Interim Action Work Plan

Seattle Times Site
1120 John Street
Seattle, Washington

Facility Site ID No. 4377754
Cleanup Site ID No. 14495
Agreed Order No. DE 20468

May 5, 2022

TRC Project No. 015365.0010

Prepared For:

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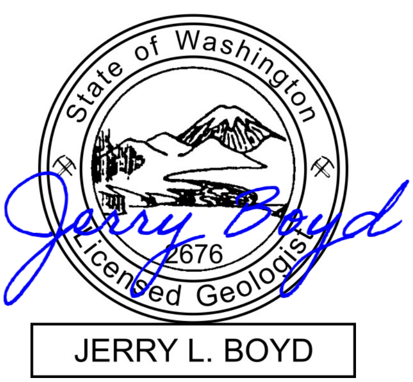

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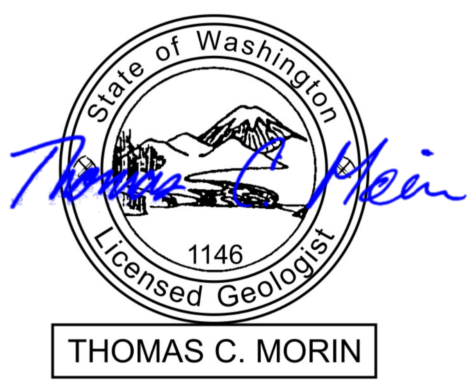

Reviewed and Approved by:
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TABLE OF CONTENTS

FIGURES

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation/ Acronym	Definition
AOPC	Area of potential concern
amsl	Above mean sea level
bgs	Below ground surface
CFR	Code of Federal Regulations
CID	Contained-In Determination
COC	Chemical of concern
CUL	Cleanup level
DRO	Diesel-range organics
Ecology	Washington State Department of Ecology
HASP	Health and Safety Plan
EPI	Environmental Partners, Inc.
GRO	Gasoline-range organics
IA	Interim Action
IAWP	Interim Action Work Plan
IRAR	Interim Remedial Action Report
µg/L	Microgram per liter
MDA	Minor Discharge Authorization
MTCA	Model Toxics Control Act
Onni	Onni John Street (Land) LLC
ORO	Oil-range organics
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
PID	Photoionization detector
RRIR	Revised Remedial Investigation Report
TCE	Trichloroethene
TRC	TRC Environmental Corporation
TWA	Time-weighted average
UST	Underground storage tank
VC	Vinyl chloride
VOCs	Volatile organic compounds
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act

1 Introduction

On behalf of Onni John Street (Land) LLC (Onni), TRC Environmental Corporation (TRC) is pleased to submit this *Agency Review Draft Interim Action Work Plan* (IAWP) for property located at 1120 John Street in Seattle, Washington (Property). The Property was formerly owned and operated by the Seattle Times. Seattle Times' operations resulted in the release of hazardous substances in certain areas within the boundaries of the Property. As such, the "Seattle Times Site" or "Site" is defined by the "Areas of Potential Concern" (AOPCs) identified in the Revised Remedial Investigation Report (RRIR) that are contained within the property boundaries of the Property. The location of the Property is depicted on Figure 1. The Property and the APOCs comprising the Seattle Times Site are depicted on Figure 2.

This IAWP has been prepared in compliance with the requirements of Agreed Order Number DE 20468 (AO No. DE 20468) between Washington State Department of Ecology (Ecology) and Onni and the requirements of the Model Toxics Control Act (MTCA; Chapter 70.105D Revised Code of Washington [RCW]) and its implementing regulations (Chapter 173-340 of the Washington Administrative Code [WAC]), collectively "MTCA."

Several phases of assessment were completed at the Site prior to the effective date of the AO. Those assessments characterized the nature and extent of chemicals of concern (COCs), identified the AOPCs, and were documented in the *Revised Remedial Investigation Report* (RRIR) prepared dated October 18, 2021. The RRIR was also prepared in accordance with the requirements of the AO. The RRIR was submitted to Ecology on November 22, 2021.

The Seattle Times Site has the following Ecology identifiers:

- Facility Site Identification Number 4377754
- Cleanup Site Identification Number 14495

This IAWP describes the remedial actions that will be implemented during the upcoming redevelopment of the Property. The planned redevelopment of the Property includes excavation of all soils within the Property boundaries (including all of the Seattle Times Site AOPCs) to an elevation of approximately 50 feet above mean sea level (amsl) as referenced to the North American Vertical Datum of 1988 (NAVD 88) – or approximately 55 feet below ground surface (bgs). It is currently anticipated that, pending final permits with the City of Seattle, groundbreaking for redevelopment will begin in May 2022. As noted herein, the redevelopment excavation will remove all impacted soils and perched groundwater associated with the Seattle Times Site.

1.1 General Site Information

The Site is situated within the approximately 2.54-acre Property, which is identified as King County Parcel Number 1986200525 on Figure 2. Adjacent properties consist of commercial office space, parking areas, a restaurant, and light commercial facilities.

The Property was historically developed with four buildings constructed between 1930 and 1969. The four on-Property buildings had approximately 316,000 square feet of floor space and were used by the Seattle Times Company for offices, paper storage, a vehicle maintenance garage, and the main printing press and production area. Paved areas for vehicle parking were located on the north and west portions of the Property adjacent to the former buildings.

Onni acquired the Property in November 2013 from the Seattle Times. Onni is currently pursuing land use entitlements and permits from the City of Seattle to redevelop the Property with a commercial office building with subgrade parking extending to an approximate finished concrete slab elevation of 50 feet amsl (55 feet bgs on average across the Property).

The north-adjacent property, King County Parcel Number 8692000000, is the source property for the Troy Laundry Site (Ecology Cleanup Site ID No. 11690). Groundwater contamination from the Troy Laundry Site is documented to extend beneath the Property in the deep regional aquifer at a depth of approximately 90 feet bgs. The AOPCs and associated contamination from the Seattle Times Site does not appear to extend further than a depth of approximately 45 feet bgs. As such, the Troy Laundry Site contamination and the Seattle Times Site contamination appear to overlap laterally on the Property, but are vertically separated by approximately 40 to 45 feet by a horizon of unimpacted soils.

1.2 Site Contact Information

Contact information for project coordinators and other pertinent entities associated with the Seattle Times Site is presented below.

Ecology Site Manager:

Contact:	Ms. Sunny Becker – Toxics Cleanup Program 15700 Dayton Avenue North Shoreline, Washington 98133
Address:	Washington State Department of Ecology, Northwest Regional Office 15700 Dayton Avenue North Shoreline, Washington 98133
Email:	HLIN461@ecy.wa.gov
Phone:	(206) 594-0107

Property Owner:

Contact:	Mr. Stephen Porter Onni John Street (Land) LLC ONNI Group 1411 4th Avenue; Suite 1501 Seattle, Washington 98101
Email:	sporter@onni.com
Phone:	(206) 691-8998

2 Site Characterization

The Seattle Times Site was characterized during the following iterative environmental investigations:

- Phase I Environmental Site Assessment – Farallon Consulting, LLC, January 8, 2010;
- Limited Subsurface Investigation Report – Environmental Partners Inc. (EPI), August 16, 2013;
- Supplemental Investigation – EPI, 2018-2019; and
- Data Gap Investigation – TRC, 2020.

A summary and full description of the investigations and characterization of the Site is included in the RRIR submitted to Ecology on October 18, 2021. Figure 3 presents the sample locations from prior investigations.

2.1 Chemicals of Concern

COCs identified at the Site are presented along with their respective proposed cleanup levels (CULs) below:

COC	Soil CUL (mg/kg)	Reference for Soil CUL[a]	Groundwater (µg/L)	Reference for Groundwater CUL[a]
Benzene	0.03	MTCA Method A	5.0	MTCA Method A
Chloroform	32	MTCA Method B	1.41	MTCA Method B
Naphthalene	4.5	CLARC Protective of Groundwater[b]	160	MTCA Method B
Tetrachloroethene	0.05	CLARC Protective of Groundwater[b]	5.0	MTCA Method A
Trichloroethene	0.025	CLARC Protective of Groundwater[b]	1.4	CLARC Protective of Soil Vapor Intrusion to Indoor Air
1,2,4-Trimethylbenzene	1.3	CLARC Protective of Groundwater[b]	80	MTCA Method B
1,3,5-Trimethylbenzene	1.3	CLARC Protective of Groundwater[b]	80	MTCA Method B
Vinyl Chloride	0.67	MTCA Method B	0.2	MTCA Method A
Gasoline-Range Organics	30	MTCA Method A	800	MTCA Method A
Diesel-Range Organics	2,000	MTCA Method A	500	MTCA Method A
Oil-Range Organics	2.000	MTCA Method A	500	MTCA Method A
Aroclor® 1254 (polychlorinated biphenyl)	0.5	MTCA Method B	0.044	MTCA Method B

Notes:
mg/kg Milligrams per kilogram.
µg/L Micrograms per liter.
a The lower of the two MTCA Method B CULs (Non-Cancer versus Cancer values).
b MTCA Equation 747-1 product as presented in MTCA's Cleanup Levels and Risk Calculation (CLARC) tables (February 2021).

In addition to the Site COCs, additional compounds migrating in the Troy Laundry Site groundwater plume could off-gas and potentially affect indoor air at the Onni redevelopment project. The Troy Laundry Site COCs and their respective screening levels are presented below:

COC	Soil Gas Screening Level (µg/m3)
Tetrachloroethene	320
Trichloroethene	11
Vinyl Chloride	9.4

Note:
µg/m^3 Micrograms per cubic meter.

Final CULs will be presented in the *Draft Cleanup Action Report* per AO No. DE 20468. Please note, not all COCs were detected in soil and groundwater in all areas of potential concern (AOPCs).

2.2 Extent of Impacts

Impacts to soil and groundwater were characterized by areas of potential concern (AOPCs) where COCs could have been released. The RRIR provides a full description of each AOPC investigated but a summary of the extents of soil and groundwater impacts is provided in the following subsections. The extent of impacts is depicted on the following figures:

- Figure 4 Extent of Chlorinated VOC Impacts to Soil, Plan View
- Figure 5 Extent of Petroleum Compounds Impacts to Soil, Plan View
- Figure 6 Extent of Impacts to Soil, Cross-Section A-A'
- Figure 7 Extent of Impacts to Soil, Cross Section B-B'

2.2.1 Soil

The following section describes COCs detected at concentrations greater than a soil CUL and the corresponding AOPC in which they were detected. COCs were detected at concentrations exceeding CULs in the five areas described below. The AOPCs described below, and their anticipated lateral extents, are indicated on Figure 3.

AOPC 2 – Interior Ink Tanks

Oil-range organics (ORO) and naphthalene were reported in samples collected from this AOPC but the source of these impacts is unclear. ORO and naphthalene concentrations are greater than the proposed CUL, which will require special handling and off-site disposal. The area requiring special handling and disposal measures approximately 15 feet by 15 feet at depths ranging from 8 to 12 feet bgs centered on boring MW-8.

AOPC 4 – Compressor Room

Aroclor® 1254, a polychlorinated biphenyl (PCB), was detected in AOPC 4 at concentrations exceeding the CUL. The most likely source is historical releases of PCB-containing oils in air compressors associated with the former Seattle Times printing presses. Aroclor® 1254 at concentrations greater than the proposed CUL is present in an area measuring approximately 10 feet by 20 feet at depths ranging from 1 foot to 12 feet bgs centered on locations C-2 and C-12.

AOPC 5 – Northern Underground Storage Tank Complex and Fuel Dispenser

Benzene, naphthalene, gasoline-range organics (GRO), and diesel-range organics (DRO) were detected in AOPC 5 at concentrations exceeding CULs. These compounds are predominately collocated in the area surrounding the current underground storage tanks (USTs), which have been temporarily decommissioned in place pending the interim action.

Benzene concentrations greater than the proposed CUL are present in an area measuring approximately 30 feet by 15 feet at depths ranging from 13 to 17 feet bgs and centered around borings U-11 and U-12.

Naphthalene concentrations greater than the proposed CUL is present in an area measuring approximately 10 feet by 10 feet at depths ranging from 17 to 22 feet bgs and centered around boring U-12.

GRO and DRO concentrations greater than the proposed CUL are present in an area measuring approximately 10 feet by 10 feet at depths ranging from 17 to 22 feet bgs and centered around boring U-12.

AOPC 8 – Heating Oil USTs

DRO and ORO were detected in AOPC 8 at concentrations exceeding the CUL. The apparent sources of those impacts are releases related to the historical USTs. Typically, fresh heating oil will be indicated as DRO during laboratory analysis. DRO and ORO concentrations greater than the proposed CUL are present in an area measuring approximately 30 feet by 20 feet at depth ranging from 5 to 10 feet bgs and centered around borings A-1 and A-3.

Troy Laundry Site – Dry Cleaning Compounds

Soil impacted with trichloroethene (TCE) is present at locations MW-9, MW-10, MW-29, and MW-30 on the northern boundary of the Property immediately adjacent to the southern boundary of the Troy Laundry Site. The source of those impacts has not been determined.

TCE CUL exceedances are present at depths from 20 to 50 feet bgs in the general area indicated on Figure 4. In order to facilitate appropriate handling and disposal, the lateral and vertical extent of these impacts will, as part of this interim action, be further characterized in support of requesting a Contained-In Determination (CID) from the Hazardous Waste/Toxics Reduction (HWTR) section of Ecology.

The entire Property will be excavated for redevelopment to an elevation of approximately 50 feet amsl. While the interim action will address those impacts that exceed a CUL, other soils with detectable COCs at concentrations less than the CUL will also necessarily be encountered and transported off-property for disposal. Such soils will be appropriately handled and disposed in accordance with applicable regulations.

2.2.2 Groundwater

Groundwater has been encountered at the Property as two general hydrostratigraphic units termed the Perched groundwater and Deeper groundwater. Those units are described as follows:

- Perched groundwater occurs within laterally discontinuous lenses of more permeable soil within a denser glacial till soil matrix. The perched groundwater is generally present at depths of 20 to 50 feet bgs within the Property. Soil borings and shallow groundwater monitoring wells at the Property have not always intercepted perched lenses of groundwater at the Property. Redevelopment of the Property includes excavation to 55 feet below the average Property grade, which generally corresponds to an elevation of approximately 50 feet amsl. Discontinuous perched groundwater is anticipated to be encountered during excavation activities and may be collected, pre-treated, and analyzed prior to disposal to the sanitary sewer system. However, based upon conditions encountered during redevelopment of nearby and adjacent properties, perched groundwater is unlikely to accumulate in recoverable quantities. Any water that may accumulate within the redevelopment excavation is likely to be associated with precipitation or in-flow from stormwater.

- Deeper regional groundwater occurs at depths of about 90 and 97 feet bgs or approximately at elevation 10 to 12 feet amsl at the Property. Groundwater elevations in wells completed within the deeper regional aquifer in the vicinity of the Property indicate a southerly to southeasterly groundwater flow direction. The Deeper regional groundwater in the northern portion of the Property is known to be a part of the Troy Laundry Site. Redevelopment excavations will not intersect the deeper regional aquifer.

3 Interim Remedial Action Methodology

Excavation and off-Property disposal of impacted soils is the Interim Remedial Action Technology. The Property will be redeveloped to include about four floors of underground parking with commercial uses at street level. It is anticipated that upon completion of the redevelopment excavation, the Seattle Times Site will have been fully remediated and all impacted media disposed off-Property at appropriately permitted facilities.

Post-Interim Action performance sample results (see Section 4) will be evaluated for compliance with the proposed CULs at the terminal limits of either remedial excavation or the terminal lateral and vertical limits of the redevelopment excavation. If necessary due to the presence of residual concentrations of COCs after the redevelopment excavation has been completed, a Feasibility Study will also be prepared after completion of the IAWP to complete assessment and evaluation of the Property in accordance with MTCA.

4 Technical Approach

The following sections provide detailed descriptions of the activities that will be completed during the soil and groundwater remediation at the Seattle Times Site.

4.1 Permitting

This Interim Action (IA) has been incorporated into the redevelopment plan for the Property. The redevelopment project is being permitted by the City of Seattle and is subject to a Washington State Environmental Policy Act (SEPA) review. The remedial actions discussed herein will be disclosed during the permit application review processes.

With the exception of a CID (see Section 4.2), off-site disposal of soils does not require permits beyond those held by the accepting facility. If a CID application is approved, these soils impacted with TCE will be disposed at a Subtitle D landfill under permit.

The work hours and hauling periods will comply with the City of Seattle permit(s) and the project will comply with requirements for street cleaning, truck cleaning, or scaling (as applicable) prior to transport.

While no permits are required for worker health and safety issues, the on-site activities involving the handling of contaminated soil and groundwater must comply with the provisions of the Washington Industrial Safety and Health Act (WISHA) and the Code of Federal Regulations (CFR) subpart 1910.120 that governs Hazardous Waste Operations and Emergency Response (HAZWOPER). Complying with these regulations is part of Protection Monitoring discussed in Section 4.4.1 herein. Occupational exposures by on-site workers to VOC and petroleum hydrocarbon vapors will be monitored as a component of on-site protection monitoring. Similarly, potential inadvertent vapor exposures to passersby will also be monitored at the perimeter of the Property as an additional component of protection monitoring.

In order to discharge excavation dewatering liquids to the sanitary sewer, a Minor Discharge Authorization (MDA) from the King County Department of Industrial Waste will be required. The Department of Industrial Waste regulates discharges to King County-operated Publicly Owned Treatment Works (POTW). The MDA would be granted and administered by King County but all fees for discharge would be paid to the City of Seattle. The MDA will have requirements for monitoring the quality and volume of discharged water and sufficient pretreatment, sampling, and analysis will be performed to comply with the stipulated compliance criteria.

On-site pretreatment of excavation dewatering liquids will likely be required for both turbidity and organic constituents. No permits are required for turbidity treatment through filtration and settlement. Treatment for the organic constituents that may be in the collected excavation water (i.e., benzene, tetrachloroethene [PCE], TCE, vinyl chloride [VC]) will be performed through air sparging and if necessary, activated carbon adsorption. The Puget Sound Clean Air Agency (PSCAA) does not regulate non-point sources of such emissions and the method of on-site treatment would be a non-point source. However, the threshold criteria for a point source requiring treatment for benzene and total petroleum hydrocarbons is one that discharges more than 15 pounds/year of benzene and 1,500 pounds/year of total petroleum hydrocarbons. At present it is estimated that no more than 100,000 gallons of excavation dewatering liquids will be discharged from the Property during redevelopment. At an average benzene concentration of 100 micrograms per liter (µg/L) and an average total petroleum hydrocarbon concentration of 2,000 µg/L, the total mass of benzene and total petroleum hydrocarbons discharged to the atmosphere would be 0.1 pounds of benzene and 2 pounds of total petroleum hydrocarbons. These values are well below the threshold for requiring emission control, even if the discharge were a point source.

The use of best management practices (BMPs) and other actions will be mandated by the City of Seattle permit requirements and the site will be subject to periodic inspection by city personnel.

4.2 CID Characterization and Permit Application

Soils known to be impacted with TCE at concentrations greater than the CUL of 0.03 mg/kg are known to be present at locations MW-9, MW-10, MW-29, and MW-30 as generally indicated on Figure 4. Soils with TCE concentrations greater than the CUL are present at varying depth from 20 to 50 feet bgs at these locations. Soils above and below these zones did not have detectable concentrations of TCE, which further implies that the source of the impacts is migrating shallow perched groundwater.

Prior to redevelopment excavation activities, TRC will seek a CID for disposal of low-level TCE and other chlorinated VOC impacted soil. The CID will be requested from the HWTR section of Ecology. Acquiring the CID will require the collection of additional soil samples throughout the area of chlorinated VOC impacts. Prior to implementing that additional investigation TRC will work with the HWTR manager to develop and approve the appropriate scope of investigation. After implementation of that investigative scope, TRC will prepare a formal CID request for submission to the HWTR with a cc to the AO project manager.

In general, soil samples will be collected and analyzed from step-out borings radiating outward from the known impacts. Analytical data will be used to characterize the extent of the impacts and determine the volume of impacted soil for the CID application. Current tentative boring locations and methodology for this task are included in the Sampling and Analysis Plan (SAP), included as Appendix A.

Analytical data quality will be evaluated per protocols specified in the Quality Assurance Project Plan (QAPP) included as Appendix B.

4.3 Site Preparation

Property preparation will be necessary prior to commencing any excavation activities. Site preparation activities will comply with the requirements of the City of Seattle permits and will be subject to periodic inspection by city personnel. The permit will require such items as protective fencing, limiting ingress and egress, protection of catch basins from runoff, etc. The requirements contained within the City of Seattle permits will be appropriate for use during the IA presented herein.

4.4 Excavation and Soil Handling

The goal of the remedial excavation will be to excavate, properly handle, and dispose off-Site all soils identified as having concentrations of COC greater than the proposed CULs and to remove and properly dispose all contaminated groundwater that is encountered during the redevelopment excavation and construction within the boundaries of the Property. In addition to mass excavation, the below-grade construction activities will include construction of retaining walls, construction of footings and supports for the building, and placement of concrete for construction of the underground parking garage.

Excavation will be performed primarily using track-mounted excavators but excavation may also be performed with rubber-tired backhoes, wheel loaders, or other machinery appropriate to project circumstances. Excavated soil may be transported to the street level using conveyor belts and loaded directly into waiting trucks.

Project shoring will require the installation of soldier piling at the perimeter of the Property. TRC will be present during soldier piling drilling in those areas of the Seattle Times Site where the potential exists for impacts to extend beyond the Property boundary. TRC personnel will field screen these soils for the purposes of segregating impacted soils from non-impacted soils and for assessing the potential limits of impacts at the Property boundary. At the discretion of TRC field personnel, grab soil samples may be collected from the solid-flight auger drilling equipment for laboratory analysis. Samples of stockpiled soldier piling drilling spoils will be collected for analysis to support proper characterization for disposal of these materials.

As stated in the RRIR, it is currently anticipated that soil contamination is limited to within the boundaries of the Property and hence the boundaries of the planned redevelopment.

Retaining walls at the perimeter of the planned redevelopment excavation will consist of soldier piling, lagging, and soil nailing and will eventually be skinned with a shotcrete surface. Construction of the retaining wall during excavation will proceed from the top down in about 5-foot vertical increments (i.e., “lift”).

It is the intent of Onni to minimize remedial action costs associated with excessive soil handling and loading. This is most readily achieved by direct loading impacted soil into trucks or transport containers (i.e., rolloffs) for off-Site disposal. In order to facilitate direct loading, a grid-based sampling and analysis approach will be used to pre-characterize the distribution of impacted soils within each excavation lift. Within each 5-foot deep lift, soil samples will be collected and analyzed from test pits oriented in a 20-foot by 20-foot rectangular grid pattern. Using this approach it will be possible to identify those 20-foot by 20-foot by 5-foot deep grids that are expected to contain contaminated soils and those that are expected to contain uncontaminated soils. Each 20-foot by 20-foot grid square within a 5-foot lift represents about 74 cubic yards, or about 111 tons of soil.

TRC will coordinate with the on-Site excavation superintendent on a daily basis to determine the plan for the next phase(s) of excavation, typically projected for the next one to two days. At the end of each day, test pits will be excavated using the 20-foot by 20-foot uniform rectangular grid pattern. The planned grid pattern is presented in the SAP, Attachment A. Only those portions of the Site-wide grid with previously confirmed or suspected impacts will initially be sampled. The area of sampling may be expanded to areas that are currently outside the previously identified impacted area if analytical data indicate that it is appropriate to do so. Soil sampling methodology is included in the SAP.

Based on the results of the grid sampling, TRC will prepare field maps that illustrate the predicted distribution of impacts within each 5-foot lift. TRC will then assist the excavation contractor in determining the actual limits of pre-classified boundaries using PID field-screening techniques. For example, as excavation progresses from a grid square with confirmed impacts toward an area not requiring disposal, TRC personnel will use the PID, and the correlation curve in use at that time, to characterize when direct loading of the impacted soils can stop. This would typically be at some location between the two adjacent grid-sampling points. Such an approach augments the usefulness of the laboratory analytical results while providing a reasonable measure of assurance that contaminated soils are not being sent off-Site as “clean.”

Impacted soil from the Property will be disposed in accordance with all local, state, and federal regulations. It is expected that all soils with detectable concentrations of contaminants will be transported off-Site for disposal.

Soils that do not have detectable concentrations of contaminants will be handled and disposed of as “clean” soil at the excavation contractor’s discretion and depending upon the clean facility’s acceptance criteria. Once the limits of the remedial excavation have been established it will be assumed that all soils outboard of those limits will continue to be “clean.” Areas of expected clean soil will not be grid-sampled or field screened. The exception to this will be if the excavation contractors encounter soils that have an obvious odor or apparent petroleum-related discoloration. In such cases, the apparent impacts will be characterized based on quantitative laboratory analysis and will then be appropriately managed, handled, and disposed.

It is likely that some dewatering will be necessary during construction. The perched groundwater level is reported to be between 20 and 50 feet bgs. Therefore, the total volume of water is not readily predictable. A highly conservative estimate of the total volume of water within the perched zones is about 100,000 gallons. It is very possible that no free groundwater will be encountered during excavation.

If encountered, excavation water will be collected, characterized, and all discharges will be permitted under a Minor Discharge Authorization (MDA) from King County and the permit will be self-monitored by TRC and/or Onni water treatment subcontractors during dewatering. At the end of dewatering it will be necessary to report the result of self-monitoring and the total gallons discharged.

Extracted water will be collected in a temporary tank(s) in a designated area of the excavation. Water from the temporary tank(s) will be pumped into a three-stage treatment system. The first stage will consist of an 18,000-gallon “frac” (i.e., fractionation or settling) tank to allow settleable solids and sediment to settle to the bottom. This is a multi-staged tank containing internal weirs. This tank is needed because there are turbidity standards for discharge to the sanitary sewer and this first tank will remove the majority of the sediment load. If substantial sediment is not present within the extracted water this first stage may be omitted.

The second stage of treatment, if needed to attain discharge limits, will be another 18,000-gallon tank that will be used for air sparging treatment. An air blower will be connected to perforated piping lying on the bottom of the second tank. The blower will inject about 100 cubic feet of air per minute into the water and dissolved contaminants will be stripped. Permitting issues are discussed in Section 4.1. Treatment and discharge to the sanitary sewer will be performed in a batch mode. Each 18,000-gallon batch will be tested as indicated in Section 4.5.2.

If required based on the MDA, a third stage of treatment utilizing a “sand filter” may be implemented to remove remaining suspended solids from the water prior to discharge. This stage of treatment would only be used if the water exceeds a typical allowable turbidity limit of between 5 and 15 nephelometric turbidity units (NTU) greater than background conditions. TRC will assess the turbidity using field instrumentation prior to discharge and assess whether a sand filter is necessary.

4.5 Compliance Monitoring

Compliance monitoring has three components: (1) protection monitoring, (2) performance monitoring, and (3) confirmational monitoring. Compliance monitoring is intended to fulfill the requirements of Sections 410, 740, 810, and 820 of the MTCA Cleanup Regulations (WAC 173-340). The following sections present the activities that will be performed for compliance monitoring during implementation of the remedial activities.

4.5.1 Protection Monitoring

Protection monitoring is intended to confirm that human health and the environment are protected during implementation of the remedial action (WAC 173-340-410(a)). Protection monitoring will be performed through the implementation of a Health and Safety Plan (HASP) prepared in accordance with the requirements of the Occupational Safety and Health Administration (OSHA) and the WISHA standards for hazardous waste site operations (29 CFR 1910.120 and WAC 296-62 Part P). The HASP pertains only to those activities relating to handling and management of contaminated soils and groundwater and related hazards, and will have no relation to any other phases of the project. A copy of the HASP is included as Appendix C.

The HASP will establish the general health and safety practices for TRC personnel performing the remedial action and will be provided to the on-Site contractors for their information. TRC will not be responsible for the health and safety of other on-Site personnel. TRC is not the general contractor for this project and does not control the jobsite. However, TRC will be available to advise other on-Site workers on the health and safety measures that TRC personnel will be using, and TRC will share all of its monitoring data and will advise other workers when TRC personnel are upgrading or modifying their level of personal protective equipment. The HASP will also be provided to subcontractor personnel for informational purposes. Implementation of this level of on-Site health and safety monitoring is considered to meet the requirements of WAC 173-340-410(1)(2)(a) for the following reasons:

- Site access will be limited to authorized personnel only.
- The field monitoring and mitigation measures called for in the HASP are protective of on-Site worker health and should, therefore, also be adequate to protect the health of workers in nearby buildings. The nearest potential exposure points for off-Site workers are considerable distances from the affected soil excavation and handling areas.
- Conditions imposed on the remedial action contractors by applicable federal and state regulations and laws require that specific measures be taken to prevent the occurrence of discharges that may pose a threat to human health or the environment (e.g., surface water runoff, earth moving equipment dragout, wind-blown dust emissions). These same regulations also require that contingency plans be prepared and implemented in the event of an accidental discharge of contaminants (e.g., overturned haul truck). Work will be conducted in accordance with applicable OSHA and WISHA regulations. Contractors on this project will be required to develop and implement their own health and safety procedures in accordance with applicable laws and regulations.

- Soil excavation activities associated with this project will be of a relatively short duration (i.e., 12 to 16 weeks) and health risks associated with long-term exposures to on-Site contaminants are not a concern. Considering the protection measures and monitoring called for during soil excavation, the risk of non-workers being subjected to appreciable short-term chemical exposure will be negligible.

The HASP will contain provisions for on-Site worker protective equipment and for monitoring atmospheric concentrations of volatile compounds. The HASP will also provide the standards for upgrading personal protective equipment and the monitoring equipment to be used.

Included in the protection monitoring will be measurements of actual on-Site worker exposure to petroleum hydrocarbon vapors and vapor monitoring at the perimeter of the property to assess potential inadvertent exposures by passersby and off-Site workers. Both personal air monitoring and perimeter monitoring will be continued until the excavation, handling, and transportation of petroleum-contaminated soils is completed.

Worker exposures will be monitored by measuring the 8-hour, time-weighted average (TWA) actually encountered by two designated on-Site workers; typically a laborer and an excavation equipment operator. Each worker will wear an air monitoring pump with an inlet tube and charcoal filter attached to their outerwear near their chins. The charcoal tubes will be submitted for analysis on a daily basis. The results of these analyses will be compared to allowable TWAs or other worker exposure standards.

Similarly, two such air monitoring pumps will be placed along the perimeter of the Property at a height of about 5.5 feet above the adjacent sidewalk. The charcoal tubes from these pumps will also be submitted for analysis and the results will be evaluated to assess potential exposures to passersby.

Real-time evaluations of vapor concentrations will be performed using a photoionization detector (PID) calibrated to isobutylene. The readings from this PID will be the basis for upgrading personal protective equipment (PPE) to include half- or full-face respirators and for establishing an exclusion zone. If a PID reading exceeds a Short-term Exposure Limit (STEL) or a 15-minute ceiling limit, additional monitoring using compound specific methods such as Draeger tubes will be used to assess chemical-specific exposure levels to benzene.

4.5.2 Performance Monitoring

Performance monitoring is used to determine whether and where the remedial action has attained the desired cleanup standards (WAC 173-340-410(b)). Since the IA will generally extend to pre-defined horizontal and vertical limits, the MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses may not be attained at the final limits of the excavation. The horizontal limits of the excavation are defined by the vertical planes of the property boundaries. The vertical limits of the excavation are, in large part, defined by the pre-planned depth of excavation and by the slope protection provided by the retaining walls for the development. As such, performance monitoring will not only assess attainment of a CUL but will also be used to characterize those contaminant concentrations that may remain in place, if any, beneath the concrete cap of the parking garage floor or within the sidewalls behind the concrete walls of the parking garage and surface pavement. It should be noted that the sidewall concentrations would in most cases be indicative of impacts, if any, at the vertical plane of the Property boundary.

As noted above, not all soils throughout the limits of the construction excavation are impacted, and soils may be impacted with different compounds at different depths and in different areas of the Property. Figures 4 and 5 illustrates the current understanding of the distribution of soil impacts at the Property. Performance monitoring will also be used to segregate soils for disposal.

During the remedial action, performance monitoring will consist of collecting and analyzing soil samples from excavation sidewalls and floors to demonstrate compliance with the proposed CULs. The decision to excavate additional soils will be based upon Site-specific calculations, professional judgment, and Site conditions.

As stipulated in MTCA, in determining compliance with any particular CUL it is necessary (WAC 173-340-740(f)) to demonstrate that:

- no single sample concentration is greater than two times the soil CUL;
- less than 10 percent of the sample concentrations exceed the soil CUL; and
- the true proportion of samples that do not exceed the soil CUL shall not be less than 90 percent using a Type I error level of 0.05.

During excavation on the Property, soil samples from the excavation sidewalls and bottoms will be screened using a PID and sheen testing. Depending upon field conditions, timing, and safety constraints, PID readings of volatile vapors will be measured by placing a soil sample into a plastic bag, disaggregating the soil, and allowing the sample to sit undisturbed for about 5 minutes. The PID sampling tube will then be inserted into the bag to measure the presence of volatile vapors within the soil headspace. Based on project and health and safety constraints, PID readings may be recorded directly from the open faces of the excavation or from soil stockpiles.

As the excavation activities progress and field indications of relative impacts lessen, samples will be collected for submittal for laboratory analysis to establish compliance with CULs and disposal requirements.

Final performance soil samples will be collected from the sidewalls and bottom of the final excavation limits at the Property. Sidewall samples will be collected from each 20 linear feet of sidewall or, in areas where the sidewalls exceed 5 feet in depth, two performance soil samples will be collected for each 10 linear feet of excavation sidewall. These samples will be from different depths and will be used to characterize the vertical distribution of impacts in the sidewall. One performance sample will be collected for every 400 square feet of excavation floor (i.e., 20-foot by 20-foot grid).

Please refer to the SAP for additional details regarding soil sample collection and analysis.

4.5.3 Vapor Pathway Evaluation

Vapor pathway evaluation will be conducted as part of the IA to determine if a chemical vapor barrier is needed for the new building foundation. It is important to conduct a vapor pathway evaluation before the building is constructed since the solvent groundwater plume at a depth of 70 bgs (approximate elevation of 0 to 10 feet amsl) from upgradient Troy Laundry Site will become “shallow” at about 40 feet below the bottom of Onni’s proposed parking garage. Further, there is an ongoing TCE source from Boren Avenue North. For example, the concentrations in monitoring well MW27 increased from 15 µg/L to 80 µg/L from 2019 to 2021. This TCE plume could potentially migrate to beneath Onni's future parking garage, if not treated or if natural attenuation does not occur.

Two of the CID investigative borings will be advanced to approximately 45 feet amsl in the northwestern portion of the Property in an area of documented groundwater impacts from the Troy Laundry Site. The depth of these borings will be approximately 10 feet below the bottom of the planned redevelopment excavation. Expendable soil vapor monitoring points will be placed at the terminal depth within each of these borings. The soil vapor monitoring points will be sealed from surface atmosphere. Representative soil vapor samples will be collected and analyzed for the presence of PCE, TCE, cis-1,2-dichloroethene (cDCE), and VC using U.S. Environmental Protection Agency (EPA) Method TO-15. These analytical data will be used to determine the potential for vapor intrusion in the completed building and to assist in evaluating the need for a chemical vapor barrier.

If these vapor samples contain COC concentrations exceeding applicable screening levels, the data will be shared with Ecology as soon as reasonably possible. Additionally, if performance soil sampling (see Section 4.5.2) indicates elevated concentrations of COCs in soil at the base of the construction excavation, those results will also be communicated to Ecology.

4.5.4 Confirmational Monitoring

Confirmational monitoring is intended to confirm the long-term effectiveness of the remedial action (WAC 173-340-410(c)). During the IA all source soil will be excavated and there will no longer be a source at the Seattle Times Site.

It is possible that after completion of planned excavation activities and review of the performance sampling data, it may be necessary to develop a groundwater compliance monitoring plan. In the absence of performance sampling data, it is not possible to propose such a plan at this time. It is currently expected that the perched groundwater zone (i.e., from average surface grade, at approximate elevation 105 feet amsl to 50 feet amsl) within the limits of the Property will be fully excavated. As a result, both the source of the previously detected impacts and the impacted medium will be removed from the Property. Therefore, the Property will no longer be impacted and cannot act as a potential source of ongoing impacts. This expected condition will be evaluated and documented throughout the performance of the IA and will be documented in the post-interim action report (see Section 4.6).

However, the deep aquifer solvent plume from the upgradient Troy Laundry Site has migrated to the Property. Wells MW29R and MW30R will be installed to monitor the migration of this solvent plume from Troy Laundry Site (shown on Figure 3).

4.5.5 Deed Restrictions

If soil or groundwater contamination greater than the respective CULs remain at the Property after the proposed soil excavation, an Environmental Covenant will be recorded and adequate monitoring wells will be installed, regardless of whose property it is and what sources contributed to the contamination.

If any remaining impacts are determined to be solely from the Troy Laundry Site, the PLPs will negotiate with Onni to allow for the recording of the Environmental Covenant and installation of monitoring wells on the Property.

4.6 Interim Remedial Action Reporting

Upon completion of the tasks described herein and receipt of final analytical laboratory reports, TRC will prepare an *Agency Review Interim Remedial Action Report* (IRAR). The soil and perched groundwater remediation at the Seattle Times Site will be considered interim since the remedial action may or may not result in removal of all impacts from the Site. If the compliance sampling demonstrates that the IA is a full cleanup action, the report will be termed a *Cleanup Action Report*.

The IRAR will document the activities performed during the remedial excavation, the results of the remedial activities and related sampling and analysis, and the conclusions supported by those results. The IRAR will include the following:

- A narrative description of the scope of work performed;
- A discussion of the performance monitoring results and an assessment of compliance with MTCA;
- Tabulated summaries of screening results and analytical data;
- Figures depicting the limits of the soil excavation, soil sampling locations, and residual concentrations remaining after the excavation has been completed;
- A tabulated summary of soil disposal volumes;
- Hardcopy analytical laboratory reports;
- Copies of treatment facility tipping receipts; and
- Other information pertinent to the implementation, findings and/or conclusions of the remedial action.

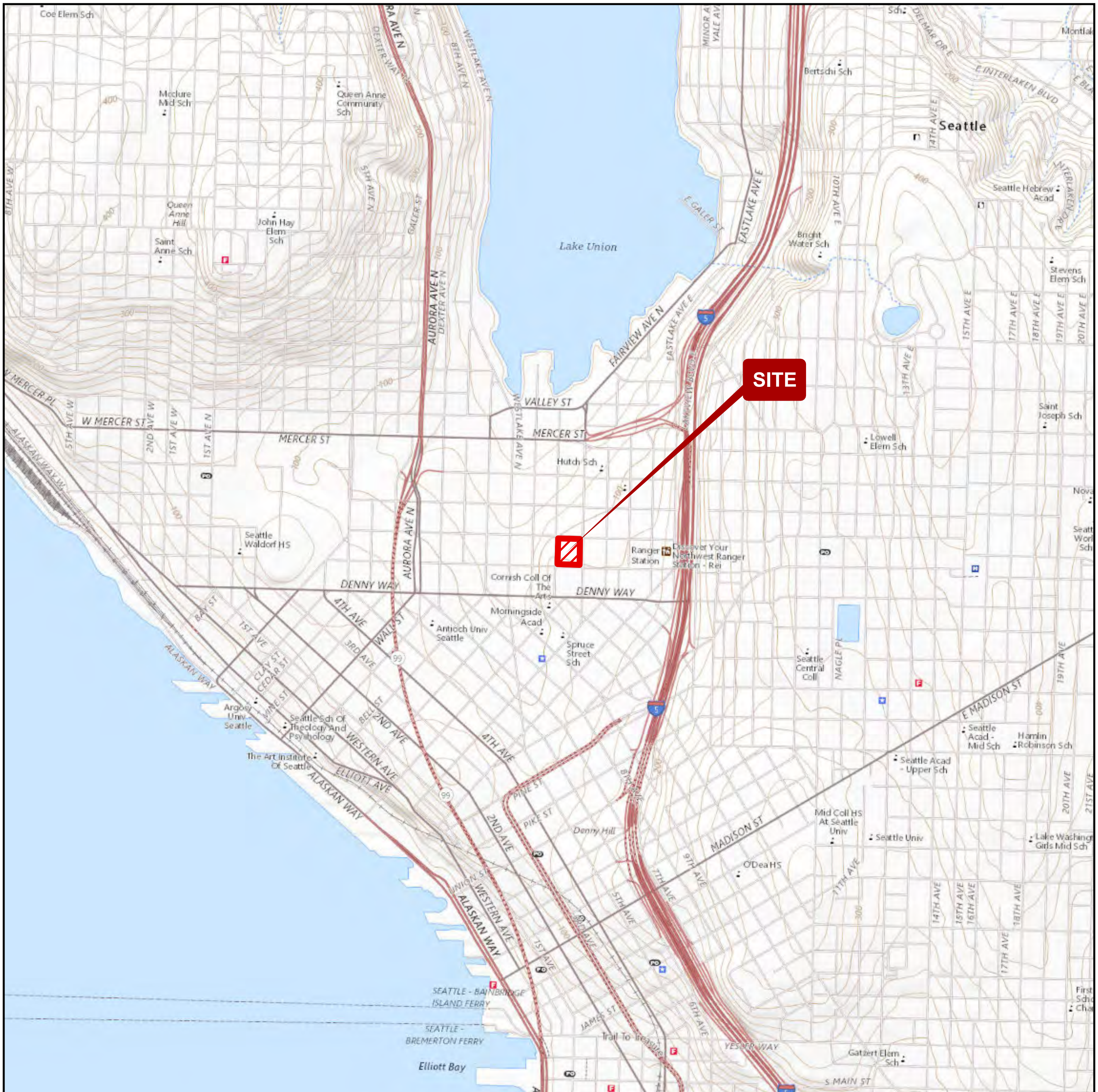
All analytical results from the IA will be entered into Ecology's Environmental Information Management (EIM) database as required by the AO.

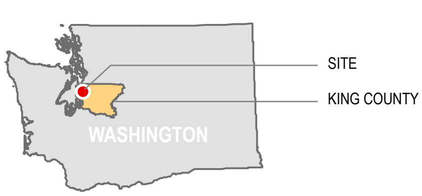
5 Limitations

To the extent that preparation of this IAWP required the application of best professional judgment and the application of scientific principles, certain results of this work were based on subjective interpretation. TRC makes no warranties, express or implied, including and without limitation warranties as to merchantability or fitness for a particular purpose. The information provided in this IAWP is not to be construed as legal advice.

This IAWP was prepared solely for Onni and the contents herein may not be used or relied upon by any other person without the express written consent and authorization of TRC.

Figures





SOURCE: USGS, THE NATIONAL MAP

0 0.25 0.5 0.75 1

APPROXIMATE SCALE IN MILES

N

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FIGURE 1

GENERAL VICINITY MAP

REPORT
INTERIM ACTION
WORK PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 11/18/21
DRAWN BY RMC
REVIEWED BY JB

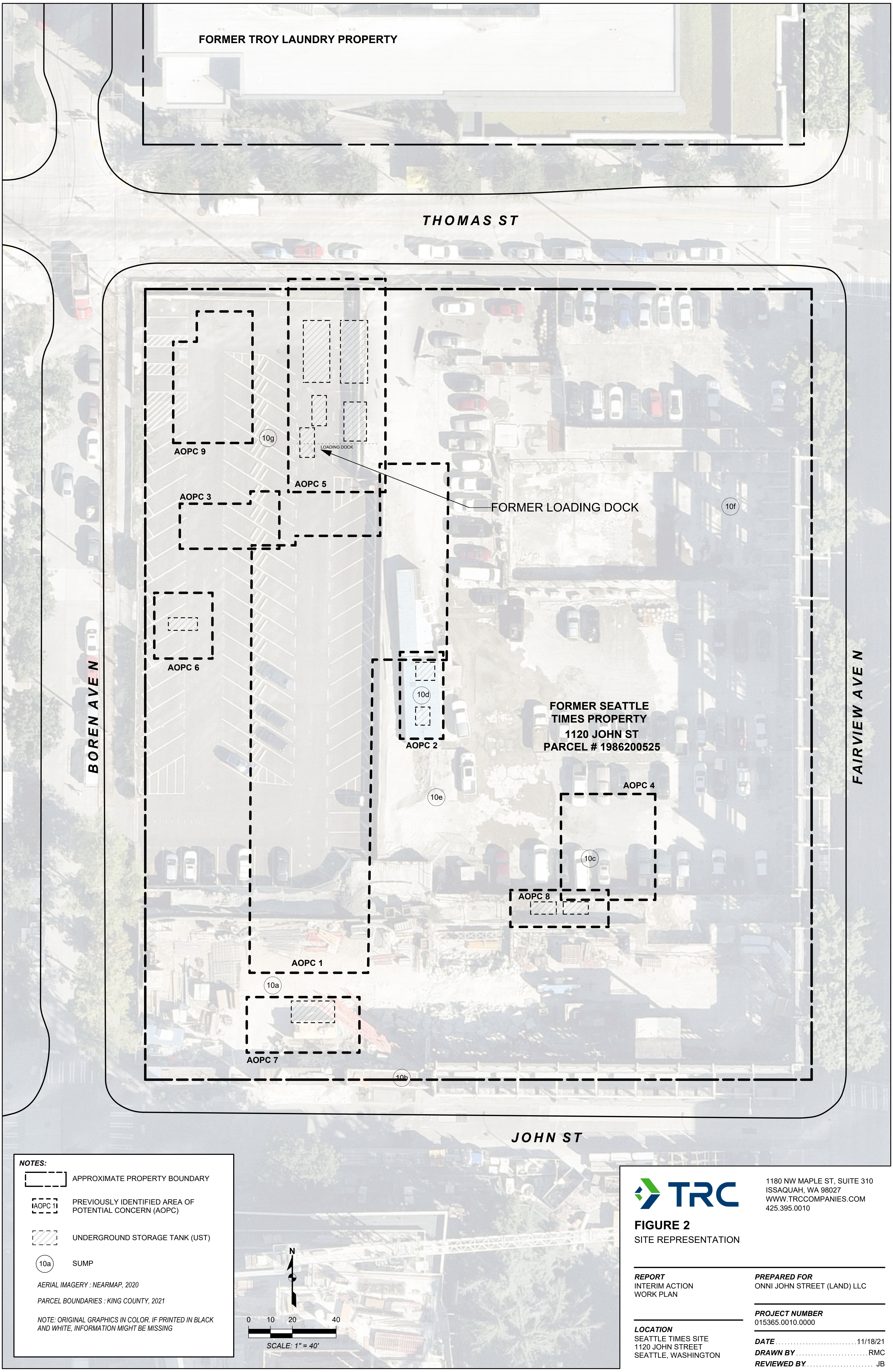

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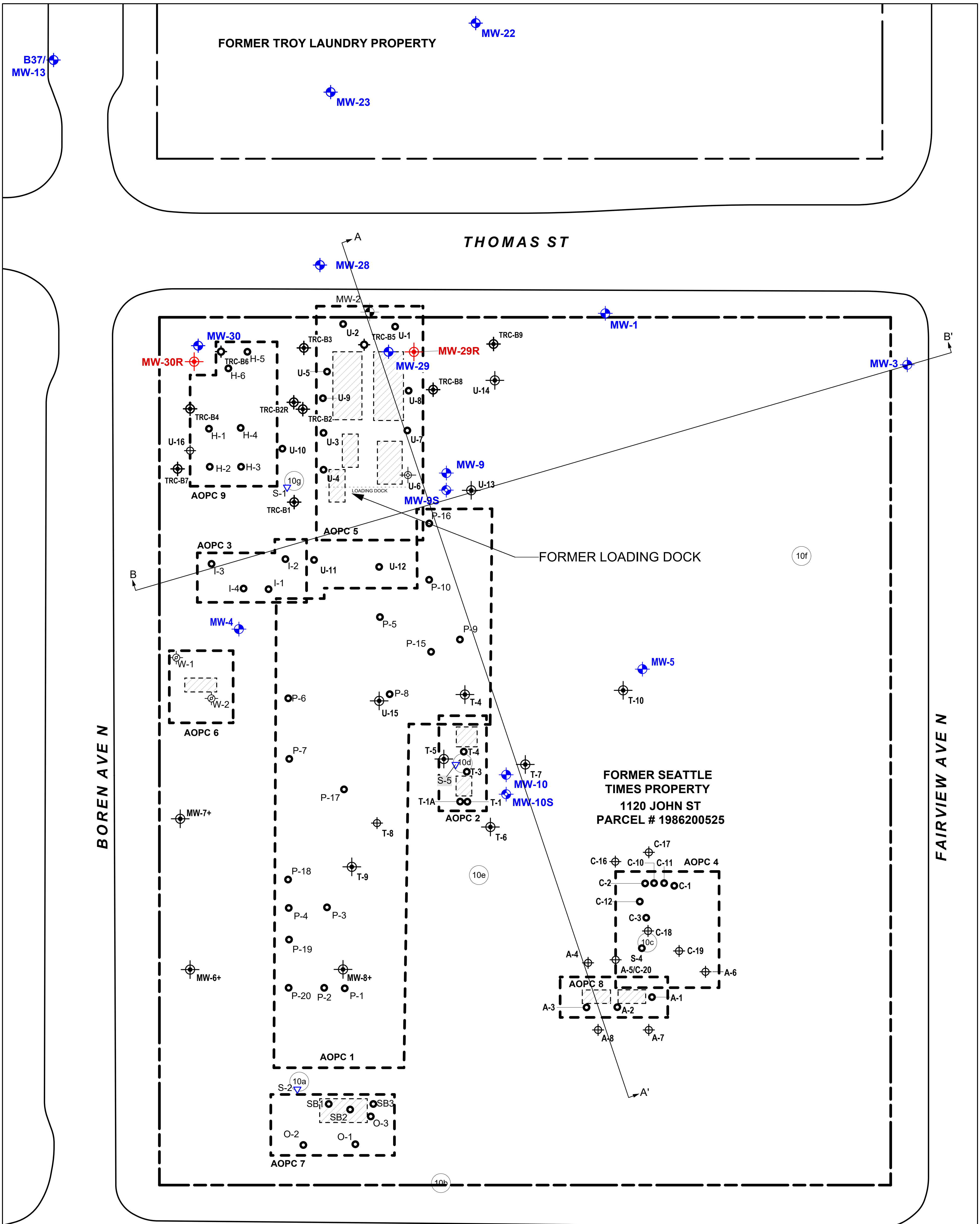
FIGURE 2

SITE REPRESENTATION

REPORT INTERIM ACTION WORK PLAN	***PREPARED FOR*** ONNI JOHN STREET (LAND) LLC
	PROJECT NUMBER 015365.0010.0000
LOCATION SEATTLE TIMES SITE 1120 JOHN STREET SEATTLE, WASHINGTON	***DATE*** 11/18/21 ***DRAWN BY*** RMC ***REVIEWED BY*** JB



NOTES:

PROPOSED TROY LAUNDRY SITE REPLACEMENT WELL LOCATION	APPROXIMATE PROPERTY BOUNDARY
SOIL BORING ADVANCED TO 20' BELOW GROUND SURFACE	AOPC 1 — PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)
SOIL BORING ADVANCED UP TO 50' BELOW GROUND SURFACE	UNDERGROUND STORAGE TANK (UST)
SOIL BORING FROM LIMITED SUBSURFACE INVESTIGATION	10a — SUMP
SHALLOW MONITORING WELL LOCATION	+ ATTEMPTED DEEP MONITORING WELL; NOT COMPLETED DUE TO REFUSAL
DEEP MONITORING WELL LOCATION	
SOIL BORING	
FLOOR SUMP	
A — A' CROSS-SECTION LOCATION	

PARCEL BOUNDARIES : KING COUNTY, 2019

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

N

0 10 20 40

SCALE: 1" = 40'

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FIGURE 3

AOPCs AND REMEDIAL INVESTIGATION SAMPLE LOCATIONS

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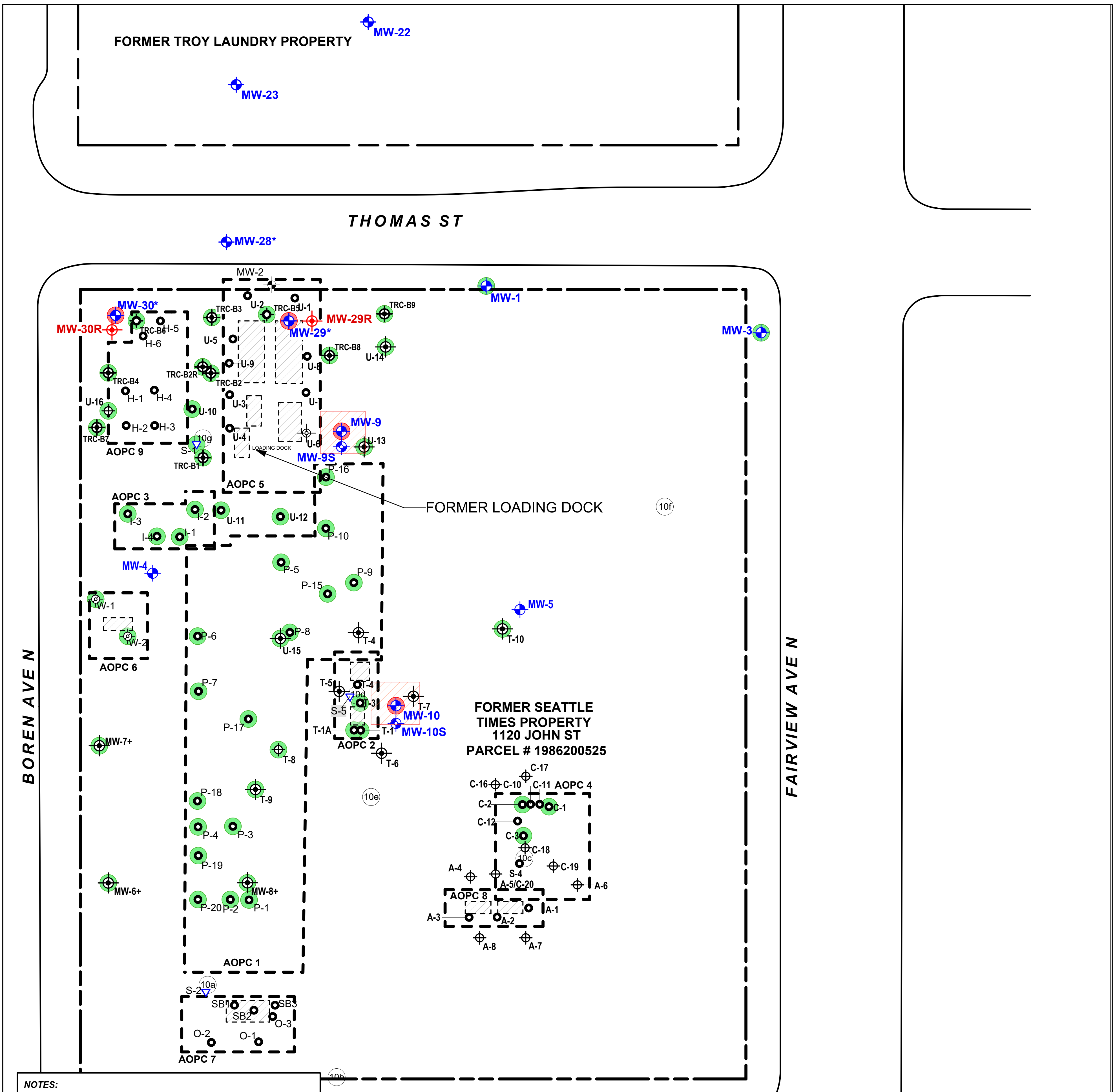
INTERIM ACTION WORK PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 4/20/22
DRAWN BY .... RMC
REVIEWED BY .... JB



Sample ID	Sample Depth (feet)	Sample Date	Volatile Organic Compounds		
			PCE	TCE	Vinyl Choride
MW-9:20	20	11/3/2020	<0.025	**0.055**	<0.05
MW-9:30	30	11/3/2020	<0.025	**0.046**	<0.05
MW-10:30	30	11/5/2020	<0.025	**0.032**	<0.05
MW-10:41	41	11/5/2020	<0.025	**0.034**	<0.05
MW-10:50	50	11/5/2020	<0.025	**0.047**	<0.05
U-11:15	15	5/13/2018	<0.025	**0.021**	<0.05
MTCA Method A or B Soil Cleanup Level			0.05[a]	0.025[a]	0.67[b]

NOTES:

- PROPOSED TROY LAUNDRY SITE REPLACEMENT WELL LOCATION
- SOIL BORING ADVANCED TO 20' BELOW GROUND SURFACE
- SOIL BORING ADVANCED UP TO 50' BELOW GROUND SURFACE
- SOIL BORING FROM LIMITED SUBSURFACE INVESTIGATION
- SHALLOW MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF HALOGENATED VOLATILE ORGANIC COMPOUND IMPACTS TO SOIL
- SOIL BORING
- FLOOR SUMP
- SAMPLE HAD NO ANALYZED COMPOUNDS EXCEEDING CLEANUP LEVELS (CULs)
- INDICATES SAMPLE WHERE ONE OR MORE COMPOUND CONCENTRATIONS EXCEEDED CULs
- APPROXIMATE PROPERTY BOUNDARY
- AOPC 1 — PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)
- UNDERGROUND STORAGE TANK (UST)
- 10a — SUMP
- \+ ATTEMPTED DEEP MONITORING WELL; NOT COMPLETED DUE TO REFUSAL
- * ANALYTICAL RESULTS FROM SOUNDEARTH STRATEGIES, NOT SHOWN ON INSET TABLE FOR FULL ANALYTICAL SEE TROY LAUNDRY SITE REMEDIAL INVESTIGATION REPORT

PARCEL BOUNDARIES : KING COUNTY, 2019

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

0 12.5 25 50

SCALE: 1" = 50'

Table Notes:

All results presented in milligrams/kilogram (mg/kg).

Bold Bold results indicate the compound was detected.

(shaded) Shaded cells indicate the compound was detected at a concentration greater than the cleanup level.

a Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1, Washington Administrative Code (WAC) 173-340-900.

b MTCA Method B Soil Cleanup Levels (from Cleanup Levels and Risk Calculations [CLARC] spreadsheet) used. Where cleanup levels based on carcinogenic and non-carcinogenic risk were available, the lower value is listed.

Abbreviations:

PCE Tetrachloroethene

TCE Trichloroethene

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FIGURE 4

EXTENT OF CHLORINATED VOC IMPACTS TO SOIL, PLAN VIEW

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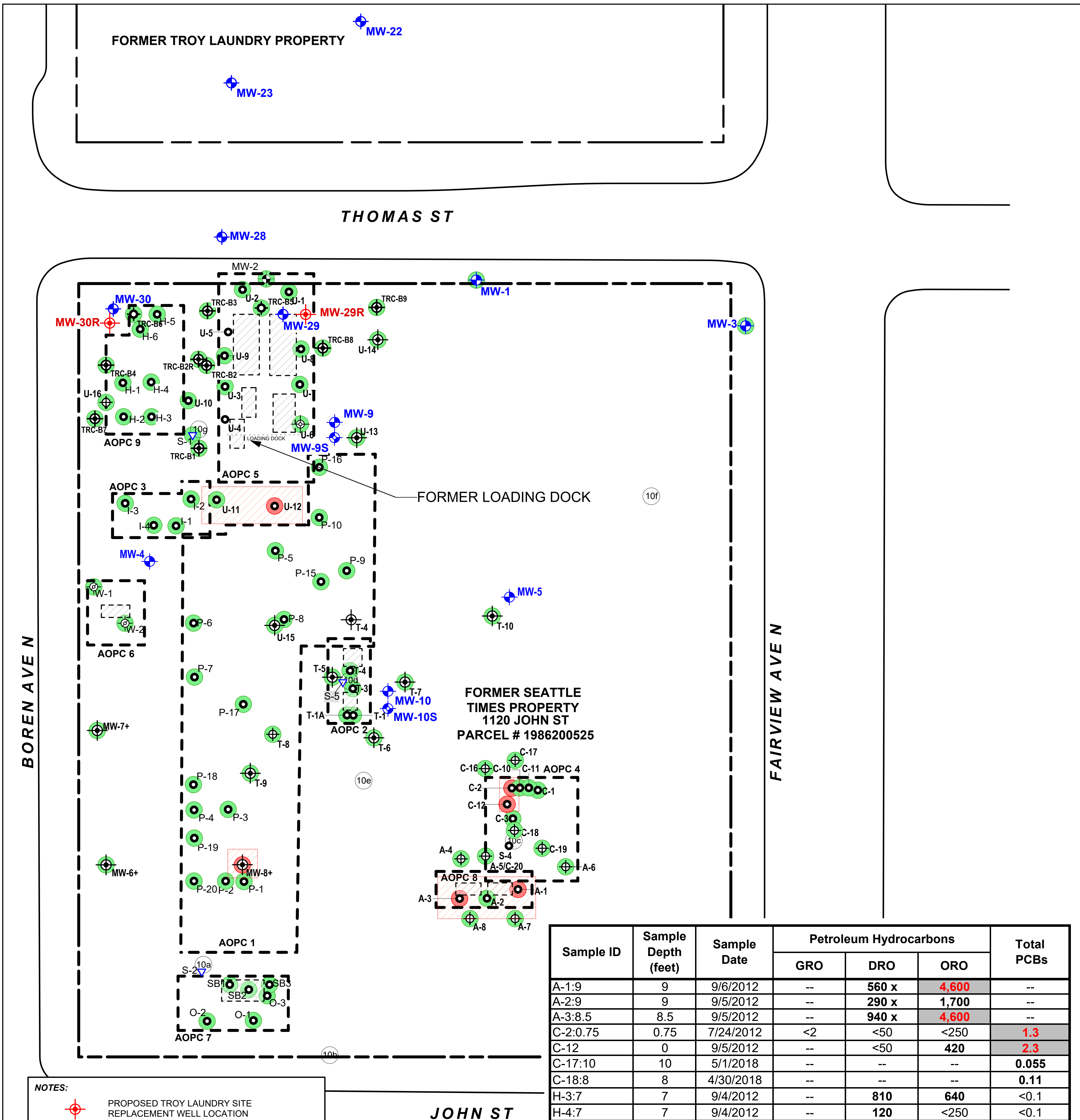
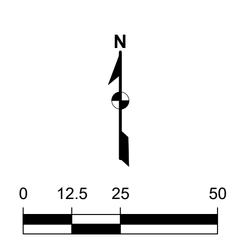


Sample ID	Sample Depth (feet)	Sample Date	Petroleum Hydrocarbons			Total PCBs
			GRO	DRO	ORO	
A-1:9	9	9/6/2012	--	**560 x**	**4,600**	--
A-2:9	9	9/5/2012	--	**290 x**	**1,700**	--
A-3:8.5	8.5	9/5/2012	--	**940 x**	**4,600**	--
C-2:0.75	0.75	7/24/2012	<2	<50	<250	**1.3**
C-12	0	9/5/2012	--	<50	**420**	**2.3**
C-17:10	10	5/1/2018	--	--	--	**0.055**
C-18:8	8	4/30/2018	--	--	--	**0.11**
H-3:7	7	9/4/2012	--	**810**	**640**	<0.1
H-4:7	7	9/4/2012	--	**120**	<250	<0.1
MW-8:10	10	3/17/2019	**21**	**600 x**	**5,000**	--
P-2:0	0	7/19/2012	<2	<50	<250	**0.2**
P-19:1.5	1.5	9/4/2012	--	<50	<250	**0.23**
T-8:5	5	5/20/2018	**5.8**	<50	**360**	--
U-11:20	20	5/13/2018	**12**	<50	<250	--
U-12:20	20	5/13/2018	**940**	**2,100 x**	<250	--
MTCA Method A Soil Cleanup Level for Unrestricted Land Uses[a]			**30**	**2,000**	**2,000**	**1**



NOTES:

- PROPOSED TROY LAUNDRY SITE REPLACEMENT WELL LOCATION
- SOIL BORING ADVANCED TO 20' BELOW GROUND SURFACE
- SOIL BORING ADVANCED UP TO 50' BELOW GROUND SURFACE
- SOIL BORING FROM LIMITED SUBSURFACE INVESTIGATION
- SHALLOW MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF PETROLEUM COMPOUNDS IMPACTS TO SOIL
- SAMPLE HAD NO ANALYZED COMPOUNDS EXCEEDING CLEANUP LEVELS (CULs)
- INDICATES SAMPLE WHERE ONE OR MORE COMPOUND CONCENTRATIONS EXCEEDED CULs
- SOIL BORING
- FLOOR SUMP
- APPROXIMATE PROPERTY BOUNDARY
- AOPC 1 — PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)
- UNDERGROUND STORAGE TANK (UST)
- 10a — SUMP
- \+ ATTEMPTED DEEP MONITORING WELL; NOT COMPLETED DUE TO REFUSAL

PARCEL BOUNDARIES : KING COUNTY, 2019

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

Table Notes:

All results presented in milligrams/kilogram (mg/kg).

Bold	Bold results indicate the compound was detected.
(shaded)	Shaded cells indicate the compound was detected at a concentration greater than the cleanup level.
a	Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses, Table 740-1, Washington Administrative Code (WAC) 173-340-900.
--	Not sampled, not analyzed.

Abbreviations:

DRO	Diesel-range organics
GRO	Gasoline-range organics
ORO	Oil-range organics
PCBs	Polychlorinated Biphenyls

Qualifier:

x	The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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FIGURE 5

EXTENT OF PETROLEUM COMPOUNDS IMPACTS TO SOIL, PLAN VIEW

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INTERIM ACTION WORK PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
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SEATTLE, WASHINGTON

DATE 4/20/22
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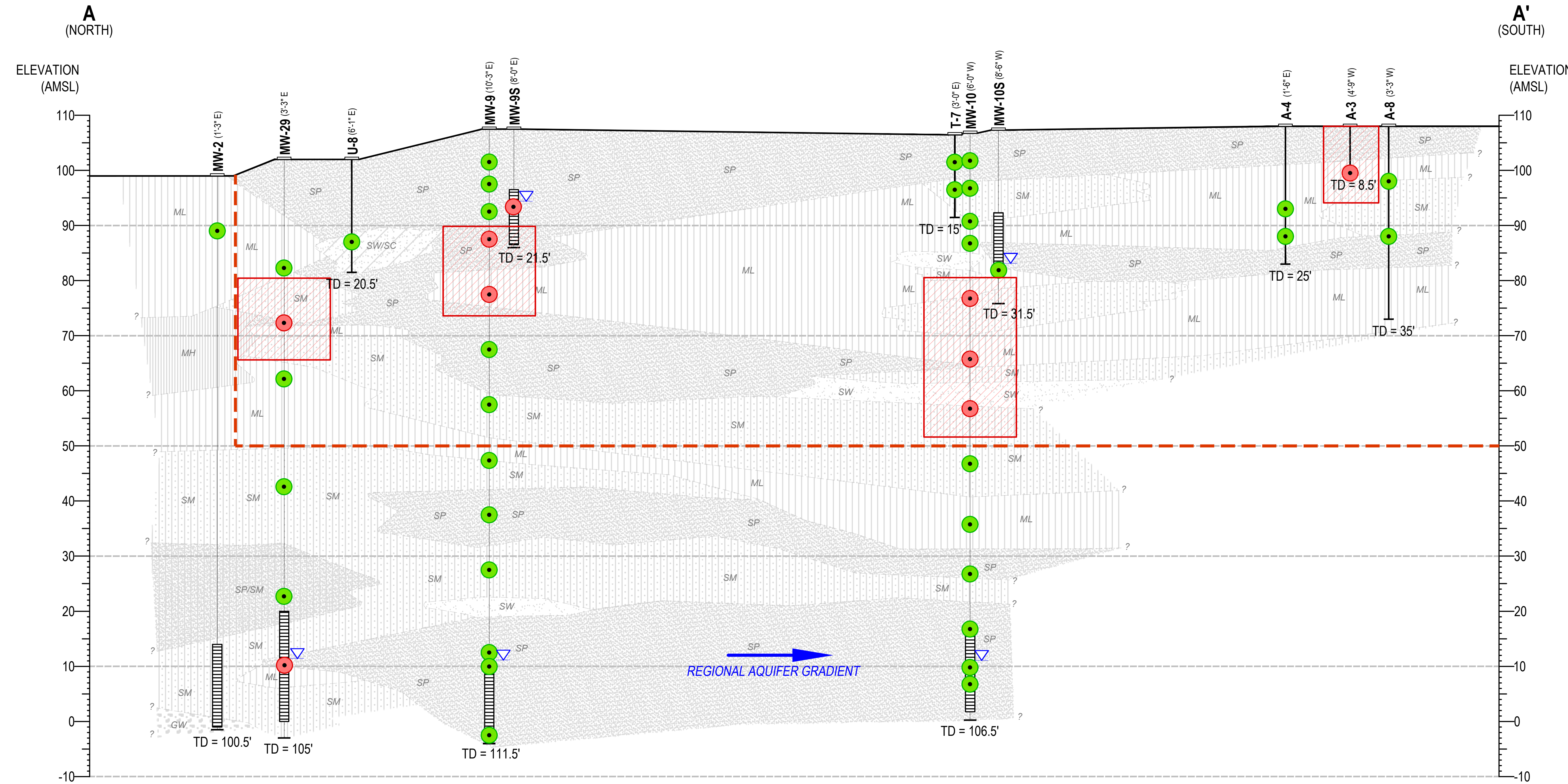


NOTES:

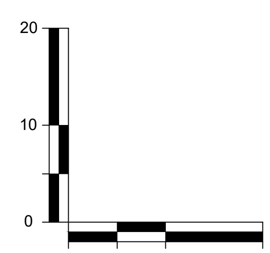
- SOIL BORING OR MONITORING WELL
- SM — LITHOLOGY DESIGNATIONS
- SOIL SAMPLE LOCATION
- SCREEN INTERVAL
- WATER LEVEL INDICATOR (NOVEMBER 2020)
- TOTAL DEPTH (TD)

(10'-3" E)	DISTANCE AND DIRECTION FROM CROSS-SECTION TO ACTUAL BORING/WELL LOCATION
AMSL	ABOVE MEAN SEA LEVEL
ML	SILT
MH	SANDY SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY GRADED SAND
SP/SM	POORLY GRADED SAND TO SILTY SAND
SW	WELL GRADED SAND
SW/SC	WELL GRADED SAND TO CLAYEY SAND
GW	WELL GRADED GRAVEL

- SAMPLE HAD NO ANALYZED COMPOUNDS EXCEEDING CLEANUP LEVELS (CULs)
- INDICATES SAMPLE WHERE ONE OR MORE COMPOUND CONCENTRATIONS EXCEEDED CLEANUP LEVELS

CONCENTRATIONS IN SOIL IN MILLIGRAMS PER KILOGRAM (mg/kg)

- APPROXIMATE EXTENT OF IMPACTS TO SOIL
- REDEVELOPMENT EXCAVATION AREA



SCALE:
(HORIZONTAL 1" = 30' = VERTICAL 1" = 20')

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FIGURE 6

EXTENT OF IMPACTS TO SOIL, CROSS-SECTION A-A'

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INTERIM ACTION WORK PLAN

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ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 11/18/21
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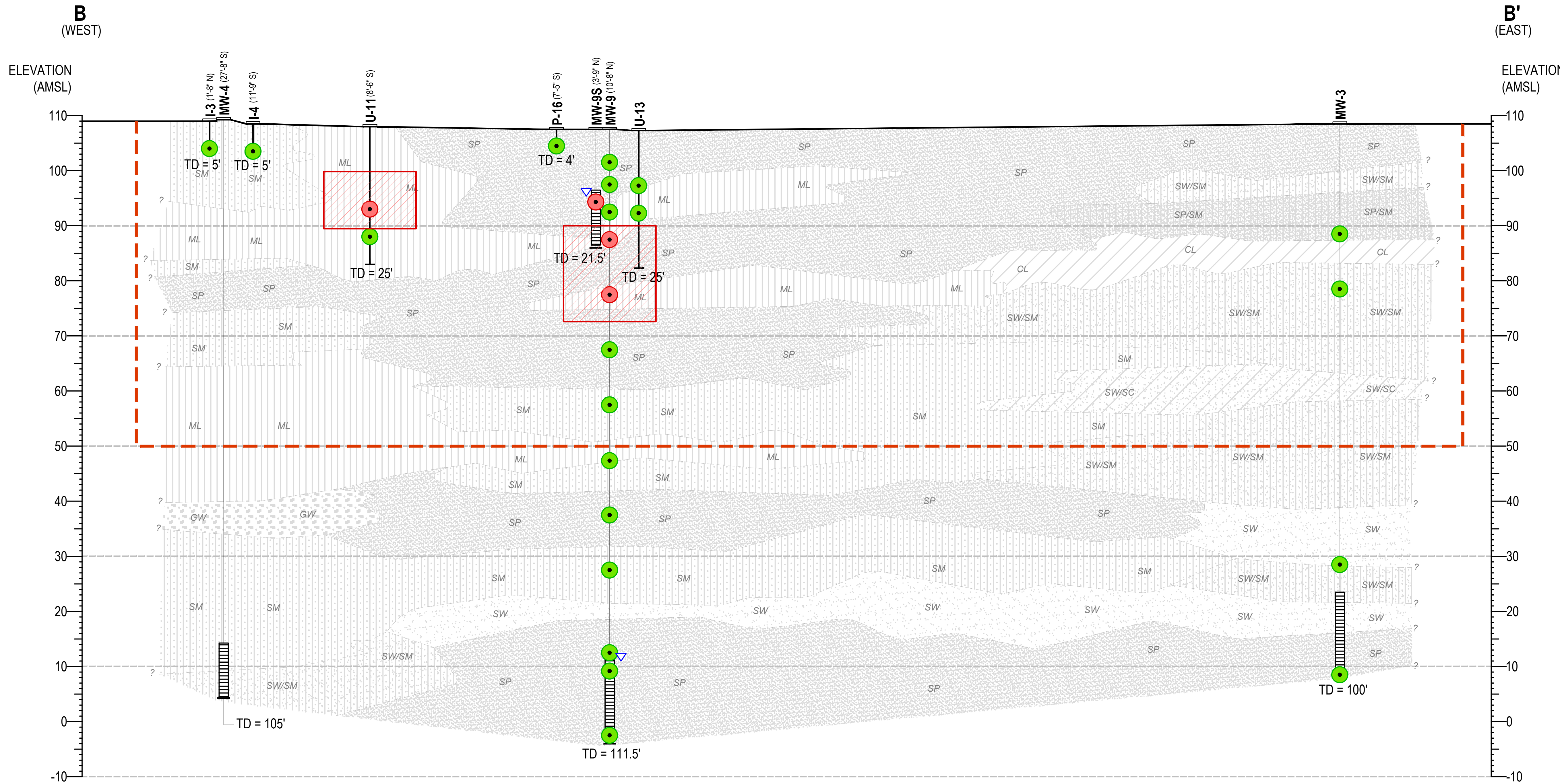


NOTES:

SOIL BORING OR MONITORING WELL
LITHOLOGY DESIGNATIONS
SOIL SAMPLE LOCATION
SCREEN INTERVAL
WATER LEVEL INDICATOR (NOVEMBER 2020)
TOTAL DEPTH (TD)

(10'-3" E)	DISTANCE AND DIRECTION FROM CROSS-SECTION TO ACTUAL BORING/WELL LOCATION
AMSL	ABOVE MEAN SEA LEVEL
CL	CLAY
ML	SILT
MH	SANDY SILT
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY GRADED SAND
SP/SM	POORLY GRADED SAND TO SILTY SAND
SW/SM	WELL GRADED SAND TO SILTY SAND
SW	WELL GRADED SAND
SW/SC	WELL GRADED SAND TO CLAYEY SAND
GW	WELL GRADED GRAVEL

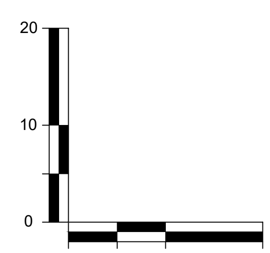
SAMPLE HAD NO ANALYZED COMPOUNDS EXCEEDING CLEANUP LEVELS (CULs)

INDICATES SAMPLE WHERE ONE OR MORE COMPOUND CONCENTRATIONS EXCEEDED CLEANUP LEVELS

CONCENTRATIONS IN SOIL IN MILLIGRAMS PER KILOGRAM (mg/kg)

APPROXIMATE EXTENT OF IMPACTS TO SOIL

REDEVELOPMENT EXCAVATION AREA



SCALE:
(HORIZONTAL 1" = 30' = VERTICAL 1" = 20')

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FIGURE 7
EXTENT OF IMPACTS TO SOIL, CROSS-SECTION B-B'

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INTERIM ACTION WORK PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 11/18/21
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REVIEWED BY JB

Appendix A
Sampling and Analysis Plan

Sampling and Analysis Plan

Interim Action Work Plan

Seattle Times Site
1120 John Street
Seattle, Washington

Facility Site ID No. 4377754
Cleanup Site ID No. 14495
Agreed Order No. DE 20468

May 5, 2022

TRC Project No. 015365.0010

Prepared For:

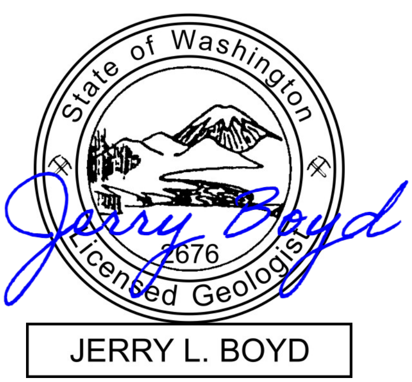
Washington State Department of Ecology
Toxics Cleanup Program
15700 Dayton Avenue North
Shoreline, Washington 98133

On Behalf Of:

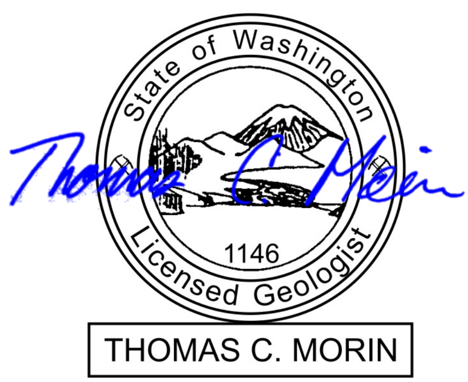
Onni John Street (Land) LLC
Mr. Brian Brodeur, VP Development
ONNI Group
1411 4th Avenue, Suite 1501
Seattle, Washington 98101

Prepared By:

TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, Washington 98027



Prepared by:
Jerry Boyd, L.G.
Senior Geologist



Reviewed and Approved by:
Thomas C. Morin, L.G.
Vice President / Principal Geologist

TABLE OF CONTENTS

FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation/ Acronym	Definition
amsl	Above mean sea level
ASTM	American Society for Testing and Materials
AO	Agreed Order No DE 20468
DOT	Department of Transportation
DRO	Diesel-range organics
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
GRO	Gasoline-range organics
HASP	Health and Safety Plan
HCl	Hydrochloric acid
He	Helium
IA	Interim action
IAWP	Interim Action Work Plan
mL	Milliliter
MS/MSD	Matrix spike/matrix spike duplicate
MTCA	Model Toxics Control Act
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons – Diesel Range Extended
NWTPH-Gx	Northwest Total Petroleum Hydrocarbons – Gas Range
Onni	Onni John Street (Land) LLC
ORO	Oil-range organics
ORP	Oxidation-reduction potential
PCBs	Polychlorinated biphenyls
PID	Photoionization detector
PPE	Personal protective equipment
QA/QC	Quality assurance and quality control
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
TRC	TRC Environmental Corporation
USCS	Unified Soil Classification System
VOA	Volatile organic analysis
VOCs	Volatile organic compounds
WAC	Washington Administrative Code

1 Introduction

On behalf of Onni John Street (Land) LLC (Onni), TRC Environmental Corporation (TRC) has prepared this *Sampling and Analysis Plan* (SAP) as an appendix to the *Agency Review Draft Interim Action Work Plan* (IAWP) for the Seattle Times Site (Site) located at 1120 John Street in Seattle, Washington (Property). The relative location of the Property is depicted on Figure 1 and the general layout of the Site is depicted on Figure 2.

The IAWP has been prepared in conformance with Agreed Order No. DE 20468 (AO or the "Order") between the state of Washington and the Property owner, Onni. This SAP is being provided as Appendix A to the IAWP. The purpose of the SAP is to provide procedures and practices that will be used during the implementation of the IAWP and collection of environmental samples.

1.1 Sampling and Analysis Plan Organization

This SAP is organized as follows:

- Section 1.0: Introduction
- Section 2.0: Interim Action Implementation
- Section 3.0: Field Procedures and Practices
- Section 4.0: Sample Containers, Preservation, Packaging, and Delivery
- Section 5.0: Decontamination Procedures
- Section 6.0: Bibliography

1.2 Project Organization

The following subsections provide key personnel involved with the Interim Action (IA at the Seattle Times Site.

1.2.1 Washington State Department of Ecology Site Manager

The Ecology Project Manager, Ms. Sunny Becker, will oversee this project for Washington State Department of Ecology (Ecology) and is responsible for regulatory oversight of the planned IA and requirements of the AO to ensure that all work is completed in accordance with the Model Toxics Control Act (MTCA). Ms. Becker's contact information is provided below:

Contact:	Ms. Sunny Becker – Toxics Cleanup Programs 15700 Dayton Avenue North Shoreline, Washington 98133
Address:	Washington State Department of Ecology, Northwest Regional Office 15700 Dayton Avenue North Shoreline, Washington 98133
Email:	HLIN461@ecy.wa.gov
Phone:	(206) 594-0107

1.2.2 Onni Project Manager

The Project Manager for Onni is Mr. Stephen Porter. Mr. Porter will oversee and direct the TRC team that will perform the IA and will also serve to coordinate communications between Ecology and the TRC team. Mr. Porter's contact information is presented below:

Contact: Mr. Stephen Porter
Onni John Street (Land) LLC
ONNI Group
1411 4th Avenue; Suite 1501
Seattle, Washington 98101
Email: sporter@onni.com
Phone: (206) 691-8998

1.2.3 TRC Project Coordinator

The TRC Project Coordinator for the Site on behalf of Onni is Mr. Thomas Morin, L.G., Principal Geologist. Mr. Morin will direct overall project performance and will serve as a primary technical point of contact for Onni. Mr. Morin's contact information is presented below:

Contact: Mr. Thomas Morin, L.G. – Principal Geologist
Address: TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, WA 98027
Email: tmorin@trccompanies.com
Phone: (425) 395-0030 (direct)
(206) 954-6957 (cell)

1.2.4 TRC Project Manager

The TRC Project Manager for IA activities is Mr. Jerry Boyd, L.G. Mr. Boyd will oversee and direct the TRC Field Team Leader, who will direct Field Team Staff and subcontractors performing work associated the IA. Mr. Boyd's contact information is presented below:

Contact: Mr. Jerry Boyd, L.G. – Senior Geologist
Address: TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, WA 98027
Email: jboyd@trccompanies.com
Phone: (425) 395-0046 (direct)
(425) 358-0089 (cell)

Mr. Boyd will report to the Onni Project Manager, Mr. Porter.

1.2.5 Project Quality Assurance Officer

The Project Quality Assurance (QA) Officer, Ms. Christy Wyborny, has overall responsibility for quality assurance oversight. The Project QA Officer communicates directly to the TRC Project Manager. The Project QA Officer will initiate and monitor any necessary formal corrective actions and will assist in preparing QA/Quality Control (QA/QC) project summaries for the final report, including analysis of precision, accuracy, and completeness of collected data. Ms. Wyborny's contact information is provided below:

Contact:	Ms. Christy Wyborny – Project QA Officer
Address:	TRC Environmental Corporation 1180 NW Maple Street, Suite 310 Issaquah, Washington 98027
Email:	cwyborny@trccompanies.com
Phone:	(425) 395-0038

1.2.6 TRC Field Team Leader

The TRC Field Team Leader for the IA has not been selected but will be designated prior to mobilizing for implementation of the IA. The Field Team Leader will coordinate closely with the TRC Project Manager and will oversee the TRC Field Team and subcontractors. The TRC Field Team Leader will report directly to Mr. Boyd, the TRC Project Manager. The TRC Field Team Leader will be responsible for implementation of the SAP, the Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), and any other project-specific plans required to complete the IA.

1.2.7 TRC Field Team

Members of the TRC Field Team will report directly to the TRC Field Team Leader and will perform on-site work under the direction of the TRC Field Team Leader. TRC Field Team staff must have current 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certification and annual 8-Hour Updates.

1.2.8 Contract Laboratory

Only Washington State-accredited analytical laboratories will be used for chemical analyses of samples collected during the implementation of the IAWP. All chemical analyses will be performed using U.S. Environmental Protection Agency (EPA) or Ecology-approved analytical methods consistent with the QAPP. The contract laboratory will report directly to the TRC Project Manager and QA Officer.

2 Interim Action Implementation

2.1 Pre-Field Activities

Pre-field activities that must be completed prior to mobilization for the IA field activities are presented in the following sections.

2.1.1 Public Utility Locate

The TRC Field Team Leader will contact the Washington State Utility Notification Center at least 72 hours prior to mobilization for the proposed drilling activities at the Site. The phone number for the Washington State Utility Notification Center is 811 or 1-800-424-5555. The TRC Field Team Leader will ensure that all proposed drilling locations planned for the IA are marked with white paint, as required.

Upon completion of the notification, the TRC Field Team Leader will be provided with a ticket number from Washington State Utility Notification Center. The TRC Field Team Leader will provide the ticket number to Onni's excavation subcontractor.

2.2 Field Equipment

Field equipment that will be used to oversee the IA will be functional, decontaminated, and calibrated to the instrument manufacturers' specifications. The following sections describe the instruments and supplies that will be utilized to perform the IA as well as how to calibrate, decontaminate, and maintain instruments and equipment.

2.2.1 Essential Equipment List

The following essential equipment is necessary to perform the groundwater, soil, and ambient air sampling tasks defined in the IAWP.

Required Equipment	Purpose	Comments
Photoionization detector (PID)	Health and safety/work area air monitoring and to assess the presence of volatiles in soil	Requires daily calibration gas and battery recharging
Multi-parameter meter and flow-through cell (water)	Measure groundwater field parameters (pH, temperature, conductivity, oxidation-reduction potential [ORP], dissolved oxygen [DO])	Requires daily calibration standards and battery recharging
Turbidimeter	Measure groundwater turbidity during purging and at time of sampling	Requires calibration standards and battery exchange on an as needed basis
Summa® canister and flow regulator (laboratory supplied)	Atmospheric air sampling	Requires flow regulator adjusted for planned sampling duration
Method 5035 soil sample plunger (laboratory supplied)	Soil sampling to preserve volatile organic compounds (VOCs)	Single-use disposable
Sample jars, vials, bottles, Tedlar® bags, Summa ® canisters, etc. (laboratory supplied)	Soil, ambient air, and groundwater sampling	Requires unique label with sample ID, date, and time for each discrete sample,

2.2.2 Equipment Function Testing and Calibration

The calibration and general maintenance of field instruments is the responsibility of the TRC Field Team Leader. All calibration procedures and measurements will be made in accordance with manufacturers' specifications. Field instruments will be checked and calibrated before their use on-site, and batteries will be charged and checked daily where applicable. Extra batteries will be included with on-site supplies for equipment that is powered with replaceable batteries.

Instrument calibration will be checked at the beginning of each workday and checked and recalibrated as necessary through the course of the day according to manufacturers' specifications or if deemed necessary by sampling personnel. Equipment that fails calibration and/or becomes otherwise inoperable during the field investigation will be removed and either repaired or replaced. If the data appear to have been affected, the results of the evaluation will be documented, and the TRC Team Project Manager will be notified.

3 Field Procedures and Practices

The IAWP includes compliance monitoring tasks to produce data sufficient to provide real-time data regarding potential exposures during the IA (protection monitoring), performance monitoring to determine whether and where remedial action has attained the desired cleanup standards (proposed cleanup levels provided in the Revised Remedial Investigation Report), and confirmation monitoring to confirm the long-term effectiveness of the remedial action. Specifically, the IAWP includes tasks for collection and laboratory analysis of representative subsurface soil and any groundwater encountered during the redevelopment excavation and construction.

Locations of historical and existing sample locations are depicted on Figure 3 while sample locations for this IA will generally be at alpha-numeric grid nodes as depicted on Figure 4.

The planned locations may be adjusted based on access and the presence of utilities. All final sample locations will be appropriately documented and located on project graphics. Sample depths may be adjusted based on field observations such as soil type, field screening results, and sample recovery. Final sample depths will be documented.. Actual sample locations and depths submitted for analysis based on field observations will be documented in the field logbook.

3.1 Sample Nomenclature

Multiple environmental and geotechnical investigations have occurred either at the Site or in the vicinity of the Site and there is the possibility that different sample locations could inadvertently share the same or substantially similar identifiers. For this reason, all new sample locations that are part of this IA will begin with the letter "T" followed by an abbreviation of the type of sample location as follows:

- TS denotes a soil sample
- TW denotes a water sample
- TA denotes an ambient air sample

Specific nomenclature for each of these sample media are discussed in greater detail in the following subsections.

3.1.1 Soil

Discrete soil samples collected from the excavation floor and sidewalls as part of this IA will be assigned a unique alphanumeric identifier comprising:

- prefix of TS followed by a dash (-);
- alphanumeric location descriptor followed by a colon (:); and
- the sample elevation in feet above mean sea level.

For example, "TS-A1010:70" describes the soil sample collected at location A1010 at an elevation of 70 feet above mean sea level (amsl).

3.1.2 Water

Up to three different locations may be sampled for water during the IA:

- Excavation Sumps;
- Dewatering Wells; and
- Treatment Operation, which includes both raw, untreated water and finished, treated water.

These types of potential water samples are discussed in the following subsections. If any of these elements of Property dewatering are deemed not to be necessary to allow construction, sampling of that component will not be performed.

Excavation Sump Water Samples

Water samples collected from the open excavation sumps, if necessary, will be assigned a unique alphanumeric identifier comprising:

- prefix of TW followed by a dash (-);
- alphanumeric location descriptor of the location followed by a colon (:); and
- the sample elevation in feet amsl.

For example, "TW-A1010:70" describes the water sample identified as collected at location A1010 at 70 feet amsl.

Dewatering Well Water Samples

Water samples collected from a dewatering well, if necessary, will be assigned an alphanumeric identifier comprising:

- prefix of TW followed by a dash (-);
- alphanumeric location descriptor of the location followed by a colon (:); and
- the sample elevation in feet amsl.

For example, “TW-X2020:40” describes the water sample collected at location X2020 at 40 feet amsl. Dewatering wells, if necessary, will be placed around the perimeter of the excavation.

Treatment Operation Water Samples

Water samples collected from the treatment operation that may be necessary before discharging collected excavation liquids to the sanitary sewer by permit will be assigned an alphanumeric identifier comprising:

- prefix of TW followed by a dash (-);
- the character “R” for raw, untreated water or “F” for finished, treated water followed by a colon (:); and
- the sample date in the YYMMDD format.

For example, “TW-F:220630” describes a post-treatment (i.e., finished) water sample collected on June 30, 2022.

3.1.3 Air

If field screening of atmospheric air indicates the potential presence of VOCs above a threshold value identified in the site-specific Health and Safety Plan (HASP), an ambient air sample may be collected for analysis. Ambient air samples will be assigned a unique alphanumeric identifier comprising:

- prefix of TA followed by a dash (-);
- alphanumeric location descriptor; and
- the sample date in the YYMMDD format.

For example, “TA-J3350:220104" describes the air sample collected from location J3350 on January 4, 2022.

3.1.4 Field Quality Assurance Samples

Field QA samples will be collected not less than once daily. QA samples will be assigned unique identifiers comprising:

- the prefix TSD for a soil duplicate sample followed by a dash (-) and the alphanumeric location separated by a colon (:) and then the elevation referenced to feet amsl;
- TWD for a water duplicate sample followed by a dash (-) and the alphanumeric location separated by a colon (:) and then the elevation referenced to feet amsl or if the sample was collected from the treatment operation, the prefix of TWD followed by a dash (-) and then the location of sample collection (i.e., raw water before pre-treatment [R] or finished, post-treatment [F]) and finally the sample date (YYMMDD);
- the prefix TEB followed by a dash (-) for equipment blanks, and TTB followed by a dash for trip blanks;
- a sequential number starting with 1 followed by a colon (:); and

- the sample date in the YYMMDD format.

Field QA sample frequency is depicted in the following table:

Type	Media	Frequency
Field Duplicate	Soil or Water	Not less than 10 percent of each media
Equipment Blank	Soil or Water (Only when reusable sampling equipment is employed)	Once every 20 samples of each media
Trip Blank	Water	Each day that water samples are collected

3.1.5 Labelling and Tracking of Samples

The unique sample identification described in Section 3.1.1 through Section 3.1.4 along with the sample time and date will be placed on sample labels fixed to laboratory-supplied sample vessels, recorded on the field report form, and recorded on the sample Chain-of-Custody Form.

All field labeling will be performed with waterproof labels and waterproof pens or markers. Field notes completed by field staff will also indicate samples names, elevations where appropriate, and times in the event that there is uncertainty regarding an individual sample.

3.2 Soil Sampling Procedures

3.2.1 Soil Logging and Field Screening Procedures

Soil conditions encountered during sample collection will be logged in accordance with the Unified Soil Classification System (USCS) Standard Practice Description and Identification of Soils (Visual Manual procedure; ASTM 2488D-00). Physical properties to be documented on the soil boring logs generally include: USCS name, color, moisture content, density or stiffness, dilatancy and plasticity for fine-grained soils, and odor or other field screening indications of potential contamination such as PID measurements. A portion of soil from each sample interval will be placed in a new resealable plastic bag, disaggregated, and allowed to degas for approximately 10 minutes after which time the headspace within the bag will be measured for the presence and relative concentration of VOCs using a calibrated PID. PID measurements will be recorded on the daily field report form.

Nitrile gloves will be changed, at a minimum, between each sample interval and whenever the potential for cross-contamination is suspected. Soil samples will be placed into laboratory-cleaned, labeled vials and jars. The following sample collection sequence will be followed

- VOCs and gasoline-range organics (GRO);
- Diesel-range organics (DRO) and oil-range organics (ORO); and
- Polychlorinated biphenyls (PCBs).

Samples for VOCs and GRO analyses will be collected using EPA Method 5035A. Soil sample labeling will follow procedures documented in the sample identification section (Section 3.1). EPA Method 5035A requires testing for total solids and an additional sample aliquot will be collected and analyzed for total solids by Standard Method (SM) 2540G-97. Samples for DRO, ORO, and PCBs analyses will be collected in an unpreserved 4-ounce glass jar. All soil sample analytical results will be reported on a dry weight basis.

3.2.2 Soil Chemical Analyses

Planned laboratory analyses and samples collected but archived for potential analyses using one or more of the following methods:

- VOCs by EPA Method 8260C, sample collection per EPA Method 5035A;
- GRO by Ecology method Northwest Total Petroleum Hydrocarbon-Gasoline Range (NWTPH-Gx), sample collection per EPA Method 5035A;
- DRO and ORO by Ecology Method by NWTPH-Diesel Range Extended (NWTPH-Dx); and
- PCBs by EPA Method 8082A

Chemical analyses will be performed by a laboratory accredited by Washington State.

3.3 Soil Vapor Monitoring Locations

A total of two soil vapor sampling locations will be temporarily constructed within dedicated 6-inch diameter borings advanced during the Contained-In Determination (CID) investigation task. Planned temporary soil vapor sampling points intended for this purpose will be advanced to an approximate elevation of 45 feet amsl, which corresponds to about 10 feet below the floor elevation for the planned building. Soil vapor probes will be constructed of 6-inch-long stainless-steel sintered inlet tips connected to 0.25-inch interior diameter polyethylene tubing extending from the sample interval depth to ground surface. Filter pack consisting of clean washed 10/20 silica sand (typical) will be used to fill the annular space around and 1 foot above the soil vapor tip. Hydrated bentonite will be placed in lifts above the filter sand and extend a minimum of 3 feet above the filter pack. Annular space from the top of the hydrated bentonite seal to the soil vapor monument will consist of neat cement. Valves will be placed on the top of the probe effluent tubing to ensure exclusion of atmospheric air intrusion into the soil vapor probe and limit soil vapor effluent from the tubing, except during sampling,

Upon completion of soil vapor sampling at these two locations, the borings will be decommissioned and sealed.

3.3.1 Soil Vapor Sampling Procedures

Soil vapor samples will be collected using the following procedures:

1. Determine the prevailing wind direction in the vicinity of the Site prior to starting soil vapor sampling. Set up a laboratory-supplied and batch-certified evacuated Summa® canister with a 15-minute flow regulator in an upwind area to collect a background atmospheric air sample during the planned soil vapor sampling time frame. This atmospheric sample will be submitted and analyzed along with soil vapor samples. Atmospheric analytical results will be used for comparison to reported soil vapor concentrations under procedures specified for this medium in the QAPP.

2. Perform a negative pressure test to observe for leaks in aboveground sampling appurtenances (i.e., flow regulator, pressure gauge, sampling valves, fittings). A slight vacuum will be applied to the sample train equipment via disposable syringe plunger or pump to ensure the system does not lose more than 1 inch of mercury (inch Hg) per minute. If a leak is detected, all fitting attachments will be evaluated and re-tightened before the negative pressure test is repeated.

3. Calculate the purge volume based on the interior diameter and length of the vapor probe tubing plus the pore space volume of the filter pack.

4. Purge three well volumes at a rate of less than 200 cubic centimeters per minute (cc/min) using a disposable syringe plunger or an electric pump.

5. Perform a leak test during purging/sampling by placing a weighted and sealed shroud over the vapor probe wellhead and filling with ultra-high purity helium (He) while monitoring the purge gas for He using a calibrated field meter. The He concentration within the shroud atmosphere should be kept at approximately 20 percent. If He is detected during purging activities, the wellhead should be resealed and the leak test repeated.

6. Collect the soil vapor sample in a laboratory-supplied and individually-certified evacuated Summa® canister with a 1-hour flow regulator Valves for each Summa® canister should be closed while the canister remains under a negative pressure, typically 0.5 to 1 inch of Hg.

7. Label the Summa® canister as to sample, time, date, beginning and final pressures, and requested analysis.

8. Submit the sample to the contract laboratory for analysis.

A field audit of soil vapor sampling procedures may be performed as part of procedures provided in the QAPP.

In addition to the two soil vapor samples, one ambient air sample will be collected at the same time as the soil vapor samples. These samples will be collected over a similar 1-hour sampling interval at the beginning and end of the sampling period for soil gas. These samples will provide information on ambient condition in the event there is atmospheric leakage into the soil vapor samples and also provide some indication of potential atmospheric turnover/intrusion into shallow soil vapor.

3.3.2 Soil Vapor Chemical Analysis

Background atmospheric air and soil vapor samples will be submitted for chlorinated VOCs analysis using EPA Method TO-15. Chlorinated VOCs to be reported are tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cDCE), and vinyl chloride (VC). Analysis for He will also be completed for potential leak detection. All soil vapor analysis will be performed by a State of Washington-accredited analytical laboratory.

3.4 Water Sampling Procedures

3.4.1 Field Parameters

Field parameters for each sample will be collected using a calibrated multimeter (e.g., YSI556) for the following parameters and resolutions:

- Temperature: ± 0.1°C
- pH: ± 0.1 pH units
- Specific conductance: ± 3%
- ORP: ± 1 millivolt

3.4.2 Sampling Procedures and Sequence

Water samples will be placed into laboratory-supplied, pre-labeled sample vessels. Samples will be collected starting with the most sensitive sample aliquot and ending with the least sensitive aliquot. For IA water sampling, the following sampling sequence will be followed:

- VOCs and GRO placed in 40-milliliter (mL) volatile organic analysis (VOA) vial with zero-headspace and preserved with hydrochloric acid (HCl);
- DRO and ORO placed in one 250-mL unpreserved amber glass bottle; and
- PCBs in one 1-liter unpreserved amber glass jar.

Water samples for VOCs and GRO will be placed into three 40-mL VOA vials, preserved with HCl, using the least agitation method achievable with the submersible pump, hand dipper, or sample valve in the case of an on-site treatment operation. These samples should have no headspace in the vessel after filling. To check for this, VOA vials will be capped, inverted, and struck on the palm of the sampler's hand to check for gas bubbles. If gas bubbles are noted, the lid will be removed and the sample vial topped off, resealed, and rechecked for gas bubbles. This process will be repeated until a zero-headspace sample is achieved in the VOA vials. Water samples for DRO and ORO analysis will be placed into one unpreserved 250-mL amber glass bottle. Water sample labeling will follow procedures documented in the sample identification section (Section 3.1).

3.4.3 Water Chemical Analysis

Water samples will be submitted for laboratory analysis using one or more of the following methods:

- VOCs by EPA Method 8260D;
- GRO by NWTPH-Gx;
- DRO and ORO by NWTPH-Dx;
- PCBs by EPA Method 8082A.

All analyses will be performed by a laboratory accredited by Washington State.

3.5 Field Documentation

Field documentation procedures for groundwater, soil, and air sampling performed as part of the IA are presented in the following sections. Sample nomenclature is described in Section 3.1.

3.5.1 Equipment Calibration Logs

Daily instrument calibration is required for health and safety monitoring equipment, field screening, and water quality instruments. Instrument calibration will be checked at the beginning of each workday and checked and recalibrated as necessary through the course of each field day according to manufacturers' specifications or more frequently if deemed necessary by the TRC Field Team.

Documentation associated with calibration and/or maintenance of field equipment will be maintained on instrument calibration forms that will be part of the field logbook. Logbook entries regarding the status of field equipment will contain, but will not necessarily be limited to, the following information:

- Date and time of calibration;
- Name of person conducting calibration;
- Type of equipment being calibrated (make and model);
- Reference standard used for calibration (such as pH of buffer solutions);
- Manufacturer's lot number and expiration date of standard solution or calibration gas; and
- Other pertinent information.

3.5.2 Water Sampling Field Data Sheets

Water sampling field data will be recorded on Water Sampling Field Data Sheets. Water sampling information that will be recorded in the field logbook typically includes the following:

- Location identification;
- Date and time of sampling;
- Weather conditions;
- Names of sampling personnel;
- Elevation of water sample, if appropriate;
- Field parameter measurements;
- Miscellaneous comments or observations;
- Health and safety monitoring instrument readings; and
- Samples collected, sample times, number of bottles, bottle types, and preservation, (if any).

3.5.3 Air Sampling Data Sheets

Air sampling field notes will be recorded on individual Air Sampling Data Sheets. Air sampling information that will be recorded typically includes the following:

- Location identification;
- Date and time of sampling;
- Weather conditions;

- Names of sampling personnel;
- Miscellaneous comments or observations;
- Health and safety monitoring instrument readings (i.e., PID and colorimetric tube measurements); and
- Samples collected, sample times, number of sample vessels, and vessel types (i.e., Tedlar® bag, Summa canister).

3.5.4 Chain-of-Custody

Custody is one of several factors necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final evidence files.

Samples are in a person's custody if:

- Samples are in the actual possession of a person;
- Samples are in the view of the person after being in actual possession of the person; and
- Samples are in a locked vehicle, building, or other secure structure to prevent tampering.

Documentation of sample custody is provided on Chain-of-Custody Forms, which travel with the samples (e.g., inside the sample cooler or with the person transporting the samples). The Chain-of-Custody Forms are used to track the samples from the time of collection, through the transport process, and ending with delivery to the analytical laboratory.

Every time the samples change custody from one person to another, the person relinquishing custody will sign, date, and note the time (to the nearest minute) that sample custody was relinquished. The person taking custody of the samples will sign, date, and note the time that they took custody. This should be the same time as the samples were relinquished.

Sample coolers that are shipped to analytical laboratories by common carrier (e.g., FedEx) will include Chain-of-Custody Forms that will be protected in sealed plastic bags taped to the inside lid of the sample cooler. The person in custody of the samples will sign, date, and time stamp the Chain-of-Custody Form when samples are delivered to the common carrier and then seal the cooler and apply custody seals to the strapping tape securing the cooler lid. The shipment tracking system will serve as the custody record until delivery to the analytical laboratory. Upon receipt at the analytical laboratory, sample check-in staff will open the cooler(s) and sign, date, and time stamp the Chain-of-Custody Form to take custody of the samples.

3.6 Field Quality Control Samples

Quality control (QC) measures will be taken to evaluate laboratory precision, potential equipment cross-contamination, potential matrix interferences, and potential contamination from the ambient air.

Field duplicates, equipment blanks, and trip blank samples will be collected as part of the field QC program for the IA. Each of these sample types is described in the following sections along with their purpose, collection frequency, and analyses.

3.6.1 Trip Blank Samples

The potential for contamination from sample handling procedures will be evaluated using trip blank samples for all aqueous samples . The trip blanks will originate at the contract laboratory and will be relabeled upon arrival at the Property. Trip blank samples accompany one cooler of sample bottles and samples during sampling and shipping for each day in the field during performance of the IA. Trip blank samples will be analyzed for VOCs using EPA Method 8260C.

3.6.2 Equipment Blank Samples

The potential for cross-contamination from non-dedicated multi-use sampling devices or equipment will be evaluated using equipment blank samples. Some examples of multi-use non-dedicated sampling devices that will potentially be used for this investigation are soil core or other metallic samplers, submersible pumps, and an electronic water level indicator. One equipment blank sample will be collected for each type of non-dedicated sampling equipment to evaluate the effectiveness of the decontamination procedures (Section 5.0). Equipment blank samples will only be analyzed for VOCs.

Equipment blank samples will be prepared by pouring laboratory-supplied deionized organic-free water over the previously used and decontaminated sampling equipment and capturing the rinsate into appropriate sample bottles for the requested analyses. The equipment blank sample will be given a unique sample ID following the sampling nomenclature protocols detailed in Section 3.1 of the IAWP.

3.6.3 Field Duplicate Samples (Groundwater Only)

Laboratory and field sampling precision of groundwater sampling will be evaluated by collecting blind field duplicate samples. One field duplicate sample will be collected per every 10 percent, or fraction thereof, of the total number of samples collected. The field duplicate sample will be collected under conditions as nearly identical as possible to the original sample. The field duplicate sample will be labeled following sample nomenclature procedures previously described. The field duplicate sample will be distinguished as a duplicate only in the field notes and will be analyzed for the same constituent list as the original sample.

3.6.4 Laboratory Quality Control Samples

The analytical laboratory will perform their own internal QA/QC checks on data quality. The laboratory data report will provide analytical results for a MS/MSD sample at a rate of one each for each sample delivery group or for not less than 10 percent of the total samples. The laboratory will provide a report if the analysis of the MS/MSD results relative to surrogate recovery control limits and relative percent different between MS/MSD samples. Analytical results that are outside of control limits will be flagged with the appropriate data qualifier and may be reanalyzed if control limits are not met or if reported concentrations are outside of instrument calibration limits. Full laboratory data reports will be provided with the reports required under the AO.

4 Sample Containers, Preservation, Packaging, and Delivery

The following sections describe sample container types, preservation requirements, packaging, and shipping procedures for water, soil, and air samples collected during the IA.

4.1 Sample Packing Procedures

Samples will be packed into laboratory-provided coolers or other packaging (i.e., cardboard box for Summa canister) containing bagged ice to reduce and maintain an internal temperature of approximately 4 degrees Celsius (ºC) or less for soil and water. Air samples will not be chilled. The completed Chain-of-Custody Form will accompany the samples and may be placed into the cooler in a sealable plastic bag or may be held by the person delivering the samples to the laboratory. See Section 3.4.4 for chain-of-custody information.

4.2 Sample Transport

Soil, water, air, and all QA/QC samples will be hand-delivered to the contract laboratory or relinquished to a courier after each day of sampling following standard chain-of-custody procedures.

5 Decontamination Procedures

Sampling equipment that comes into direct contact with sample media, or sample containers ideally will be single-use, disposable equipment that is replaced between each unique sample collection. If the sampling equipment is not single-use disposable equipment, it will be decontaminated between each sample location as described below.

Decontamination fluids generated on-site will be retained in Department of Transportation (DOT)-approved steel drums provided by TRC. The drums will be properly labeled as described in Section 5.5 and stored on-site pending characterization for disposal.

5.1 Aqueous Sampling Equipment Decontamination

If non-dedicated, multiple-use sampling equipment is used for water sampling, it will be decontaminated prior to use and between each sample according to the following steps:

1. Wash in a solution of Alconox® (or equivalent) and distilled water.
2. Rinse with distilled water.
3. Rinse again with distilled water.

5.2 Nonaqueous Sampling Equipment Decontamination

If non-dedicated, multiple-use sampling equipment is used for soil sampling, it will be decontaminated prior to use and between each sample according to the following steps:

1. Wash in solution of Alconox® (or equivalent) and distilled water.
2. Rinse with distilled water.
3. Rinse again with distilled water.

All air sampling equipment will be new, single use material.

5.3 Decontamination of Workers and Personal Protective Equipment

It is anticipated that all work associated with the IA at the Site will be conducted in Level D personal protective equipment (PPE). Requirements for upgrading to modified Level D or Level C PPE are outlined in the Site HASP, which is provided as Appendix C the IAWP.

Level D PPE includes the following components:

- Steel-toe, steel-shank rubber boots or boot covers over steel-toe, steel-shank leather boots;
- Safety glasses or face shield (American National Standards Institute [ANSI] Z87.1);
- Nitrile gloves for chemical protection;
- Hearing protection when appropriate (ANSI S3.19);
- Hard hat when working around overhead equipment (ANSI Z89.1); and
- DOT-approved high visibility clothing (ANSI 107 Class 2 or Class 3).

In addition to these PPE components, additional respiratory vector procedures may be necessary to ensure worker safety.

5.4 Decontamination of Sample Containers

All sample containers will be laboratory-prepared and pre-cleaned to standards as required in protocols found in Section 4 of EPA's SW-846 Methods. Field decontamination of sample containers is not approved and any sample container suspected of being contaminated will be disposed and replaced with a new, laboratory-provided equivalent sample container.

5.5 Sampling Waste Handling and Disposal

Decontamination fluids, excess sample material, purge water, and other sampling wastes will be placed in 55-gallon DOT-approved steel drums. TRC will also coordinate characterization of sampling wastes for disposal. Hazardous wastes are managed per the requirements of Dangerous Waste Regulations, WAC Chapter 173-303.

Used PPE and disposable equipment are not considered hazardous and will be double-bagged and disposed as municipal refuse at a Subtitle D or equivalent landfill. Any PPE and disposable equipment to be disposed that could still be functional will be rendered inoperable before disposal.

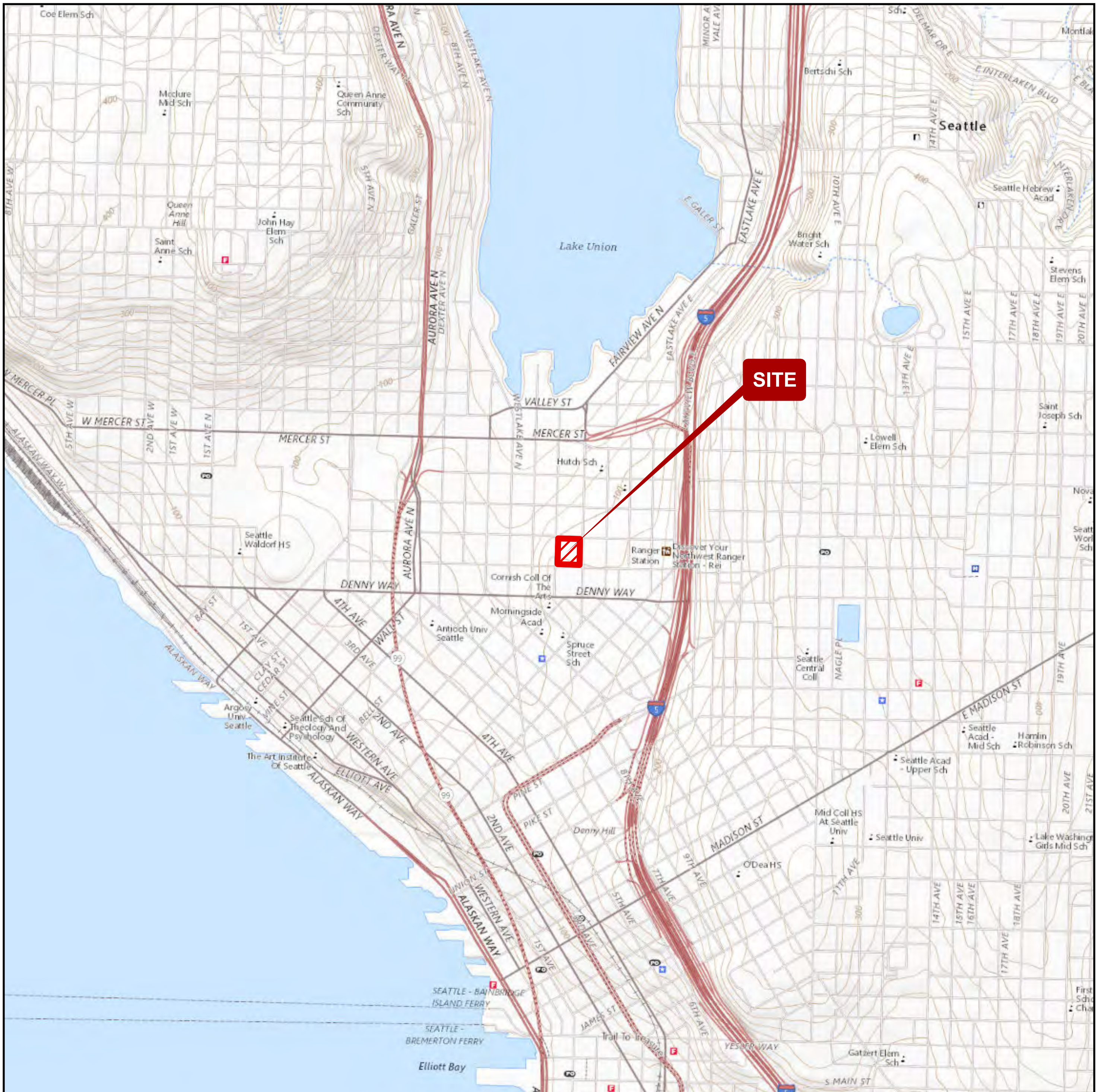
6 Bibliography

United States Environmental Protection Agency (EPA). 1996a. "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures." *Ground Water Issue*. EPA/540/S-95/504. April.

United States Environmental Protection Agency (EPA). 1996b. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. SW-846, Third Edition, Final Update 3. December.

United States Environmental Protection Agency (EPA). 2017. National Functional Guidelines for Organic Superfund Methods Data Review. Office of Superfund Remediation and Technology Innovation. EPA-540-R-2017-002. January.

Figures



SOURCE: USGS, THE NATIONAL MAP

0 0.25 0.5 0.75 1

APPROXIMATE SCALE IN MILES

N

TRC

1180 NW MAPLE ST, SUITE 310
ISSAQUAH, WA 98027
425.395.0010
WWW.TRCCOMPANIES.COM

FIGURE 1

GENERAL VICINITY MAP

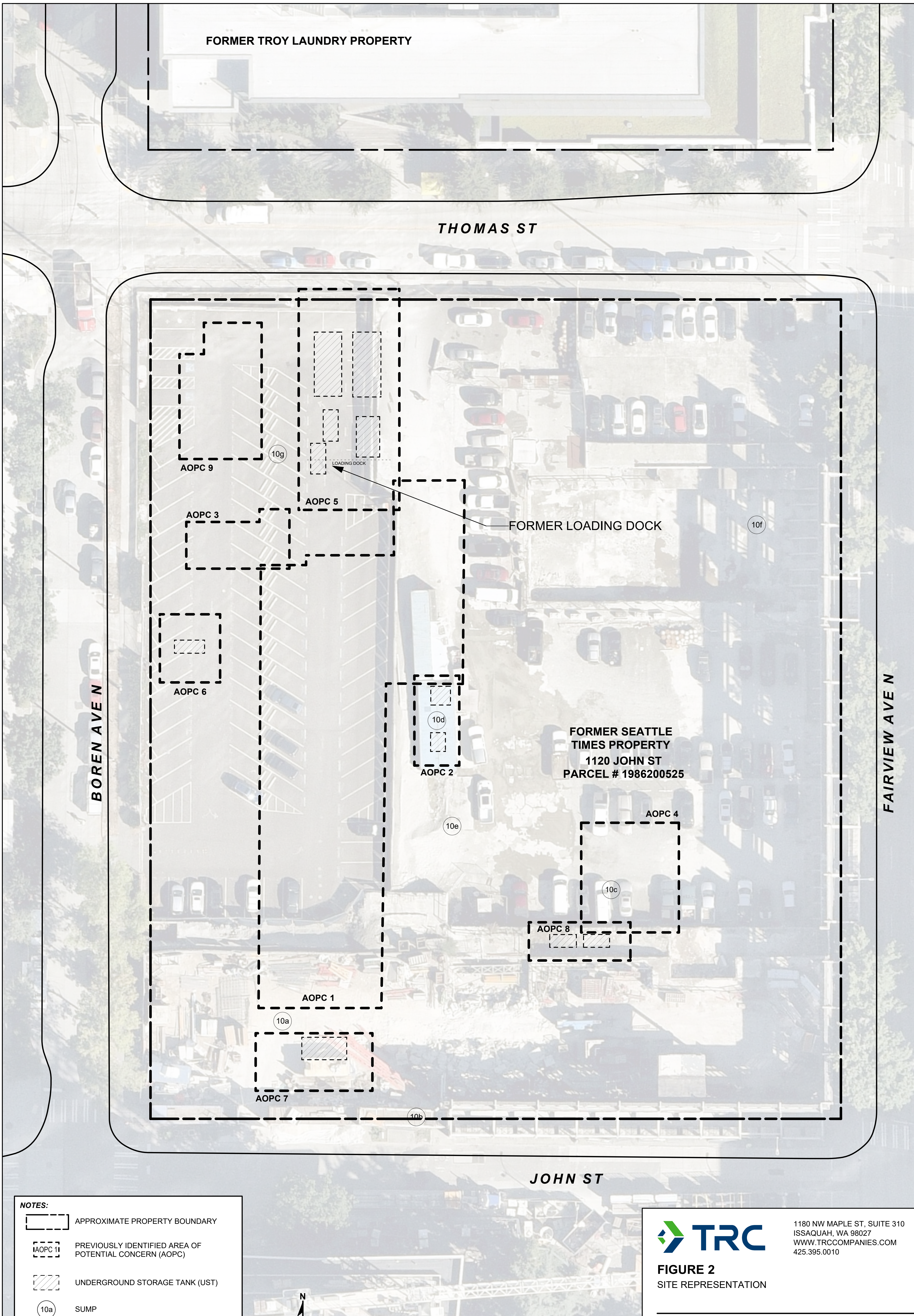
REPORT
SAMPLING AND
ANALYSIS PLAN

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

DATE 11/12/21
DRAWN BY RMC
REVIEWED BY JB



NOTES:

APPROXIMATE PROPERTY BOUNDARY

AOPC 1 — PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)

UNDERGROUND STORAGE TANK (UST)

10a — SUMP

AERIAL IMAGERY : NEARMAP, 2020

PARCEL BOUNDARIES : KING COUNTY, 2021

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

TRC

1180 NW MAPLE ST, SUITE 310
ISSAQUAH, WA 98027
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425.395.0010

FIGURE 2

SITE REPRESENTATION

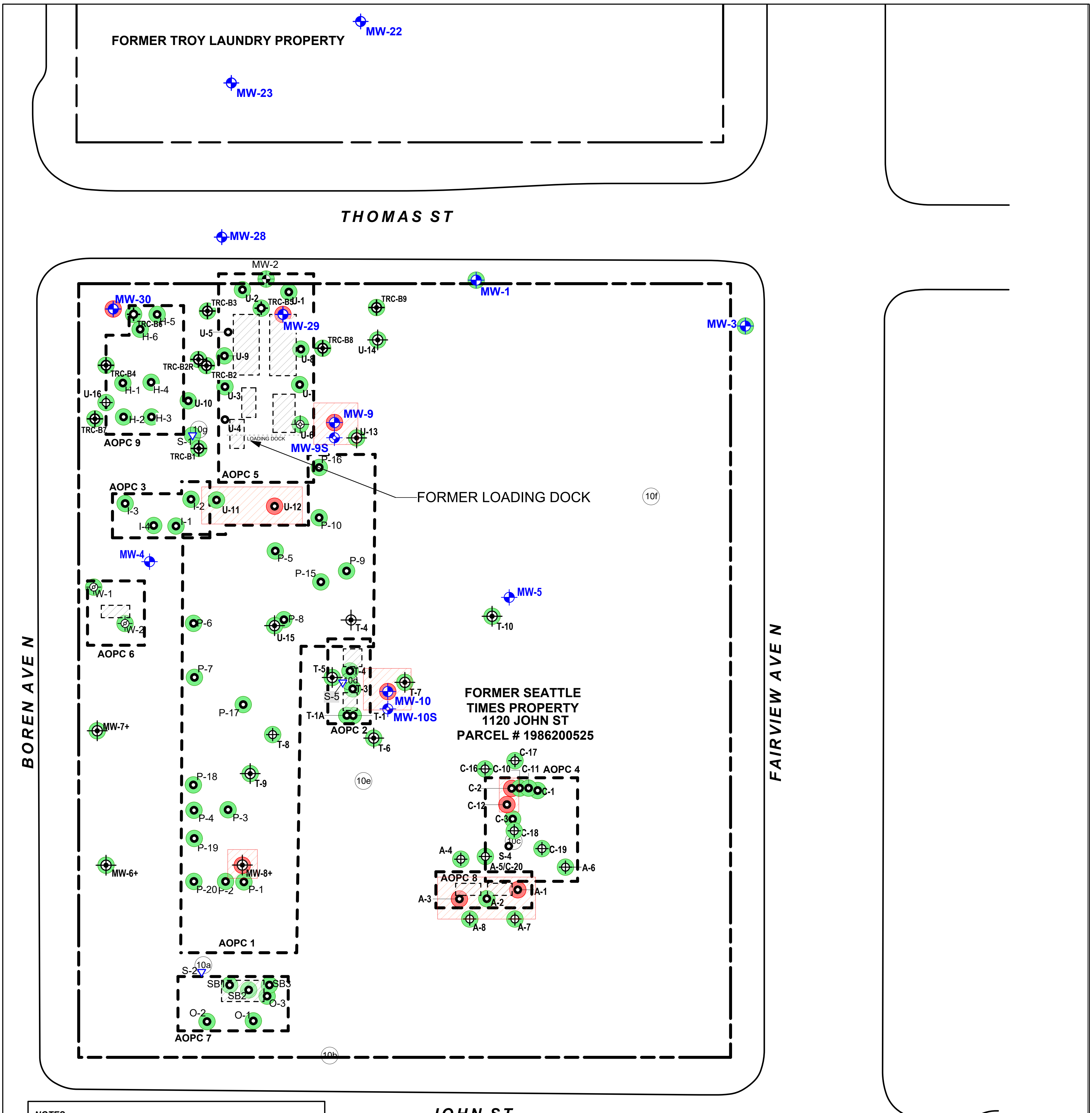
REPORT
SAMPLING AND ANALYSIS PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE..........11/18/21
DRAWN BY..........RMC
REVIEWED BY..........JB



NOTES:

⯐	SOIL BORING ADVANCED TO 20' BELOW GROUND SURFACE
⯐	SOIL BORING ADVANCED UP TO 50' BELOW GROUND SURFACE
⊙	SOIL BORING FROM LIMITED SUBSURFACE INVESTIGATION
⯐	SHALLOW MONITORING WELL LOCATION
⯐	DEEP MONITORING WELL LOCATION
▭	APPROXIMATE EXTENT OF IMPACTS TO SOIL
●	LOCATION HAD NO ANALYZED COMPOUNDS EXCEEDING CLEANUP LEVELS (CULs)
●	INDICATES LOCATION WHERE ONE OR MORE COMPOUND CONCENTRATIONS EXCEEDED CULs
⌖	SOIL BORING
▽	FLOOR SUMP
▭	APPROXIMATE PROPERTY BOUNDARY
AOPC 1	PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)
▭	UNDERGROUND STORAGE TANK (UST)
10a	SUMP
+	ATTEMPTED DEEP MONITORING WELL; NOT COMPLETED DUE TO REFUSAL

PARCEL BOUNDARIES : KING COUNTY, 2019

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

N

0 12.5 25 50

SCALE: 1" = 50'

TRC
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ISSAQUAH, WA 98027
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425.395.0010

FIGURE 3

INTERIM ACTION EXCAVATION AREAS

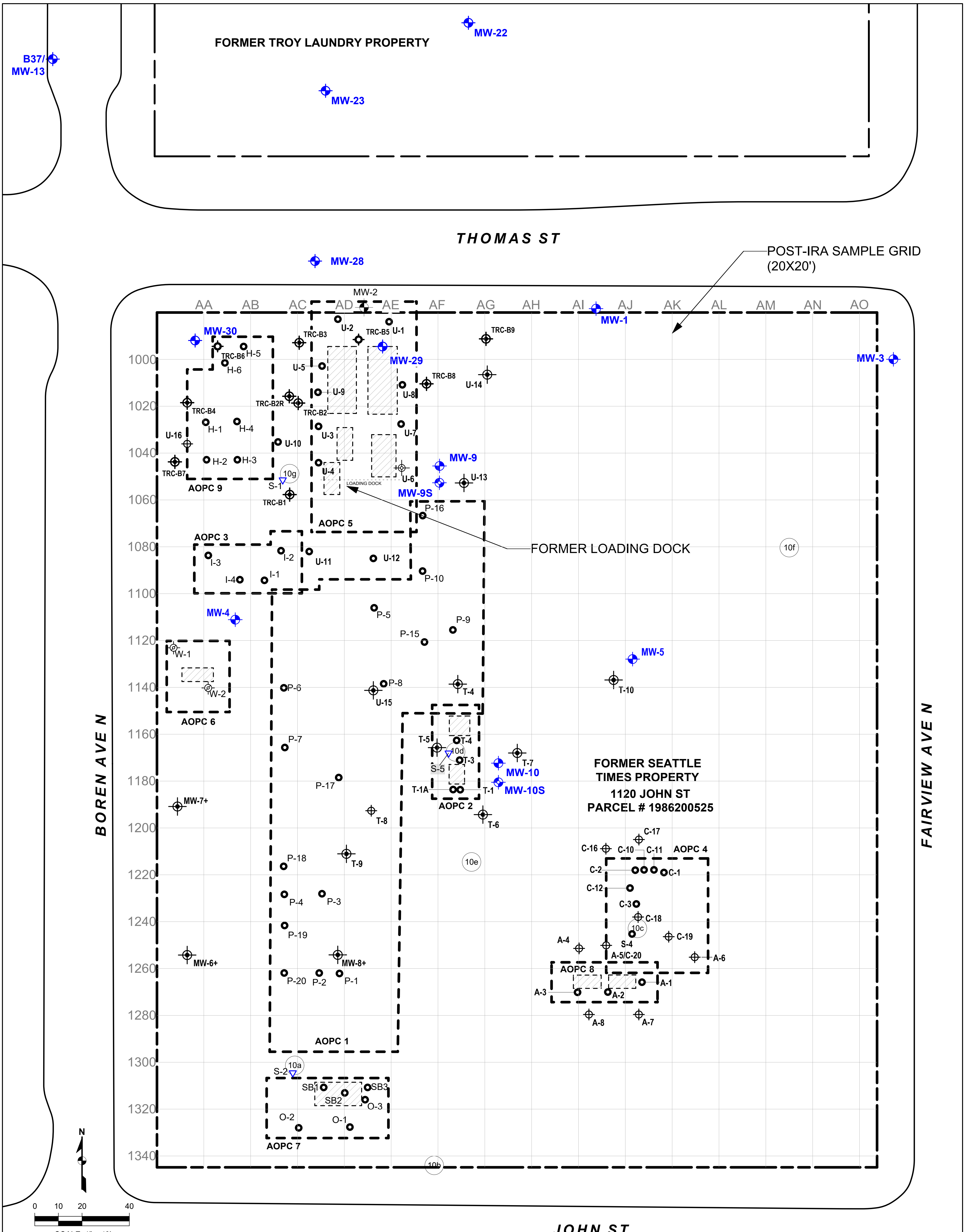
REPORT
SAMPLING AND ANALYSIS PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 11/18/21
DRAWN BY .... RMC
REVIEWED BY .... JB



NOTES:

- SOIL BORING ADVANCED TO 20' BELOW GROUND SURFACE
- SOIL BORING ADVANCED UP TO 50' BELOW GROUND SURFACE
- SOIL BORING FROM LIMITED SUBSURFACE INVESTIGATION
- SHALLOW MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- SOIL BORING
- FLOOR SUMP
- APPROXIMATE PROPERTY BOUNDARY
- AOPC 1 — PREVIOUSLY IDENTIFIED AREA OF POTENTIAL CONCERN (AOPC)
- UNDERGROUND STORAGE TANK (UST)
- 10a — SUMP
- \+ — ATTEMPTED DEEP MONITORING WELL; NOT COMPLETED DUE TO REFUSAL

PARCEL BOUNDARIES : KING COUNTY, 2019

NOTE: ORIGINAL GRAPHICS IN COLOR. IF PRINTED IN BLACK AND WHITE, INFORMATION MIGHT BE MISSING

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425.395.0010

FIGURE 4

INTERIM REMEDIAL ACTION SAMPLING GRID

REPORT
SAMPLING AND ANALYSIS PLAN

PREPARED FOR
ONNI JOHN STREET (LAND) LLC

PROJECT NUMBER
015365.0010.0000

LOCATION
SEATTLE TIMES SITE
1120 JOHN STREET
SEATTLE, WASHINGTON

DATE 11/18/21
DRAWN BY .... RMC
REVIEWED BY .... JB

Appendix B
Quality Assurance Project Plan

Quality Assurance Project Plan

Interim Action Work Plan

Seattle Times Site
1120 John Street
Seattle, Washington

Facility Site ID No. 4377754
Cleanup Site ID No. 14495
Agreed Order No. DE 20468

May 5, 2022

TRC Project No. 015365.0010

Prepared For:

Washington State Department of Ecology
Toxics Cleanup Program
15700 Dayton Avenue North
Shoreline, Washington 98133

On Behalf Of:

Onni John Street (Land) LLC
Mr. Brian Brodeur, VP Development
ONNI Group
1411 4th Avenue, Suite 1501
Seattle, Washington 98101

Prepared By:
TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, Washington 98027

JERRY L. BOYD

Prepared by:
Jerry Boyd, L.G.
Senior Geologist

THOMAS C. MORIN

Reviewed and Approved by:
Thomas C. Morin, L.G.
Vice President / Principal Geologist

TRC

TABLE OF CONTENTS

TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation/ Acronym	Definition
IA	Interim Action
IAWP	Interim Action Work Plan
ºC	Degrees Celsius
%R	Percent recovery
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
DOT	United States Department of Transportation
DQI	Data Quality Indicator
Ecology	Washington State Department of Ecology
EIM	Environmental Information Management
EPA	United States Environmental Protection Agency
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IA	Interim Action
IAWP	Interim Action Work Plan
LCS	Laboratory control sample
MDL	Method detection limit
MS/MSD	Matrix spike/matrix spike duplicate
Onni	Onni John Street (Land) LLC
PPE	Personal protective equipment
QA/QC	Quality assurance and quality control
QAPP	Quality Assurance Project Plan
QC	Quality control
RDL	Reported detection limit
RPD	Relative percent difference
SAP	Sampling and Analysis Plan
SOP	Standard operating procedure
TRC	TRC Environmental Corporation
VOCs	Volatile organic compounds

1 Introduction

On behalf of Onni John Street (Land) LLC (Onni), TRC Environmental Corporation (TRC) has prepared this *Quality Assurance Project Plan* (QAPP) as an appendix to the *Agency Review Draft Interim Action Work Plan* (IAWP) for the Seattle Times Site (Site) located at 1120 John Street in Seattle, Washington (Property).

The IAWP has been prepared in conformance with Agreed Order No. DE 20468 (AO or the “Order”) between the state of Washington and the Property owner, Onni. This QAPP is Appendix B to the IAWP. The QAPP herein is designed to function in concert with the *Sampling and Analysis Plan* (SAP), which is Appendix A to the IAWP.

1.1 Purpose

This QAPP provides a description of planning, implementation, and assessment procedures for data quality assurance and quality control (QA/QC) practices that will be employed during the interim action (IA). The purpose of the QAPP is to ensure that data generated are of sufficient quality to support project data quality objectives identified in the IAWP. Procedures described herein are for qualitative and quantitative measures that will be used to ensure data quality objectives are met. The QAPP provides a description of project management responsibilities, analytical procedures, oversight of remedial activities, and data evaluation, validation, and reporting.

The QAPP herein was prepared in accordance with the Washington State Department of Ecology (Ecology) QAPP Guidance (Lombard and Kirchmer 2016) and the United States Environmental Protection Agency (EPA) guidance for QAPP preparation (EPA 2002). Analytical procedures and QA/QC procedures described herein are consistent with EPA’s solid waste test method procedures (EPA 1996) and EPA’s Superfund contract laboratory program guidance (EPA 2017a and 2017b).

If the IAWP is modified or amended to meet additional requirements, this QAPP will be modified or amended as necessary.

1.2 Project Description and Schedule

The primary IA objective is to provide oversight of remedial actions that are planned to occur during redevelopment of the Property. In particular, the IAWP describes the excavation of contaminated soils and removal of shallow (i.e., elevation of 50 feet above mean sea level) contaminated groundwater during redevelopment activities at the Property. Contaminated media was described in the Revised Remedial Investigation Report (RRIR), which includes the following contaminants:

- Volatile organic compounds (VOCs);
- Petroleum hydrocarbons including gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO);
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs); and
- Polychlorinated biphenyls (PCBs).

1.3 QAPP Organization

This QAPP is prepared for the Site IAWP and is organized as follows:

- Section 1.0: Introduction
- Section 2.0: Project Management
- Section 3.0: Project Data Quality Indicators
- Section 4.0: Request for Analyses
- Section 5.0: Field Methods and Procedures
- Section 6.0: Sample Containers, Preservation, Packaging, and Shipping
- Section 7.0: Quality Control
- Section 8.0: Assessments and Response Actions
- Section 9.0: Bibliography

2 Project Management

The purpose of this section of the QAPP is to identify key project tasks and duties, personnel responsible for these tasks and duties, summarize project data quality objectives and criteria, list training and certifications necessary for task personnel, and describe recordkeeping and documentation procedures.

2.1 Project Personnel Organization

The project personnel (team members) are described in the following subsections. As with any project of this scope and schedule, it is possible that personnel may change over the course of the IA so while an individual has been identified herein, if changes are necessary the term "designee" refers to the substitute team member.

2.1.1 Ecology Unit Manager

The Ecology Project Manager, Ms. Sunny Becker, will oversee this project for Ecology and is responsible for regulatory oversight of the planned RI and requirements of the Agreed Order to ensure that all work is completed in accordance with the Model Toxics Control Act (MTCA). Ms. Becker's contact information is provided below:

Contact:	Ms. Sunny Becker – Toxic Cleanup Programs 15700 Dayton Avenue North Shoreline, Washington 98133
Address:	Washington State Department of Ecology, Northwest Regional Office 15700 Dayton Avenue North Shoreline, Washington 98133
Email:	sunny.becker@ecy.wa.gov
Phone:	(206) 594-0107

2.1.2 Onni Project Manager

The Onni Project Manager for the IA activities is Mr. Stephen Porter. Mr. Porter will oversee and direct the TRC team that will perform the IA and will also serve to coordinate communications between Ecology and the TRC team. Mr. Porter's information is provided below:

Contact: Mr. Stephen Porter – Development Manager
Address: Onni Group
1411 4th Avenue, Suite 1501
Seattle, Washington 98101
Email: sporter@onni.com
Phone: (206) 691-8998

2.1.3 TRC Project Coordinator

The TRC Project Coordinator for the Site on behalf of Onni is Mr. Thomas Morin, L.G., Principal Geologist. Mr. Morin will direct overall project performance and will serve as a primary technical point of contact for Onni. Mr. Morin's contact information is presented below:

Contact: Mr. Thomas Morin, L.G. – Principal Geologist
Address: TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, WA 98027
Email: tmorin@trccompanies.com
Phone: (425) 395-0030 (direct)
(206) 954-6957 (cell)

2.1.4 TRC Project Manager

The TRC Project Manager for IA activities is Mr. Jerry Boyd, L.G. Mr. Boyd will oversee and direct the TRC Field Team Leader, who will direct Field Team Staff and subcontractors performing work associated the IA. Mr. Boyd's contact information is provided below:

Contact: Mr. Jerry Boyd, L.G. – Senior Geologist
Address: TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, WA 98027
Email: jboyd@trccompanies.com
Phone: (425) 395-0046

Mr. Boyd will report to the Onni Project Manager, Mr. Porter.

2.1.5 Project Quality Assurance Officer

The Project Quality Assurance (QA) Officer, Ms. Christy Wyborny, has overall responsibility for quality assurance oversight. The Project QA Officer communicates directly to the TRC Project Manager. The Project QA Officer will initiate and monitor any necessary formal data corrective actions and will assist in preparing QA/QC project summaries for the final report, including analysis of precision, accuracy, and completeness of collected data. Ms. Wyborny's contact information is provided below:

Contact:	Ms. Christy Wyborny – Project QA Officer
Address:	TRC Environmental Corporation. 1180 NW Maple Street; Suite 310 Issaquah, WA 98027
Email:	cwyborny@trccompanies.com
Phone:	(425) 395-0038

2.1.6 Field Responsibilities

Successful implementation of the IAWP and associated SAP and QAPP as components thereof is dependent on effective communication between the project management and field personnel. The following identifies field personnel and their responsibilities for quality assurance and control.

2.1.7 TRC Field Team Leader

The TRC Field Team Leader for the IA has not been selected but will be designated prior to mobilizing for implementation of the IA. The Field Team Leader will coordinate closely with the TRC Project Manager and will oversee the TRC Field Team and any subcontractors (e.g., analytical laboratory, surveyor, utility locators). The TRC Field Team Leader will report directly to Mr. Boyd, the TRC Project Manager. The TRC Field Team Leader will be responsible for implementation of the SAP, the Health and Safety Plan (HASP), QAPP, and any other project-specific plans required to complete the IA.

2.1.8 TRC Field Team

Members of the TRC Field Team will report directly to the TRC Field Team Leader and will perform on-Site work under the direction of the TRC Field Team Leader. TRC Field Team staff must have current 40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) certification and annual 8-Hour Updates.

2.2 Contract Laboratory

Only Washington State-accredited analytical laboratories will be used for chemical analyses of samples collected during the implementation of the IAWP. All chemical analyses will be performed using EPA or Ecology approved analytical methods consistent with the QAPP. The contract laboratory will report directly to the TRC Project Manager and QA Officer.

2.3 Special Training Requirements and Certifications

All on-Site investigative personnel, be they TRC employees or subcontractors, will have current 40-hour HAZWOPER certification and 8-hour annual refresher updates per 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) regulations. Additionally, all on-Site personnel shall be briefed on the site-specific HASP, which will be on Site and available for inspection for the duration of the IA.

2.4 Documentation and Records

All documents and records will be maintained electronically by TRC. Each project team member is responsible for recording and filing necessary information and/or providing this information to the team member responsible for the filing procedures. Team members may maintain information in files for individual tasks but must upload this information to the filing system within 48 hours of data generation or once the individual task is complete, whichever is sooner. An index of project file contents will be maintained with the project files for reference and expedient recall of specific files. A summary of documentation and record maintenance is provided in the following subsections.

2.4.1 Field Records

All data recorded during completion of field tasks will be recorded and become part of the project file. Field personnel will keep a daily record of task objectives, observations, measurements, observations, and significant events on field forms.

Pertinent information recorded by field team members will, at a minimum, include:

- Project name;
- Date;
- Field team members and subcontractors on Site;
- Site visitors;
- Weather conditions, which include current, past 24-hour summary, and forecast of the day;
- Field observations;
- Notes on figures and subsurface logs;
- Samples collected and time of collection;
- Sampling method and volume;
- List of field instruments used for data collection along with serial numbers and calibration documentation;
- Any deviations from the IAWP, SAP, and/or QAPP; and
- Other pertinent data that may affect data QA/QC.

To assist field team personnel, data collection checklists may be prepared in advance to assist with compliance with procedures described herein. Checklists will include location identifiers, types of samples and planned analyses, QC samples to be collected, and specific instructions for the planned data collection event.

2.4.2 Analytical Records

The contract laboratory will be required to submit data summary and sufficient QA information for independent determination of data quality. The determination of data quality performed by the TRC QA Officer or designee using the EPA Contract Laboratory Program National Functional Guidelines for organic and inorganic data review as guidelines (EPA 2017a and 2017b).

An EPA Level II or equivalent data report will be submitted by the contract laboratory to TRC upon completion of requested analyses. Deliverable requirements for requested analyses include:

- Case narratives for each sample batch that include sample, QC, shipment delivery, or analytical problems along with the contract laboratory internal decision rationale potentially affecting the samples and documentation of ultimate solutions.
- Sample concentrations reported on standard data sheets for each sample. Data sheets will include reporting units and to appropriate significant digits. For undetected values, the lower limit of detection for each parameter or compound will be reported separately for each sample. Sample extraction or preparation and analytical method will be included.
- Data qualifiers and qualification descriptions.
- Method blank summary.
- Recovery percent for each surrogate used will be calculated and reported for gas chromatography (GC) and GC/mass spectrometry (GC/MS) analyses.
- Results of laboratory control sample (LCS) analyses.
- Recovery percent of matrix spike/matrix spike duplicate (MS/MSD), spike level, and relative percent difference (RPD).
- Laboratory duplicate results.
- Electronic data spreadsheet formatted for submission to Ecology's Environmental Information Management (EIM) database.

The analytical laboratory is required to maintain all records relevant to these analyses for a minimum of 10 years along with sufficient instrument data for full restoration of data, if necessary.

Laboratory reports will be maintained electronically in TRC's project file described in Section 2.4.

2.4.3 Data Reporting

Analytical results, summaries, and evaluations of the data will be prepared and submitted to Ecology as described in the IAWP. More specifically, field measurements and analytical data generated as part of the IAWP for this project will be uploaded to the Ecology EIM database within 3 weeks of validation.

3 Project Data Quality Indicators

Project data quality indicators (DQIs) for the IA will be used to ensure data collected during field activities and laboratory analysis are of sufficient quality to address the objectives of the IA. Assessment of laboratory data quality includes evaluation of precision, accuracy, representativeness, comparability, completeness, and sensitivity. Definitions of these parameters and QC procedures applicable to each are provided in the following subsections. Table 1 summarizes the data quality indicators.

DQIs were developed in using EPA's Guidance for Systematic Planning Using the Data Quality Objective Process (EPA 2006) as a guide.

3.1 Precision

Precision is the ability of an analytical method or instrument to reproduce the measurement and is a measure of the variability in sampling, sample handling, and laboratory analysis. Two levels of precision are identified (ASTM 2002): repeatability and reproducibility. Repeatability is the random error associated with measurements made by a single operator/technician on identical aliquots of tested material using the same instrumentation and same operating conditions. Reproducibility is the random error associated with measurements made by different operators/technicians using the same method but different instruments and in different operating conditions (i.e., other locations) but using an identical test sample.

Field precision will be evaluated by the collection of blind field duplicates for chemistry samples on a one in 20 samples frequency. Field chemistry duplicate precision will be screened against an RPD of 50 percent for soil and 35 percent for groundwater samples. However, data will be qualified based on additional evaluation parameters, not simply duplicate precision.

Laboratory "in-batch" precision is measured using replicate samples and/or QC analyses and is expressed as the RPD between these measurements. "Batch-to-batch" precision of determined from the variance observed in the analysis of standards and/or laboratory control samples from multiple analytical batches.

Precision is expressed by the following equation:

$$RPD = \frac{(C1 - C2) \times 100\%}{\frac{(C1 + C2)}{2}}$$

Where:

RPD = relative percent difference
C1 = larger of two observed values
C2 = smaller of the two observed values

3.1.1 Field Precision Objectives

Field precision is assessed through the collection and measurement of field duplicates (one extra sample in addition to the original field sample). In general, field duplicates will be collected at a frequency of one per 20 investigative samples per matrix per analytical parameter. Precision will be measured through the calculation of RPD of the reported analytical measurements. The resulting information will be used to assess sample homogeneity, spatial variability at the Site, sample collection reproducibility, and analytical variability. Field duplicate RPDs must be less than or equal to 30 for aqueous and less than or equal to 50 for solid samples. Field precision will be improved by following SOPs, utilizing experienced/trained field team members, and conducting field audits.

3.1.2 Laboratory Precision Objectives

Precision in the laboratory is assessed through the calculation of RPD for laboratory duplicate samples (two samples from the same container). Laboratory precision measures both sample preparation and analysis reproducibility. Laboratory duplicate RPDs must be:

- VOCs by EPA Method 8260D less than or equal to 20 for aqueous, less than or equal to 50 for soil; and
- Petroleum hydrocarbons by Northwest Total Petroleum Hydrocarbons (NWTPH) methods less than or equal to 30 for aqueous, less than or equal to 50 for soil.

For the organic analyses, laboratory precision will be assessed through the analysis of MS/MSD samples and/or field duplicates. MS/MSD samples will be performed at a frequency of one per 20 investigative samples per matrix. Laboratory duplicate samples will be performed at a frequency of one per 20 investigative samples per matrix.

3.2 Accuracy

Accuracy is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error.

3.2.1 Field Accuracy Objectives

Accuracy in the field is assessed through the adherence to all field instrument calibration procedures, sample handling, preservation, and holding time requirements. Accuracy will also be evaluated through the use of trip blanks, equipment blanks, and cooler temperature blanks.

Equipment blanks will be collected by passing laboratory-supplied deionized water over and/or through the respective sampling equipment utilized during each sampling effort. In general, one equipment blank will be collected for each type of non-dedicated field equipment used during each sampling event. In general, equipment blanks will be collected for each target parameter at a frequency of one per day; it should be noted that equipment blanks will not be collected for analyses associated with the surface water or biota samples (due to the lack of sampling equipment used). Trip blanks will be submitted with each cooler that includes aqueous VOC samples and will be analyzed for the same VOCs for which the associated media are being analyzed. The equipment and trip blanks will indicate any adverse effects of sample contamination from an outside source (i.e., sample collection) and could result in a positive or negative bias. The bias will be minimized by following standardized SOPs for equipment decontamination, utilizing an experienced/trained sampling crew, conducting field audits, and ensuring the purity of all chemicals.

3.2.2 Laboratory Accuracy Objectives

Laboratories assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of "standards", materials of accepted reference value. Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy will be measured in terms of method blank results, the percent recovery (%R) of surrogate or internal standard compounds in organic analyses, or %R of spiked compounds in MS and/or MSD samples, and/or LCS. This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds and provides a measure of bias for the parameter of interest. The laboratory method blanks will indicate any adverse effects of sample contamination from an outside source (i.e., sample preparation or sample analysis) and could result in a positive or negative bias.

The equation used to express laboratory accuracy is:

$$\%R = 100\% \times \frac{(S - U)}{Csa}$$

Where:

%R	= percent recovery
S	= measured concentration in the spiked aliquot
U	= measured concentration in the unspiked aliquot
Csa	= actual concentration of the spike added

3.2.3 Bias

Bias is the systemic or persistent distortion of a measurement process that causes errors in a single direction. Bias assessments for environmental measurements are made in the field using personnel, equipment, and spiking and/or reference aliquots as independent as possible from those used in the calibration of the measurement system. Whenever possible, bias assessments shall be based on analysis of spiked samples so that the effect of the matrix on spike recovery is incorporated into the assessment. A documented laboratory spiking protocol and consistent adherence to that protocol are important to obtaining data quality estimates that are relevant.

3.3 Representativeness

Representativeness is a qualitative parameter that expresses the degree to which the data and sampling design accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is a qualitative parameter that is dependent upon the proper design of the sampling program and the laboratory quality control program.

3.3.1 Measures to Ensure Representativeness of Field Data

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the sampling plan and sampling methods are followed, and that proper sampling, sample handling, and sample preservation techniques are used. Representativeness may also be assessed by the use of field duplicate samples. By definition, field duplicate samples are collected so they are equally representative of a given point in space and time. In this way, they provide both precision and representativeness information. As stated previously, field duplicate samples will be collected at a frequency of one per 20 investigative samples per matrix per analytical parameter.

In general, representativeness in the field will be maximized by the following methods: proper sample homogenization procedures, proper sample preservation procedures, utilizing experienced/trained sampling crews, and conducting field audits.

3.3.2 Measures to Ensure Representativeness of Laboratory Data

Representativeness in the laboratory is ensured by using the proper analytical procedures and appropriate methods, and by meeting sample holding times. Following the detailed requirements outlined in the EPA methods and the laboratory SOPs will maximize the representativeness of the laboratory data.

3.4 Comparability

Comparability is a qualitative parameter that expresses the confidence with which one dataset can be compared to another. For this project, comparability of data will be established through the use of standard analytical methodologies, report formats, and of traceable calibration and reference materials.

3.4.1 Measures to Ensure Field Comparability

Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the SAP and QAPP are followed, sampling methods are followed, and that proper sampling and preservation techniques are used.

3.4.2 Measures to Ensure Laboratory Comparability

Comparability is dependent on the use of EPA methods and approved laboratory SOPs, and the reporting of data in standardized units.

3.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. “Normal conditions” are defined as the conditions expected if the sampling plan was implemented as planned.

3.5.1 Field Completeness Objectives

Field completeness is a measure of the amount of:

1. Valid measurements obtained from all the measurements taken in the project; and
2. Valid samples collected.

The field completeness objective is greater than 90 percent. This allows for the potential loss of samples due to sampling problems or bottle breakage during transport.

3.5.2 Laboratory Completeness Objectives

Laboratory completeness is a measure of the amount of valid measurements obtained from all valid samples submitted to the laboratory. The laboratory completeness objective is greater than 95 percent. This allows for the potential loss of samples impossible to analyze due to unforeseen interferences and rejected data following data validation.

Completeness will be calculated as:

$$C = \frac{(Number\ of\ acceptable\ data\ points) \times 100}{(Total\ number\ of\ data\ points)}$$

The data quality objective (DQO) for completeness for all data components of this project is 90 percent. Data that have been qualified as estimated due to QC criteria were not met will be used as acceptable data points for the above calculation. Data qualified other than estimated due to QC criteria not met will not be considered valid for the purpose of assessing completeness.

3.6 Sensitivity

The method detection limit (MDL) is the minimum concentration at which a given analyte can be measured and reported within 99 percent confidence that the analyte concentration is greater than zero. Laboratory practical quantitation limit (PQL) or reported detection limit (RDL) is the lowest value that can be reliably achieved with the specific limits of precision and accuracy during routine laboratory operating conditions. MDLs and RDLs are used to evaluate the method sensitivity and/or applicability prior to the acceptance of a method for this project.

Laboratories will need to adjust all quantitation limits based on dilutions, sample sizes, extract/digestate volumes, percent solids and cleanup procedures. In all cases, the adjusted quantitation limit (or sample quantitation limit) must be less than the project screening level for a particular analyte. In establishing the required quantitation limits for this program, these factors were considered in ensuring the project screening levels would be achieved. Sample-specific MDLs and RDLs will be reported by the laboratory.

Sensitivity will be maximized by following the EPA methods or laboratory SOPs utilizing experienced/trained laboratory personnel and conducting laboratory audits.

4 Request for Analyses

4.1 Analyses Narrative

Table 2 details the analytical methods container types, sample volumes, preservatives, special handling, and analytical holding times for each parameter that will be used for groundwater and soil samples collected as part of the IA. In general, the analytical methods will be followed as written. Analyses will typically be performed on a standard 10-day turnaround time. The laboratory reporting limits for soil and groundwater analyses are presented in Tables 3 and 4, respectively. Laboratory QC samples (i.e., duplicates, spikes, laboratory blanks, and performance evaluation samples) will be performed by the laboratory according to the laboratory QA/QC plan, presented in Table 5.

4.2 Analytical Laboratory

Laboratory analysts will be responsible for daily checks and calibrations and for reporting any problems with the laboratory instruments. The maintenance schedule will follow the manufacturer's recommendations. Laboratory personnel will also be responsible for ensuring that critical parts are kept with the fixed laboratory instruments. Critical spare parts will be immediately available to reduce potential downtime. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner. Laboratory analysts will be responsible for performing routine operator maintenance and cleaning in accordance with the manufacturer's specifications.

5 Field Methods and Procedures

The field investigations and sample collection activities planned as part of this project will adhere to applicable SOPs and EPA technical guidance. The field activities and methods for the soil boring advancement and groundwater monitoring well construction and sampling activities are described in the SAP (Appendix A of the IAWP).

As conditions in the field may vary, it may become necessary to implement minor modifications to the proposed sampling procedures presented in the SAP due to unforeseen circumstances. When appropriate, the TRC Project Manager and Project QA Officer will be notified, and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the IA Report.

6 Sample Containers, Preservation, Packaging, and Shipping

The following sections describe sample container types, preservation requirements, packaging and shipping procedures for groundwater, soil, and soil vapor samples collected during the IA.

6.1 Sample Containers, Preservation, and Holding Times

Table 2 presents a summary of analytical methods, sample container types, preservative measures, and allowable holding times.

6.2 Sample Packing and Transport

Sample packing and transport or shipping procedures for delivery to the contract laboratory are presented in the following sections.

6.2.1 Sample Packing Procedures for Hand Delivery

IA samples will be packed into laboratory-provided coolers containing bagged ice to maintain an internal temperature of 4ºC or less. The completed Chain-of-Custody Form will accompany the samples and may be placed into the cooler in a sealable plastic bag or may be held by the person delivering the samples to the laboratory.

7 Quality Control

7.1 Field Quality Control Samples

QC measures will be taken to evaluate laboratory precision, potential equipment cross-contamination, potential matrix interferences, and potential contamination from the ambient air. Field QC samples will not be collected for particle size analysis and particle size analysis samples will not be included in the soil sample count upon which the number of QC samples is based.

Trip blanks, equipment blanks, temperature blanks, and field duplicate samples will be collected as part of the field QC program for the IA. Each of these sample types is described in the following sections along with their purpose, collection frequency, and analyses.

7.1.1 Trip Blank Samples

The potential for contamination from the ambient air will be evaluated using trip blank samples. The trip blanks will originate at the contract laboratory and will be relabeled upon arrival at the Site. Trip blank samples accompany one cooler of sample bottles and samples during sampling and shipping for each day in the field during implementation of the IA. Trip blank samples will be analyzed for VOCs.

7.1.2 Equipment Blank Samples

The potential for cross-contamination from non-dedicated multi-use sampling devices will be evaluated using equipment blank samples. Some examples of multi-use non-dedicated sampling devices that will potentially be used for this investigation are direct-push probe soil core samplers and temporary well screens used to collect groundwater samples. One equipment blank sample will be collected for each type of non-dedicated sampling equipment to evaluate the effectiveness of the decontamination procedures that are documented in the SAP. Equipment blank samples will be analyzed for VOCs.

Equipment blank samples will be prepared by pouring laboratory-supplied deionized organic-free water over the previously used and decontaminated sampling equipment and capturing the rinsate into appropriate sample bottles for the requested analyses. The equipment blank sample will be given a fictitious sample ID following the sampling identification protocols detailed in Section 8.2.

7.1.3 Temperature Blanks

For each cooler that is shipped or transported to an analytical laboratory a 40-milliliter (mL) volatile organic analysis (VOA) vial will be included that is marked “temperature blank.” The laboratory uses these temperature blanks to ensure that proper preservation of the samples has been maintained during sample shipment. The temperature of these blanks must be approximately 4ºC to demonstrate that proper preservation has been maintained. The laboratory records the results of the temperature blanks on the Chain-of-Custody Form or sample login form immediately upon receipt of the samples at the laboratory, prior to inventory and refrigeration.

7.1.4 Field Duplicate Samples (Groundwater Only)

Laboratory and field sampling precision of the groundwater sampling task will be evaluated by collecting blind field duplicate samples. One field duplicate sample will be collected per every 10 percent, or fraction thereof, of the total number of samples collected. The field duplicate sample will be collected under conditions as nearly identical as possible to the original sample. The field duplicate sample will be labeled like standard samples as noted in Section 3.1 of the SAP. The field duplicate sample will be distinguished as a duplicate only in the field notes and will be analyzed for the same constituent list as the original sample.

7.2 Laboratory Quality Control Samples

The different types of laboratory control samples are described below. The measurement quality objectives for accuracy, precision, and completeness for each analysis and media are presented in Table 6.

7.2.1 Method Blank Samples

Method blank samples will be performed as part of each analytical batch for each laboratory methodology performed under this IA. Method blanks are used to evaluate contamination introduced during sample preparation and/or analysis by the laboratory.

7.2.2 Matrix Spike and Matrix Spike Duplicate Samples

MS/MSD samples are used to evaluate laboratory preparation and analysis bias and precision for specific compounds in specific sample matrices (i.e., sample-specific QC).

7.2.3 Surrogate Spikes

Surrogate spikes are used to evaluate extraction efficiency or analytical bias on a sample-by-sample basis for organic parameters. Surrogate spikes are added to all samples for organic parameters. Surrogate spikes are another measure of sample-specific QC.

7.2.4 Laboratory Control Samples

LCSs are used to evaluate almost all parameters for the ability of the laboratory to accurately identify and quantify target compounds in a reference matrix when spiked at a known concentration using a secondary source standard. LCSs are typically performed as part of each analytical batch for each methodology. LCSs are also a self-check for the laboratory to ensure the method is in compliance.

8 Assessments and Response Actions

The EPA's *Guidance for Systematic Planning Using the Data Quality Objective (DQO) Process* (EPA 2006) was used as a guide to develop DQOs for the IA. The DQOs for this project were developed to ensure data quality and to define procedures for data collection.

8.1 Data Review, Validation, and Verification

Analytical data will be evaluated for method and laboratory QC compliance and their validity and applicability for program purposes will be determined during the validation process. Based on these findings, data validation qualifiers, which are independent of laboratory qualifiers, may be assigned. The validated project data, including all qualifiers, will be entered into the data summary tables for review, comparison, evaluation, and for inclusion in the IA Report.

Validation of data includes the compliance verification of field and laboratory technician signatures on all appropriate data sheets and laboratory data sheets (respectively), review of completeness and accuracy by the Field Team Leader and Laboratory Manager, review by the TRC QA Officer or designee for outliers and emissions, and use of QC data to accept or reject specific data. All data will be entered into electronic spreadsheets. Laboratory data will be provided to the TRC Quality Control Officer in standard spreadsheet and Ecology EIM format. Data will be validated and/or reviewed manually, and qualifiers will be assigned manually. The accuracy of all manually entered spreadsheet data will be verified by a second party.

All data, as applicable, from the subsurface soil and groundwater sampling will be validated in accordance with EPA *Guidance on Environmental Data Verification and Data Validation, Data Quality Assessment: Statistical Methods*. Any deviation should be documented and provided with the analytical data report.

Data validation entails comparing the sample descriptions with the field sheets and Chain-of-Custody Forms for consistency and ensuring that any anomalies in sample processing and handling are documented. Analytical data validation will occur as described in the analytical SOPs for each parameter and the laboratory SOPs for data review. Data validation is accomplished by the laboratory using control charts and data review checklists. Discrepancies are noted in the analytical file and appropriate data flags are used. If data are determined to be outside of control limits, the data are flagged on the laboratory report. Laboratory personnel will review MS/MSDs, lab blanks, and lab duplicates to ensure they are acceptable. The analytical laboratory will provide data packages that will allow TRC to review all sample and laboratory QC sample results.

The Project QA Officer will perform additional data validation to ensure that the field and analytical data meet the quality objectives of this QAPP. The Project QA Officer's review will ensure consistency of all field and analytical data that are generated by the IA.

All data entry performed by the TRC Team will be reviewed for accuracy. Verification will be carried out by proofing against the original data. Data verification includes checking that results have been transferred correctly from the original hand-written, hard copy field and analytical laboratory documentation to the project database. The goal of data verification is to identify and correct data reporting errors.

8.2 Data Management

Measurements and sample collection information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly stricken, initialed, and dated by the person recording the data, and corrected in a space adjacent to the original (erroneous) entry. Daily reviews of the field records will be performed by the TRC Field Team Leader. As appropriate, field data will be tabulated and presented in the IA Report.

Data received from the analytical laboratory will be tabulated and presented in the associated report(s). Additionally, electronic data deliverables (EDDs) will be requested from the laboratory and will be managed by the Project QA Officer for inclusion into the project database and EIM.

8.3 Corrective Action Responses

8.3.1 Intermediate Corrective Action

Corrective action for analytical work might include recalibration of laboratory instruments, reanalysis of QC samples and, if necessary, reanalysis of field samples. Specific QC procedures and checklists will be used by the analytical laboratory and will be designed to help analysts detect the need for corrective action. Commonly, the professional judgment of the laboratory analyst will be valuable in identifying suspicious data or malfunctioning equipment.

If an immediate corrective action can be taken, as part of normal operating procedures, the origination and distribution of poor-quality data can be avoided. Instrument and equipment malfunctions are amenable to this type of corrective action and the QC procedures include manufacturer's troubleshooting guides and corrective action suggestions. The actions taken will be noted in field or laboratory notebooks, but no other formal documentation is required, unless further corrective action is necessary. These on-the-spot corrective actions are a common element of the QA/QC system.

Corrective action during the field sampling portion of a program is most commonly a result of equipment failure or an operator oversight and may require recollection of a sample. Operator oversight can be reduced by having field crew members audit each other's work before and after a test. The Field Team Leader will make every effort to ensure that all QC procedures are followed. If potential problems are not solved as an immediate corrective action, the TRC Project Manager will apply long-term corrective action, if necessary.

8.3.2 Long-Term Corrective Action

The need for long-term corrective action may be identified by standard QC procedures, control charts, performance or system audits. Any quality problem that cannot be solved by immediate corrective action falls into the long-term category. The TRC Project Manager will use a system to ensure that the identified quality problem is reported to a person responsible for correcting it, and who is part of a closed-loop action and follow-up plan.

The essential steps in the closed-loop corrective action system are listed below.

- Identify and define the problem.
- Assign responsibility for investigating the problem.
- Investigate and determine the cause of the problem.
- Determine a corrective action to eliminate the problem.
- Assign and accept responsibility for implementing the corrective action.
- Establish effectiveness of the corrective action and implement it.
- Verify that the corrective action has eliminated the problem.

The responsible person may be a laboratory analyst, TRC Field Team Leader, Laboratory QA Manager, or the TRC QA Officer. If no person is identified as responsible for the action, the TRC QA Officer will investigate the situation and determine who is responsible in each case.

Corrective action communication will include a written description of the corrective action planned and the date it was taken, and descriptions for follow-up actions. The TRC QA Officer checks to be sure that initial action has been taken and appears effective and, at an appropriate later date, checks again to see if the problem has been fully solved. The TRC QA Officer will be copied on all corrective action communications. This record aids the TRC QA Officer in follow-up and makes any quality problems visible to management; the log may also prove valuable in listing a similar problem and its solution.

8.4 Non-Conformances

8.4.1 Field Non-Conformances

Field corrective action might be necessary when the sample network is changed (i.e., more/fewer samples, sampling locations other than those specified in the SAP), or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. If TRC identifies the need for corrective action, the TRC Field Team Leader will notify the TRC Project Manager. The TRC Field Team Leader will ensure that the field team implements the corrective measure. Corrective actions will be implemented and documented in the field logbook. Documentation will include the following:

- A description of the circumstances that initiated the corrective action;
- The action taken in response;
- The final resolution; and
- Any necessary approvals.

TRC Field Team members will not initiate corrective action without prior communication of findings through the proper channels. If necessary, a problem resolution audit will be conducted.

8.4.2 Laboratory Non-Conformances

Corrective action in the laboratory may occur prior to, during, and after initial analyses. Some conditions such as broken sample containers, omissions or discrepancies with chain-of-custody documentation, low/high pH readings for preserved samples, and potentially high concentration samples might be identified during sample log-in or just prior to analysis. Following consultation with laboratory analysts and Laboratory Section Leaders, it might be necessary for the Laboratory QA Manager to approve the implementation of corrective action. The EPA methods, and laboratory SOPs specify some conditions during or after analysis that might automatically trigger corrective action. These conditions might include dilution of samples, additional sample extract cleanup, and automatic reinjection/reanalysis when certain QC criteria are not met.

If laboratory staff identify the need for corrective action, the Laboratory Supervisor, in consultation with the staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Manager will ensure implementation and documentation of the corrective action.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and the narrative data report sent from the laboratory to the TRC Team Project Manager. If the corrective action does not rectify the situation, the laboratory will contact the TRC QA Officer, who will determine the action to be taken and inform the appropriate personnel. If necessary, a problem resolution audit will be conducted.

8.4.3 Data Validation and Data Assessment Non-Conformances

The need for corrective action may be identified during either data validation or data assessment. Potential types of corrective action might include resampling by the field team or reanalysis of samples by the laboratory if sufficient sample volume remains and holding times are not exceeded. If the data validator or data assessor identifies a corrective action situation, the TRC Project Manager will be responsible for informing the appropriate personnel. All corrective actions of this type will be documented by the TRC Project Manager and maintained in the project files.

9 Bibliography

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Tables

Table 1
Data Quality Indicators
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Data Quality Indicator	Field and Laboratory QA/QC Sample Type
Precision	Field Duplicate (groundwater only) Laboratory Duplicate Laboratory Matrix Spike Duplicate
Accuracy	Laboratory Matrix Spike Surrogate Spike Laboratory Control Sample Trip Blank Method Blank
Representativeness	Trip Blank Method Blank Chain of Custody Holding Times
Comparability	Method Detection Limits Method Reporting Limits Sample Collection Methods Laboratory Analytical Methods
Completeness	Data Qualifiers Laboratory Deliverables Requested / Reported Results

Note:
QA/QC = Quality assurance / quality control.

Table 2
Sample Analyses, Container Types, Preservatives, and Holding Times
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Soil Analyses	Laboratory	Field Collection Method	Analytical Method	Bottle Type	Preservative	Holding Time
VOCs	To Be Determined	EPA Method 5035A	EPA Method 8260C	(2) 40-mL VOA vials, 5 grams	Methanol, chill to 4°C	14 days
Solids		Grab Sample	SM 2540G-97	(1) 2-oz wide mouth jar with septa	Chill to 4°C	7 days
Petroleum Hydrocarbon Identification		Grab Sample	NWTPH-HCID	(1) 4-oz wide mouthjar with septa	Chill to 4°C	7 Days
GRO		EPA Method 5035A	NWTPH-Gx	(2) 40-mL VOA vials, 5 grams	Methanol, chill to 4°C	14 days
DRO		Grab Sample	NWTPH-Dx	(1) 4-oz wide mouthjar with septa	Chill to 4°C	14 Days
ORO		Grab Sample	NWTPH-Dx Extended	(1) 4-oz wide mouthjar with septa	Chill to 4°C	14 Days
PCBs		Archived Grab Sample pending ORO Detection	EPA Method 8082A	(1) 4-oz wide mouthjar with septa	Chill to 4°C	365 Days

Soil Vapor Analyses	Laboratory	Field Collection Method	Analytical Method	Bottle Type	Preservative	Holding Time
Chlorinated VOCs	To Be Determined	Grab Sample	TO-15	1-Liter Summa	None	30 Days

Groundwater Analyses	Laboratory	Field Collection Method	Analytical Method	Bottle Type	Preservative	Holding Time
VOCs	To Be Determined	Grab Sample	EPA Method 8260C	(3) 40-mL VOA vials	HCl, chill to 4°C	14 Days
Petroleum Hydrocarbon Identification		Grab Sample	NWTPH-HCID	(1) 500 mL Amber	HCl, chill to 4°C	14 Days
GRO		Grab Sample	NWTPH-Gx	(3) 40-mL VOA vials	HCl, chill to 4°C	14 Days
DRO		Grab Sample	NWTPH-Dx	(1) 1-L Amber Glass	HCl, Chill to 4°C	14 Days
ORO		Grab Sample	NWTPH-Dx	(1) 1-L Amber Glass	HCl, Chill to 4°C	14 Days
PCBs		Archived Grab Sample pending ORO Detection	EPA Method 8082A	(1) 1-L Amber Glass	Chill to 4°C	7 Days

Notes:

ASTM	American Society for Testing and Materials
°C	Degrees Celsius.
EPA	United States Environmental Protection Agency.
HCl	Hydrochloric acid.
oz	Ounce.
mL	Milliliter.
SM	Standard Method.
VOA	Volatile organic analysis

Compounds

VOCs	Volatile organic compounds
GRO	Gasoline-range organics
DRO	Diesel-range organics
ORO	Oil-range organics
PCBs	Polychlorinated biphenyls

Table 3
Laboratory Reporting Limits – Soil
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Chemical	Chemical Abstract Service Number	Method Reporting Limit	Practical Quantitation Limit
1,1,1,2-Tetrachloroethane	630-20-6	0.0045	0.02
1,1,1-Trichloroethane	71-55-6	0.0043	0.02
1,1,2,2-Tetrachloroethane	79-34-5	0.0065	0.02
1,1,2-Trichloroethane	79-00-5	0.0045	0.02
1,1-Dichloroethane	75-34-3	0.0029	0.02
1,1-Dichloroethene	75-35-4	0.0052	0.02
1,1-Dichloropropene	563-58-6	0.0069	0.02
1,2,3-Trichlorobenzene	87-61-6	0.0040	0.02
1,2,3-Trichloropropane	96-18-4	0.0072	0.025
1,2,4-Trichlorobenzene	120-82-1	0.0040	0.02
1,2,4-Trimethylbenzene	95-63-6	0.0045	0.02
1,2-Dibromo-3-chloropropane	96-12-8	0.0115	0.5
1,2-Dibromoethane	106-93-4	0.0019	0.005
1,2-Dichlorobenzene	95-50-1	0.0032	0.02
1,2-Dichloroethane	107-06-2	0.0029	0.02
1,2-Dichloropropane	78-87-5	0.0031	0.02
1,3,5-Trimethylbenzene	108-67-8	0.0045	0.02
1,3-Dichlorobenzene	541-73-1	0.0045	0.02
1,3-Dichloropropane	142-28-9	0.0031	0.025
1,4-Dichlorobenzene	106-46-7	0.0041	0.02
2-Chlorotoluene	95-49-8	0.0074	0.025
4-Chlorotoluene	106-43-4	0.0038	0.02
4-Isopropyltoluene	99-87-6	0.0043	0.025
Benzene	71-43-2	0.0070	0.02
Bromobenzene	108-86-1	0.0038	0.02
Bromodichloromethane	75-27-4	0.0012	0.02
Bromoform	75-25-2	0.0024	0.05
Bromomethane	74-83-9	0.0149	0.05
Carbon tetrachloride	56-23-5	0.0046	0.02
Chlorobenzene	108-90-7	0.0038	0.02
Chlorodibromomethane	124-48-1	0.0036	0.02
Chloroethane	75-00-3	0.0116	0.05
Chloroform	67-66-3	0.0047	0.02
Chloromethane	74-87-3	0.0026	0.05
cis-1,2-Dichloroethene	156-59-2	0.0035	0.02
cis-1,3-Dichloropropene	10061-01-5	0.0019	0.02
Cumene	98-82-8	0.0040	0.02
Dibromomethane	74-95-3	0.0031	0.02
Dichlorodifluoromethane	75-71-8	0.0054	0.02
Ethylbenzene	100-41-4	0.0069	0.025
Hexachlorobutadiene	87-68-3	0.0065	0.025
m,p-Xylene	179601-23-1	0.0133	0.05
Methylene chloride	75-09-2	0.0016	0.02
n-Butylbenzene	104-51-8	0.0048	0.02
n-Propylbenzene	103-65-1	0.0037	0.02
Naphthalene	91-20-3	0.0065	0.05
o-Xylene	95-47-6	0.0066	0.025
sec-Butylbenzene	135-98-8	0.0036	0.025
Styrene	100-42-5	0.0026	0.02
tert-Butyl Methyl Ether	1634-04-4	0.0028	0.02
tert-Butylbenzene	98-06-6	0.0044	0.02
Tetrachloroethene	127-18-4	0.0027	0.02
Toluene	108-88-3	0.0021	0.02
trans-1,2-Dichloroethene	156-60-5	0.0041	0.02
trans-1,3-Dichloropropene	10061-02-6	0.0020	0.02
Trichloroethene	79-01-6	0.0022	0.02
Trichlorofluoromethane	75-69-4	0.0039	0.02
Vinyl chloride	75-01-4	0.0055	0.02
Gasoline-Range Organics (GRO)	NA	20	NA
Diesel-Range Organics (DRO)	NA	50	NA
Oil-Range Organics (ORO)	NA	250	NA
Polychlorinated Biphenyl-1016	12674-11-2	0.0992	0.2
Polychlorinated Biphenyl-1260	11096-82-5	0.0992	0.2
Polychlorinated Biphenyl-1232	11141-16-5	0.0992	0.2
Polychlorinated Biphenyl-1242	53469-21-9	0.0992	0.2
Polychlorinated Biphenyl-1248	12672-29-6	0.0992	0.2
Polychlorinated Biphenyl-1254	11097-69-1	0.0992	0.2
Polychlorinated Biphenyl-1262	37324-23-5	0.0992	0.2
Chromium, Hexavalent	18540-29-9	0.1126972	0.5

Note:
All concentration in milligrams per kilogram (mg/kg), dry weight.

Table 4
Laboratory Reporting Limits - Soil Vapor
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Chemical	Reporting Limit (ppbv)	Reporting Limit ($\mu g/m^3$)
cis-1,2-Dichloroethene	0.2	0.793
Tetrachloroethene	0.2	1.36
Trichloroethene	6.49E-02	3.49
Vinyl chloride	0.107184267	0.274

Notes:
ppbv Part per bilion by volume.
$\mu g/m^3$ Microgram per cubic meter.

Table 5
Laboratory Reporting Limits – Groundwater
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Chemical	Chemical Abstract Service Number	Method Reporting Limit	Practical Quantitation Limit
1,1,1,2-Tetrachloroethane	630-20-6	5.40E-02	1
1,1,1-Trichloroethane	71-55-6	0.083908925	1
1,1,2,2-Tetrachloroethane	79-34-5	0.109781028	1
1,1,2-Trichloroethane	79-00-5	0.107316922	1
1,1-Dichloroethane	75-34-3	0.090267496	1
1,1-Dichloroethene	75-35-4	0.146749575	1
1,1-Dichloropropene	563-58-6	0.112597927	1
1,2,3-Trichlorobenzene	87-61-6	7.66E-02	4
1,2,3-Trichloropropane	96-18-4	7.94E-02	1
1,2,4-Trichlorobenzene	120-82-1	6.30E-02	2
1,2,4-Trimethylbenzene	95-63-6	6.13E-02	1
1,2-Dibromo-3-chloropropane	96-12-8	0.171324307	1
1,2-Dibromoethane	106-93-4	8.61E-02	0.25
1,2-Dichlorobenzene	95-50-1	5.97E-02	1
1,2-Dichloroethane	107-06-2	8.31E-02	1
1,2-Dichloropropane	78-87-5	7.04E-02	1
1,3,5-Trimethylbenzene	108-67-8	6.14E-02	1
1,3-Dichlorobenzene	541-73-1	6.97E-02	1
1,3-Dichloropropane	142-28-9	0.078402083	1
1,4-Dichlorobenzene	106-46-7	3.79E-02	1
2-Chlorotoluene	95-49-8	7.29E-02	1
4-Chlorotoluene	106-43-4	7.73E-02	1
4-Isopropyltoluene	99-87-6	7.98E-02	1
Benzene	71-43-2	7.47E-02	1
Bromobenzene	108-86-1	4.60E-02	1
Bromodichloromethane	75-27-4	6.09E-02	1
Bromoform	75-25-2	0.134679156	1
Bromomethane	74-83-9	0.117771936	1
Carbon tetrachloride	56-23-5	0.140227555	1
Chlorobenzene	108-90-7	7.02E-02	1
Chlorodibromomethane	124-48-1	5.28E-02	1
Chloroethane	75-00-3	0.198856831	1
Chloroform	67-66-3	0.175879151	1
Chloromethane	74-87-3	0.78895531	2
cis-1,2-Dichloroethene	156-59-2	7.90E-02	1
cis-1,3-Dichloropropene	10061-01-5	0.10210753	1
Cumene	98-82-8	5.88E-02	1
Dibromomethane	74-95-3	9.88E-02	1
Dichlorodifluoromethane	75-71-8	0.108711719	1
Ethylbenzene	100-41-4	8.68E-02	1
Hexachlorobutadiene	87-68-3	0.160695516	0.5
m,p-Xylene	179601-23-1	0.173112555	1
Methylene chloride	75-09-2	0.396328589	1
n-Butylbenzene	104-51-8	7.94E-02	1
n-Propylbenzene	103-65-1	6.19E-02	1
Naphthalene	91-20-3	0.204522715	1
o-Xylene	95-47-6	6.88E-02	1
sec-Butylbenzene	135-98-8	0.082183244	1
Styrene	100-42-5	5.11E-02	1
tert-Butyl Methyl Ether	1634-04-4	5.71E-02	1
tert-Butylbenzene	98-06-6	6.07E-02	1
Tetrachloroethene	127-18-4	8.51E-02	1
Toluene	108-88-3	9.12E-02	1
trans-1,2-Dichloroethene	156-60-5	9.92E-02	1
trans-1,3-Dichloropropene	10061-02-6	9.96E-02	1
Trichloroethene	79-01-6	9.48E-02	0.5
Trichlorofluoromethane	75-69-4	0.127039181	1
Vinyl chloride	75-01-4	8.05E-02	0.2
Gasoline-Range Organics (GRO)	NA	20	NA
Diesel-Range Organics (DRO)	NA	50	NA
Oil-Range Organics (ORO)	NA	250	NA

Note:
All concentration in micrograms per liter (μg/L).

Table 6
Laboratory Quality Control Frequency
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Parameter	Method	Method Blanks	Lab Duplicates or MSD	MS	LCS	Surrogate(s)
Volatile Organic Compounds	EPA 8260C GC/MS	1/batch	1/batch	5%	1/batch	All Samples
Gasoline-Range Organics	NWTPH-Gx	1/batch	1/batch	5%	1/batch	All Samples
Diesel- and Oil-Range Organics	NWTPH-Dx	1/batch	1/batch	5%	1/batch	All Samples
cPAHs	EPA 8270D SIM	1/batch	1/batch	5%	1/batch	All Samples
PCBs	EPA 8082A	1/batch	1/batch	5%	1/batch	All Samples

Notes:

a	Blank spike or standard reference material may substitute for matrix spike data.
b	Hexavalent chromium analysis for soil matrix only.
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons.
EPA	United States Environmental Protection Agency.
GC/MS	Gas chromatography / mass spectrometry.
LCS	Laboratory control sample.
MS	Matrix spike.
MSD	Matrix spike duplicate.
PCBs	Polychlorinated biphenyls.
SIM	Selected ion monitoring.
SM	Standard Method.

Table 7
Measurement Quality Objectives: Accuracy, Precision, and Completeness Goals
Interim Action Quality Assurance Project Plan
Seattle Times Site
1120 John Street, Seattle Washington

Parameters	Analytical Method	Media	Laboratory Control Sample Accuracy (% Recovery)	Matrix Spike Sample Accuracy (% Recovery)	Surrogate Spike (% Recovery)	Precision (RPD, Duplicate, or MS/MSD)	Completeness
Volatile Organic Compounds	EPA 8260C	Soil	70–130	50-150	64-137	20%	95%
		Groundwater	69-134	Varies by Compound	47-140	20%	95%
Gasoline-Range Organics	NWTPH-Gx	Soil	71-131	80–120	71-131	20%	95%
		Groundwater	69-134	65-135	51-134	20%	95%
Diesel- and Oil-Range Organics	NWTPH-Dx	Soil	47-140	80–120	47-140	20%	95%
		Groundwater	63-142	65-135	51-134	20%	95%

Notes:
MS/MSD Matrix spike/matrix spike duplicate.
RPD Relative percent difference.
EPA United States Environmental Protection Agency.

Appendix C
Health and Safety Plan

TRC
1180 NW Maple St., Suite 310
Issaquah, WA 98027
T 425.395.0010
TRCcompanies.com

Health and Safety Plan

Site Name:	Seattle Times Site		
Site Address:	1120 John Street, Seattle WA		
TRC Project Number:	015365		
Client:	Onni John Street (Land) LLC	**Phone:**	
Site Contact:	Stephen Porter	**Phone: (206) 691-8998**	
Client Health and Safety Representative:	Stephen Porter	**Phone: (206) 691-8998**	
TRC WorkCare		**Phone: 888-449-7787**	

Planned Activities:	**Location Within Site:**	**Dates:**
Excavation oversight	Site-wide	To be determined

Estimation of Hazards to TRC Personnel:

Petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylene (BTEX) constituents, polychlorinated biphenyls (PCBs), chlorinated solvents (tetrachloroethene [PCE], trichloroethene [TCE], vinyl chloride [VC]), mechanical equipment, electrical power, vehicle traffic, potential exposure to COVID-19 (see attachments).

Physical Description of the Facility:

Uneven but generally sloped to north; varying ground cover that will be removed for redevelopment excavation.

Operation Description of the Facility:

Surface parking but being redeveloped.

Facility Status:

Surface parking but being redeveloped.

Hazard Assessment			
Chemical State:	☒ Liquid	☒ Solid	☐ Gas
	☒ Vapor	☐ Unknown	
Chemical Characteristics:	☐ Corrosive	☐ Flammable	☒ Toxic
	☒ Volatile	☐ Inert	☐ Other:

Describe Potential Chemical Hazards and Modes of Exposure	
Chemical Hazards:	Petroleum compounds, BTEX, PCBs, chlorinated solvents (PCE, TCE, VC)
Potential Modes of Exposure:	Direct contact, inhalation, ingestion.

Potential Chemical Hazards						
Chemical Name	**Action Levels**			**Exposure Route**	**Target Organs**	**Symptoms**
	PEL	**STEL**	**IDLH**			
Petroleum-Related Chemicals						
Benzene	1 ppm	5 ppm	500 ppm	Inhalation; ingestion; skin/eye contact	Blood, central nervous system; skin; bone marrow; eyes; respiratory system	Irritation of eyes, nose, respiratory; giddiness; headache; nausea; staggered gait; fatigue; anorexia; lassitude; dermatitis; bone marrow; depression
Ethyl benzene	100 ppm	125 ppm	800 ppm	Inhalation; ingestion; skin/eye contact	Eyes; upper respiratory system; skin; central nervous system	Irritation of eyes, mucous membrane; headache; dermatitis; narcosis; coma
Toluene	100 ppm	150 ppm	500 ppm	Inhalation; absorption, ingestion, skin/eye contact	Central nervous system; liver; kidneys; skin	Fatigue; confusion, euphoria, dizziness, headache; dilated pupils; lacrimation; nervousness; insomnia; paresthesia; dermatitis
Xylene	100 ppm	150 ppm	900 ppm	Inhalation; ingestion; absorption; skin/eye contact	Central nervous system; GI tract; blood; liver; kidneys; skin	Dizziness, excitement, drowsiness, incoordination, staggered gait; irritation of eyes, nose, throat; corneal vacuolization; anorexia; nausea; vomiting, abdominal pain; dermatitis

Potential Chemical Hazards						
Chemical Name	Action Levels			Exposure Route	Target Organs	Symptoms
	PEL	STEL	IDLH			
PCBs (Aroclor 1254)	0.5 mg/m3		5 mg/m	Inhalation; ingestion; absorption; skin/eye contact	Liver, lungs, skin, cardiovascular system, nervous system, endocrine systems, blood/immune, gastrointestinal, urinary tract.	Nausea, vomiting, respiratory irritation, skin irritation (chloroacne)
Tetrachloroethene (PCE)	100 ppm		150 ppm	Inhalation, skin absorption, ingestion, skin/eye contact	Eyes, skin, respiratory system, liver, kidneys, CNS	Irritation eyes, skin, nose, throat, respiratory system, nausea, flush face, neck, dizziness, incoordination, headache, drowsiness, skin redness, liver damage [potential occupational carcinogen]
Trichloroethene (TCE)	100 ppm		1,000 ppm	Inhalation, skin absorption, ingestion, skin/eye contact	Eyes, skin, respiratory system, liver, kidneys, CNS	Irritation eyes, skin, headache, visual disturbance, weakness, exhaustion, dizziness, tremor, drowsiness, nausea, vomiting, dermatitis, cardiac arrhythmias, parethaesia, liver injury [potential occupational carcinogen]
1,2-Dichloroethene (cis and trans)	200 ppm		1,000 ppm	Inhalation, skin absorption, ingestion, skin/eye contact	Eyes, respiratory system, CNS	Irritation eyes, respiratory system, CNS depression.
Vinyl chloride	1 ppm		5 ppm	Inhalation, skin/eye contact	Liver, CNS, blood, respiratory system, lymphatic system	Weakness, exhaustion, abdominal pain, gastrointestinal bleeding, enlarged liver, pallor or cyanosis of extremities, liquid: frostbite [potential occupational carcinogen]

Describe Potential Physical Worker Hazards:

Working with electrical motors and equipment, hot motor casings, and hydraulic equipment, slip, trip, and fall, vehicular traffic.

Potential Physical Hazards

☒ Heat Stress	☒ Cold Stress	☐ Explosion/Flammability
☒ Noise	☐ Confined-Space Entry	☐ Oxygen-Deficient Atmosphere
☒ Traffic or heavy equipment	☒ Heights	☒ Slip, trip, fall
☒ Overhead hazards	☒ Dust (non-toxic)	☒ COVID-19 (see attachments)
☐ Hazardous Energy	☐ Poisonous Plants/insects	

Prevention of Physical Hazards

Category	Cause	Preventive Measures
Head Hazards	Falling and/or sharp objects, bumping hazards.	Hard hats will be worn by all personnel at all times when working around overhead hazards and heavy equipment.
Foot/Ankle Hazards	Sharp objects, dropped objects, uneven and/or slippery surfaces, and chemical exposure.	Chemical resistant, steel-toed boots must be worn at all times on-site.
Eye Hazards	Sharp objects, poor lighting, bright lights (welding equipment), exposure due to splashes.	Safety glasses/face shields will be worn when appropriate. Shaded welding protection will be worn when appropriate.
Electrical Hazards	Underground utilities, overhead utilities, motors, electrical panels equip. and breakers.	Locator service mark-outs, visual inspection of work area prior to starting work.
Mechanical Hazards	Heavy equipment such as drill rigs, service trucks, excavation equipment, saws, drills, etc.	Competent operators, backup alarms, regular maintenance, daily mechanical checks, proper guards.
Noise Hazards	Machinery creating >85 decibels TWA, >115 decibels continuous noise, or peak at >140 decibels.	Wear earplugs or protective earmuffs.
Fall Hazards	Elevated and/or slippery or uneven surfaces. Trips caused by poor "housekeeping" practices.	Care should be used to avoid such accidents and to maintain good "housekeeping". Fall protection devices must be used when work proceeds on elevated surfaces.
Lifting Hazards	Injury due to improper lifting techniques, overreaching/overextending, heavy objects.	Use proper lifting techniques, mechanical devices where appropriate.
Lighting Hazards	Improper illumination.	Limit work to daylight hours or rent additional construction lighting.

Site Activity Considerations

Will Client Site Representative be Present?	☐ Yes	☐ No	☒ Sometimes
Exact Locations of Chemicals:	☐ Known	☒ Assumed	☐ Unknown
Identify Nearest Off-Site Population:	☐ Rural ☒ Urban	☐ Industrial ☒ Commercial	☐ Residential

Monitoring Equipment

☒ PID	☐ FID	☐ Combustible gas indicator
☒ Colorimetric tubes	☐ Particulate meter	☐ Carbon monoxide meter
☐ H_2S/O_2 Meter	☐ Other (describe):	

Monitoring Action Guidelines

Instrument	Reading	Action Required
PID with colorimetric tube verification of benzene or vinyl chloride presence/concentration depending on site-specific requirements. (Note: All measurements taken within the breathing space of site workers.)	>1 but <5 ppm	Wait 15 minutes and measure again. Level is based on **S**hort-**T**erm **E**xposure **L**imit (15-min TWA) for benzene.
	>1 but <5 ppm for >15 minutes	Upgrade to Level C (full- or half-face respirator) protection with combination HEPA/organic vapor cartridges.
	>500 ppm for benzene	**Evacuate all workers from work area. Notify Project Manager and Office Safety Coordinator. If permitted, retest atmosphere while wearing full- or half-face respirator with combination HEPA/organic vapor cartridges.**

Special Safety Considerations

If there is more than one level of hazard, or if there are multiple "sites" within a site, the hazards associated with each should be considered. A separate "Special Safety Considerations" section should be completed for each "site."

Work Location: Entire site.

Objective of work at this Location: Contaminated media excavation for off-property disposal.

Level of Protection Planned: ☐ Level C ☒ Level D ☐ Level D-Modified (explain below)

Modifications to Level of Protection: Hard hat, safety glasses, steel toe boots, and hearing protection required when working near drill rigs or heavy equipment. DOT-approved high visibility safety vest required when working near vehicle traffic or heavy equipment.

Types of PPE to be Used	
Foot	Steel-toed, steel shank boots. Rubber steel toed boots or rubber boot covers required if boot decontamination is warranted.
Hand	Double layer of nitrile gloves when handling potentially contaminated media, temperature-appropriate gloves for protection during cold weather.
Eye/Face	Safety glasses, COVID-19 appropriate face mask
Clothing	Temperature appropriate, long pants are required. Tyvek coveralls should be available to all on-site workers.
Respiratory	Based on monitoring requirements (full- or half-face respirator should be available to all on-site workers).
Additional Gear	Hardhat, earplugs, face shield, DOT-approved high visibility safety vest.

Work Party		
Name	**Responsibility**	**Level of Protection**
To be determined.		

Site Entry Procedure

Upon site arrival but before walking onto the property, send an email with the following information to the Project Manager and to onsite-iss@trccompanies.com:

- Property address
- Who is with you at the job site (TRC employee, client, or subcontractor)
- Description and license number of the vehicle you are using
- What time you anticipate leaving the property

When leaving the site for the day, send another email to the Project Manager and onsite-iss@trccompanies.com stating that you are off-site. The email can be as simple as: "It's 5:00pm and I'm leaving the property."

Criteria for Changing Personal Protection

Air monitoring threshold limits, potential for dermal contact, describe when to upgrade to respiratory protection.

Criteria for Implementing Engineering Controls:

Artificial lighting when necessary, fencing, fall protection.

Decontamination Procedures

Remove PPE and wash hands and face with soap and potable water prior to eating or leaving Site. Eye wash kit, first aid kit, and fire extinguisher available in TRC vehicle(s).

Work Limitations **(i.e., time of day, conditions, etc.)**

Daylight hours only.

TO BE UPDATED PRIOR TO WORK START.

Placement of Disposable Materials

Non-contaminated materials will be placed in dumpster on-site. Contaminated materials will be placed in DOT-approved 55-gallon drums on-site pending characterization for proper transport and off-site disposal.

Placement of Investigation-Derived Residuals (i.e., drilling spoils, decon. water, purge/dev. water)

Liquid and solids will be disposed in accordance with local, state, and federal regulations.

Location of Nearest:

Cellular Phone:	With TRC field representative provide cell phone numbers for TRC staff
Running Water:	To be determined.
Public Road:	
Lavatory:	

Emergency Planning

Service	Name	Number
Local Police:		911
Local EMS:		911
Local Fire Department:		911
Local Hospital:	Virginia Mason	
Client Contact:	Stephen Porter	206.691.8998
Site Phone Number:	TRC personnel	
WorkCare		888-449-7787
TRC Office Safety Coordinator	Douglas Kunkel	425-395-0016 office 425-241-8170 cell

Directions to Nearest Medical Facility (Map Attached):

The recommended route to Virginia Mason is highlighted on attached map. The hospital is located approximately 1 mile from the site.

Approvals

Title	Signature	Date
Site Safety Officer, TO BE DETERMINED		
Project Manager, TO BE DETERMINED		
TRC Office Safety Coordinator, Doug Kunkel		

Additional Site Personnel		
Printed Name and Company	**Approvals Signature**	**Date**

TRC
1180 NW Maple St., Suite 310
Issaquah, WA 98027
T 425.395.0010
TRCcompanies.com

Daily Safety Meeting

Date:	
TRC Project Number:	015365
Site Address:	1120 John Street, Seattle WA
TRC Personnel Conducting Meeting:	

Known or Suspected Potential Hazards	Personal Protective Equipment
☐ Chemicals of Potential Concern	☐ Hard Hat
☐ Traffic (Vehicle and Pedestrian)	☐ Eye Protection
☐ Trips	☐ High-Visibility Clothing
☐ Falls	☐ Flame-Resistant Clothing
☐ Drilling Equipment	☐ Protective Footwear
☐ Excavation Equipment	☐ Coveralls
☐ Noise	☐ Hearing Protection
☐ Hot/Cold	☐ Respirator
☐ Utilities, Subsurface, and Overhead	☐ Exclusion Zone (Cones, Signs, Etc.)
☐ Other, Describe:	☒ Other, Describe: COVID-19 procedures

Locations of Emergency Equipment	Decon, Emergency Signals, Rally Point, Etc.
☐ Fire Extinguishers	☐ Decon Procedures
☐ Eye Wash	☐ Waste Management
☐ First Aid Kit	☐ Hand Signals for Shutdown
☐ Nearest Medical Facility	☐ Audible Signals for Shutdown
☐ Potable Water	☐ Primary Rally Point
☐ Restroom	☐ Secondary Rally Point
☐ Equipment Shutdown Procedures	☐ Other Emergency Info, Describe:
☐ Other, Describe:	

Persons Attending Safety Meeting

Name / Affiliation (Print)	Time
/	
/	
/	
/	
/	
/	
/	

TO BE UPDATED PRIOR TO WORK START.