- TOC to GS _____
BOS bgs _____

WELL DEVELOPMENT LOG

Owner-Client _____ Well No. _____

Location _____ Project No _____

Weather _____ Date _____

Development Personnel _____

Diameter and Type of Casing: _____

Total Depth of Well **Before** Development (feet below top of casing): _____

Depth to Water **Before** Development (feet below top of casing): _____

Depth to Screen Top and Bottom (from Construction Log): Top: Bottom:

Development Details

Feet of water in well _____ Time pumping started _____

Gallons per foot _____ Flow rate (gal/min) _____

Gallons in well _____ Flow-rate measurement method:

Surge method _____ _____

Pump used _____ Time pumping ended _____

Tubing used (ft) _____ Gallons Pumped _____

Disposal: _____

Depth to Water **After** Development (feet below top of casing): _____

Total Depth of Well **After** Development (feet below top of casing): _____

Observations

Time	Water Clarity (Visual)	Time	Water Clarity (Visual)

NOTES: _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	1¼	2	3	4	6	8
Gallons per lineal foot	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Owner/Client _____ Project No. _____
Location _____ Date _____
Sampling Personnel _____ Well _____
Weather Conditions _____ Air Temp. (°F) _____ Time started _____
Time completed _____

Sample No. _____ Time _____
Duplicate _____ Time _____
Equipment Blank _____ Time _____

Pump _____
Purging Method *portable / dedicated pump* Diameter and Type of Casing _____
Pumping Start _____ Approximate Total Depth of Well Below MP (ft.) _____
Purge Rate (gal./min.) _____ Measured Total Depth of Well Below MP (ft.) _____
Pumping End _____ Depth to Water Below MP (ft.) _____
Depth to Ice (if frozen) Below MP (ft.) _____
Pump Set Depth Below MP (ft.) _____ Feet of Water in Well _____
KuriTec Tubing (ft.) _____ Gallons per foot _____
TruPoly Tubing (ft.) _____ Gallons in Well _____
Purge Water Volume (gal.) _____
Purge Water Disposal _____

Monument Condition _____

Casing Condition _____

Wiring Condition _____
(dedicated pumps) _____

Measuring Point (MP) *Top of Casing (TOC)* Monument type: *Stickup / Flushmount*
Measurement method: *Rod & level / Tape measure*

Top-of-casing to monument (ft.) _____ Datalogger type n/a
Monument to ground surface (ft.) _____ Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational
- ☐ Well name legible on outside of well
- ☐ Evidence of frost-jacking _____

Notes _____

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____ Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
□				□
□				□
□				□
□				□
□				□
□				□

Well No.

SHANNON & WILSON, INC.

INDOOR AIR SAMPLING LOG

Client _____ Project Number _____

Location _____ Project Name _____

_____ Date _____

Mailing Address _____ Time _____

Weather _____ Temp (°F) _____ Sampling Personnel _____

Sample No. _____ Date (start) _____ Time (start) _____

Date (end) _____ Time (end) _____

Duplicate _____ Date (start) _____ Time (start) _____

Date (end) _____ Time (end) _____

Sample Location: _____

Sample Height (ft.) _____ Above Ground Surface

Canister ID _____ Relative Humidity _____

Canister Volume (L) _____ Barometric Pressure _____

Initial Canister Vacuum (inHg) _____ Laboratory _____

Final Canister Vacuum (inHg) _____ Analysis _____

Notes: _____

SHANNON & WILSON, INC.

SOIL-GAS SAMPLING LOG

Client _____ Project Number _____

Location _____ Project Name _____

_____ Date and Time _____

Weather _____ Temp (°F) _____ Sampling Personnel _____

Sample No. _____ Time (start) _____ Time (end) _____

Duplicate _____ Time (start) _____ Time (end) _____

Soil-Gas Port Type _____ Date Installed _____

Installation Depth _____ feet bgs Time Installed _____

Canister ID _____ Laboratory _____

Canister Volume (L) _____ Analysis _____

Initial Canister Vacuum (inHg) _____

Final Canister Vacuum (inHg) _____

Leak Detection Tests: Pass / Fail

Shut-in Test:

Vacuum applied to sample train _____ inHg

Drop in vacuum after one minute _____ inHg

Note: vacuum applied to sample train = evacuating sample train to ≥ 7.35 inHg. Any observable loss after 1 minute is considered a leak.

Tracer Test:

Helium applied at probe interface (shroud) _____ % or ppm

Probe and sampling line purge rate _____ mL/min.

Sample train length _____ ft

Volume per foot (3/16" tubing) 4.22 mL/ft

Sample train volume _____ mL

One sample train volume (purge time) _____ seconds

Note: Helium detected at > 10% the helium applied under the shroud is considered a leak.

Tracer Test Time	Helium (% or ppm)

Notes:

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Page_____ of_____

Laboratory_____

Attn:_____

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab							Total Number of Containers	Remarks/Matrix

Project Information	Sample Receipt	
Project Number:	Total Number of Containers	
Project Name:	COC Seals/Intact? Y/N/NA	
Contact:	Received Good Cond./Cold	
Ongoing Project? Yes ☐ No ☐	Delivery Method:	
Sampler:	(attach shipping bill, if any)	

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 30000

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs

Contaminated Media Transport and Treatment or Disposal Approval Form

DEC HAZARD/SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL

CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION

CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, WASH BAY, FIRE TRAINING PIT, LUST, ETC.)

CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED

POST TREATMENT ANALYSIS REQUIRED *(such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)*

COMMENTS OR OTHER IMPORTANT INFORMATION

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
RESPONSIBLE PARTY	**ADDRESS/PHONE NUMBER**
WASTE MANAGEMENT CO. / ORGANIZER	**ADDRESS/PHONE NUMBER**

***Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.**

Name of the Person Requesting Approval (printed) | Title/Association

Signature | Date | Phone Number

----------DEC USE ONLY----------

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed) | Project Manager Title

Signature | Date | Phone Number

IMPORTANT INFORMATION

Important Information

About Your Environmental Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report.

IMPORTANT INFORMATION

While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

IMPORTANT INFORMATION

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland