



December 6, 2023

G-Logics File Number 01-0410-S

Mr. Dale Myers
Washington State Department of Ecology
Northwest Regional Office
15700 Dayton Avenue North
Shoreline, Washington 98133

**SUBJECT: Final Groundwater Monitoring and Sampling Work Plan
Boeing Field Chevron
10805 East Marginal Way South
Tukwila, Washington**

Dear Mr. Myers:

G-Logics has prepared this draft Groundwater Monitoring and Sampling Work Plan (Work Plan) for the Boeing Field Chevron Site (the Site; Figure 1). For the purposes of this Work Plan, the “Site” refers to the areas of soil, groundwater, and soil gas that have been impacted with petroleum contaminants originating from the fuel storage and dispensing operations on the Boeing Field Chevron located East Marginal Way South in Tukwila, Washington (the Property). Contaminants of concern for the Site have been identified as light nonaqueous-phase liquid (LNAPL), gasoline range organics (GRO), and benzene.

The purpose of the Work Plan is to present the procedures for collecting a single round of groundwater samples from a subset of the existing groundwater monitoring well network at the Site. The Washington State Department of Ecology (Ecology) requested the groundwater monitoring and sampling event to update the current groundwater quality at the Site since groundwater samples have not been collected since 2017 and/or 2018.

G-Logics will present the updated groundwater analytical results to Ecology as an addendum to the Remedial Investigation Report. The groundwater analytical results will

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inform the development of remedial alternatives to be presented in the Feasibility Study for the Site. The elements of the Work Plan are discussed below.

GROUNDWATER MONITORING AND SAMPLING

G-Logics will measure groundwater elevations, measure field parameters, and collect groundwater samples from Upper Zone and Lower Zone wells at the Site. G-Logics will monitor and sample the following monitoring wells (the target wells):

- Upper Zone Wells: IP-4, TW-2, TW-3, MW-18, MW20, MW-23 to MW25, MW-26S to MW-28S, and MW-30
- Lower Zone Wells: IP-5, MW19, MW21, MW24D, MW27D, MW28D, and MW-29D

Additionally, Ecology requested that G-Logics gauge the static water level and thickness of the LNAPL and collect a sample of LNAPL at the Lower Zone well IP-7. Monitoring wells selected for sampling were chosen in consultation with Ecology and are shown in Figure 2.

Before sampling, and at ebbing tide, groundwater monitoring well covers will be opened and well caps removed to allow the static water level in the well casings to equilibrate. The groundwater level and thickness of LNAPL will be measured at each target well using an oil-water interface probe. The depth of groundwater will be measured in each of the monitoring wells to the nearest 0.01 foot. LNAPL thickness will be measured in each monitoring well, except for monitoring wells located in the Tukwila International Boulevard South right-of-way (TIB right-of-way).

G-Logics will collect groundwater samples from each monitoring well using a peristaltic pump, with the intake located near the midpoint of the screened section of each well or if the water level in the well is lower than the midpoint, approximately 1 foot below the groundwater surface. Before the collection of each sample, groundwater will be purged from the well using a peristaltic pump with dedicated disposable tubing. Groundwater quality parameters, including temperature, electrical conductivity (EC), pH, dissolved oxygen (DO), and oxidation-reduction potential (ORP), will be measured at regular intervals using a water quality meter in combination with a flow-through cell. Purging at a given well will be considered complete either when three consecutive readings for temperature, EC, pH, turbidity, DO, and ORP are observed within 10 percent of one

another, or a minimum of three well casing water volumes are purged from the well, whichever occurs first. If a well purges dry, purging will be considered complete once the monitoring well has been purged dry twice and the water level in the well has returned to within 75 percent of its pre-purge static water level. The groundwater purge rate will be minimized to limit drawdown in the wells. The groundwater purge rate will be maintained during pumping. The groundwater parameters measured during purging, flow rates, and instrument calibrations will be documented in the field by a G-Logics field representative. The groundwater purging will be performed following *Standard Operating Procedure EAP099, Version 1.2, Collecting Groundwater Samples: Purging and Sampling Monitoring Wells for General Chemistry Parameters* (Publication No. 23-03-209).

Following the purging activities, the water level in the well will be allowed to partially recover, and a groundwater sample will be collected from the well for laboratory analysis using the peristaltic pump under low-flow sampling techniques.

The groundwater samples will be submitted for the following analyses:

- GRO by Ecology Method NWTPH-Gx, with benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Method 8021B
- Diesel and oil range organics (DRO) by Ecology Method NWTPH-Dx (without silica gel cleanup)

The LNAPL sample collected from well IP-7 will be submitted for the following analyses:

- GRO by Ecology Method NWTPH-Gx
- DRO by Ecology Method NWTPH-Dx
- BTEX, Methyl Tert-Butyl Ether, 1,2-Dibromoethene, and 1,2-Dichloroethane by USEPA Method 8260D

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The QA/QC process for the presented scope of work will include generally accepted procedures for sample collection, storage, tracking, and documentation. In addition, the laboratory will provide its own independent QA/QC procedures, including internal spikes and control blanks, as necessary to document the data meets the analytical method's

reporting limits. All sampling equipment will be washed and rinsed before collecting the samples. All samples will be labeled with a sample number, date, time, and sampler name, and stored in an ice chest containing frozen “blue ice.” Appropriate chain-of-custody documentation will be completed.

One duplicate sample for each analytical parameter will be collected during each monitoring event to evaluate sample collection and analytical effects on the precision and accuracy of results. Additional QA/QC samples may be added if conditions are identified that require more robust data quality evaluation procedures. Laboratory analytical data reports will be validated using the available sample and batch QA/QC data included in standard reporting documentation from the laboratory. Analytical data will be appropriately flagged to indicate QA/QC exceptions identified, including diluted samples, estimated values, and rejected data.

HEALTH AND SAFETY PLAN

An updated site-specific Health and Safety Plan will be developed for the field activities completed at the Site. All field personnel will review the plan and will implement the procedures while conducting the on-site field activities.

INVESTIGATION-DERIVED WASTE

The groundwater monitoring and sampling event will generate investigation-derived waste that will be stored in steel or plastic 55-gallon drums. Rinse/purge water and LNAPL generated during groundwater activities will be temporarily stored on the Property in Department of Transportation-approved drums. Drums will remain on the Property pending characterization, profiling, and coordination of off-site transportation and disposal.

ADDENDUM TO REMEDIAL INVESTIGATION REPORT

The results and findings of the groundwater monitoring and sampling event will be summarized in an addendum to the Remedial Investigation Report for the Site. The addendum will document the objectives, methods, and observations of the groundwater monitoring and sampling event activities. Monitoring data, laboratory analytical results, and a discussion of our findings will also be included. G-Logics will present groundwater

analytical results in a table and groundwater flow directions for the Lower and Upper Saturated Zones in groundwater elevation contour maps.

CLOSING

G-Logics appreciates this opportunity to work with Ecology to implement the Boeing Field Chevron groundwater monitoring and sampling event. Please contact us if you have questions.

Sincerely,
G-Logics

Thomas Cammarata

Thomas Cammarata LG, LHG
Principal Project Manager

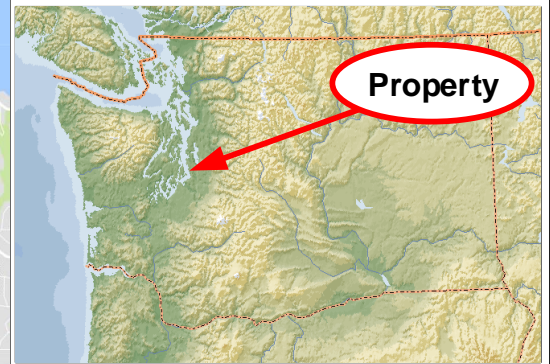
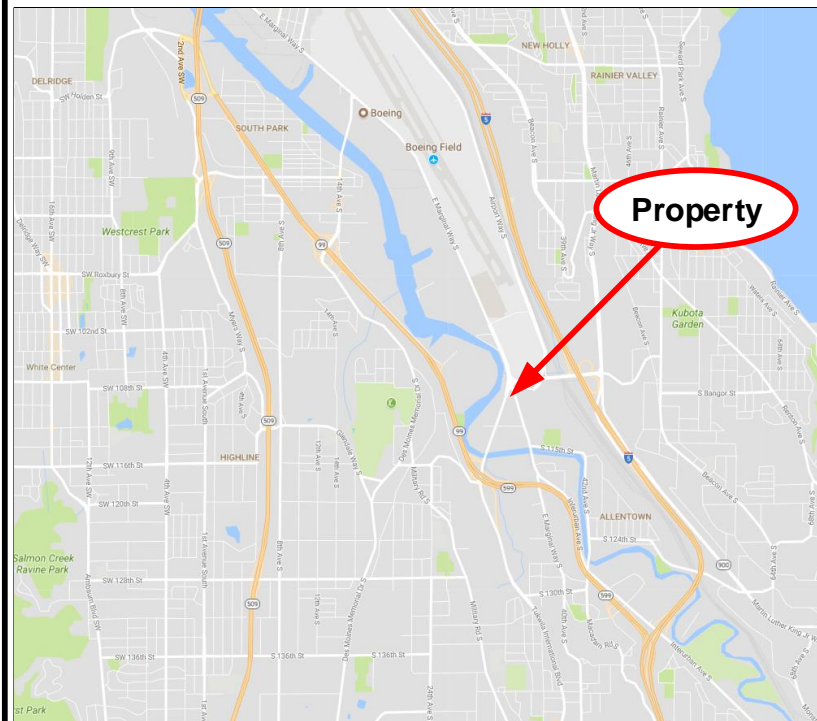
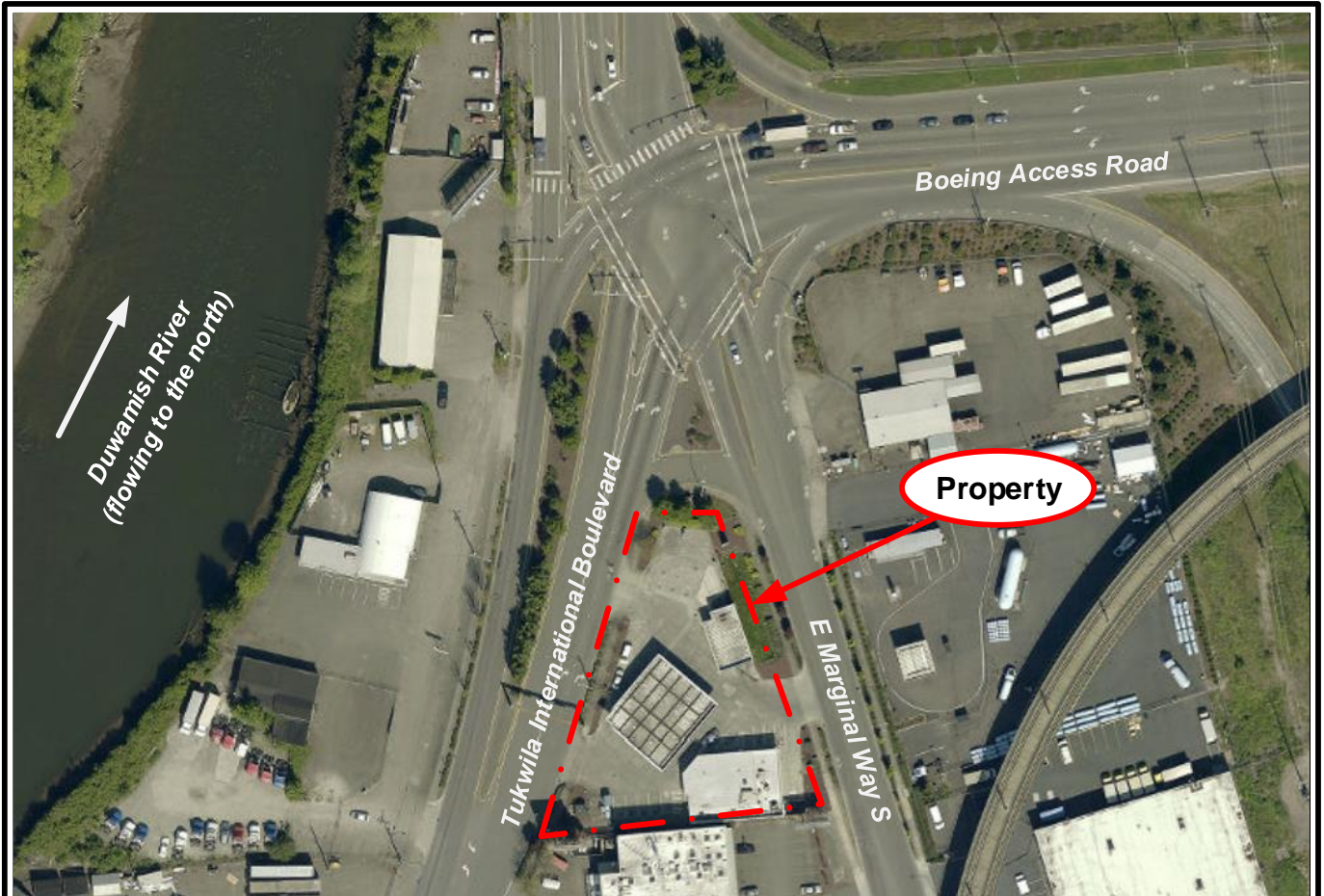
Don Wyll

Don Wyll
Principal Project Manager

Attachments Figure 1, Property Location Map
 Figure 2, Proposed Groundwater Monitoring and Sample Locations

cc: Rajbir Sandhu, Boeing Field Chevron
 Ryan Hultgren, Kennedy Jenks
 Mark Myers, Williams Kastner
 Lynn Manolopoulos, Davis Wright Tremaine
 Russ Shropshire, Leidos
 Nathan Blomgren, Chevron

ATTACHMENTS



Project File: 01-0410-R-F1_tlg.vsdw




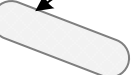




Property Location Maps
Boeing Field Chevron
10805 East Marginal Way South
Tukwila, Washington

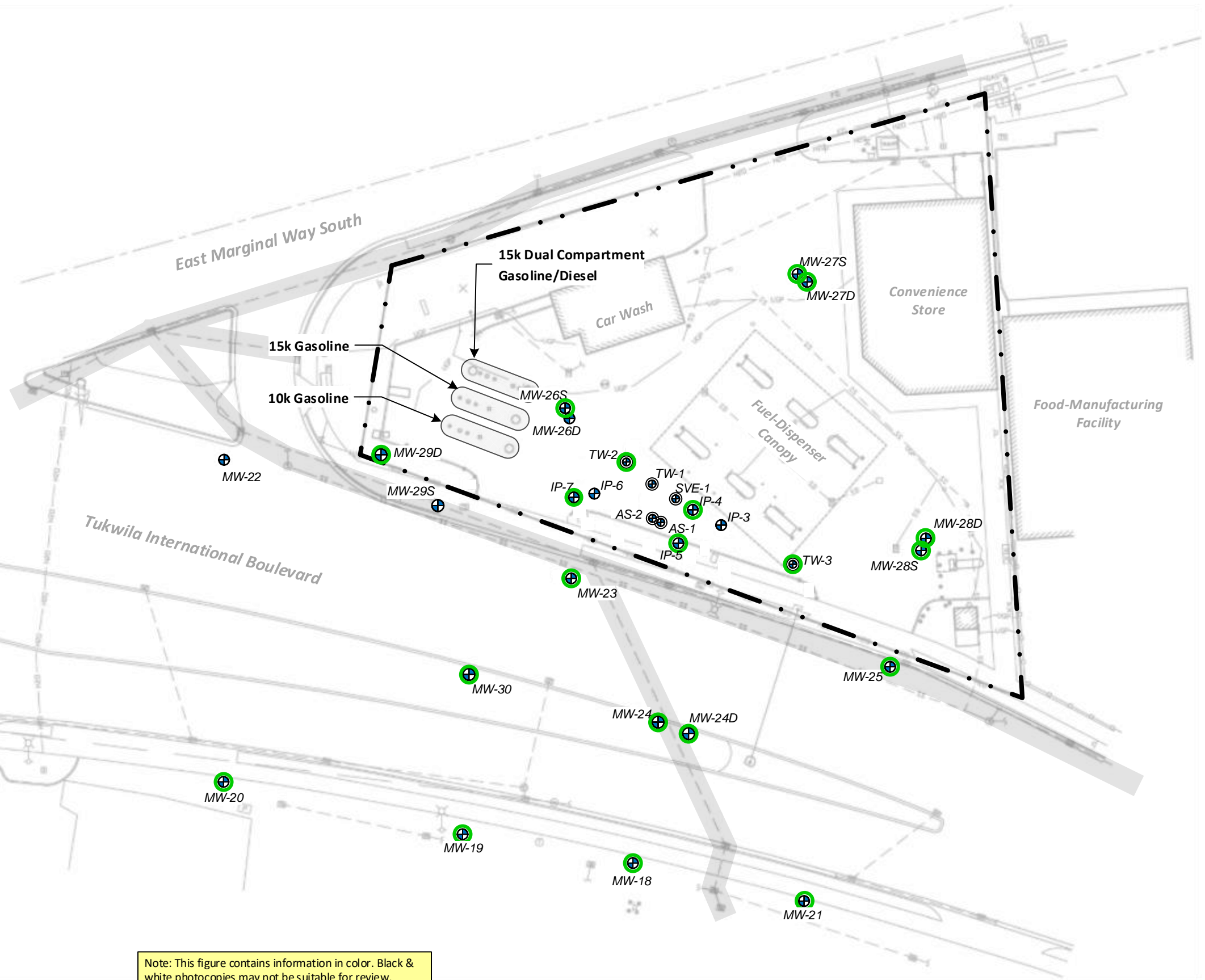
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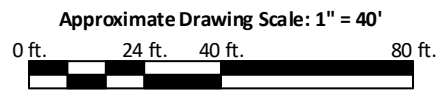
Legend

-  MW-22 Groundwater Monitoring Well
-  MW-23 Proposed Groundwater Monitoring and Sampling Location
-  SVE-1 Pilot Test AS/SVE/Observation Wells
-  15k Gasoline
Current UST Capacity (in gallons), Contents, and Approximate Location.
-  Property Boundary
-  Understood Utility Trench Locations (Adjacent to Property)

Note: Background Image (grayed areas) indicates current station and site features



Note: This figure contains information in color. Black & white photocopies may not be suitable for review.



Proposed Groundwater Monitoring and Sampling Locations
Boeing Field Chevron
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Tukwila, Washington