Periodic Review
Sauros Cleanerama Tacoma

1401 S Pacific Ave, Tacoma, Pierce County, WA 98402
Facility Site ID: 4339824, Cleanup Site ID: 3310

Toxics Cleanup Program, Southwest Region

Washington State Department of Ecology
Lacey, Washington

June 2026

Document Information

This document is available on the Department of Ecology's Sauros Cleanerama Tacoma cleanup site page.[1]

Related Information

- Facility Site ID: 4339824
- Cleanup Site ID: 3310

Contact Information

Toxics Cleanup Program

Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504

Danielle Gibson, Uniform Environmental Covenants Act (UECA) Coordinator
Email: danielle.gibson@ecy.wa.gov
Phone: 360-409-6164

Sandy Smith, Cleanup Project Manager
Email: sandy.smith@ecy.wa.gov
Phone: 360-999-9588

Website: Washington State Department of Ecology[2]

ADA Accessibility

The Department of Ecology is committed to providing people with disabilities access to information and services by meeting or exceeding the requirements of the Americans with Disabilities Act (ADA), Section 504 and 508 of the Rehabilitation Act, and Washington State Policy #188.

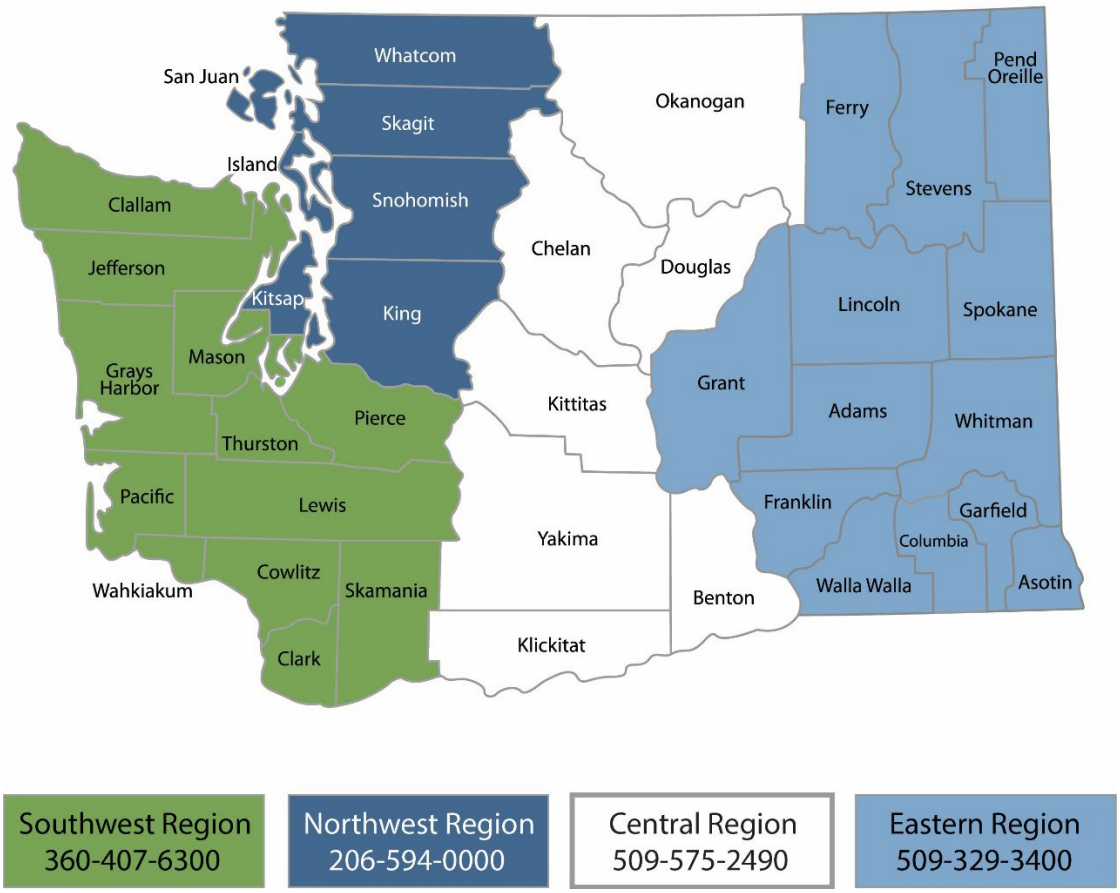
To request an ADA accommodation, contact the Ecology ADA Coordinator by phone at 360-407-6831 or email at ecyadacoordinator@ecy.wa.gov. For Washington Relay Service or TTY call 711 or 877-833-6341. Visit Ecology's website[3] for more information.

---

[1] https://apps.ecology.wa.gov/cleanupsearch/site/3310
[2] https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Toxics-Cleanup
[3] https://ecology.wa.gov/About-us/Accountability-transparency/Our-website/Accessibility

Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Table of Contents

Introduction **1**

Summary of Site Conditions **2**

Site description and history 2

Site investigations 2

Cleanup actions 6

Groundwater monitoring 7

Cleanup standards 8

Environmental Covenant and institutional controls 8

Periodic Review **9**

Effectiveness of completed cleanup actions 9

New scientific information for individual hazardous substances or mixtures present at the Site 11

New applicable state and federal laws for hazardous substances present at the Site 11

Current and projected Site and resource uses 11

Availability and practicability of more permanent remedies 11

Availability of improved analytical techniques to evaluate compliance with cleanup levels 12

Issues/Recommendations **12**

Conclusions **13**

Protectiveness statement 14

Next review 14

References **15**

Tables **16**

Appendix A. Vicinity Map **27**

Appendix B. Site Plans **28**

Appendix C. Mann-Kendall Trend Analysis **37**

Appendix D. Photo Log **46**

Introduction

The Washington State Department of Ecology (Ecology) reviewed post-cleanup site conditions and monitoring data to ensure human health and the environment are being protected at the Sauros Cleanerama Tacoma cleanup site (Site). Site cleanup was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). This is the first periodic review conducted for this Site.

Cleanup activities at this Site are being completed under an agreed order and consist of monitoring groundwater for monitored natural attenuation (MNA) and implementation of institutional controls. Residual concentrations of chlorinated volatile organic compounds (CVOCs) that exceed MTCA cleanup levels remain in soil and groundwater on the Site. The MTCA cleanup levels for soil and groundwater are established under WAC 173-340-740[4] and WAC 173-340-720,[5] respectively. Cleanup levels for soil and groundwater are listed in Table 1.

Ecology determined institutional controls in the form of an environmental covenant (Covenant) would be required as part of the cleanup action for the Site. WAC 173-340-420(2)[6] requires Ecology to conduct a periodic review of certain sites every five years. For this Site, a periodic review is required because the department approved cleanup actions under an agreed order and institutional controls are required as part of the cleanup action.

When evaluating whether human health and the environment are being protected, Ecology must consider the following factors (WAC 173-340-420(4)):

a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site;

b) New scientific information for individual hazardous substances or mixtures present at the site;

c) New applicable state and federal laws for hazardous substances present at the site;

d) Current and projected site and resource uses;

e) The availability and practicability of more permanent remedies; and

f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

Ecology will publish a notice of this periodic review in the *Contaminated Site Register* and provide an opportunity for public comment.

[4] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-740
[5] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-720
[6] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-420

Summary of Site Conditions

Site description and history

The former Sauro's property is located at 1401, 1407, and 1409 Pacific Avenue in downtown Tacoma, Pierce County, Washington, west of the Thea Foss Waterway (Figure 1, Appendix A). Historical operations at the Sauro's property resulted in the release of CVOCs to soil and groundwater that impacted adjacent and downgradient properties. Therefore, the overall Site includes the former Sauro's property and the surrounding impacted area (Figure 1, Appendix B).

Numerous businesses operated at the former Sauro's property between 1887 and 1958 including a hotel, office/retail shops, bus terminal where buses were parked and maintained, laundry operations, electroplating company, farm implement and seed store, church, jeweler, barber, tailor/clothes cleaner, and possibly a hatter (Tacoma-Pierce County Health Department [TPCHD] 2008). In 1958, the Sauros purchased the property (TPCHD 2008).

Between 1961 and 2000, Pete Sauro operated a dry-cleaning business, Sauro's Cleanerama, at the Site. During its operation, Sauro's Cleanerama used a wastewater sump located in the building's basement. Over time, dry cleaning solvents leaked from the sump into soil and groundwater underlying the property.

The City of Tacoma (City) purchased the Sauro's property from the Sauro Estate on January 9, 2009. Subsequently, on March 30, 2009, the City and Ecology entered into Agreed Order No. DE 4283 which required the City to conduct a remedial investigation/feasibility study (RI/FS), prepare a draft Cleanup Action Plan (CAP), and conduct an interim action if deemed necessary. On July 16, 2015, the City and Ecology entered into Agreed Order No. DE 11080 to implement the selected cleanup action which includes MNA and institutional controls.

The Sauro's property is currently used as a public parking lot. The Site which also includes the area under which the groundwater plume has come to be located is used as public parking lots and roadways and includes City rights-of-way. The former Budget property to the north of the Sauro's property includes a one-story underground parking garage and a small, single-story building previously occupied by Budget for renting vehicles but is now used for storage.

A vicinity map is in Appendix A, and Site plans are in Appendix B.

Site investigations

Various environmental investigations have been conducted at the Site between 1992 and 2014. The sections below provide a summary of past investigations.

Pre-Remedial Investigations, 1992 to 2008

The previous property owner, Sauro Estate, conducted several pre-RI field investigation activities as independent actions between 1992 and 2008. Results from the pre-RI investigations showed impacts to soil and groundwater from historical Site operations (Landau

Associates [Landau] 2014). Contaminants of potential concern (COPC) identified included CVOCs, petroleum hydrocarbons, and metals. The primary CVOC detected was tetrachloroethene (PCE), which is a solvent used in dry cleaning since the 1940s. Figures 2 through 6 in Appendix B depict soil and groundwater results of the pre-RI investigations.

According to Landau (2014), data from pre-RI investigations concluded that PCE and related VOC breakdown products were the primary contaminant impacts at the Sauro's property in soil and groundwater. A primary and secondary groundwater plume were identified. The primary plume was found to extend approximately 800 feet in the east-northeast direction from the intersection of South 14th Street and Pacific Avenue to Dock Street. The secondary plume was determined to be shallower and extending approximately 200 feet to the southeast from the Sauro's property.

The Site entered into the Voluntary Cleanup Program (VCP) on March 28, 2001. However, on November 20, 2006, the Site was removed from VCP and Ecology notified the Sauro Estate on February 16, 2007, that Ecology intended to proceed under the formal process to address cleanup of the Site.

Remedial Investigation, 2009 to 2013

RI activities were conducted by Landau between March 2009 and December 2013 and included: (1) soil sampling; (2) DaVita drain and associated outfall sampling; (3) vapor intrusion (VI) assessment; (4) groundwater investigations; and (5) groundwater monitoring (Landau 2014).

In 2009, Landau conducted soil sampling activities at the Sauro's property to provide additional soil characterization prior to implementation of the interim action. Seven soil borings were advanced to further characterize the area of the 2001 sump and soil excavation activities to define the quantity of soil that would likely require disposal as hazardous waste. Six additional borings were advanced across the Sauro's property for archeological purposes and to fill any data gaps. Six borings were advanced adjacent to the DaVita building to evaluate the soil quality in this area (Figure 7, Appendix B). Results found in most cases that the CVOC with the highest concentration was PCE. Other VOCs frequently detected included trichloroethene (TCE); *cis*-1,2-dichloroethene (DCE); and acetone. TCE and *cis*-1,2-DCE were attributed to in-situ reductive dechlorination of PCE (Landau 2014).

The DaVita drain was also investigated in 2009 and included defining the hydraulic route of the drainage from the building. The drain is located at the base of a manhole structure in the basement of the DaVita building. City staff determined the drainage flow path utilizing a dye tracer. The City determined the drain, which actively collects groundwater, flows south and connects to the City's stormwater sewer system along South 15th Street and then ultimately discharges into the Thea Foss Waterway at an outfall adjacent to a public dock east of the former Johnny's Seafood restaurant, now The Fish Peddler Restaurant on Foss Waterway. Landau noted in the 2014 RI/FS that the secondary VOC groundwater plume follows along the DaVita drain, conveyance piping, and to the downstream outfall. The results of sampling at the drain and outfall in April and August 2009 suggested that the DaVita drain captures contaminated groundwater from the secondary plume. In addition, Landau noted that the

decrease in VOC concentrations from the drain to the outfall are likely the result of dilution and mixing of the water as it travels along the flow path. The concentrations of VOCs at the outfall were shown to be well below the applicable marine surface water applicable or relevant and appropriate requirements (ARARs) identified at the time of this investigation. This sampling was conducted prior to the interim action when the secondary plume was larger and had higher concentrations (Landau 2014).

As part of the RI activities, a VI assessment was also performed in 2009 (Landau 2009). The VI assessment evaluated one potential development scenario on neighboring properties including the former Budget property (1305 Pacific Avenue) and the former U.S. Postal Service (USPS) property (1310 and 1320 A Street). The VI assessment was performed to determine if the VOC groundwater plume would pose a risk to indoor air if a four to five story underground parking structure extending 40 to 50 feet below ground surface (bgs) were to be placed on either of these properties. Landau used the Johnson and Ettinger Model to model the future potential exposure scenario at the neighboring properties. In addition to site-specific conditions, the model assumed waterproofing materials, acting as a vapor barrier, would be used beneath the parking structure and elevator shaft of a future underground parking structure. Based on a continuous ventilation air exchange rate of 1.5 cubic feet per minute per square foot, the model found that VI would not result in an elevated health risk for workers. It should be noted that the former Budget property currently includes a one-story underground parking area, with no vapor barrier. Per an email from the City received on March 11, 2025, the current property owner indicated that there is no mechanical ventilation system in the underground parking area; however, there are open air portals that allow air exchange between the underground parking area and the surface.

Two RI groundwater investigations were conducted following the interim action described in the section below. The first included installation of a new monitoring well in 2010, referred to as LAI-MW5. All pre-existing monitoring wells on the Sauro's property were decommissioned in 2009 as part of the interim action. LAI-MW5 was installed within the City's right-of-way on South 14th Street and includes a 15-foot screen. In 2013, the second groundwater investigation was conducted and included advancement of borings along Dock Street to verify the leading edge of the plume was adequately characterized. Borings were placed north and south of monitoring well LAI-MW4 (Figure 7, Appendix B). Two groundwater samples were collected from each boring, one at the top of the water table for a VI Tier 1 screening assessment and one at the bottom of the boring in line with the approximate depth monitored at LAI-MW4. Results for groundwater samples collected at the top of the water table showed all contaminants of concern (COCs) were non-detect. Therefore, VI did not appear to be a risk along Dock Street. Results for groundwater samples collected at the bottom of the borings found vinyl chloride (VC) in one boring at a concentration of 0.6 micrograms per liter (µg/L). Low-level detections of PCE (0.2 µg/L), TCE (0.4 µg/L), and *cis*-1,2-DCE (5.8 µg/L) were found in groundwater in one boring, but all results were below their respective MTCA Method B groundwater cleanup levels. In addition, groundwater data collected from LAI-MW4 and non-project wells MW-JS and MW-JS2 around this time were non-detect for VC (Landau 2014).

Groundwater monitoring was conducted as part of the RI between April 2009 and September 2013. The first sampling event was conducted in April/May 2009 prior to the interim action and included analysis of 18 wells for VOCs and five wells for MNA parameters. Following the interim action, quarterly groundwater monitoring for VOCs was conducted of the remaining 14 wells beginning in May 2010. MW-3 was not sampled during these quarterly events due to inadequate water level for sampling. Following the July 2010 sampling event, four wells (RNS-MW3, RNS-MW4, RNS-MW5, and RNS-MW7) were removed from the sampling program due to historical non-detect results for Site COCs. One additional well, LAI-MW5, was installed in October 2010 as noted above and was added to the groundwater sampling program. A total of 16 quarterly sampling events for VOC analysis were conducted between May 2010 and September 2013. Quarterly monitoring also included analysis of samples for MNA parameters. This included the same wells that were sampled for VOC analysis, as well as RNS-MW7. A total of five MNA quarterly sampling events were conducted between 2012 and 2013 (Landau 2014). Groundwater monitoring results collected for the RI are summarized in Tables 2 through 11.

Interim Action, 2009 to 2010

Between September 2009 and January 2010, a source area interim action was conducted. The interim action included a lot line to lot line excavation at the Sauro's property of approximately 12,700 tons of contaminated soil and debris. Confirmation samples were collected from the bottom of the excavation. Results showed concentrations of PCE and TCE remained in soil above the MTCA Method A cleanup levels. PCE was detected in two samples above the cleanup level (50 micrograms per kilogram [µg/kg]) at concentrations of 56,000 µg/kg and 790 µg/kg. TCE concentrations exceeded the cleanup level (30 µg/kg) in two samples at 340 and 53 µg/kg. Due to saturated soil conditions, the excavation depth was limited to around the water table. Following excavation of this material, a layer of geotextile fabric was placed to delineate the limit of contaminated soil. Clean fill material was then placed over the top of the geotextile layer (Landau 2014). Figure 8 in Appendix B depicts the soil excavation area. Category 1 soil was considered hazardous waste and Category 2 soil was considered non-hazardous waste.

During excavation activities, petroleum-contaminated soil was discovered within two areas along the north wall of the Sauro's property. Soil samples collected from this area were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO). Of the samples collected, one sample had a concentration of motor oil above the MTCA Method A cleanup level and in another sample concentrations of TPH-GRO and ethylbenzene exceeded the MTCA Method B cleanup levels. Contaminated soil was removed from these areas and confirmation sample results showed all analytes were either non-detect or below MTCA Method A cleanup levels.

Cleanup actions

In 2015, a CAP was issued by Ecology describing the proposed remedial action for the Site. The City entered into Agreed Order No. DE 11080 with Ecology on July 16, 2015, to implement the CAP. The CAP included the following components of the selected alternative (Ecology 2015a):

- **MNA (Groundwater):** Implementation of an MNA remedy to demonstrate that naturally occurring in situ attenuation processes are effective in reducing the plume extent.
- **Institutional Controls (Soil and Groundwater):** Establishment of institutional controls in the City controlled areas of the Site and the former Sauro's property to prevent or limit intrusive activities that would bring workers into contact with contaminated soil and groundwater.

The MNA remedy includes monitoring COCs and MNA parameters in groundwater from existing monitoring wells. The City conducted quarterly MNA sampling from fall 2012 to fall 2013. Following this sampling, the monitoring well network was modified to remove monitoring wells MW-1 and RNS-MW7 and reduce sample depths to one depth at each monitoring well LAI-MW5 and RNS-MW2. Groundwater sampling was to continue in general accordance with the Sampling and Analysis Plan (SAP) (Landau 2013) to monitor MNA including sampling of nine monitoring wells (LAI-MW1 through LAI-MW5, MW-2, MW-13, RNS-MW2, and RNS-MW6). Groundwater monitoring was to occur semi-annually for two years, beginning in January 2015, and then annually after that.

According to the CAP, institutional controls were to be implemented to prohibit use of Site groundwater as a potable water supply, restrict intrusive activities on City-owned property and rights-of-way, and require proper safety measures and soil management practices be implemented as part of any project involving soil disturbance at the Site. On July 29, 2015, institutional controls in the form of a Covenant were recorded for the former Sauro's property (parcel numbers 2014030010, 2014030020, and 2014030030). The Covenant prohibits groundwater use on the three former Sauro's parcels. Documented administrative procedures were to be put in place to ensure redevelopment and utility maintenance activities on City property are coordinated carefully to prevent unacceptable exposure of subsurface contamination to temporary construction contractors. Institutional controls that require proper safety measures and soil management practices be implemented as part of any project involving soil disturbances do not appear to have been implemented at the Site. Ecology requests that either the Covenant be amended to note this requirement or an administrative procedure be placed on the former Sauro's property.

Documented administrative procedures were also to ensure that the City will coordinate with the owner(s) of the two private properties (i.e. former Budget and former USPS properties). The City is to address any required environmental monitoring for dewatering or excavation that could generate contaminated waste and ensure that worker health and safety are adequately protected. (Ecology 2015a). However, as of the date of this periodic review, administrative procedures requiring the City to coordinate with private property owner(s) have not been established.

In 2022, Landau prepared a draft Natural Attenuation Assessment Report at Ecology's request to evaluate the effectiveness of the MNA remedy and document whether human health and the environment are being protected during the ongoing cleanup at the Site (Landau 2022). Landau based their assessment on data from nine groundwater wells monitored between 2013 and 2022. The results of the assessment found that most of the wells have aerobic to mildly reducing conditions and trends in concentrations are generally stable or decreasing.

Groundwater monitoring

Beginning in January 2015, groundwater monitoring was conducted semi-annually for two years, and then annually in subsequent years. Groundwater sampling to monitor MNA parameters and CVOCs is performed in general accordance with the 2013 SAP (Landau 2013) and modifications presented in the 2015 CAP. In addition, groundwater samples are also analyzed for methane, ethene, ethane, and acetylene. The current monitoring well network includes nine monitoring wells (LAI-MW1 through LAI-MW5, MW-2, MW-13, RNS-MW2, and RNS-MW6). Tables 2 through 11 provide a summary of analytical results for groundwater sampling conducted between 2013 and 2025.

Since the interim action was completed in 2010, concentrations of PCE in groundwater have consistently been detected above the cleanup level of 5 µg/L in monitoring wells LAI-MW2, LAI-MW3, MW-13, RNS-MW2, and RNS-MW6. Concentrations of TCE have also been consistently detected at concentrations above the cleanup level of 5 µg/L in monitoring wells LAI-MW2, LAI-MW3, MW-13, and RNS-MW6.

Cis-1,2-DCE has been detected above the cleanup level of 70 µg/L in multiple wells. However, over the last four sampling events, exceedances of the cleanup level have only occurred in monitoring wells LAI-MW2 and RNS-MW6. VC has also been detected above the cleanup level in multiple wells since the interim action was completed in 2010. Over the last three years, VC has only been detected above the cleanup level in MW-2. However, it should be noted that the reporting limit for VC for non-detect results has exceeded the cleanup level of 0.2 µg/L in several wells during the last three sampling events. These should also be considered exceedances. Figure 9 in Appendix B depicts the groundwater results from the latest groundwater sampling event in January 2025.

Ecology conducted trend analysis using the Mann-Kendall toolkit to determine trends in concentrations of CVOCs at the Site using data collected between 2013 and 2025. The Mann-Kendall trend analysis is included in Appendix C. For non-detect results, Ecology used one half of the detection limit. The trend analysis shows concentrations of CVOCs in all wells appear to be either stable, decreasing, or there is no apparent trend with two exceptions. Concentrations of TCE in monitoring well LAI-MW4 appear to be increasing; however, concentrations remain well below the cleanup level. Concentrations of VC in monitoring well RNS-MW6-52.5 are probably increasing; however, this is likely in part due to the elevated reporting limit over the last four sampling events. Although concentrations of CVOCs do not appear to be increasing at the Site, except as noted in LAI-MW4 and RNS-MW6, it is not expected that concentrations of

COCs in groundwater from all wells will reach cleanup levels within 30 years, as originally anticipated.

Cleanup standards

Cleanup standards include cleanup levels, the location where these cleanup levels must be met (point of compliance), and any other regulatory requirements that apply to the Site. WAC 173-340-704[7] states MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used. Method B may be used at any site and is the most common method for setting cleanup levels when sites are contaminated with substances not listed under Method A. Method C cleanup levels may be used to set soil and air cleanup levels at industrial sites.

MTCA Method A cleanup levels were determined to be appropriate for contaminants in soil and groundwater at this Site. The cleanup actions conducted at the Site were determined to be routine, few hazardous substances were found at the Site, and numerical standards were available in the MTCA Method A table for each hazardous substance with the exception of *cis*-1,2-DCE and VC in soil and *cis*-1,2-DCE in groundwater. Since there is no MTCA Method A cleanup level available for *cis*-1,2-DCE in groundwater, the Federal/State maximum contaminant level (MCL) was selected for the cleanup level. Cleanup levels for soil and groundwater are listed in Table 1.

The point of compliance is the area where the cleanup levels must be attained. For groundwater, the standard point of compliance is throughout the Site. For soil cleanup levels based on the protection of groundwater, the standard point of compliance is established as soils throughout the Site. For soil cleanup levels based on direct contact, the standard point of compliance is soils throughout the Site from ground surface to 15 feet bgs.

Environmental Covenant and institutional controls

Ecology determined that institutional controls would be required as part of the cleanup action to document the remaining contamination, protect the cleanup action, and protect human health and the environment. On July 29, 2015, institutional controls in the form of a Covenant[8] were recorded for the Sauro's property (parcel numbers 2014030010, 2014030020, and 2014030030).

The Covenant recorded for the Sauro's property imposes the following limitations:

1. **Groundwater Use.** The groundwater beneath the property remains contaminated and shall not be extracted for any purpose other than temporary construction dewatering,

[7] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704
[8] https://apps.ecology.wa.gov/cleanupsearch/document/48931

investigation, monitoring or remediation. Drilling of a well for any water supply purpose is strictly prohibited. Groundwater extracted from the property for any purpose shall be considered potentially contaminated and any discharge of this water shall be done in accordance with state and federal law.

2. **Monitoring.** Groundwater monitoring wells are currently located on the property in the locations shown on Exhibit C of the Covenant to monitor the performance of the remedial action. The Grantor shall maintain clear access to these devices and protect them from damage. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to any monitoring device. Unless Ecology approves of an alternative plan in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs. Monitoring wells are required to be used to demonstrate that naturally occurring in situ attenuation processes are effective in reducing the plume extent.

In addition to institutional controls in the form of a Covenant, the CAP also included documented administrative procedures to be put in place to ensure redevelopment and utility maintenance activities on City property are coordinated carefully to prevent unacceptable exposure of subsurface contamination to temporary construction contractors. Documented administrative procedures were also to ensure that the City will coordinate with the owner(s) of the two private properties (i.e. former Budget and former USPS properties). The City is to address any required environmental monitoring for dewatering or excavation that could generate contaminated waste and ensure that worker health and safety are adequately protected (Ecology 2015a). However, as of the date of this periodic review, administrative procedures have not been established.

Periodic Review

Effectiveness of completed cleanup actions

During the Site visit Ecology conducted on February 27, 2025, Ecology found no indications that the integrity of the cleanup action has been compromised.

The Sauro's property is currently used as a public parking lot. The Site which also includes the area under which the groundwater plume has come to be located is used as public parking lots and roadways and includes City rights-of-way. The former Budget property to the north of the Sauro's property includes a one-story underground parking area and a small, single-story building previously occupied by Budget for renting vehicles but is now used for storage.

A photo log is in Appendix D.

Direct contact

The cleanup actions were intended to eliminate exposure to contaminated soil and groundwater at the Site. Exposure pathways to contaminated soils by ingestion and direct contact were reduced by a lot line to lot line excavation to a depth around the water table on the former Sauro's property.

As per the requirements of the 2013 SAP and 2015 CAP, groundwater sampling continues to be conducted on an annual basis. Groundwater at the Site is not currently used for drinking and the Covenant restricts groundwater use at the Sauro's property. The results of the most recent sampling event in January 2025 show that concentrations of PCE, TCE, and *cis*-1,2-DCE remain at the Site above cleanup levels. Analytical results for groundwater sampling conducted between 2013 and 2025 are presented in Tables 2 through 11.

The most recent groundwater sampling event was in January 2026.

Protection of groundwater

Soils with CVOCs at concentrations exceeding MTCA Method A cleanup levels remain at the Site; however, contaminated soil source material above the water table has been removed. Groundwater is monitored on an annual basis for MNA parameters and CVOC concentrations.

Protection of indoor air

A VI assessment was performed in 2009 to evaluate potential development of neighboring properties, including the former Budget property (1305 Pacific Avenue) and the former USPS property (1310 and 1320 A Street). The VI assessment was performed to determine if the CVOC groundwater plume would pose a risk to indoor air if a four to five story underground parking structure extending 40 to 50 feet bgs, constructed with a vapor barrier and ventilation system, were to be placed on either of these properties. The assessment found that VI would not result in an elevated risk for workers.

The above VI assessment; however, did not evaluate the current potential VI pathway within the existing one-story underground parking area on the former Budget property. Based on available information, it is unclear whether there is a complete VI pathway in the underground parking area and who the potential receptors may be. Ecology requests that a VI assessment be conducted on the former Budget property, including a site visit to the below ground parking garage and Tier I assessment using existing data, with results presented to Ecology in a written report. Depending on the results of the Tier 1 assessment, a VI investigation work plan may be developed in coordination with Ecology and following Ecology's Guidance for Evaluating Vapor Intrusion in Washington State, Publication No. 09-09-047.

Institutional controls

Institutional controls in the form of a Covenant were implemented at the former Sauro's property in 2015. The Covenant remains active and discoverable through the Pierce County Auditor's website. Ecology found no evidence that a new instrument has been recorded that limits the effectiveness or applicability of the Covenant. This Covenant prohibits activities that

will result in the release of contaminants contained as part of the cleanup action and prohibits any use of the property that is inconsistent with the Covenant, unless approved by Ecology in advance. This Covenant ensures the long-term integrity of the cleanup action will be protected.

Documented administrative procedures were also to be put in place to ensure redevelopment and utility maintenance activities on City property are coordinated carefully to prevent unacceptable exposure of subsurface contamination to temporary construction contractors. The documented administrative procedures were also to ensure that the City will coordinate with the owner(s) of the two private properties (i.e. former Budget and former USPS properties). However, as of the date of this periodic review, administrative procedures have not been established.

New scientific information for individual hazardous substances or mixtures present at the Site

There is no new relevant scientific information for the hazardous substances remaining at the Site.

New applicable state and federal laws for hazardous substances present at the Site

There are no new applicable or relevant state or federal laws for hazardous substances remaining at the Site.

Current and projected Site and resource uses

The Site is used for commercial purposes as public parking lots, roads, and City rights-of-way. There have been no changes in current or projected future Site or resource uses. The current Site use is not likely to have a negative impact on the protectiveness of the cleanup action.

It should be noted that the “Super Block” is currently listed for sale. The “Super Block” includes the former Budget and former USPS properties. Per an email from the City on February 28, 2025, there has not been any recent activity or interest in the “Super Block.” If these “Super Block” parcels are redeveloped, potential for VI shall be evaluated during the planning and design stages, and necessary remediation or mitigation implemented before or during construction.

Availability and practicability of more permanent remedies

The remedy implemented includes institutional controls and monitoring hazardous substances in groundwater. Groundwater conditions continue to be protective of human health and the environment at the Sauro’s property. However, as previously noted, it is not expected that concentrations of COCs in groundwater from all wells will reach cleanup levels within 30 years,

as originally anticipated. Therefore, additional active groundwater remediation may need to be considered in the future.

In addition, it is unclear if a complete VI pathway is present within the existing one-story underground parking area on the former Budget property. If a VI assessment determines that there is a current VI pathway, this will need to be remediated or mitigated. The potential for VI will also need to be evaluated during the planning and design stages of any redevelopment on the "Super Block" parcels. If necessary, remediation or mitigation may need to be implemented before or during construction as stated in the section above.

Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the cleanup action were capable of detection below the selected MTCA cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

Issues/Recommendations

- It is Ecology's opinion that the current monitoring well network is not sufficient to adequately monitor the lateral and vertical extent of the groundwater plume to support future closure of the Site. A revised monitoring well network should be developed in coordination with Ecology. Ecology expects the City and/or their consultant to reach out to Ecology within 90 days of the date of the finalized periodic review to schedule a meeting to discuss what modifications to the monitoring well network are needed. An initial meeting to discuss the needed modifications was held on December 10, 2025.
- Continue groundwater monitoring at the current frequency to monitor for changes in COC concentrations and monitor increasing trends in downgradient groundwater monitoring wells.
- All monitoring wells at the Site, including those that are not currently sampled, should be inspected annually during each sampling event to ensure the wells are maintained in good condition if they are needed for future sampling efforts.
- A VI assessment should be conducted to determine potential for VI within the underground parking area on the former Budget property and if an immediate risk is present. A VI assessment work plan may be developed in coordination with Ecology and following Ecology's Guidance for Evaluating Vapor Intrusion in Washington State, Publication No. 09-09-047. Ecology expects to receive the first draft of this work plan within 60 days of the date of the finalized periodic review. A final version of the plan, addressing any comments from Ecology, should be submitted to Ecology within 30 days of receiving comments.

- If the “Super Block” parcels are redeveloped, potential for VI shall be evaluated during the planning and design stages, and necessary remediation or mitigation implemented before or during construction.
- Establish documented administrative procedures to ensure redevelopment and utility maintenance activities on City property are coordinated carefully to prevent unacceptable exposure of subsurface contamination to temporary construction contractors.
- The documented administrative procedures should also ensure that the City will coordinate with the owner(s) of the two private properties (i.e. former Budget and former USPS properties). The City is to address any required environmental monitoring for dewatering or excavation that could generate contaminated waste and ensure that worker health and safety are adequately protected.
- Institutional controls that require proper safety measures and soil management practices be implemented as part of any project involving soil disturbances do not appear to have been implemented at the Site. Ecology requests that either the Covenant be amended to note this requirement or an administrative procedure be placed on the former Sauro’s property.

Conclusions

- Soil cleanup levels have not been met at the Site; however, the cleanup action is determined to comply with cleanup standards under WAC 173-340-740(6)(f), since the selected remedy of excavation is permanent to the maximum extent practicable and the cleanup action appears to be protective of human health and the environment. However, there is no institutional control in place to require proper safety measures and soil management practices be implemented as part of any project involving soil disturbances on the former Sauro’s property.
- Groundwater monitoring is currently required on an annual basis. The results of the most recent sampling event in January 2025 show that concentrations of PCE, TCE, and *cis*-1,2-DCE remain in groundwater at the Site above cleanup levels. However, concentrations of CVOCs in all wells appear to be either stable, decreasing, or there is no apparent trend with two exceptions. Concentrations of TCE in monitoring well LAI-MW4 appear to be increasing; however, concentrations remain well below the cleanup level. Concentrations of VC in monitoring well RNS-MW6-52.5 are probably increasing; however, this is likely in part due to the elevated reporting limit over the last four sampling events.
- The Covenant for the property is in place and is effective in protecting human health and the environment from exposure to hazardous substances in groundwater and the integrity of the cleanup action.

Protectiveness statement

Based on this periodic review, the cleanup action implemented for groundwater at the Site is functioning as intended and is protective of human health and the environment. However, it is not expected that concentrations of COCs in groundwater from all wells will reach cleanup levels within 30 years, as originally anticipated. Therefore, additional active groundwater remediation may need to be considered in the future.

In regard to soil, the cleanup action implemented at the Site for the direct contact exposure pathway is protective of human health and the environment. However, soil contamination remains at the Site below the water table and there is no institutional control in place to require proper safety measures and soil management practices be implemented as part of any project involving soil disturbances on the former Sauro's property.

In regard to VI, it is unclear if there is a potential VI issue in the underground parking area on the former Budget property. Therefore, it is unknown if human health and the environment are being protected from potential VI. A VI assessment is needed to identify if an immediate risk is present.

The property owner is responsible for continuing to inspect the Site to ensure the integrity of the cleanup action is maintained and to continue groundwater monitoring.

Next review

Ecology will schedule the next review for the Site five years from the date of this periodic review. If additional cleanup actions or institutional controls are required, the next periodic review will be scheduled for five years after those activities are completed.

References

Landau Associates Inc. (Landau). 2009. Soil Vapor Intrusion, Evaluation of Neighboring Properties, Sauro's Cleanerama. August 19.

Landau. 2013. Draft Sampling and Analysis Plan, Former Sauro's Property, Tacoma, Washington. January 24.

Landau. 2014. Remedial Investigation/Feasibility Study, Sauro's Cleanerama Site, Tacoma, Washington. August 29.

Landau. 2022. Draft Natural Attenuation Assessment Report, Former Sauro's Cleanerama Site, Tacoma, Washington. December 22.

Landau. 2025. Long-Term Groundwater Monitoring Status Report No. 12, 2025 Annual Groundwater Monitoring, Former Sauro's Cleanerama Site, Tacoma, Washington, Project No. 0094048.100.108. July 15.

Tacoma-Pierce County Health Department (TPCHD). 2008. Site Hazard Assessment Completion, Ecology Facility Site ID: 4339824. February 6.

Washington State Department of Ecology (Ecology). 2015a. Cleanup Action Plan, Former Sauro's Cleanerama Site, Tacoma, Washington, FSID: 4339824. June.

Ecology. 2015b. Environmental Covenant, Recording #201507290711. July 29.

Ecology. 2022. Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action. Washington State Department of Ecology Toxics Cleanup Program. Publication no. 09-09-047. March. Available at: https://apps.ecology.wa.gov/publications/documents/0909047.pdf

Ecology. 2025. Site visit. February 28.

Tables

Table 1. Cleanup levels for soil and groundwater contaminants.

Contaminant	Soil Cleanup Level (µg/kg)[1]	Groundwater Cleanup Level (µg/L)[2]
PCE	50	5
TCE	30	5
cis-1,2-DCE	NE	70
VC	NE	0.2

Notes:

[1] Soil cleanup levels are the MTCA Method A cleanup levels for unrestricted land use. No MTCA Method A cleanup levels have been established for *cis*-1,2-DCE or VC.

[2] Groundwater cleanup levels are the MTCA Method A cleanup levels. No MTCA Method A cleanup level has been established for *cis*-1,2-DCE; therefore, the Federal/State MCL value of 70 µg/L was selected for the cleanup level.

µg/kg = microgram per kilogram
µg/L = microgram per liter
DCE = dichloroethene
MCL = maximum contaminant level
MTCA = Model Toxics Control Act
NE = not established
PCE = tetrachloroethene
TCE =trichloroethene
VC = vinyl chloride

Table 2. Groundwater contaminant concentrations and MNA parameters at LAI-MW1.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	0.5 U	0.2 U	0.5 U	0.2 U	5.0 U	5.0 U	5.0 U	44.1	1.90	-14.1	1.15	0.0229	0.040	17.7	0.15 U	5.0 U	3.97
4/2/2013	N	0.2 U	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	44.3	2.20	1.40	1.03 J	0.0109 J	0.030	22.4	0.150 U	5.0 U	3.40
6/18/2013	N	0.2 U	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	43.1	0.800 J	-26.8 J	1.39	0.0139	0.090 J	24.9	0.150 U	5.0 U	9.26
9/9/2013	N	0.2 U	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	47.8	1.20	-31.8	1.40	0.025	0.03 U	25.8	0.150 U	5.0 U	11.2
1/5/2016	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	48	5.96	115.00	0.84 J	0.020 UJ	0.0	19	0.050 U	16	0.27 J
7/7/2016	N	0.12 J	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	64	2.37	-16.4	1.1	0.40 U	0.0	21	0.050 U	0.55 J	1.4 J
1/18/2017	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	72	2.17	31.2	1.3	0.40 U	0.0	19	0.050 U	5.0 U	2.6
7/11/2017	N	0.30	0.90 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	53	2.39	59.8	1.2	0.40 U	0.0	20	0.050 U	5.0 U	1.8
2/8/2018	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	47	3.13	-68.7	1.5	0.40 U	1.0	20	0.050 U	5.0 U	1.9
1/9/2019	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	52	1.65	165	1.8	0.40 U	0.5	22	0.050 U	5.0 U	1.3
1/20/2020	N	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	45 J	1.06	87.6	1.2 J	0.40 UJ	0.4	20 J	0.050 UJ	19 J	1.7 J
1/27/2021	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	65	1.82	-280.8	2.0	0.40 U	1.5	23	0.050 U	5.0 U	1.5 U
1/11/2022	N	0.20 U	0.20 U	0.20 U	0.20 U	--	--	--	89	0.293	1.98	1.5	0.40 U	1.4	19	0.050 U	8.0 J	1.3
3/6/2023	N	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	67	2.16	50.30	1.8	0.40 U	0.5	20	0.050 U	0.63 U	1.4
1/9/2024	N	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	56	4.28	88.50	1.4	0.40 U	0.0	17	0.050 U	0.63 U	1.3
1/13/2025	N	0.20 U	0.20 U	0.20 U	0.20 U	1.5 U	1.5 U	1.5 U	80	1.19	24.5	1.3	0.40 U	0.5 U	14	0.050 UJ	1.5 U	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the level of the reported sample quantitation limit.
UJ = The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 3. Groundwater contaminant concentrations and MNA parameters at LAI-MW2.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**390**	**130**	**140**	**0.8**	5.0 U	5.0 U	5.0 U	8.99	3.06	-19.2	0.01 U	0.0161	0.050	11.3	0.285	37	2.38
4/2/2013	N	**380**	**110**	**100**	**0.7**	5.0 U	5.0 U	5.0 U	10.0	2.80	-28.9	0.01 UJ	0.0575 J	0.280	17.5	17.5	43	4.11
6/18/2013	N	**280 J**	**87 J**	**120 J**	**0.8**	5.0 U	5.0 U	5.0 U	10.8	1.50 J	32.7 J	0.018	0.0100 U	0.030 UJ	17.2	17.2	43	10.3
9/9/2013	N	**360 J**	**120 J**	**160 J**	**0.8**	5.0 U	5.0 U	5.0 U	13.0	2.90	-44.8	0.01 U	0.015	0.03 U	18.9	18.9	26	12.3
1/5/2016	N	**440**	**150**	**130**	**0.89**	5.0 U	3.8 J	5.0 U	15	6.89	81.60	0.024 J	0.020 UJ	0.5	22	22	17	2.9
7/7/2016	N	**350**	**140**	**120**	**0.61**	0.65 J	3.7 J	5.0 U	15	3.34	-28.5	0.20 U	0.40 U	0.4	20	20	27	1.3
1/18/2017	N	**390**	**120**	**120**	**0.80 J**	5.0 U	5.0 U	5.0 U	12	6.97	15.5	0.20 U	0.40 U	1.5	19	19	24	5.6
7/11/2017	N	**270**	**95**	**94**	**0.54**	5.0 U	5.0 U	5.0 U	13	2.24	57.1	0.20 U	0.40 U	0.4	19	19	12	1.8
2/8/2018	N	**310**	**110**	**90**	**0.63**	5.0 U	5.0 U	5.0 U	12	7.28	-60.3	0.20 U	0.40 U	1.5	18	18	11	1.7
1/9/2019	N	**320**	**95**	**78**	**0.58**	5.0 U	5.0 U	5.0 U	14 J	2.46	86.8	0.20 U	0.40 U	1.0	20 J	20 J	6.5	1.2
1/20/2020	N	**270 J**	**100 J**	**93 J**	**0.50 J**	5.0 UJ	5.0 UJ	5.0 UJ	14 J	1.47	91.4	0.20 UJ	0.40 UJ	0.4	17 J	17 J	9.8 J	1.1 J
1/27/2021	N	**230**	**83**	61	**0.89**	5.0 U	5.0 U	5.0 U	25	2.99	-265	0.54	0.40 U	0.5	24	24	6.3	1.5 U
1/11/2022	N	**450**	**170**	**130**	**2.0 U**	--	--	--	24	5.20	18.8	0.29	0.40 U	2.0	24	24	6.1 J	1.8
3/6/2023	N	**350**	**120**	**96**	**10 U**	0.40 U	3.8	0.73 U	26	2.35	-7.4	0.20 U	0.40 U	0.0	23	0.050 U	14	1.6
1/9/2024	N	**230**	**120**	**100**	**10 U**	0.40 U	3.3 J	0.73 U	21	2.31	66.8	0.20 U	0.40 U	1.0	17	0.050 U	12	1.2
1/13/2025	N	**200**	**90**	69	**0.44**	1.5 U	2.0 J	1.5 U	23	0.69	4.4	0.20 U	0.40 U	0.5 U	17	0.050 U	10	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level
[1] The reporting limit for VC in 2022, 2023, and 2024 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 4. Groundwater contaminant concentrations and MNA parameters at LAI-MW3.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**120**	**37**	48	0.1 J	5.0 U	5.0 U	5.0 U	5.36	5.36	-28.1	0.165	0.0357	0.030	8.3	0.076	5.0 U	4.36
4/2/2013	N	**97**	**33**	36	0.2 U	5.0 U	5.0 U	5.0 U	13.8	3.77	-7.10	0.416 J	0.0184 J	0.160	24.1	0.069 J	5.0 U	6.35
4/2/2013	FD	**94**	**33**	38	0.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--
6/18/2013	N	**72 J**	**27**	44	0.2 U	5.0 U	5.0 U	5.0 U	17.1	1.30 J	-34.9 J	0.647	0.0129	0.080 J	23.3	0.150 U	5.0 U	11.8
9/9/2013	N	**78 J**	**34**	54	0.2 U	5.0 U	5.0 U	5.0 U	19.3	3.00	-29.0	0.655	0.020	0.03 U	21.9	0.150 U	5.0 U	16.0
1/5/2016	N	**120**	**43**	47	0.16 J	5.0 U	5.0 U	5.0 U	18	6.42	95.1	0.51 J	0.020 UJ	--	21	0.050 U	2.8 J	2.2
7/7/2016	N	**59**	**38**	43	0.095 J	5.0 U	5.0 U	5.0 U	23	1.36	-36.5	0.62	0.40 U	0.0	22	0.050 U	1.8 J	1.5
1/18/2017	N	**97**	**32**	39	0.20 U	5.0 U	5.0 U	5.0 U	17	1.31	31.6	0.54	0.40 U	0.0	20	0.050 U	5.0 U	1.8
7/11/2017	N	**73**	**35 J**	35	0.20 U	5.0 U	5.0 U	5.0 U	19	2.38	55.9	0.53	0.40 U	1.0	20	0.050 U	5.0 U	2.0
2/8/2018	N	**58**	**26**	27	0.20 U	5.0 U	5.0 U	5.0 U	20	2.73	-46.1	0.65	0.40 U	0.5	22	0.050 U	5.0 U	2.3
1/9/2019	N	**78**	**33**	34	0.20 U	5.0 U	5.0 U	5.0 U	22	3.18	130	0.70	0.40 U	0.5	23	0.050 U	5.0 U	1.3
1/20/2020	N	**42 J**	**37 J**	35 J	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	22 J	2.29	24.6	0.64 J	0.40 UJ	0.6	22 J	0.050 UJ	5.0 UJ	1.5 J
1/27/2021	N	**83**	**36**	34	0.20 U	5.0 U	5.0 U	5.0 U	26	4.59	-344.2	1.3	0.40 U	0.5	27	0.050 U	5.0 U	1.5
1/11/2022	N	**86**	**44**	37	0.20 U	--	--	--	23	3.76	38.8	0.82	0.40 U	0.0	24	0.050 U	R	1.7
3/6/2023	N	**79**	**33**	31	**2.0 U**	0.40 U	0.57 U	0.73 U	20	3.04	61.2	0.55	0.40 U	0.0	25	0.050 U	2.3	1.3
3/6/2023	FD	**77**	**32**	30	**2.0 U**	0.40 U	0.57 U	0.73 U	20 J	2.92	62.0	0.56 J	0.40 U	0.0	24 J	0.050 U	1.9	1.2
1/9/2024	N	**52**	**39**	29	**2.0 U**	0.40 U	0.57 U	0.73 U	29	6.47	107.2	0.50	0.40 U	0.0	19	0.050 U	1.2 J	1.2
1/9/2024	FD	**56**	**39**	28	**2.0 U**	0.40 U	0.57 U	0.73 U	29	6.25	107.2	0.50	0.40 U	0.0	19	0.050 U	1.6 J	1.2
1/13/2025	N	**65 J**	**28 J**	23	0.2 U	1.5 U	1.5 U	1.5 U	39	5.77	29.9	0.59	0.40 U	0.5 U	19	0.050 U	1.5 U	1.0 U
1/13/2025	FD	**97 J**	**37 J**	27	0.2 U	1.5 U	1.5 U	1.5 U	39	5.50	32.3	0.60	0.40 U	0.5 U	19	0.050 U	1.5 U	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:

Highlighted, red bold text = exceedance of the cleanup level

[1] The reporting limit for VC in 2023 and 2024 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
FD = field duplicate
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 5. Groundwater contaminant concentrations and MNA parameters at LAI-MW4.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	0.5 U	0.2 U	0.3 J	0.2 U	5.0 U	5.0 U	5.0 U	33.1	2.52	-75.0	0.01 U	0.0480	4.70	4.0	0.029	2,800	10.7
4/2/2013	N	0.2 U	0.2 U	0.3	0.2 U	5.0 U	5.0 U	5.0 U	31.3	1.86	-87.3	0.01 UJ	0.0319 J	5.55	6.9	0.150 U	3,700	6.73
6/18/2013	N	0.2 U	0.2 U	0.3	0.2 U	5.0 U	5.0 U	5.0 U	32.2	1.84 J	-62.4 J	0.019	0.0090	6.40 J	11.3	0.150 U	3,400	17.8
9/9/2013	N	0.2 U	0.2 U	0.6	0.2 U	5.0 U	5.0 U	5.0 U	32.6	2.60	-82.6	0.010 U	0.0550 J	2.52	11.1	0.150 U	3,000	19.6
1/5/2016	N	0.20 UJ	0.20 U	0.093 J	0.20 U	5.0 U	0.77 J	5.0 U	34	3.65	-43.9	0.016 J	0.020 UJ	1.5	9.1	0.050 U	4,200	4.3
1/5/2016	FD	0.88	0.092 J	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	34	3.64	-43.5	0.017 J	0.020 UJ	1.5	9.4	0.050 U	4,500	4.2
7/7/2016	N	0.20 U	0.20 U	0.085 J	0.030 J	5.0 U	0.78 J	5.0 U	27	--	--	0.20 U	0.40 U	3.0	2.0	0.050 U	6,400	2.9
7/7/2016	FD	0.20 U	0.20 U	0.10 J	0.030 J	5.0 U	0.90 J	5.0 U	27	--	--	0.20 U	0.40 U	3.0	2.0	0.050 U	6,100	2.9
1/18/2017	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	24	2.35	-18.3	0.20 U	0.40 U	4.5	2.1	0.050 U	3,700 J	3.6
1/18/2017	FD	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	24	2.13	-19.5	0.20 U	0.40 U	4.5	2.6	0.050 U	4,600 J	3.5
7/11/2017	N	0.20 U	0.20 U	0.25	0.20 U	5.0 U	5.0 U	5.0 U	22	3.98	6.78	0.20 U	0.40 U	3.0	1.8	0.050 U	5,200	3.7
7/11/2017	FD	0.20 U	0.92 U	0.27	0.20 U	5.0 U	5.0 U	5.0 U	22	3.81	5.85	0.20 U	0.40 U	3.0	1.7	0.050 U	4,900	4.3
2/8/2018	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	32	3.82	-36.2	0.20 U	0.40 U	1.5	1.2 U	0.050 U	4,400	4.6
2/8/2018	FD	0.20 U	0.20 U	0.20 U	0.20 U	5.0 UJ	5.0 UJ	5.0 U	33	3.79	-34.9	0.20 U	0.40 U	1.5	1.2 U	0.050 U	4,600 J	4.3
1/9/2019	N	0.20 U	0.20 U	0.65	0.20 U	5.0 U	5.0 U	5.0 U	40	2.95	-40.0	0.20 U	0.40 U	4.5	4.3	0.050 U	2,100	2.6
1/9/2019	FD	0.20 U	0.20 U	0.58	0.20 U	5.0 U	5.0 U	5.0 U	40	2.88	-40.3	0.20 U	0.40 U	4.5	4.3	0.050 U	1,900	2.7
1/20/2020	N	0.20 UJ	0.24 J	0.32 J	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	53 J	5.70	-9.85	0.20 UJ	0.40 UJ	4.8	2.5 J	0.050 UJ	3,000 J	3.4 J
1/20/2020	FD	0.20 UJ	0.24 J	0.33 J	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	54 J	5.78	-7.33	0.20 UJ	0.40 UJ	4.8	2.4 J	0.050 UJ	3,200 J	3.5 J
1/27/2021	N	0.20 U	0.40	2.7	**1.4**	5.0 U	5.0 U	5.0 U	40	1.51	-251.6	0.68 J	0.40 U	5.0	9.8	0.050 U	1,000	3.2
1/27/2021	FD	0.20 U	0.40	2.5	**1.3**	5.0 U	5.0 U	5.0 U	40	1.47	-253.1	0.61 J	0.40 UJ	5.0	9.2	0.050 U	1,000	3.5
1/11/2022	N	0.20 U	0.33	0.20 U	**0.49 J**	--	--	--	5,200	0.46	-102.4	1.1	0.40 U	4.8	720	0.050 U	160 J	2.5
1/11/2022	FD	0.20 U	0.29	0.25	0.20 UJ	--	--	--	5,300	0.47	-100.5	0.96 J	R	4.8	710	0.050 U	190 J	2.5
3/6/2023	N	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	3,500	2.81	-10.2	20 U	40 U	2.5	530	0.061	330	3.0
1/9/2024	N	0.20 U	0.65	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	1,100	2.94	94.1	0.20 U	0.40 U	4.8	140	0.050 U	110	3.2
1/13/2025	N	0.20 U	0.37	2.1	0.20 U	1.5 U	1.5 U	1.5 U	430	0.56	-141.1	0.20 U	0.40 U	5.0	33	0.050 U	490	3.0
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:

Highlighted, red bold text = exceedance of the cleanup level

-- = not analyzed or not established

µg/L = micrograms per liter

DCE = dichloroethene

DO = dissolved oxygen

FD = field duplicate

J = The result is an estimated quantity.

mg/L = milligrams per liter

mV = millivolt

MW = monitoring well

N = primary sample

ORP = oxygen reduction potential

PCE = tetrachloroethene

R = The data are unusable. The sample results were rejected due to deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TCE = trichloroethene

TOC = total organic carbon

U = The analyte was analyzed for but was not detected at or above the reporting limit.

UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.

VC = vinyl chloride

Table 6. Groundwater contaminant concentrations and MNA parameters at LAI-MW5.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	0.5 U	0.2 U	0.5 U	0.2 U	5.0 U	5.0 U	5.0 U	58.4	2.32	-12.2	0.01 U	0.0490	6.32	5.4	0.15 U	5,200	10.0
4/2/2013	N	0.2 U	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	57.5	2.00	-64.9	0.01 UJ	0.138 J	10.0	13.6	0.131 J	6,600	10.5
6/18/2013	N	0.2 U	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	59.7	1.70 J	-28.2 J	0.010 U	0.0373	7.95 J	10.1	0.150 U	10,000	17.8
9/9/2013	N	0.3 J	0.2 U	0.2 U	0.2 U	5.0 U	5.0 U	5.0 U	56.3	1.00	-69.8	0.010 U	0.092 J	2.52	5.3	0.150 U	11,000	24.4
9/9/2013	FD	0.6 J	0.2 U	0.2 U	0.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1/5/2016	N	0.44	0.048 J	0.094 J	0.022 U	10.0 U	10.0 U	5.0 U	20	2.88	-39.9	0.020 UJ	0.020 UJ	3.0	2.6	0.050 U	18,000	11
7/7/2016	N	0.073 J	0.027 J	0.081 J	0.039 J	5.0 U	5.0 U	5.0 U	24	1.68	-62.1	0.11 J	0.40 U	3.6	4.1	0.50 U	9,000	7.5
1/18/2017	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	14	1.81	-26.0	0.20 U	0.40 U	2.0	1.2 U	0.10 U	12,000	9.6
7/11/2017	N	0.63	0.88 U	0.22	0.20 U	5.0 U	5.0 U	5.0 U	25	0.94	-16.5	0.20 U	0.40 U	2.0	1.4	0.050 U	8,300	9.6
2/8/2018	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	26	2.11	-148.6	0.20 U	0.40 U	2.0	1.2 U	0.050 U	9,500	9.3
1/9/2019	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	57	2.41	-23.1	0.20 U	0.40 U	7.0	4.3	0.050 U	5,400	6.2
1/20/2020	N	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	110 J	1.71	-69.7	0.20 UJ	0.40 UJ	3.6	2.0 J	0.24 J	14,000 J	6.3 J
1/27/2021	N	0.20 U	0.20 U	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	89	2.91	-268.6	0.60	0.40 U	3.5	3.3	0.050 U	10,000	7.3
1/12/2022	N	0.20 U	0.20 U	0.20 U	0.20 U	--	--	--	85	1.19	-38.7	0.20 U	0.40 U	6.2	4.9	0.050 U	9,300 J	6.2
3/7/2023	N	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	100	5.47	-41.1	0.20 U	0.40 U	1.5	12	0.050 U	6,400	6.1
1/9/2024	N	0.20 U	0.20 U	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	140	2.99	112.4	0.20 U	0.40 U	7.0	3.9	0.050 U	11,000	5.7
1/13/2025	N	0.20 U	0.20 U	0.20 U	0.20 U	1.5 U	1.5 U	1.5 U	120	1.23	-50.6	0.20 U	0.40 U	5.0	4.5	0.050 U	6,800	5.2
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
FD = field duplicate
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 7. Groundwater contaminant concentrations and MNA parameters at MW-2.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	0.5	0.8	3.1	**1.4**	5.0 U	5.0 U	5.0 U	61.5	3.10	-3.60	0.477	0.0209	2.25	37.9	0.15 U	5.0 U	4.36
4/2/2013	N	0.5 J	0.7 J	1.2 J	0.2 UJ	5.0 U	5.0 U	5.0 U	99.4	4.00	47.6	2.03 J	0.0167 J	0.03 U	27.7	0.053 J	4.3 J	8.37
6/18/2013	N	0.7	0.8	2.7	**0.3**	5.0 U	5.0 U	5.0 U	81.0	2.00 J	51.1 J	2.18	0.0163	0.130 J	31.5	0.150 U	83	13.9
9/9/2013	N	0.7	0.6	1.4	0.2	5.0 U	5.0 U	5.0 U	66.3	--	-113.0	1.63	0.019	--	50.3	0.150 U	260	6.74
1/5/2016	N	0.96	0.32	0.65	0.18 J	5.0 U	5.0 U	5.0 U	17	--	--	1.7 J	0.020 UJ	--	29	0.050 U	590	2.5
7/7/2016	N	0.48	0.56	1.4	**0.24**	5.0 U	1.3 J	5.0 U	15	--	--	1.9	0.40 U	0.0	20	0.050 U	1,100	3.3
1/18/2017	N	0.54	0.30	0.75	**0.44**	5.0 U	5.0 U	5.0 U	25	1.67	38.9	1.9	0.40 U	0.5	24	0.050 U	1,000	2.7
7/11/2017	N	0.40	0.91 U	1.3	**0.23**	5.0 U	5.0 U	5.0 U	55	1.50	58.4	2.0	0.40 U	--	14	0.050 U	470	3.3
2/8/2018	N	0.25	0.27	0.95	**0.37**	5.0 U	5.0 U	5.0 U	70	--	--	0.59	0.40 U	1.0	28	0.050 U	640	3.3
1/9/2019	N	0.42	0.40	1.5	**0.36**	5.0 U	5.0 U	5.0 U	60	--	--	1.3	0.40 U	--	42	0.050 U	570	2.6
1/20/2020	N	0.97 J	0.73 J	1.7 J	**0.46 J**	5.0 UJ	5.0 UJ	5.0 UJ	52 J	--	--	1.3 J	0.40 UJ	--	79 J	0.21 J	600 J	2.5 J
1/27/2021	N	1.3	0.43	0.90	0.20 U	5.0 U	5.0 U	5.0 U	80	0.875	-252.8	3.2	0.40 U	0.8	50	0.050 U	300	3.6
1/11/2022	N	0.34	0.20 U	0.20 U	0.20 U	--	--	--	50	1.59	-145.7	2.9	0.40 U	0.5	43	0.050 UJ	30 J	2.8
3/7/2023	N	0.64	0.48	2.0	**0.28**	0.40 U	0.57 U	0.73 U	47	1.55	-13.9	0.45	0.40 U	0.5	23	0.050 U	320	3.6
1/9/2024	N	1.10	0.41	1.4	0.20	0.40 U	0.57 U	0.73 U	25	1.17	93.5	1.30	0.40 U	6.0	29	0.050 UJ	2,000	2.6
1/13/2025	N	0.71	0.30	1.2	0.20 U	1.5 U	1.5 U	1.5 U	14	1.87	251.0	2.4	0.40 U	5.4	31	0.050 U	530	3.3
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level
[1] The reporting limit for VC in 2022, 2023, and 2024 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 8. Groundwater contaminant concentrations and MNA parameters at MW-13.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**550**	**120**	**110**	**0.8**	5.0 U	5.0 U	5.0 U	8.28	3.20	-1.10	0.306	0.0168	0.280	24.1	0.15 U	6.0	4.51
4/2/2013	N	**570**	**130**	**98**	**0.7**	5.0 U	5.0 U	5.0 U	8.16	1.48	-0.800	0.869 J	0.0709 J	0.550	33.1	0.150 U	6.5	5.78 J
4/2/2013	FD	--	--	--	--	5.0 U	5.0 U	5.0 U	--	--	--	0.778 J	0.138 J	--	33.6	0.150 U	6.3	7.18 J
6/18/2013	N	**400 J**	**96 J**	**110 J**	**0.8**	5.0 U	5.0 U	5.0 U	9.91	3.30 J	77.0 J	1.12	0.0136	0.150 UJ	51.3	0.150 U	9.3	7.30
9/9/2013	N	**430 J**	**110 J**	**120 J**	**0.8**	5.0 U	5.0 U	5.0 U	10.2	1.28	48.5	1.01 J	0.018 J	0.240	34.6	0.150 U	6.6	8.79 J
9/9/2013	FD	--	--	--	--	5.0 U	5.0 U	5.0 U	10.2	--	--	0.989 J	0.011 J	--	32.0	0.150 U	6.4	11.8 J
1/5/2016	N	**300**	**85**	66	**0.58**	5.0 U	2.4 J	5.0 U	13	1.74	119.3	0.79 J	0.020 UJ	0.0	32	0.050 U	14	1.7
7/7/2016	N	**340**	**100**	**81**	**0.60**	5.0 U	1.2 J	5.0 U	16	6.38	-25.7	0.73	0.40 U	0.0	33	0.50 U	6.3	1.5
1/18/2017	N	**430**	**98**	**73**	**0.73 J**	5.0 U	5.0 U	5.0 U	14	2.21	37.7	0.65	0.40 U	0.0	30	0.25 U	10	1.7
7/11/2017	N	**190**	**53**	47	**0.27**	5.0 U	5.0 U	5.0 U	13	--	--	0.67	0.40 U	0.0	30	0.050 U	6.1	2.0
2/8/2018	N	**200**	**63**	**77**	**0.58**	5.0 U	5.0 U	5.0 U	13	2.91	-40.0	0.79	0.40 U	0.5	31	0.050 U	9.5	2.4
1/9/2019	N	**370**	**84**	59	**0.51**	5.0 U	5.0 U	5.0 U	16	3.30	168.6	0.76	0.40 U	1.0	31	0.050 U	5.0 U	1.3
1/21/2020	N	**470**	**130**	**95**	**0.81**	5.0 U	5.0 U	5.0 UJ	17	4.92	139.3	0.65	0.40 UJ	1.8	29	0.37	6.2	1.2
1/27/2021	N	**310**	**98**	68	**0.57**	5.0 U	5.0 U	5.0 U	24	2.33	-338.1	1.2	0.40 U	2.0	30	0.050 U	5.0 U	2.0
1/12/2022	N	**350**	**98**	63	**2.0 U**	--	--	--	27	2.39	107.5	0.63	0.40 U	0.0	23	0.050 U	6.0 J	1.6
3/6/2023	N	**170**	**58**	45	**4.0 U**	0.40 U	0.81	0.73 U	38	2.95	74.6	0.70	0.40 U	0.0	24	0.050 U	5.0	1.2
1/11/2024	N	**340**	**90**	58	**2.0 U**	0.40 U	0.57 U	0.73 U	43	3.42	148.6	0.55	0.40 U	0.0	21	0.050 U	2.8 J	1.0
1/13/2025	N	**240**	**74**	52	**0.35**	1.5 U	1.5 U	1.5 U	64	0.46	17.8	0.54	0.40 U	0.5 U	20	0.050 U	12	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level
[1] The reporting limit for VC in 2022, 2023, and 2024 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
FD = field duplicate
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 9. Groundwater contaminant concentrations and MNA parameters at RNS-MW2.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**16**	0.9	0.3 J	0.2 U	5.0 U	5.0 U	5.0 U	22.9	8.67	24.7	3.28	0.0628	0.060	41.2	0.15 U	5.0 U	2.00
1/15/2013	FD	--	--	--	--	5.0 U	5.0 U	5.0 U	20.6	--	--	3.44	0.0376	--	37.4	0.15 U	5.0 U	2.56
4/2/2013	N	**11**	0.8	0.2	0.2 U	5.0 U	5.0 U	5.0 U	25.8	8.60	134	2.17 J	0.234 J	0.150	37.0	37.0	5.0 U	3.65
6/18/2013	N	**9.6**	0.4	0.2	0.2 U	5.0 U	5.0 U	5.0 U	31.8	5.97 J	-21.1 J	2.99	0.0080	0.550 J	77.3	77.3	5.0 U	11.6
9/9/2013	N	**23**	0.7	0.2	0.2 U	5.0 U	5.0 U	5.0 U	18.5	6.04	66.5	3.02 J	0.020 J	0.800	33.4	33.4	5.0 U	6.68
1/5/2016	N	**30**	0.94	0.24	0.20 U	5.0 U	5.0 U	5.0 U	25	6.7	87.9	3.3 J	0.020 UJ	--	35	35	5.0 U	1.3
7/7/2016	N	**21**	0.49	0.14 J	0.20 U	5.0 U	5.0 U	5.0 U	20	7.51	-2.2	2.9	0.40 U	0.0	30	30	5.0 U	1.1
1/18/2017	N	**25**	0.51	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	42	6.37	35.8	2.9	0.40 U	0.0	27	27	5.0 U	1.2
7/11/2017	N	**14**	1.3 J	0.24	0.20 U	5.0 U	5.0 U	5.0 U	41	6.69	60.1	2.6	0.40 U	0.0	26	26	5.0 U	1.8
2/8/2018	N	**17**	0.38	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	67	4.73	-21.2	3	0.40 U	1.0	26	26	5.0 U	1.2
1/9/2019	N	**22**	0.54	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	100	5.64	146.0	2.9	0.40 U	1.5	25	25	5.0 U	1.1
1/20/2020	N	**19 J**	0.64 J	0.20 UJ	0.20 UJ	5.0 UJ	5.0 UJ	5.0 UJ	150 J	5.61	114.2	2.9 J	0.40 UJ	0.2	26 J	26 J	5.0 UJ	1.1 J
1/27/2021	N	**22**	0.57	0.20 U	0.20 U	5.0 U	5.0 U	5.0 U	100	6.02	-256.5	3.9	0.40 U	0.5	29	29	5.0 U	1.5 U
1/11/2022	N	**18**	0.45	0.20 U	0.20 U	--	--	--	67 J	6.24	59.0	0.20 U	0.40 U	0.5	23	23	R	1.8
3/6/2023	N	**15**	0.44	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	54	5.79	82.8	2.8	0.40 U	0.1	23	0.050 U	0.63 U	1.3
1/9/2024	N	**15**	0.65	0.20 U	0.20 U	0.40 U	0.57 U	0.73 U	31	6.99	78.2	2.6	0.40 U	0.5	19	0.050 U	0.63 U	1.1
1/13/2025	N	**15**	0.48	0.20 U	0.20 U	1.5 U	1.5 U	1.5 U	27	7.13	33.6	2.6	0.40 U	1.0 U	21	0.050 U	1.80 J	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
FD = field duplicate
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
R = The data are unusable. The sample results were rejected due to deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 10. Groundwater contaminant concentrations and MNA parameters at RNS-MW6-42.5.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**1300**	**210**	**79**	0.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4/2/2013	N	**1500 J**	**240**	**89**	**2 U**	--	--	--	--	--	--	--	--	--	--	--	--	--
6/18/2013	N	**590 J**	**190 J**	**85 J**	**0.5**	--	--	--	--	--	--	--	--	--	--	--	--	--
9/9/2013	N	**1100 J**	**260 J**	**130 J**	0.2 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1/5/2016	N	**1100**	**250**	**150**	**0.29**	--	--	--	--	--	--	--	--	--	--	--	--	--
7/7/2016	N	**770**	**220**	**140**	**0.25**	--	--	--	--	--	--	--	--	--	--	--	--	--
1/18/2017	N	**860**	**180**	**140**	**0.33 J**	--	--	--	--	--	--	--	--	--	--	--	--	--
7/11/2017	N	**670**	**180**	**130**	**0.33**	--	--	--	--	--	--	--	--	--	--	--	--	--
2/8/2018	N	**1300**	**340**	**170**	0.20 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1/9/2019	N	**800**	**190**	**93**	0.20 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1/20/2020	N	**320 J**	**120 J**	57 J	0.20 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1/27/2021	N	**950**	**350**	**160**	**0.38**	--	--	--	--	--	--	--	--	--	--	--	--	--
1/12/2022	N	**680**	**190**	**80**	**10 U**	--	--	--	--	--	--	--	--	--	--	--	--	--
3/6/2023	N	**170**	**66**	55	**4.0 U**	--	--	--	--	--	--	--	--	--	--	--	--	--
1/11/2024	N	**240**	**74**	46	**2.0 U**	--	--	--	--	--	--	--	--	--	--	--	--	--
1/13/2025	N	**220**	**87**	60	**2.0 U**	--	--	--	--	--	--	--	--	--	--	--	--	--
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level
[1] The reporting limit for VC in 2013, 2022, 2023, 2024, and 2025 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Table 11. Groundwater contaminant concentrations and MNA parameters at RNS-MW6-52.5.

Date	Sample Type	PCE (µg/L)	TCE (µg/L)	*cis*-1,2-DCE (µg/L)	VC (µg/L)[1]	Ethene (µg/L)	Ethane (µg/L)	Acetylene (µg/L)	Chloride (mg/L)	DO (mg/L)	ORP (mV)	Nitrate (mg/L)	Nitrite (mg/L)	Iron II (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Methane (µg/L)	TOC (mg/L)
1/15/2013	N	**1200**	**160**	**110**	0.2	5.0 U	5.0 U	5.0 U	17.0	2.75	-6.80	0.049	0.0333	0.03 U	25.4	0.15 U	36	4.63
4/2/2013	N	**950**	**150**	**89**	**0.5**	5.0 U	4.1 J	5.0 U	18.3	3.12	16.8	0.206 J	0.0917 J	0.15 U	32.8	0.083 J	36	8.75
6/18/2013	N	**580 J**	**170 J**	**81 J**	**0.5**	5.0 U	5.0 U	5.0 U	20.2	3.70 J	58.9 J	0.454	0.0097	0.030 UJ	40.9 J	0.150 U	7.6 J	10.5
6/18/2013	FD	**520 J**	**150 J**	**72 J**	**0.4**	5.0 U	5.0 U	5.0 U	20.2	--	--	0.405	0.0089	--	55.2 J	0.150 U	16 J	12.3
9/9/2013	N	**630 J**	**130 J**	**140 J**	**0.3**	5.0 U	9.2	5.0 U	21.0	3.72	55.8	0.317 J	0.022 J	0.180	33.5	0.150 U	68	11.6
1/5/2016	N	**640**	**150**	**120**	**0.52**	5.0 U	10	5.0 U	26	4.08	97.6	0.57 J	0.020 UJ	--	29	0.050 U	52	2.2
7/7/2016	N	**420**	**140**	**120**	**0.48**	5.0 U	13	5.0 U	30	0.95	-31.4	0.58	0.40 U	0.0	31	0.50 U	77	1.7
1/18/2017	N	**570**	**130**	**110**	**10 U**	5.0 U	8.7	5.0 U	25	2.77	41.9	0.61	0.40 U	0.0	27	0.25 U	36	1.9
7/11/2017	N	**400**	**110**	**99**	**0.38**	5.0 U	8.3	5.0 U	26	--	--	0.64	0.40 U	0.0	28	0.050 U	43	2.7
2/8/2018	N	**410**	**120**	**110**	**0.51**	5.0 U	10	5.0 U	26	4.04	-49.5	0.20 U	0.40 U	1.0	28	0.050 U	62	2.2
1/9/2019	N	**590**	**130**	**77**	**0.24**	5.0 U	5.1	5.0 U	28	1.74	173	0.78	0.40 U	1.0	29	0.050 U	18	1.7
1/20/2020	N	**370 J**	**130 J**	**100 J**	**0.37 J**	5.0 UJ	5.4 J	5.0 UJ	31 J	3.07	74.9	0.63 J	0.40 UJ	2.0	25 J	1.2 J	43 J	1.8 J
1/27/2021	N	**900**	**330**	**150**	**0.37**	5.0 U	5.1	5.0 U	41	1.58	-380.4	1.1	0.40 U	2.0	26 J	0.050 U	160	3.1
1/12/2022	N	**600**	**160**	34	**10 U**	--	--	--	39	0.453	115.1	0.67	0.40 U	0.0	23	0.050 U	32 J	2.0
3/6/2023	N	**220**	**74**	53	**4.0 U**	0.40 U	3.5	0.73 U	48	0.45	80.8	0.96	0.40 U	0.0	27	0.050 U	17	1.4
1/11/2024	N	**220**	**72**	52	**2.0 U**	0.40 U	0.57 U	0.73 U	45	0.66	165.2	0.77	0.40 U	0.0	26	0.050 U	1.9 J	1.3
1/13/2025	N	**190**	**92**	69	**2.0 U**	1.5 U	1.5 U	1.5 U	47	1.03	29.6	0.60	0.40 U	0.5 U	24	0.050 U	7.6	1.0 U
Cleanup Level:		**5**	**5**	**70**	**0.2**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Notes:
Highlighted, red bold text = exceedance of the cleanup level
[1] The reporting limit for VC in 2017, 2022, 2023, 2024, and 2025 exceeded the cleanup level; therefore, these have been marked as exceedances.

-- = not analyzed or not established
µg/L = micrograms per liter
DCE = dichloroethene
DO = dissolved oxygen
FD = field duplicate
J = The result is an estimated quantity.
mg/L = milligrams per liter
mV = millivolt
MW = monitoring well
N = primary sample
ORP = oxygen reduction potential
PCE = tetrachloroethene
TCE = trichloroethene
TOC = total organic carbon
U = The analyte was analyzed for but was not detected at or above the reporting limit.
UJ = The analyte was analyzed for but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
VC = vinyl chloride

Appendix A. Vicinity Map

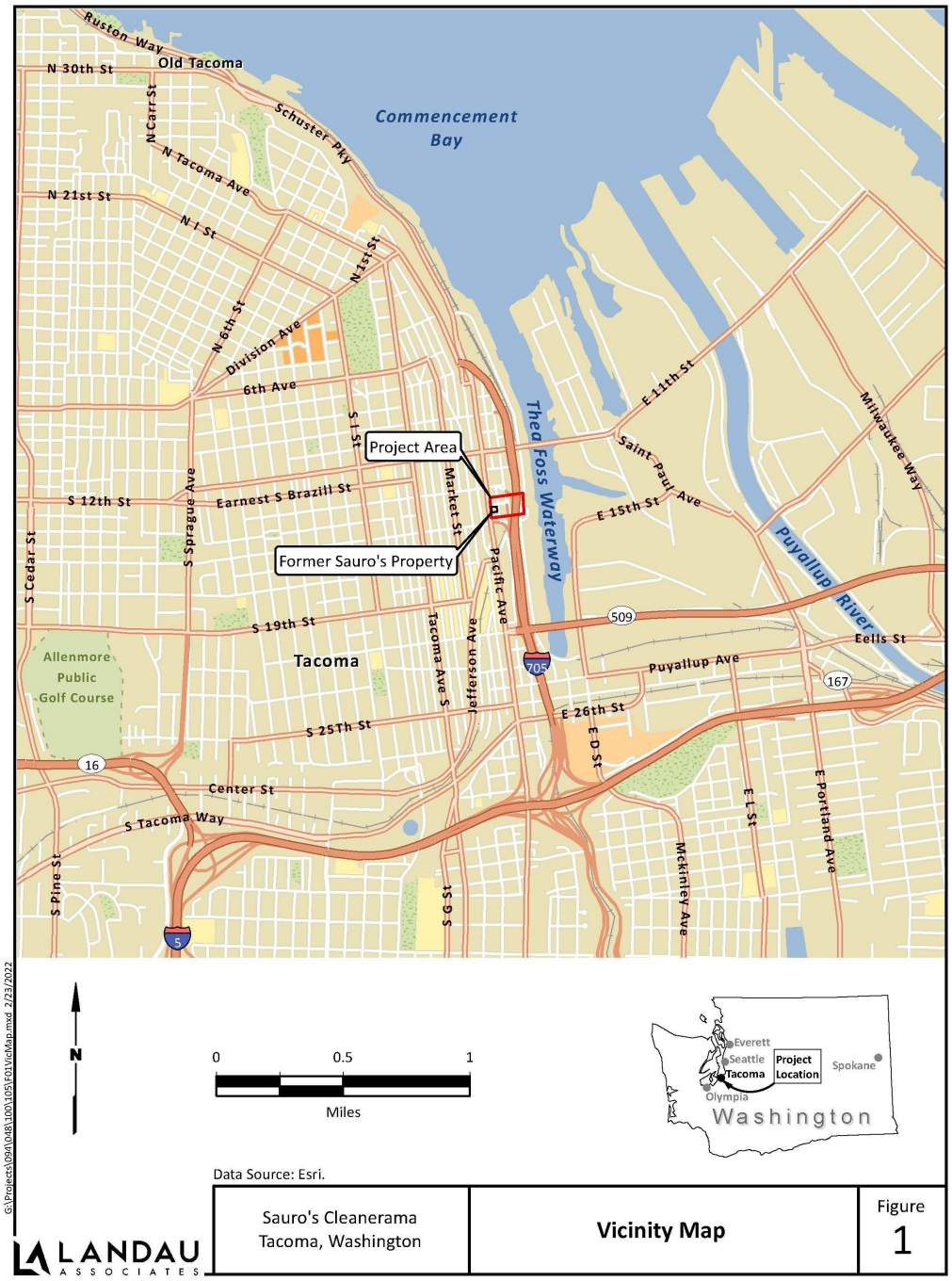


Figure 1: Site vicinity map (Landau Associates [Landau] 2025).

Appendix B. Site Plans

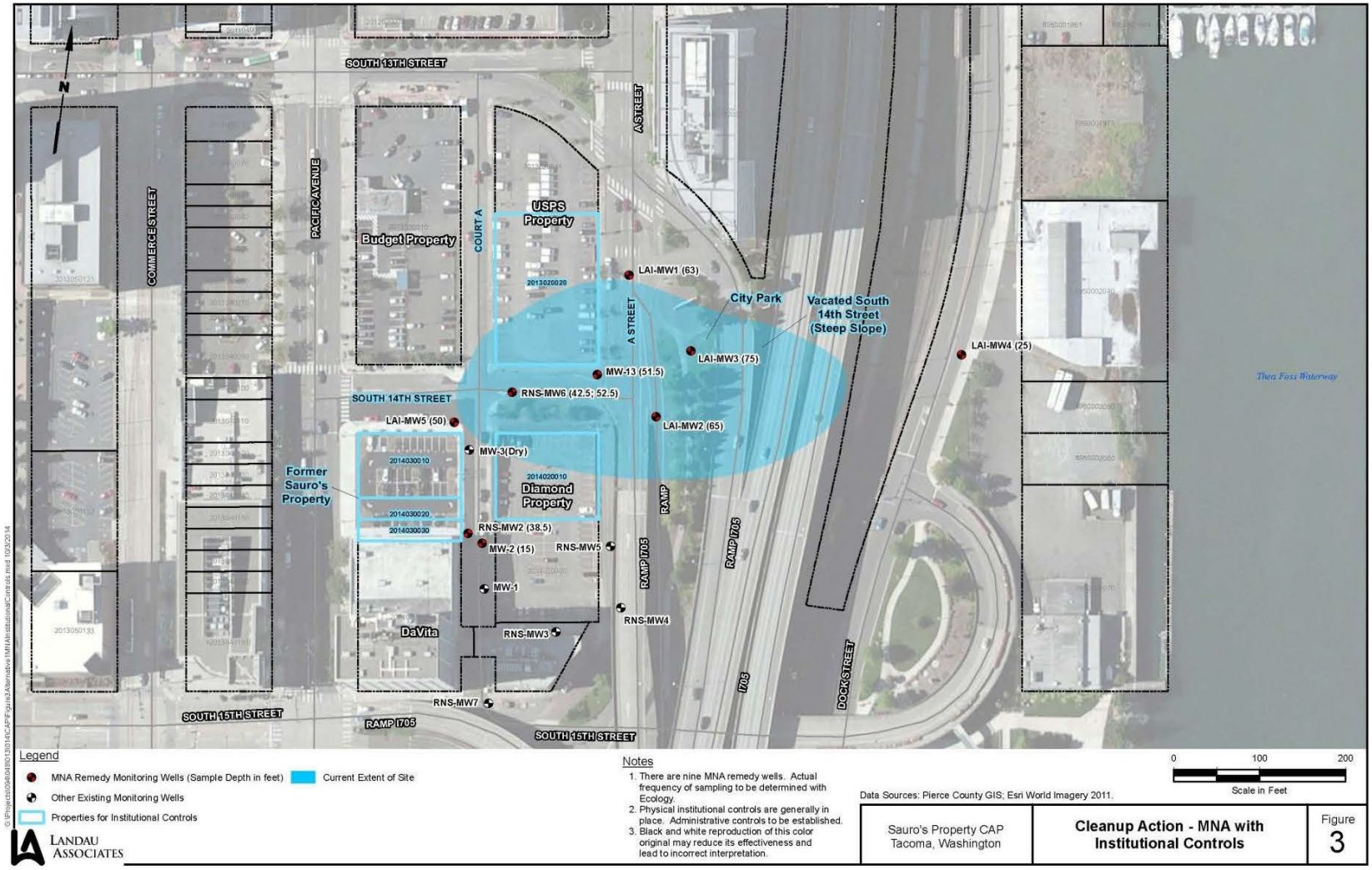


Figure 1: Site map showing the extent of groundwater contamination as of the 2015 Cleanup Action Plan (CAP) (Washington State Department of Ecology [Ecology] 2015a).

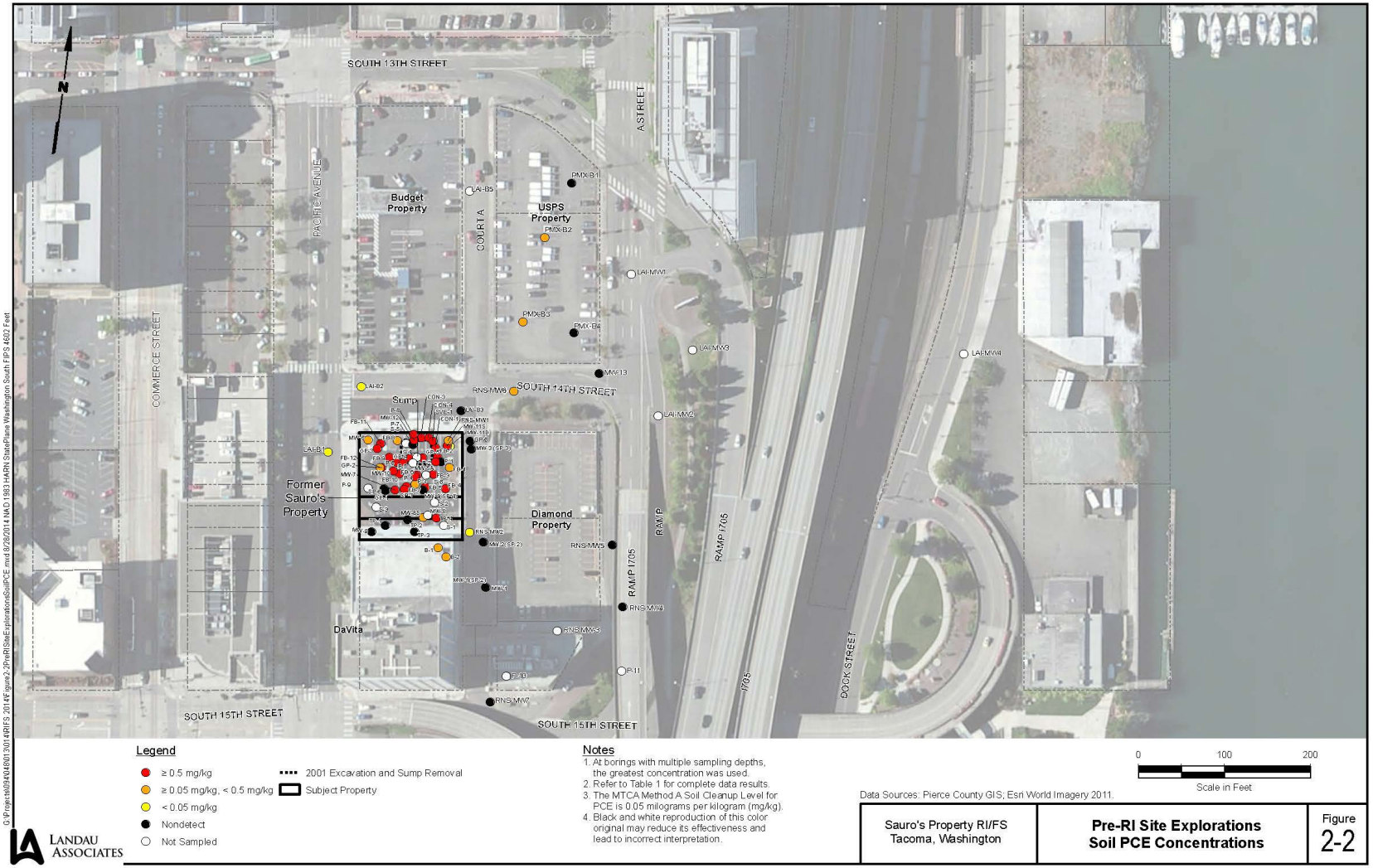


Figure 2: Pre-Remedial Investigation (RI) tetrachloroethene (PCE) concentrations in soil (Landau 2014).

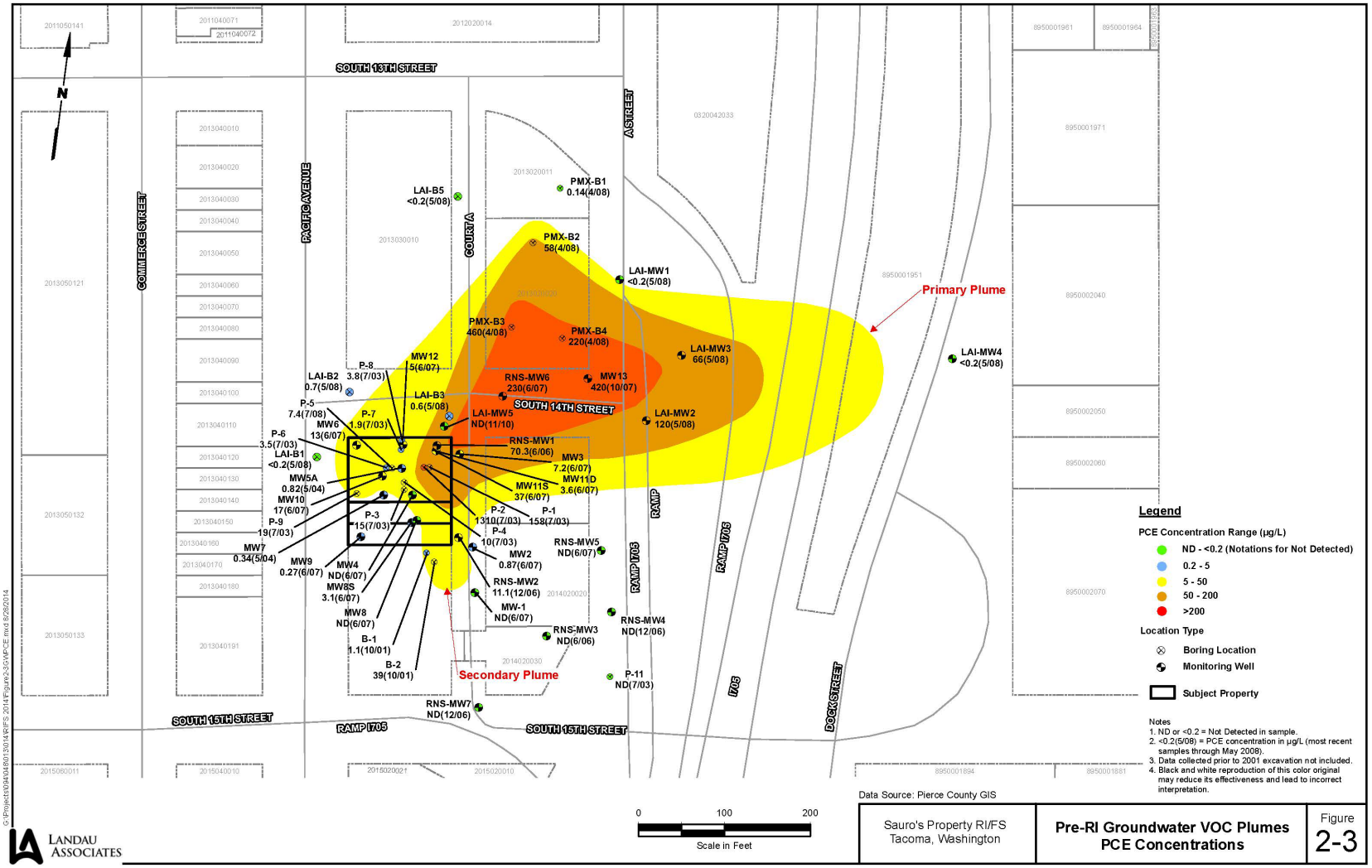


Figure 3: Pre-RI PCE concentrations in groundwater (Landau 2014).

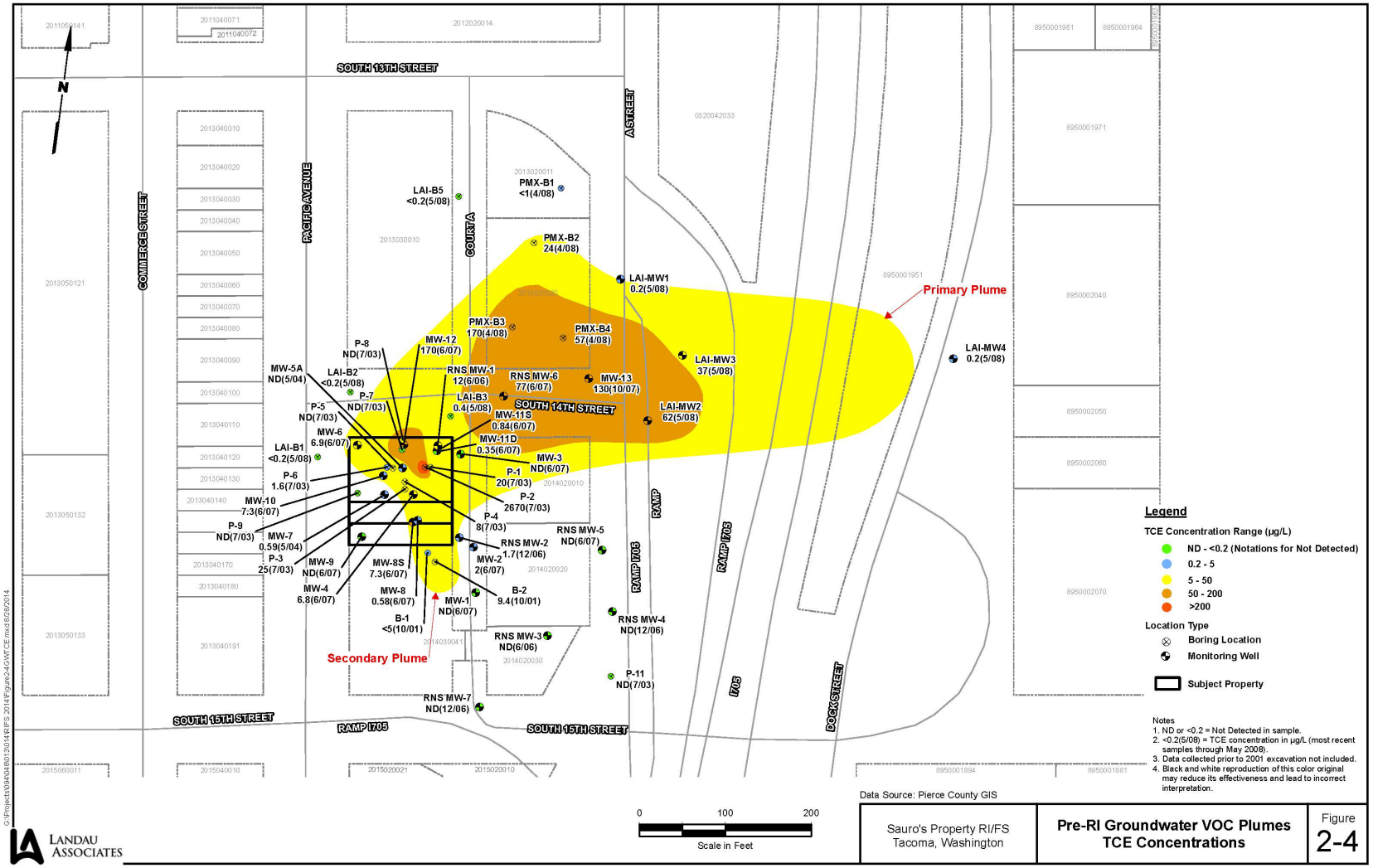


Figure 4: Pre-RI trichloroethene (TCE) concentrations in groundwater (Landau 2014).

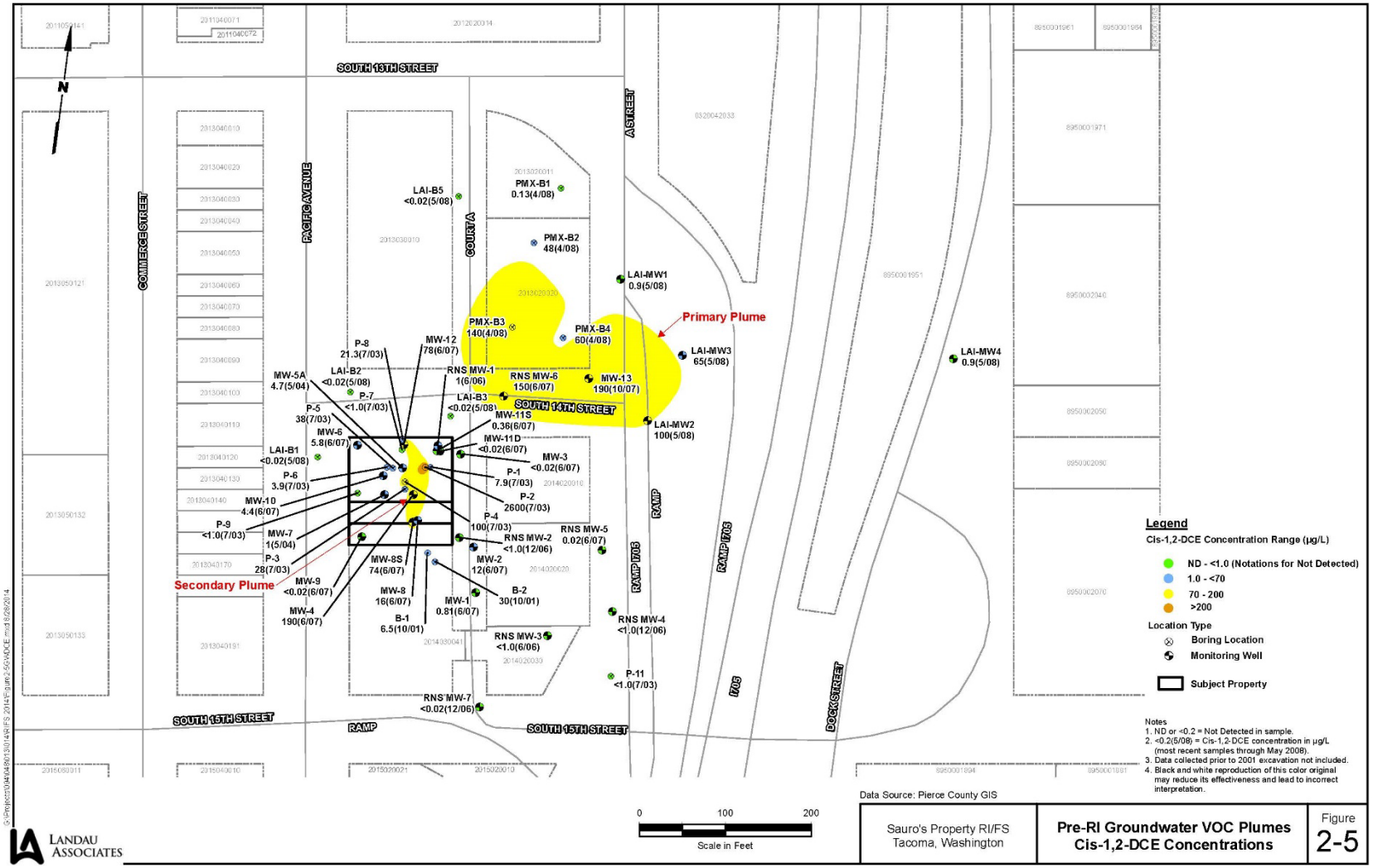


Figure 5: Pre-RI *cis*-1,2-dichloroethene (DCE) concentrations in groundwater (Landau 2014).

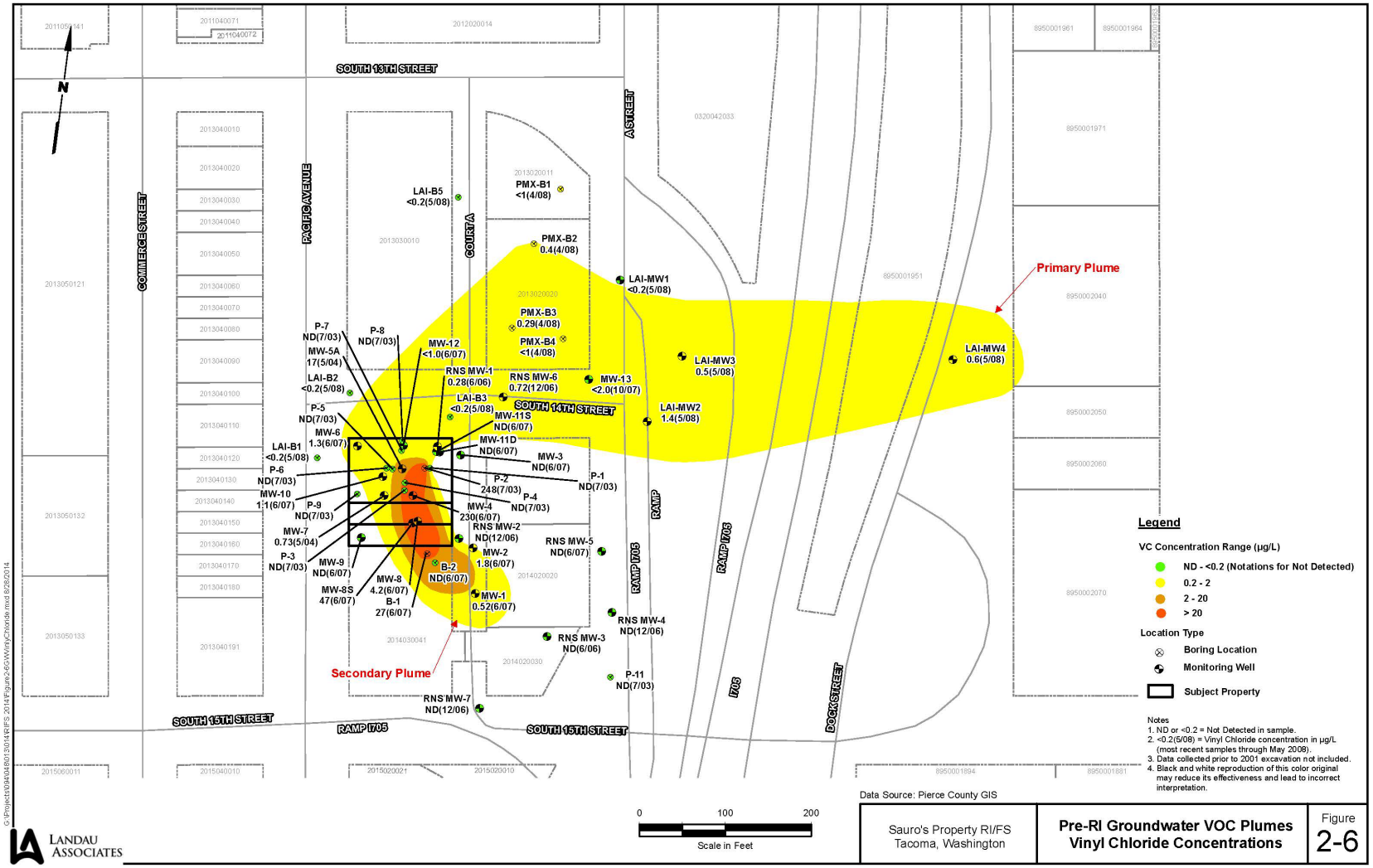


Figure 6: Pre-RI vinyl chloride (VC) concentrations in groundwater (Landau 2014).

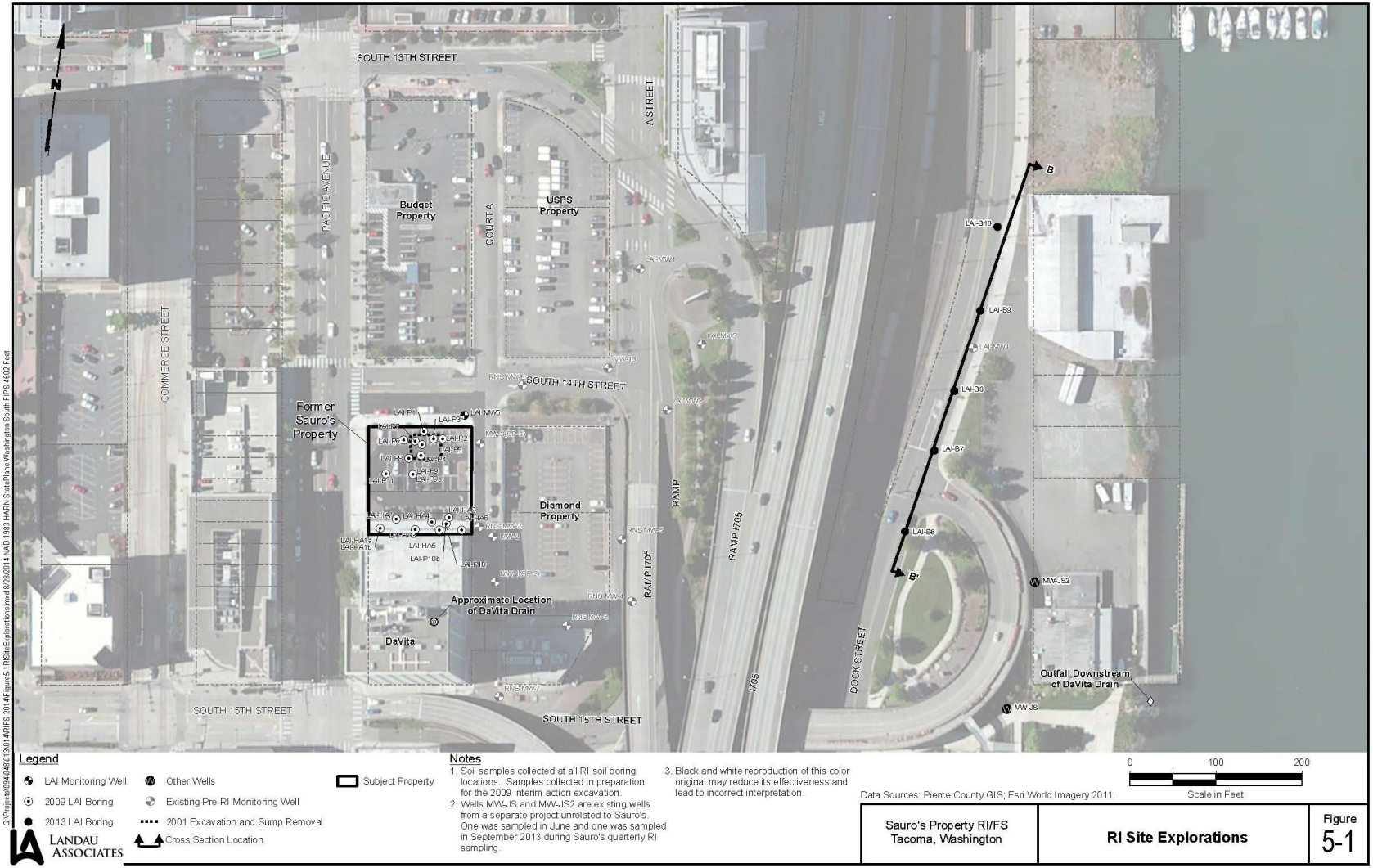


Figure 7: RI soil boring locations completed in 2009 and 2013 (Landau 2014).

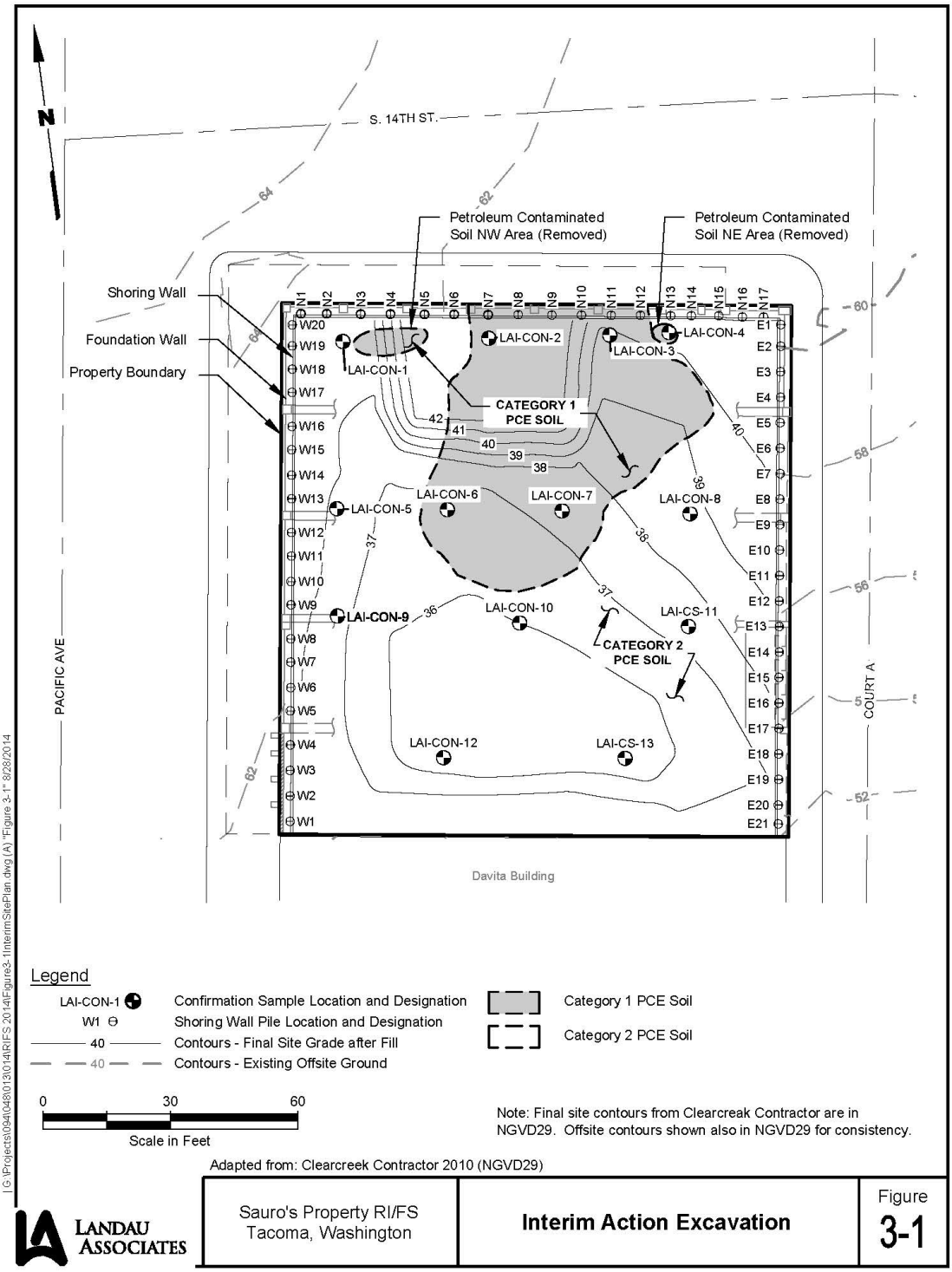


Figure 8: Extent of interim action excavation conducted between 2009 and 2010 (Landau 2014).

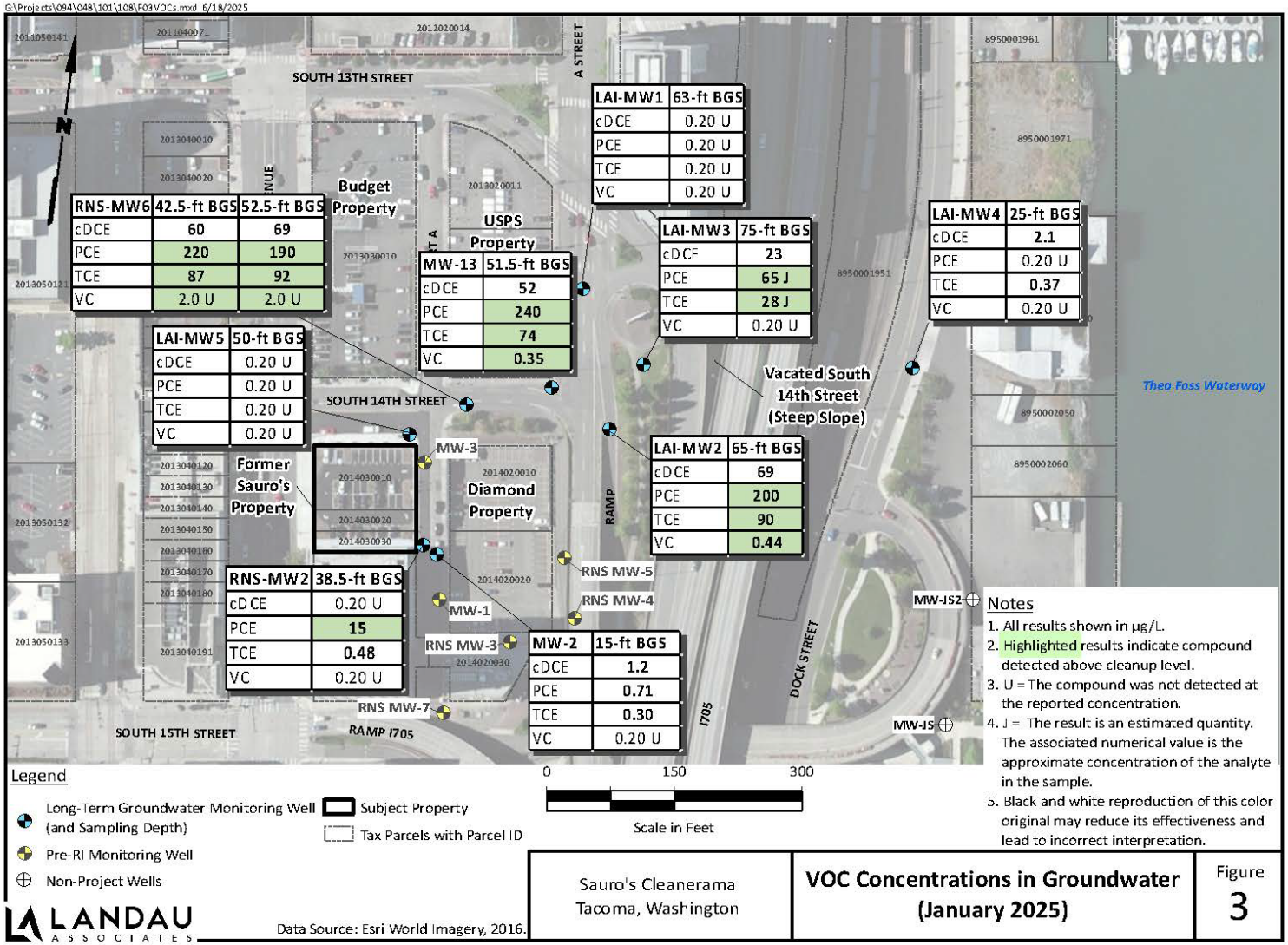


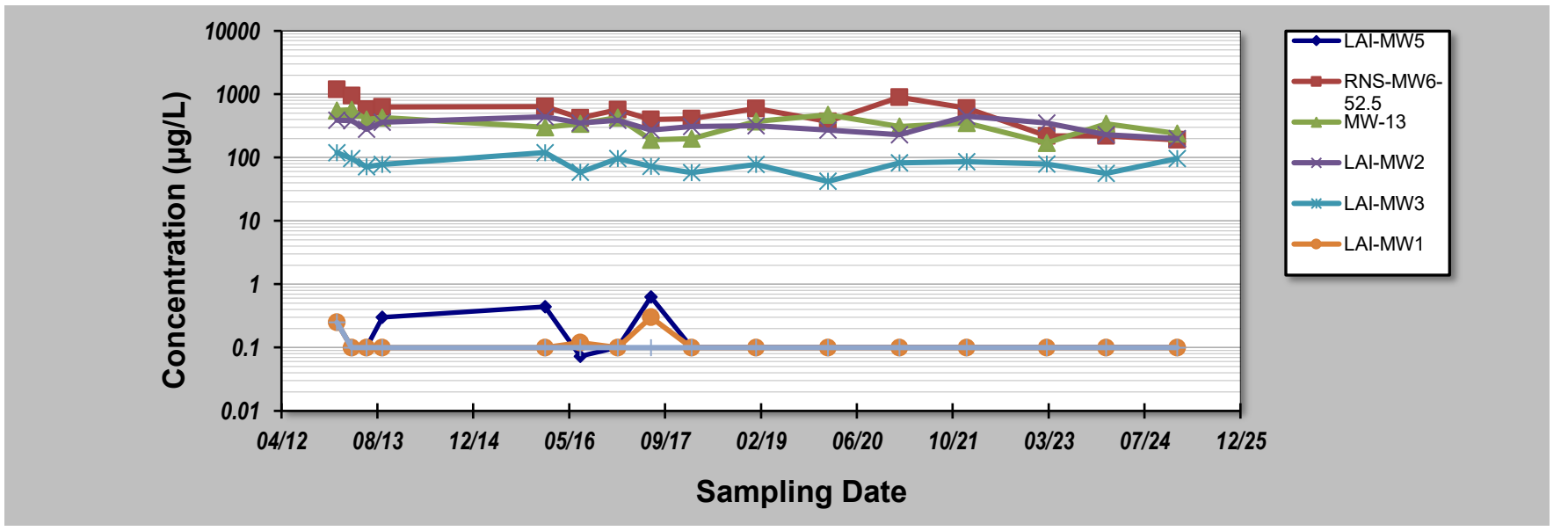
Figure 9: Chlorinated volatile organic compound (CVOC) concentrations in groundwater in January 2025 (Landau 2025).

Appendix C. Mann-Kendall Trend Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	**Job ID:**	3310
Facility Name:	Sauros Cleanerama Tacoma	**Constituent:**	PCE
Conducted By:	Danielle Gibson	**Concentration Units:**	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW6-52.5	MW-13	LAI-MW2	LAI-MW3	LAI-MW1	LAI-MW4
Sampling Event	**Sampling Date**	**PCE CONCENTRATION (µg/L)**					
1	15-Jan-13	0.25	1200	550	390	120	0.25	0.25
2	2-Apr-13	0.1	950	570	380	97	0.1	0.1
3	18-Jun-13	0.1	580	400	280	72	0.1	0.1
4	9-Sep-13	0.3	630	430	360	78	0.1	0.1
5	5-Jan-16	0.44	640	300	440	120	0.1	0.1
6	7-Jul-16	0.073	420	340	350	59	0.12	0.1
7	18-Jan-17	0.1	570	430	390	97	0.1	0.1
8	11-Jul-17	0.63	400	190	270	73	0.3	0.1
9	8-Feb-18	0.1	410	200	310	58	0.1	0.1
10	9-Jan-19	0.1	590	370	320	78	0.1	0.1
11	20-Jan-20	0.1	370	470	270	42	0.1	0.1
12	27-Jan-21	0.1	900	310	230	83	0.1	0.1
13	11-Jan-22	0.1	600	350	450	86	0.1	0.1
14	6-Mar-23	0.1	220	170	350	79	0.1	0.1
15	9-Jan-24	0.1	220	340	230	56	0.1	0.1
16	13-Jan-25	0.1	190	240	200	97	0.1	0.1
17								
18								
19								
20								
Coefficient of Variation:		0.90	0.50	0.34	0.23	0.27	0.49	0.34
Mann-Kendall Statistic (S):		-19	-67	-48	-50	-21	-20	-15
Confidence Factor:		78.8%	99.9%	98.4%	98.7%	81.3%	80.1%	73.3%
Concentration Trend:		Stable	Decreasing	Decreasing	Decreasing	Stable	Stable	Stable



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

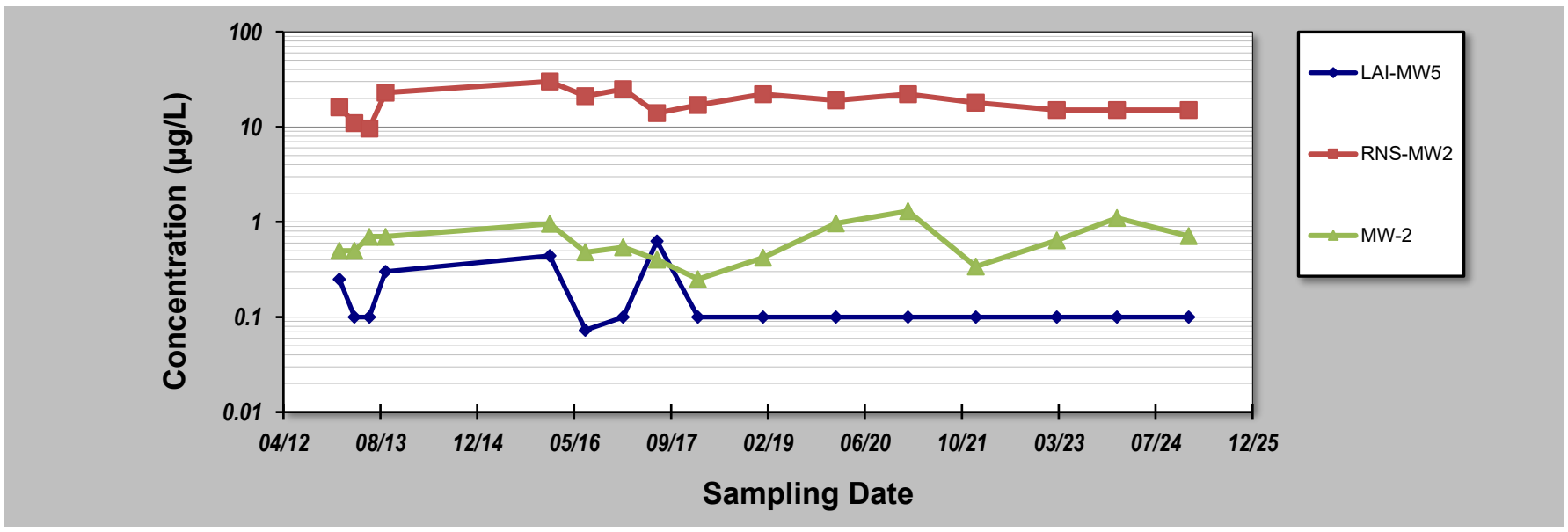
DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 18-Feb-25
Facility Name: Sauros Cleanerama Tacoma
Conducted By: Danielle Gibson

Job ID: 3310
Constituent: PCE
Concentration Units: µg/L

Sampling Point ID:	LAI-MW5	RNS-MW2	MW-2				
Sampling Event	Sampling Date	PCE CONCENTRATION (µg/L)						
1	15-Jan-13	0.25	16	0.5				
2	2-Apr-13	0.1	11	0.5				
3	18-Jun-13	0.1	9.6	0.7				
4	9-Sep-13	0.3	23	0.7				
5	5-Jan-16	0.44	30	0.96				
6	7-Jul-16	0.073	21	0.48				
7	18-Jan-17	0.1	25	0.54				
8	11-Jul-17	0.63	14	0.4				
9	8-Feb-18	0.1	17	0.25				
10	9-Jan-19	0.1	22	0.42				
11	20-Jan-20	0.1	19	0.97				
12	27-Jan-21	0.1	22	1.3				
13	11-Jan-22	0.1	18	0.34				
14	6-Mar-23	0.1	15	0.64				
15	9-Jan-24	0.1	15	1.1				
16	13-Jan-25	0.1	15	0.71				
17								
18								
19								
20								
Coefficient of Variation:		0.90	0.29	0.45				
Mann-Kendall Statistic (S):		-19	-10	16				
Confidence Factor:		78.8%	65.5%	74.7%				
Concentration Trend:		Stable	Stable	No Trend				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

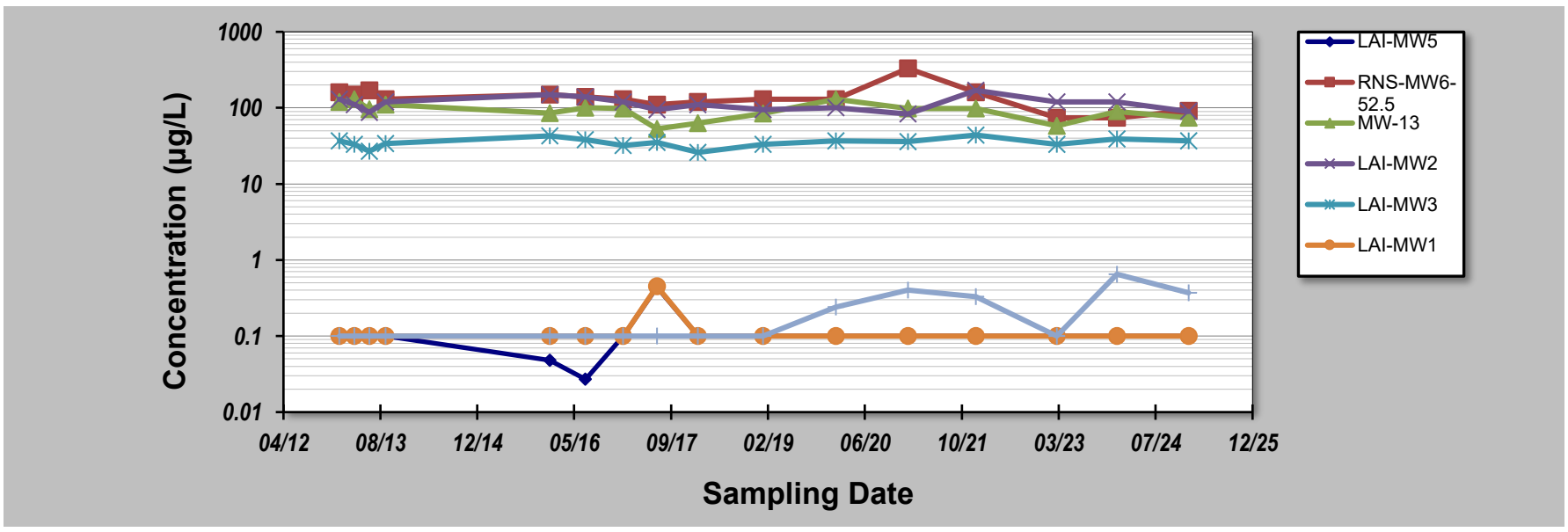
DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	TCE
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW6-52.5	MW-13	LAI-MW2	LAI-MW3	LAI-MW1	LAI-MW4
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	15-Jan-13	0.1	160	120	130	37	0.1	0.1
2	2-Apr-13	0.1	150	130	110	33	0.1	0.1
3	18-Jun-13	0.1	170	96	87	27	0.1	0.1
4	9-Sep-13	0.1	130	110	120	34	0.1	0.1
5	5-Jan-16	0.048	150	85	150	43	0.1	0.1
6	7-Jul-16	0.027	140	100	140	38	0.1	0.1
7	18-Jan-17	0.1	130	98	120	32	0.1	0.1
8	11-Jul-17	0.44	110	53	95	35	0.45	0.1
9	8-Feb-18	0.1	120	63	110	26	0.1	0.1
10	9-Jan-19	0.1	130	84	95	33	0.1	0.1
11	20-Jan-20	0.1	130	130	100	37	0.1	0.24
12	27-Jan-21	0.1	330	98	83	36	0.1	0.4
13	11-Jan-22	0.1	160	98	170	44	0.1	0.33
14	6-Mar-23	0.1	74	58	120	33	0.1	0.1
15	9-Jan-24	0.1	74	90	120	39	0.1	0.65
16	13-Jan-25	0.1	92	74	90	37	0.1	0.37
17								
18								
19								
20								
Coefficient of Variation:		0.79	0.41	0.25	0.21	0.14	0.72	0.84
Mann-Kendall Statistic (S):		8	-49	-42	-18	22	-1	53
Confidence Factor:		62.2%	98.6%	96.8%	77.5%	82.5%	50.0%	99.1%
Concentration Trend:		No Trend	Decreasing	Decreasing	Stable	No Trend	Stable	Increasing



Notes:

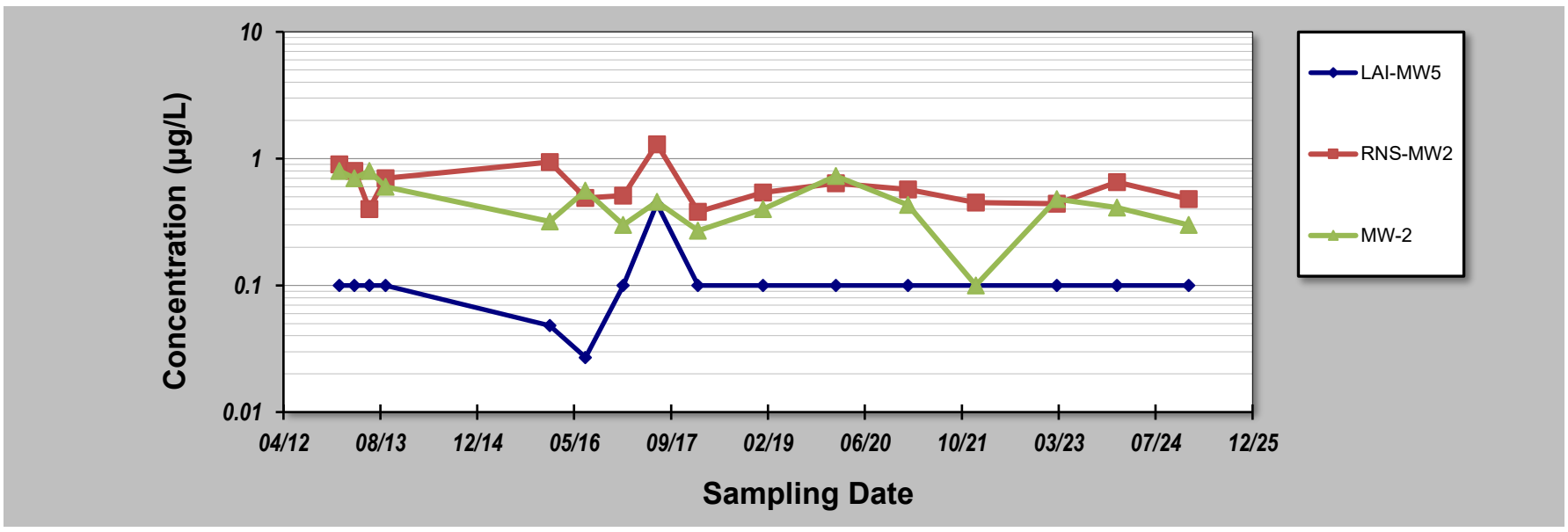
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	TCE
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW2	MW-2				
Sampling Event	Sampling Date	TCE CONCENTRATION (µg/L)						
1	15-Jan-13	0.1	0.9	0.8				
2	2-Apr-13	0.1	0.8	0.7				
3	18-Jun-13	0.1	0.4	0.8				
4	9-Sep-13	0.1	0.7	0.6				
5	5-Jan-16	0.048	0.94	0.32				
6	7-Jul-16	0.027	0.49	0.56				
7	18-Jan-17	0.1	0.51	0.3				
8	11-Jul-17	0.44	1.3	0.455				
9	8-Feb-18	0.1	0.38	0.27				
10	9-Jan-19	0.1	0.54	0.4				
11	20-Jan-20	0.1	0.64	0.73				
12	27-Jan-21	0.1	0.57	0.43				
13	11-Jan-22	0.1	0.45	0.1				
14	6-Mar-23	0.1	0.44	0.48				
15	9-Jan-24	0.1	0.65	0.41				
16	13-Jan-25	0.1	0.48	0.3				
17								
18								
19								
20								
Coefficient of Variation:		0.79	0.39	0.43				
Mann-Kendall Statistic (S):		8	-28	-52				
Confidence Factor:		62.2%	88.6%	99.0%				
Concentration Trend:		No Trend	Stable	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

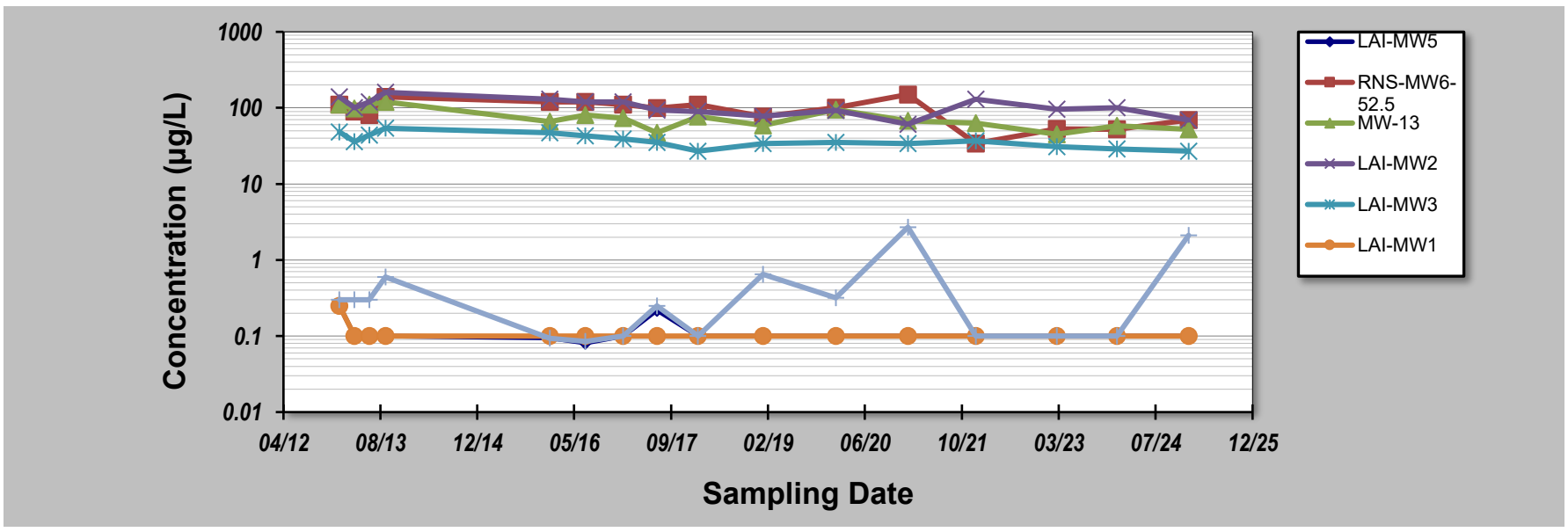
DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI Environmental Inc., www.gsi-net.com

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	cDCE
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW6-52.5	MW-13	LAI-MW2	LAI-MW3	LAI-MW1	LAI-MW4
Sampling Event	Sampling Date	CDCE CONCENTRATION (µg/L)						
1	15-Jan-13	0.25	110	110	140	48	0.25	0.3
2	2-Apr-13	0.1	89	98	100	36	0.1	0.3
3	18-Jun-13	0.1	81	110	120	44	0.1	0.3
4	9-Sep-13	0.1	140	120	160	54	0.1	0.6
5	5-Jan-16	0.094	120	66	130	47	0.1	0.093
6	7-Jul-16	0.081	120	81	120	43	0.1	0.085
7	18-Jan-17	0.1	110	73	120	39	0.1	0.1
8	11-Jul-17	0.22	99	47	94	35	0.1	0.25
9	8-Feb-18	0.1	110	77	90	27	0.1	0.1
10	9-Jan-19	0.1	77	59	78	34	0.1	0.65
11	20-Jan-20	0.1	100	95	93	35	0.1	0.32
12	27-Jan-21	0.1	150	68	61	34	0.1	2.7
13	11-Jan-22	0.1	34	63	130	37	0.1	0.1
14	6-Mar-23	0.1	53	45	96	31	0.1	0.1
15	9-Jan-24	0.1	52	58	100	29	0.1	0.1
16	13-Jan-25	0.1	69	52	69	27	0.1	2.1
17								
18								
19								
20								
Coefficient of Variation:		0.41	0.34	0.31	0.25	0.21	0.34	1.49
Mann-Kendall Statistic (S):		-6	-44	-69	-53	-77	-15	9
Confidence Factor:		58.8%	97.4%	99.9%	99.1%	>99.9%	73.3%	63.9%
Concentration Trend:		Stable	Decreasing	Decreasing	Decreasing	Decreasing	Stable	No Trend



Notes:

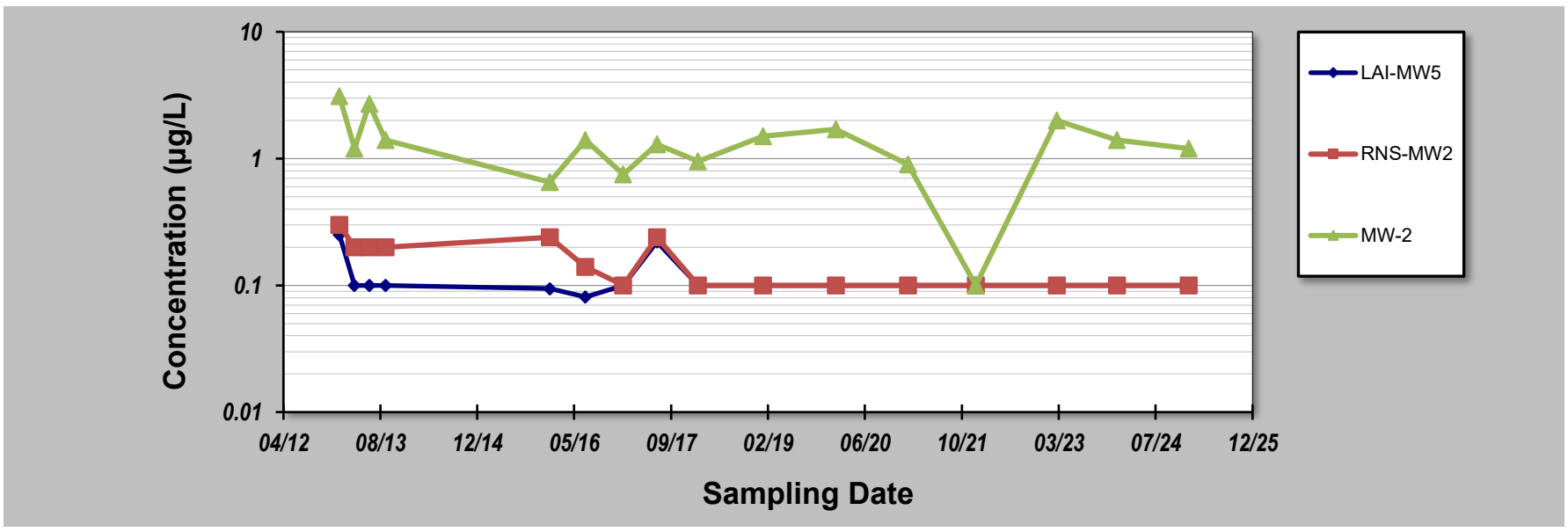
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	cDCE
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW2	MW-2				
Sampling Event	Sampling Date	CDCE CONCENTRATION (µg/L)						
1	15-Jan-13	0.25	0.3	3.1				
2	2-Apr-13	0.1	0.2	1.2				
3	18-Jun-13	0.1	0.2	2.7				
4	9-Sep-13	0.1	0.2	1.4				
5	5-Jan-16	0.094	0.24	0.65				
6	7-Jul-16	0.081	0.14	1.4				
7	18-Jan-17	0.1	0.1	0.75				
8	11-Jul-17	0.22	0.24	1.3				
9	8-Feb-18	0.1	0.1	0.95				
10	9-Jan-19	0.1	0.1	1.5				
11	20-Jan-20	0.1	0.1	1.7				
12	27-Jan-21	0.1	0.1	0.9				
13	11-Jan-22	0.1	0.1	0.1				
14	6-Mar-23	0.1	0.1	2				
15	9-Jan-24	0.1	0.1	1.4				
16	13-Jan-25	0.1	0.1	1.2				
17								
18								
19								
20								
Coefficient of Variation:		0.41	0.45	0.53				
Mann-Kendall Statistic (S):		-6	-64	-16				
Confidence Factor:		58.8%	99.8%	74.7%				
Concentration Trend:		Stable	Decreasing	Stable				



Notes:

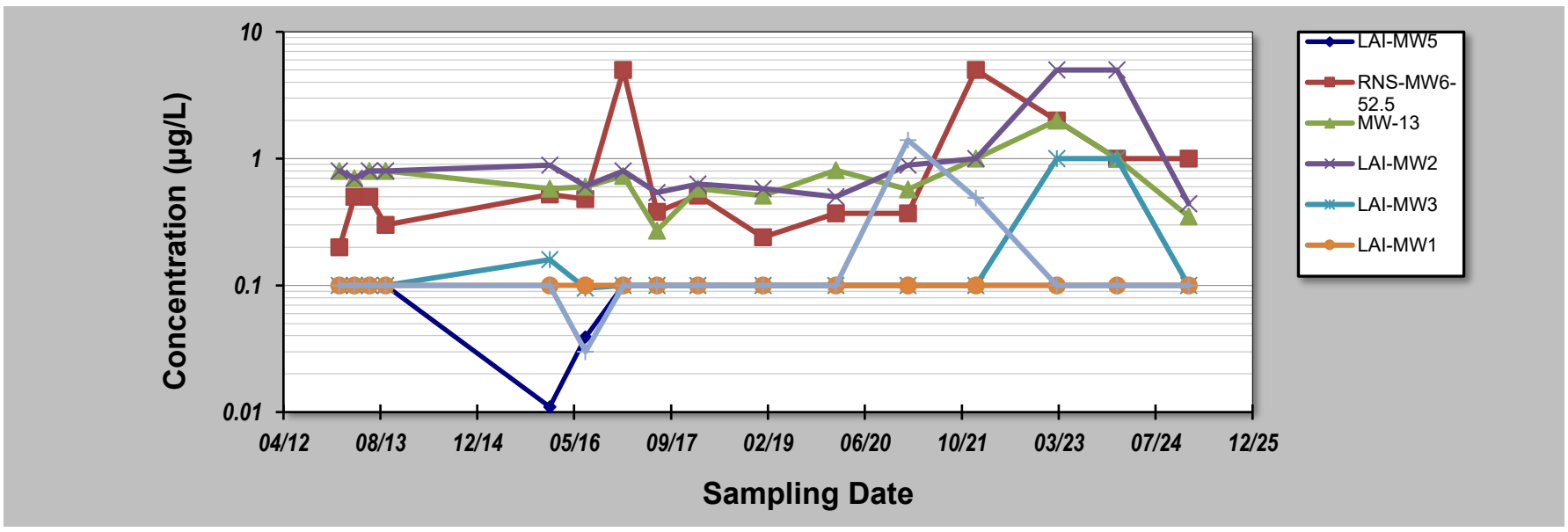
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	VC
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW6-52.5	MW-13	LAI-MW2	LAI-MW3	LAI-MW1	LAI-MW4
Sampling Event	Sampling Date	VC CONCENTRATION (µg/L)						
1	15-Jan-13	0.1	0.2	0.8	0.8	0.1	0.1	0.1
2	2-Apr-13	0.1	0.5	0.7	0.7	0.1	0.1	0.1
3	18-Jun-13	0.1	0.5	0.8	0.8	0.1	0.1	0.1
4	9-Sep-13	0.1	0.3	0.8	0.8	0.1	0.1	0.1
5	5-Jan-16	0.011	0.52	0.58	0.89	0.16	0.1	0.1
6	7-Jul-16	0.039	0.48	0.6	0.61	0.095	0.1	0.03
7	18-Jan-17	0.1	5	0.73	0.8	0.1	0.1	0.1
8	11-Jul-17	0.1	0.38	0.27	0.54	0.1	0.1	0.1
9	8-Feb-18	0.1	0.51	0.58	0.63	0.1	0.1	0.1
10	9-Jan-19	0.1	0.24	0.51	0.58	0.1	0.1	0.1
11	20-Jan-20	0.1	0.37	0.81	0.5	0.1	0.1	0.1
12	27-Jan-21	0.1	0.37	0.57	0.89	0.1	0.1	1.4
13	11-Jan-22	0.1	5	1	1	0.1	0.1	0.49
14	6-Mar-23	0.1	2	2	5	1	0.1	0.1
15	9-Jan-24	0.1	1	1	5	1	0.1	0.1
16	13-Jan-25	0.1	1	0.35	0.44	0.1	0.1	0.1
17								
18								
19								
20								
Coefficient of Variation:		0.29	1.36	0.51	1.18	1.42	0.00	1.66
Mann-Kendall Statistic (S):		13	32	1	6	23	0	18
Confidence Factor:		70.3%	91.7%	50.0%	58.8%	83.6%	48.2%	77.5%
Concentration Trend:		No Trend	Prob. Increasing	No Trend	No Trend	No Trend	Stable	No Trend



Notes:

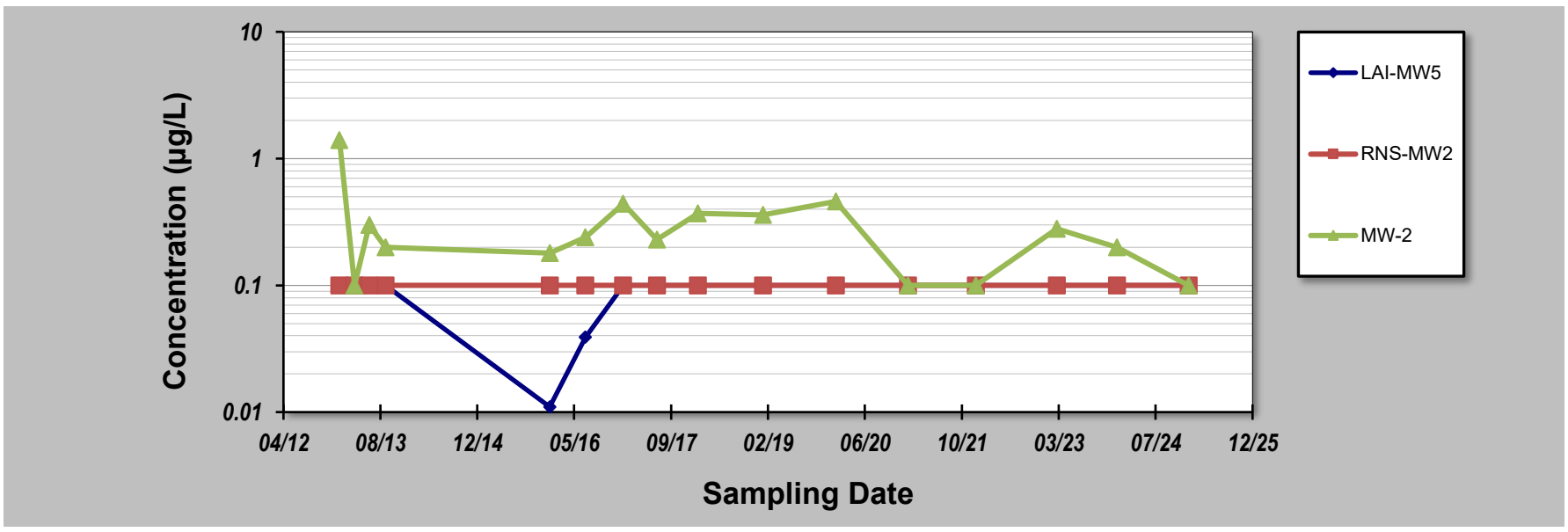
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Feb-25	Job ID:	3310
Facility Name:	Sauros Cleanerama Tacoma	Constituent:	VC
Conducted By:	Danielle Gibson	Concentration Units:	µg/L

Sampling Point ID:	LAI-MW5	RNS-MW2	MW-2				
Sampling Event	Sampling Date	VC CONCENTRATION (µg/L)						
1	15-Jan-13	0.1	0.1	1.4				
2	2-Apr-13	0.1	0.1	0.1				
3	18-Jun-13	0.1	0.1	0.3				
4	9-Sep-13	0.1	0.1	0.2				
5	5-Jan-16	0.011	0.1	0.18				
6	7-Jul-16	0.039	0.1	0.24				
7	18-Jan-17	0.1	0.1	0.44				
8	11-Jul-17	0.1	0.1	0.23				
9	8-Feb-18	0.1	0.1	0.37				
10	9-Jan-19	0.1	0.1	0.36				
11	20-Jan-20	0.1	0.1	0.46				
12	27-Jan-21	0.1	0.1	0.1				
13	11-Jan-22	0.1	0.1	0.1				
14	6-Mar-23	0.1	0.1	0.28				
15	9-Jan-24	0.1	0.1	0.2				
16	13-Jan-25	0.1	0.1	0.1				
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.00	0.99				
Mann-Kendall Statistic (S):		13	0	-21				
Confidence Factor:		70.3%	48.2%	81.3%				
Concentration Trend:		No Trend	Stable	Stable				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

DISCLAIMER: *The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

Appendix D. Photo Log

Photo: 1	
Direction: Southwest	
Description: View of the former Sauro's property from the northeast corner of the property.	

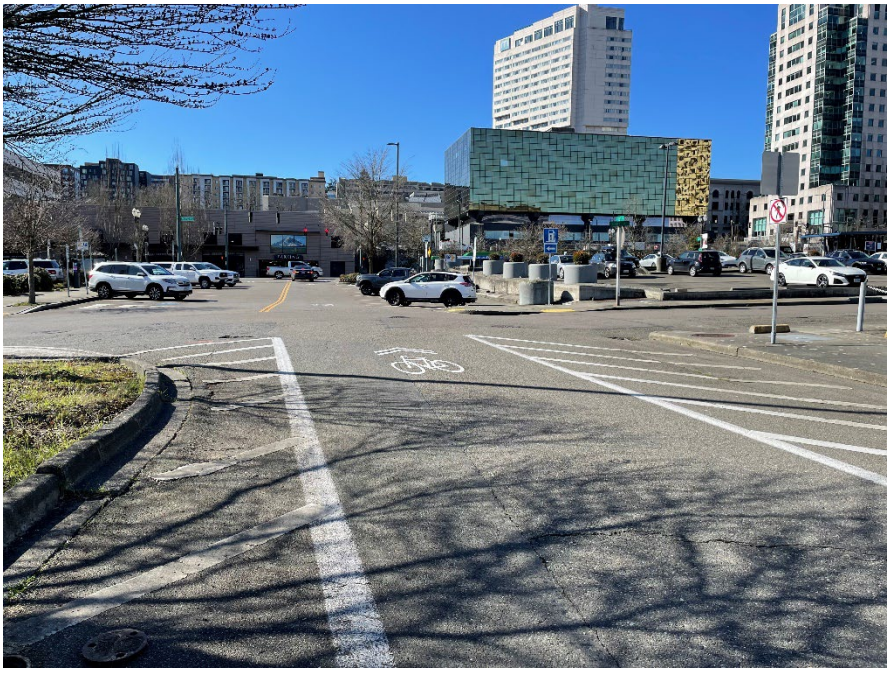
Photo: 2	
Direction: West	
Description: View along S 14th Street near the intersection with Court A.	

Photo: 3	
Direction: East	
Description: View of the former Budget property. A small building used for storage is visible.	

Photo: 4	
Direction: Southwest	
Description: View of the building located on the former Budget property. The building is used for storage.	

Photo: 5	
Direction: South	
Description: View along the western boundary of the former Budget property. A garage door providing access to the underground parking area is visible.	

Photo: 6	
Direction: West	
Description: View of the former USPS property across A Street.	

Photo: 7	
Direction: Northwest	
Description: View of the intersection of Court A and S 14th Street. The former Budget and USPS properties are visible.	

Photo: 8	
Direction: West	
Description: View of Dock Street, railroad tracks, and I-705 west of monitoring well LAI-MW4.	

Photo: 9	
Direction: East	
Description: View of monitoring well LAI-MW1 located in the center lane of A Street.	

Photo: 10	
Direction: West	
Description: View of monitoring well LAI-MW2 along the I-705 ramp.	

Photo: 11	
Direction: Not applicable (NA)	
Description: View of monitoring well LAI-MW3 within City Park.	



Photo: 12	
Direction: West	
Description: View of monitoring well LAI-MW4 located within Dock Street.	



Photo: 13	
Direction: NA	
Description: View of monitoring well LAI-MW5 located directly north of the former Sauro's property near the intersection of S 14th Street and Court A.	

Photo: 14	
Direction: NA	
Description: View of monitoring well MW-2 along Court A.	

Photo: 15	
Direction: NA	
Description: View of monitoring well MW-13 located near the intersection of S 14th Street and A Street.	

Photo: 16	
Direction: NA	
Description: View of monitoring well RNS-MW2 located along Court A across the street from monitoring well MW-2.	

Photo: 17	
Direction: NA	
Description: View of monitoring well RNS-MW6 located along S 14th Street.	