2016 Feasibility Study Report
Webster Nursery Site, Site ID 3380
Tumwater, Washington

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Prepared for

Washington State Department of Natural Resources

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LIST OF ABBREVIATIONS AND ACRONYMS

AO ..... Agreed Order
ARAR ..... Applicable or Relevant and Appropriate Requirement
bgs ..... below ground surface
CAO ..... cleanup action objectives
CAP ..... Cleanup Action Plan
CSM ..... Conceptual Site Model
CLARC ..... Cleanup Levels and Risk Calculation
CUL ..... cleanup level
cy ..... cubic yard
DNR ..... Washington State Department of Natural Resources
Ecology ..... Washington State Department of Ecology
EPA ..... U.S. Environmental Protection Agency
FS ..... Feasibility Study
ft ..... foot/feet
HE ..... Heptachlor epoxide
LAI ..... Landau Associates, Inc.
µg/L ..... micrograms per liter
µg/kg ..... micrograms per kilogram
MNA ..... Monitored Natural Attenuation
MTCA ..... Model Toxics Control Act
RCRA ..... Resource Conservation and Recovery Act of 1976
RI ..... Remedial Investigation
UST ..... underground storage tank
WAC ..... Washington Administrative Code

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1.0 INTRODUCTION

This report summarizes current site conditions and evaluates cleanup action alternatives to expedite attainment of site cleanup action objectives (CAOs) at the Washington State Department of Natural Resources' (DNR) Webster Nursery site (Site; Site ID 3380). The Site is an operating nursery that includes a former pesticide storage warehouse located at 9805 Blomberg Street Southwest in Tumwater, Washington. Soil and groundwater at the Site are affected by a historical release of organochlorine pesticides from an underground storage tank (UST). Heptachlor epoxide (HE) is the primary constituent of concern detected above applicable cleanup levels (CULs) in groundwater at the Site. The vicinity and Site location is shown on Figure 1, and a detailed Site plan is shown on Figure 2.

Contamination of soil and groundwater was identified at the Site in 1996. On June 30, 1999, DNR completed a Remedial Investigation/Feasibility Study (RI/FS) under an initial Agreed Order (AO; No. DE 98TC-S175, effective October 1998) with the Washington State Department of Ecology (Ecology). The 1999 RI/FS documented site investigations and evaluated cleanup options for the Site. In October 2001, Ecology presented a cleanup action plan (CAP) based on conclusions of the 1999 RI/FS (Ecology 2001). Subsequently, DNR undertook a cleanup action at the Site under AO No. DE 00 TCPSR-295, signed into effect January 8, 2001 (Ecology 2001). The 2001 AO included the CAP as Exhibit A.

Per the 2001 CAP, a component of the selected cleanup action is monitored natural attenuation (MNA), which requires monitoring of pesticide concentrations in groundwater. According to the CAP, the long-term timeframe for the Site remedy is 5 to 10 years. However, groundwater concentrations of HE above the Model Toxics Control Act (MTCA) Method B groundwater CUL have been observed for more than 10 years. The persistence of HE concentrations in groundwater has caused Ecology to question the presence of residual pesticide contamination in soil (Ecology 2014). Recent site investigations characterized the extent of residual soil contamination and determined that HE concentrations are present in soil on site to the south and east of the release area, at depths near the water table (LAI 2014a).

This report follows substantive requirements of an FS under MTCA, as codified in state regulation (Revised Code of Washington 70.105D, Washington Administrative Code [WAC] 173-340).

1.1 Background

In 1978, a concrete UST was installed south of the former pesticide storage warehouse. The UST was historically used to contain wash water and spills from pesticide mixing operations at the nursery. The original concrete UST was replaced with a metal UST in 1982. During removal of the metal UST in July 1996, soil and groundwater pesticide contamination was confirmed, and a remedial excavation was planned and completed in 1996. Groundwater seepage in the bottom of the excavation limited the horizontal and vertical extent of the excavation, so a smaller volume of soil was removed than planned. According to the Site CAP, approximately 70 cubic yards (cy) of contaminated soil was removed for disposal.

The excavation depth was approximately 7 feet (ft) below ground surface (bgs). Field screening during excavation indicated soil contamination was left in place. The location of the excavation area is shown on Figure 2.

In August 1996, four shallow groundwater monitoring wells (SW-9, SW-10, SW-11, and SW-12) were installed around the excavation area to characterize groundwater as part of the long-term groundwater monitoring plan. From January 2010 until February 2014, groundwater sampling and water level monitoring were conducted by DNR staff. In February 2014, Landau Associates, Inc. (LAI) performed sampling and water level monitoring under contract to DNR staff. Monitoring activities were not completed in 2015 due to budget constraints. Recent and historical groundwater quality analytical results were summarized in semiannual reports (LAI 2014b,c).

In April 1999, six shallow (i.e., 12.5 ft deep) soil borings (SB05 through SB10) were drilled around the excavation area to characterize residual pesticide contamination in soil (Tetra Tech 1999). Additional soil borings were completed by LAI in 2014 (LAI-B11 and LAI-B12; LAI 2014a) and 2015 (LAI-B13 through LAI-B19; Section 1.2.1 of present document). Soil boring locations are shown on Figure 2. A summary of the 1999 soil analytical results is provided in Appendix A.

HE (daughter product of heptachlor[1]) is the primary constituent of concern at the Site. Groundwater HE exceeds the MTCA Method B groundwater CUL (0.0048 micrograms per liter [µg/L]) at two monitoring wells, SW-10 and SW-11, located approximately 5 ft from the excavation area margin to the south and east, respectively (LAI 2014b,c). Soil investigations in 1999 and 2014 identified HE in soil beneath and southeast of the excavation area, with the highest concentrations occurring between about 4 and 10 ft bgs (Tetra Tech 1999; LAI 2014a, 2015a). This depth interval corresponds with the seasonal range in groundwater elevations (LAI 2014a,c). In addition, soil HE detections are above the current[2] MTCA Method B soil CUL for protection of groundwater in the saturated zones (4.02 micrograms per kilogram [µg/kg]). The presence of HE in soil appears to correspond with groundwater contamination (LAI 2014a, 2015a).

Alpha- and gamma-chlordane have also been detected at the Site. Most recent groundwater sampling results indicate that total chlordane (the sum of alpha- and gamma-chlordane) come close to, but do not exceed, the CUL (0.25 µg/L)[3]. Although concentrations of total chlordane were detected in soil during the 1999 subsurface investigation (pre-excavation), concentrations detected in 2014 were well below the saturated zone CUL (103 µg/kg); therefore, alpha- and gamma-chlordane are not considered constituents of concern.

[1] Soil investigations at the Site have only detected heptachlor in soil below the center of the excavation area in boring SB10, between 6.5 and 10.5 ft bgs. Concentrations were below the MTCA Method B soil CUL (Tetra Tech 1999).
[2] Current as of March 2016.
[3] The most recent groundwater sampling results are from 2014; groundwater sampling was not performed in 2015 due to delays in contracting.

1.2 2015 Subsurface Investigation

A subsurface soil investigation was conducted in April 2015 by LAI, under contract to DNR (LAI 2015a). The investigation was conducted to further delineate subsurface contamination to plan for potential additional soil excavation. Shallow direct-push borings were advanced in the vicinity of the excavation area and monitoring wells SW-10 and SW-11, and soil samples were analyzed to assess the nature and extent of residual soil contamination. Soil boring locations and analytical results are presented on Figure 3.

1.2.1 Procedures

Direct-push drilling was conducted on April 14, 2015, by Holocene Drilling, Inc., under contract to LAI. Weather conditions were sunny and dry. A direct-push drilling rig was used to advance a 2-inch inside diameter core barrel with a removable polyethylene liner. A continuous soil core was collected inside the liner. Once the desired depth was reached, the liner and soil core were removed from the core barrel, soil lithology was documented, and soil samples were collected for laboratory analysis.

Seven borings (LAI-B13 through LAI-B19) were advanced to 12 ft bgs, and soil samples were collected from each boring at 6, 8, and 10 ft bgs. Recovery was poor from the 8 to 12 ft bgs interval at the initial boring LAI-B17, so a second 12-ft-deep boring was drilled 8 inches from the first, and a sand catcher shoe was used to improve recovery. Boring locations were measured and mapped in reference to wells SW-10 and SW-11. Upon completion of sampling, borings were backfilled in accordance with state regulations (WAC 173-160) and patched to be consistent with the surrounding ground surface. Soil cuttings were drummed on site and labeled.

A total of 22 discrete soil samples were collected from borings, including one blind field duplicate. Samples were collected and analyzed in accordance with the work plan (LAI 2015a). All samples were submitted to TestAmerica Laboratories in Tacoma, Washington. The 6 ft bgs and 10 ft bgs samples from the four borings located farthest from the historical excavation (LAI-B13, LAI-B15, LAI-B17, and LAI-B19) and the field duplicate were analyzed on a standard turnaround time for pesticides by U.S. Environmental Protection Agency (EPA) Method 8081A, and the remaining samples were placed on hold pending results (LAI 2015a).

A composite soil sample was collected from the drums and submitted to the laboratory for analysis of pesticides by EPA Method 8081A. Disposal will be coordinated and overseen by DNR. Soil waste analytical results are presented in Table 1.

1.2.2 Results

Soil encountered in borings LAI-B13 to LAI-B19 generally consisted of a thin (less than 0.2 ft) layer of topsoil overlying approximately 4 to 6 ft of light brown, fine to medium sand with silt and organic material. With depth (below approximately 4 to 5 ft), soil graded to light brown, silty fine sand and sandy silt. Groundwater was generally encountered near 4 to 5 ft bgs. Soil boring logs are provided as Appendix B.

All soil samples were analyzed except for those from LAI-B14. HE was detected at LAI-B15 at 8 ft bgs (2.9 µg/kg) and 10 ft bgs (3.6 µg/kg), at concentrations below the applicable MTCA Method B soil CUL (4.02 µg/L in the saturated zone). Because HE was detected at LAI-B15, analyses were not performed on samples collected at LAI-B14, closer to the excavation area. The only other detection was gamma-chlordane in LAI-B13 at 10 ft bgs (1.5 µg/kg), at a concentration well below the MTCA Method B soil CUL (103 µg/kg in the saturated zone). Heptachlor was not detected in any of the soil samples. Soil analytical results from the April 2015 investigation are presented in Table 2 and laboratory reports are provided in Appendix C.

1.3 Current Site Conditions

HE is not mobile and has a low potential to leach (Syracuse Research Corporation 2007), so the extent of HE in soil is interpreted from soil analytical results obtained in 1999, 2014, and 2015. HE has been detected in soil below the excavation area and adjacent to the south and southeastern margins of the excavation area. Soil HE concentrations exceeding applicable MTCA Method B soil CULs occur between 5.5 and 15 ft bgs (Figure 3)[4].

Concentrations of HE above the MTCA Method B groundwater CUL (0.0048 µg/L) have been detected consistently in groundwater at monitoring wells SW-10 and SW-11. These wells are located about 5 ft south and east of the excavation area margin, respectively, and are screened from approximately 6 to 16 ft bgs. During the wet season (i.e., spring,) groundwater HE concentrations are relatively low (February 2014 maximum of 0.67 µg/L at SW-11), while dry season concentrations are typically higher (September 2014 maximum of 3.0 µg/L at SW-11).

Groundwater below the Site is shallow and unconfined, ranging from 4.19 to 11.28 ft bgs in 2014. Groundwater levels fluctuate approximately 6 ft seasonally in response to surface conditions and precipitation. Although regional groundwater flow is likely toward the west/northwest toward Salmon Creek (LAI 2014c; Ecology 2001; Tetra Tech 1999), shallow groundwater is influenced by local surface conditions, runoff, and infiltration.

[4] Current MTCA Method B soil CULs for protection of groundwater in the vadose and saturated zones are 80.2 µg/kg and 4.02 µg/kg, respectively. As the highest water table observed in 2014 was 4.19 ft bgs, saturated zone soil CULs will be applied at and below a depth of 4.19 ft bgs, and vadose zone CULs will be applied above 4.19 ft bgs.

Groundwater mounding has been interpreted in wells near the excavation area (Ecology 2001; LAI 2014c). Seasonal depths to groundwater observed during 2014, including the minimum observed depth to water (4.19 ft bgs) are presented in Table 3[5].

1.4 Conceptual Site Model

The conceptual site model (CSM) provides a conceptual understanding of a site that identifies sources, types, and concentrations of hazardous substances, potentially contaminated environmental media, and potential exposure pathways for human and ecological receptors (WAC 173-340-200). It considers current conditions and future land use in assessing potential exposure pathways; only complete pathways result in exposure. A complete pathway includes a source and a mechanism of release, an exposure medium, and an exposure route by which contact can occur.

The primary release mechanism to soil is the release of pesticide compounds from a UST source. Soil contamination above MTCA Method B soil CULs is observed adjacent to the UST excavation area (i.e., within approximately 5 ft). Based on the distribution of HE in groundwater described above, the primary release mechanism to groundwater appears to be limited back diffusion of HE from soil pore water into shallow groundwater. Media of concern at the Site include soil and groundwater due to HE detections exceeding applicable CULs (Section 2.2). The limited extent of groundwater HE (adjacent to the UST excavation area) suggests that concentrations of HE are back diffusing into groundwater from soil near the water table.

It is anticipated that the Site will retain its current rural character and that future land uses will be consistent with the current use (forest nursery) as well as zoning and land use regulations. There are no likely potential ecological receptors on the Site. Although MTCA requires consideration of terrestrial plants and animals that may be exposed to hazardous substances, the Site qualifies for exclusion from further terrestrial ecological evaluation under WAC 173-340-900. Table 749-3 of this section presents Ecological Indicator Soil Concentrations for Protection of Terrestrial Plants and Animals, which are provided for use in eliminating hazardous substances from further consideration under WAC 173-340-7493(2)(a)(i). The total heptachlor/HE[6] CUL protective of wildlife is 400 µg/kg, and the chlordane CULs protective of soil biota and wildlife are 1,000 µg/kg and 2,700 µg/kg, respectively. Soil HE and chlordane concentrations do not exceed these protective levels. Furthermore, institutional controls are in place via deed restrictions on the property[7].

Although there is a low potential for exposure at the Site, the complete exposure pathways and potential human receptors identified include:

[5] Table 3 contains depth to water observations from 2014. Additional depth to water data are available for the dry season (August 2009), however it was not tabulated as it does not improve understanding of historical maximum water table depths during the wet season.

[6] Heptachlor and HE are the only constituents detected at the Site listed in Table 749-3.

[7] This restrictive covenant will remain in place only until the new agreed order to implement the 2016 CAP is issued; then a new environmental covenant will be placed on the property.

- Potential exposure of site employees via ingestion of, or dermal contact with, groundwater.
- Potential exposure of off-site residents via ingestion of, or dermal contact with, groundwater. Groundwater monitoring at the Site conducted since 1995 (20 years) indicates exposure via this pathway is unlikely (see Appendix D[8]).

An institutional control shall continue to be required under WAC 173-304-440 if hazardous substances remain at the Site at concentrations that exceed the applicable CUL, or if Ecology determines such control is required to assure continued protection of human health and the environment or the integrity of the cleanup action.

[8] Appendix D contains groundwater data from August 2000 to present.

2.0 CLEANUP STANDARDS

MTCA requires that cleanup standards be protective of human and ecological receptors for the affected media, based on the reasonable maximum exposures expected to occur under current and future site use. CAOs and cleanup standards were initially established in the 2001 CAP. However, cleanup levels have been revised by Ecology since the 2001 CAP took effect. The current cleanup levels provided in Ecology's Cleanup Levels and Risk Calculation (CLARC) database will be applicable to the 2016 CAP.

2.1 Cleanup Action Objectives

Site CAOs were outlined in the 2001 CAP include (Ecology 2001):

- Human Health: Prevent exposure to groundwater exceeding contaminant-specific applicable or relevant and appropriate requirements; in accordance with WAC 173-340-360 and WAC 173-340-700.
- Environmental Protection: Prevent migration of groundwater contamination at levels that could negatively impact Salmon Creek.

Supplemental to the existing CAOs, DNR has expressed a further goal of expediting attainment of cleanup standards to the greatest extent practicable.

Execution of the 2001 CAP removed 70 cy of the most highly pesticide-contaminated soil from the Site. To date, no human exposures to contaminated soil or groundwater have occurred, and groundwater monitoring data indicate that groundwater contamination has not migrated away from the area immediately adjacent to the soil excavation (Figure 3); and therefore, has not negatively impacted Salmon Creek. However, HE concentrations in soil and groundwater exceed applicable CULs locally. Soil and groundwater data indicate that the 1996 excavation left soil contamination in place, and that low concentrations of HE are back diffusing into groundwater near the water table from the remaining affected soil. The objective of the 2016 CAP will be to more completely remove contaminated soil in order to attain currently applicable CULs at the point of compliance (Section 2.3).

2.2 Cleanup Levels

The 2001 and current[9] CULs are presented below.

[9] MTCA Method B groundwater CULs are from Ecology's Cleanup Levels and Risk Calculation database (accessed March 28, 2016).

	Cleanup Level (CUL) Summary					
			Leaching Soil to Groundwater Pathway			
Contaminant	2001 Soil Direct Contact (µg/kg)	2016 Soil Direct Contact (ug/kg)	2016 Soil (Vadose Zone (µg/kg)	2016 Soil (Saturated Zone) (µg/kg)	2001 Groundwater (µg/L)	2016 Groundwater (µg/L)
Total Chlordane	2,860	2,860	2,060	103	0.25	0.25
Heptachlor	222	222	37.8	1.90	0.019	0.19
Heptachlor epoxide	110	110	80.2	4.02	0.009	0.0048
2,4-D	800,000	800,000	NA (a)	NA (a)	160	160
2,4,5-T	8,000,000	800,000	NA (a)	NA (a)	160	160
2,4,5-TP	640,000	640,000	NA (a)	NA (a)	128	128
Dicamba	2,400,000	2,400,000	NA (a)	NA (a)	240	480
Picloram	5,600,000	5,600,000	NA (a)	NA (a)	1,120	1,120
Atrazine	4,550	4,350	NA (a)	NA (a)	0.398	0.380
Simazine	8,330	8,330	NA (a)	NA (a)	0.729	0.729

(a) CLARC does not report a CUL for this constituent.
µg/kg = microgram per kilogram
µg/L = microgram per liter
NA = Not available
Highlighting = Selected CUL

Where available, 2016 CULs will be used. Additional information used in the selection of current CULs from the CLARC database is included in Appendix E, including the TEE values discussed in Section 1.4.

2.3 Point of Compliance

The point of compliance represents the locations at which CULs are to be attained. The 2001 CAP defined the point of compliance as "throughout the Site." The Site was defined as "that portion of the parcel of property owned by DNR where Webster Nursery is located that has been impacted by the release from the pesticide storage tank" (Ecology 2001). Consequently, the 2016 CAP will seek to attain applicable CULs for soil, groundwater, and ecological receptors throughout that portion of the DNR Webster Nursery property impacted by leakage from the pesticide UST.

3.0 EVALUATION OF CLEANUP ACTION ALTERNATIVES

This section presents an evaluation of potential cleanup actions to address HE concentrations above CULs in soil and groundwater at the Site. In evaluating cleanup alternatives, it is assumed that future use of the Site will be consistent with current use as a forest nursery.

Evaluation of cleanup action alternatives has been conducted in general accordance with WAC 173-340-360, which specifies the order of preference for selecting cleanup technologies, policies for permanent solutions, and the process of approving cleanup actions. Following presentation of the areas to be addressed by cleanup action, cleanup action alternatives will be identified and qualitatively/quantitatively evaluated based on effectiveness, implementability, restoration timeframe, permanence, and cost. A recommended cleanup alternative will then be developed for the Site.

3.1 AREAS ADDRESSED BY CLEANUP ACTIONS

This cleanup action seeks to address HE concentrations in shallow soil and groundwater within the point of compliance described in Section 2.3. Under the Site CSM, occurrences of HE in groundwater at the Site are attributed to pesticide-impacted soil near the water table. Seasonally, the water table fluctuates over the interval between approximately 4 and 11 ft bgs. For the purposes of this evaluation, the cleanup area will target the region of soil enclosed by boring locations in which HE has been detected above 2016 CULs (between 4 ft and 15 ft bgs).

3.2 GENERAL RESPONSE ACTIONS AND REMEDIAL TECHNOLOGIES

Cleanup action alternatives are an assemblage of one or more actions and technologies that, taken as a whole, will achieve CAOs. General response actions and associated technologies evaluated in the CAP and identified as applicable to the Site include (Ecology 2001):

- No Action: Process options included natural attenuation of groundwater.
- Limited Action: Process options included deed restrictions and compliance groundwater monitoring.
- Containment: Process options included capping, drainage control, and over excavation with replacement by clean backfill.
- *Ex situ* Treatment: Process options included groundwater extraction and treatment via filtration or physical/chemical oxidation.

While *ex situ* thermal and chemical treatment processes for heptachlor contamination are noted in the literature (EPA 2010; CAEPA 2010), they are complex and costly, and their effectiveness in remediating HE is not well documented. Based on consideration of site-specific factors, the 2001 CAP eliminated *ex situ* treatment as a viable option because "the relatively high capital and operating costs associated with this technology are not commensurate with the extent of the groundwater

contaminant plume at the Site and observed contaminant levels" (Ecology 2001). *In situ* containment using soil stabilization/solidification, though listed in the current literature as an applicable technology for pesticide-affected soil (USAEC 2002), is similarly eliminated in the present evaluation due to relatively high investment, and in the interest of minimizing the need for long-term management at a site with a relatively small volume of contamination (WAC 173-340-370).

General response actions and selected process options identified in the 2001 CAP were used to develop three cleanup action alternatives appropriate to the Site. The selected cleanup action involved groundwater compliance monitoring, hydraulic controls, and a filing of a restrictive covenant.

Although applicable CULs have changed since the 2001 CAP, the general response actions and preliminary screening rationale presented in 2001 continue to be relevant at the Site because environmental conditions are similar to conditions at that time, specifically:

- Previous remedial actions, including UST removal and soil excavation, removed soil with pesticide contamination exceeding CULs applicable at that time (Section 2.2).
- The pesticide-related compounds of concern have a high affinity for sorption to soil, low solubility, and a low potential for leaching (Syracuse Research Corporation. 2007; Ecology 2001; ExToxNet 1993).
- Pesticide contamination in groundwater is monitored at multiple locations around the Site and has not been observed to migrate from the area immediately adjacent to the former tank excavation.
- Organochlorine pesticide compounds are not susceptible to biodegradation, photolysis, oxidation, or hydrolysis in the environment; and therefore, can be difficult to treat effectively (ExToxNet 1993; Ecology 2001).
- Deed restrictions have been established for the property in accordance with requirements of the AO and CAP[10] (Ecology 2001).

3.3 DESCRIPTION OF CLEANUP ACTION ALTERNATIVES

Because groundwater restoration was not achieved within the designated timeframe under the selected remedy, current cleanup action alternatives have been developed from the original general response actions and selected process options. The potential supplemental cleanup action alternatives are described below. For the purposes of comparison, a lifespan of 30 years is assumed where applicable. Costs were estimated as a basis of comparison between alternatives, and are presented assuming a relative accuracy of -30 to +50 percent. Cost estimates for Alternatives 1, 2, and 3 are presented in Tables 4, 5, and 6, respectively.

[10] This restrictive covenant will remain in place only until the new agreed order to implement the 2016 CAP is issued; then a new environmental covenant will be placed on the property.

3.3.1 ALTERNATIVE 1: STATUS QUO

Alternative 1 involves continuation of the present action, including groundwater monitoring, MNA as the primary remedial technology, and institutional controls as the secondary remedial technology. Existing groundwater monitoring locations are shown on Figure 2.

An estimated cost range for Alternative 1 is $157,000 to $336,000. This estimate assumes:

- Annual groundwater monitoring and reporting will cost $7,000 per year
- Monitoring will continue for 30 years.

3.3.2 ALTERNATIVE 2: PHYSICAL BARRIER/CONTAINMENT

Alternative 2 involves construction of a physical barrier to prevent infiltration of surface water through HE-affected soil to groundwater and to reduce groundwater flow across HE-affected soil in the zone of seasonal water table fluctuation. A site plan and subsurface cross section for Alternative 2 is shown on Figures 4 and 5, respectively.

The barrier would employ an impervious cap, such as asphalt, to prevent infiltration, and vertical impermeable barriers, such as sheet pile walls, around the west, east, and south boundaries of the cleanup area to approximately 15 ft bgs. Alternatively or additionally, the barrier could involve drainage control or site grading to redirect surface runoff. This option would require ongoing maintenance of the cap, as well as land use restrictions and potential modifications to the property's restrictive covenant. Additionally, because wells SW-10 and SW-11 would be enclosed in the containment area, it is assumed that two additional groundwater monitoring wells would be installed to allow groundwater compliance monitoring outside the containment area.

An estimated cost range for Alternative 2 is $253,000 to $542,000. This estimate assumes:

- Three sheet pile walls, each 25 ft long and driven 15 ft deep
- Asphalt cap 25 ft x 25 ft with seal to building on north end
- Two additional monitoring wells outside containment area (south and east)
- Maintenance of cap every 5 years
- Monitoring and maintenance will continue for 30 years.

3.3.3 ALTERNATIVE 3: EXCAVATION AND OFF-SITE DISPOSAL

Alternative 3 involves excavation of soil containing HE concentrations within the zone of seasonal groundwater fluctuation. Specifically, excavation would target soil between 4 ft and 10 ft bgs in the area enclosed by boring locations in which HE has been detected as well as the previous excavation area where HE-affected soil was left in place below 7 ft bgs. In addition, additional depth would be removed in the immediate vicinity of boring LAI-B12, where depth profiling indicates that contamination extends to 15 ft bgs. A trench box would be used to allow for excavation below the

water table; groundwater would be pumped (using a sump pump) to an area of the excavation where concentrations in soil and groundwater already exceed CULs. A site plan and geologic cross section for Alternative 3 is shown on Figures 6 and 7, respectively. Clean soil excavated from 0 to 4.0 ft bgs would be stockpiled and used as backfill, and the remaining excavation area would be backfilled with compacted clean, fine- to medium-grained material. Field activities will include protective measures to prevent off-site migration of contaminants in soil and groundwater.

The estimated volume of soil to be excavated and disposed of is approximately 125 cy. HE-affected soil would be loaded into trucks and disposed of off-site at a RCRA Subtitle D landfill. If the soil designates as a dangerous waste, treatment prior to disposal or disposal at a RCRA Subtitle C landfill would be required. Previous determinations from Ecology indicate that soil excavated from the cleanup area may not be designated as a dangerous waste (Ecology 1998).

Because on-site monitoring wells SW-10 and SW-11 are screened within the defined cleanup area, they would be decommissioned according to regulation (WAC 173-160-381) prior to excavation. Two new monitoring wells would be installed to replace SW-10 and SW-11. To be comparable to the existing wells, the replacement wells would be located south and east of the new excavation and screened from approximately 6 to 16 ft bgs. These wells would be sampled for at least 4 quarters; if analytical results indicate groundwater HE exceeds applicable CULs after the fourth quarterly sampling event, additional groundwater monitoring will be needed to ascertain HE concentration trends.

An estimated cost range for Alternative 3 is $67,000 to $143,000. This estimate assumes:

- Soil disposed at a Subtitle D landfill
- 1 cy = 1.6 tons
- Excavation and site restoration labor and equipment will cost $140 per hour
- Costs to haul and dispose of soil will be $80 per ton
- Clean backfill will cost $21 per cy and will be compacted to match surrounding formation
- Dewatering and water disposal will cost $2,100
- Decommission two existing monitoring wells and install two replacement monitoring wells
- Six confirmation soil samples from completed excavation
- Four post-restoration groundwater sampling events at six well locations and associated reporting.

3.4 EVALUATION OF CLEANUP ACTIONS

MTCA establishes minimum requirements for cleanup actions (WAC 173-340-360[2][a]) including protection of human health and the environment, compliance with cleanup standards, compliance with applicable state and federal laws, and provision for compliance monitoring. MTCA further

requires that the selected cleanup action use permanent solutions to the maximum extent practicable, provide for a reasonable restoration timeframe, and consider public concerns (WAC 173-340-360[2][b]). The regulation also specifies a hierarchy for site cleanup actions, with more permanent technologies (such as destruction) preferred over less permanent technologies (such as containment).

Each cleanup action was evaluated on the basis MTCA minimum requirements for cleanup actions, CAOs, and selected criteria including effectiveness, permanence, restoration timeframe, implementability, and cost. The stated CAOs are prevention of exposure to groundwater exceeding contaminant-specific applicable or relevant and appropriate requirements and prevention of migration of groundwater contamination at levels that could negatively impact Salmon Creek. MTCA requires that cleanup alternatives be compared to a number of criteria to evaluate the adequacy of each alternative in achieving CAOs and as a basis for comparing the relative merits of the developed cleanup action alternatives. A summary of MTCA criteria rankings are included in Table 7. The evaluations are summarized below.

3.4.1 ALTERNATIVE 1: STATUS QUO

Alternative 1 is implementable, as it is currently part of site operations. It has established on-site containment of groundwater contamination, thereby serving CAOs and goals for protectiveness. It is assumed that remediation by MNA would be permanent once groundwater CULs were achieved. However, over the past 15 years, Alternative 1 has not been effective in attaining cleanup standards or achieving site CAOs in the anticipated restoration timeframe. The duration of this alternative is uncertain, but previous projections from historical trends indicate that groundwater HE concentrations could achieve applicable CULs under MNA in 27 to 94 years (LAI 2015b). Costs for Alternative 1 are moderately high given the anticipated duration of groundwater monitoring.

3.4.2 ALTERNATIVE 2: PHYSICAL BARRIER/CONTAINMENT

Alternative 2 is considered to be difficult to implement at the Site, due to access limitations for large equipment. Effectiveness of this alternative is uncertain. Although it is likely that the physical barrier could effectively prevent surface water from infiltrating through soil to the water table, it may not preclude seasonal water table fluctuation across the zone of HE-affected soil, which the CSM assumes to be the primary mechanism by which HE enters groundwater. Thus, this alternative may not provide long-term effectiveness or permanent attainment of cleanup standards or CAOs. Although deed restrictions are in place at the Site, a new environmental covenant will be issued with the AO to implement the 2016 CAP. The estimated cost for Alternative 2 is high.

3.4.3 ALTERNATIVE 3: EXCAVATION AND OFF-SITE DISPOSAL

Alternative 3 is anticipated to be effective in permanently attaining CAOs and cleanup standards, as it would result in removal of affected soil that appears to act as a source of HE to groundwater. Effectiveness will be verified by continued groundwater monitoring. The implementability of Alternative 3 is considered to be high, as excavation is a straightforward technology and contractors are readily available. The relatively short restoration timeframe makes Alternative 3 a low-cost option in comparison to Alternatives 1 and 2.

3.5 RECOMMENDED CLEANUP ALTERNATIVE

Alternative 3 complies with MTCA requirements (WAC 173-340-360) and presents the most implementable and effective alternative for achieving stated cleanup standards and objectives in a timely manner. Consequently, it is recommended that Alternative 3 be adopted for a supplemental cleanup action. The decision to undertake a cleanup action will be made through communications between DNR and Ecology.

4.0 SCHEDULE

Implementation of the recommended cleanup alternative can be scheduled after Ecology issues a final FS, CAP and AO; finalization of these documents will follow a combined public comment period for the FS, CAP, SEPA checklist and determination, and AO by Ecology. DNR, in consultation with Ecology, will determine a schedule for budgeting, preparing an AO for the selected cleanup action, solicitation of public comment, and cleanup implementation. For efficiency in planning and budgeting, a CAP will be submitted concurrently with this FS. The CAP will provide a conceptual design and general timeline for implementation of Alternative 3. After Ecology receives the CAP, FS, and SEPA checklist, it is expected that Ecology will prepare an AO and public notice. After a 30-day public comment period, Ecology will issue a final CAP and AO. Once a final CAP and AO are issued, DNR will prepare a Remedial Action Work Plan, which will include a Sampling and Analysis Plan and a Health and Safety Plan.

5.0 USE OF THIS REPORT

This feasibility study report has been prepared for the exclusive use of the Washington State Department of Natural Resources and applicable regulatory agencies for specific application to the Webster Nursery site. No other party is entitled to rely on the information, conclusions, and recommendations included in this document, other than the general public during the public review process for this document, without the express written consent of LAI. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following environmental key staff.

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EFW/TJS/jln
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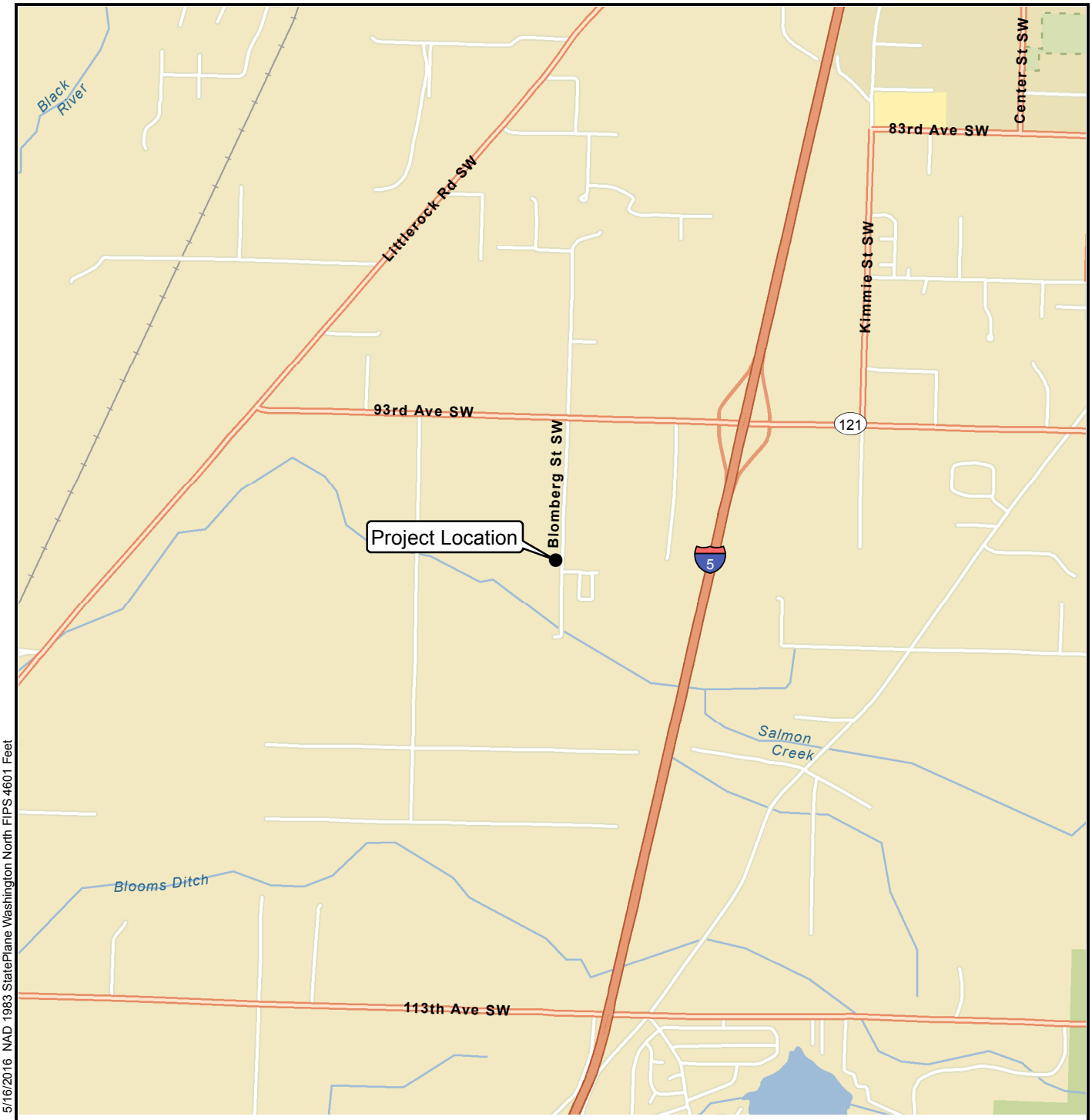

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Data Source: Esri 2012

G:\Projects\774\006\020\026\FSIF01 VicinityMap.mxd 5/16/2016 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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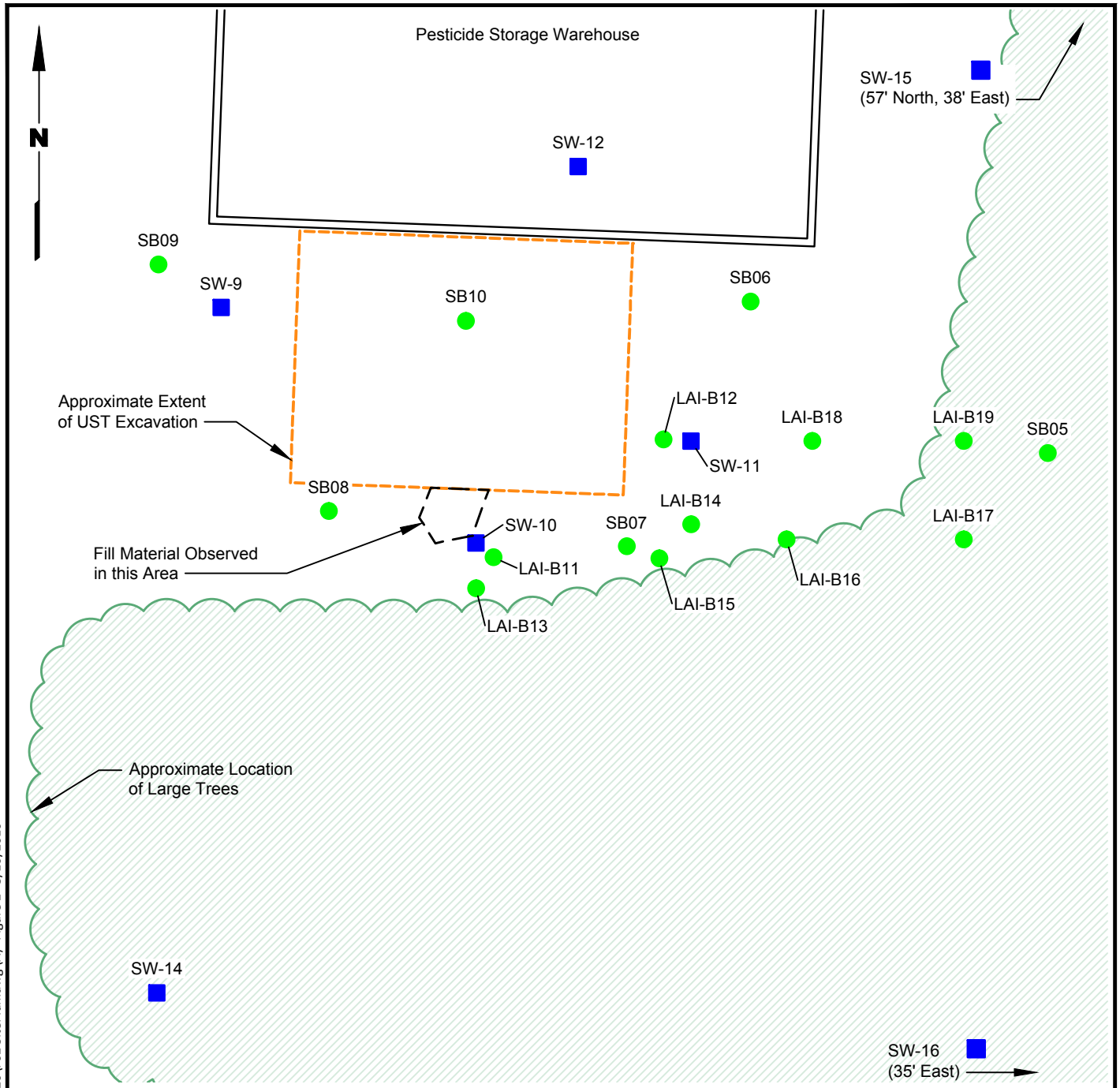
Webster Nursery Site Tumwater, Washington	**Vicinity Map**	Figure 1



Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Soil Boring Location and Designation
- Groundwater Monitoring Well Location and Designation

0 10 20

Scale in Feet

Source: Tetra Tech, 1999

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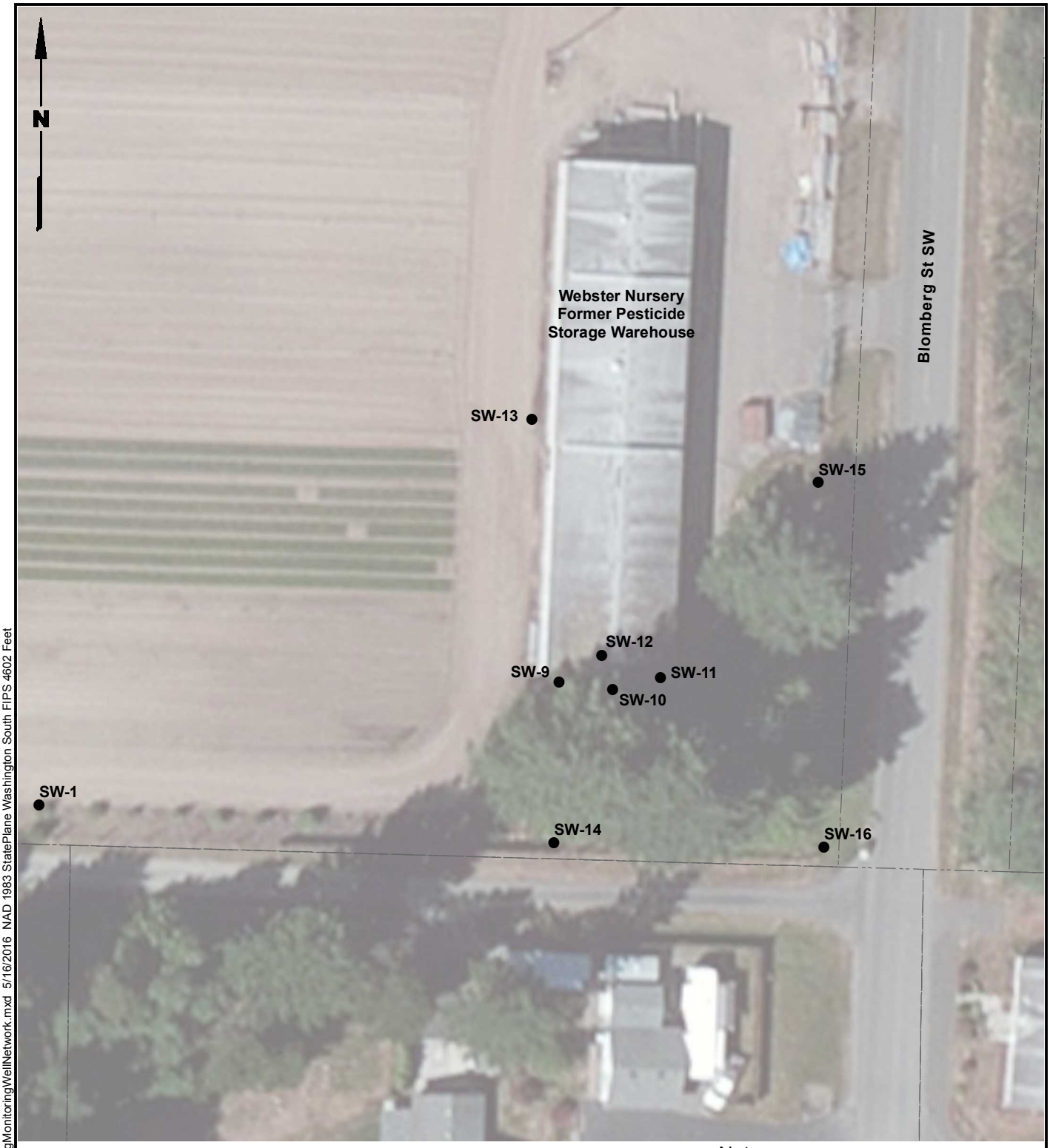
Webster Nursery Site Tumwater, Washington	**Site Plan**	Figure 2



G:\Projects\774\006\020\026\F03ExistingMonitoringWellNetwork.mxd 5/16/2016 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Monitoring Well
- Tax Parcels

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 50 100

Scale in Feet

Data Sources: Thurston County GIS; Esri World Imagery.

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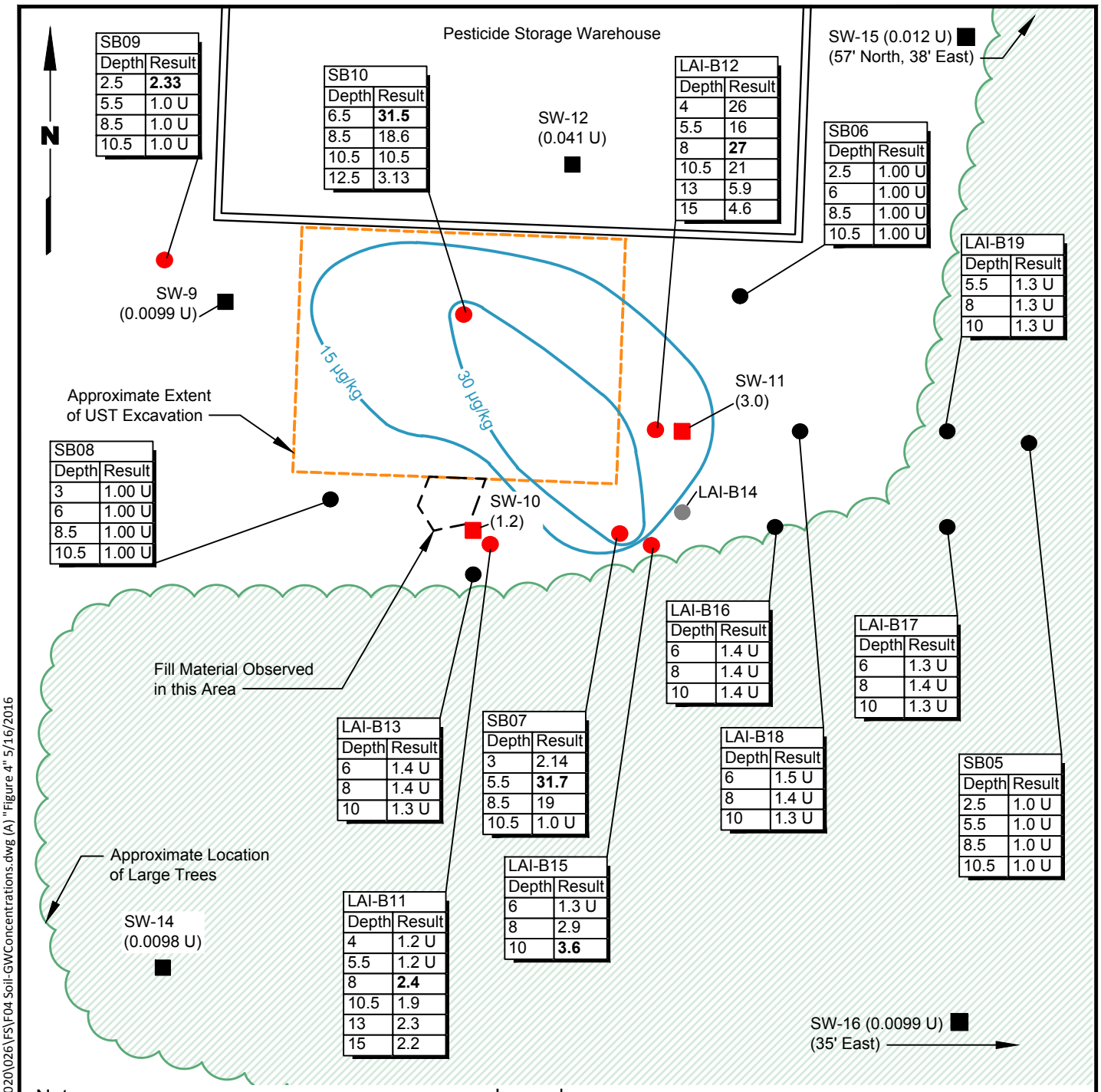
Webster Nursery Site Tumwater, Washington	**Existing Monitoring Well Network**	Figure 3



Notes

1. Depth measured in feet below ground surface.
2. Soil concentrations in micrograms per kilogram (µg/kg); bold indicates maximum.
3. Groundwater concentrations are most recent result, in micrograms per liter (µg/L).
4. U = indicates the compound was not detected at the reported concentration.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

Location Type:
- Soil Boring
- Groundwater Monitoring Well
- Soil Concentration Contour

Heptachlor Epoxide Results:
- Detected
- Not Detected
- Not Analyzed

0 10 20
Scale in Feet

Source: Tetra Tech, 1999

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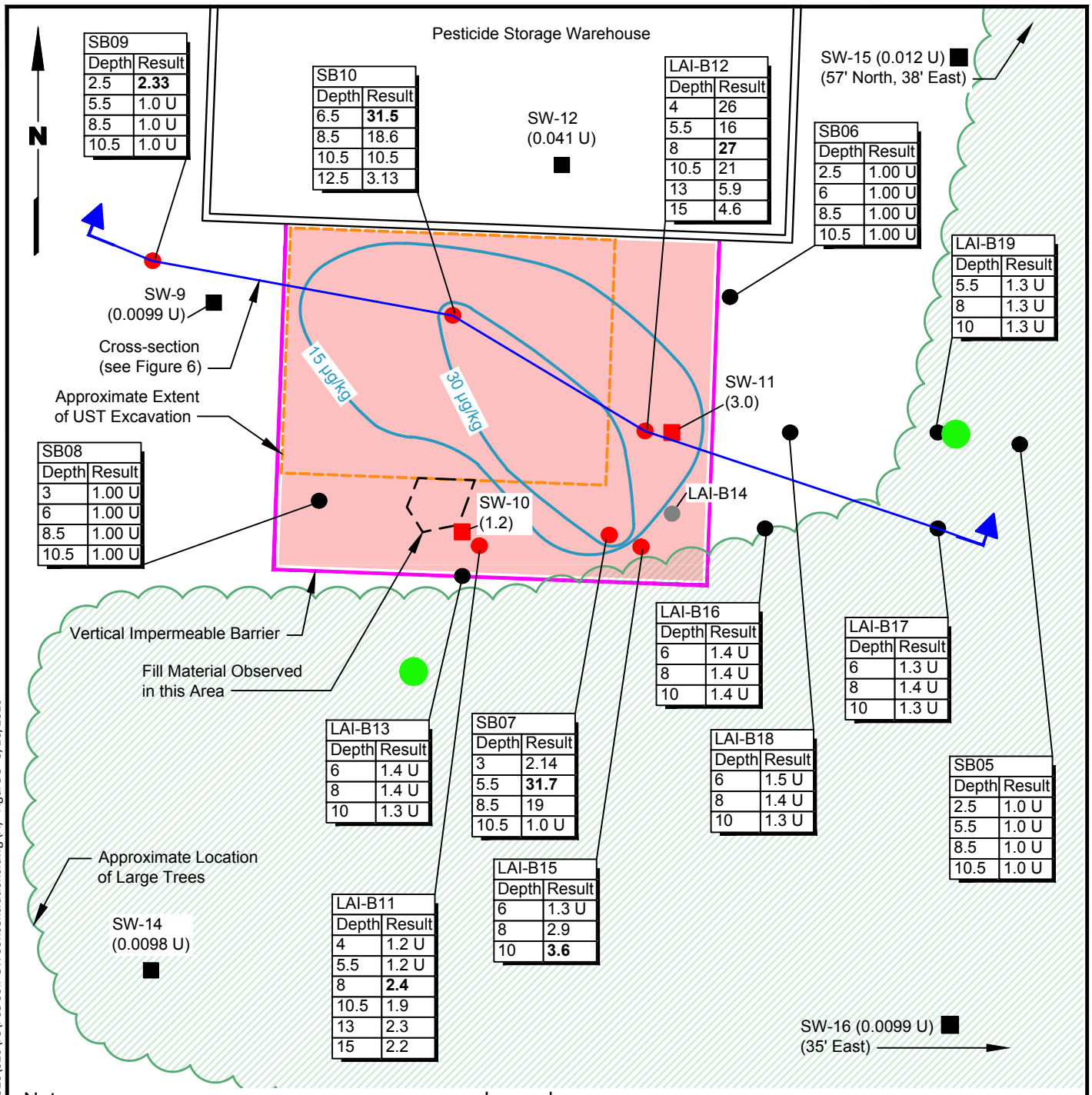
Webster Nursery Site
Tumwater, Washington

Heptachlor Epoxide Concentrations in Soil and Groundwater

Figure 4



Notes

1. Depth measured in feet below ground surface.
2. Soil concentrations in micrograms per kilogram (µg/kg); bold indicates maximum.
3. Groundwater concentrations are most recent result, in micrograms per liter (µg/L).
4. U = indicates the compound was not detected at the reported concentration.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Tetra Tech, 1999

Legend

Location Type:
- Soil Boring
- Groundwater Monitoring Well
- Soil Concentration Contour
- Proposed Monitoring Well Location
- Impervious Cap

Heptachlor Epoxide Results:
- Detected
- Not Detected
- Not Analyzed

0 10 20
Scale in Feet

LANDAU ASSOCIATES, INC. | G:\Projects\774\006\020\026\FS\F05 Soil-GWConcentrations.dwg (A) "Figure 5" 5/16/2016

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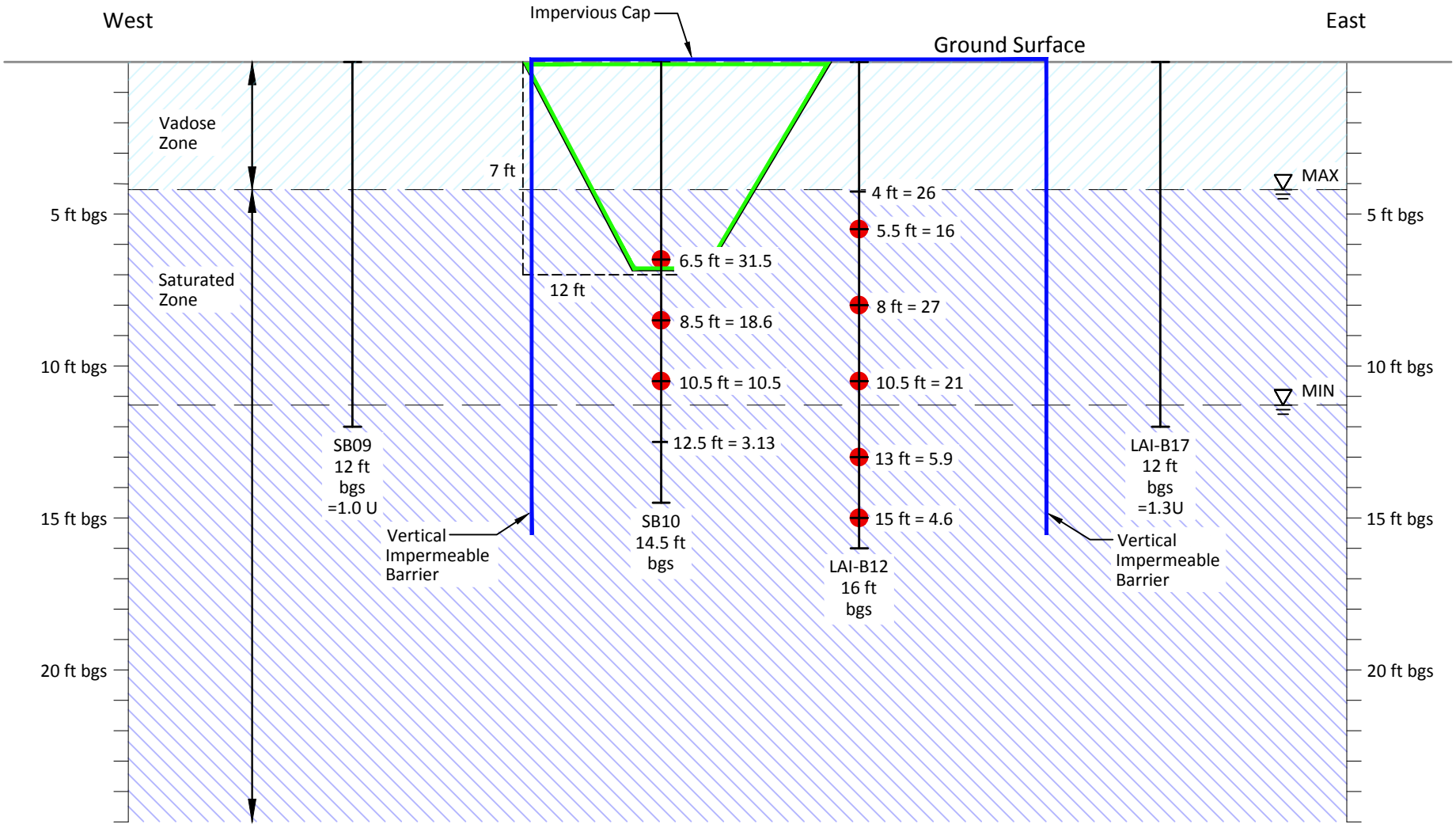
Webster Nursery Site
Tumwater, Washington

Site Plan:
Alternative #2

Figure
5



Notes

1. Maximum Water Level = 4.19 bgs (Feb 2014), Minimum Water Level = 11.28 bgs (Sept 2014).
2. Surface elevation approx. 193 ft.
3. Ground surface elevations obtained from GoogleEarth, vertical datum unknown.
4. U = indicates the compound was not detected at the reported concentration.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Exceedances; MTCA Method B
- Historical Excavation Area
- Proposed Containment Area

0 10 20

Horizontal Scale: 1" = 10'
Vertical Scale: 1" = 5'
2x vertical exaggeration

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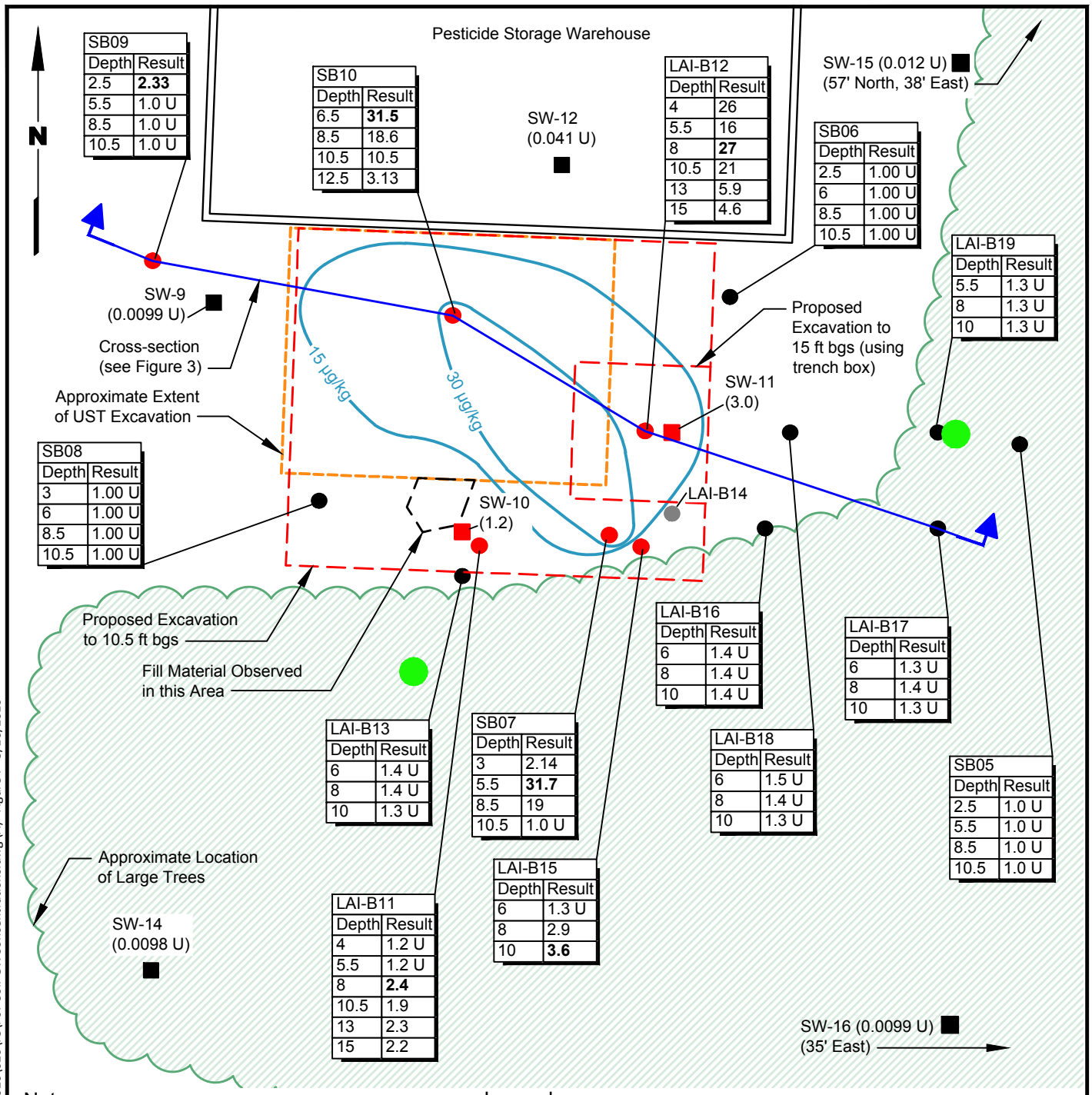
Webster Nursery Site
Tumwater, Washington

Cross Section Alternative #2

Figure 6



Notes

1. Depth measured in feet below ground surface.
2. Soil concentrations in micrograms per kilogram (µg/kg); bold indicates maximum.
3. Groundwater concentrations are most recent result, in micrograms per liter (µg/L).
4. U = indicates the compound was not detected at the reported concentration.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

Location Type:

- Soil Boring
- Groundwater Monitoring Well
- Soil Concentration Contour
- Proposed Monitoring Well Location

Heptachlor Epoxide Results:

- Detected
- Not Detected
- Not Analyzed

0 10 20

Scale in Feet

Source: Tetra Tech, 1999

LANDAU ASSOCIATES, INC. | G:\Projects\774\006\020\026\FS\F07 Soil-GWConcentrations.dwg (A) "Figure 7" 5/16/2016

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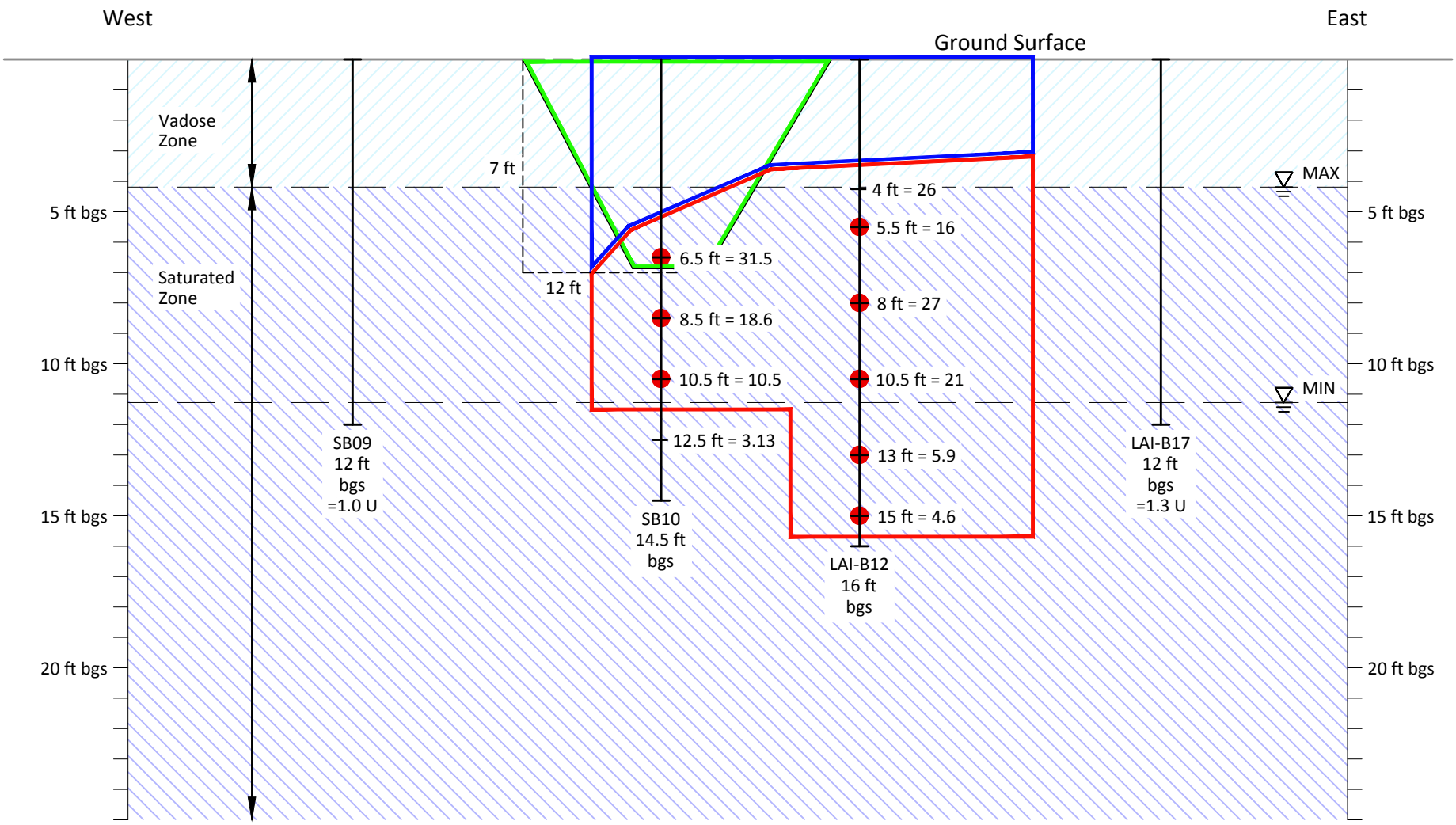
Webster Nursery Site
Tumwater, Washington

**Site Plan:
Alternative #3**

Figure
7



Notes

1. Maximum Water Level = 4.19 bgs (Feb 2014), Minimum Water Level = 11.28 bgs (Sept 2014).
2. Surface elevation approx. 193 ft.
3. Ground surface elevations obtained from GoogleEarth, vertical datum unknown.
4. U = indicates the compound was not detected at the reported concentration.
5. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Exceedances; MTCA Method B
- Historical Excavation Area
- Clean Overburden
- Proposed Soil Excavation Area

0 10 20

Horizontal Scale: 1" = 10'
Vertical Scale: 1" = 5'
2x vertical exaggeration

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Webster Nursery Site
Tumwater, Washington

Cross Section Alternative #3

Figure 8

Table 1
Soil Waste Analytical Results
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Soil Cleanup Level (a)	Drum 580-49046-23 4/14/2015
PESTICIDES (µg/kg) **EPA Method 8081A**		
Aldrin		1.3 U
alpha-BHC		1.3 U
beta-BHC		1.3 U
delta-BHC		1.3 U
gamma-BHC (Lindane)		1.3 U
4,4'-DDD		2.6 U
4,4'-DDE		2.6 U
4,4'-DDT		2.6 U
Dieldrin		2.6 U
Endosulfan I		1.3 U
Endosulfan II		2.6 U
Endosulfan sulfate		2.6 U
Endrin		2.6 U
Endrin aldehyde		2.6 U
Heptachlor	37.8	**4.5**
Heptachlor epoxide	80.2	**34**
Methoxychlor		13 U
Endrin ketone		2.6 U
Toxaphene		130 U
alpha-Chlordane	2060	**7.1**
gamma-Chlordane	2060	**20**

Bold = Detected compound.
J = Indicates that the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
MTCA = Model Toxics Control Act
U = Indicates the compound was not detected at the reported concentration.

(a) Cleanup levels for the vadose zone were used for waste characterization.

Table 2
Soil Analytical Results
Webster Nursery
Tumwater, Washington

Location: / Lab ID: / Date Collected:	Vadose Zone (<4.19 ft bgs)	Saturated Zone (≥4.19 ft bgs)	SB05 (2.5)	SB05 (5.5)	SB05 (8.5)	SB05 (10.5)	SB06 (2.5)	SB06 (6)	SB06 (8.5)	SB06 (10.5)	SB07 (3)	SB07 (5.5)	SB07 (8.5)	SB07 (10.5)	SB08 (3)	SB08 (6)
PESTICIDES (µg/kg) EPA Method 8081A																
Aldrin																
alpha-BHC																
beta-BHC																
delta-BHC																
gamma-BHC (Lindane)																
4,4'-DDD																
4,4'-DDE																
4,4'-DDT																
Dieldrin																
Endosulfan I																
Endosulfan II																
Endosulfan sulfate																
Endrin																
Endrin aldehyde																
Heptachlor	38	1.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Heptachlor epoxide	80	4.02	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.14**	**31.7 J**	**19 J**	1 U	1 U	1 U
Methoxychlor																
Endrin ketone																
Toxaphene																
alpha-Chlordane	2060	103	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
gamma-Chlordane	2060	103	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLORINATED HERBICIDES (µg/kg) EPA Method 8151A																
2,4-D			5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5 TP			1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PERCENT TOC (µg/kg) EPA Method 8151A																
TOC			NA	NA	NA	NA	**0.16**	NA	NA	NA	NA	**0.16**	NA	NA	NA	NA

Table 2
Soil Analytical Results
Webster Nursery
Tumwater, Washington

Location: / Lab ID: / Date Collected:	Vadose Zone (<4.19 ft bgs)	Saturated Zone (≥4.19 ft bgs)	SB08 (8.5)	SB08 (10.5)	SB09 (2.5)	SB09 (5.5)	SB09 (8.5)	SB09 (10.5)	SB10 (6.5)	SB10 (8.5)	SB10 (10.5)	SB10 (12.5)	LAI-B11 (4) 5/23/2014	LAI-B11 (5.5) 5/23/2014	LAI-B11 (8) 5/23/2014	LAI-B11 (10.5) 5/23/2014
PESTICIDES (µg/kg) EPA Method 8081A																
Aldrin													1.2 U	1.2 U	1.5 U	1.3 U
alpha-BHC													1.2 U	1.2 U	1.5 U	1.3 U
beta-BHC													1.2 U	1.2 U	1.5 U	1.3 U
delta-BHC													1.2 U	1.2 U	1.5 U	1.3 U
gamma-BHC (Lindane)													1.2 U	1.2 U	1.5 U	1.3 U
4,4'-DDD													2.3 U	2.3 U	2.9 U	2.7 U
4,4'-DDE													2.3 U	2.3 U	2.9 U	2.7 U
4,4'-DDT													2.3 U	2.3 U	2.9 U	2.7 U
Dieldrin													2.3 U	2.3 U	2.9 U	2.7 U
Endosulfan I													1.2 U	1.2 U	1.5 U	1.3 U
Endosulfan II													2.3 U	2.3 U	2.9 U	2.7 U
Endosulfan sulfate													2.3 U	2.3 U	2.9 U	2.7 U
Endrin													2.3 U	2.3 U	2.9 U	2.7 U
Endrin aldehyde													2.3 U	2.3 U	2.9 U	2.7 U
Heptachlor	38	1.9	1 U	1 U	1 U	1 U	1 U	1 U	**144**	**55.3**	1 U	1 U	2.3 U	2.3 U	2.9 U	2.7 U
Heptachlor epoxide	80	4.02	1 U	1 U	**2.33 J**	1 U	1 U	1 U	**31.5**	**18.6**	**10.5 J**	**3.13 J**	1.2 U	1.2 U	2.4 U	**1.9**
Methoxychlor													12 U	12 U	15 U	13 U
Endrin ketone													2.3 U	2.3 U	2.9 U	2.7 U
Toxaphene													120 U	120 U	150 U	130 U
alpha-Chlordane	2060	103	1 U	1 U	1 U	1 U	1 U	1 U	**27.1**	**20.9**	1 U	**3.04 J**	1.2 U	1.2 U	1.5 U	1.3 U
gamma-Chlordane	2060	103	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	**139**	**90.1**	0.8 U	0.8 U	1.2 U	1.2 U	1.5 U	**1.9**
CHLORINATED HERBICIDES (µg/kg) EPA Method 8151A																
2,4-D			5 U	5 U	**8.17 J**	5 U	5 U	5 U	5 U	5 U	5 U	5 U				
2,4,5 TP			1 U	1 U	1 U	1 U	1 U	1 U	1 U	**30.9**	1 U	1 U				
PERCENT TOC (µg/kg) EPA Method 8151A																
TOC			NA	NA	NA	NA	NA	NA	NA	**0.09**	NA	NA				

Table 2
Soil Analytical Results
Webster Nursery
Tumwater, Washington

Location:			LAI-B12 (4)	LAI-B12 (5.5)	LAI-B12 (8)	LAI-B12 (10.5)	LAI-B13 (6)	LAI-B13 (8)	LAI-B13 (10)	LAI-B15 (6)	LAI-B15 (8)	LAI-B15 (10)	LAI-B16 (6)	LAI-B16 (8)	LAI-B16 (10)	LAI-B17 (6)
Lab ID:	Vadose Zone	Saturated Zone					580-49046-2	580-49046-5	580-49046-4	580-49046-1	580-49046-3	580-49046-9	580-49046-11	580-49046-10	580-49046-12	580-49046-19
Date Collected:	(<4.19 ft bgs)	(≥4.19 ft bgs)	5/23/2014	5/23/2014	5/23/2014	5/23/2014	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015
PESTICIDES (µg/kg) EPA Method 8081A																
Aldrin			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
alpha-BHC			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
beta-BHC			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
delta-BHC			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
gamma-BHC (Lindane)			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
4,4'-DDD			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
4,4'-DDE			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
4,4'-DDT			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Dieldrin			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Endosulfan I			1.2 U	1.3 U	1.4 U	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
Endosulfan II			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 UJ	2.6 U	2.6 U	2.9 UJ	2.6 U	2.7 UJ	2.8 UJ	2.7 UJ	2.6 U
Endosulfan sulfate			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Endrin			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Endrin aldehyde			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Heptachlor	38	1.9	2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Heptachlor epoxide	80	4.02	**26**	**16**	**27**	**21**	1.4 U	1.4 U	1.3 U	1.3 U	**2.9**	**3.6 J**	1.4 U	1.4 U	1.4 U	1.3 U
Methoxychlor			12 U	13 U	14 U	14 U	14 U	14 U	13 U	13 U	14 U	13 U	14 U	14 U	14 U	13 U
Endrin ketone			2.5 U	2.6 U	2.7 U	2.7 U	2.7 U	2.7 U	2.6 U	2.6 U	2.9 U	2.6 U	2.7 U	2.8 U	2.7 U	2.6 U
Toxaphene			120 U	130 U	140 U	140 U	140 U	140 U	130 U	130 U	140 U	130 U	140 U	140 U	140 U	130 U
alpha-Chlordane	2060	103	**3.3**	**1.7**	**2.6**	1.4 U	1.4 U	1.4 U	1.3 U	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
gamma-Chlordane	2060	103	**5.3**	**3.9**	**8.4**	**2.6**	1.4 U	1.4 U	**1.5** J	1.3 U	1.4 U	1.3 U	1.4 U	1.4 U	1.4 U	1.3 U
CHLORINATED HERBICIDES (µg/kg) EPA Method 8151A																
2,4-D																
2,4,5 TP																
PERCENT TOC (µg/kg) EPA Method 8151A																
TOC																

Table 2
Soil Analytical Results
Webster Nursery
Tumwater, Washington

Location:			LAI-B17 (8)	LAI-B17 (10)	LAI-B99	LAI-B18 (6)	LAI-B18 (8)	LAI-B18 (10)	LAI-B19 (5.5)	LAI-B19 (8)	LAI-B19 (10)
Lab ID:	Vadose Zone	Saturated Zone	580-49046-18	580-49046-20	580-49046-16	580-49046-13	580-49046-14	580-49046-17	580-49046-15	580-49046-21	580-49046-22
Date Collected:	(<4.19 ft bgs)	(≥4.19 ft bgs)	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015	4/14/2015
PESTICIDES (µg/kg) EPA Method 8081A											
Aldrin			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
alpha-BHC			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
beta-BHC			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
delta-BHC			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
gamma-BHC (Lindane)			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
4,4'-DDD			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
4,4'-DDE			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
4,4'-DDT			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Dieldrin			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Endosulfan I			1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
Endosulfan II			2.8 UJ	2.7 U	2.6 U	2.9 UJ	2.8 UJ	2.6 UJ	2.7 U	2.6 UJ	2.6 UJ
Endosulfan sulfate			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Endrin			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Endrin aldehyde			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Heptachlor	38	1.9	2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Heptachlor epoxide	80	4.02	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
Methoxychlor			14 U	13 U	13 U	15 U	14 U	13 U	13 U	13 U	13 UJ
Endrin ketone			2.8 U	2.7 U	2.6 U	2.9 U	2.8 U	2.6 U	2.7 U	2.6 U	2.6 UJ
Toxaphene			140 U	130 U	130 U	150 U	140 U	130 U	130 U	130 U	130 UJ
alpha-Chlordane	2060	103	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
gamma-Chlordane	2060	103	1.4 U	1.3 U	1.3 U	1.5 U	1.4 U	1.3 U	1.3 U	1.3 U	1.3 UJ
CHLORINATED HERBICIDES (µg/kg) EPA Method 8151A											
2,4-D											
2,4,5 TP											
PERCENT TOC (µg/kg) EPA Method 8151A											
TOC											

Notes:

bgs = below ground surface
Bold = Detected compound.
ft = foot/feet
J = Indicates that the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
MTCA = Model Toxics Control Act
U = Indicates the compound was not detected at the reported concentration.
UJ = Indicates that the analyte was not detected above the reporting limit, which is an approximate limit of quantitation. Therefore, the analyte may be present.
NA = Not Applicable

1. MTCA Method B soil CULs for protection of groundwater in the vadose and saturated zones are 80.2 micrograms per kilogram (µg/kg) and 4.02 µg/kg, respectively.
2. As the highest water table observed in 2014 was 4.19 ft bgs, saturated zone soil CULs are applied at and below a depth of 4.19 ft bgs.

Table 3
Seasonal Groundwater Levels
Webster Nursery
Tumwater, Washington

Well ID	Top of PVC Elevation (ft, msl)	Depth to Water (ft) 02/24/14	Depth to Water (ft) 09/10/14	Groundwater Fluctuation (ft)
SW-9	192.12	4.19	9.98	5.79
SW-10	193.37	5.37	11.28	5.91
SW-11	192.19	4.19	10.12	5.93
SW-12	192.9	5.17	10.71	5.54
Maximum/Minimim		4.19	11.28	

ft = feet
msl = mean sea level

Table 4
Cleanup Alternative #1 Cost Estimate
Webster Nursery
Tumwater, Washington

ALTERNATIVE 1: STATUS QUO
General Description: Long-term monitoring (30 yr).

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Work Plans/Reporting/Other				
Annual reporing/data management/EIM	30	yr	$ 3,600	$ 108,000
Project Management	10%	pct	$ 204,000	$ 20,000
Task Subtotal				*$ 128,000*
Sampling and Monitoring				
Groundwater monitoring	30	event	$ 2,500	$ 75,000
Groundwater analyses	30	event	$ 700	$ 21,000
Task Subtotal				*$ 96,000*
			Total	$ 224,000
Appropriate Cost Range (-30% - +50%)		**TOTAL**	**$ 157,000**	**$ 336,000**

Notes:
All costs presented in this FS are considered to have a relative accuracy within the range of -30 to +50 percent, as shown above, and should be used primarily as a basis for comparison of costs between alternatives.
Costs do not include taxes or markup unless specifically identified.

Table 5
Cleanup Alternative #2 Cost Estimate
Webster Nursery
Tumwater, Washington

ALTERNATIVE 2: PHYSICAL BARRIER/CONTAINMENT
General Description: Pave surface and drive sheet pile walls to 15 ft below ground surface; long-term monitoring (30 yr).

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Work Plans/Reporting/Other				
Remedial Action Work Plan, SAP, HSP	1	LS	$ 5,000	$ 5,000
Subcontracting, permitting	10	hr	$ 160	$ 1,600
Construction Completion Report	1	LS	$ 2,000	$ 2,000
Annual reporing/data management/EIM	30	yr	$ 3,600	$ 108,000
Project Management	15%	pct	$ 313,600	$ 47,000
Task Subtotal				*$ 163,600*
Cleanup Activities				
Contractor mobilization/demobilization	4	hr	$ 140	$ 560
Utilities management	4	hr	$ 100	$ 400
Sheet pile walls purchased and installed	1125	sq ft	$ 60	$ 67,500
Asphalt cap preparation and installation	625	sq ft	$ 5	$ 3,125
Asphalt cap maintenance	6	5 yr	$ 300	$ 1,800
Construction oversight during field work	40	hr	$ 140	$ 5,600
Task Subtotal				*$ 79,000*
Sampling and Monitoring				
Additional/replacement monitoring wells	2	well	$ 3,500	$ 7,000
Annual groundwater monitoring	30	event	$ 2,800	$ 84,000
Groundwater analysis	30	event	$ 900	$ 27,000
			$ -	$ -
Task Subtotal				*$ 118,000*
			Total	$ 361,000
Appropriate Cost Range (-30% - +50%)		**TOTAL**	**$ 253,000**	**$ 542,000**

Notes:
All costs presented in this FS are considered to have a relative accuracy within the range of -30 to +50 percent, as shown above, and should be used primarily as a basis for comparison of costs between alternatives.
Costs do not include taxes or markup unless specifically identified.

Table 6
Cleanup Alternative #3 Cost Estimate
Webster Nursery
Tumwater, Washington

ALTERNATIVE 3: EXCAVATION AND DISPOSAL
General Description: Excavation and offsite disposal of soil from 4 to 10 feet below ground surface.

ITEM	QUANTITY	UNIT	UNIT COST	TOTAL
Work Plans/Reporting/Other				
Remedial Action Work Plan, SAP, HSP	1	LS	$ 5,000	$ 5,000
Subcontracting, permitting, contained-in application	10	hr	$ 160	$ 1,600
Construction Completion Report	1	LS	$ 2,000	$ 2,000
Data management/EIM	1	LS	$ 1,600	$ 1,600
Project Management	15%	pct	$ 83,200	$ 12,000
Task Subtotal				*$ 22,200*
Cleanup Activities				
Remedial excavation				
Contractor mobilization/demobilization	4	hr	$ 140	$ 560
Utilities management	4	hr	$ 100	$ 400
Decommission monitoring wells	2	well	$ 600	$ 1,200
Dewatering equipment	1	LS	$ 1,000	$ 1,000
Dewatering (characterization, transportation and disposal)	500	gal	$ 2	$ 1,000
Trench box	2	day	$ 325	$ 650
Excavation	200	cy	$ 20	$ 4,000
Haul and disposal	195	ton	$ 80	$ 15,600
Import backfill	125	cy	$ 21	$ 2,625
Place and compact backfill	205	cy	$ 10	$ 2,050
Site restoration and decontamination	5	hr	$ 140	$ 700
Construction oversight during field work	45	hr	$ 140	$ 6,300
Task Subtotal				*$ 36,000*
Sampling and Monitoring				
Excavation confirmation sample analysis (EPA 8081A)	6	sample	$ 228	$ 1,365
Additional/replacement monitoring wells	2	well	$ 3,200	$ 6,400
Groundwater monitoring sampling/analysis/data reporting	4	event	$ 7,000	$ 28,000
Waste characterization	2	sample	$ 305	$ 610
Confirmation sampling of clean backfill	1	sample	$ 228	$ 228
Task Subtotal				*$ 37,000*
			Total	$ 95,000
Appropriate Cost Range (-30% - +50%)		**TOTAL**	**$ 67,000**	**$ 143,000**

Notes:
All costs presented in this FS are considered to have a relative accuracy within the range of -30 to +50 percent, as shown above, and should be used primarily as a basis for comparison of costs between alternatives.
Costs do not include taxes or markup unless specifically identified.

Table 7
Summary of MTCA Alternatives Evaluation and Ranking
Webster Nursery
Tumwater, Washington

Alternative Number	**Alternative 1**	**Alternative 2**	**Alternative 3**
Alternative Name	**Status Quo**	**Physical Barrier/Containment**	**Excavation and Offsite Disposal**
Alternative Description	Continuation of the present action, including groundwater montoring, and MNA as the primary remedial technology, and institutional controls as the secondary remedial technology.	Construction of physical barriers including an impervious cap, vertical impermeable barriers, and drainage control. Two new monitoring wells and 30 years of compliance monitoring.	Excavation of HE contaminated soils and offsite disposal, including dewatering and site restoration. Two new monitoring wells and 1 year of compliance monitoring.
Individual Ranking Criteria			
1 Meets Remedial Action Objectives	Yes	Yes	Yes
2 Compliance With MTCA Threshold Criteria [WAC 173-340-360(2)(a)]			
-Protect human health and the environment	Yes	Yes	Yes
-Comply with cleanup standards	Yes	Yes	Yes
-Comply with applicable state/federal laws	Yes	Yes	Yes
-Provide for compliance monitoring	Yes	Yes	Yes
3 Restoration Time Frame [WAC 173-340-360(2)(b)(ii) and WAC 173-340-360(4)]	30 years	30 years	1 year
-Potential risk to human health and environment	Low	Low	Low
-Practicability of achieving shorter restoration time	See DCA below	See DCA below	See DCA below
-Current use of site, surrounding area, and resources	Unrestricted/Commercial - no offsite migration	Unrestricted/Commercial - no offsite migration	Unrestricted/Commercial - no offsite migration
-Future use of site, surrounding area, and resources	Unrestricted/Commercial - no offsite migration	Unrestricted/Commercial - no offsite migration	Unrestricted/Commercial - no offsite migration
-Availability of alternative water supplies	Yes	Yes	Yes
-Likely effectiveness/reliability of institutional controls	High	High	High
-Ability to monitor migration of hazardous substances	High	High	High
-Toxicity of hazardous substances at the site	Moderate	Moderate	Moderate
-Natural processes that reduce concentrations	Yes	Yes	Yes
-Overall Reasonable Restoration Time Frame	Yes	Yes	Yes
4 Relative Benefits Ranking for DCA [WAC 173-340-360(2)(b)(i) and WAC 173-340-36093)(f)]			
Comparative Overall Benefit	Comparative Benefit Rating / Score / Weighting Factor / Weighted Score	Comparative Benefit Rating / Score / Weighting Factor / Weighted Score	Comparative Benefit Rating / Score / Weighting Factor / Weighted Score
-Overall Protectiveness	Medium / 6 / 0.3 / 1.8	Medium High / 8 / 0.3 / 2.4	Medium High / 8 / 0.3 / 2.4
-Permanence	Medium / 6 / 0.2 / 1.2	Medium High / 7 / 0.2 / 1.4	High / 9 / 0.2 / 1.8
-Long Term Effectiveness	Medium High / 8 / 0.2 / 1.6	Medium High / 8 / 0.2 / 1.6	High / 9 / 0.2 / 1.8
-Manageability of Short Term Risk	Medium High / 8 / 0.1 / 0.8	Medium High / 8 / 0.1 / 0.8	Medium High / 7 / 0.1 / 0.7
-Implementability	High / 10 / 0.1 / 1	Medium Low / 4 / 0.1 / 0.4	Medium High / 8 / 0.1 / 0.8
-Consideration of Public Concerns	High / 10 / 0.1 / 1	High / 10 / 0.1 / 1	High / 10 / 0.1 / 1
Overall Weighted Benefit Score	**7.4**	**7.6**	**8.5**
5 Disproportionate Cost Analysis			
Overall Weighted Benefit Score	7.4	7.6	8.5
Estimated Remedy Cost	$336,000	$542,000	$143,000
Most practicable permanent solution	No	No	**Yes**
Lowest Cost Alternative	No	No	**Yes**
Relative Benefit/Cost Ratio*	6.6	4.2	17.8
Incremental Increase/Decrease in Relative Benefit to Most Permanent Alternative	-13%	-11%	0%
Incremental Increase/Decrease in Relative Benefit to Next Most Expensive Alternative	-3%	0%	12%
Incremental Increase/Decrease in Cost Compared to Most Permanent Alternative	135%	279%	0%
Incremental Increase/Decrease in Cost Compared to Next Most Expensive Alternative	0%	135%	-57%
Costs Disproportionate to Incremental Benefits	No	Yes	No
Remedy Permanent to the Maximum Extent Practicable?	No	No	Yes
Preferred Alternative	**No**	**No**	**Yes**

APPENDIX A

Summary of 1999 Subsurface Soil Investigation Results

TABLE 8. SUMMARY OF SUBSOIL SAMPLE ANALYTICAL RESULTS
PESTICIDE STORAGE WAREHOUSE RI/FS
WEBSTER NURSERY, THURSTON COUNTY, WASHINGTON

Sample Designation	Sample[a] Depth (ft – bgs)	Analytical Results (ug/kg)[b]						
		Organochlorine Pesticides (EPA 8081A)				Chlorinated Herbicides (EPA 8151A)		Percent Total Organic Carbon[c] (EPA 9060)
		Alpha Chlordane	Gamma Chlordane	Heptachlor	Heptachlor Epoxide	2,4-D	2,4,5 TP	
PSW-SB01-5.0	5.0 – 6.5	ND[d]	ND	ND	ND	ND J[f]	ND J	NA[e]
PSW-SB02-5.0	5.0 – 6.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB03-5.0	5.0 – 6.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB04-5.0	5.0 – 6.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB05-2.5	2.5 – 5.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB05-5.5	5.5 – 8.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB05-8.5	8.5 – 10.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB05-10.5	10.5 – 12.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB06-2.5	2.5 – 5.5	ND	ND	ND	ND	ND	ND	0.16
PSW-SB06-6.0	6.0 – 8.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB06-8.5	8.5 – 10.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB06-10.5	10.5 – 12.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB07-3.0	3.0 – 5.5	ND	ND	ND	2.14	ND	ND	NA
PSW-SB07-5.5	5.5 – 8.5	ND J	ND J	ND J	31.7 J	ND	ND	0.16
PSW-SB07-8.5	8.5 – 10.5	ND J	ND J	ND J	19.0 J	ND	ND	NA
PSW-SB07-10.5	10.5 – 12.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB08-3.0	3.0 – 5.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB08-6.0	6.0 – 8.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB08-15.0[g]	6.0 – 8.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB08-8.5	8.5 – 10.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB08-10.5	10.5 – 12.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB09-2.5	2.5 – 5.5	ND J	ND J	ND J	2.33 J	8.17 J[h]	ND	NA
PSW-SB09-5.5	5.5 – 8.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB09-8.5	8.5 – 10.5	ND	ND	ND	ND	ND	ND	NA
PSW-SB09-10.5	10.5 – 12.5	ND J	ND J	ND J	ND J	ND	ND	NA
PSW-SB10-6.5	6.5 – 8.5	27.1	139	144	31.5	ND	ND	NA
PSW-SB10-8.5	8.5 – 10.5	20.9	90.1	55.3	18.6	ND	30.9	0.09
PSW-SB10-10.5	10.5 – 12.5	ND J	ND J	ND J	10.5 J	ND J[i]	ND J[i]	NA
PSW-SB10-12.5	10.5 – 12.5	3.04 J	ND J	ND J	3.13 J	ND	ND	NA
Equipment Blank	NA	ND	ND	ND	ND	ND	ND	NA
Laboratory Reporting Limit (ug/kg)		1.0	0.8	1.0	1.0	5.0	1.0	0.05
MTCA Method B Residential Soil Cleanup Level (ug/kg)[j]		2,860[k]		222	110	800,000	640,000	NA

a ft – bgs = Feet below ground surface.
b The summary of soil sample results specifically includes only those compounds detected at or above the associated laboratory reporting limit during the investigation.
c Total organic carbon results reported as percent TOC
d ND = Not detected at or above the associated laboratory reporting limit.
e NA = Not Applicable.
f J = Unless otherwise indicated, data flag indicates an estimated concentration due to slight exceedance of the recommended sample holding time.
g Field duplicate Sample PSW-SB08-15.0 collected concurrently with project sample PSW-SB08-6.0.
h J - flag indicates an estimated concentration based on poor laboratory duplicate precision for this compound.
i J – flag indicates an estimated concentration base don low surrogate recoveries.
j Model Toxics Control Act (MTCA) Method B Residential Soil Cleanup Levels, as published in the Cleanup Levels and Risk Calculations (CLARC) Update, February 1996. For those contaminants with both carcinogenic and noncarcinogenic State Cleanup Levels, the carcinogenic value has been applied.
k Chlordane cleanup level based on change in chronic slope factor from 1.3 to 0.35 $(mg/kg\text{-}day)^{-1}$, EPA Integrated Risk Information System (IRIS), on-line database search conducted June 11, 1998.

APPENDIX B

Soil Boring Logs, 2015

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

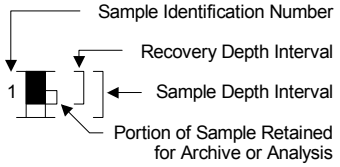
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time other than ATD

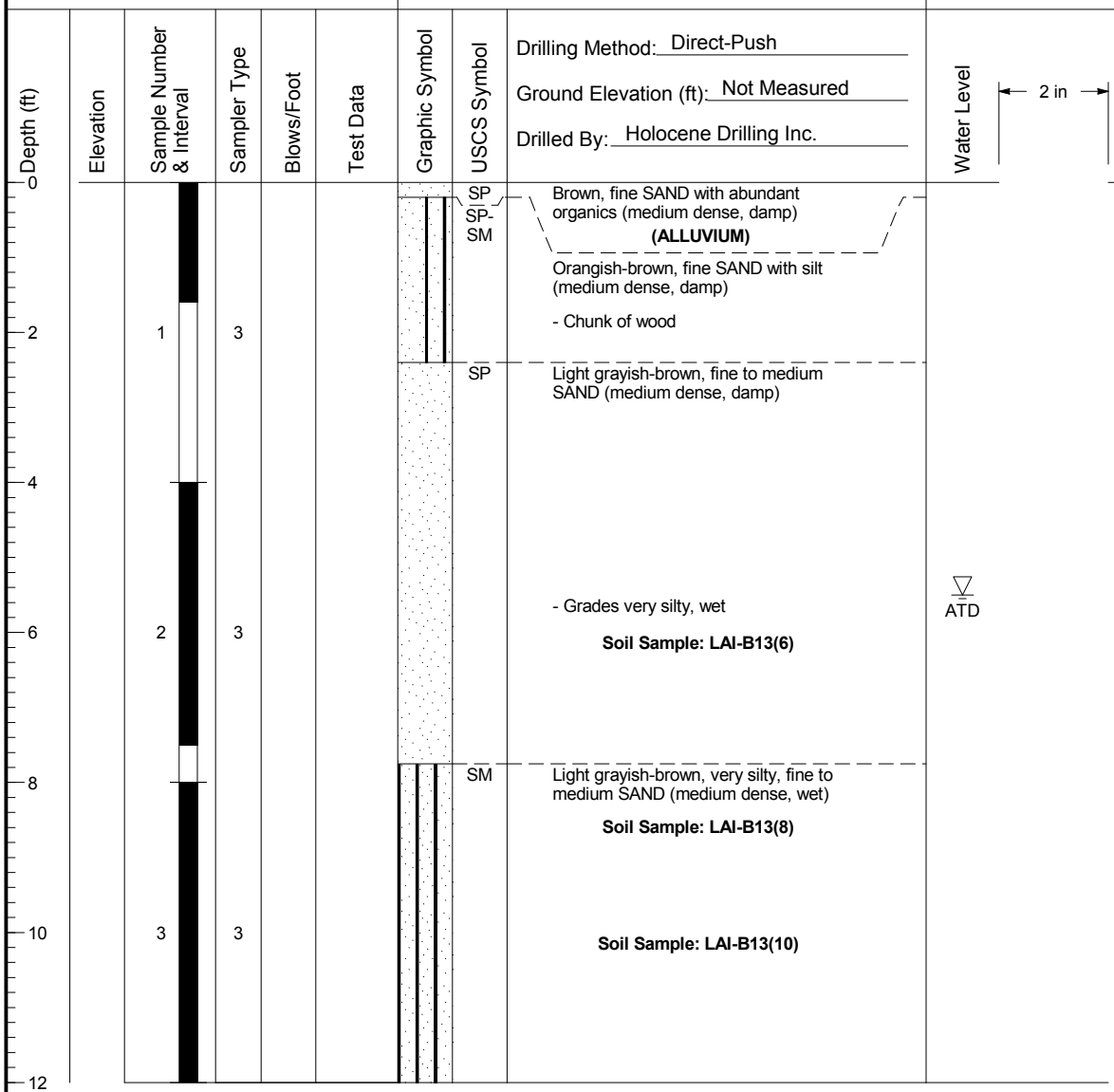
LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Soil Classification System and Key

Figure B-1

LAI- B13



Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B13

Figure
B-2

LAI- B14

SAMPLE DATA						SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Direct-Push Ground Elevation (ft): Not Measured Drilled By: Holocene Drilling Inc.	Water Level
0							SP-SM	Topsoil Brown, fine SAND with silt (medium dense, damp) **(ALLUVIUM)**	
2		1	3				SM	Grayish-brown, silty, fine SAND (medium dense, moist)	
4							ML	Tannish-brown, sandy SILT (medium stiff, wet)	ATD
6		2	3					**Soil Sample: LAI-B14(6)**	
8								**Soil Sample: LAI-B14(8)**	
10		3	3					**Soil Sample: LAI-B14(10)**	
12									
14									
16									

Detail: 2 in

Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B14

Figure
B-3

LAI- B15

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Direct-Push
Ground Elevation (ft): Not Measured
Drilled By: Holocene Drilling Inc.

Detail: 2 in

Depth (ft)	Sample Number & Interval	Sampler Type	Graphic Symbol	USCS Symbol	Soil Profile	Water Level
0				SP-SM	Topsoil Orangish-tan, fine SAND with silt (medium dense, damp) **(ALLUVIUM)**	
2	1	3				
4					- Grades tannish-brown, moist	
				SM	Tannish-brown, very silty, fine SAND (medium dense, wet)	ATD
6	2	3			**Soil Sample: LAI-B15(6)**	
8				ML	Tannish-brown, sandy SILT (medium stiff, wet)	
					Soil Sample: LAI-B15(8)	
10	3	3			**Soil Sample: LAI-B15(10)**	
12						
14						
16						

Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B15

Figure
B-4

LAI- B16

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Direct-Push
Ground Elevation (ft): Not Measured
Drilled By: Holocene Drilling Inc.

Detail: 2 in

Depth (ft)	Sample Number & Interval	Sampler Type	Graphic Symbol	USCS Symbol	Soil Profile	Water Level
0				SP-SM	Topsoil Orangish-brown, fine SAND with silt and organics (wood) (medium dense, damp) **(ALLUVIUM)**	
2	1	3				
4					- Grades tannish-brown, wet, and without organics	
6	2	3		SM	Tannish-brown, very silty, fine SAND (medium dense, wet) **Soil Sample: LAI-B16(6)**	ATD
8				ML	Tannish-brown, sandy SILT with sand lenses (medium stiff, wet) **Soil Sample: LAI-B16(8)**	
10	3	3			**Soil Sample: LAI-B16(10)**	
12						
14						
16						

Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

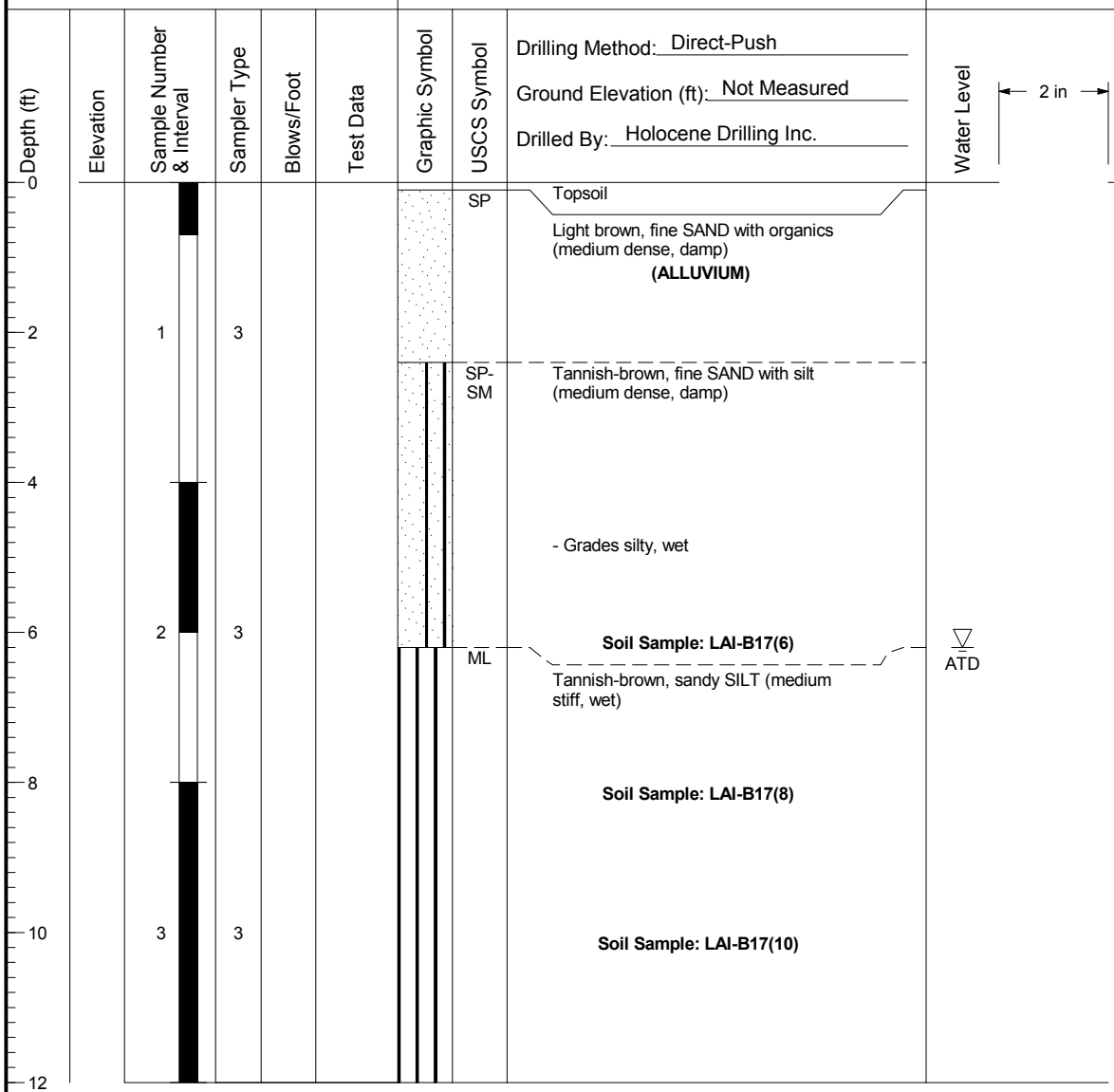
LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B16

Figure
B-5

LAI- B17



Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

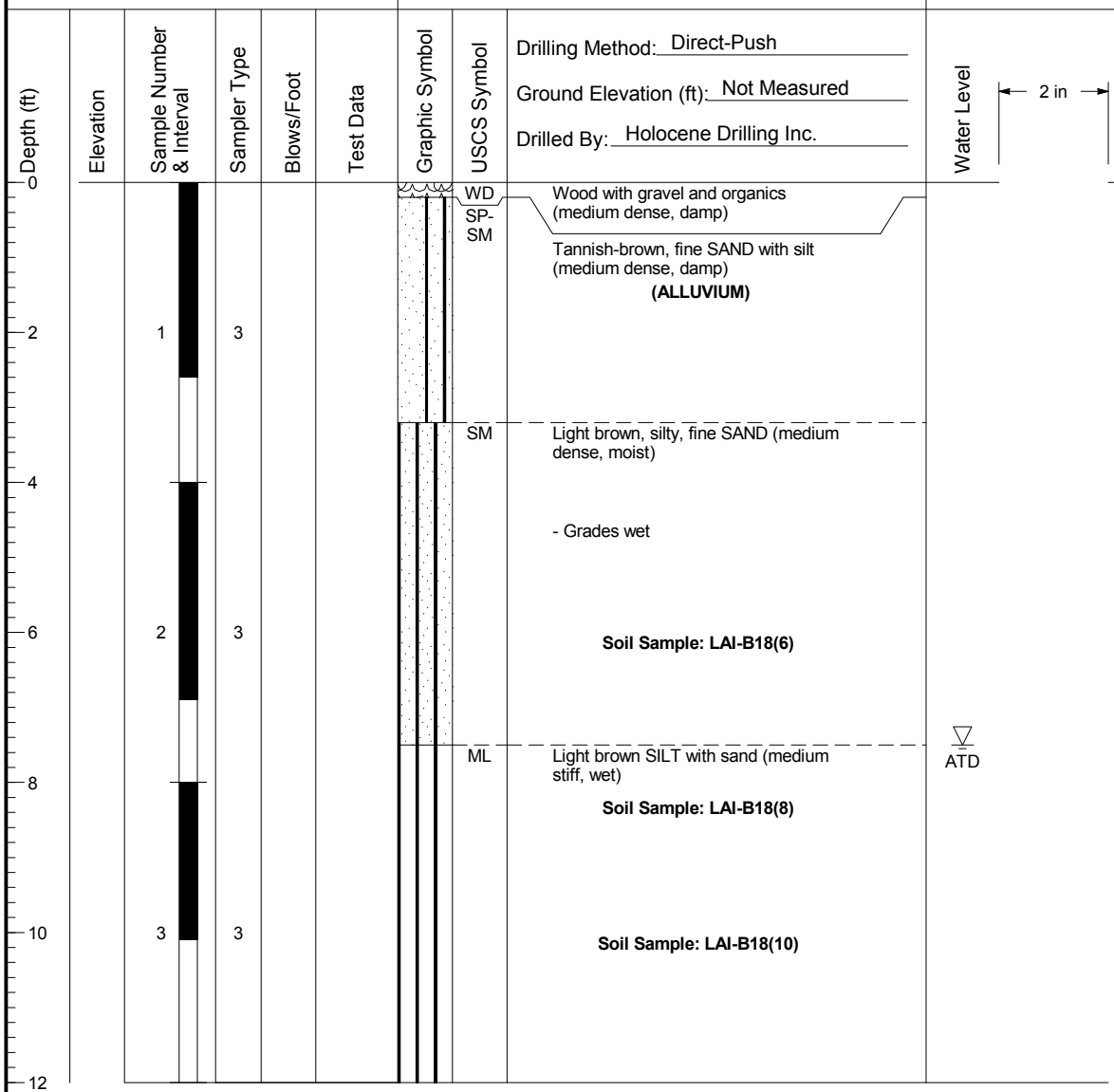
LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B17

Figure
B-6

LAI- B18



Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B18

Figure
B-7

LAI- B19

SAMPLE DATA						SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: Direct-Push Ground Elevation (ft): Not Measured Drilled By: Holocene Drilling Inc.	Water Level
0							SP-SM	Dark brown, fine SAND with silt (medium dense, damp) **(ALLUVIUM)** - Grades black with organics - Grades tannish-brown without organics	
2		1	3						
							SM	Light grayish-brown, silty, fine SAND (medium dense, wet)	ATD
4									
								Soil Sample: LAI-B19(5.5)	
6		2	3						
							SM	Light brown, silty, fine SAND (medium dense, wet)	
8								**Soil Sample: LAI-B19(8)** -burnt organics from 8.5 to 8.6 feet	
10		3	3					**Soil Sample: LAI-B19(10)**	
12									
14									
16									

Detail: 2 in

Boring Completed 04/14/15
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

774006.01 4/15/16 Y:\774\006\T\BORING LOGS\0774006.010.013.GPJ WELL LOG W/ ELEVATION

LANDAU ASSOCIATES

Webster Nursery
Olympia, Washington

Log of Soil Boring LAI- B19

Figure
B-8

APPENDIX C

Laboratory Analytical Results, 2015

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-49046-1
Client Project/Site: Webster Nursery, Tumwater, WA
Revision: 1

For:
Landau & Associates, Inc.
130 Second Ave South
Edmonds, Washington 98020

Attn: Ms. Anne Halvorsen

Authorized for release by:
4/29/2015 2:18:19 PM

Robert Greer, Project Manager I
(253)922-2310
robert.greer@testamericainc.com

Table of Contents

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Job ID: 580-49046-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-49046-1

Comments
No additional comments.

Receipt
The samples were received on 4/14/2015 1:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.4º C.

Except:

The following sample(s) was collected in an improper container: LAI-B19 (8), LAI-B19 (10), and Drum. This was discussed with client and the laboratory was instructed to proceed with analysis.

GC Semi VOA
Method(s) 8081A, 8081B: The continuing calibration verification (CCV) associated with batch 187488 recovered above the upper control limit for multiple analytes. The samples associated with this CCV were non-detects for the affected analytes and LCS/LCSD recovery was acceptable; therefore, the data have been reported.

Method(s) 8081A: Surrogate recovery for the following sample was outside control limits: LAI-B19 (10) (580-49046-22). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8081A: In analysis batch 187696, surrogate DCB Decachlorobiphenyl recovery for the following samples from were outside control limits: LAI-B13 (10) (580-49046-4) and LAI-B15 (10) (580-49046-9). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
F1	MS and/or MSD Recovery is outside acceptance limits.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-49046-1	LAI-B15 (6)	Solid	04/14/15 09:01	04/14/15 13:10
580-49046-2	LAI-B13 (6)	Solid	04/14/15 08:52	04/14/15 13:10
580-49046-4	LAI-B13 (10)	Solid	04/14/15 08:56	04/14/15 13:10
580-49046-9	LAI-B15 (10)	Solid	04/14/15 09:05	04/14/15 13:10
580-49046-15	LAI-B19 (5.5)	Solid	04/14/15 10:42	04/14/15 13:10
580-49046-16	LAI-B99	Solid	04/14/15 10:28	04/14/15 13:10
580-49046-19	LAI-B17 (6)	Solid	04/14/15 10:22	04/14/15 13:10
580-49046-20	LAI-B17 (10)	Solid	04/14/15 10:26	04/14/15 13:10
580-49046-22	LAI-B19 (10)	Solid	04/14/15 10:46	04/14/15 13:10
580-49046-23	Drum	Solid	04/14/15 10:55	04/14/15 13:10

LANDAU ASSOCIATES

- ☐ Seattle/Edmonds (425) 778-0907
- ☒ Tacoma (253) 926-2493
- ☐ Spokane (509) 327-9737
- ☐ Portland (503) 542-1080
- ☐ _____

Chain-of-Custody Record

Date 4/14/15

Page 1 of 2

49046

Project Name Webster Nursery Project No. 774006.010.013

Project Location/Event Olympia, WA

Sampler's Name Siena Mott

Project Contact Siena Mott

Send Results To Anne Halvorsen, Eric Weber, John Felder, Siena Mott

Turnaround Time
☐ Standard
☒ Accelerated
☐ 6 Business Day

	Sample I.D.	Date	Time	Matrix	No. of Containers	8081A organochlorine pesticides	HOLD	HOLD	Observations/Comments
01	LAI-B15 (6)	4/14/15	901	Soil	1	X			
02	LAI-B13 (6)		852		1	X			
03	LAI-B15 (8)		903		1	X	X		
04	LAI-B13 (10)		856		1	X			
05	LAI-B13 (8)		854		1	X	X		
06	LAI-B14 (6)		930		1	X	X		
07	LAI-B14 (8)		932		1	X	X		
08	LAI-B14 (10)		934		1	X	X		
09	LAI-B15 (10)		905		1	X			
10	LAI-B16 (8)		944		1	X	X		
11	LAI-B16 (6)		942		1	X	X		
12	LAI-B16 (10)		946		1	X	X		
13	LAI-B18 (6)		959		1	X	X		
14	LAI-B18 (8)		1001		1	X	X		
15	LAI-B19 (5.5)		1042		1	X			
16	LAI-B99		1028		1	X			
17	LAI-B18 (10)		1003		1	X	X		
18	LAI-B17 (8)		1024		1	X	X		

Testing Parameters

Observations/Comments

X Allow water samples to settle, collect aliquot from clear portion

__ NWTPH-Dx - run acid wash silica gel cleanup

__ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):

__ non-preserved

__ preserved w/methanol

__ preserved w/sodium bisulfate

__ Freeze upon receipt

__ Dissolved metal water samples field filtered

Cooler/TB Dig IR (#2) cor 5.4° unc 5.9°

Cooler Dsc Mod Red @ Lab 3:10

Wet Packs Packing bubble wrap

Special Shipment/Handling or Storage Requirements cooler on ice

Method of Shipment drop off

Relinquished by
Signature Siena Mott
Printed Name Siena Mott
Company LAI
Date 4/14/15 Time 1308

Received by
Signature
Printed Name Robert Green
Company TA-Seattle
Date 4/14/15 Time 13:10

Relinquished by
Signature
Printed Name
Company
Date Time

580-49046 Chain of Custody

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

12/2014

4/29/2015

LANDAU ASSOCIATES

- [ ] **Seattle/Edmonds** (425) 778-0907
- [x] **Tacoma** (253) 926-2493
- [ ] **Spokane** (509) 327-9737
- [ ] **Portland** (503) 542-1080
- [ ] _____

Chain-of-Custody Record

Date 4/14/15

Page 2 of 2

49046

Project Name Webster Nursery Project No. 774006.010.013

Project Location/Event Olympia, WA

Sampler's Name Siena Mott

Project Contact Siena Mott

Send Results To Anne Halvorsen, Eric Weber
John Felder, Siena Mott

Turnaround Time
- [ ] Standard
- [x] Accelerated
- [ ] 6 Business Day

Sample I.D.	Date	Time	Matrix	No. of Containers	8081A - organochlorine pesticides	PCBs as Aroclors	HOLD Metals	Observations/Comments
19 - LAI-B17(6)	4/14/15	1022	Soil	1	X			
20 - LAI-B17(10)		1026		1	X			
~~LAI-B19(6)~~	sm							
21 - LAI-B19(8)		1044		1	X	X		
LAI-B19(10)		1046		1	X			
Drum		1055		1	X		X	

Page 27 of 28

X Allow water samples to settle, collect aliquot from clear portion

___ NWTPH-Dx - run acid wash silica gel cleanup

___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):

___ non-preserved

___ preserved w/methanol

___ preserved w/sodium bisulfate

___ Freeze upon receipt

___ Dissolved metal water samples field filtered

Cooler/TB Dig IR cor 5.4 unc 5.9

Cooler Dsc Mod Rec @ Lab 1310

Wet/Packs Packing Bubble wrap

Client Dropoff w/o ice

Special Shipment/Handling or Storage Requirements Cooler on ice

Method of Shipment drop off

Relinquished by	Received by	Relinquished by	Received by
Signature Siena Mott	Signature	Signature	Signature
Printed Name Siena Mott	Printed Name Robert Green	Printed Name	Printed Name
Company LAI	Company TA-Seattle	Company	Company
Date 4/14/15 Time 1308	Date 4/14/15 Time 1310	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

12/2014

4/29/2015

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-49046-1

Login Number: 49046

List Source: TestAmerica Seattle

List Number: 1

Creator: Greer, Robert A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	False	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B15 (6)
Date Collected: 04/14/15 09:01
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-1
Matrix: Solid
Percent Solids: 71.5

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
alpha-BHC	ND	F2 ^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endrin aldehyde	ND	F2 F1 ^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 20:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*60 - 128*	*04/21/15 08:55*	*04/22/15 20:38*	*1*
Tetrachloro-m-xylene	*55*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 20:38*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**72**		0.10		%			04/21/15 09:00	1
Percent Moisture	**28**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B13 (6)
Date Collected: 04/14/15 08:52
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-2
Matrix: Solid
Percent Solids: 72.2

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
alpha-BHC	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
alpha-Chlordane	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
beta-BHC	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
4,4'-DDD	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
4,4'-DDE	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
4,4'-DDT	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
delta-BHC	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Dieldrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endosulfan I	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endosulfan II	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endosulfan sulfate	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endrin aldehyde	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Endrin ketone	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
gamma-BHC (Lindane)	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
gamma-Chlordane	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Heptachlor	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Heptachlor epoxide	ND	^	1.4		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Methoxychlor	ND	^	14		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1
Toxaphene	ND		140		ug/Kg	☼	04/21/15 08:55	04/22/15 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*69*		*60 - 128*	*04/21/15 08:55*	*04/22/15 21:30*	*1*
Tetrachloro-m-xylene	*54*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 21:30*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**72**		0.10		%			04/21/15 09:00	1
Percent Moisture	**28**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B13 (10)
Date Collected: 04/14/15 08:56
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-4
Matrix: Solid
Percent Solids: 74.0

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endrin aldehyde	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*60 - 128*	*04/21/15 08:55*	*04/22/15 21:47*	*1*
Tetrachloro-m-xylene	*63*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 21:47*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-Chlordane	**1.5**		1.3		ug/Kg	☼	04/21/15 08:55	04/24/15 15:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*	*X*	*60 - 128*	*04/21/15 08:55*	*04/24/15 15:15*	*1*
Tetrachloro-m-xylene	*50*		*35 - 129*	*04/21/15 08:55*	*04/24/15 15:15*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**74**		0.10		%			04/21/15 09:00	1
Percent Moisture	**26**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B15 (10)
Date Collected: 04/14/15 09:05
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-9
Matrix: Solid
Percent Solids: 70.6

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endrin aldehyde	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*72*		*60 - 128*	*04/21/15 08:55*	*04/22/15 22:05*	*1*
Tetrachloro-m-xylene	*61*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 22:05*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Heptachlor epoxide	**3.6**		1.3		ug/Kg	☼	04/21/15 08:55	04/24/15 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*55*	*X*	*60 - 128*	*04/21/15 08:55*	*04/24/15 15:32*	*1*
Tetrachloro-m-xylene	*48*		*35 - 129*	*04/21/15 08:55*	*04/24/15 15:32*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**71**		0.10		%			04/21/15 09:00	1
Percent Moisture	**29**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B19 (5.5)
Date Collected: 04/14/15 10:42
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-15
Matrix: Solid
Percent Solids: 69.7

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
4,4'-DDD	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
4,4'-DDE	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
4,4'-DDT	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Dieldrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endosulfan II	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endosulfan sulfate	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endrin aldehyde	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Endrin ketone	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Heptachlor	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 23:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*75*	^	*60 - 128*	*04/21/15 08:55*	*04/22/15 23:14*	*1*
Tetrachloro-m-xylene	*45*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 23:14*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70**		0.10		%			04/21/15 09:00	1
Percent Moisture	**30**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B99
Date Collected: 04/14/15 10:28
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-16
Matrix: Solid
Percent Solids: 72.9

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endrin aldehyde	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*73*	^	*60 - 128*	*04/21/15 08:55*	*04/22/15 23:31*	*1*
Tetrachloro-m-xylene	*72*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 23:31*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**73**		0.10		%			04/21/15 09:00	1
Percent Moisture	**27**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B17 (6)
Date Collected: 04/14/15 10:22
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-19
Matrix: Solid
Percent Solids: 73.2

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endrin aldehyde	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/22/15 23:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*83*	^	*60 - 128*	*04/21/15 08:55*	*04/22/15 23:48*	*1*
Tetrachloro-m-xylene	*60*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 23:48*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**73**		0.10		%			04/21/15 09:00	1
Percent Moisture	**27**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B17 (10)
Date Collected: 04/14/15 10:26
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-20
Matrix: Solid
Percent Solids: 69.6

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
4,4'-DDD	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
4,4'-DDE	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
4,4'-DDT	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Dieldrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endosulfan II	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endosulfan sulfate	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endrin	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endrin aldehyde	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Endrin ketone	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Heptachlor	ND	^	2.7		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/23/15 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*74*	^	*60 - 128*	*04/21/15 08:55*	*04/23/15 00:05*	*1*
Tetrachloro-m-xylene	*60*	^	*35 - 129*	*04/21/15 08:55*	*04/23/15 00:05*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70**		0.10		%			04/21/15 09:00	1
Percent Moisture	**30**		0.10		%			04/21/15 09:00	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B19 (10)
Date Collected: 04/14/15 10:46
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-22
Matrix: Solid
Percent Solids: 74.4

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
alpha-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endrin aldehyde	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
gamma-Chlordane	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Heptachlor	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Heptachlor epoxide	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/23/15 00:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*59*	*X ^*	*60 - 128*	*04/21/15 08:55*	*04/23/15 00:22*	*1*
Tetrachloro-m-xylene	*49*	*^*	*35 - 129*	*04/21/15 08:55*	*04/23/15 00:22*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**74**		0.10		%			04/21/15 09:00	1
Percent Moisture	**26**		0.10		%			04/21/15 09:00	1

Client Sample ID: Drum

Date Collected: 04/14/15 10:55
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-23

Matrix: Solid
Percent Solids: 75.0

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
alpha-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
beta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
4,4'-DDD	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
4,4'-DDE	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
4,4'-DDT	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
delta-BHC	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Dieldrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Endosulfan I	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Endosulfan II	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Endosulfan sulfate	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Endrin	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Endrin ketone	ND	^	2.6		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
gamma-BHC (Lindane)	ND	^	1.3		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Methoxychlor	ND	^	13		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1
Toxaphene	ND		130		ug/Kg	☼	04/21/15 08:55	04/23/15 00:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*65*	^	*60 - 128*	*04/21/15 08:55*	*04/23/15 00:40*	*1*
Tetrachloro-m-xylene	*66*	^	*35 - 129*	*04/21/15 08:55*	*04/23/15 00:40*	*1*

Method: 8081A - Organochlorine Pesticides (GC) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-Chlordane	**7.1**		1.3		ug/Kg	☼	04/21/15 08:55	04/24/15 15:50	1
Endrin aldehyde	ND		2.6		ug/Kg	☼	04/21/15 08:55	04/24/15 15:50	1
gamma-Chlordane	**20**		1.3		ug/Kg	☼	04/21/15 08:55	04/24/15 15:50	1
Heptachlor	**4.5**		2.6		ug/Kg	☼	04/21/15 08:55	04/24/15 15:50	1
Heptachlor epoxide	**34**		1.3		ug/Kg	☼	04/21/15 08:55	04/24/15 15:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*60*		*60 - 128*	*04/21/15 08:55*	*04/24/15 15:50*	*1*
Tetrachloro-m-xylene	*60*		*35 - 129*	*04/21/15 08:55*	*04/24/15 15:50*	*1*

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.5**		0.42		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Barium	**96**		0.42		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Cadmium	ND		0.17		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Chromium	**27**		0.42		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Lead	**4.4**		0.42		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Selenium	ND		0.83		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10
Silver	ND		0.17		mg/Kg	☼	04/21/15 11:45	04/21/15 17:20	10

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.032**		0.022		mg/Kg	☼	04/20/15 11:24	04/21/15 11:32	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**75**		0.10		%			04/21/15 09:00	1
Percent Moisture	**25**		0.10		%			04/21/15 09:00	1

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 580-187342/1-A
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 187342

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
alpha-BHC	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
alpha-Chlordane	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
beta-BHC	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
4,4'-DDD	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
4,4'-DDE	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
4,4'-DDT	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
delta-BHC	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Dieldrin	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endosulfan I	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endosulfan II	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endosulfan sulfate	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endrin	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endrin aldehyde	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Endrin ketone	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
gamma-BHC (Lindane)	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
gamma-Chlordane	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Heptachlor	ND	^	2.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Heptachlor epoxide	ND	^	1.0		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Methoxychlor	ND	^	10		ug/Kg		04/21/15 08:55	04/22/15 19:29	1
Toxaphene	ND		100		ug/Kg		04/21/15 08:55	04/22/15 19:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*90*		*60 - 128*	*04/21/15 08:55*	*04/22/15 19:29*	*1*
Tetrachloro-m-xylene	*92*	^	*35 - 129*	*04/21/15 08:55*	*04/22/15 19:29*	*1*

Lab Sample ID: LCS 580-187342/2-A
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 187342

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	20.0	24.0	^	ug/Kg		120	59 - 127
alpha-BHC	20.0	22.0	^	ug/Kg		110	48 - 132
alpha-Chlordane	20.0	24.8	^	ug/Kg		124	52 - 137
beta-BHC	20.0	22.5	^	ug/Kg		112	45 - 122
4,4'-DDD	20.0	23.7	^	ug/Kg		119	48 - 136
4,4'-DDE	20.0	22.9	^	ug/Kg		115	50 - 138
4,4'-DDT	20.0	23.1	^	ug/Kg		115	53 - 132
delta-BHC	20.0	17.2	^	ug/Kg		86	27 - 124
Dieldrin	20.0	24.8	^	ug/Kg		124	53 - 145
Endosulfan I	20.0	25.5	^	ug/Kg		128	57 - 140
Endosulfan II	20.0	24.3	^	ug/Kg		121	58 - 144
Endosulfan sulfate	20.0	22.6	^	ug/Kg		113	55 - 125
Endrin	20.0	23.7	^	ug/Kg		119	51 - 143
Endrin aldehyde	20.0	23.0	^	ug/Kg		115	45 - 130
Endrin ketone	20.0	23.5	^	ug/Kg		118	53 - 139
gamma-BHC (Lindane)	20.0	23.6	^	ug/Kg		118	47 - 127
gamma-Chlordane	20.0	26.1	^	ug/Kg		130	52 - 137

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 580-187342/2-A
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 187342

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Heptachlor			20.0	23.5	^	ug/Kg		117	43 - 141		
Heptachlor epoxide			20.0	22.8	^	ug/Kg		114	47 - 143		
Methoxychlor			20.0	23.0	^	ug/Kg		115	56 - 137		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*93*		*60 - 128*
Tetrachloro-m-xylene	*95*	^	*35 - 129*

Lab Sample ID: LCSD 580-187342/3-A
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 187342

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			20.0	23.7	^	ug/Kg		118	59 - 127	1	19
alpha-BHC			20.0	21.6	^	ug/Kg		108	48 - 132	2	17
alpha-Chlordane			20.0	24.6	^	ug/Kg		123	52 - 137	1	17
beta-BHC			20.0	22.3	^	ug/Kg		111	45 - 122	1	18
4,4'-DDD			20.0	23.8	^	ug/Kg		119	48 - 136	0	18
4,4'-DDE			20.0	22.9	^	ug/Kg		114	50 - 138	0	17
4,4'-DDT			20.0	23.1	^	ug/Kg		116	53 - 132	0	20
delta-BHC			20.0	17.2	^	ug/Kg		86	27 - 124	0	19
Dieldrin			20.0	24.7	^	ug/Kg		123	53 - 145	1	18
Endosulfan I			20.0	25.1	^	ug/Kg		126	57 - 140	2	19
Endosulfan II			20.0	24.2	^	ug/Kg		121	58 - 144	0	19
Endosulfan sulfate			20.0	22.4	^	ug/Kg		112	55 - 125	0	18
Endrin			20.0	23.5	^	ug/Kg		118	51 - 143	1	18
Endrin aldehyde			20.0	23.9	^	ug/Kg		120	45 - 130	4	21
Endrin ketone			20.0	23.4	^	ug/Kg		117	53 - 139	1	17
gamma-BHC (Lindane)			20.0	23.4	^	ug/Kg		117	47 - 127	1	17
gamma-Chlordane			20.0	25.9	^	ug/Kg		129	52 - 137	1	17
Heptachlor			20.0	23.2	^	ug/Kg		116	43 - 141	1	18
Heptachlor epoxide			20.0	22.7	^	ug/Kg		113	47 - 143	1	17
Methoxychlor			20.0	22.8	^	ug/Kg		114	56 - 137	1	17

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*93*		*60 - 128*
Tetrachloro-m-xylene	*95*	^	*35 - 129*

Lab Sample ID: 580-49046-1 MS
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: LAI-B15 (6)
Prep Type: Total/NA
Prep Batch: 187342

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aldrin	ND	^	26.3	21.4	^	ug/Kg	☼	81	59 - 127		
alpha-BHC	ND	F2 ^	26.3	19.1	^	ug/Kg	☼	73	48 - 132		
alpha-Chlordane	ND	^	26.3	23.6	^	ug/Kg	☼	90	52 - 137		
beta-BHC	ND	^	26.3	20.8	^	ug/Kg	☼	79	45 - 122		
4,4'-DDD	ND	^	26.3	21.6	^	ug/Kg	☼	82	48 - 136		

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 580-49046-1 MS
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: LAI-B15 (6)
Prep Type: Total/NA
Prep Batch: 187342

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDE	ND	^	26.3	22.3	^	ug/Kg	☼	85	50 - 138
4,4'-DDT	ND	^	26.3	20.4	^	ug/Kg	☼	77	53 - 132
delta-BHC	ND	^	26.3	16.1	^	ug/Kg	☼	61	27 - 124
Dieldrin	ND	^	26.3	23.5	^	ug/Kg	☼	89	53 - 145
Endosulfan I	ND	^	26.3	24.1	^	ug/Kg	☼	92	57 - 140
Endosulfan II	ND	^	26.3	22.8	^	ug/Kg	☼	87	58 - 144
Endosulfan sulfate	ND	^	26.3	21.2	^	ug/Kg	☼	81	55 - 125
Endrin	ND	^	26.3	22.8	^	ug/Kg	☼	87	51 - 143
Endrin aldehyde	ND	F2 F1 ^	26.3	23.6	^	ug/Kg	☼	90	45 - 130
Endrin ketone	ND	^	26.3	22.2	^	ug/Kg	☼	84	53 - 139
gamma-BHC (Lindane)	ND	^	26.3	22.3	^	ug/Kg	☼	85	47 - 127
gamma-Chlordane	ND	^	26.3	24.5	^	ug/Kg	☼	93	52 - 137
Heptachlor	ND	^	26.3	21.0	^	ug/Kg	☼	80	43 - 141
Heptachlor epoxide	ND	^	26.3	21.6	^	ug/Kg	☼	82	47 - 143
Methoxychlor	ND	^	26.3	18.9	^	ug/Kg	☼	72	56 - 137

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*68*		*60 - 128*
Tetrachloro-m-xylene	*57*	^	*35 - 129*

Lab Sample ID: 580-49046-1 MSD
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: LAI-B15 (6)
Prep Type: Total/NA
Prep Batch: 187342

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	ND	^	27.8	25.3	^	ug/Kg	☼	91	59 - 127	17	19
alpha-BHC	ND	F2 ^	27.8	24.1	^ F2	ug/Kg	☼	87	48 - 132	23	17
alpha-Chlordane	ND	^	27.8	26.8	^	ug/Kg	☼	96	52 - 137	13	17
beta-BHC	ND	^	27.8	24.5	^	ug/Kg	☼	88	45 - 122	16	18
4,4'-DDD	ND	^	27.8	24.7	^	ug/Kg	☼	89	48 - 136	13	18
4,4'-DDE	ND	^	27.8	25.7	^	ug/Kg	☼	92	50 - 138	14	17
4,4'-DDT	ND	^	27.8	22.7	^	ug/Kg	☼	81	53 - 132	11	20
delta-BHC	ND	^	27.8	18.9	^	ug/Kg	☼	68	27 - 124	16	19
Dieldrin	ND	^	27.8	26.7	^	ug/Kg	☼	96	53 - 145	13	18
Endosulfan I	ND	^	27.8	27.3	^	ug/Kg	☼	98	57 - 140	13	19
Endosulfan II	ND	^	27.8	26.4	^	ug/Kg	☼	95	58 - 144	14	19
Endosulfan sulfate	ND	^	27.8	24.3	^	ug/Kg	☼	87	55 - 125	14	18
Endrin	ND	^	27.8	26.2	^	ug/Kg	☼	94	51 - 143	14	18
Endrin aldehyde	ND	F2 F1 ^	27.8	26.2	^	ug/Kg	☼	94	45 - 130	11	21
Endrin ketone	ND	^	27.8	25.3	^	ug/Kg	☼	91	53 - 139	13	17
gamma-BHC (Lindane)	ND	^	27.8	26.1	^	ug/Kg	☼	94	47 - 127	16	17
gamma-Chlordane	ND	^	27.8	28.0	^	ug/Kg	☼	101	52 - 137	13	17
Heptachlor	ND	^	27.8	24.4	^	ug/Kg	☼	88	43 - 141	15	18
Heptachlor epoxide	ND	^	27.8	24.7	^	ug/Kg	☼	89	47 - 143	13	17
Methoxychlor	ND	^	27.8	21.7	^	ug/Kg	☼	78	56 - 137	14	17

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 580-49046-1 MSD
Matrix: Solid
Analysis Batch: 187488

Client Sample ID: LAI-B15 (6)
Prep Type: Total/NA
Prep Batch: 187342

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl	*68*		*60 - 128*
Tetrachloro-m-xylene	*68*	^	*35 - 129*

Method: 8081A - Organochlorine Pesticides (GC) - RA

Lab Sample ID: MB 580-187342/1-A
Matrix: Solid
Analysis Batch: 187696

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 187342

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
alpha-BHC - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
alpha-Chlordane - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
beta-BHC - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
4,4'-DDD - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
4,4'-DDE - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
4,4'-DDT - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
delta-BHC - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Dieldrin - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endosulfan I - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endosulfan II - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endosulfan sulfate - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endrin - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endrin aldehyde - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Endrin ketone - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
gamma-BHC (Lindane) - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
gamma-Chlordane - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Heptachlor - RA	ND		2.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Heptachlor epoxide - RA	ND		1.0		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Methoxychlor - RA	ND		10		ug/Kg		04/21/15 08:55	04/24/15 14:58	1
Toxaphene - RA	ND		100		ug/Kg		04/21/15 08:55	04/24/15 14:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl - RA	*69*		*60 - 128*	*04/21/15 08:55*	*04/24/15 14:58*	*1*
Tetrachloro-m-xylene - RA	*71*		*35 - 129*	*04/21/15 08:55*	*04/24/15 14:58*	*1*

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 580-187370/21-A
Matrix: Solid
Analysis Batch: 187455

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 187370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.50		mg/Kg		04/21/15 11:45	04/21/15 16:23	10
Barium	ND		0.50		mg/Kg		04/21/15 11:45	04/21/15 16:23	10
Cadmium	ND		0.20		mg/Kg		04/21/15 11:45	04/21/15 16:23	10
Chromium	ND		0.50		mg/Kg		04/21/15 11:45	04/21/15 16:23	10

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-187370/21-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 187455 — **Prep Batch: 187370**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.50		mg/Kg		04/21/15 11:45	04/21/15 16:23	10
Selenium	ND		1.0		mg/Kg		04/21/15 11:45	04/21/15 16:23	10
Silver	ND		0.20		mg/Kg		04/21/15 11:45	04/21/15 16:23	10

Lab Sample ID: LCS 580-187370/22-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 187455 — **Prep Batch: 187370**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	194		mg/Kg		97	80 - 120
Barium	200	197		mg/Kg		98	80 - 120
Cadmium	5.00	5.11		mg/Kg		102	80 - 120
Chromium	20.0	19.8		mg/Kg		99	80 - 120
Lead	50.0	46.9		mg/Kg		94	80 - 120
Selenium	200	195		mg/Kg		97	80 - 120
Silver	30.0	29.7		mg/Kg		99	80 - 120

Lab Sample ID: LCSD 580-187370/23-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 187455 — **Prep Batch: 187370**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	200		mg/Kg		100	80 - 120	3	20
Barium	200	201		mg/Kg		101	80 - 120	2	20
Cadmium	5.00	5.25		mg/Kg		105	80 - 120	3	20
Chromium	20.0	20.7		mg/Kg		104	80 - 120	5	20
Lead	50.0	48.7		mg/Kg		97	80 - 120	4	20
Selenium	200	200		mg/Kg		100	80 - 120	3	20
Silver	30.0	30.6		mg/Kg		102	80 - 120	3	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-187242/19-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 187371 — **Prep Batch: 187242**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg		04/20/15 11:24	04/21/15 09:58	1

Lab Sample ID: LCS 580-187242/20-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 187371 — **Prep Batch: 187242**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.159		mg/Kg		95	80 - 120

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCSD 580-187242/21-A
Matrix: Solid
Analysis Batch: 187371

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 187242

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.167	0.158		mg/Kg		95	80 - 120	1	20

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B15 (6)

Lab Sample ID: 580-49046-1
Date Collected: 04/14/15 09:01
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 71.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 20:38	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B13 (6)

Lab Sample ID: 580-49046-2
Date Collected: 04/14/15 08:52
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 21:30	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B13 (10)

Lab Sample ID: 580-49046-4
Date Collected: 04/14/15 08:56
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 74.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 21:47	CGM	TAL SEA
Total/NA	Prep	3550B	RA		187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A	RA	1	187696	04/24/15 15:15	EKK	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B15 (10)

Lab Sample ID: 580-49046-9
Date Collected: 04/14/15 09:05
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 70.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 22:05	CGM	TAL SEA
Total/NA	Prep	3550B	RA		187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A	RA	1	187696	04/24/15 15:32	EKK	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B19 (5.5)

Lab Sample ID: 580-49046-15
Date Collected: 04/14/15 10:42
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 69.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 23:14	CGM	TAL SEA

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: LAI-B19 (5.5)

Lab Sample ID: 580-49046-15

Date Collected: 04/14/15 10:42
Matrix: Solid
Date Received: 04/14/15 13:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B99

Lab Sample ID: 580-49046-16

Date Collected: 04/14/15 10:28
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 72.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 23:31	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B17 (6)

Lab Sample ID: 580-49046-19

Date Collected: 04/14/15 10:22
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 73.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/22/15 23:48	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B17 (10)

Lab Sample ID: 580-49046-20

Date Collected: 04/14/15 10:26
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 69.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/23/15 00:05	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Client Sample ID: LAI-B19 (10)

Lab Sample ID: 580-49046-22

Date Collected: 04/14/15 10:46
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 74.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/23/15 00:22	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Client Sample ID: Drum
Date Collected: 04/14/15 10:55
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-23
Matrix: Solid
Percent Solids: 75.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	187488	04/23/15 00:40	CGM	TAL SEA
Total/NA	Prep	3550B	RA		187342	04/21/15 08:55	KZ1	TAL SEA
Total/NA	Analysis	8081A	RA	1	187696	04/24/15 15:50	EKK	TAL SEA
Total/NA	Prep	3050B			187370	04/21/15 11:45	PAB	TAL SEA
Total/NA	Analysis	6020A		10	187455	04/21/15 17:20	FCW	TAL SEA
Total/NA	Prep	7471A			187242	04/20/15 11:24	PAB	TAL SEA
Total/NA	Analysis	7471A		1	187371	04/21/15 11:32	FCW	TAL SEA
Total/NA	Analysis	D 2216		1	187343	04/21/15 09:00	AHP	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C553	02-17-16

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8081A	3550B	Solid	4,4'-DDD
8081A	3550B	Solid	4,4'-DDE
8081A	3550B	Solid	4,4'-DDT
8081A	3550B	Solid	Aldrin
8081A	3550B	Solid	alpha-BHC
8081A	3550B	Solid	alpha-Chlordane
8081A	3550B	Solid	beta-BHC
8081A	3550B	Solid	delta-BHC
8081A	3550B	Solid	Dieldrin
8081A	3550B	Solid	Endosulfan I
8081A	3550B	Solid	Endosulfan II
8081A	3550B	Solid	Endosulfan sulfate
8081A	3550B	Solid	Endrin
8081A	3550B	Solid	Endrin aldehyde
8081A	3550B	Solid	Endrin ketone
8081A	3550B	Solid	gamma-BHC (Lindane)
8081A	3550B	Solid	gamma-Chlordane
8081A	3550B	Solid	Heptachlor
8081A	3550B	Solid	Heptachlor epoxide
8081A	3550B	Solid	Methoxychlor
8081A	3550B	Solid	Toxaphene
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-49046-2
Client Project/Site: Webster Nursery, Tumwater, WA

For:
Landau & Associates, Inc.
130 Second Ave South
Edmonds, Washington 98020

Attn: Ms. Anne Halvorsen

Kristine D. Allen

Authorized for release by:
4/30/2015 5:13:30 PM
Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

Designee for

Robert Greer, Project Manager I
(253)922-2310
robert.greer@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Job ID: 580-49046-2

Laboratory: TestAmerica Seattle

Narrative

Job Narrative
580-49046-2

Comments
No additional comments.

Receipt
The samples were received on 4/14/2015 1:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.4° C.

Except:

The following sample(s) was collected in an improper container: LAI-B19 (8), LAI-B19 (10), and Drum. This was discussed with client and the laboratory was instructed to proceed with analysis.

GC Semi VOA
Method(s) 8081A, 8081B: The following analyte(s) recovered outside control limits for the LCS/LCSD associated with preparation batch 580-187982 and analytical batch 580-188109: Endosulfan II. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-49046-3	LAI-B15 (8)	Solid	04/14/15 09:03	04/14/15 13:10
580-49046-5	LAI-B13 (8)	Solid	04/14/15 08:54	04/14/15 13:10
580-49046-10	LAI-B16 (8)	Solid	04/14/15 09:44	04/14/15 13:10
580-49046-11	LAI-B16 (6)	Solid	04/14/15 09:42	04/14/15 13:10
580-49046-12	LAI-B16 (10)	Solid	04/14/15 09:46	04/14/15 13:10
580-49046-13	LAI-B18 (6)	Solid	04/14/15 09:59	04/14/15 13:10
580-49046-14	LAI-B18 (8)	Solid	04/14/15 10:01	04/14/15 13:10
580-49046-17	LAI-B18 (10)	Solid	04/14/15 10:03	04/14/15 13:10
580-49046-18	LAI-B17 (8)	Solid	04/14/15 10:24	04/14/15 13:10
580-49046-21	LAI-B19 (8)	Solid	04/14/15 10:44	04/14/15 13:10

LANDAU ASSOCIATES

- ☐ Seattle/Edmonds (425) 778-0907
- ☒ Tacoma (253) 926-2493
- ☐ Spokane (509) 327-9737
- ☐ Portland (503) 542-1080
- ☐ _____

Chain-of-Custody Record

Date 4/14/15

Page 1 of 2

49046

Project Name Webster Nursery Project No. 774006.010.013

Project Location/Event Olympia, WA

Sampler's Name Siena Mott

Project Contact Siena Mott

Send Results To Anne Halvorsen, Eric Weber, John Felder, Siena Mott

Turnaround Time
☐ Standard
☒ Accelerated
☐ 6 Business Day

	Sample I.D.	Date	Time	Matrix	No. of Containers	8081A organochlorine pesticides	HOLD	HOLD	Observations/Comments
01	LA1-B15 (6)	4/14/15	901	Soil	1	X			
02	LA1-B13 (6)		852		1	X			
03	LA1-B15 (8)		903		1	X	X		
04	LA1-B13 (10)		856		1	X			
05	LA1-B13 (8)		854		1	X	X		
06	LA1-B14 (6)		930		1	X	X		
07	LA1-B14 (8)		932		1	X	X		
08	LA1-B14 (10)		934		1	X	X		
09	LA1-B15 (10)		905		1	X			
10	LA1-B16 (8)		944		1	X	X		
11	LA1-B16 (6)		942		1	X	X		
12	LA1-B16 (10)		946		1	X	X		
13	LA1-B18 (6)		959		1	X	X		
14	LA1-B18 (8)		1001		1	X	X		
15	LA1-B19 (5.5)		1042		1	X			
16	LA1-B99		1028		1	X			
17	LA1-B18 (10)		1003		1	X	X		
18	LA1-B17 (8)		1024		1	X	X		

Testing Parameters

Observations/Comments

- X Allow water samples to settle, collect aliquot from clear portion
- ___ NWTPH-Dx - run acid wash silica gel cleanup
- ___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):

- ___ non-preserved
- ___ preserved w/methanol
- ___ preserved w/sodium bisulfate
- ___ Freeze upon receipt
- ___ Dissolved metal water samples field filtered

Cooler/TB Dig (IR) #2 cor 5.4° unc 5.9°

Cooler Dsc Mod Rec @ Lab 3.10

(Wet) Packs Packing bubble wrap

Special Shipment/Handling or Storage Requirements cooler on ice

Method of Shipment drop off

Relinquished by
Signature Siena Mott
Printed Name Siena Mott
Company LAI
Date 4/14/15 Time 1308

Received by
Signature
Printed Name Robert Green
Company TA-Seattle
Date 4/14/15 Time 13:10

Relinquished by
Signature _____
Printed Name _____
Company _____
Date _____ Time _____

580-49046 Chain of Custody

4/30/2015

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

12/2014

LANDAU ASSOCIATES

☐ **Seattle/Edmonds** (425) 778-0907
☒ **Tacoma** (253) 926-2493
☐ **Spokane** (509) 327-9737
☐ **Portland** (503) 542-1080
☐ _____

Chain-of-Custody Record

Date 4/14/15
Page 2 of 2

49046

Project Name Webster Nursery Project No. 7740006.010.013
Project Location/Event Olympia, WA
Sampler's Name Siena Mott
Project Contact Siena Mott
Send Results To Anne Halvorsen, Eric Weber
John Felder, Siena Mott

Turnaround Time
☐ Standard
☒ Accelerated
☐ 6 Business Day

Sample I.D.	Date	Time	Matrix	No. of Containers	8081A - organochlorine pesticides	PCBs as Aroclors	HOLD Metals	Observations/Comments
19 - LAI-B17(6)	4/14/15	1022	Soil	1	X			X Allow water samples to settle, collect aliquot from clear portion
20 - LAI-B17(10)		1026		1	X			___ NWTPH-Dx - run acid wash silica gel cleanup
~~LAI-B19(6)~~	sm							
21 - LAI-B19(8)		1044		1	X	X		___ Analyze for EPH if no specific product identified
LAI-B19(10)		1046		1	X			VOC/BTEX/VPH (soil):
Drum		1055		1	X		X	___ non-preserved
								___ preserved w/methanol
								___ preserved w/sodium bisulfate
								___ Freeze upon receipt
								___ Dissolved metal water samples field filtered

Cooler/TB Dig IR cor 5.4 unc 5.9
Cooler Dsc Mod Rec @ Lab 1310
Wet/Packs Packing Bubble wrap
Clear Dropoff w/o Ice

Special Shipment/Handling or Storage Requirements Cooler on ice

Method of Shipment drop off

Relinquished by	Received by	Relinquished by	Received by
Signature Siena Mott	Signature	Signature	Signature
Printed Name Siena Mott	Printed Name Robert Green	Printed Name	Printed Name
Company LAI	Company TA-Seattle	Company	Company
Date 4/14/15 Time 1308	Date 4/14/15 Time 1310	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

12/2014

4/30/2015

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-49046-2

Login Number: 49046

List Source: TestAmerica Seattle

List Number: 1

Creator: Greer, Robert A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	False	Refer to Job Narrative for details.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B15 (8)
Date Collected: 04/14/15 09:03
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-3
Matrix: Solid
Percent Solids: 68.9

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
4,4'-DDD	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
4,4'-DDE	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
4,4'-DDT	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Dieldrin	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endosulfan II	ND	* F1	2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endosulfan sulfate	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endrin	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endrin aldehyde	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Endrin ketone	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Heptachlor	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Heptachlor epoxide	**2.9**		1.4		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/29/15 19:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*60 - 128*	*04/28/15 09:45*	*04/29/15 19:07*	*1*
Tetrachloro-m-xylene	*73*		*35 - 129*	*04/28/15 09:45*	*04/29/15 19:07*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**69**		0.10		%			04/28/15 15:50	1
Percent Moisture	**31**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B13 (8)
Date Collected: 04/14/15 08:54
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-5
Matrix: Solid
Percent Solids: 71.1

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
4,4'-DDD	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
4,4'-DDE	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
4,4'-DDT	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Dieldrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endosulfan II	ND	*	2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endosulfan sulfate	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endrin aldehyde	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Endrin ketone	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Heptachlor	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 09:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*65*		*60 - 128*	*04/28/15 09:45*	*04/30/15 09:46*	*1*
Tetrachloro-m-xylene	*72*		*35 - 129*	*04/28/15 09:45*	*04/30/15 09:46*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**71**		0.10		%			04/28/15 15:50	1
Percent Moisture	**29**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B16 (8)
Date Collected: 04/14/15 09:44
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-10
Matrix: Solid
Percent Solids: 69.8

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
4,4'-DDD	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
4,4'-DDE	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
4,4'-DDT	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Dieldrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endosulfan II	ND	*	2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endosulfan sulfate	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endrin aldehyde	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Endrin ketone	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Heptachlor	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 10:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*71*		*60 - 128*	*04/28/15 09:45*	*04/30/15 10:03*	*1*
Tetrachloro-m-xylene	*58*		*35 - 129*	*04/28/15 09:45*	*04/30/15 10:03*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70**		0.10		%			04/28/15 15:50	1
Percent Moisture	**30**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B16 (6)
Date Collected: 04/14/15 09:42
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-11
Matrix: Solid
Percent Solids: 72.2

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
4,4'-DDD	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
4,4'-DDE	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
4,4'-DDT	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Dieldrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endosulfan II	ND	*	2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endosulfan sulfate	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endrin aldehyde	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Endrin ketone	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Heptachlor	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 10:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*70*		*60 - 128*	*04/28/15 09:45*	*04/30/15 10:20*	*1*
Tetrachloro-m-xylene	*58*		*35 - 129*	*04/28/15 09:45*	*04/30/15 10:20*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**72**		0.10		%			04/28/15 15:50	1
Percent Moisture	**28**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B16 (10)
Date Collected: 04/14/15 09:46
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-12
Matrix: Solid
Percent Solids: 72.0

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
4,4'-DDD	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
4,4'-DDE	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
4,4'-DDT	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Dieldrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endosulfan II	ND	*	2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endosulfan sulfate	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endrin	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endrin aldehyde	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Endrin ketone	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Heptachlor	ND		2.7		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*76*		*60 - 128*	*04/28/15 09:45*	*04/30/15 10:38*	*1*
Tetrachloro-m-xylene	*63*		*35 - 129*	*04/28/15 09:45*	*04/30/15 10:38*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**72**		0.10		%			04/28/15 15:50	1
Percent Moisture	**28**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B18 (6)
Date Collected: 04/14/15 09:59
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-13
Matrix: Solid
Percent Solids: 67.8

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
alpha-BHC	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
alpha-Chlordane	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
beta-BHC	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
4,4'-DDD	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
4,4'-DDE	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
4,4'-DDT	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
delta-BHC	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Dieldrin	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endosulfan I	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endosulfan II	ND	*	2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endosulfan sulfate	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endrin	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endrin aldehyde	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Endrin ketone	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
gamma-BHC (Lindane)	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
gamma-Chlordane	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Heptachlor	ND		2.9		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Heptachlor epoxide	ND		1.5		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Methoxychlor	ND		15		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1
Toxaphene	ND		150		ug/Kg	☼	04/28/15 09:45	04/30/15 10:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*79*		*60 - 128*	*04/28/15 09:45*	*04/30/15 10:55*	*1*
Tetrachloro-m-xylene	*67*		*35 - 129*	*04/28/15 09:45*	*04/30/15 10:55*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**68**		0.10		%			04/28/15 15:50	1
Percent Moisture	**32**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B18 (8)
Date Collected: 04/14/15 10:01
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-14
Matrix: Solid
Percent Solids: 68.5

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
4,4'-DDD	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
4,4'-DDE	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
4,4'-DDT	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Dieldrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endosulfan II	ND	*	2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endosulfan sulfate	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endrin aldehyde	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Endrin ketone	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Heptachlor	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 11:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*77*		*60 - 128*	*04/28/15 09:45*	*04/30/15 11:12*	*1*
Tetrachloro-m-xylene	*62*		*35 - 129*	*04/28/15 09:45*	*04/30/15 11:12*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**68**		0.10		%			04/28/15 15:50	1
Percent Moisture	**32**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B18 (10)
Date Collected: 04/14/15 10:03
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-17
Matrix: Solid
Percent Solids: 74.9

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
alpha-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
alpha-Chlordane	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
beta-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
4,4'-DDD	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
4,4'-DDE	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
4,4'-DDT	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
delta-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Dieldrin	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endosulfan I	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endosulfan II	ND	*	2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endosulfan sulfate	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endrin	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endrin aldehyde	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Endrin ketone	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
gamma-BHC (Lindane)	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
gamma-Chlordane	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Heptachlor	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Heptachlor epoxide	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Methoxychlor	ND		13		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1
Toxaphene	ND		130		ug/Kg	☼	04/28/15 09:45	04/30/15 11:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*81*		*60 - 128*	*04/28/15 09:45*	*04/30/15 11:29*	*1*
Tetrachloro-m-xylene	*60*		*35 - 129*	*04/28/15 09:45*	*04/30/15 11:29*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**75**		0.10		%			04/28/15 15:50	1
Percent Moisture	**25**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B17 (8)
Date Collected: 04/14/15 10:24
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-18
Matrix: Solid
Percent Solids: 70.2

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
alpha-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
alpha-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
beta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
4,4'-DDD	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
4,4'-DDE	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
4,4'-DDT	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
delta-BHC	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Dieldrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endosulfan I	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endosulfan II	ND	*	2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endosulfan sulfate	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endrin	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endrin aldehyde	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Endrin ketone	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
gamma-BHC (Lindane)	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
gamma-Chlordane	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Heptachlor	ND		2.8		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Heptachlor epoxide	ND		1.4		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Methoxychlor	ND		14		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1
Toxaphene	ND		140		ug/Kg	☼	04/28/15 09:45	04/30/15 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*81*		*60 - 128*	*04/28/15 09:45*	*04/30/15 11:47*	*1*
Tetrachloro-m-xylene	*70*		*35 - 129*	*04/28/15 09:45*	*04/30/15 11:47*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70**		0.10		%			04/28/15 15:50	1
Percent Moisture	**30**		0.10		%			04/28/15 15:50	1

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B19 (8)
Date Collected: 04/14/15 10:44
Date Received: 04/14/15 13:10

Lab Sample ID: 580-49046-21
Matrix: Solid
Percent Solids: 75.8

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
alpha-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
alpha-Chlordane	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
beta-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
4,4'-DDD	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
4,4'-DDE	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
4,4'-DDT	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
delta-BHC	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Dieldrin	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endosulfan I	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endosulfan II	ND	*	2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endosulfan sulfate	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endrin	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endrin aldehyde	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Endrin ketone	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
gamma-BHC (Lindane)	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
gamma-Chlordane	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Heptachlor	ND		2.6		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Heptachlor epoxide	ND		1.3		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Methoxychlor	ND		13		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1
Toxaphene	ND		130		ug/Kg	☼	04/28/15 09:45	04/30/15 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*78*		*60 - 128*	*04/28/15 09:45*	*04/30/15 12:04*	*1*
Tetrachloro-m-xylene	*76*		*35 - 129*	*04/28/15 09:45*	*04/30/15 12:04*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**76**		0.10		%			04/28/15 15:50	1
Percent Moisture	**24**		0.10		%			04/28/15 15:50	1

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 580-187982/1-A
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 187982

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
alpha-BHC	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
alpha-Chlordane	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
beta-BHC	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
4,4'-DDD	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
4,4'-DDE	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
4,4'-DDT	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
delta-BHC	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Dieldrin	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endosulfan I	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endosulfan II	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endosulfan sulfate	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endrin	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endrin aldehyde	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Endrin ketone	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
gamma-BHC (Lindane)	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
gamma-Chlordane	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Heptachlor	ND		2.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Heptachlor epoxide	ND		1.0		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Methoxychlor	ND		10		ug/Kg		04/28/15 09:45	04/29/15 18:15	1
Toxaphene	ND		100		ug/Kg		04/28/15 09:45	04/29/15 18:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*88*		*60 - 128*	*04/28/15 09:45*	*04/29/15 18:15*	*1*
Tetrachloro-m-xylene	*88*		*35 - 129*	*04/28/15 09:45*	*04/29/15 18:15*	*1*

Lab Sample ID: LCS 580-187982/2-A
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 187982

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	20.0	18.8		ug/Kg		94	59 - 127
alpha-BHC	20.0	16.4		ug/Kg		82	48 - 132
alpha-Chlordane	20.0	18.7		ug/Kg		93	52 - 137
beta-BHC	20.0	18.5		ug/Kg		93	45 - 122
4,4'-DDD	20.0	17.9		ug/Kg		89	48 - 136
4,4'-DDE	20.0	17.4		ug/Kg		87	50 - 138
4,4'-DDT	20.0	17.8		ug/Kg		89	53 - 132
delta-BHC	20.0	14.5		ug/Kg		73	27 - 124
Dieldrin	20.0	18.7		ug/Kg		93	53 - 145
Endosulfan I	20.0	15.7		ug/Kg		78	57 - 140
Endosulfan II	20.0	6.53	*	ug/Kg		33	58 - 144
Endosulfan sulfate	20.0	17.5		ug/Kg		88	55 - 125
Endrin	20.0	17.7		ug/Kg		89	51 - 143
Endrin aldehyde	20.0	16.3		ug/Kg		82	45 - 130
Endrin ketone	20.0	18.1		ug/Kg		91	53 - 139
gamma-BHC (Lindane)	20.0	17.3		ug/Kg		86	47 - 127
gamma-Chlordane	20.0	19.6		ug/Kg		98	52 - 137

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 580-187982/2-A
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 187982

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Heptachlor			20.0	18.3		ug/Kg		91	43 - 141		
Heptachlor epoxide			20.0	17.4		ug/Kg		87	47 - 143		
Methoxychlor			20.0	18.2		ug/Kg		91	56 - 137		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*81*		*60 - 128*
Tetrachloro-m-xylene	*79*		*35 - 129*

Lab Sample ID: LCSD 580-187982/3-A
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 187982

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			20.0	18.2		ug/Kg		91	59 - 127	3	19
alpha-BHC			20.0	16.4		ug/Kg		82	48 - 132	0	17
alpha-Chlordane			20.0	18.5		ug/Kg		92	52 - 137	1	17
beta-BHC			20.0	15.9		ug/Kg		80	45 - 122	15	18
4,4'-DDD			20.0	17.6		ug/Kg		88	48 - 136	1	18
4,4'-DDE			20.0	17.3		ug/Kg		86	50 - 138	1	17
4,4'-DDT			20.0	17.5		ug/Kg		87	53 - 132	2	20
delta-BHC			20.0	14.1		ug/Kg		70	27 - 124	3	19
Dieldrin			20.0	18.5		ug/Kg		92	53 - 145	1	18
Endosulfan I			20.0	15.6		ug/Kg		78	57 - 140	1	19
Endosulfan II			20.0	6.53	*	ug/Kg		33	58 - 144	0	19
Endosulfan sulfate			20.0	17.2		ug/Kg		86	55 - 125	2	18
Endrin			20.0	17.6		ug/Kg		88	51 - 143	1	18
Endrin aldehyde			20.0	15.5		ug/Kg		77	45 - 130	6	21
Endrin ketone			20.0	18.0		ug/Kg		90	53 - 139	1	17
gamma-BHC (Lindane)			20.0	17.8		ug/Kg		89	47 - 127	3	17
gamma-Chlordane			20.0	19.3		ug/Kg		97	52 - 137	1	17
Heptachlor			20.0	17.9		ug/Kg		89	43 - 141	2	18
Heptachlor epoxide			20.0	17.2		ug/Kg		86	47 - 143	1	17
Methoxychlor			20.0	17.7		ug/Kg		89	56 - 137	3	17

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*77*		*60 - 128*
Tetrachloro-m-xylene	*80*		*35 - 129*

Lab Sample ID: 580-49046-3 MS
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: LAI-B15 (8)
Prep Type: Total/NA
Prep Batch: 187982

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aldrin	ND		28.6	25.5		ug/Kg	☼	89	59 - 127		
alpha-BHC	ND		28.6	23.2		ug/Kg	☼	81	48 - 132		
alpha-Chlordane	ND		28.6	28.4		ug/Kg	☼	99	52 - 137		
beta-BHC	ND		28.6	24.2		ug/Kg	☼	85	45 - 122		
4,4'-DDD	ND		28.6	26.8		ug/Kg	☼	94	48 - 136		

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 580-49046-3 MS
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: LAI-B15 (8)
Prep Type: Total/NA
Prep Batch: 187982

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDE	ND		28.6	26.2		ug/Kg	☼	92	50 - 138
4,4'-DDT	ND		28.6	27.1		ug/Kg	☼	95	53 - 132
delta-BHC	ND		28.6	22.1		ug/Kg	☼	77	27 - 124
Dieldrin	ND		28.6	28.6		ug/Kg	☼	100	53 - 145
Endosulfan I	ND		28.6	24.1		ug/Kg	☼	84	57 - 140
Endosulfan II	ND	* F1	28.6	10.0	F1	ug/Kg	☼	35	58 - 144
Endosulfan sulfate	ND		28.6	26.6		ug/Kg	☼	93	55 - 125
Endrin	ND		28.6	27.7		ug/Kg	☼	97	51 - 143
Endrin aldehyde	ND		28.6	26.6		ug/Kg	☼	93	45 - 130
Endrin ketone	ND		28.6	27.6		ug/Kg	☼	96	53 - 139
gamma-BHC (Lindane)	ND		28.6	26.6		ug/Kg	☼	93	47 - 127
gamma-Chlordane	ND		28.6	29.7		ug/Kg	☼	104	52 - 137
Heptachlor	ND		28.6	26.0		ug/Kg	☼	91	43 - 141
Heptachlor epoxide	2.9		28.6	28.7		ug/Kg	☼	90	47 - 143
Methoxychlor	ND		28.6	25.4		ug/Kg	☼	89	56 - 137

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*79*		*60 - 128*
Tetrachloro-m-xylene	*77*		*35 - 129*

Lab Sample ID: 580-49046-3 MSD
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: LAI-B15 (8)
Prep Type: Total/NA
Prep Batch: 187982

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	ND		28.5	23.9		ug/Kg	☼	84	59 - 127	6	19
alpha-BHC	ND		28.5	22.1		ug/Kg	☼	78	48 - 132	5	17
alpha-Chlordane	ND		28.5	25.7		ug/Kg	☼	90	52 - 137	10	17
beta-BHC	ND		28.5	24.9		ug/Kg	☼	87	45 - 122	3	18
4,4'-DDD	ND		28.5	24.1		ug/Kg	☼	85	48 - 136	11	18
4,4'-DDE	ND		28.5	23.5		ug/Kg	☼	83	50 - 138	11	17
4,4'-DDT	ND		28.5	23.9		ug/Kg	☼	84	53 - 132	12	20
delta-BHC	ND		28.5	20.1		ug/Kg	☼	70	27 - 124	9	19
Dieldrin	ND		28.5	25.7		ug/Kg	☼	90	53 - 145	10	18
Endosulfan I	ND		28.5	21.9		ug/Kg	☼	77	57 - 140	10	19
Endosulfan II	ND	* F1	28.5	9.03	F1	ug/Kg	☼	32	58 - 144	10	19
Endosulfan sulfate	ND		28.5	24.1		ug/Kg	☼	85	55 - 125	10	18
Endrin	ND		28.5	24.7		ug/Kg	☼	87	51 - 143	11	18
Endrin aldehyde	ND		28.5	23.7		ug/Kg	☼	83	45 - 130	11	21
Endrin ketone	ND		28.5	25.1		ug/Kg	☼	88	53 - 139	10	17
gamma-BHC (Lindane)	ND		28.5	24.0		ug/Kg	☼	84	47 - 127	10	17
gamma-Chlordane	ND		28.5	26.9		ug/Kg	☼	94	52 - 137	10	17
Heptachlor	ND		28.5	24.5		ug/Kg	☼	86	43 - 141	6	18
Heptachlor epoxide	2.9		28.5	26.0		ug/Kg	☼	81	47 - 143	10	17
Methoxychlor	ND		28.5	23.2		ug/Kg	☼	81	56 - 137	9	17

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 580-49046-3 MSD
Matrix: Solid
Analysis Batch: 188109

Client Sample ID: LAI-B15 (8)
Prep Type: Total/NA
Prep Batch: 187982

Surrogate	MSD %Recovery	MSD Qualifier	Limits
DCB Decachlorobiphenyl	*72*		*60 - 128*
Tetrachloro-m-xylene	*68*		*35 - 129*

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B15 (8)

Lab Sample ID: 580-49046-3
Date Collected: 04/14/15 09:03
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 68.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188109	04/29/15 19:07	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B13 (8)

Lab Sample ID: 580-49046-5
Date Collected: 04/14/15 08:54
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 71.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 09:46	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B16 (8)

Lab Sample ID: 580-49046-10
Date Collected: 04/14/15 09:44
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 69.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 10:03	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B16 (6)

Lab Sample ID: 580-49046-11
Date Collected: 04/14/15 09:42
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 10:20	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B16 (10)

Lab Sample ID: 580-49046-12
Date Collected: 04/14/15 09:46
Matrix: Solid
Date Received: 04/14/15 13:10
Percent Solids: 72.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 10:38	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Client Sample ID: LAI-B18 (6)

Lab Sample ID: 580-49046-13

Date Collected: 04/14/15 09:59
Date Received: 04/14/15 13:10

Matrix: Solid
Percent Solids: 67.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 10:55	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B18 (8)

Lab Sample ID: 580-49046-14

Date Collected: 04/14/15 10:01
Date Received: 04/14/15 13:10

Matrix: Solid
Percent Solids: 68.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 11:12	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B18 (10)

Lab Sample ID: 580-49046-17

Date Collected: 04/14/15 10:03
Date Received: 04/14/15 13:10

Matrix: Solid
Percent Solids: 74.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 11:29	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B17 (8)

Lab Sample ID: 580-49046-18

Date Collected: 04/14/15 10:24
Date Received: 04/14/15 13:10

Matrix: Solid
Percent Solids: 70.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 11:47	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Client Sample ID: LAI-B19 (8)

Lab Sample ID: 580-49046-21

Date Collected: 04/14/15 10:44
Date Received: 04/14/15 13:10

Matrix: Solid
Percent Solids: 75.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			187982	04/28/15 09:45	KZ1	TAL SEA
Total/NA	Analysis	8081A		1	188205	04/30/15 12:04	CGM	TAL SEA
Total/NA	Analysis	D 2216		1	188072	04/28/15 15:50	KZ1	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Certification Summary

Client: Landau & Associates, Inc.
Project/Site: Webster Nursery, Tumwater, WA

TestAmerica Job ID: 580-49046-2

Laboratory: TestAmerica Seattle

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C553	02-17-16

APPENDIX D

Groundwater Data: August 2000 to Present

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-1 Aug-00		SW-1 Nov-00		SW-1 Feb-01		SW-1 May-01		SW-1 Sep-01		SW-1 Dec-01		SW-1 Apr-02		SW-1 Nov-02		SW-1 Apr-03		SW-1 Nov-03		SW-1 Apr-04		SW-1 Dec-04		SW-1 Apr-05	
PESTICIDES (µg/L)																											
EPA Method 8081A																											
Aldrin		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.007	U
alpha-BHC		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.007	U
beta-BHC		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.006	U
delta-BHC		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.008	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.008	U
4,4'-DDE		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U
4,4'-DDT		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.008	U
Dieldrin		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.011	U
Endosulfan I		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.005	U
Endosulfan II		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.011	U
Endosulfan sulfate		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U
Endrin		0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.002	U
Endrin aldehyde		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.018	U
Heptachlor	0.019	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U
Heptachlor epoxide	0.0048	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U
Methoxychlor		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.002	U
Endrin ketone		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U
Toxaphene						--	U	--	U	--	U	--	U	--	U	--	U	1.0	U	1.0	U	1.0	U	1.0	U	0.47	U
alpha-Chlordane	0.25	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.006	U
gamma-Chlordane	0.25	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U
Total Chlordane	0.25	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																											
EPA Method 515.5																											
2,4-D																											
2,4,5-T																											
2,4,5-TP	128																										
Dicamba	480																										
Picloram	1120																										
Nitrogen and Phosphorus Pesticides (µg/L)																											
EPA Methods 507/525.5																											
Atrazine	0.38	0.01	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	**0.04**	**J**	**0.01**	**J**	0.03	U	0.03	U	0.03	U
Simazine	0.729	0.01	U	0.028	U	0.028	U	0.028	U	0.028	U	**0.15**		**0.17**		0.028	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																											
Nitrite as N (EPA 300.0)																											
Sulfate (EPA 300.0)																											
Nitrate as N (EPA 300.0)																											
Total Organic Carbon (EPA 415.1)																											
Sulfide, Reactive (EPA 9034)																											
FIELD PARAMETERS																											
Dissolved Oxygen (mg/L)																											
Oxidation Reduction Potential (mV)																											
Ferrous Iron (mg/L)																											

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-1 Mar-06		SW-9 Feb-07		SW-9 Jan-08		SW-9 May-08		SW-9 Oct-08		SW-9 Aug-09		SW-9 Jan-10		SW-9 Jul-10		SW-9 Jan-11		SW-9 Aug-11		SW-9 Feb-12		SW-9 Aug-12		SW-9 Feb-13	
PESTICIDES (µg/L)																											
EPA Method 8081A																											
Aldrin		0.007	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.01	U	0.02	U	0.01	U	0.01	U
alpha-BHC		0.007	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.01	U	0.02	U	0.01	U	0.01	U
beta-BHC		0.006	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.02	U	0.02	U	0.02	U	0.02	U
delta-BHC		0.008	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.01	U	0.02	U	0.01	U	0.01	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.01	U	0.02	U	0.01	U	0.01	U
4,4'-DDD		0.008	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.02	U	0.02	U	0.02	U
4,4'-DDE		0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.01	U	0.02	U	0.01	U	0.01	U
4,4'-DDT		0.008	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	B4	0.01	U	0.01	U	0.008	U	0.02	U	0.008	U	0.008	U
Dieldrin		0.011	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.01	U	0.02	U	0.01	U	0.01	U
Endosulfan I		0.005	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.02	U	0.02	U	0.02	U	0.02	U
Endosulfan II		0.011	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.04	U	0.02	U	0.01	U	0.01	U
Endosulfan sulfate		0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.08	U	0.02	U	0.08	U	0.08	U
Endrin		0.002	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.01	U	0.02	U	0.01	U	0.01	U
Endrin aldehyde		0.018	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.02	U	0.02	U	0.02	U	0.02	U
Heptachlor	0.019	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.007	U	0.02	U	0.007	U	0.007	U
Heptachlor epoxide	0.0048	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.02	U	0.02	U	0.02	U	0.02	U
Methoxychlor		0.002	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.04	U	0.02	U	0.04	U	0.04	U
Endrin ketone		0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.01	U	0.02	U	0.01	U	0.01	U
Toxaphene		0.47	U																	0.8	U	1.0	U	0.85	U	0.5	U
alpha-Chlordane	0.25	0.006	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.01	U	0.02	U	0.01	U	0.01	U
gamma-Chlordane	0.25	0.005	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.009	U	0.02	U	0.009	U	0.009	U
Total Chlordane	0.25	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.2	U	0.5	U	0.29	U	0.07	U
Chlorinated Herbicides (µg/L)																											
EPA Method 515.5																											
2,4-D																											
2,4,5-T																											
2,4,5-TP	128																										
Dicamba	480																										
Picloram	1120																										
Nitrogen and Phosphorus Pesticides (µg/L)																											
EPA Methods 507/525.5																											
Atrazine	0.38	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.07	U	0.03	U	0.03	U	0.03	U
Simazine	0.729	**0.14**		0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.05	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																											
Nitrite as N (EPA 300.0)																											
Sulfate (EPA 300.0)																						**7**		**10**		**9**	
Nitrate as N (EPA 300.0)																						**0.5**		**0.7**		**0.8**	
Total Organic Carbon (EPA 415.1)																						**0.5**		**0.5**		**0.7**	
Sulfide, Reactive (EPA 9034)																						0.1	U	0.1	U	0.1	U
FIELD PARAMETERS																											
Dissolved Oxygen (mg/L)																											
Oxidation Reduction Potential (mV)																											
Ferrous Iron (mg/L)																						0.03	U	0		0	

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-9 Sep-13		SW-9 580-42461-1 Feb-14		SW-9 580-45310-7 Sep-14		SW-10 Aug-00		SW-10 Nov-00		SW-10 Feb-01		SW-10 May-01		SW-10 Sep-01		SW-10 Dec-01		SW-10 Apr-02		SW-10 Feb-12		SW-10 Aug-12		SW-10 Feb-13	
PESTICIDES (µg/L)																											
EPA Method 8081A																											
Aldrin		0.003	U	0.0098	U	0.0099	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.02	U	0.01	U	0.01	U
alpha-BHC		0.0026	U	0.0098	U	0.0099	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.02	U	0.01	U	0.01	U
beta-BHC		0.0015	U	0.02	U	0.02	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.02	U	0.02	U	0.02	U
delta-BHC		0.003	U	0.0098	U	0.0099	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.02	U	0.01	U	0.01	U
gamma-BHC (Lindane)		0.003	U	0.0098	U	0.0099	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.02	U	0.01	U	0.01	U
4,4'-DDD		0.003	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.02	U	0.02	U
4,4'-DDE		0.0011	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.01	U	0.01	U
4,4'-DDT		0.003	U	0.02	U	0.020	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.02	U	0.008	U	0.008	U
Dieldrin		0.003	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.01	U	0.01	U
Endosulfan I		0.003	U	0.02	U	0.020	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.02	U	0.02	U	0.02	U
Endosulfan II		0.003	U	0.02	U	0.020	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.02	U	0.01	U	0.01	U
Endosulfan sulfate		0.003	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.08	U	0.08	U
Endrin		0.003	U	0.02	U	0.020	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.02	U	0.01	U	0.01	U
Endrin aldehyde		0.00099	U	0.049	U	0.049	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.02	U	0.02	U	0.02	U
Heptachlor	0.019	0.003	U	0.0098	U	0.0099	U	**0.26**		**0.21**		**0.18**		**0.11**		0.005	U	**0.17**		**0.008**	**J**	0.02	U	0.007	U	0.007	U
Heptachlor epoxide	0.0048	0.003	U	0.0098	U	0.0099	U	**1.85**		**1.75**		**1.75**		**1.76**		**1.09**		**1.51**		**0.59**		**0.34**		**0.41**		**0.22**	
Methoxychlor		0.003	U	0.098	U	0.099	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.02	U	0.04	U	0.04	U
Endrin ketone		0.003	U	0.02	U	0.020	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.02	U	0.01	U	0.01	U
Toxaphene		0.27	U	0.98	U	0.99	U															1.0	U	0.85	U	0.5	U
alpha-Chlordane	0.25	0.003	U	0.0098	U	0.0099	U	**0.11**		**0.15**		**0.12**		**0.2**		0.004	U	**0.23**		**0.01**		0.02	U	0.01	U	0.01	U
gamma-Chlordane	0.25	0.0011	U	0.0098	U	0.0099	U	**0.43**		**0.76**		**0.68**		**1.13**		**0.245**		**0.745**		**0.05**		**0.08**		**0.06**		0.009	U
Total Chlordane	0.25	0.023	U	ND	U	ND	U	**1.45**		**2.15**		**3.3**		**6.45**		**1.6**		**3.85**		**0.44**		0.5	U	0.29	U	0.07	U
Chlorinated Herbicides (µg/L)																											
EPA Method 515.5																											
2,4-D																											
2,4,5-T																											
2,4,5-TP	128																										
Dicamba	480																										
Picloram	1120																										
Nitrogen and Phosphorus Pesticides (µg/L)																											
EPA Methods 507/525.5																											
Atrazine	0.38							**0.02**		0.04	U	**0.02**	**J**	**0.03**	**J**	**0.04**	**J**	**0.02**	**J**	0.04	U	0.03	U	0.03	U	0.03	U
Simazine	0.729							**0.1**		**0.06**		**0.05**	**J**	**0.09**	**J**	**0.08**	**J**	**0.08**	**J**	**0.06**	**J**	0.03	U	**0.32**		0.03	U
CONVENTIONALS (mg/L)																											
Nitrite as N (EPA 300.0)		0.6	U	0.19	U	0.0099	U																				
Sulfate (EPA 300.0)		**8.9**		0.20	U	0.0099	U															**5**		**3**		**7**	
Nitrate as N (EPA 300.0)		0.9	U	0.21	U	0.020	U															0.2	U	0.2	U	0.2	U
Total Organic Carbon (EPA 415.1)		**0.33**	**J**	0.22	U	0.0099	U															**4**		**3.8**		**0.6**	
Sulfide, Reactive (EPA 9034)		16	U	0.23	U	0.0099	U															0.1	U	0.1	U	0.1	U
FIELD PARAMETERS																											
Dissolved Oxygen (mg/L)				9.52		7.88																					
Oxidation Reduction Potential (mV)				184.5		191.4																					
Ferrous Iron (mg/L)				0		0																**0.42**		**2.8**		0	

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-10 Sep-13		SW-10 580-42461-5 Feb-14		Dup of SW-10 SW-99 580-42461-6 Feb-14		SW-10 580-45310-4 Sep-14		SW-11 Aug-00		SW-11 Nov-00		SW-11 Feb-01		SW-11 May-01		SW-11 Sep-01		SW-11 Dec-01		SW-11 Apr-02		SW-11 Nov-02		SW-11 Apr-03	
PESTICIDES (µg/L)																											
EPA Method 8081A																											
Aldrin		0.003	U	0.0098	U	0.0098	U	0.0099	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
alpha-BHC		0.0026	U	0.0098	U	0.0098	U	0.0099	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
beta-BHC		0.0015	U	0.02	U	0.02	U	0.020	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
delta-BHC		**0.0043**	**J**	0.0098	U	0.0098	U	0.0099	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-BHC (Lindane)		0.003	U	0.0098	U	0.0098	U	0.0099	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.02	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDE		0.0011	U	0.02	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDT		0.003	U	0.02	U	0.02	U	0.020	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Dieldrin		0.003	U	0.02	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endosulfan I		0.003	U	0.02	U	0.02	U	0.020	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Endosulfan II		0.003	U	0.02	U	0.02	U	0.020	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Endosulfan sulfate		0.003	U	0.02	U	0.02	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin		0.003	U	0.02	U	0.02	U	0.020	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
Endrin aldehyde		0.00099	U	0.049	U	0.049	U	0.049	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Heptachlor	0.019	**0.0058**	**J**	0.0098	U	0.0098	U	0.0099	U	**0.08**		**0.092**		**0.069**		**0.067**		0.005	U	**0.02**		**0.04**		**0.019**		**0.016**	
Heptachlor epoxide	0.0048	**0.5**		**0.44**		**0.42**		**1.2**		**1.85**		**2.52**		**2.18**		**2.52**		**1.59**		**1.29**		**0.93**		**1.42**		**0.78**	
Methoxychlor		0.003	U	0.098	U	0.098	U	0.099	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin ketone		0.003	U	0.02	U	0.02	U	0.020	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Toxaphene		0.27	U	0.98	U	0.98	U	0.99	U					--	U	--	U	--	U	--	U	--	U	--	U	1.0	U
alpha-Chlordane	0.25	**0.036**		**0.04**		**0.042**		**0.033**		**0.2**		**0.1**		**0.21**		**0.17**		**0.11**		**0.15**		**0.01**		**0.11**		**0.016**	
gamma-Chlordane	0.25	**0.048**		**0.042**		**0.043**		**0.14**		**0.82**		**0.58**		**1.0**		**0.84**		**0.58**		**0.41**		**0.04**		**0.48**		**0.061**	
Total Chlordane	0.25	**4.1**		**0.082**		**0.085**		**0.173**		**2.73**		**2.0**		**4.6**		**5.7**		**3.07**		**2.33**		**0.43**		**1.81**		**0.47**	
Chlorinated Herbicides (µg/L)																											
EPA Method 515.5																											
2,4-D																											
2,4,5-T																											
2,4,5-TP	128																										
Dicamba	480																										
Picloram	1120																										
Nitrogen and Phosphorus Pesticides (µg/L)																											
EPA Methods 507/525.5																											
Atrazine	0.38									**0.05**		**0.05**	**J**	**0.03**	**J**	**0.06**	**J**	**0.04**	**J**	**0.03**	**J**	0.04	U	**0.02**	**J**	0.03	U
Simazine	0.729									0.01	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U	0.03	U
CONVENTIONALS (mg/L)																											
Nitrite as N (EPA 300.0)		0.6	U	0.25	U	0.25	U	0.0099	U																		
Sulfate (EPA 300.0)		**5.2**		0.26	U	0.26	U	0.0099	U																		
Nitrate as N (EPA 300.0)		0.9	U	0.28	U	0.27	U	0.020	U																		
Total Organic Carbon (EPA 415.1)		**2.3**		0.29	U	0.29	U	0.0099	U																		
Sulfide, Reactive (EPA 9034)		**18**		0.31	U	0.30	U	0.0099	U																		
FIELD PARAMETERS																											
Dissolved Oxygen (mg/L)				10.18		10.18		8.33																			
Oxidation Reduction Potential (mV)				187.2		187.2		203.5																			
Ferrous Iron (mg/L)				0		0		0.5																			

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-11 Nov-03		SW-11 Apr-04		SW-11 Dec-04		SW-11 Apr-05		SW-11 Mar-06		SW-11 Feb-07		SW-11 Jan-08		SW-11 May-08		SW-11 Oct-08		SW-11 Aug-09		SW-11 Jan-10		SW-11 Jul-10		SW-11 Jan-11	
PESTICIDES (µg/L)																											
EPA Method 8081A																											
Aldrin		0.009	U	0.009	U	0.009	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
alpha-BHC		0.005	U	0.005	U	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
beta-BHC		0.009	U	0.009	U	0.009	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
delta-BHC		0.004	U	0.004	U	0.004	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.003	U	0.003	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
4,4'-DDE		0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
4,4'-DDT		0.01	U	0.01	U	0.01	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	D4	0.008	D4		
Dieldrin		0.003	U	0.003	U	0.003	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan I		0.006	U	0.006	U	0.006	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endosulfan II		0.001	U	0.001	U	0.001	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan sulfate		0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endrin		0.007	U	0.007	U	0.007	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin aldehyde		0.004	U	0.004	U	0.004	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U
Heptachlor	0.019	**0.028**		**0.031**	J	**0.015**	J	**0.023**		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Heptachlor epoxide	0.0048	**2.59**		**1.35**		**1.38**		**1.24**		**0.45**		**0.42**		**0.94**		**1.31**		**1.20**		**1.33**		**1.14**		**1.76**		**0.7**	
Methoxychlor		0.003	U	0.003	U	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin ketone		0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Toxaphene		1.0	U	1.0	U	1.0	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
alpha-Chlordane	0.25	**0.12**		0.004	U	0.004	U	0.006	U	0.006	U	0.006	U	**0.02**	J	0.006	U	0.006	U	**0.01**	J	**0.02**	J	**0.03**	J	0.006	U
gamma-Chlordane	0.25	**0.6**		**0.092**		**0.37**		**0.025**		0.005	U	0.005	U	**0.035**	J	**0.04**	J	0.005	U	**0.06**		**0.05**		**0.17**		0.005	U
Total Chlordane	0.25	**3.58**		**0.84**		**4.0**		**3.0**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.07**		**0.2**		0.01	U
Chlorinated Herbicides (µg/L)																											
EPA Method 515.5																											
2,4-D										**8.7**																	
2,4,5-T										**21**																	
2,4,5-TP	128									**4**																	
Dicamba	480									**100**																	
Picloram	1120									**0.2**	J																
Nitrogen and Phosphorus Pesticides (µg/L)																											
EPA Methods 507/525.5																											
Atrazine	0.38	**0.04**	J	0.03	U	**0.02**	J	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Simazine	0.729	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																											
Nitrite as N (EPA 300.0)																											
Sulfate (EPA 300.0)																											
Nitrate as N (EPA 300.0)																											
Total Organic Carbon (EPA 415.1)																											
Sulfide, Reactive (EPA 9034)																											
FIELD PARAMETERS																											
Dissolved Oxygen (mg/L)																											
Oxidation Reduction Potential (mV)																											
Ferrous Iron (mg/L)																											

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-11 Aug-11		SW-11 Feb-12		SW-11 Aug-12		SW-11 Feb-13		SW-11 Sep-13		SW-11 580-42461-2 Feb-14		SW-11 580-45310-5 Sep-14		Dup of SW-11 SW-99 580-45310-6 Sep-14		SW-14 Aug-00		SW-14 Nov-00		SW-14 Feb-01		SW-14 May-01		SW-14 Sep-01		SW-14 Dec-01	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0099	U	0.0098	U	0.010	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
alpha-BHC		0.01	U	0.02	U	0.01	U	0.01	U	0.0026	U	0.0099	U	0.0098	U	0.010	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
beta-BHC		0.02	U	0.02	U	0.02	U	0.02	U	0.0015	U	0.02	U	0.020	U	0.020	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
delta-BHC		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0099	U	0.0098	U	0.010	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-BHC (Lindane)		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0099	U	0.0098	U	0.010	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.02	U	0.020	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDE		0.01	U	0.02	U	0.01	U	0.01	U	0.0011	U	0.02	U	0.020	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDT		0.008	U	0.02	U	0.008	U	0.008	U	0.003	U	0.02	U	0.020	U	0.020	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Dieldrin		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.02	U	0.020	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endosulfan I		0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.02	U	0.020	U	0.020	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Endosulfan II		0.04	U	0.02	U	0.01	U	0.01	U	0.003	U	0.02	U	0.020	U	0.020	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Endosulfan sulfate		0.08	U	0.02	U	0.08	U	0.08	U	0.003	U	0.02	U	0.020	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.02	U	0.020	U	0.020	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
Endrin aldehyde		0.02	U	0.02	U	0.02	U	0.02	U	0.00099	U	0.05	U	0.049	U	0.050	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Heptachlor	0.019	0.007	U	0.02	U	0.007	U	0.007	U	**0.0073**	**J**	0.0099	U	0.0098	U	0.010	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Heptachlor epoxide	0.0048	**1.27**		**0.45**		**1.43**		**1.21**		**1.4**		**0.65**		**3.0**		**2.8**		**0.007**		**0.012**		**0.006**		**0.01**		**0.013**		0.001	U
Methoxychlor		0.04	U	0.02	U	0.04	U	0.04	U	0.003	U	0.099	U	0.098	U	0.10	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin ketone		0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.02	U	0.020	U	0.020	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Toxaphene		0.8	U	1.0	U	0.85	U	0.5	U	0.27	U	0.99	U	0.98	U	1.0	U					--	U	--	U	--	U	--	U
alpha-Chlordane	0.25	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0099	U	**0.057**		**0.051**		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-Chlordane	0.25	0.009	U	0.02	U	0.009	U	**0.11**		**0.12**		**0.013**		**0.19**		**0.18**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Total Chlordane	0.25	0.2	U	0.5	U	0.29	U	0.07	U	**0.97**		**0.013**		**0.247**		**0.231**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																													
2,4,5-T																													
2,4,5-TP	128																												
Dicamba	480																												
Picloram	1120																												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	0.07	U	0.03	U	0.03	U	0.03	U									0.01	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
Simazine	0.729	0.05	U	0.03	U	0.03	U	0.03	U									0.01	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)										0.6	U	0.23	U	0.0098	U	0.010	U												
Sulfate (EPA 300.0)				1.0	U	**1.0**		1.0	U	2.7	U	0.25	U	0.0098	U	0.010	U												
Nitrate as N (EPA 300.0)				0.2	U	**0.3**		**0.2**		0.9	U	0.26	U	0.020	U	0.020	U												
Total Organic Carbon (EPA 415.1)				**2.3**		**0.7**		**0.8**		1.3	U	0.27	U	0.0098	U	0.010	U												
Sulfide, Reactive (EPA 9034)				0.1	U	0.1	U	0.1	U	17	U	0.28	U	0.0098	U	0.010	U												
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)												10		4.81		4.81													
Oxidation Reduction Potential (mV)												192.8		203.0		+203													
Ferrous Iron (mg/L)				**1.2**		**1.8**		0				0		0		0													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-14 Apr-02		SW-14 Nov-02		SW-14 Apr-03		SW-14 Nov-03		SW-14 Apr-04		SW-14 Dec-04		SW-14 Apr-05		SW-14 Mar-06		SW-14 Feb-07		SW-14 May-08		SW-14 Oct-08		SW-14 Aug-09		SW-14 Jan-10		SW-14 Jul-10	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
alpha-BHC		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
beta-BHC		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
delta-BHC		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
4,4'-DDE		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
4,4'-DDT		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	B4
Dieldrin		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan I		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endosulfan II		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan sulfate		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endrin		0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin aldehyde		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U
Heptachlor	0.019	0.005	U	**0.012**		0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Heptachlor epoxide	0.0048	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Methoxychlor		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin ketone		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Toxaphene		--	U	--	U	1.0	U	1.0	U	1.0	U	1.0	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
alpha-Chlordane	0.25	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
gamma-Chlordane	0.25	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Total Chlordane	0.25	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																													
2,4,5-T																													
2,4,5-TP	128																												
Dicamba	480																												
Picloram	1120																												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	0.04	U	0.04	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Simazine	0.729	0.028	U	0.028	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)																													
Sulfate (EPA 300.0)																													
Nitrate as N (EPA 300.0)																													
Total Organic Carbon (EPA 415.1)																													
Sulfide, Reactive (EPA 9034)																													
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)																													
Oxidation Reduction Potential (mV)																													
Ferrous Iron (mg/L)																													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-14 Jan-11		SW-14 Aug-11		SW-14 Feb-12		SW-14 Aug-12		SW-14 Feb-13		SW-14 Sep-13		SW-14 580-42461-4 Feb-14		SW-14 580-45310-2 Sep-14		SW-15 Aug-00		SW-15 Nov-00		SW-15 Feb-01		SW-15 May-01		SW-15 Sep-01		SW-15 Dec-01	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0096	U	0.0098	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
alpha-BHC		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0026	U	0.0096	U	0.0098	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
beta-BHC		0.006	U	0.02	U	0.02	U	0.02	U	0.02	U	0.0015	U	0.019	U	0.020	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
delta-BHC		0.008	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0096	U	0.0098	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-BHC (Lindane)		0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0096	U	0.0098	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.008	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.019	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDE		0.005	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0011	U	0.019	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDT		0.008	U	0.008	U	0.02	U	0.008	U	0.008	U	0.003	U	0.019	U	0.020	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Dieldrin		0.011	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endosulfan I		0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.019	U	0.020	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Endosulfan II		0.011	U	0.04	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.020	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Endosulfan sulfate		0.005	U	0.08	U	0.02	U	0.08	U	0.08	U	0.003	U	0.019	U	0.020	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin		0.002	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.020	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
Endrin aldehyde		0.018	U	0.02	U	0.02	U	0.02	U	0.02	U	0.00099	U	0.048	U	0.049	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Heptachlor	0.019	0.003	U	0.007	U	0.02	U	0.007	U	0.007	U	0.003	U	0.0096	U	0.0098	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Heptachlor epoxide	0.0048	0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.0096	U	0.0098	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Methoxychlor		0.002	U	0.04	U	0.02	U	0.04	U	0.04	U	0.003	U	0.096	U	0.098	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin ketone		0.003	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.020	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Toxaphene		0.47	U	0.8	U	1.0	U	0.85	U	0.5	U	0.27	U	0.96	U	0.98	U					--	U	--	U	--	U	--	U
alpha-Chlordane	0.25	0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0096	U	0.0098	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-Chlordane	0.25	0.005	U	0.009	U	0.02	U	0.009	U	0.009	U	0.0011	U	0.0096	U	0.0098	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Total Chlordane	0.25	0.01	U	0.2	U	0.5	U	0.29	U	0.07	U	0.023	U	0.0096	U	0.0098	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																													
2,4,5-T																													
2,4,5-TP	128																												
Dicamba	480																												
Picloram	1120																												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	0.03	U	0.07	U	0.03	U	0.03	U	0.03	U							0.01	U	**0.04**	**J**	**0.04**	**J**	**0.06**	**J**	**0.04**	**J**	**0.05**	**J**
Simazine	0.729	0.03	U	0.05	U	0.03	U	0.03	U	0.03	U							0.01	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)														0.18	U	0.0098	U												
Sulfate (EPA 300.0)														0.19	U	0.0098	U												
Nitrate as N (EPA 300.0)														0.20	U	0.020	U												
Total Organic Carbon (EPA 415.1)														0.21	U	0.0098	U												
Sulfide, Reactive (EPA 9034)														0.22	U	0.0098	U												
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)														65.5		11.34													
Oxidation Reduction Potential (mV)														174.2		184.7													
Ferrous Iron (mg/L)														0.4		0													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-15 Apr-02		SW-15 Nov-02		SW-15 Apr-03		SW-15 Nov-03		SW-15 Apr-04		SW-15 Dec-04		SW-15 Apr-05		SW-15 Mar-06		SW-15 Feb-07		SW-15 May-08		SW-15 Oct-08		SW-15 Aug-09		SW-15 Jan-10		SW-15 Jul-10	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
alpha-BHC		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
beta-BHC		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
delta-BHC		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
4,4'-DDE		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
4,4'-DDT		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	B4
Dieldrin		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan I		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endosulfan II		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan sulfate		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endrin		0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin aldehyde		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U
Heptachlor	0.019	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Heptachlor epoxide	0.0048	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Methoxychlor		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin ketone		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Toxaphene		--	U	--	U	1.0	U	1.0	U	1.0	U	1.0	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
alpha-Chlordane	0.25	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
gamma-Chlordane	0.25	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Total Chlordane	0.25	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																													
2,4,5-T																													
2,4,5-TP	128																												
Dicamba	480																												
Picloram	1120																												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	**0.06**	**J**	**0.06**	**J**	**0.08**	**J**	**0.05**	**J**	**0.07**	**J**	**0.07**	**J**	**0.08**	**J**	**0.07**	**J**	**0.07**	**J**	**0.06**	**J**	**0.07**	**J**	**0.06**	**J**	**0.07**	**J**	**0.05**	**J**
Simazine	0.729	0.028	U	0.028	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)																													
Sulfate (EPA 300.0)																													
Nitrate as N (EPA 300.0)																													
Total Organic Carbon (EPA 415.1)																													
Sulfide, Reactive (EPA 9034)																													
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)																													
Oxidation Reduction Potential (mV)																													
Ferrous Iron (mg/L)																													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-15 Jan-11		SW-15 Aug-11		SW-15 Feb-12		SW-15 Aug-12		SW-15 Feb-13		SW-15 Sep-13		SW-15 580-42461-3 Feb-14		SW-15 580-45310-3 Sep-14		SW-16 Aug-00		SW-16 Nov-00		SW-16 Feb-01		SW-16 May-01		SW-16 Sep-01		SW-16 Dec-01	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0097	U	0.012	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
alpha-BHC		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0026	U	0.0097	U	0.012	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
beta-BHC		0.006	U	0.02	U	0.02	U	0.02	U	0.02	U	0.0015	U	0.019	U	0.024	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U
delta-BHC		0.008	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0097	U	0.012	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-BHC (Lindane)		0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0097	U	0.012	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.008	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.019	U	0.024	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDE		0.005	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0011	U	0.019	U	0.024	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
4,4'-DDT		0.008	U	0.008	U	0.02	U	0.008	U	0.008	U	0.003	U	0.019	U	0.024	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Dieldrin		0.011	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.024	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endosulfan I		0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.019	U	0.024	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Endosulfan II		0.011	U	0.04	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.024	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Endosulfan sulfate		0.005	U	0.08	U	0.02	U	0.08	U	0.08	U	0.003	U	0.019	U	0.024	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin		0.002	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.024	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
Endrin aldehyde		0.018	U	0.02	U	0.02	U	0.02	U	0.02	U	0.00099	U	0.048	U	0.060	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Heptachlor	0.019	0.003	U	0.007	U	0.02	U	0.007	U	0.007	U	0.003	U	0.0097	U	0.012	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Heptachlor epoxide	0.0048	0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.003	U	0.0097	U	0.012	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Methoxychlor		0.002	U	0.04	U	0.02	U	0.04	U	0.04	U	0.003	U	0.097	U	0.12	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endrin ketone		0.003	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.019	U	0.024	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Toxaphene		0.47	U	0.8	U	1.0	U	0.85	U	0.5	U	0.27	U	0.97	U	1.2	U					--	U	--	U	--	U	--	U
alpha-Chlordane	0.25	0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.003	U	0.0097	U	0.012	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
gamma-Chlordane	0.25	0.005	U	0.009	U	0.02	U	0.009	U	0.009	U	0.0011	U	0.0097	U	0.012	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Total Chlordane	0.25	0.01	U	0.2	U	0.5	U	0.29	U	0.07	U	0.023	U	ND	U	ND	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																													
2,4,5-T																													
2,4,5-TP	128																												
Dicamba	480																												
Picloram	1120																												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	**0.07**	J	**0.2**		**0.1**		**0.1**		**0.06**								0.01	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
Simazine	0.729	0.03	U	0.05	U	0.03	U	0.03	U	0.03	U							0.01	U	0.028	U	0.028	U	0.028	U	0.028	U	0.028	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)														0.18	U	0.012	U												
Sulfate (EPA 300.0)														0.19	U	0.012	U												
Nitrate as N (EPA 300.0)														0.20	U	0.024	U												
Total Organic Carbon (EPA 415.1)														0.21	U	0.012	U												
Sulfide, Reactive (EPA 9034)														0.23	U	0.012	U												
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)														13.81		10.36													
Oxidation Reduction Potential (mV)														170.6		189.6													
Ferrous Iron (mg/L)														0.2		0													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-16 Apr-02		SW-16 Nov-02		SW-16 Apr-03		SW-16 Nov-03		SW-16 Apr-04		SW-16 Dec-04		SW-16 Apr-05		SW-16 Mar-06		SW-16 Feb-07		SW-16 May-08		SW-16 Oct-08		SW-16 Aug-09		SW-16 Jan-10		SW-16 Jul-10	
PESTICIDES (µg/L)																													
EPA Method 8081A																													
Aldrin		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
alpha-BHC		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
beta-BHC		0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.009	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
delta-BHC		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
gamma-BHC (Lindane)		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
4,4'-DDD		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
4,4'-DDE		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
4,4'-DDT		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	U	0.008	B4
Dieldrin		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan I		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endosulfan II		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U	0.011	U
Endosulfan sulfate		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endrin		0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin aldehyde		0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U	0.018	U
Heptachlor	0.019	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Heptachlor epoxide	0.0048	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Methoxychlor		0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Endrin ketone		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Toxaphene		--	U	--	U	1.0	U	1.0	U	1.0	U	1.0	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U	0.47	U
alpha-Chlordane	0.25	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
gamma-Chlordane	0.25	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Total Chlordane	0.25	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chlorinated Herbicides (µg/L)																													
EPA Method 515.5																													
2,4-D																0.11	U												
2,4,5-T																0.044	U												
2,4,5-TP	128															0.02	U												
Dicamba	480															0.045	U												
Picloram	1120															0.089	U												
Nitrogen and Phosphorus Pesticides (µg/L)																													
EPA Methods 507/525.5																													
Atrazine	0.38	0.04	U	0.04	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Simazine	0.729	0.028	U	0.028	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
CONVENTIONALS (mg/L)																													
Nitrite as N (EPA 300.0)																													
Sulfate (EPA 300.0)																													
Nitrate as N (EPA 300.0)																													
Total Organic Carbon (EPA 415.1)																													
Sulfide, Reactive (EPA 9034)																													
FIELD PARAMETERS																													
Dissolved Oxygen (mg/L)																													
Oxidation Reduction Potential (mV)																													
Ferrous Iron (mg/L)																													

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Appendix D
Groundwater Data, August 2000 to Present
Webster Nursery
Tumwater, Washington

Location: Lab ID: Date Collected:	MTCA Method B Groundwater Cleanup Level (CUL)	SW-16 Jan-11		SW-16 Aug-11		SW-16 Feb-12		SW-16 Aug-12		SW-16 Feb-13		SW-16 580-42461-7 Feb-14		SW-16 580-45310-1 Sep-14	
PESTICIDES (µg/L)															
EPA Method 8081A															
Aldrin		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0097	U	0.0099	U
alpha-BHC		0.007	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0097	U	0.0099	U
beta-BHC		0.006	U	0.02	U	0.02	U	0.02	U	0.02	U	0.019	U	0.020	U
delta-BHC		0.008	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0097	U	0.0099	U
gamma-BHC (Lindane)		0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0097	U	0.0099	U
4,4'-DDD		0.008	U	0.02	U	0.02	U	0.02	U	0.02	U	0.019	U	0.020	U
4,4'-DDE		0.005	U	0.01	U	0.02	U	0.01	U	0.01	U	0.019	U	0.020	U
4,4'-DDT		0.008	U	0.008	U	0.02	U	0.008	U	0.008	U	0.019	U	0.020	U
Dieldrin		0.011	U	0.01	U	0.02	U	0.01	U	0.01	U	0.019	U	0.020	U
Endosulfan I		0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.019	U	0.020	U
Endosulfan II		0.011	U	0.04	U	0.02	U	0.01	U	0.01	U	0.019	U	0.020	U
Endosulfan sulfate		0.005	U	0.08	U	0.02	U	0.08	U	0.08	U	0.019	U	0.020	U
Endrin		0.002	U	0.01	U	0.02	U	0.01	U	0.01	U	0.019	U	0.020	U
Endrin aldehyde		0.018	U	0.02	U	0.02	U	0.02	U	0.02	U	0.048	U	0.050	U
Heptachlor	0.019	0.003	U	0.007	U	0.02	U	0.007	U	0.007	U	0.0097	U	0.0099	U
Heptachlor epoxide	0.0048	0.005	U	0.02	U	0.02	U	0.02	U	0.02	U	0.0097	U	0.0099	U
Methoxychlor		0.002	U	0.04	U	0.02	U	0.04	U	0.04	U	0.097	U	0.099	U
Endrin ketone		0.003	U	0.01	U	0.02	U	0.01	U	0.01	U	0.019	U	0.020	U
Toxaphene		0.47	U	0.8	U	1.0	U	0.85	U	0.5	U	0.97	U	0.99	U
alpha-Chlordane	0.25	0.006	U	0.01	U	0.02	U	0.01	U	0.01	U	0.0097	U	0.0099	U
gamma-Chlordane	0.25	0.005	U	0.009	U	0.02	U	0.009	U	0.009	U	0.0097	U	0.0099	U
Total Chlordane	0.25	0.01	U	0.2	U	0.5	U	0.29	U	0.07	U	0.0097	U	0.0099	U
Chlorinated Herbicides (µg/L)															
EPA Method 515.5															
2,4-D															
2,4,5-T															
2,4,5-TP	128														
Dicamba	480														
Picloram	1120														
Nitrogen and Phosphorus Pesticides (µg/L)															
EPA Methods 507/525.5															
Atrazine	0.38	0.03	U	0.07	U	0.03	U	0.03	U	0.03	U				
Simazine	0.729	0.03	U	0.05	U	0.03	U	0.03	U	0.03	U				
CONVENTIONALS (mg/L)															
Nitrite as N (EPA 300.0)												0.18	U	0.0099	U
Sulfate (EPA 300.0)								1	U			0.19	U	0.0099	U
Nitrate as N (EPA 300.0)								**0.4**				0.20	U	0.020	U
Total Organic Carbon (EPA 415.1)								**0.4**				0.21	U	0.0099	U
Sulfide, Reactive (EPA 9034)								0.1	U			0.23	U	0.0099	U
FIELD PARAMETERS															
Dissolved Oxygen (mg/L)												6.71		4.15	
Oxidation Reduction Potential (mV)												176.8		200.5	
Ferrous Iron (mg/L)						0.03	U	0		0		0		0	

-- = Laboratory reporting limit not available but reported as undetected.
Blanks = Not analyzed
Bold = Detected compound
EPA = Environmental Protection Agency
ID = Identification
µg/L = Micrograms per liter
mg/L = Milligrams per liter
mV = Millivolts
MTCA = Model Toxics Control Act
NA = Not applicable
Gray highlighting = exceedance of CUL

Notes:
Appendix D contains all groundwater data made available to Landau Associates.
U = Indicates the compound was not detected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
B4 = The PQL/MDL has been elevated due to chromatographic interference.
D4 = Data is suspect as biased high; the LFB was outside the upper acceptance limit. The continuing calibration checks were within acceptable limits, indicating an increase in detector response of the extracted sample.
Gray highlighting = Exceedance of 2016 MTCA Method B Cleanup Level

APPENDIX E

Washington State Department of Ecology's Cleanup Levels and Risk Calculation Database

Appendix E
2016 Cleanup Level Selection
Webster Nursery
Tumwater, Washington

Chemical Name	CAS #	Soil Direct Contact Method B Non cancer (mg/kg)	Soil Direct Contact Method B Cancer (mg/kg)	Soil Protective of Groundwater Vadose @ 25 degrees C (mg/kg)	Soil Protective of Groundwater Saturated (mg/kg)	Soil TEE Soil Biota (mg/kg)	Soil TEE Wildlife (mg/kg)	Soil CUL in Final Units Vadose Zone (µg/kg)	Soil CUL in Final Units Saturated Zone (µg/kg)	Ground Water Method B Non cancer (µg/L)	Ground Water Method B Cancer (µg/L)
atrazine	1912-24-9	2.80E+03	4.35E+00					4.35E+03	4.35E+03	5.60E+02	3.80E-01
chlordane	57-74-9	4.00E+01	2.86E+00	2.06E+00	1.03E-01	1.00E+00	2.70E+00	2.06E+03	1.03E+02	8.00E+00	2.50E-01
dicamba	1918-00-9	2.40E+03						2.40E+06	2.40E+06	4.80E+02	
heptachlor	76-44-8	4.00E+01	2.22E-01	3.78E-02	1.90E-03		0.4 (a)	3.78E+01	1.90E+00	8.00E+00	1.94E-02
heptachlor epoxide	1024-57-3	1.04E+00	1.10E-01	8.02E-02	4.02E-03		0.4 (a)	8.02E+01	4.02E+00	1.04E-01	4.81E-03
picloram	1918-02-1	5.60E+03						5.60E+06	5.60E+06	1.12E+03	
simazine	122-34-9	4.00E+02	8.33E+00					8.33E+03	8.33E+03	8.00E+01	7.29E-01
tp;2,4,5-	93-72-1	6.40E+02						6.40E+05	6.40E+05	1.28E+02	
2,4-D	94-75-7	8.00E+02									
2,4,5 T	93-76-5	8.00E+02									

All cleanup criteria are from the Washington State Department of Ecology's Cleanup Levels and Risk Calculation Database, except for the TEE values which are from WAC 173-340-900, Table 749-3

Selected cleanup level (CUL)

(a) Total heptachlor and heptachlor epoxide