TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Steve Teel, L. Hg., Washington State Department of Ecology

cc: John Felder, P.E., Washington State Department of Natural Resources

FROM: Eric Weber, L.Hg.

DATE: December 5, 2014

RE: SEPTEMBER 2014 SEMIANNUAL GROUNDWATER MONITORING
WEBSTER NURSERY SITE, SITE ID 3380
TUMWATER, WASHINGTON

INTRODUCTION

On behalf of Washington State Department of Natural Resources (DNR), Landau Associates is providing this semiannual groundwater monitoring technical memorandum, which covers groundwater monitoring activities conducted in September 2014. DNR has been conducting semiannual groundwater monitoring activities in the vicinity of the DNR's Webster Nursery former pesticide storage warehouse (site). The site is associated with past releases of organochlorine pesticides to soil and groundwater. The site location is shown on Figure 1.

Monitoring is being conducted under an Agreed Order (No. DE 00TCP-SR295 dated January 8, 2001) with Washington State Department of Ecology. Since January 2010, sampling has been conducted by DNR staff. Landau Associates began sampling in February 2014 under contract to DNR.

SEMIANNUAL GROUNDWATER MONITORING PROGRAM SUMMARY

The existing site groundwater monitoring well network includes a total of nine wells. Of the nine wells, six (SW-9, SW-10, SW-11, SW-14, SW-15, and SW-16) are sampled as part of an ongoing groundwater quality monitoring program. The other three wells (SW-1, SW-12, and SW-13) are not sampled due to historical data that indicates the wells were not impacted by the organochlorine pesticide release. Water levels are collected at all nine wells. The locations of the nine wells are provided on Figure 2. The six wells (SW-9, SW-10, SW-11, SW-14, SW-15, and SW-16) that are sampled are tested for pesticides, and four of the six wells (SW-9, SW-10, SW-11, and SW-16) are also tested for monitored natural attenuation (MNA) parameters. The locations of the wells sampled for pesticides and MNA parameters are shown on Figure 3 and Figure 4, respectively.

Groundwater quality samples are collected using a peristaltic pump with dedicated tubing stationed at each well. Field parameters were collected using a YSI water quality meter and a ferrous iron field test kit. Purge water from sampling is collected in a 5 gallon bucket and is transported to onsite drums provided by DNR.

Groundwater data is screened using the current Model Toxics Control Act (MTCA) Method B groundwater cleanup levels (CUL) for applicable constituents. The primary constituents of concern at the site are heptachlor[1], chlorodane, and heptachlor epoxide. Currently heptachlor epoxide is the only constituent detected above applicable groundwater CULs. All samples were analyzed for organochlorine pesticides by U.S. Environmental Protection Agency Method 8081A. Four of the six samples were also analyzed for MNA parameters. Field parameters were collected for all samples. A groundwater sampling matrix is presented in Table 1. Analytical methods, reporting limits, preservatives, and holding times are presented in Table 2. September 2014 groundwater analytical data and MNA field parameter data are presented in Table 3.

GROUNDWATER LEVEL DATA

A complete round of water levels for all existing wells was collected on September 10, 2014. Depth to groundwater ranged from about 10 ft to 13.45 feet (ft) below top of PVC casing. In comparison to the winter 2014 sampling event (February 2014), groundwater levels declined between 5.07 ft (well SW-15) and 6.45 ft (well SW-1). A summary of groundwater level data for February and September 2014 is presented in Table 4.

Groundwater flow direction at the site appears to be variable and non-uniform. Regionally, groundwater flow is likely to the south toward Salmon Creek (Figure 1) which is the nearest discharge location. However, because the shallow water bearing zone is relatively low permeability, shallow groundwater levels are likely influenced by anthropogenic runoff and infiltration patterns and possibly by buried utilities. During September 2014, groundwater levels are highest in the vicinity of the former tank excavation and decline to the south, east and west. September 2014 groundwater elevation data is presented on Figure 5.

ORGANOCHLORINE PESTICIDES DATA

There were no detections of heptachlor. Heptachlor epoxide, which is a degradation product of heptachlor, was detected at wells SW-10 and SW-11. Chlordane was also only detected at SW-10 and SW-11. No other pesticides were detected. September 2014 organochlorine pesticide concentration data is presented in Table 3.

Alpha-Chlordane and gamma-Chlordane were both detected at concentrations below the associated MTCA Method B CULs of 0.25 micrograms per liter (µg/L). Concentrations at SW-10 were 0.033µg/L for alpha-Chlordane and 0.14µg/L for gamma-Chlordane. Concentrations at SW-11 were 0.057µg/L for alpha-Chlordane and 0.19µg/L for gamma-Chlordane. Concentrations of heptachlor

[1] Heptachlor is generally no longer detected, but was detected with data qualifiers in September 2013 at low-level concentrations.

epoxide were detected at SW-10 and SW-11 above the MTCA Method B CUL of 0.0048 µg/L. Concentrations were 1.2µg/L and 3.0µg/L, respectively. Pesticide concentrations are generally higher than recent sampling events.

As mentioned, pesticide concentrations collected in September 2014 were generally higher than historical data, with heptachlor epoxide being detected only at SW-10 and SW-11. A comparison of recent heptachlor epoxide groundwater concentrations with historical data dating back to January 2010 is presented in the time series plot on Figure 6.

MONITORED NATURAL ATTENUATION DATA

MNA data collected during this sampling event indicate that groundwater conditions are aerobic. Dissolved oxygen concentrations were greater than 4.15 milligrams per liter: oxidation reduction potential (ORP) was greater than 184.7 millivolts (mV), and nitrate and ferrous iron were generally not detected. A summary of MNA data is presented in Table 3.

Natural attenuation of pesticides in groundwater occurs via aerobic biodegradation [Minnesota Department of Agriculture (MDA) 2005]. According to guidance prepared by the MDA, conditions necessary to enable biodegradation include the presence of oxygen (an electron acceptor), a relatively neutral pH (5 to 9), positive redox voltage (minimum of 50 mV; offsets negative potential caused when oxygen becomes depleted), and the availability of nutrients (such as carbon). The pH range is 5.19 to 5.69. The ORP (redox voltage) is within a consistent range of approximately +184.7 to +20.3.5. However, total organic carbon was not detected at any of the sampled wells. These data suggest the natural attenuation could be occurring; however, the slow rate of decline of heptachlor epoxide suggests that natural attenuation is not a strong process for this constituent.

ANALYTICAL LABORATORY ISSUES

TestAmerica Laboratories Inc. (TestAmerica) was selected by DNR to complete the analytical testing of groundwater quality samples. Initial data received on September 26, 2014 indicated anomalous results that were not consistent with historical sampling data. SW-10 was non-detect for heptachlor epoxide, while the compound was detected at perimeter well SW-15. After a thorough review of field forms and practices it was determined that sample results were likely switched by the laboratory. TestAmerica was alerted to the possible sample switch. Additional sample material retained by the lab was rerun indicating that during the initial sample run, the laboratory had switched samples SW-10 and SW-15. A revised data package was transmitted on October 2, 2014 with the corrected results. Only the revised laboratory analytical report is provided in Attachment 1. A corrective action plan will be provided by TestAmerica; the plan had not been received at the time of this technical memorandum.

Upon review of the data package, raised reporting limits were identified at SW-99 (the field duplicate of SW-11) and SW-15. The raised reporting limits for heptachlor epoxide were 0.010 µg/L and 0.012 µg/L, respectively. No explanation was included in the case narrative for the raised limits. The MTCA Method B groundwater CUL for heptachlor epoxide is 0.0048µg/L. The detected concentration (2.8µg/L) of heptachlor epoxide at SW-99 (i.e., SW-11) was above the raised reporting limit. However, heptachlor epoxide was not detected at SW-15. Prior to the next groundwater sampling event, TestAmerica will be informed of the CULs and required reporting limits for constituents of concern.

ENVIRONMENTAL INFORMATION MANAGEMENT SUBMITTAL

An Environmental Information Management submittal for 2014 will include the February and September groundwater analytical data as well as soil data collected from the May direct-push probe investigation. This submittal will be completed October or November 2014.

Please let us know if you have any questions concerning groundwater monitoring activities presented in this semiannual groundwater monitoring report.

SMM/LKK/EFW/jrc

REFERENCE

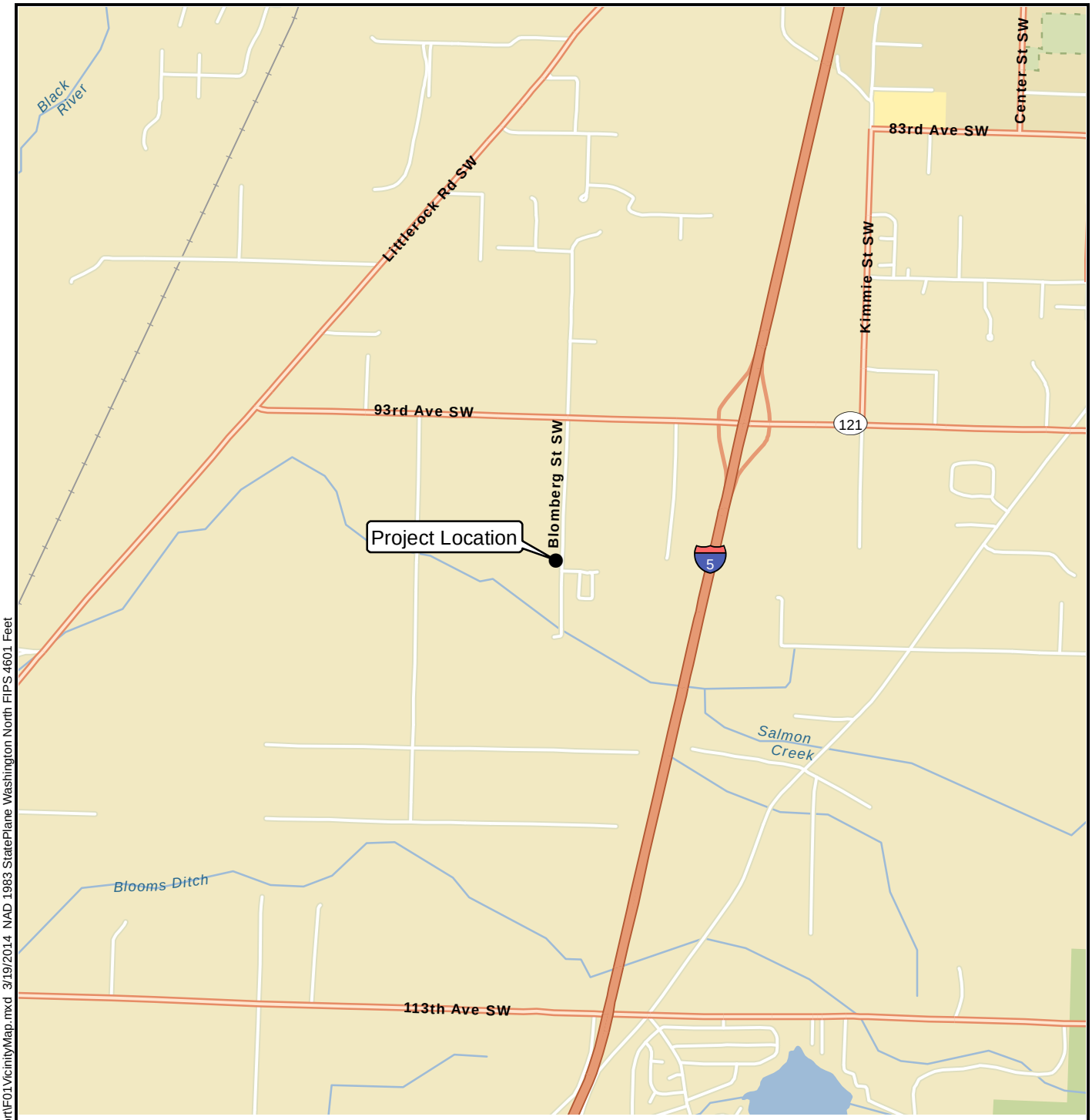
MDA. 2005. Guidance Document: *Natural Attenuation of Contaminated Soil and Ground Water at Agricultural Chemical Incident Sites.* Minnesota Department of Agriculture Pesticide & Fertilizer Management Division. November.

ATTACHMENTS

Figure 1: Vicinity Map
Figure 2: Existing Monitoring Well Network
Figure 3: Organochlorine Pesticide Groundwater Sampling Locations
Figure 4: Natural Attenuation Parameter Groundwater Sampling Locations
Figure 5: Groundwater Contours September 2014
Figure 6: Heptachlor Epoxide Time Series Concentrations for SW-10 and SW-11

Table 1: September 2014 Groundwater Sampling Matrix
Table 2: Groundwater Monitoring Laboratory and Field Parameter Details
Table 3: Groundwater Analytical Results
Table 4: Groundwater Level Measurements

Attachment 1: September 2014 Lab Data Report



N

0 0.5 1

Miles

Data Source: Esri 2012

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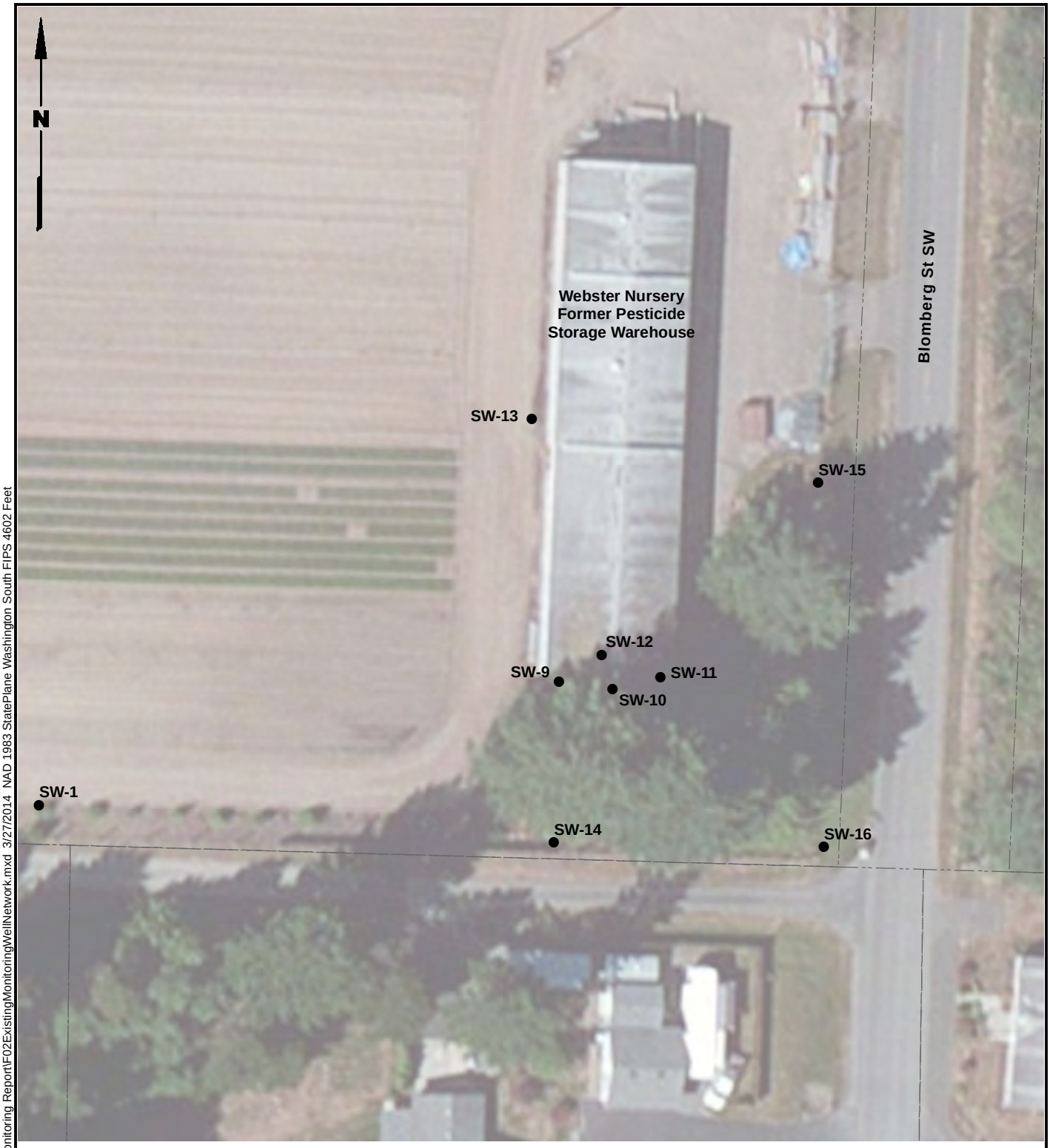
Webster Nursery Site Tumwater, Washington	**Vicinity Map**	Figure 1



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.

G:\Projects\774\006\Semiannual GW Monitoring Report\F02ExistingMonitoringWellNetwork.mxd 3/27/2014 NAD 1983 StatePlane Washington South FIPS 4602 Feet

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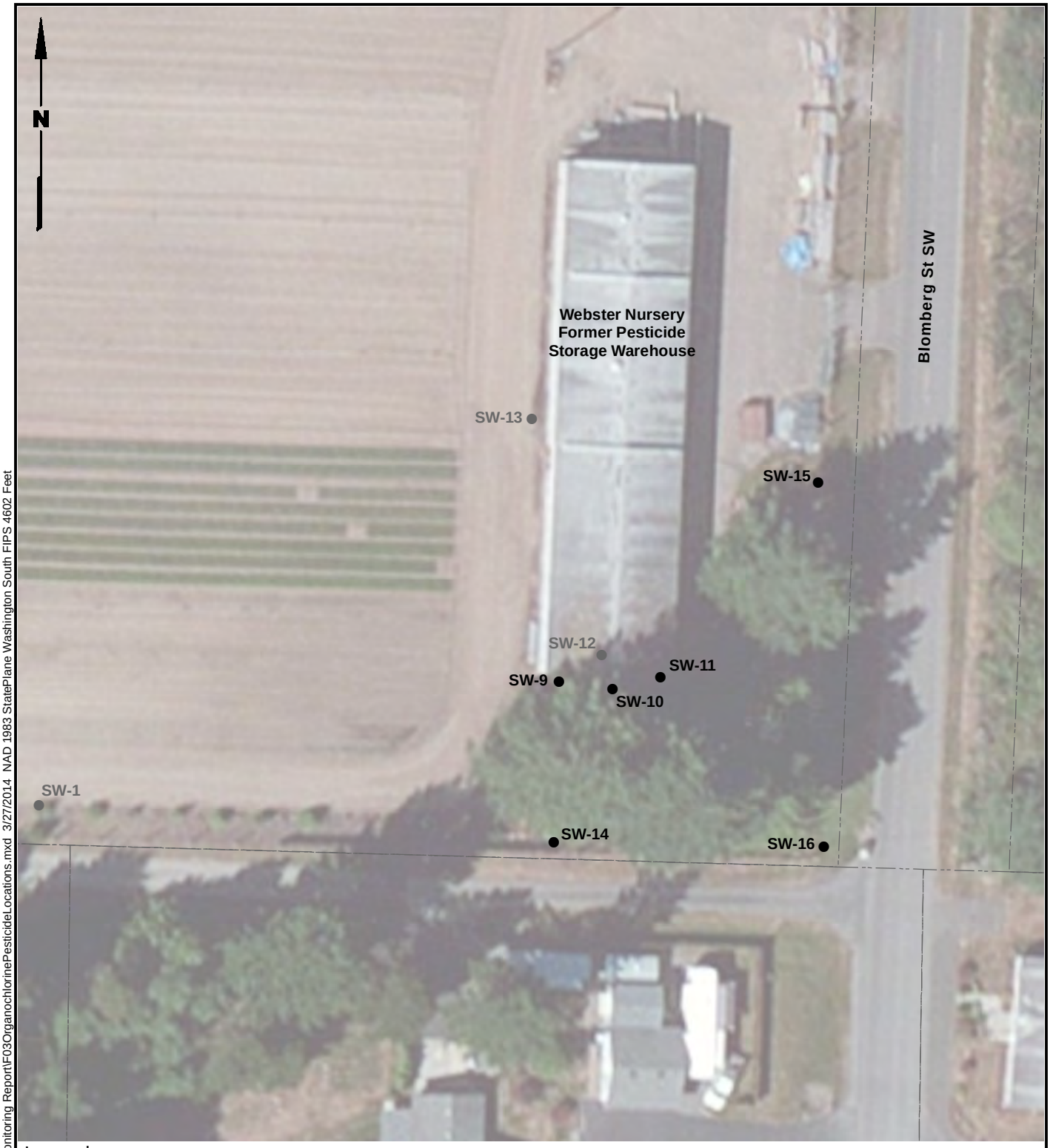
Webster Nursery Site Tumwater, Washington	**Existing Monitoring Well Network**	Figure 2



G:\Projects\774\006\Semiannual GW Monitoring Report\F03OrganochlorinePesticideLocations.mxd 3/27/2014 NAD 1983 StatePlane Washington South FIPS 4602 Feet

Legend

- Organochlorine Pesticide Groundwater Sampling Location
- Other Monitoring Wells
- 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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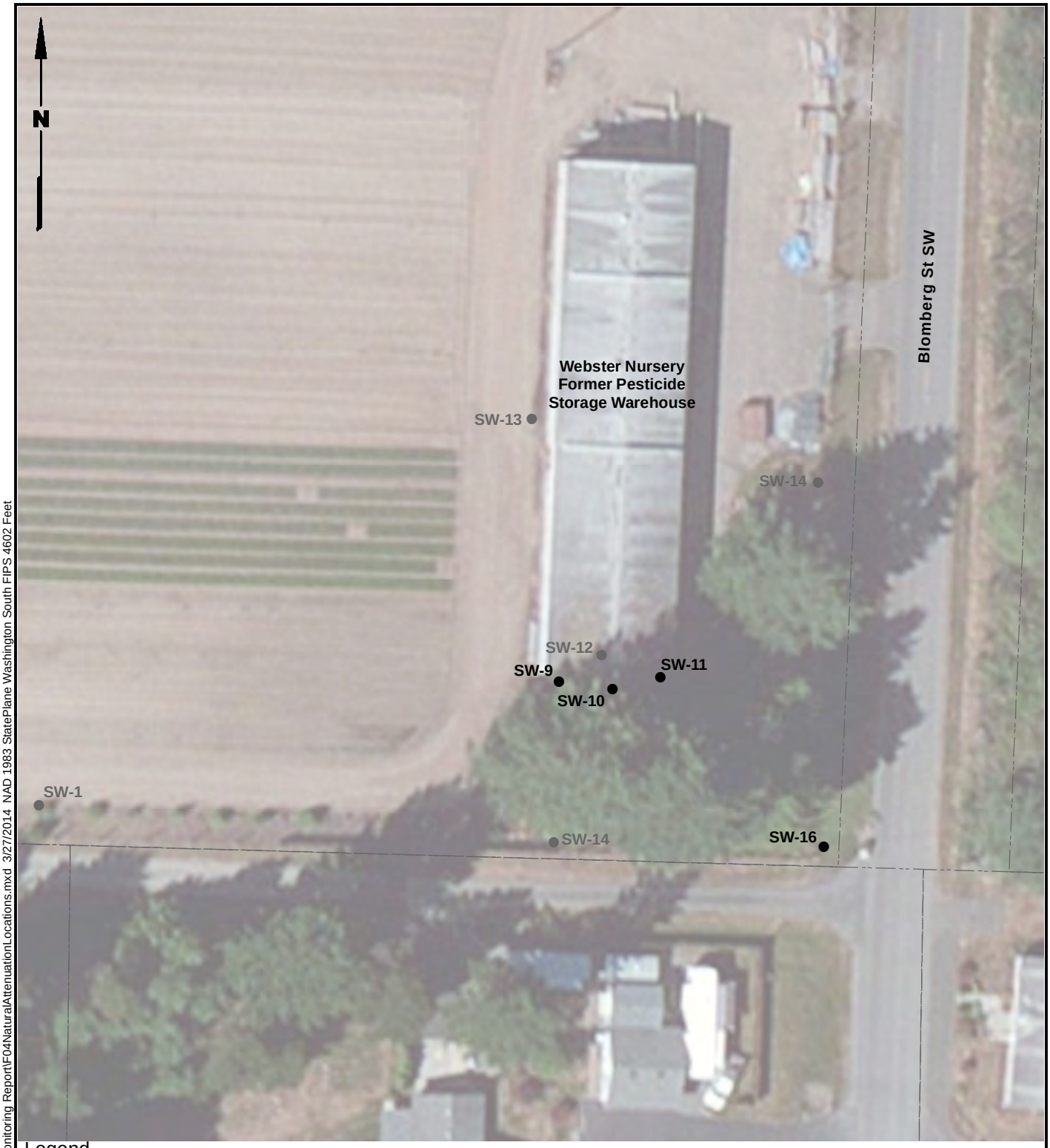
Webster Nursery Site
Tumwater, Washington

Organochlorine Pesticide Groundwater Sampling Locations

Figure 3



Legend

- Natural Attenuation Parameter Groundwater Sampling Location
- Other Monitoring Wells
- 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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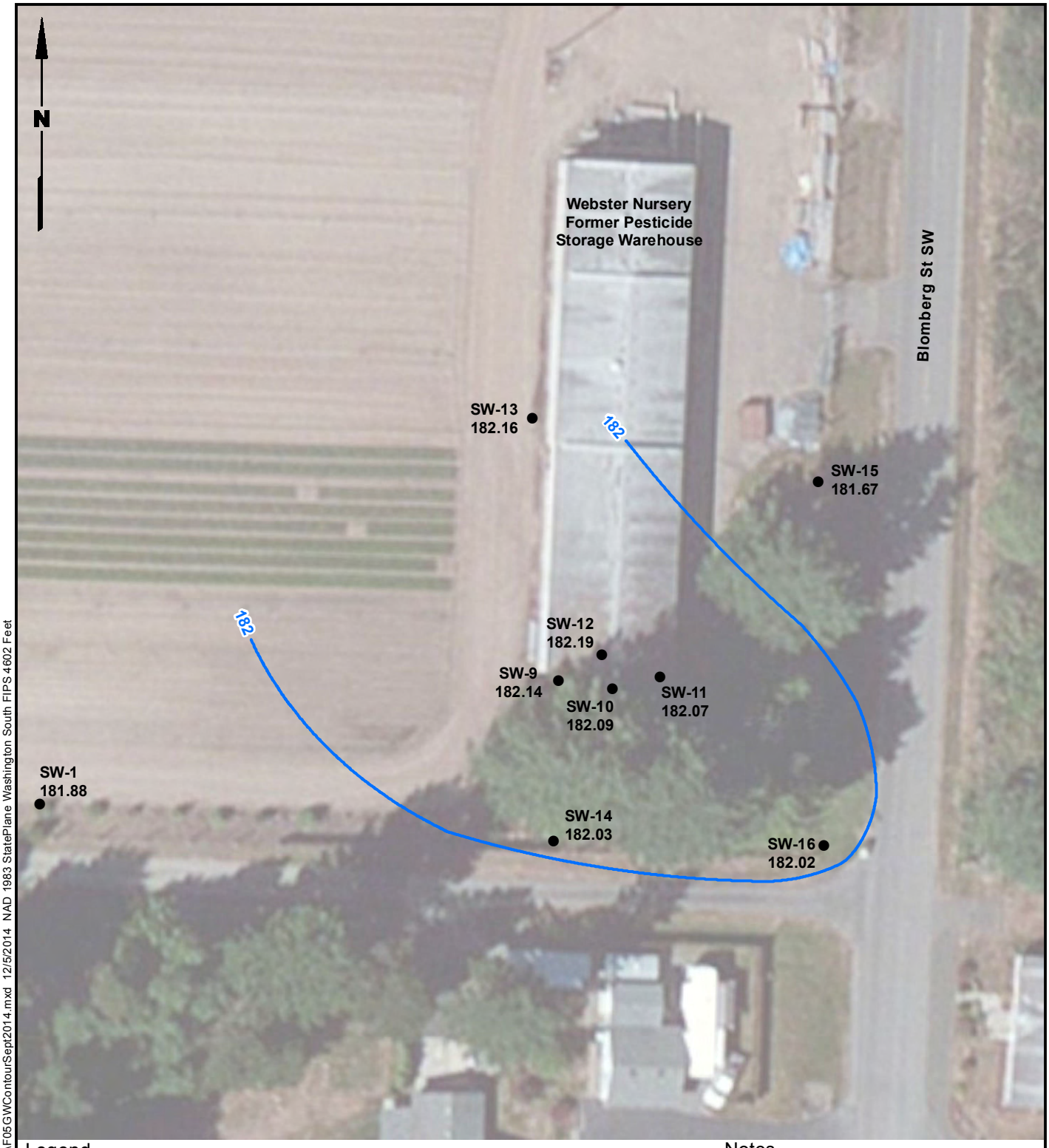
Webster Nursery Site Tumwater, Washington	**Natural Attenuation Parameter Groundwater Sampling Locations**	Figure 4



Legend

- Monitoring Well
- Groundwater Contour
- Tax Parcels

Notes

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.

G:\Projects\774\006\010\012\Sept 2014\F05GWContourSept2014.mxd 12/5/2014 NAD 1983 StatePlane Washington South FIPS 4602 Feet

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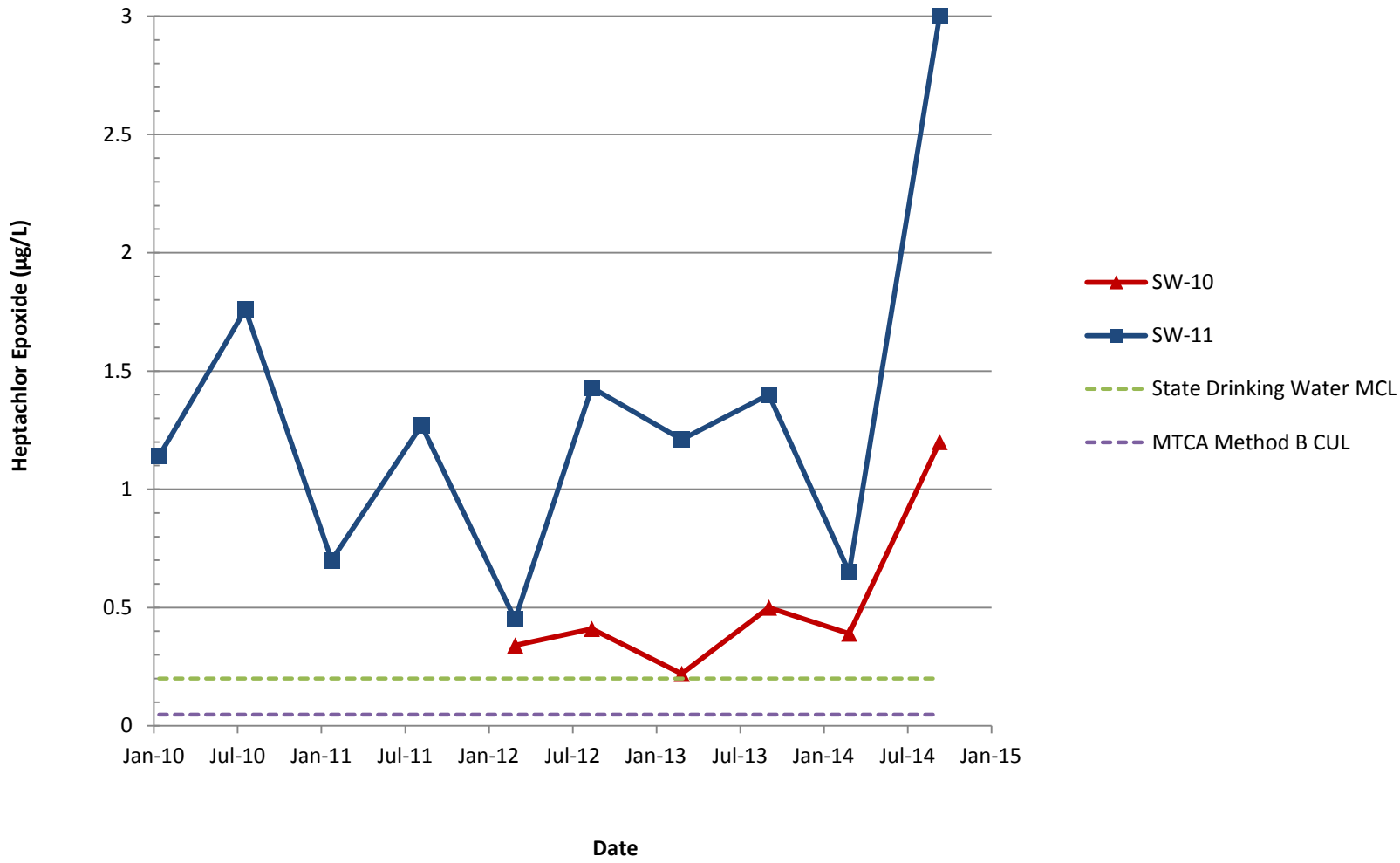
Webster Nursery Site Tumwater, Washington	**Groundwater Contours September 2014**	Figure 5



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Webster Nursery Site Tumwater, Washington	**Heptachlor Epoxide Time Series Concentrations for SW-10 and SW-11**	Figure 6

TABLE 1
SEPTEMBER 2014 GROUNDWATER SAMPLING MATRIX
WEBSTER NURSERY
TUMWATER, WASHINGTON

Location	Water Level	Organochlorine Pesticides EPA 8081A	Nitrate/Sulfate EPA 300.0	Total Organic Carbon EPA 415.1	Reactive Sulfide EPA 9034	Ferrous Iron Hach® Test Kit
SW-1	x					
SW-9	x	x	x	x	x	x
SW-10	x	x	x	x	x	x
SW-11	x	x	x	x	x	x
SW-12	x					
SW-13	x					
SW-14	x	x				x
SW-15	x	x				x
SW-16	x	x	x	x	x	x

Notes
X = measurement or sample type to be collected at a given well location
EPA = U.S. Environmental Protection Agency

TABLE 2
GROUNDWATER MONITORING LABORATORY AND FIELD PARAMETER DETAILS
WEBSTER NURSERY
TUMWATER, WASHINGTON

Groundwater Analytical Parameters	EPA Analytical Method	Practical Quantitation Limit	Preservation	Maximum Holding Time (Days)
Pesticides				
Heptachlor	8081A	0.01 µg/L	Store cool at 6°C	7
Heptachlor Epoxide	8081A	0.05 µg/L	Store cool at 6°C	7
alpha-Chlordane	8081A	0.05 µg/L	Store cool at 6°C	7
gamma-Chlordane	8081A	0.05 µg/L	Store cool at 6°C	7
Conventionals				
Nitrate (NO_3) (Total) as N	EPA 300.0	0.01 mg/L	Store cool at 6°C	48 hours
Nitrite (NO_2) (Total) as N	EPA 300.0	0.010 mg/L	Store cool at 6°C	48 hours
Total Organic Carbon	EPA 415.1	1.00 mg/L	Add 2mL 9N H_2SO_4 pH<2; Store at 6°C	28
Sulfate (SO_4) (Total)	EPA 300.0	5.0 mg/L	Store cool at 6°C	28
SulfiDe, Reactive	9034	0.2 mg/L	Add 2mL NaOH pH <2; Store cool at 6°C	No holding time

Groundwater Field Parameters	Data Collection Method	Instrument	Units
Monitored Natural Attenuation			
Conductivity	Field	YSI (a)	microSiemens per centimeter
Dissolved Oxygen	Field	YSI	mg/L
Oxidation Reduction Potential	Field	YSI	+/- millivolts
pH	Field	YSI	unitless
Temperature	Field	YSI	°C
Ferrous Iron (Fe^{2+})	Field	Hach® Kit	mg/L
Turbidity	Field	Turbidity Meter	nephelometric turbidity units
Water Level	Field	Water Level Indicator	0.01 foot

Notes:
(a) YSI will be calibrated daily
°C = degrees Celsius
EPA = U.S. Environmental Protection Agency
mg/L = Milligrams per Liter
µg/L = Micrograms per Liter

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
WEBSTER NURSERY
TUMWATER, WASHINGTON

Location:	MTCA Method B	SW-9	SW-10	SW-11	Dup of SW-11 SW-99
Lab ID:	Groundwater Cleanup Level	580-45310-7	580-45310-4	580-45310-5	580-45310-6
Data Collected:	for Unrestricted Land Use (a)	9/10/2014	9/10/2014	9/10/2014	9/10/2014
PESTICIDES (µg/L)					
EPA Method 8081A					
Aldrin		0.0099 U	0.0099 U	0.0098 U	0.010 U
alpha-BHC		0.0099 U	0.0099 U	0.0098 U	0.010 U
beta-BHC		0.020 U	0.020 U	0.020 U	0.020 U
delta-BHC		0.0099 U	0.0099 U	0.0098 U	0.010 U
gamma-BHC (Lindane)		0.0099 U	0.0099 U	0.0098 U	0.010 U
4,4'-DDD		0.020 U	0.020 U	0.020 U	0.020 U
4,4'-DDE		0.020 U	0.020 U	0.020 U	0.020 U
4,4'-DDT		0.020 U	0.020 U	0.020 U	0.020 U
Dieldrin		0.020 U	0.020 U	0.020 U	0.020 U
Endosulfan I		0.020 U	0.020 U	0.020 U	0.020 U
Endosulfan II		0.020 U	0.020 U	0.020 U	0.020 U
Endosulfan sulfate		0.020 U	0.020 U	0.020 U	0.020 U
Endrin		0.020 U	0.020 U	0.020 U	0.020 U
Endrin aldehyde		0.049 U	0.049 U	0.049 U	0.050 U
Heptachlor	0.019	0.0099 U	0.0099 U	0.0098 U	0.010 U
Heptachlor epoxide	0.0048	0.0099 U	**1.2**	**3.0**	**2.8**
Methoxychlor		0.099 U	0.099 U	0.098 U	0.10 U
Endrin ketone		0.020 U	0.020 U	0.020 U	0.020 U
Toxaphene		0.99 U	0.99 U	0.98 U	1.0 U
alpha-Chlordane	0.25	0.0099 U	**0.033**	**0.057**	**0.051**
gamma-Chlordane	0.25	0.0099 U	**0.14**	**0.19**	**0.18**
Total Chlordane	0.25 (b)	ND	**0.173**	**0.247**	**0.231**
CONVENTIONALS					
Nitrite as N (EPA 300.0; mg/L)		**0.87**	**1.1**	**1.3**	**1.2**
Sulfate (EPA 300.0; mg/L)		**8.1**	**4.4**	**3.0**	**3.0**
Nitrate as N (EPA 300.0; mg/L)		0.90 U	0.90 U	0.90 U	0.90 U
Total Organic Carbon (EPA 415.1; mg/L)		1.0 U	1.0 U	1.0 U	1.0 U
Sulfide, Reactive (EPA 9034; mg/L)		20 U	20 U	20 U	20 U
FIELD PARAMETERS					
Dissolved Oxygen (mg/L)		7.88	8.33	4.81	4.81
Oxidation Reduction Portential (mV)		+191.4	+203.5	+203	+203
pH		5.45	5.38	5.19	5.19
Ferrous Iron (mg/L)		0	0.5	0	0

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
WEBSTER NURSERY
TUMWATER, WASHINGTON

Location:	SW-14		SW-15		SW-16	
Lab ID:	580-45310-2		580-45310-3		580-45310-1	
Data Collected:	9/10/2014		9/10/2014		9/10/2014	
PESTICIDES (µg/L)						
EPA Method 8081A						
Aldrin	0.0098	U	0.012	U	0.0099	U
alpha-BHC	0.0098	U	0.012	U	0.0099	U
beta-BHC	0.020	U	0.024	U	0.020	U
delta-BHC	0.0098	U	0.012	U	0.0099	U
gamma-BHC (Lindane)	0.0098	U	0.012	U	0.0099	U
4,4'-DDD	0.020	U	0.024	U	0.020	U
4,4'-DDE	0.020	U	0.024	U	0.020	U
4,4'-DDT	0.020	U	0.024	U	0.020	U
Dieldrin	0.020	U	0.024	U	0.020	U
Endosulfan I	0.020	U	0.024	U	0.020	U
Endosulfan II	0.020	U	0.024	U	0.020	U
Endosulfan sulfate	0.020	U	0.024	U	0.020	U
Endrin	0.020	U	0.024	U	0.020	U
Endrin aldehyde	0.049	U	0.060	U	0.050	U
Heptachlor	0.0098	U	0.012	U	0.0099	U
Heptachlor epoxide	0.0098	U	0.012	U	0.0099	U
Methoxychlor	0.098	U	0.12	U	0.099	U
Endrin ketone	0.020	U	0.024	U	0.020	U
Toxaphene	0.98	U	1.2	U	0.99	U
alpha-Chlordane	0.0098	U	0.012	U	0.0099	U
gamma-Chlordane	0.0098	U	0.012	U	0.0099	U
Total Chlordane	ND		ND		ND	
CONVENTIONALS						
Nitrite as N (EPA 300.0; mg/L)					**1.1**	J
Sulfate (EPA 300.0; mg/L)					**1.2**	
Nitrate as N (EPA 300.0; mg/L)					0.90	U
Total Organic Carbon (EPA 415.1; mg/L)					1.0	U
Sulfide, Reactive (EPA 9034; mg/L)					20	U
FIELD PARAMETERS						
Dissolved Oxygen (mg/L)	11.34		10.36		4.15	
Oxidation Reduction Portential (mV)	+184.7		+189.6		+200.5	
pH	5.69		5.41		5.48	
Ferrous Iron (mg/L)	0		0		0	

Notes:
(a) Model Toxics Control Act (MTCA) Method B cleanup levels were used as screening criteria.
(b) Screening criteria cannot be exceeded by the sum of individual concentrations.

Bold = Detected compound.
Box = Exceedance of Cleanup Level.
EPA = U.S. Environmental Protection Agency
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
mg/L = Milligrams per Liter
MTCA = Model Toxics Control Act
mV = Millivolt
µg/L = Micrograms per Liter
ND = Not detected for the sum.
U = Indicates the compound was not detected at the reported concentration.

TABLE 4
GROUNDWATER LEVEL MEASUREMENTS
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 Elevation (ft, MSL) 02/24/14	Groundwater Elevation (ft, MSL) 09/10/14
SW-1	193.38	5.05	11.50	188.33	181.88
SW-9	192.12	4.19	9.98	187.93	182.14
SW-10	193.37	5.37	11.28	188.00	182.09
SW-11	192.19	4.19	10.12	188.00	182.07
SW-12	192.9	5.17	10.71	187.73	182.19
SW-13	193.15	5.74	10.99	187.41	182.16
SW-14	193.08	5.04	11.05	188.04	182.03
SW-15	194.79	8.05	13.12	186.74	181.67
SW-16	194.79	6.84	12.77	187.95	182.02

ft = feet
MSL = mean sea level

ATTACHMENT 1

September 2014 Lab Data Report

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: 580-45310-1
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:
10/2/2014 4:33:41 PM

Melissa Armstrong, Project Manager II
(253)248-4975
melissa.armstrong@testamericainc.com

LINKS

Review your project results through TotalAccess

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Visit us at: www.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

Case Narrative

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

TestAmerica Job ID: 580-45310-1

Job ID: 580-45310-1

Laboratory: TestAmerica Seattle

Narrative

Revised 10/2/14 - Samples SW-15-20140910 (580-45310-3) and SW-10-20140910 (580-45310-4) were switched and reported incorrectly on the first report.

Receipt
The samples were received on 9/10/2014 3:33 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.7º C.

GC Semi VOA - Method(s) 8081A
In analysis batch 170524 the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 169874 recovered outside upper control limits for Toxaphene. This analyte was biased high in the LCS/LCSD and was not detected in the associated samples; therefore, the data have been "*" qualified and reported.

In addition the %RPD of the laboratory control sample (LCS) and laboratory control standard duplicate (LCSD) for preparation batch 169874 recovered outside control limits for Endosulfan II. Individual recoveries were within acceptable limits. Data has been "*" qualified and reported.

In analysis batch 170524 the surrogate recovery for the Toxaphene LCS was outside the upper control limits. All associated sample surrogates fell within acceptance criteria; therefore, the data have been "X" qualified and reported.

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

General Chemistry - Method(s) 300.0
The matrix spike (MS) recovery of Nitrite as N for analysis batch 169584 was outside lower control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. Data has been "F1" qualified and reported.

No additional analytical or quality issues were noted, other than those described above or 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
*	RPD of the LCS and LCSD exceeds the control limits
*	LCS or LCSD exceeds the control limits
X	Surrogate is outside control limits

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery exceeds the 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: 580-45310-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-45310-1	SW-16-20140910	Water	09/10/14 13:49	09/10/14 15:33
580-45310-2	SW-14-20140910	Water	09/10/14 11:05	09/10/14 15:33
580-45310-3	SW-15-20140910	Water	09/10/14 10:19	09/10/14 15:33
580-45310-4	SW-10-20140910	Water	09/10/14 13:13	09/10/14 15:33
580-45310-5	SW-11-20140910	Water	09/10/14 12:19	09/10/14 15:33
580-45310-6	SW-99-20140910	Water	09/10/14 12:25	09/10/14 15:33
580-45310-7	SW-9-20140910	Water	09/10/14 11:35	09/10/14 15:33

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Seattle
5755 8th Street E.
Tacoma, WA 98424
Tel. 253-922-2310
Fax 253-922-5047
www.testamericainc.com

☐ Rush
☒ Short Hold

Chain of Custody Record

10/2/2014

Client	Client Contact	Date	Chain of Custody Number
WA DNR	Eric Weber (Landau)	9/10/14	25124
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
9850 Blomberg St	253-926-2493	45310	
City / State / Zip Code	**Sampler**	**Lab Contact**	
Olympia / WA	Siena Mott	Melissa	
Project Name and Location (State)	**Billing Contact**		
Webster Nursery, WA	John Felder (DNR)		
Contract/Purchase Order/Quote No.			
~~PO~~ 67740006.010.012			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: Organochlorine Pest. 8081A	Residue, Sulfide 160.3	Nitrate 300.0	Sulfate 300.0	TOC 415.1
SW-16-20140910	9/10/14	1349		X			3	1			2		X	X	X	X	X
SW-14-20140910		1105		X			2						X				
SW-15-20140910		1019		X			2						X				
SW-10-20140910		1313		X			3	1			2		X	X	X	X	X
SW-11-20140910		1219		X			3	1			2		X	X	X	X	X
SW-99-20140910		1225		X			3	1			2		X	X	X	X	X
SW-9-20140910		1135		X			3	1			2		X	X	X	X	X

Special Instructions/ Conditions of Receipt

Report results to Anne Halvorsen, Eric Weber and John Felder.

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580-45310 Chain of Custody

Cooler TB Dig/IR cor 5.7 A1 unc 6.0 A1 w/c
Cooler Dsc Lg Blu/whi@Lab
Wet Packs Packing other
client drop

Cooler	Possible Hazard Identification	Sample Disposal	(A fee may be assessed if samples are retained longer than 1 month)
☒ Yes ☐ No Cooler Temp: ____	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown	☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months	

Turn Around Time Required (business days)
☐ 24 Hours ☐ 48 Hours ☐ 5 Days ☒ 10 Days ☐ 15 Days ☐ Other ____

QC Requirements (Specify)

	Relinquished By Sign/Print	Date	Time	Received By Sign/Print	Date	Time
1.	Siena Mott / Siena Mott	9/10/14	1533	Tom Blankinship / Blankinship	9/10/14	1533
2.						
3.						

Comments

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-45310-1

Login Number: 45310

List Source: TestAmerica Seattle

List Number: 1

Creator: McDaniel, Ronald T

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.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
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: 580-45310-1

Client Sample ID: SW-16-20140910
Date Collected: 09/10/14 13:49
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-1
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
alpha-BHC	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
delta-BHC	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
gamma-BHC (Lindane)	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endosulfan II	ND	*	0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endrin aldehyde	ND		0.050		ug/L		09/16/14 10:10	09/23/14 15:04	1
Heptachlor	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
Heptachlor epoxide	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
Methoxychlor	ND		0.099		ug/L		09/16/14 10:10	09/23/14 15:04	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:04	1
Toxaphene	ND	*	0.99		ug/L		09/16/14 10:10	09/23/14 15:04	1
alpha-Chlordane	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1
gamma-Chlordane	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*85*		*45 - 123*	*09/16/14 10:10*	*09/23/14 15:04*	*1*
DCB Decachlorobiphenyl	*133*		*33 - 133*	*09/16/14 10:10*	*09/23/14 15:04*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	**1.1**		0.60		mg/L			09/11/14 11:10	1
Sulfate	**1.2**		1.2		mg/L			09/11/14 11:10	1
Nitrate as N	ND		0.90		mg/L			09/11/14 11:10	1
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-14-20140910
Date Collected: 09/10/14 11:05
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-2
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
alpha-BHC	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
delta-BHC	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
gamma-BHC (Lindane)	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endosulfan II	ND	*	0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endrin aldehyde	ND		0.049		ug/L		09/16/14 10:10	09/23/14 15:20	1
Heptachlor	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
Heptachlor epoxide	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
Methoxychlor	ND		0.098		ug/L		09/16/14 10:10	09/23/14 15:20	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:20	1
Toxaphene	ND	*	0.98		ug/L		09/16/14 10:10	09/23/14 15:20	1
alpha-Chlordane	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1
gamma-Chlordane	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*46*		*45 - 123*	*09/16/14 10:10*	*09/23/14 15:20*	*1*
DCB Decachlorobiphenyl	*78*		*33 - 133*	*09/16/14 10:10*	*09/23/14 15:20*	*1*

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-15-20140910
Date Collected: 09/10/14 10:19
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-3
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
alpha-BHC	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
beta-BHC	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
delta-BHC	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
gamma-BHC (Lindane)	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
4,4'-DDD	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
4,4'-DDE	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
4,4'-DDT	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Dieldrin	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endosulfan I	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endosulfan II	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endosulfan sulfate	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endrin	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endrin aldehyde	ND		0.060		ug/L		09/16/14 10:10	09/23/14 15:53	1
Heptachlor	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
Heptachlor epoxide	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
Methoxychlor	ND		0.12		ug/L		09/16/14 10:10	09/23/14 15:53	1
Endrin ketone	ND		0.024		ug/L		09/16/14 10:10	09/23/14 15:53	1
Toxaphene	ND	*	1.2		ug/L		09/16/14 10:10	09/23/14 15:53	1
alpha-Chlordane	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1
gamma-Chlordane	ND		0.012		ug/L		09/16/14 10:10	09/23/14 15:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*52*		*45 - 123*	*09/16/14 10:10*	*09/23/14 15:53*	*1*
DCB Decachlorobiphenyl	*88*		*33 - 133*	*09/16/14 10:10*	*09/23/14 15:53*	*1*

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-10-20140910
Date Collected: 09/10/14 13:13
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-4
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
alpha-BHC	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
delta-BHC	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
gamma-BHC (Lindane)	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endosulfan II	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endrin aldehyde	ND		0.049		ug/L		09/16/14 10:10	09/23/14 15:37	1
Heptachlor	ND		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
Heptachlor epoxide	**1.2**		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
Methoxychlor	ND		0.099		ug/L		09/16/14 10:10	09/23/14 15:37	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:10	09/23/14 15:37	1
Toxaphene	ND	*	0.99		ug/L		09/16/14 10:10	09/23/14 15:37	1
alpha-Chlordane	**0.033**		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1
gamma-Chlordane	**0.14**		0.0099		ug/L		09/16/14 10:10	09/23/14 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*55*		*45 - 123*	*09/16/14 10:10*	*09/23/14 15:37*	*1*
DCB Decachlorobiphenyl	*91*		*33 - 133*	*09/16/14 10:10*	*09/23/14 15:37*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	**1.1**		0.60		mg/L			09/11/14 12:22	1
Sulfate	**4.4**		1.2		mg/L			09/11/14 12:22	1
Nitrate as N	ND		0.90		mg/L			09/11/14 12:22	1
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-11-20140910
Date Collected: 09/10/14 12:19
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-5
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
alpha-BHC	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
delta-BHC	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
gamma-BHC (Lindane)	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endosulfan II	ND	*	0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endrin aldehyde	ND		0.049		ug/L		09/16/14 10:10	09/23/14 16:10	1
Heptachlor	ND		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
Heptachlor epoxide	**3.0**		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
Methoxychlor	ND		0.098		ug/L		09/16/14 10:10	09/23/14 16:10	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:10	09/23/14 16:10	1
Toxaphene	ND	*	0.98		ug/L		09/16/14 10:10	09/23/14 16:10	1
alpha-Chlordane	**0.057**		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1
gamma-Chlordane	**0.19**		0.0098		ug/L		09/16/14 10:10	09/23/14 16:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*55*		*45 - 123*	*09/16/14 10:10*	*09/23/14 16:10*	*1*
DCB Decachlorobiphenyl	*96*		*33 - 133*	*09/16/14 10:10*	*09/23/14 16:10*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	**1.3**		0.60		mg/L			09/11/14 12:36	1
Sulfate	**3.0**		1.2		mg/L			09/11/14 12:36	1
Nitrate as N	ND		0.90		mg/L			09/11/14 12:36	1
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-99-20140910
Date Collected: 09/10/14 12:25
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-6
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
alpha-BHC	ND		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
delta-BHC	ND		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
gamma-BHC (Lindane)	ND		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endosulfan II	ND	*	0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endrin	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endrin aldehyde	ND		0.050		ug/L		09/16/14 10:11	09/24/14 12:07	1
Heptachlor	ND		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
Heptachlor epoxide	**2.8**		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
Methoxychlor	ND		0.10		ug/L		09/16/14 10:11	09/24/14 12:07	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:07	1
Toxaphene	ND	*	1.0		ug/L		09/16/14 10:11	09/24/14 12:07	1
alpha-Chlordane	**0.051**		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1
gamma-Chlordane	**0.18**		0.010		ug/L		09/16/14 10:11	09/24/14 12:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*53*		*45 - 123*	*09/16/14 10:11*	*09/24/14 12:07*	*1*
DCB Decachlorobiphenyl	*89*		*33 - 133*	*09/16/14 10:11*	*09/24/14 12:07*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	**1.2**		0.60		mg/L			09/11/14 12:51	1
Sulfate	**3.0**		1.2		mg/L			09/11/14 12:51	1
Nitrate as N	ND		0.90		mg/L			09/11/14 12:51	1
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-9-20140910
Date Collected: 09/10/14 11:35
Date Received: 09/10/14 15:33

Lab Sample ID: 580-45310-7
Matrix: Water

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
alpha-BHC	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
delta-BHC	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
gamma-BHC (Lindane)	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endosulfan II	ND	*	0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endrin	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endrin aldehyde	ND		0.049		ug/L		09/16/14 10:11	09/24/14 12:23	1
Heptachlor	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
Heptachlor epoxide	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
Methoxychlor	ND		0.099		ug/L		09/16/14 10:11	09/24/14 12:23	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:11	09/24/14 12:23	1
Toxaphene	ND	*	0.99		ug/L		09/16/14 10:11	09/24/14 12:23	1
alpha-Chlordane	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1
gamma-Chlordane	ND		0.0099		ug/L		09/16/14 10:11	09/24/14 12:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*56*		*45 - 123*	*09/16/14 10:11*	*09/24/14 12:23*	*1*
DCB Decachlorobiphenyl	*96*		*33 - 133*	*09/16/14 10:11*	*09/24/14 12:23*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	**0.87**		0.60		mg/L			09/11/14 13:05	1
Sulfate	**8.1**		1.2		mg/L			09/11/14 13:05	1
Nitrate as N	ND		0.90		mg/L			09/11/14 13:05	1
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 580-169874/1-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 169874

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
alpha-BHC	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
beta-BHC	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
delta-BHC	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
gamma-BHC (Lindane)	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
4,4'-DDD	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
4,4'-DDE	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
4,4'-DDT	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Dieldrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endosulfan I	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endosulfan II	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endosulfan sulfate	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endrin	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endrin aldehyde	ND		0.050		ug/L		09/16/14 10:10	09/23/14 13:41	1
Heptachlor	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
Heptachlor epoxide	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
Methoxychlor	ND		0.10		ug/L		09/16/14 10:10	09/23/14 13:41	1
Endrin ketone	ND		0.020		ug/L		09/16/14 10:10	09/23/14 13:41	1
Toxaphene	ND		1.0		ug/L		09/16/14 10:10	09/23/14 13:41	1
alpha-Chlordane	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1
gamma-Chlordane	ND		0.010		ug/L		09/16/14 10:10	09/23/14 13:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*61*		*45 - 123*	*09/16/14 10:10*	*09/23/14 13:41*	*1*
DCB Decachlorobiphenyl	*91*		*33 - 133*	*09/16/14 10:10*	*09/23/14 13:41*	*1*

Lab Sample ID: LCS 580-169874/2-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169874

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	0.160	0.144		ug/L		90	56 - 124
alpha-BHC	0.160	0.152		ug/L		95	41 - 126
beta-BHC	0.160	0.158		ug/L		98	56 - 114
delta-BHC	0.160	0.0897		ug/L		56	30 - 130
gamma-BHC (Lindane)	0.160	0.158		ug/L		99	46 - 127
4,4'-DDD	0.160	0.169		ug/L		105	48 - 147
4,4'-DDE	0.160	0.175		ug/L		109	61 - 131
4,4'-DDT	0.160	0.169		ug/L		106	47 - 143
Dieldrin	0.160	0.161		ug/L		101	63 - 140
Endosulfan I	0.160	0.157		ug/L		98	54 - 151
Endosulfan II	0.160	0.172		ug/L		107	53 - 144
Endosulfan sulfate	0.160	0.155		ug/L		97	45 - 130
Endrin	0.160	0.177		ug/L		111	57 - 137
Endrin aldehyde	0.160	0.150		ug/L		94	52 - 139
Heptachlor	0.160	0.158		ug/L		99	46 - 138
Heptachlor epoxide	0.160	0.178		ug/L		111	58 - 142
Methoxychlor	0.160	0.181		ug/L		113	51 - 147

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

Lab Sample ID: LCS 580-169874/2-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169874

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin ketone			0.160	0.163		ug/L		102	52 - 150		
alpha-Chlordane			0.160	0.180		ug/L		112	58 - 133		
gamma-Chlordane			0.160	0.176		ug/L		110	61 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*76*		*45 - 123*
DCB Decachlorobiphenyl	*113*		*33 - 133*

Lab Sample ID: LCS 580-169874/4-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169874

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Toxaphene			4.00	6.10	*	ug/L		152	55 - 141		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*92*		*45 - 123*
DCB Decachlorobiphenyl	*156*	*X*	*33 - 133*

Lab Sample ID: LCSD 580-169874/3-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169874

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			0.160	0.0944		ug/L		59	56 - 124	42	52
alpha-BHC			0.160	0.103		ug/L		64	41 - 126	39	53
beta-BHC			0.160	0.112		ug/L		70	56 - 114	34	50
delta-BHC			0.160	0.0661		ug/L		41	30 - 130	30	56
gamma-BHC (Lindane)			0.160	0.110		ug/L		69	46 - 127	36	50
4,4'-DDD			0.160	0.128		ug/L		80	48 - 147	27	52
4,4'-DDE			0.160	0.126		ug/L		79	61 - 131	32	50
4,4'-DDT			0.160	0.128		ug/L		80	47 - 143	28	52
Dieldrin			0.160	0.118		ug/L		74	63 - 140	31	51
Endosulfan I			0.160	0.120		ug/L		75	54 - 151	27	55
Endosulfan II			0.160	0.129	*	ug/L		80	53 - 144	29	19
Endosulfan sulfate			0.160	0.118		ug/L		74	45 - 130	27	52
Endrin			0.160	0.134		ug/L		84	57 - 137	28	52
Endrin aldehyde			0.160	0.122		ug/L		76	52 - 139	20	51
Heptachlor			0.160	0.107		ug/L		67	46 - 138	39	50
Heptachlor epoxide			0.160	0.131		ug/L		82	58 - 142	31	49
Methoxychlor			0.160	0.138		ug/L		86	51 - 147	27	52
Endrin ketone			0.160	0.122		ug/L		76	52 - 150	29	50
alpha-Chlordane			0.160	0.131		ug/L		82	58 - 133	31	52
gamma-Chlordane			0.160	0.126		ug/L		79	61 - 130	33	51

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*57*		*45 - 123*

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

Lab Sample ID: LCSD 580-169874/3-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169874

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
DCB Decachlorobiphenyl	84		33 - 133

Lab Sample ID: LCSD 580-169874/5-A
Matrix: Water
Analysis Batch: 170524

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169874

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toxaphene			4.00	5.56		ug/L		139	55 - 141	9	40

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	79		45 - 123
DCB Decachlorobiphenyl	133		33 - 133

Method: 300.0 - Nitrate & Nitrite

Lab Sample ID: MB 580-169584/3
Matrix: Water
Analysis Batch: 169584

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	ND		0.60		mg/L			09/11/14 08:55	1
Nitrate as N	ND		0.90		mg/L			09/11/14 08:55	1

Lab Sample ID: LCS 580-169584/4
Matrix: Water
Analysis Batch: 169584

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N			1.20	1.16		mg/L		97	90 - 110
Nitrate as N			1.80	1.82		mg/L		101	90 - 110

Lab Sample ID: LCSD 580-169584/5
Matrix: Water
Analysis Batch: 169584

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrite as N			1.20	1.16		mg/L		97	90 - 110	0	15
Nitrate as N			1.80	1.82		mg/L		101	90 - 110	0	15

Lab Sample ID: 580-45310-1 MS
Matrix: Water
Analysis Batch: 169584

Client Sample ID: SW-16-20140910
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	1.1		1.20	1.91	F1	mg/L		64	90 - 110
Nitrate as N	ND		1.80	2.70		mg/L		103	90 - 110

Method: 300.0 - Nitrate & Nitrite (Continued)

Lab Sample ID: 580-45310-1 DU
Matrix: Water
Analysis Batch: 169584

Client Sample ID: SW-16-20140910
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Nitrite as N	1.1			1.11		mg/L				3	10
Nitrate as N	ND			ND		mg/L				NC	10

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-169593/3
Matrix: Water
Analysis Batch: 169593

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		1.2		mg/L			09/11/14 08:55	1

Lab Sample ID: LCS 580-169593/4
Matrix: Water
Analysis Batch: 169593

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			12.0	12.1		mg/L		101	90 - 110		

Lab Sample ID: LCSD 580-169593/5
Matrix: Water
Analysis Batch: 169593

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate			12.0	12.1		mg/L		101	90 - 110	0	15

Lab Sample ID: 580-45310-1 DU
Matrix: Water
Analysis Batch: 169593

Client Sample ID: SW-16-20140910
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	1.2			1.20		mg/L				0.8	10

Method: 415.1 - TOC

Lab Sample ID: MB 580-170347/1
Matrix: Water
Analysis Batch: 170347

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			09/20/14 13:20	1

Lab Sample ID: LCS 580-170347/2
Matrix: Water
Analysis Batch: 170347

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			15.0	15.8		mg/L		105	85 - 115		

Method: 9034 - Reactive Sulfide

Lab Sample ID: MB 580-169774/1-A
Matrix: Water
Analysis Batch: 170283

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 169774

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide, Reactive	ND		20		mg/L		09/15/14 10:51	09/19/14 11:35	1

Lab Sample ID: LCS 580-169774/2-A
Matrix: Water
Analysis Batch: 170283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 169774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide, Reactive	401	250		mg/L		63	30 - 114

Lab Sample ID: LCSD 580-169774/3-A
Matrix: Water
Analysis Batch: 170283

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 169774

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide, Reactive	401	232		mg/L		58	30 - 114	7	20

Lab Sample ID: 580-45310-1 MS
Matrix: Water
Analysis Batch: 170283

Client Sample ID: SW-16-20140910
Prep Type: Total/NA
Prep Batch: 169774

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide, Reactive	ND		401	208		mg/L		52	30 - 114

Lab Sample ID: 580-45310-1 MSD
Matrix: Water
Analysis Batch: 170283

Client Sample ID: SW-16-20140910
Prep Type: Total/NA
Prep Batch: 169774

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide, Reactive	ND		401	202		mg/L		51	30 - 114	3	

Lab Sample ID: 580-45310-1 DU
Matrix: Water
Analysis Batch: 170283

Client Sample ID: SW-16-20140910
Prep Type: Total/NA
Prep Batch: 169774

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfide, Reactive	ND		ND		mg/L		NC	20

Lab Chronicle

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-16-20140910

Lab Sample ID: 580-45310-1

Date Collected: 09/10/14 13:49

Matrix: Water

Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:10	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170524	09/23/14 15:04	EGS	TAL SEA
Total/NA	Analysis	300.0		1	169584	09/11/14 11:10	RSB	TAL SEA
Total/NA	Analysis	300.0		1	169593	09/11/14 11:10	RSB	TAL SEA
Total/NA	Analysis	415.1		1	170347	09/20/14 13:20	JLS	TAL SEA
Total/NA	Prep	7.3.4			169774	09/15/14 10:51	SPP	TAL SEA
Total/NA	Analysis	9034		1	170283	09/19/14 11:35	SPP	TAL SEA

Client Sample ID: SW-14-20140910

Lab Sample ID: 580-45310-2

Date Collected: 09/10/14 11:05

Matrix: Water

Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:10	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170524	09/23/14 15:20	EGS	TAL SEA

Client Sample ID: SW-15-20140910

Lab Sample ID: 580-45310-3

Date Collected: 09/10/14 10:19

Matrix: Water

Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:10	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170524	09/23/14 15:53	EGS	TAL SEA

Client Sample ID: SW-10-20140910

Lab Sample ID: 580-45310-4

Date Collected: 09/10/14 13:13

Matrix: Water

Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:10	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170524	09/23/14 15:37	EGS	TAL SEA
Total/NA	Analysis	300.0		1	169584	09/11/14 12:22	RSB	TAL SEA
Total/NA	Analysis	300.0		1	169593	09/11/14 12:22	RSB	TAL SEA
Total/NA	Analysis	415.1		1	170347	09/20/14 13:20	JLS	TAL SEA
Total/NA	Prep	7.3.4			169774	09/15/14 10:51	SPP	TAL SEA
Total/NA	Analysis	9034		1	170283	09/19/14 11:35	SPP	TAL SEA

Lab Chronicle

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

TestAmerica Job ID: 580-45310-1

Client Sample ID: SW-11-20140910

Lab Sample ID: 580-45310-5

Date Collected: 09/10/14 12:19
Matrix: Water
Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:10	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170524	09/23/14 16:10	EGS	TAL SEA
Total/NA	Analysis	300.0		1	169584	09/11/14 12:36	RSB	TAL SEA
Total/NA	Analysis	300.0		1	169593	09/11/14 12:36	RSB	TAL SEA
Total/NA	Analysis	415.1		1	170347	09/20/14 13:20	JLS	TAL SEA
Total/NA	Prep	7.3.4			169774	09/15/14 10:51	SPP	TAL SEA
Total/NA	Analysis	9034		1	170283	09/19/14 11:35	SPP	TAL SEA

Client Sample ID: SW-99-20140910

Lab Sample ID: 580-45310-6

Date Collected: 09/10/14 12:25
Matrix: Water
Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:11	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170606	09/24/14 12:07	EGS	TAL SEA
Total/NA	Analysis	300.0		1	169584	09/11/14 12:51	RSB	TAL SEA
Total/NA	Analysis	300.0		1	169593	09/11/14 12:51	RSB	TAL SEA
Total/NA	Analysis	415.1		1	170347	09/20/14 13:20	JLS	TAL SEA
Total/NA	Prep	7.3.4			169774	09/15/14 10:51	SPP	TAL SEA
Total/NA	Analysis	9034		1	170283	09/19/14 11:35	SPP	TAL SEA

Client Sample ID: SW-9-20140910

Lab Sample ID: 580-45310-7

Date Collected: 09/10/14 11:35
Matrix: Water
Date Received: 09/10/14 15:33

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			169874	09/16/14 10:11	RBL	TAL SEA
Total/NA	Analysis	8081A		1	170606	09/24/14 12:23	EGS	TAL SEA
Total/NA	Analysis	300.0		1	169584	09/11/14 13:05	RSB	TAL SEA
Total/NA	Analysis	300.0		1	169593	09/11/14 13:05	RSB	TAL SEA
Total/NA	Analysis	415.1		1	170347	09/20/14 13:20	JLS	TAL SEA
Total/NA	Prep	7.3.4			169774	09/15/14 10:51	SPP	TAL SEA
Total/NA	Analysis	9034		1	170283	09/19/14 11:35	SPP	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: 580-45310-1

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	02-17-15

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

Analysis Method	Prep Method	Matrix	Analyte
415.1		Water	Total Organic Carbon
8081A	3510C	Water	4,4'-DDD
8081A	3510C	Water	4,4'-DDE
8081A	3510C	Water	4,4'-DDT
8081A	3510C	Water	Aldrin
8081A	3510C	Water	alpha-BHC
8081A	3510C	Water	alpha-Chlordane
8081A	3510C	Water	beta-BHC
8081A	3510C	Water	delta-BHC
8081A	3510C	Water	Dieldrin
8081A	3510C	Water	Endosulfan I
8081A	3510C	Water	Endosulfan II
8081A	3510C	Water	Endosulfan sulfate
8081A	3510C	Water	Endrin
8081A	3510C	Water	Endrin aldehyde
8081A	3510C	Water	Endrin ketone
8081A	3510C	Water	gamma-BHC (Lindane)
8081A	3510C	Water	gamma-Chlordane
8081A	3510C	Water	Heptachlor
8081A	3510C	Water	Heptachlor epoxide
8081A	3510C	Water	Methoxychlor
8081A	3510C	Water	Toxaphene
9034	7.3.4	Water	Sulfide, Reactive