



✓ GEA
4/24/2015

Where did the
89 ppb cleanup
target originate from?

Technical Memorandum

To: Greg Aitken/ Oregon DEQ

From: Heidi Blischke/GSI Water Solutions Inc.

Date: 4/2/2015

Re: Additional Information requested regarding Reduction in Monitoring Request Dated February 9, 2015

A request to reduce the monitoring program for the J.H. Baxter site in Eugene, Oregon was discussed with Oregon Department of Environmental Quality (DEQ) during the fall of 2014. Baxter submitted a formal request to reduce the monitoring program in a letter dated February 9, 2015. A conference call between Greg Aitken/Oregon DEQ, Heidi Blischke/GSI Water Solutions (GSI) and Randy Pratt/GSI was conducted on March 16 to discuss the proposal. DEQ requested the following additional information to support the proposal to reduce the monitoring program:

- ✓ • Concentration maps for pentachlorophenol (PCP) with groundwater contours for 2001 and 2014
- ✓ • Trend Plots for PCP in the wells since 2001
- ✓ • A review of new well installations in the vicinity of the Site to determine whether new wells have been installed since the Beneficial Use Determination was completed in 2002.

Concentration Maps

Figures 1 through 4 present the PCP concentration maps for the shallow and intermediate groundwater zones 2001 and 2014. Concentration ranges used include greater than 500 ug/L, above 89 ug/L and below 500 ug/L, and below 89 ug/L (which is the proposed cleanup concentration presented in the Feasibility Study). The groundwater pump and treat system began operating in 1984.

Figure 1 presents the PCP concentrations in shallow wells from 2001 or prior to 2001 where the wells were not sampled in 2001. The PCP concentrations in groundwater and date of sample is presented next to each shallow well. No data was identified for W-15S, W-21S or W-22S.

Shallow groundwater contours are presented for September 2001. This shows that the pump and treat system is achieving capture of the highest concentrations. Figure 2 presents the PCP concentrations in the shallow zone from 2014. The concentration footprint is slightly smaller and the areas with high concentrations is smaller. Because this represents the source area, it is not expected that the pump and treat system will dramatically reduce concentrations in the source area but serves more as a containment technology. Concentrations in the source area achieve some reduction due to the flushing with clean upgradient water and removal of mass from groundwater extraction.

Figure 3 presents the PCP concentrations present in groundwater from 2001 (or prior to 2001 if data was not available for 2001). The intermediate groundwater elevation contours are also presented for September 2001 which shows that the extraction system is generally achieving capture of the highest concentrations. Figure 4 presents the PCP concentrations in intermediate groundwater from 2014. There is a significant reduction in both the impacted footprint and the PCP concentrations between 2001 and 2014. This demonstrated that the pump and treat system is both containing the source area and has significantly reduced the concentrations present in the residential neighborhood to the north of the Site. In fact, offsite concentrations are generally below 89 ug/L which is the proposed cleanup concentration for groundwater at the Site.

Trend plots

Trend plots for each well between 2001 through 2014 are presented in Attachment A: Figures A-1 through A-14. Detections are present as a solid dot and non-detects are shown as an open circle. It is important to shown non-detects with a different symbol because in cases where a detection limit is elevated, it can appear on trend as if there is an increase in concentration.

Figure A-1 presents trend plots for the offsite wells with the individual trend plots presented on Figures A-2 through A-7. PCP is not detected or detected at concentrations generally less than 1 ug/L in wells W-16AI, W-17AS, W-17AI, and W-17BI located in the residential neighborhood north of the Site. PCP is not detected or detected at concentrations generally less than 2 ug/L in wells W-32, W-34, W-35, and W-36 located downgradient of the Site. While there have been some elevated detection limits in the last 3 years, the long history of low detection limit non detections prior to 2011 and the decreasing concentrations in wells closer to the source area, suggest that these wells are not adversely impacted. The remaining offsite wells W-24, W-25, W-26, and W-29 all show decreasing PCP concentration trends between 2001 and 2014 which is consistent with the intermediate concentration maps presented in Figures 3 and 4.

Trend plots for the onsite wells are present in Figure A-8 with the individual plots presented in Figures A-9 through A-14. Onsite wells are either stable (W-12I) or show decreasing concentration trends for PCP.

The overall reduction in the footprint of the PCP plume coupled with the decreasing concentrations in individual wells is consistent with the pump and treat system removing PCP mass. In addition, the highest concentrations and concentrations above the proposed cleanup level of 89 ug/L are contained to onsite by the extraction system.

New Well Installations in the Vicinity of the Site

A well search was conducted on the Oregon Water Resource Department's website for new wells installed since 2000. While there were numerous geotechnical holes and monitoring wells installed, there was **only 1 well installed** that is listed for domestic use. This well is located at 3829 Roosevelt Blvd and is completed at 39 feet below ground surface (well log attached - Attachment B). It is outside of the shallow plume and within the low concentration area of the intermediate plume. We suspect that the well is being used for irrigation because the residents north of the Site are on City water. However, **this will be confirmed with the homeowner**. No additional new wells were installed since the Beneficial Use Determination was completed.

✓ ?



FIGURE 1
PCP Concentrations in
Shallow Monitoring Wells 2001 or
Maximum Concentration Prior to 2001
JH Baxter
Eugene, Oregon

LEGEND

- Monitoring Well, Shallow
- Inferred Groundwater Elevation Contours (dashed where inferred) September 2001 (AMEC)
- Proposed Cleanup Boundary

PCP Concentration (ug/L)

- <89
- ≥89 - 500
- ≥500

All Other Features

- Facility Boundary
- Tax Lot
- Railroad
- Watercourse

NOTES:
PCP results in ug/L
ND: Non-Detect

N

0 160 320 480
Feet

MAP NOTES:
Date: April 3, 2015
Data Sources: AMEC, USGS, ESRI, Lane Co.





FIGURE 2
PCP Concentrations in
Shallow Monitoring Wells 2014
JH Baxter
Eugene, Oregon

LEGEND

- Monitoring Well, Shallow
- Groundwater Elevation Contours (dashed where inferred)
- Proposed Cleanup Boundary

PCP Concentration (ug/L)

- <89
- ≥89 - 500
- ≥500

All Other Features

- Facility Boundary
- Tax Lot
- Railroad
- Watercourse

NOTES:
PCP results in ug/L
ND: Non-Detect

N

0 160 320 480
Feet

MAP NOTES:
Date: April 3, 2015
Data Sources: AMEC, USGS, ESRI, Lane Co.



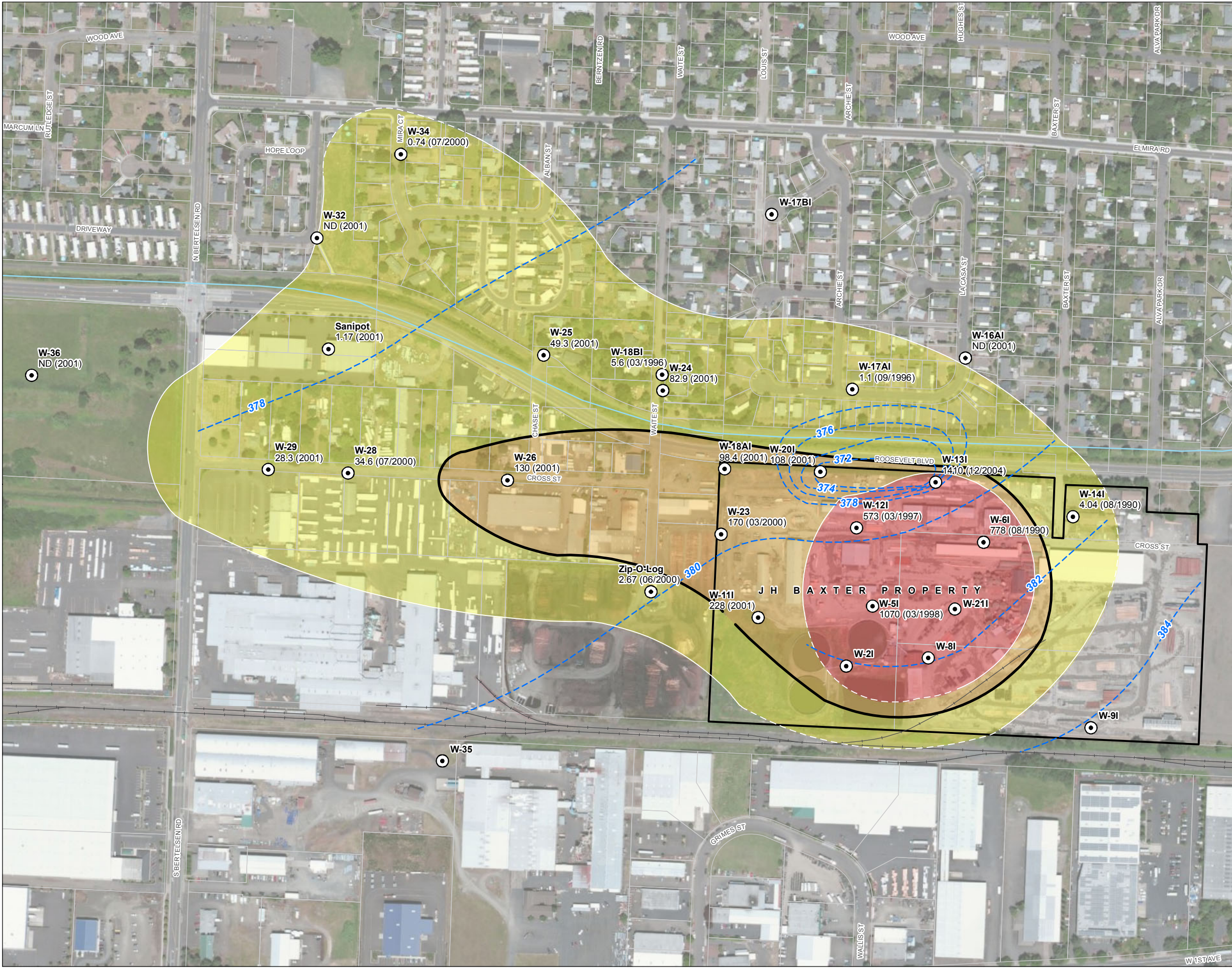


FIGURE 3
PCP Concentrations in
Intermediate Monitoring Wells 2001 or
Maximum Concentration Prior to 2001
JH Baxter
Eugene, Oregon

- LEGEND**
- Monitoring Well, Intermediate
 - Inferred Groundwater Elevation Contours (dashed where inferred) September 2001 (AMEC)
 - Proposed Cleanup Boundary
 - PCP Concentration (ug/L)**
 - <89
 - ≥89 - 500
 - ≥500
 - All Other Features**
 - Facility Boundary
 - Tax Lot
 - Railroad
 - Watercourse

NOTES:
PCP results in ug/L
ND: Non-Detect

MAP NOTES:
Date: April 3, 2015
Data Sources: AMEC, USGS, ESRI, Lane Co.





FIGURE 4
PCP Concentrations in
Intermediate Monitoring Wells 2014
JH Baxter
Eugene, Oregon

- LEGEND**
- Monitoring Well, Intermediate
 - Groundwater Elevation Contours (dashed where inferred)
 - Proposed Cleanup Boundary
 - PCP Concentration (ug/L)**
 - <89
 - ≥89 - 500
 - ≥500
 - All Other Features**
 - Facility Boundary
 - Tax Lot
 - Railroad
 - Watercourse

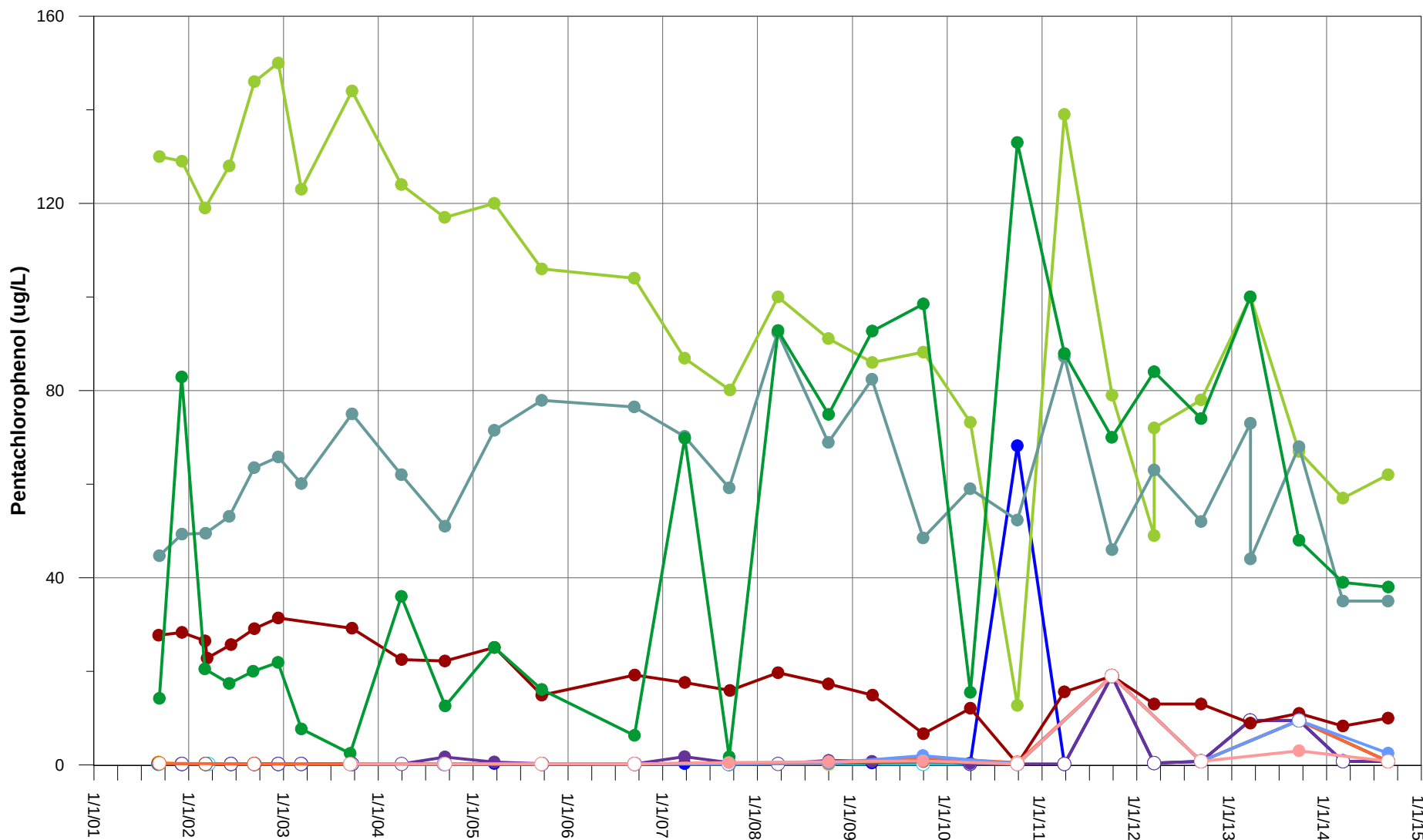
NOTES:
PCP results in ug/L
ND: Non-Detect

0 160 320 480
Feet

MAP NOTES:
Date: April 3, 2015
Data Sources: AMEC, USGS, ESRI, Lane Co.



Attachment A: PCP Concentration Trend Plots



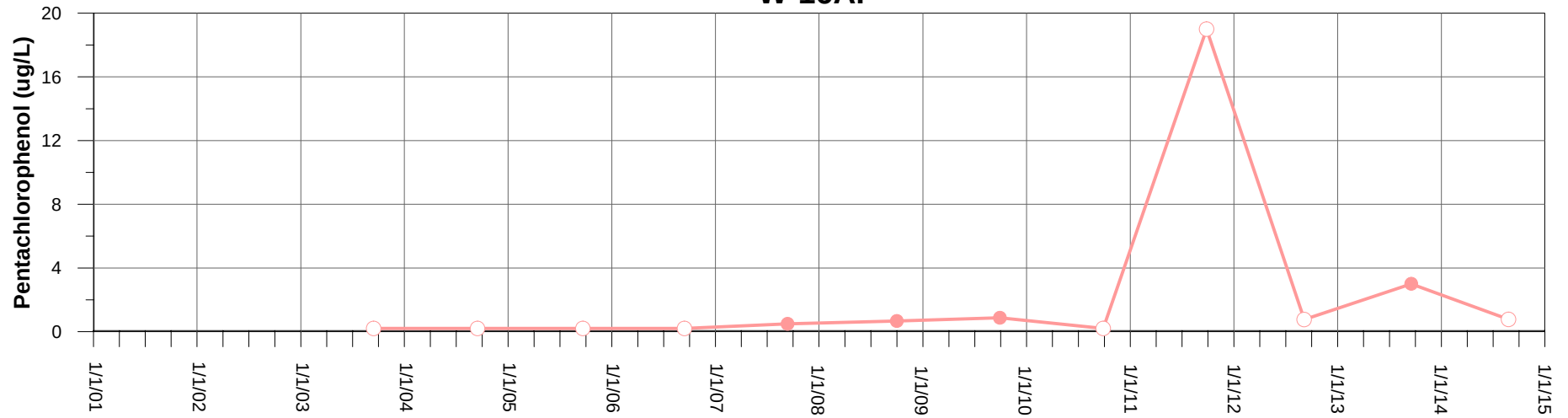
Legend:



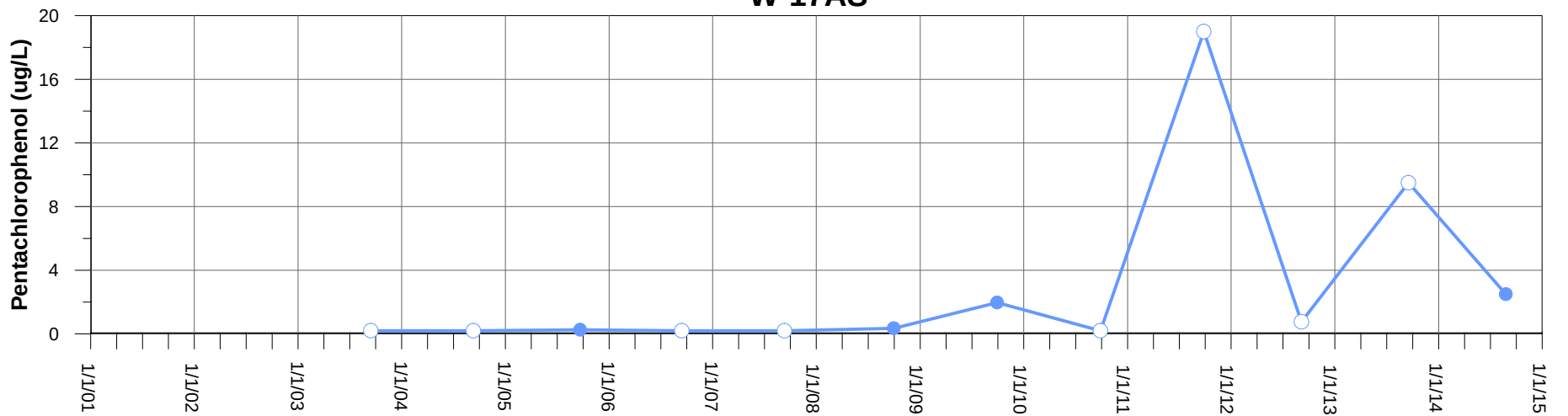
FIGURE A-1
Pentachlorophenol Groundwater Concentrations in Offsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon

Notes:
 ug/L = microgram per liter

W-16AI



W-17AS



Legend:

- Detect
- Non-detect
- W-16AI
- W-17AS

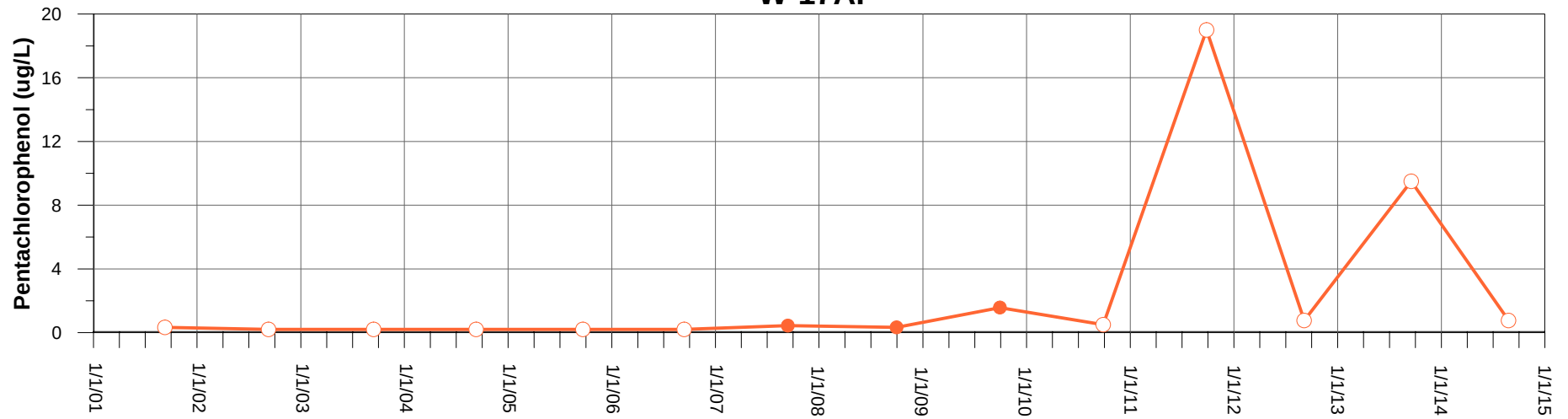
Notes:

ug/L = microgram per liter

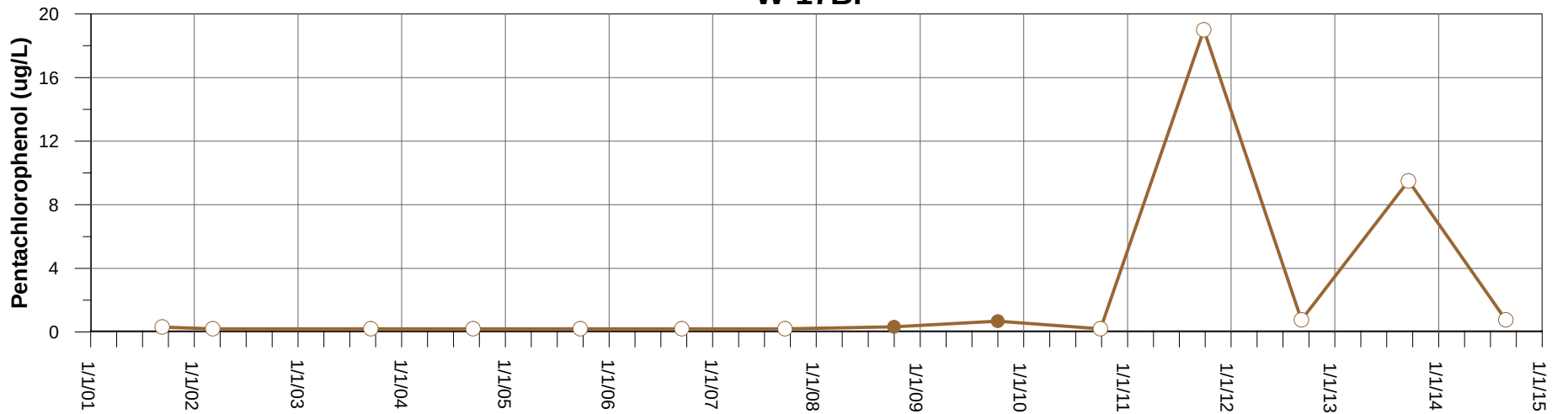
FIGURE A-2 Pentachlorophenol Groundwater Concentrations in Offsite Wells

J.H. Baxter Wood Treating Facility
Eugene, Oregon

W-17AI



W-17BI



Legend:

- Detect
- Non-detect
- W-17AI
- W-17BI

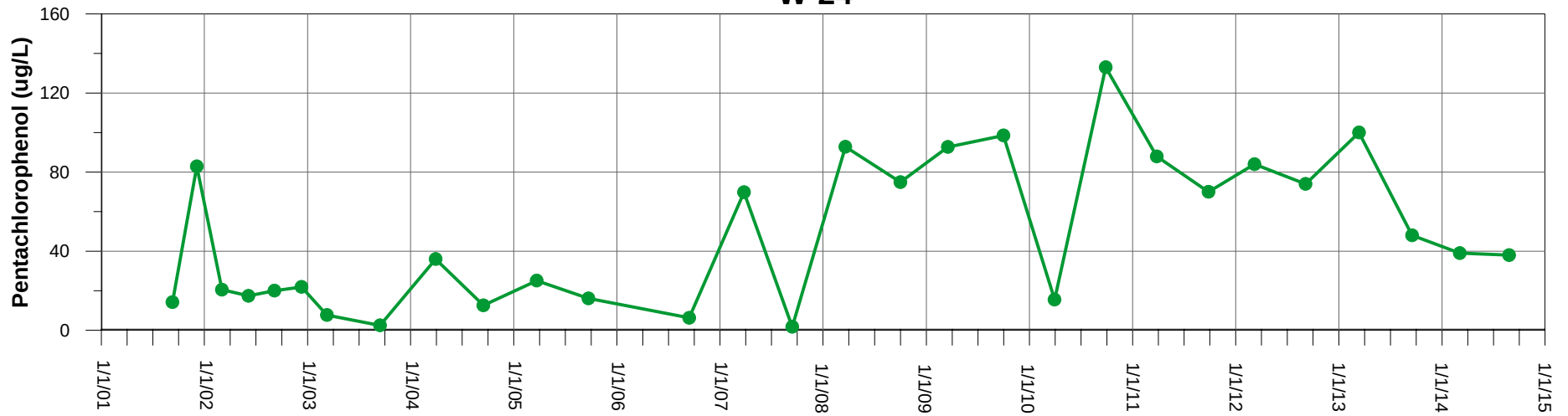
Notes:

ug/L = microgram per liter

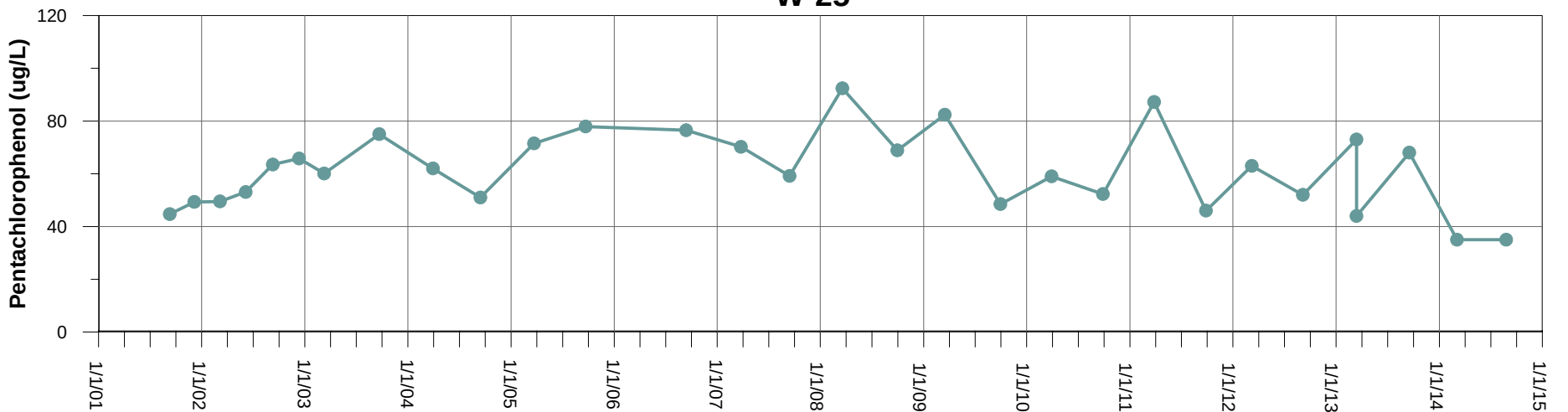
FIGURE A-3
Pentachlorophenol Groundwater Concentrations in Offsite Wells

J.H. Baxter Wood Treating Facility
Eugene, Oregon

W-24



W-25



Legend:

- Detect
- Non-detect
- W-24
- W-25

Notes:

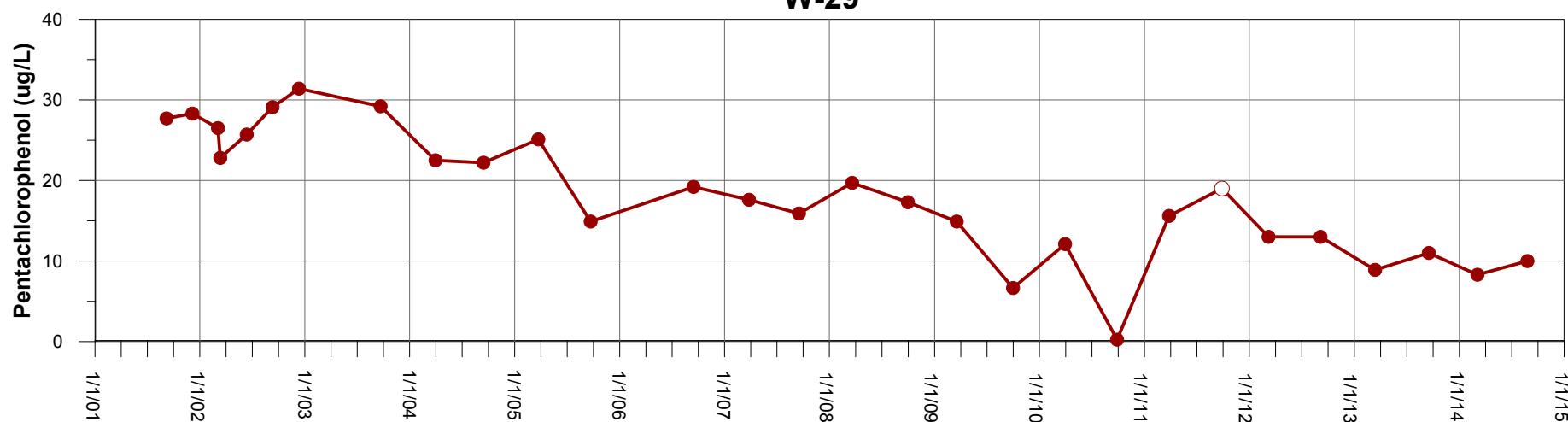
ug/L = microgram per liter

FIGURE A-4
Pentachlorophenol Groundwater Concentrations in Offsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon

W-26



W-29



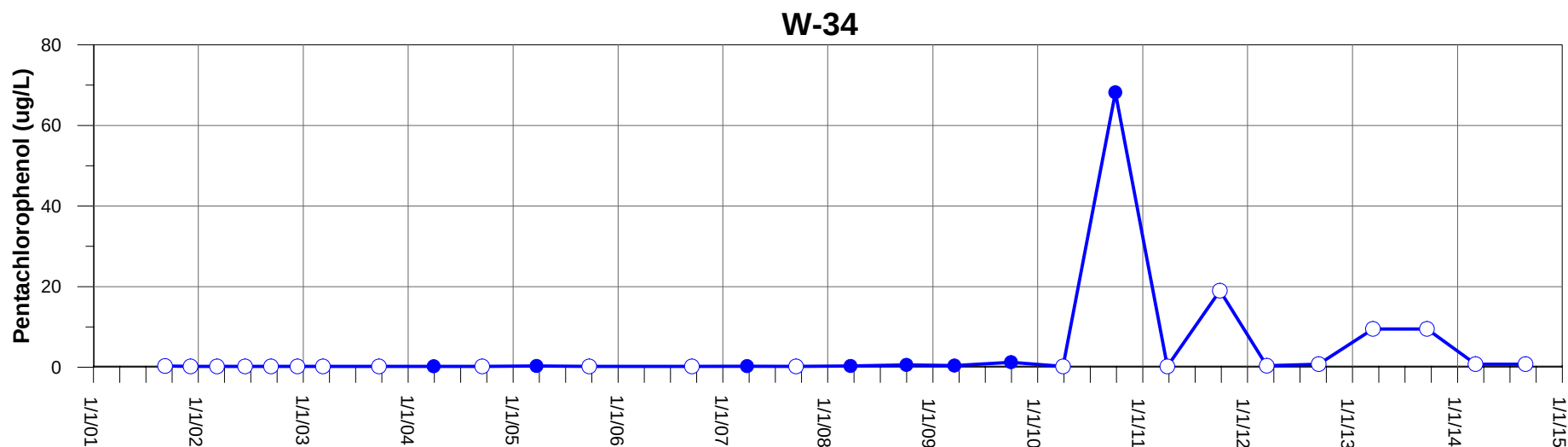
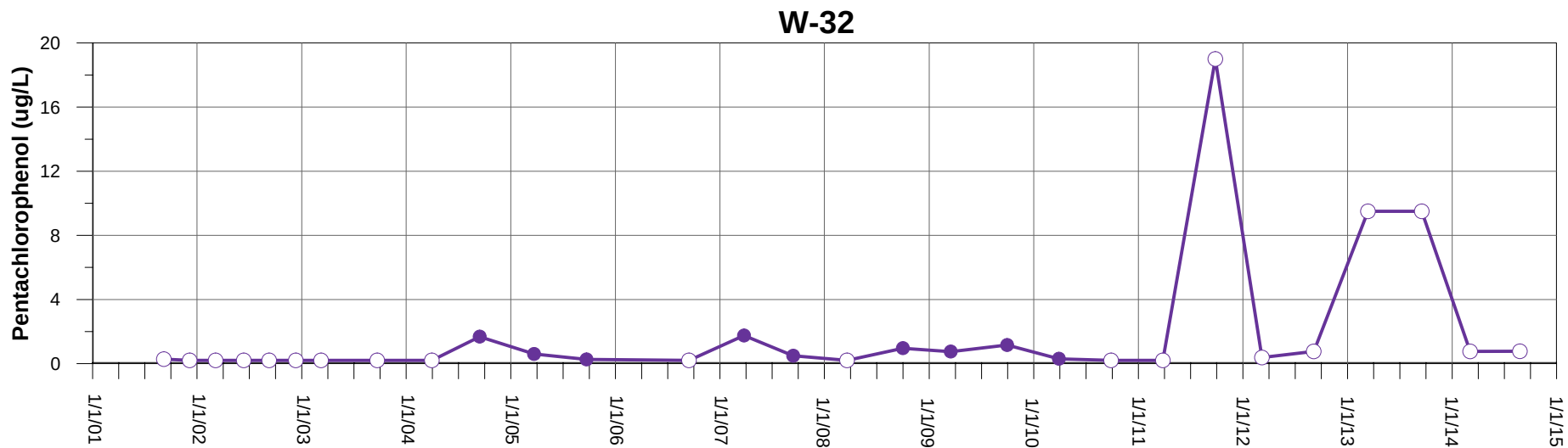
Legend:

- Detect
- Non-detect
- W-26
- W-29

Notes:

ug/L = microgram per liter

FIGURE A-5
Pentachlorophenol Groundwater Concentrations in Offsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon



Legend:

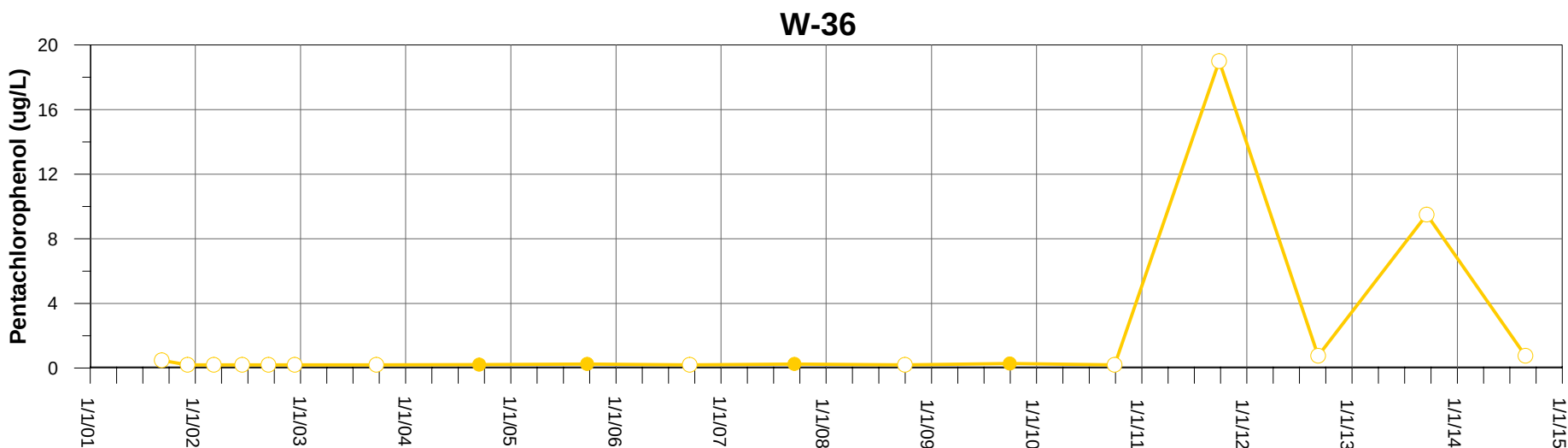
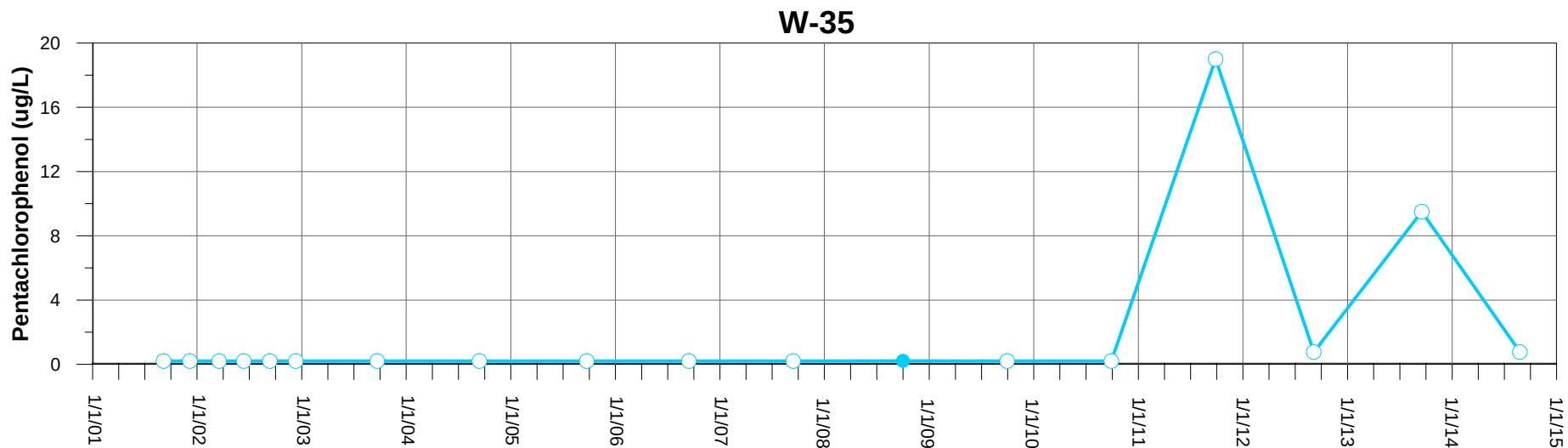
- Detect
- Non-detect
- W-32
- W-34

Notes:

ug/L = microgram per liter

FIGURE A-6 Pentachlorophenol Groundwater Concentrations in Offsite Wells

J.H. Baxter Wood Treating Facility
Eugene, Oregon



Legend:

- Detect
- Non-detect
- W-35
- W-36

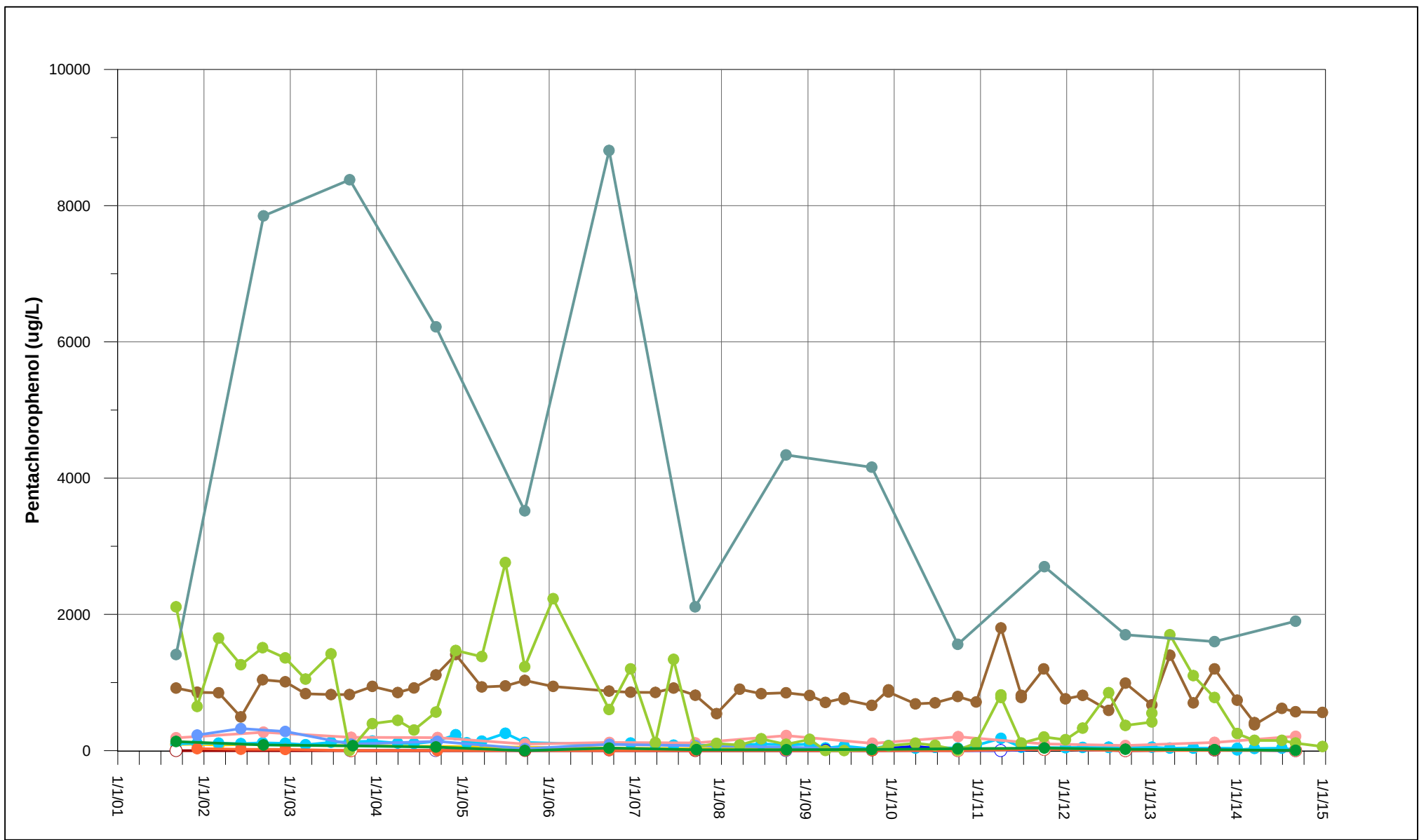
Notes:

ug/L = microgram per liter

FIGURE A-7

Pentachlorophenol Groundwater Concentrations in Offsite Wells

J.H. Baxter Wood Treating Facility
Eugene, Oregon



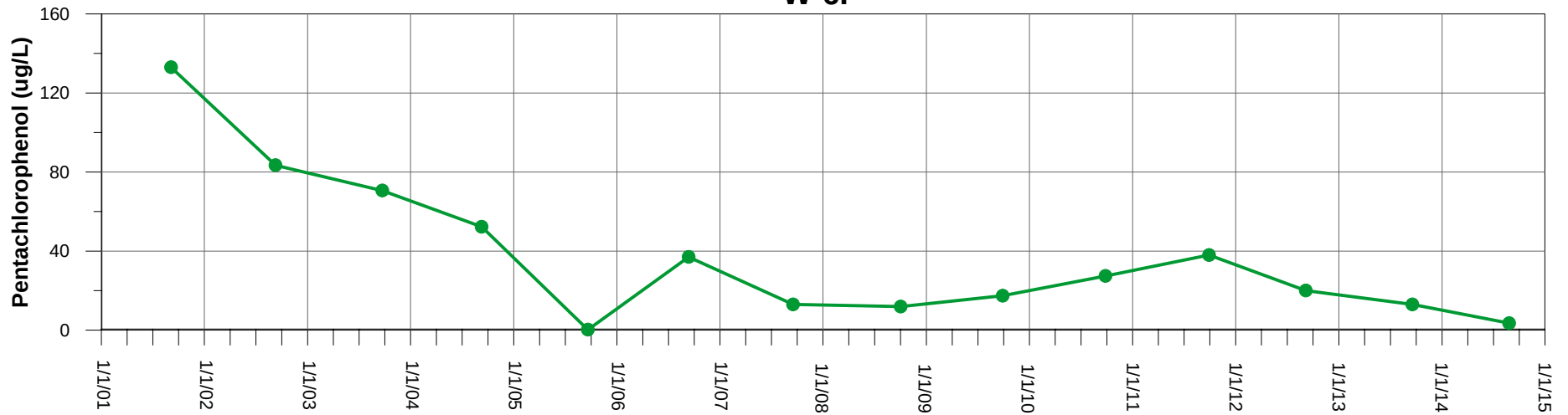
Legend:

- | | | |
|--------------|---------|----------|
| ● Detect | ● W-11I | ● W-18AS |
| ○ Non-detect | ● W-12I | ● W-18AI |
| ● W-6I | ● W-12D | ● W-20I |
| ● W-7S | ● W-13S | ● W-23 |
| ● W-11S | ● W-13I | |

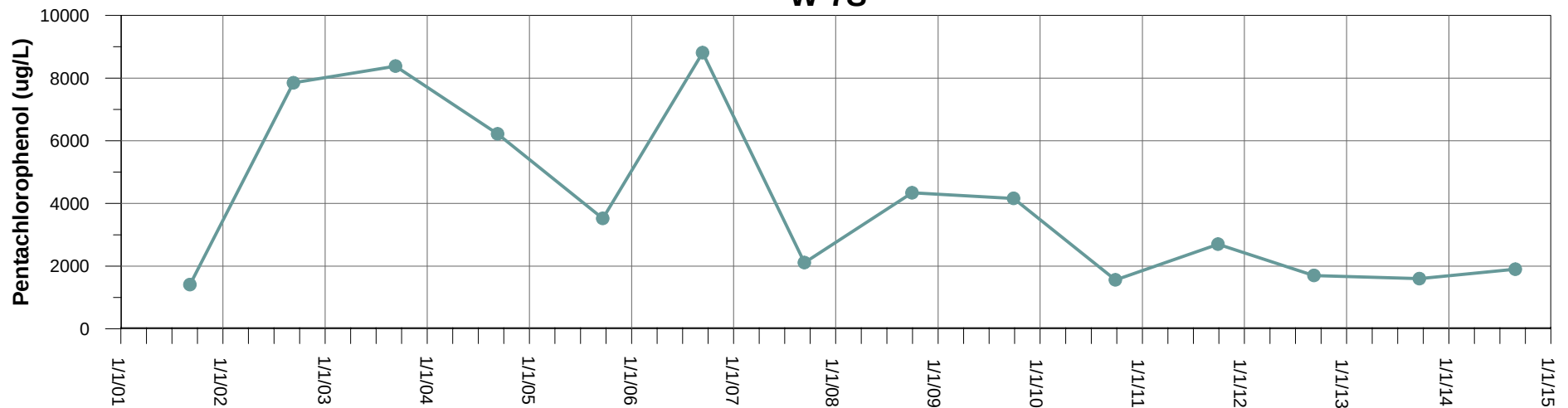
FIGURE A-8
Pentachlorophenol Groundwater Concentrations in Onsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon

Notes:
 ug/L = microgram per liter

W-6I



W-7S



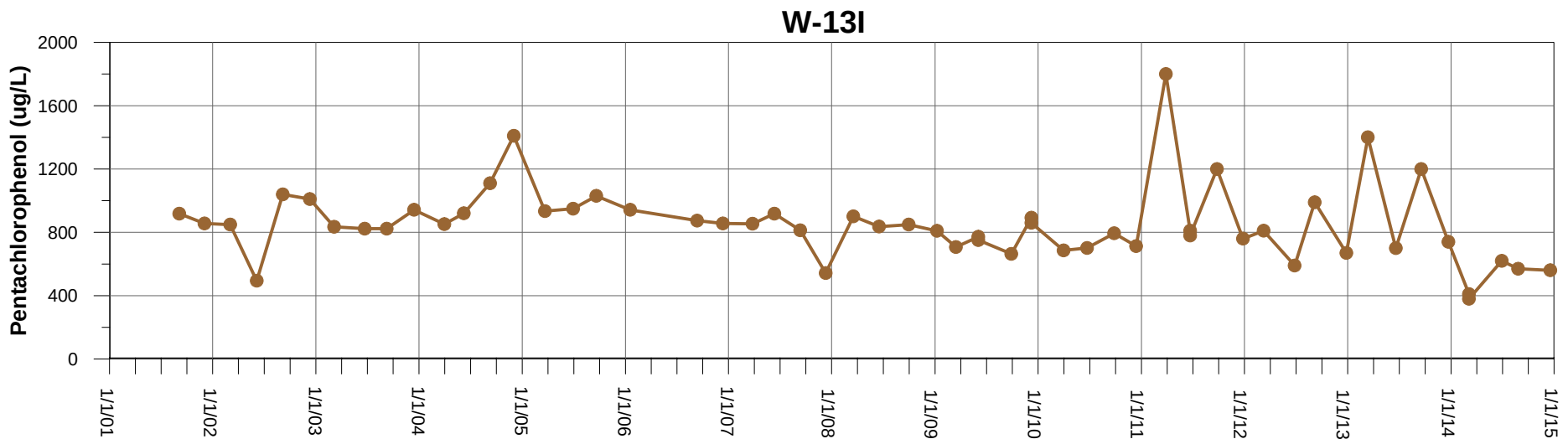
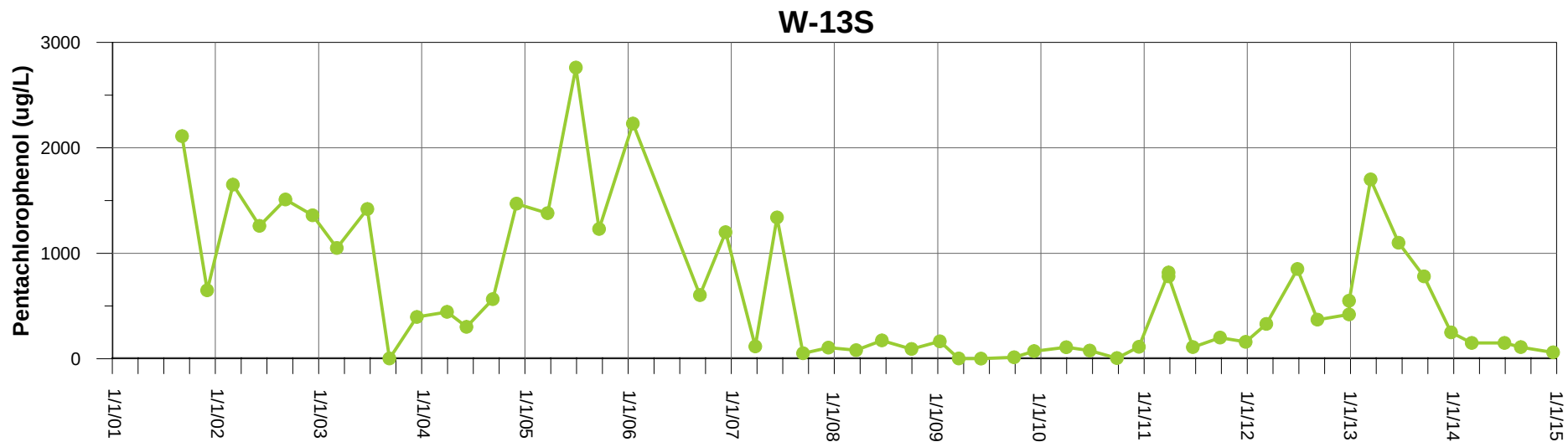
Legend:

- Detect
- Non-detect
- W-6I
- W-7S

Notes:

ug/L = microgram per liter

FIGURE A-9
Pentachlorophenol Groundwater Concentrations in Onsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon



Legend:

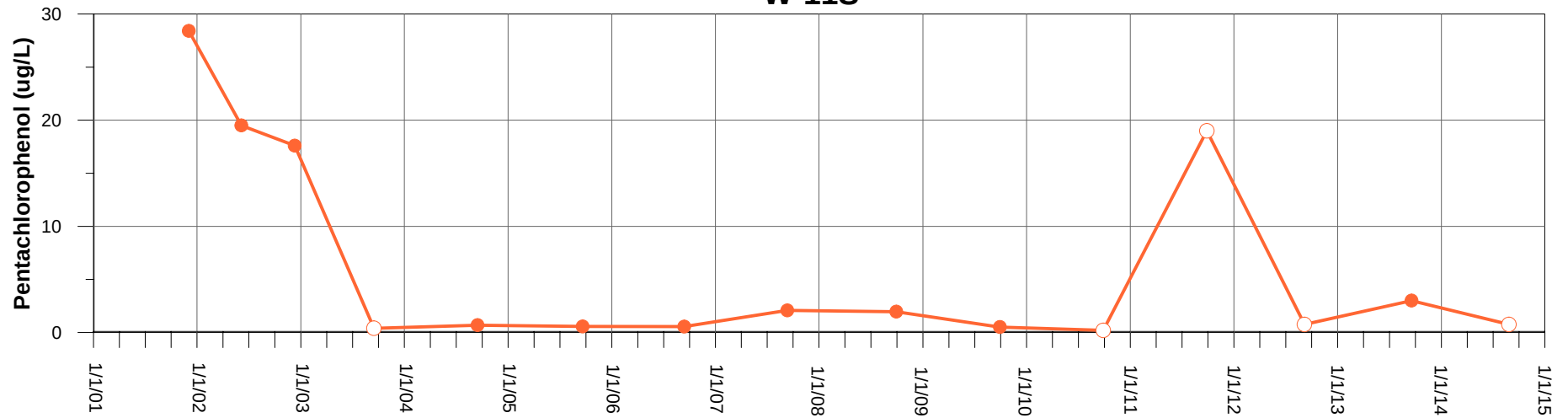
- Detect
- Non-detect
- W-13S
- W-13I

Notes:

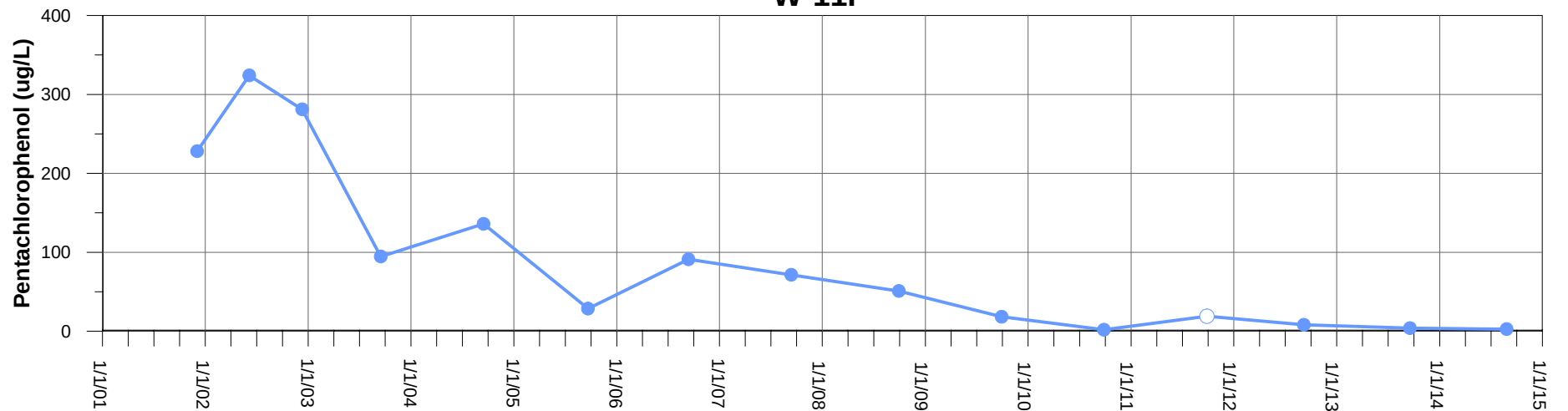
ug/L = microgram per liter

FIGURE A-10
Pentachlorophenol Groundwater Concentrations in Onsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon

W-11S



W-11I



Legend:

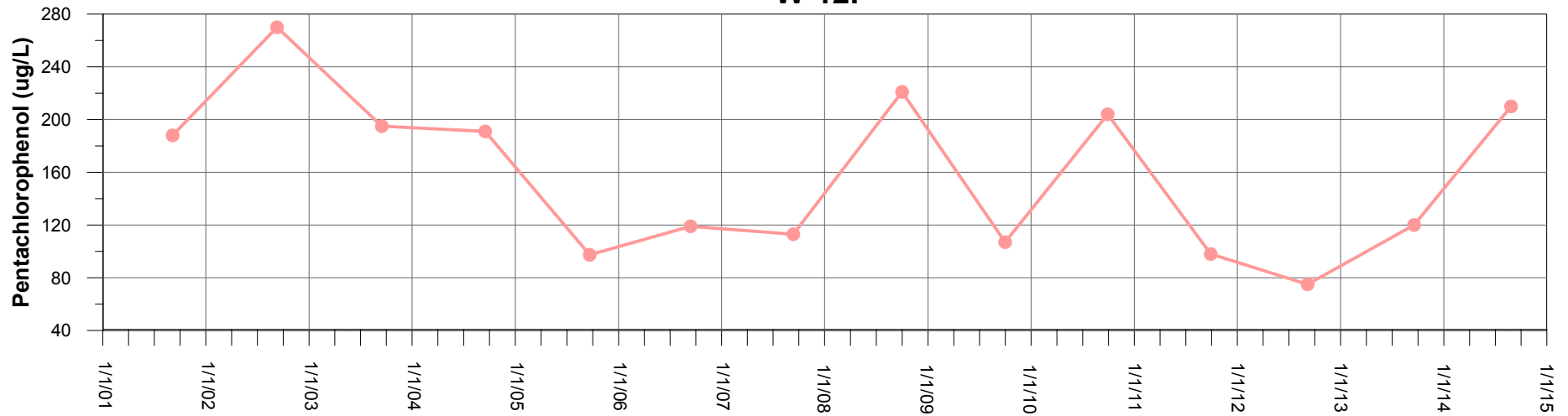
- Detect
- Non-detect
- W-11S
- W-11I

Notes:

ug/L = microgram per liter

FIGURE A-11
Pentachlorophenol Groundwater Concentrations in Onsite Wells
J.H. Baxter Wood Treating Facility
Eugene, Oregon

W-12I



W-12D



Legend:

- Detect
- Non-detect
- W-12I
- W-12D

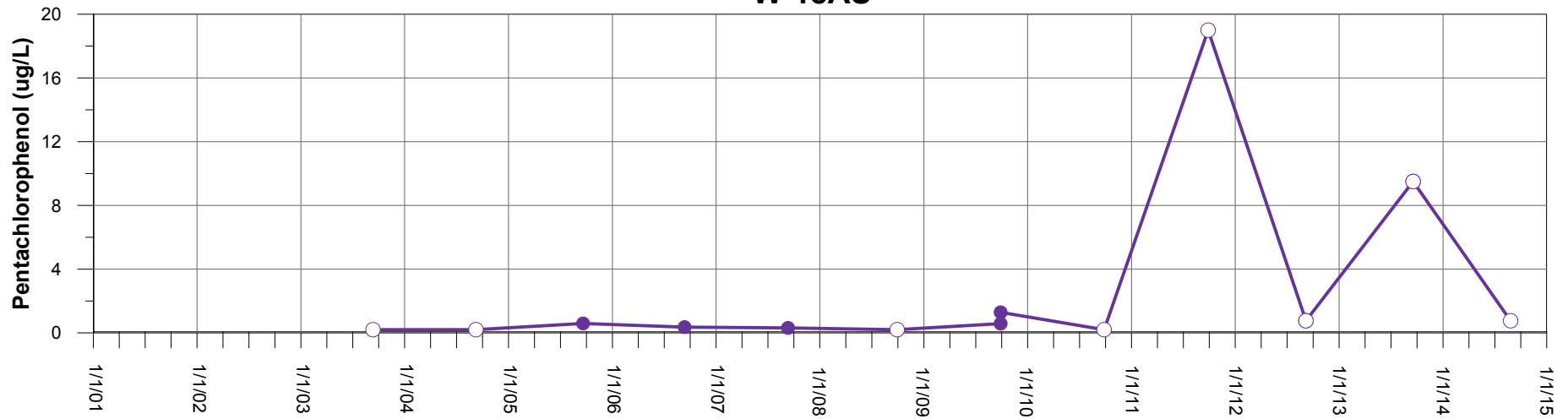
Notes:

ug/L = microgram per liter

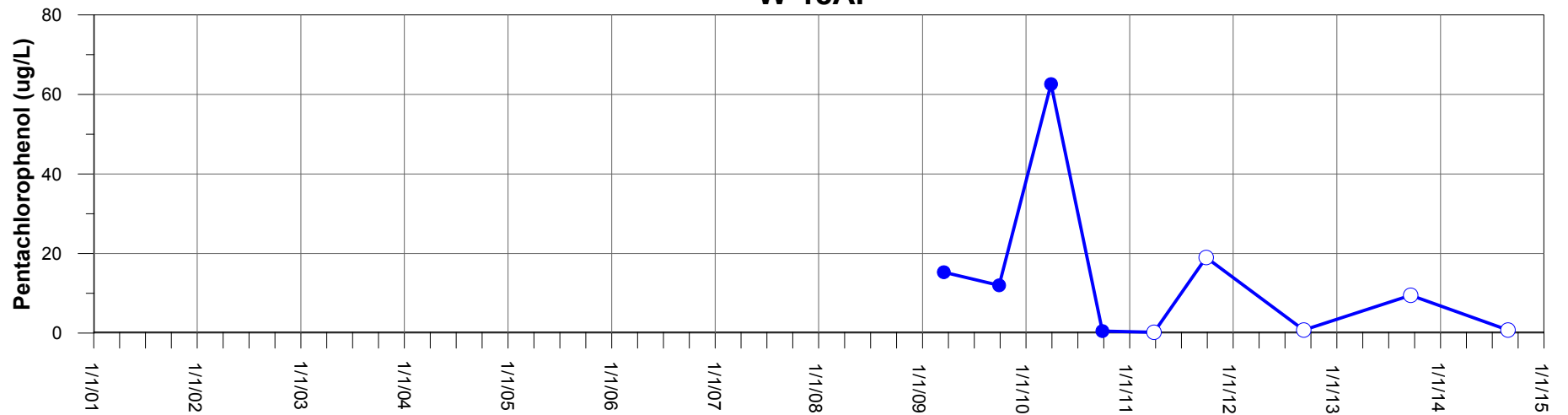
FIGURE A-12
Pentachlorophenol Groundwater Concentrations in Onsite Wells

J.H. Baxter Wood Treating Facility
 Eugene, Oregon

W-18AS



W-18AI



Legend:

- Detect
- Non-detect
- W-18AS
- W-18AI

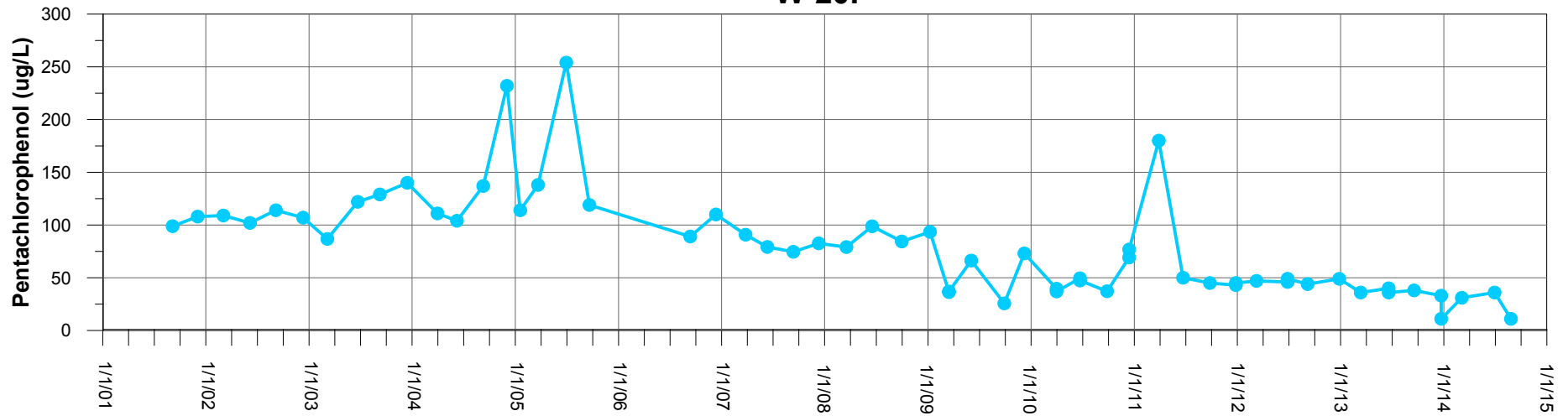
Notes:

ug/L = microgram per liter

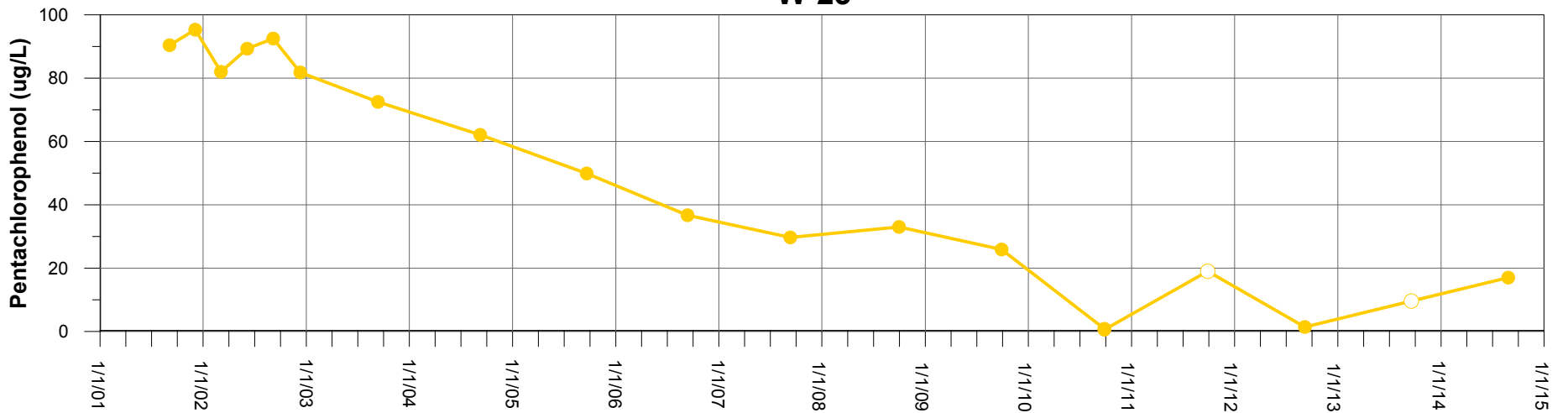
FIGURE A-13
Pentachlorophenol Groundwater Concentrations in Onsite Wells

J.H. Baxter Wood Treating Facility
 Eugene, Oregon

W-20I



W-23



Legend:

- Detect
- Non-detect
- W-20I
- W-23

Notes:

ug/L = microgram per liter

FIGURE A-14
Pentachlorophenol Groundwater Concentrations in Onsite Wells
 J.H. Baxter Wood Treating Facility
 Eugene, Oregon

Attachment B: Well Log

STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

WELL I.D. # L 63622START CARD # 157880

(1) LAND OWNER

Well Number _____

Name Don RaridonAddress 3849 Roosevelt BlvdCity EugeneState ORZip 97402

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger☐ Other _____

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation☐ Thermal ☐ Injection ☐ Livestock ☐ Other _____

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 39'Explosives used ☐ Yes ☒ No Type X Amount X

HOLE

SEAL

Diameter	From	To	Material	From	To	Sacks or pounds
10"	0	18'	CEMENT	0	18'	6 sacks
7 1/2"	18	39'				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E☐ Other _____Backfill placed from X ft. to X ft. Material XGravel placed from X ft. to X ft. Size of gravel X

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 6"	0	39'	250	☒	☐	☒	☐
Liner:				☐	☐	☐	☐

Drive Shoe used ☒ Inside ☐ Outside ☐ NoneFinal location of shoe(s) 39'

(7) PERFORATIONS/SCREENS:

☒ Perforations	Method	<u>Torch</u>					
☐ Screens	Type	<u>X</u>	Material	<u>X</u>			
From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
<u>33</u>	<u>38</u>	<u>6"</u>	<u>9</u>	<u>1 1/4"</u>	<u>6"</u>	☒	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump	☐ Bailor	☒ Air	☐ Flowing
Yield gal/min	Drawdown	Drill stem at	Time
25 GPM	100%	39'	10

Temperature of water 58°F Depth Artesian Flow Found XWas a water analysis done? NO ☐ Yes By whom XDid any strata contain water not suitable for intended use? ☐ Too little☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other XDepth of strata: X

(9) LOCATION OF WELL by legal description:

County Lane Latitude X Longitude XTownship 17 N or S 4 E or W WMSection 27 SE 1/4 NW 1/4Tax Lot 300 Lot X Block X Subdivision XStreet Address of Well (or nearest address) 3849 Roosevelt Blvd. Oregon 97402

(10) STATIC WATER LEVEL:

14' ft. below land surface.Date 7/24/03Artesian pressure X lb. per square inchDate X

(11) WATER BEARING ZONES:

Depth at which water was first found 33'

From	To	Estimated Flow Rate	SWL
33	39'	25 GPM	14'

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
TOPSOIL	0	3	
Clay w/ Gravel	3	5	
Sandy clay	5	19	
Cemented Gravel	19	33	
Gravel w/sand coarse	33	39	14'

RECEIVED

JUL 29 2003

WATER RESOURCES DEPT.
SALEM, OREGONDate started 7/23/03 Completed 7/24/03

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

Signed _____ WWC Number _____ Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

Signed Mark 1/26 WWC Number 1723 Date 7/24/03