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December 13, 2021

Mr. Chan Pongkhamsing
EPA Remedial Project Manager
U.S. EPA Region 10
1200 Sixth Avenue, ECL 111
Seattle, WA 98101

RE: Millersburg Operations Remedial Action Progress Summary Year 2020, Revised

Dear Mr. Pongkhamsing:

Please find the enclosed copy of the revised *Millersburg Operations Remedial Action Progress Summary Year 2020*. EPA comments have been incorporated into the revised report as outlined in ATI's response to comments dated June 7, 2021, with the following exceptions:

EPA Specific Comment #4

Section 1.4. An updated CSM should be presented in this Section. Specifically, include a discussion of known source areas and the pathways of COCs from those source areas to groundwater and surface water. Include information from EPA, 2019 new information from 2020 (DNAPLs near I-2 and radioactive materials left in place after the GEM excavation). Consider addressing each of the data gaps listed under the optimization report heading "Key Findings, Data Gaps or Uncertainties", in a table with a notation to the Section in the Annual Report where the data gaps are addressed.

ATI Response from June 7, 2021:

The conceptual site model (CSM) (Section 1.4) will be updated in the revised 2020 annual report to include an overarching model for the Site, an additional figure displaying the CSM, and will address significant remediation subareas such as the Acid Sump Area and Feed Makeup Area (FMA).

Data gaps listed in Section 4.9 of EPA's Optimization Review Report from 2019 are broken into two recommendations in Section 5 of the Optimization Review Report: recommendation 5.3 (extraction approach at the FMA) and recommendation 5.6.1 (potential sources in the Northwest Extraction Area). These specific recommendations are discussed in various sections of the annual report, including Sections 2.1.2, 5.5, 6.2.2.3, and 7.2. Additionally, the status, action, and schedule of each Optimization

Review Report recommendation is presented in Table 2 of the 2020 annual report. There is an existing section of the 2020 annual report dedicated to data gaps (Section 5.5) that discusses water level and water quality data gaps.

Revised 2020 Report Update:

An additional figure has been added to Appendix B showing the site geology conceptual site model (CSM). In going through the historical documents, ATI believes that a comprehensive review of the CSM is warranted. ATI proposes to address EPA's comments about the CSM in a more detailed, standalone updated CSM. EPA and ATI can discuss the standalone CSM in the upcoming first quarter meeting in February 2022. ATI will target completing the standalone CSM in the first quarter of 2022.

EPA Specific Comment #16

Figure 4 – Several data points were not honored including FW-4, MW-03A, PW-74B. Change the potentiometric surface or add these to the other wells not honored listed on the figure boundaries and consider why the data are not honored.

ATI Response from June 7, 2021:

Figure 4 will be corrected in the revised 2020 annual report to incorporate FW-4, MW-03A, and PW-74B.

Revised 2020 Report Update:

Figure 4 has been updated to honor FW-4. ATI did not modify the 198' equipotential line around MW-03A as ATI cannot identify an error. A note was added to the figure notes detailing the wells, including well PW-74B, which were not used in contouring and the associated reasoning.

EPA Specific Comment #17

Figure 4 and Section 5.5.1- Groundwater flow within the Extraction Area, within the 194 ft equipotential line, implies a line source of recharge to the subsurface. If this is the intent, then please discuss the line source (leaking pipeline, injection wells, buried drainage trench or some other feature). If this is not the intent, then please consider recording the surface water elevations in Truax Creek and the area ponds and other bodies of water to assist in the hydrogeological interpretation. If additional wells are need to remove the dashes from the equipotential lines in the Extraction Area then consider installing additional piezometers so that groundwater flow direction can be determined.

ATI Response from June 7, 2021:

ATI will provide additional explanation regarding groundwater flow within the Extraction Area and examine the potentiometric map and modify Figure 4 as needed.

Revised 2020 Report Update:

After further review, ATI agrees that there could be a source of recharge in the Extraction Area near the 194' equipotential line. ATI will be recommending additional water level evaluations in the Feed Makeup Area (FMA) in an upcoming FMA

Evaluation Work Plan. ATI will be submitting an outline of the work plan to EPA in December 2021 or January 2022.

EPA Specific Comment #18

Section 5.1, paragraph 1, last sentence and Section 5.5.1. The dashed lines on Figure 4 represent areas where groundwater flow elevation is not known. Consider reviewing historical aerial photographs and reviewing boring logs to evaluate the groundwater flow in this area and discuss any linear features that would explain the potentiometric surface.

ATI Response from June 7, 2021:

The tightly dashed lines only indicate that they lie a greater distance from a known monitoring well location with a measured value, and not that flow is not known. Areas where flow is unknown or unsure would be portrayed with long dashed lines and question marks. Figure 4 will be modified to define the contouring convention employed.

Revised 2020 Report Update:

Figure 4 has been updated such that most dashes have been removed. ATI believes the revised Figure 4 satisfies EPA's comment without the need for additional definition regarding contouring convention.

EPA Specific Comment #23

Appendix C, page 10, arsenic and fluoride. Consider scheduling sampling and analysis of arsenic in these wells while the background study is being conducted so that statistical robustness of the comparison with background will be sufficient for decision making. Consider scheduling sampling and analysis of fluoride in at least the boundary wells to monitor off-site concentrations that exceed the MCL.

ATI Response June 7, 2021:

As discussed in Section 5.5.2 of the main report and Section 4 (page 10) of Appendix C, arsenic and fluoride will be sampled every 5 years at wells in the Remedial Monitoring Phase or Attainment Monitoring Phase, including some perimeter monitoring wells. As the last round of sampling occurred in 2016, the next round of sampling will occur in fall 2021, which will overlap with the arsenic background study. Although the fluoride concentrations exceed the MCL, there is no ambient water quality criteria (AWQC) for human health and fish consumption for fluoride, which is the regulatory criteria for this property boundary.

EPA Response from June 10, 2021:

There may be a misunderstanding here as well. This can be further discussed in the context of the background study.

Revised 2020 Report Update:

ATI agrees that this can be further discussed in a background study.

EPA Specific Comment #24

Appendix C, page 10, Groundwater Remediation Ongoing bullet. Consider sampling well PW96A for arsenic every quarter for the next eight quarters to satisfy the statistical requirements as soon as possible. Fluoride will be sampled this year (5 years since 2016); consider a sampling experiment to ascertain whether the fluoride exceedances are an artifact of the well.

ATI Response June 7, 2021:

ATI appreciates the recommendation to sample PW-96A for eight consecutive quarters, likely in anticipation of obtaining enough data to reach groundwater restoration complete status. Given the 2019 and 2020 arsenic concentrations of 0.014 mg/L (both years) at PW-96A, ATI believes it is unlikely that the results will now be below the cleanup level of 0.01 mg/L as natural attenuation does not occur swiftly. ATI will evaluate potential fluoride sampling methods and add any recommendations developed to the revised 2020 annual report.

EPA Response from June 10, 2021:

There may be a misunderstanding here as well. This can be further discussed in the context of the background study.

Revised 2020 Report Update:

ATI agrees that this can be further discussed in a background study.

If you have any questions, please feel free to contact me by phone at 541.812.7230 or by email at Michael.Riley@ATImetals.com.

Sincerely,

Michael Riley

Manager, Environmental Operations & Compliance

Enclosures: 1. *Millersburg Operations Remedial Action Progress Summary Year 2020, Revised*

Millersburg Operations Remedial Action Progress Summary Year 2020

Revised December 2021

Prepared by

GSI Water Solutions, Inc.

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Contents

SECTION 1: Background and Current Site Conditions 1
1.1 Background 1
1.2 Regulatory Framework 2
1.3 Current Site Conditions 2
1.4 Conceptual Site Model 3
1.5 Documents Submitted in 2020 4
SECTION 2: Remedial Activities and Status 5
2.1 Summary of Regulatory Recommendations 5
2.1.1 Five-Year Review 5
2.1.2 Optimization Review 5
2.1.3 Previous Year's Annual Report Regulatory Comments 6
2.2 Non-Routine Remedial Activities in 2020 6
2.2.1 Significant Excavations: FMA 6
2.2.2 FCCA 6
2.2.3 Acid Sump Area 7
2.3 Facility Operations and Maintenance 7
SECTION 3: GETS Operations 8
3.1 GETS Performance 8
3.2 Extraction Area GETS 8
3.3 GETS Fabrication Area Shutdown Pilot Test 8
3.4 GETS Operations and Maintenance 9
SECTION 4: Groundwater and Surface Water Monitoring Activity Summary 10
4.1 Spring Monitoring Event 10
4.2 August Monitoring Event 10
4.3 Fall Monitoring Event 10
4.4 Deviations from QAPP and 2020 Monitoring Schedule 11
SECTION 5: Groundwater and Surface Water Monitoring Results 12
5.1 Groundwater Flow 12
5.2 Data Quality Evaluation 12
5.3 Groundwater Analytical Results 13
5.3.1 TCA and Daughter Compounds 13
5.3.2 PCE, TCE, and Daughter Compounds 14
5.3.3 Ammonium 15
5.3.4 Fluoride 15
5.3.5 Nitrate 15
5.3.6 Metals 15
5.3.7 Radium-226/228 16
5.3.8 Other Constituents of Concern 16
5.4 Surface Water Analytical Results 17
5.5 Data Gaps 17

5.5.1 Water Level Data Gaps 17
5.5.2 Water Quality Data Gaps 17
SECTION 6: Status Review 19
6.1 Review of Data 19
6.1.1 Status of Remediation Subareas 19
6.1.2 Restoration Analysis 21
6.2 Groundwater Monitoring at Compliance Boundaries 23
6.2.1 Property Boundary Compliance Criteria 23
6.2.2 Groundwater Concentrations at Compliance Boundaries 23
SECTION 7: Proposed Actions 26
7.1 Acid Sump Area Investigation 26
7.2 FMA CSM and Assessment 26
7.3 Restoration Completeness Evaluations 26
7.4 Arsenic Background Study 26
7.5 Transducers in Acid Sump Area 27
7.6 Trigger and Threshold Establishment 27
7.7 Sitewide SMWU and Excavation Report 27
SECTION 8: References 28

Tables

Table 1	Fifth Five-Year Review Recommendation Status
Table 2	Optimization Recommendation Status
Table 3	GETS Monthly Average of Groundwater Extraction Volumes
Table 4	GETS Mass Recovery for Constituents of Concern in 2020
Table 5a	TCA Groundwater Concentrations in 2011 to 2020
Table 5b	DCA Groundwater Concentrations in 2011 to 2020
Table 5c	PCE Groundwater Concentrations in 2011 to 2020
Table 5d	TCE Groundwater Concentrations in 2011 to 2020
Table 5e	DCE Groundwater Concentrations in 2011 to 2020
Table 5f	VC Groundwater Concentrations in 2011 to 2020
Table 5g	Ammonium Groundwater Concentrations in 2011 to 2020
Table 5h	Fluoride Groundwater Concentrations in 2011 to 2020
Table 5i	Nitrate Groundwater Concentrations in 2011 to 2020
Table 5j	Metal Groundwater Concentrations in 2013 to 2020
Table 5k	Miscellaneous Constituent Groundwater Concentrations in 2013 to 2020
Table 6	Fabrication Area Extraction Well Shutdown Performance Monitoring
Table 7a	Spring Monitoring Event Schedule Summary in 2020
Table 7b	Fall Monitoring Event Schedule Summary in 2020
Table 8	Groundwater Elevations in 2020
Table 9	Field Parameters in 2020
Table 10	Groundwater Exceeding Cleanup Levels in 2020
Table 11	CVOC Results in 2020
Table 12	FCCA EISB Performance Monitoring
Table 13	Surface Water Analytical Results in 2020

Figures

Figure 1 Millersburg Operations
Figure 2 Main Plant and Solids Area
Figure 3 Well and Surface Water Locations in the Main Plant and Solids Area
Figure 4 Linn Gravel Groundwater Elevation Contours Fall 2020
Figure 5a TCA Distribution in Fall 2020 and 2000
Figure 5b TCA Isopleth in Fall 2020
Figure 6 DCA Distribution in Fall 2020
Figure 7 PCE Distribution in Fall 2020 and 2000
Figure 8a TCE Distribution in Fall 2020 and 2000
Figure 8b TCE Isopleth in Fall 2020
Figure 9a DCE Distribution in Fall 2020 and 2000
Figure 9b DCE Isopleth in Fall 2020
Figure 10a VC Distribution in Fall 2020 and 2000
Figure 10b VC Isopleth in Fall 2020
Figure 11 Ammonium Distribution in Fall 2020 and 2000
Figure 12 Fluoride Distribution in Fall 2020 and 2000
Figure 13 Nitrate Distribution in Fall 2020 and 2000
Figure 14 Radium-226/228 Distribution in Fall 2020 and 2000

Appendices

Appendix A Feed Makeup Area Gamma Emitting Material Excavation
Appendix B Site Geology
Appendix C Remedial Investigation and Feasibility Study Cross Sections
Appendix D South Extraction Area Restoration Completeness Evaluation
Appendix E Well Construction Details

Abbreviations and Acronyms

µg/L	microgram/liter
AMP	attainment monitoring phase
Apex	Apex Laboratories LLC
ATI	Allegheny Technologies Incorporated
AWQC	ambient water quality criteria
bgs	below ground surface
COC	constituent of concern
COVID-19	Coronavirus disease 2019
CSM	conceptual site model
CVOC	chlorinated volatile organic compound
DCA	1,1-dichloroethane
DCE	1,1-dichloroethene
DEQ	Oregon Department of Environmental Quality
Dhb	*Dehalobacter*
Dhc	*Dehalococcoides*
DNAPL	dense nonaqueous-phase liquid
EDD	electronic data deliverable
EISB	enhanced in situ bioremediation
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant differences
FCCA	Former Crucible Cleaning Area
FMA	Feed Makeup Area
ft	feet
FYR	Five-Year Review
GEM	gamma emitting material
GETS	groundwater extraction and treatment system
GSI	GSI Water Solutions, Inc.
MCL	maximum contaminant level
MG	million gallons
mg/L	milligram/liter
MIBK	methyl isobutyl ketone
MNA	monitored natural attenuation

NPL	National Priorities List
OU	operable unit
PCE	tetrachloroethene
PSM/RMP	Process Safety Management and Risk Management Plan
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RI/FS	remedial investigation and feasibility study
RMP	remediation monitoring phase
ROD	record of decision
SEA	South Extraction Area
SWMU	solid waste management unit
TCA	1,1,1-trichloroethane
TCE	trichloroethene
TM	technical memorandum
TOC	total organic carbon
VC	vinyl chloride
VFA	volatile fatty analysis

SECTION 1: **Background and Current Site Conditions**

ATI Millersburg Operations, formerly known as the Teledyne Wah Chang facility, is an active facility operated by Allegheny Technologies Incorporated (ATI). The facility manufactures zirconium, hafnium, and other nonferrous metals, and is located at 1600 Old Salem Road NE in Millersburg, Oregon (Site).

1.1 Background

The Site is approximately 225 acres and is located in the southern portion of Millersburg, Oregon. The Site consists of the Main Plant, which contains the Fabrication and Extraction Areas, the Solids Area, and the Farm Ponds Area (Figure 1). The Willamette River and Interstate 5 lie near the western and eastern boundaries, respectively, of the Main Plant and Solids Area. A number of remediation subareas are located within the Main Plant (Figure 2). In addition, several surface water bodies are adjacent to or transit the Main Plant, including Murder Creek, along the northwest perimeter, and Truax Creek, which runs through the Main Plant and forms the boundary between the Fabrication and Extraction Areas. Truax Creek also runs along the south and west portions of the Solids Area (Figure 2).

The Site is divided into the following main areas and remediation subareas:

Main Plant (90 acres)

- Extraction Area (40 acres)
  - Feed Makeup Area (FMA)
  - Northwest Extraction Area
  - South Extraction Area (SEA)
- Fabrication Area (50 acres)
  - Acid Sump Area
  - Ammonium Sulfate Storage Area
  - Material Recycling Area
  - Dump Master Area
  - Former Crucible Cleaning Area (FCCA)
  - East Perimeter Area

Solids Area (20 acres)

Farm Ponds Area (115 acres) — approximately 0.75 miles north of the Main Plant

- Farm Ponds (74 acres)
- Soil Amendment Area (41 acres), which the City of Millersburg owns as of 1994

The Site was listed on the National Priorities List (NPL) in 1983, and ATI entered into a Consent Order and Agreement in 1997 for remediation of soil, sediment, and groundwater. During the remedial investigation and feasibility study (RI/FS), various constituents of concern (COCs) were identified on the Site, including chlorinated volatile organic compounds (CVOCs), ammonia/ammonium, fluoride, metals, nitrate, and radionuclides (CH2M HILL, 1993).

Zircon sand, once used during the manufacturing process, is the source of radionuclides at the Site. Much of the zircon sand has been excavated and removed from the Site, but some radionuclides still remain. The presence of CVOCs is associated with historical use of trichloroethene (TCE) and 1,1,1-trichloroethane (TCA). Use of TCE and TCA at the facility was discontinued in 1982 and 1988, respectively, with the exception of

TCE use under government contract near the Dump Master Area and FCCA until the early 2000s. Use of these chemicals on-site is currently prohibited.

1.2 Regulatory Framework

U.S. Environmental Protection Agency (EPA) organized the Site into three operable units (OUs), and issued a record of decision (ROD) for each OU:

- OU1 – Sludge Ponds (in the Solids Area)
- OU2 – Groundwater and Sediment
- OU3 – Surface and Subsurface Soils

This report generally, but not exclusively, focuses on groundwater (OU2). The OU2 ROD[1] (EPA, 1994) set forth cleanup levels for groundwater at the Site, which are either listed in Table 10-1 of the OU2 ROD or equal to the EPA maximum contaminant level (MCL) if a chemical is not listed in Table 10-1.

In 1996, EPA issued an Explanation of Significant Differences (ESD; EPA, 1996) to the OU2 ROD that:

1. Changed the groundwater containment requirements along the western and northern perimeters from the ROD cleanup level to surface water ambient water quality criteria (AWQC).
2. Modified the compliance boundary at the Farm Ponds Area from the edge of the former ponds to the property boundary. This change was made so that compliance boundaries were consistently applied across the Site.

In addition to these changes to the OU2 ROD (i.e., as described in the ESDs), there is no longer a cleanup level for manganese at the Site.[2]

1.3 Current Site Conditions

The OU2 ROD specified groundwater pump-and-treat as the remedial alternative for hot-spot areas across the Site (EPA, 1994). Between October 2000 and April 2002, the groundwater extraction and treatment systems (GETS) were brought online in the Fabrication and Extraction Areas, and have continued to operate, with modifications over the years, through 2020. More GETS details are presented in Section 3.

In addition to the GETS, ATI has completed multiple remedial activities in several areas (Figures 1 and 2):

- Acid Sump Area: enhanced in situ bioremediation (EISB) injections in 2009; excavation and in situ chemical oxidation in 2016 (GSI, 2011a and 2017).
- Farm Ponds Area: closure of ponds and excavation of lime solids between 1995 and 1999; pond dikes were leveled and the area was regraded to current topography in 2001 (CH2M HILL, 1998 and 2003;

[1] Record of Decision Declaration, Decision Summary, and Responsiveness Summary for Final Remedial Action of Groundwater and Sediments Operable Unit, Teledyne Wah Chang Albany Superfund Site, Millersburg, Oregon (EPA, 1994).

[2] The OU2 ROD Table 10-1 based the cleanup level for manganese on the secondary MCL (EPA, 1994), which is a nonmandatory water quality guideline for aesthetic (i.e., taste, color, odor) purposes. Table 10-1 notes state that the Safe Drinking Water Act MCLs, nonzero maximum contaminant level goal, or Oregon drinking water standards would apply as a cleanup level. In 2010, the Oregon Environmental Quality Commission revised Oregon's manganese water quality criteria by removing (1) the "water and fish ingestion" criterion and (2) the "fish consumption only" criterion for freshwaters; these changes were approved by EPA in 2011 (DEQ, n.d.). As the OU2 ROD manganese cleanup level is based on a non-enforceable secondary MCL and Oregon removed all manganese freshwater fish consumption criteria, ATI understands there is no cleanup level for manganese at the Site.

EPA, 2008a). Additional excavation of berm material encompassing National Pollutant Discharge Elimination System wells SS and SD was conducted in 2012 (GSI, 2013a and 2014).

- Feed Makeup Area (FMA): injections of buffer solutions to mitigate low pH groundwater in 2013 (GSI, 2015a); gamma emitting material (GEM) excavation in 2020 (Appendix A).
- Former Crucible Cleaning Area (FCCA): EISB injections in 2010 and 2019 (GSI, 2013b and 2021a).
- Solids Area: excavation of waste material by the early 1990s; former Schmidt Lake (now Cell 3) excavated and lined in 2010 (CH2M HILL, 1998; GSI, 2011b).
- South Extraction Area (SEA): EISB injections in 2008 (GSI, 2011c).

Institutional controls are implemented across the Site that prevent exposure to COCs above the cleanup levels through deed restrictions on groundwater use, zoning, and access controls.

Groundwater and surface water were monitored biannually in the Main Plant (Fabrication and Extraction Areas), and annually in the Solids and Farm Ponds Areas, at the locations and for the constituents specified in the 2020 monitoring schedule (GSI, 2020a) and in accordance with the procedures outlined in the Quality Assurance Project Plan for Site-Wide Remedial Actions (QAPP; GSI, 2015b). See Section 4 for more groundwater and surface water monitoring details.

1.4 Conceptual Site Model

This section presents a site geology conceptual site model (CSM) of the Site. A detailed CSM is presented in the RI/FS (CH2M HILL, 1993). The site is used for industrial purposes and due to the nature of the industrial processes, changes to site use are unlikely to occur any time in the near future.

Subsurface soils at the Site are divided into four geologic units. A conceptual cross section for the Site is provided in Appendix B. From deepest (oldest) to shallowest (youngest), the units are:

- The **Spencer Formation** is Eocene in age and consists of a 2,500-foot-thick sequence of massive marine sandstone, siltstone, and mudstone with interbedded volcanic flows and tuffs (Baker, 1988).[3] The depth to the top of the Spencer Formation at ATI is highly irregular due to an erosional period that occurred after deposition, and occurs at a depth of 5 feet (ft) below ground surface (bgs) to over 35 ft bgs. With a hydraulic conductivity ranging from 0.01 to 0.00001 ft per day (ft/day) at the Site, the Spencer Formation is considered an aquitard (CH2M HILL, 1993).
- The **Blue Clay**, deposited by lakes or rivers, unconformably overlies the Spencer Formation and is found within its topographic lows (i.e., the Blue Clay is absent where the Spencer Formation was a topographic high [CH2M HILL, 1993]). On boring logs, the Blue Clay is described as a blue silt, clayey sandy silt, clayey silt, or silty clay. With a hydraulic conductivity of about 0.00045 ft/day, the Blue Clay is considered an aquitard (CH2M HILL, 1993).
- The **Linn Gravel** is an alluvial fan deposited by streams draining the Cascade Mountains (CH2M HILL, 1993; Crenna and Yeats, 1994) between about 28,000 and 36,000 years before present (Roberts, 1984). The Linn Gravel is typically described on boring logs as a silty to sandy gravel with interbeds of silt and sand. It occurs under both confined and unconfined conditions (depending on location) and exhibits a saturated thickness ranging from 14 to 19 ft. The geometric mean hydraulic conductivity of the Linn Gravel varies by area, with values of 2.1 ft/day (Fabrication Area), 3.4 ft/day (Extraction Area), 5.7 ft/day (Farm Ponds Area), and 28 ft/day (Solids Area) (CH2M HILL, 1993). The Linn Gravel is the primary water-bearing unit at the Site. In general, monitoring wells designated with an “A” (e.g., PW-99A) are completed in the Linn Gravel.

[3] Thickness is near Dallas, Oregon, about 20 miles northwest of Millersburg.

- The **Willamette Silt** is composed of fine-grained sediments that settled out of floodwaters that inundated the Willamette Valley more than 19,000 years ago (Glenn, 1965; O'Connor et al., 2001). The Willamette Silt is described as a brown silt with occasional thin sand interbeds; in the Farm Ponds Area, a lower unit described as a gray silt, clayey silt, or clay is also present. The Willamette Silt occurs under unconfined conditions. In general, monitoring wells designated with an "S" (e.g., PW-105S) are completed in the Willamette Silt.

Groundwater at the Site occurs at an average depth of approximately 10 ft bgs in the Fabrication Area and approximately 20 ft bgs in the Extraction Area. The groundwater system at the Site is recharged by precipitation and inflow from upgradient of the Site. Groundwater at the Site discharges to surface water bodies, though in some cases the discharge is via adjacent properties. Site cross sections developed as part of the Remedial Investigation across the Extraction Area, Fabrication Area, and Solids Areas are included in Appendix C (CH2M HILL, 1993).

COCs at the Site consist of inorganic constituents, radionuclides, and CVOCs. The COCs located in the majority of areas of concern consist of CVOCs. The parent compounds for these releases (TCE and TCA) have not been used at the facility since the late 1980s, over 30 years ago. With remedial efforts to date, and the Site geochemistry and geology, the movement of COCs has been primarily localized to the subject Site and the various remediation subareas of concern.

1.5 Documents Submitted in 2020

The list below summarizes the reports and technical memorandums (TMs) submitted to EPA and Oregon Department of Environmental Quality (DEQ) in 2020:

- January 16, 2020, EPA Annual Meeting Notes, including the Proposed 2020 Work Schedule (January 2020)
- Groundwater Sampling Schedule for 2020 (January 2020)
- Acid Sump Area Source Area Remedial Design Work Plan (February 2020)
  - February 2020 work plan was revised based on EPA and DEQ comments from September 2019.
  - Final work plan was submitted in February 2021 which addressed EPA and DEQ comments of March 2020.
- Millersburg Operations Groundwater Remedial Action Progress Summary – Year 2019 (March 2020)
- Farm Ponds Area Groundwater Remedial Action Progress Summary – Year 2019 (March 2020)
- Fabrication Area Extraction Well Shutdown Pilot Test Work Plan (June 2020)
  - Work plan was revised based on DEQ comments; both the original and revised versions were submitted in June 2020.

SECTION 2: **Remedial Activities and Status**

Since the Site was listed on the NPL, a tremendous amount of work has gone into characterizing contamination, removing wastes and contaminated media, operating the GETS, and performing additional remediation projects throughout the Site. This section summarizes the most recent recommendations from EPA and DEQ, and provides the status for new and ongoing remedial activities at the Site in 2020.

2.1 Summary of Regulatory Recommendations

2.1.1 Five-Year Review

Every 5 years, EPA evaluates the implementation and performance of the remedy at the Site to determine if it is still protective of human health and the environment in a Five-Year Review (FYR). The latest FYR was published in December 2017 and includes a table of issues and recommendations in Section 6 of the FYR (Table 1; EPA, 2017). These issues and recommendations have been completed or superseded by the Optimization Review discussed below. As such, they are not discussed further in this report.

2.1.2 Optimization Review

In 2019, EPA performed a Remedial Process Optimization Study and published an Optimization Review Report (EPA, 2019). The Optimization Review Report included a useful overview of the Site and several valuable recommendations. ATI supported almost all of the recommendations and discussed the implementation and schedule of the optimization recommendations with EPA and DEQ in a January 2020 meeting (GSI, 2020b). The status of the optimization recommendations as of the end of 2020 were discussed again with EPA and DEQ in a January 2021 meeting (GSI, 2021b). A summary of the recommendations, actions, schedule, and status are provided in Table 2. The following optimization recommendations were implemented in 2020:

- Optimization recommendations completed in 2020:
  - Added AWQC criteria along the northern and western perimeters to figures showing applicable COCs (Recommendation 5.2.1). This format is provided in this submittal and will be included in subsequent annual reports.
  - Revised the annual groundwater monitoring program. The 2020 monitoring schedule was discussed with EPA and DEQ in the January 2020 meeting, and formally submitted later that month (Recommendation 5.8.5). This methodology will be used annually to collect groundwater data that reflects current site conditions and data needs.
  - Created a groundwater database in 2020 that includes groundwater quality results and the associated quality assurance (QA) and quality control (QC) data (Recommendation 5.8.6). The database will be updated as additional data are collected. Water level data will be added to the database in 2021.
  - Prepared a single water level map across the Main Plant and Solids Area (Recommendation 5.9.1). This format was provided in Year 2019 and will be included in subsequent annual reports.
  - Prepared a comprehensive annual report for the Site rather than separate reports per area (i.e., Fabrication, Extraction, Solids, and Farm Ponds) (Recommendation 5.9.2). The report format change was adopted for the Year 2019 submittal and will be used for subsequent annual reports. Due to the distance between the Farm Ponds Area and the Main Plant/Solids Area, both geographically and hydraulically, the annual progress summary for the Farm Ponds Area will be submitted as a standalone TM.

- Additional optimization action items were begun in 2020 (Table 2) but not completed. Several of the action items are discussed in the following sections and key recommendations that were implemented (but not completed in 2020) are provided below:
  - Modifying the remedial approach in the FMA has continued through 2020 (Recommendation 5.3). The hydraulic test results were provided in the 2019 progress summary (GSI, 2020c) and a GEM excavation was performed in November 2020 (Appendix A). Based on discussions with EPA and DEQ in January 2021 (GSI, 2021b), ATI will update the FMA CSM before moving forward with additional remedial actions in this remediation subarea.
  - A pilot test work plan was submitted in June 2020 to shut down extraction wells FW-1, FW-2, FW-3, and FW-4 (Recommendations 5.2.3 and 5.4). Extraction wells were shut down on June 9, 2020, with EPA and DEQ's approval. Pilot test performance monitoring will continue through 2024.
  - EPA, DEQ, and ATI discussed the application of the EPA guidance document and attainment analysis during several meetings in 2020 and created an approach that was applied to the SEA (Appendix D; Recommendations 5.8.1 and 5.9.3).

2.1.3 Previous Year's Annual Report Regulatory Comments

Neither EPA, nor DEQ had any formal comments on the 2019 Millersburg Operations progress summary.

2.2 Non-Routine Remedial Activities in 2020

Additional non-routine remedial actions were conducted or were ongoing in 2020. These included the following:

- Significant Excavations
  - **Feed Makeup Area (FMA):** a GEM excavation was performed north of a former process building.
- **Former Crucible Cleaning Area (FCCA)**: an EISB injection event was conducted in 2019 to address rebounding TCA concentrations. Performance monitoring is ongoing.

2.2.1 Significant Excavations: FMA

Details regarding the GEM excavation in the FMA are provided in Appendix A. The excavation was initially advanced as part of construction of a new building. However, when GEM was discovered, the excavation footprint was significantly expanded, based on field findings:

- The excavation expanded in width and depth to remove as much GEM as was feasible.
- No visual indications of contaminated soil were found; excavation expansion was guided by a handheld gamma meter.
- As total of 1,900 cubic yards of material was removed, more than the initial planned volume of 1,400 cubic yards.

2.2.2 FCCA

Since the first round of EISB injections in 2010, the CVOC concentrations have been monitored in FCCA monitoring wells (e.g., PW-93A, PW-94A, PW-95A, and PW-100A). A revised FCCA EISB String 3 Operations Plan (GSI, 2019a) was submitted and approved by EPA then implemented in August 2019. As outlined in the Operations Plan, approximately 20,000 gallons of deoxygenated water with 125 parts per million of food-grade 60 percent sodium lactate was combined with an additional 5 percent concentration of Newman Zone substrate and injected into 10 temporary injection wells. Halfway through the injection of deoxygenated

water, sodium lactate, and Newman Zone, about 2 kilograms of KB-1 Plus culture (*Dehalococcoides* [Dhc] and *Dehalobacter* [Dhb]) was injected into each temporary injection well. The initial 14-month performance monitoring program, including analytical groundwater samples from five wells and two Dhc/Dhb assays at PW-93A, concluded in 2020. Results from the performance monitoring are discussed in Section 6.1.1.2. Performance monitoring will continue through 2021, with those results to be included in the next annual report.

2.2.3 Acid Sump Area

Despite dramatically reduced concentrations of CVOCs in the Acid Sump Area since the 2009 EISB injections, recent groundwater quality data suggest that a persistent source of dense nonaqueous-phase liquid (DNAPL) may remain. ATI plans to implement additional remediation in the Acid Sump Area. To efficiently and cost effectively implement the remediation, further source area investigation and remediation feasibility analysis are necessary to fill data gaps.

Prior to EPA's Remedial Process Optimization Study, ATI submitted a work plan to investigate and delineate (to the extent feasible) the extent of the source zone in the Acid Sump Area (GSI, 2019b). A revised work plan was drafted in response to EPA and DEQ comments, but submittal was delayed to allow for EPA's Optimization Review Report to be published and recommendations to be discussed with EPA and DEQ before final submittal of the revised work plan in February 2020.

The source area investigation was delayed twice in 2020 (originally scheduled in June and then in December) due to concerns related to Coronavirus disease 2019 (COVID-19). ATI, in agreement with EPA and DEQ, decided in December 2020 to postpone the investigation until a vaccine is readily available, currently anticipated to be summer of 2021. See Section 7.1 for more details about the upcoming work related to the Acid Sump Area.

2.3 Facility Operations and Maintenance

As an operating facility, ATI Millersburg Operations conducts operations and maintenance activities that have the potential to positively or negatively impact the protectiveness of the remedy. A summary of those activities for 2020 is presented here:

- **Spills**: There were no spills that would impact the remedy in 2020.
- **Tank Management**: Visual inspections, as required under the facility Process Safety Management and Risk Management Plan (PSM/RMP) program, for ammonia and chlorine were conducted. No spills or releases were identified. No tanks were replaced in 2020.
- **Chemical Piping Management**: Visual inspections were conducted, as required under the facility PSM/RMP program, for ammonia and chlorine. No leaks were identified.
- **Underground Water Lines**: No major leaks were identified in 2020.

SECTION 3: **GETS Operations**

The OU2 ROD specified groundwater pump-and-treat as the remedy for hot-spot areas at the Site (EPA, 1994). In 2000, the GETS began operating with extraction wells FW-1, FW-2, FW-3, FW-4, and FW-5 in the Fabrication Area and EW-1, EW-2, EW-3, EW-4, EW-5, and EW-6 in the Extraction Area. FW-6 was not incorporated in the GETS, due to insufficient water production. Extraction well FW-7 was brought online in 2001 to prevent offsite migration but was shut down in April 2009 with EPA approval. Extraction wells EW-4, EW-5, and EW-6 were shut down in 2011 with EPA approval.

3.1 GETS Performance

Since the GETS began operating, 246,000 to 2.3 million gallons of water a month have been pumped from the aquifer (Table 3). Through the operation of the GETS, ammonium, fluoride, nickel, total dissolved solids, radium-226/228, and CVOCs are removed from the aquifer. Table 4 presents the amount of COC mass removed in 2020.

3.2 Extraction Area GETS

The environmental benefit of extractions wells EW-1, EW-2, and EW-3 in the Extraction Area was reviewed as part of the FMA hydraulic test in the 2019 Millersburg Operations progress summary (GSI, 2020c). As discussed in the report, the results of the hydraulic tests indicate that pumping only EW-2 continuously provides the same or better radium mass removal relative to pumping EW-1, EW-2, and EW-3 together. As such, only EW-2 was operational in 2020. Overall, however, very little mass is being removed using the system, and a total of only 4.01×10^{-8} pounds of radium was removed over the last 3 years. Further evaluation is warranted to develop recommendations for modifications to the remedial approach for the FMA.

3.3 GETS Fabrication Area Shutdown Pilot Test

Over the life span of the GETS, the quantity of COC mass removed by extraction wells FW-1, FW-2, FW-3, and FW-4 in the Fabrication Area had diminished from the baseline quantities, as indicated by the COC concentrations in extracted water (Tables 5a through 5k). EPA questioned whether these four extraction wells were providing any environmental benefit and, in the Optimization Review Report, recommended that ATI consider a shutdown test (EPA, 2019). ATI submitted a shutdown pilot test work plan in June 2020 (GSI, 2020d). With EPA and DEQ approval, FW-1, FW-2, FW-3, and FW-4 were taken offline on June 9, 2020.

The work plan's performance monitoring period included 30-day, 90-day, and 180-day post-shutdown groundwater samples for CVOCs and field parameters at 11 wells in 2020 (Table 6). Additionally, Mann-Kendall trends are provided for COCs in monitoring wells with results within an order of magnitude of the associated cleanup level. In accordance with the work plan's objectives, CVOC and field parameter data will be used to develop multiple lines of evidence that monitored natural attenuation (MNA) is degrading CVOCs in the vicinity of and downgradient to the extraction wells.

As outlined in the shutdown pilot test work plan (GSI, 2020d), the capture zones for extraction wells FW-1 through FW-4 have decreased significantly over time due to reduced extraction rates. The work plan included the calculated capture zones for each extraction well. In 2019, wells FW-2, FW-3, and FW-4 had capture zones that did not extend beyond the immediate vicinity of the extraction wells. Using these same aquifer parameters to calculate seepage velocities for the Linn Gravel in these portions of the site, it would take less than 0.5 years to reach the monitoring points except near FW-3 (and associated monitoring wells PW-82A

and PW-99A). In this portion of the site, it would take between 0.6 to 0.9 years to see increases in COC concentrations due to the shutdown of well FW-3.

As shown in Table 6, almost all CVOCs within the performance monitoring well network show stable or decreasing trends. One monitoring well exhibited an increasing trend for TCE, but the maximum detected value is still less than the applicable cleanup level. In accordance with the work plan, should CVOCs increase significantly in one or more monitoring wells in the future, EPA will be provided the results within 14 days.

3.4 GETS Operations and Maintenance

The active extraction wells in the GETS are serviced quarterly throughout the year, at a minimum. This service includes flushing, cleaning, repairing, and/or replacing (if necessary) the flow meters and pumps.

When extraction well FW-5 was rehabilitated in 2019, it was noted that the filter pack had been vacuumed from the well and that filter pack was present in the well sump. In March 2020, the pump at FW-5 was not operating due to clogging issues. After some trial and error, it was determined not to be a pump issue but damage to the well screen. The pump was raised 5 ft in the well to allow for pumping to continue until the well screen could be repaired. It was determined the only way to fix the screen without drilling a new well was to install a 4-inch well within the existing 6-inch well. In April, Cascade Drilling performed the well repair, keeping the screen from 14 ft to 24 ft bgs, with oversight by GSI Water Solutions, Inc (GSI). The pump was re-installed at the original set depth of 18 ft bgs and has not had any clogging issues since the repair. FW-5 fully penetrates the Linn Gravel aquifer and no benefit would be achieved by deepening the well into the underlying Spencer Formation.

Extraction well FW-5 was turned off in August due to low water levels in the well and an annual maintenance shutdown. The pump was restarted on September 23, 2020.

SECTION 4: **Groundwater and Surface Water Monitoring Activity Summary**

The Fabrication and Extraction Areas monitoring events occur biannually, in the spring and fall. The Solids Area monitoring event occurs annually in August. Tables 7a and 7b outline the sample schedule for the spring and fall monitoring events, respectively. Figure 3 shows the groundwater well and surface water locations at the Main Plant and Solids Area. The well construction details are provided in Appendix E. As the Farm Ponds Area is not hydraulically connected to the Main Plant and Solids Area, the 2020 monitoring event is discussed in a separate TM.

4.1 Spring Monitoring Event

The spring event occurred between April 27 and May 14 in the Extraction and Fabrication Areas and included the following monitoring:

- Extraction Area
  - Groundwater levels at three wells
  - Groundwater samples at one extraction well and three monitoring wells
- Fabrication Area
  - Groundwater levels at 24 wells
  - Groundwater samples at five extraction wells and 23 monitoring wells
  - Surface water samples at five locations

4.2 August Monitoring Event

The annual Solids Area monitoring event occurred between August 4 and August 6 and included the following monitoring:

- Solids Area
  - Synoptic groundwater levels at 17 wells
  - Groundwater samples at 13 monitoring wells

4.3 Fall Monitoring Event

The fall event occurred between September 2 and September 30 in the Extraction, Fabrication, and Solids Areas, and included the following monitoring:

- Extraction Area
  - Synoptic groundwater levels at 21 wells
  - Groundwater samples at three extraction wells and 10 monitoring wells
- Fabrication Area
  - Synoptic groundwater levels at 75 wells
  - Groundwater samples at five extraction wells and 56 monitoring wells
  - Surface water samples at five locations
- Solids Area
  - Synoptic groundwater levels at 17 wells

4.4 Deviations from QAPP and 2020 Monitoring Schedule

The QAPP outlines the sampling process design (GSI, 2015b). Based on a recommendation provided in the Optimization Review Report, the 2020 monitoring schedule was discussed with EPA and DEQ in the January 2020 meeting, and formally submitted later in the month (GSI, 2020a). The following are deviations from the QAPP and the 2020 monitoring schedule:

- The following wells were added to the spring monitoring event:
  - Groundwater samples were collected at EW-2 and FW-5, as both were actively pumping extraction wells. Other actively pumping extraction wells were already on the schedule.
  - Monitoring wells PW-69A, PW-93A, PW-94A, PW-95A, and PW-100A were sampled as outlined in the FCCA EISB String 3 Operations Plan (GSI, 2019a).
- Cadmium was not analyzed at monitoring well PW-21A during the spring monitoring event. Beryllium was accidentally marked on the chain-of-custody instead, and the mistake was not caught during the review of the laboratory sample login.
- Monitoring wells PW-93A and PW-100A were analyzed for fluoride in both spring and fall monitoring events. Similarly, PW-101A was analyzed for fluoride in the fall monitoring event.
- Monitoring well PW-09 was not sampled in August because of insufficient water in the well.
- Due to the tight fit of the pump in extraction well EW-2, the pump needs to be removed from the well casing to collect a groundwater level measurement. Therefore, the groundwater level measurement was not collected from actively pumping extraction well EW-2 during the fall monitoring event.
- The manhole covers for wells EW-5 and PW-57A were partially paved over during nearby construction in the late summer to early fall. Therefore, groundwater level measurements were not collected from these wells during the fall monitoring event. Pavement was not removed at the time of the gauging event due to the high volume of wells to be measured in a short period of time.
- Field parameter measurements were not collected from extraction wells EW-1, EW-2, and EW-3 during the fall monitoring event. This will be rectified during 2021 monitoring event(s).
- Total organic carbon (TOC) was analyzed at PW-69A, PW-93A, PW-94A, PW-95A, and PW-100A as outlined in the FCCA EISB String 3 Operations Plan (GSI, 2019a) during the spring and fall monitoring events.

SECTION 5: **Groundwater and Surface Water Monitoring Results**

This section discusses the results of the monitoring activities listed in Section 4. Similarly, the 2020 Farm Ponds Area monitoring event is discussed in a separate TM.

5.1 Groundwater Flow

Groundwater level measurements and the calculated groundwater elevations from the 2020 spring and fall monitoring events are shown in Table 8. A shallow groundwater contour map showing conditions during the fall 2020 monitoring event is provided as Figure 4. Groundwater levels were measured with extraction wells FW-5 and EW-2 pumping. A groundwater divide is present in the Fabrication Area, trending generally northeast–southwest from the northern side of Cell 3 to the Acid Sump Area to the Arauco Particle Board Facility. Groundwater data in the Feed Makeup Area in the Extraction Area appears to indicate a slight groundwater mound. These wells lie immediately adjacent to Ponds 1b and additional groundwater and surface water data is warranted to evaluate the groundwater flow in this portion of the Site.

Overall, shallow groundwater is present at approximately 10 ft bgs in the Fabrication Area and flows north-northwest from the divide toward Murder Creek and south-southwest toward Truax Creek. In the Extraction Area, groundwater is approximately 20 ft bgs and flows towards Truax Creek and Second Lake. The groundwater flows west in the Solids Area toward the Willamette River at a gradient ranging from approximately 0.015 to 0.02 ft/ft. In the Fabrication Area, the groundwater flows northwest toward Murder Creek at a gradient of approximately 0.016 to 0.03 ft/ft or southwest towards Truax Creek at a gradient of about 0.02 ft/ft. In the Extraction Area, the groundwater flows southwest toward Second Lake or northeast toward Truax Creek under a gradient ranging from 0.02 to 0.08 ft/ft.

5.2 Data Quality Evaluation

Groundwater monitoring in 2020 was completed in conformance with the sampling process design outlined in the QAPP. All samples were immediately placed in iced coolers and maintained under chain-of-custody protocols. GSI personnel delivered samples to the laboratory (Apex Laboratories LLC [Apex] in Tigard, Oregon) during collection periods.

Duplicate samples for field QC were collected at a frequency of 5 percent of the samples collected during the event. All duplicate samples were collected at the same time as the parent sample and were blind-labeled and delivered to Apex with the normal shipment. Matrix spike and matrix spike duplicate samples also were collected at a frequency of 5 percent as well as when potential changes in the sample matrix were anticipated because of previous sampling results. Apex provided the use of approved analytical methods according to the QAPP, analytical data package deliverables, and conformance with the laboratory's QA manual.

Field and laboratory data were subjected to a formal verification and validation process in accordance with EPA guidance documents, as described in the QAPP. QA/QC Solutions, LLC, and GSI—both external parties, as defined in EPA's Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (EPA, 2009)—performed the data validation to determine the usability of the data for meeting project objectives. An abbreviated validation review (i.e., a summary review of the results reported) was performed on 90 percent of the data and a more comprehensive validation review was performed on 10 percent of the data, as described in Section D.1 of the QAPP.

Data qualifiers were assigned during data validation to the electronic data deliverables (EDDs) when applicable QA and QC limits were not met and the qualification was warranted following guidance specified

by EPA (EPA, 2002, 2008b, and 2010), QC requirements in the QAPP, and method-specific QC requirements, as applicable. Final, qualified (as necessary) laboratory results were transmitted in EDDs for data management, further evaluation, and reporting.

After verification and validation of the field and laboratory data, as described above, data completeness was calculated by comparing the total number of acceptable data (nonrejected data) to the total number of data points generated. Overall, completeness for the 2020 monitoring events was 100 percent (i.e., no data were rejected).

5.3 Groundwater Analytical Results

Groundwater analytical results for the primary COCs are discussed below. Tables 7a and 7b display the sample schedule for the spring and fall monitoring events, respectively. Field parameter data from the monitoring events are summarized in Table 9. The extraction and monitoring wells that exceeded a cleanup level in 2020 are listed in Table 10. The groundwater CVOC results from 2020 are available in Table 11 and historical groundwater results of COCs with cleanup levels are available in Tables 5a through 5k. Similarly, groundwater plumes comparing 2000 (the baseline year) and fall 2020 plumes, and isopleth maps for COCs are displayed in Figures 5a through 14.

5.3.1 TCA and Daughter Compounds

The TCA plume has reduced in size significantly when comparing 2000 (the baseline year) to fall 2020 results. Three areas with TCA still persist above cleanup levels: Acid Sump Area, FCCA, and Dump Master Area (Figure 5a).

Acid Sump Area

As shown in the TCA isopleth (Figure 5b), there is a high concentration of TCA in the central portion of the Acid Sump Area, potentially centered near well I-2. The TCA concentration in I-2 suggests the presence of DNAPL. A criterion for DNAPL delineation is that groundwater concentrations exceeding 1 percent of a chemical's solubility in water may be indicative of DNAPL (EPA, 1992). Therefore, based on a TCA solubility in water of 1,290,000 micrograms per liter (µg/L) (Horvath et al., 1999), groundwater concentrations exceeding 12,900 µg/L may be indicative of DNAPL. The concentration of TCA in well I-2 in fall 2020 was 20,000 µg/L (Tables 5a and 11). Monitoring well PW-13, downgradient of well I-2 in the Acid Sump courtyard, had a significant increase in TCA concentration from 3,960 µg/L in fall 2019 to 10,300 µg/L in fall 2020 (Table 5a). Wells I-2 and PW-13 are the only wells at the Site with a cleanup level exceedance of TCA's daughter compound, 1,1-dichloroethane (DCA; Tables 5b, 10, and 11, Figure 6).

FCCA

TCA concentrations have decreased in the FCCA when comparing the spring 2019 monitoring event (EISB baseline) to fall 2020 results. This is the result of EISB injections conducted in August 2019 (Table 5a). Although PW-94A and PW-95A were still exceeding the TCA cleanup level of 200 µg/L in fall 2020, there was a 60 to 65 percent reduction in concentrations, respectively, between the EISB baseline and fall 2020. Concentrations of the daughter product DCA increased in PW-94A, but decreased in PW-95A in 2020 after a peak in fall 2019 (Table 5b). Results will be further discussed in the TM outlining the EISB injection activities in the FCCA, which is scheduled to be issued in May 2021.

Dump Master Area

FW-4 and PW-30A TCA concentrations appear to be fluctuating around cleanup levels over the last 7 years (Table 5a). Current concentrations are above the cleanup level of 200 µg/L at both wells. DCA

concentrations remain low in both wells (Tables 5b and 11), and nearby wells all have concentrations of TCA below the cleanup level.

5.3.2 PCE, TCE, and Daughter Compounds

Historically, tetrachloroethene (PCE) was not used at the facility and was only an impurity in TCE products. It has been detected in only a few wells at levels exceeding the cleanup level of 5 µg/L (Tables 5c and 11, Figure 7). In 2020, there were three wells with PCE cleanup level exceedances (Tables 10 and 11, Figure 7). These wells are located in the Acid Sump Area and FCCA.

The horizontal extent of the TCE plume has decreased significantly since the baseline event in 2000, but as of 2020, TCE is still detected in the Acid Sump Area, FCCA, and Ammonium Sulfate Storage Area/Material Recycling Area (Table 5d and Figures 8a and 8b). DCE, a daughter product of TCE, has historically been present across most of the Fabrication Area (Figure 9a). As of fall 2020, the DCE plume has reduced in lateral extent and is present with TCE in the Acid Sump Area, FCCA, and Ammonium Sulfate Storage Area/Material Recycling Area. DCE is also detected in the Dump Master and East Perimeter Areas (Table 5e and Figures 9a and 9b). The horizontal extent of vinyl chloride (VC) impact has also decreased since 2000 (Figure 10a). VC is now present in the Acid Sump Area, FCCA, Ammonium Sulfate Storage Area/Material Recycling Area, and the East Perimeter Area, where groundwater conditions are suitable for the reductive dechlorination of TCE and DCE (Table 5f and Figures 10a and 10b). Additionally, there is an isolated VC cleanup level exceedance along the western property boundary in well PW-22A (Northwest Extraction Area).

Acid Sump Area

PCE. TCE, and its daughter compounds were detected above applicable cleanup levels in the Acid Sump Area in 2020 (Tables 5c through 5f and Figures 7 through 10b). As shown on Figure 9b, the groundwater impact originates in the Acid Sump Area courtyard, and continues downgradient toward Murder Creek. Perimeter monitoring wells PW-77A, PW-78A, and PW-79A have exceedances of DCE, but do not exceed any other CVOC cleanup level (Table 11). Although the DCE concentrations at the perimeter monitoring wells PW-77A (9.18 µg/L), PW-78A (37.5 µg/L), and PW-79A (9.84 µg/L) exceeded the cleanup level of 7 µg/L (Tables 5e and 11), the concentrations are significantly lower than the DCE AWQC aquatic receptor standard of 11,600 µg/L that applies to Murder Creek (DEQ, 2014a).

FCCA

Following the August 2019 EISB injections, concentrations of CVOCs had generally declined in the FCCA (Table 12). As further discussed in Section 6.1.1.2, there was a moderate amount of Dhc in PW-93A in December 2020, and aquifer conditions (i.e., dissolved oxygen and oxygen-reduction potential) are favorable for reductive dechlorination to occur (Table 9). In addition, TOC, a food source for Dhc and Dhb, declined in 2020 but remains above levels of 20 milligrams per liter (mg/L) which are considered favorable for reductive dechlorination to occur (AFCEE, 2007). See Section 6.1.1.2 for more discussion related to the EISB performance monitoring results.

Ammonium Sulfate Storage Area and Material Recycling Area

Although the plume is smaller in the area than observed in the 2000 baseline event, TCE and daughter compounds DCE and VC exceeded the applicable cleanup levels in multiple wells in 2020 in the Ammonium Sulfate Storage Area and Material Recycling Area (Figures 8a through 10b). Extraction well FW-5 is downgradient of this plume and has been extracting TCE, DCE, and low levels of VC from the aquifer (Tables 5d through 5f and 11).

Dump Master Area and East Perimeter Area

In this portion of the site, groundwater extraction and natural reductive dechlorination processes have successfully reduced the TCE impacts to levels below the cleanup level of 5 µg/L (Figure 8a). In the Dump Master Area and East Perimeter Areas, DCE and VC plumes have also reduced in size (Figures 9a through 10b).

FMA and Northwest Extraction Area

TCE and daughter products have not been historically present in the FMA or the Northwest Extraction Area. As a result of the 2016 sitewide sampling event (GSI, 2018), VC was identified as a COC in perimeter monitoring well PW-22A located in the Northwest Extraction Area. EPA recommended adding it to the monitoring schedule in the Optimization Review Report (Recommendation 5.8.5). The constituent was subsequently added to the 2020 monitoring schedule (GSI, 2020a). The VC concentration in fall 2020 was 17 µg/L, above the 2 µg/L cleanup level, but below the concentration of 34.5 µg/L observed in the 2016 sitewide sampling event (Table 5f). Monitoring well PW-22A is located over 300 ft from Second Lake; therefore, it is considered unlikely that this impact will result in an AWQC exceedance in groundwater discharges to Second Lake. Additional investigation is required to evaluate and, if necessary, address the VC exceedance at well PW-22A, as addressed in Optimization Recommendation 5.6.1 (Table 2).

5.3.3 Ammonium

Only the Ammonium Sulfate Storage Area had an ammonium cleanup level exceedance in 2020, in monitoring well PW-01A (Tables 5g and 10, Figure 11). This well is downgradient of former wood-stave ammonium storage tanks that were replaced in 2016.

5.3.4 Fluoride

Fluoride cleanup level exceedances are shown in Tables 5h and 10, and Figure 12. Groundwater impacts are present in the Acid Sump Area, FCCA, Ammonium Sulfate Storage Area, and FMA. There were no fluoride cleanup level exceedances in the Solids Area.

5.3.5 Nitrate

Eight wells exceeded the nitrate cleanup level in 2020 (Tables 5i and 10, Figure 13). There was a single monitoring well that continued to exceed the cleanup level in both the Acid Sump Area and Ammonia Sulfate Storage Areas. Four FMA monitoring wells (PW-21A, PW-24A, PW-27A, and PW-51A) exceeded the nitrate cleanup level of 10 mg/L. Additionally, a well on the upgradient side of the Site (PW-31A) had a nitrate cleanup level exceedance. The upgradient location of PW-31A likely indicates an upgradient source on adjacent property east of the Union Pacific Railroad track.

5.3.6 Metals

Arsenic, beryllium, cadmium, and nickel are analyzed at various wells across the Site (Table 5j).

Arsenic

Arsenic has been monitored routinely in the FMA since 2000. There has not been an arsenic cleanup level exceedance in this area since spring 2015 (Table 5j).

As a result of the 2016 sitewide sampling event (GSI, 2018), arsenic was recognized as a COC in five wells in the Fabrication Area and three wells in the Solids Area. These exceedances were observed again in 2020, with the exception of monitoring well PWE-1 located in the Solids Area. Concentrations in PWE-1 declined

below the cleanup level of 0.01 mg/L (Table 5j). The source of the arsenic has not been determined and ATI is currently working with EPA and DEQ to determine the data source (either specific monitoring wells or regional data) to be used for an arsenic background study, as recommended in the Optimization Review Report (EPA, 2019).

Beryllium

Beryllium was identified as a COC in two extraction wells and three monitoring wells in the FMA during the 2016 sitewide sampling event (GSI, 2018). The presence of beryllium above the cleanup level of 0.001 mg/L continued in these wells in 2020 (Table 5j).

Cadmium

Cadmium has been a COC in the FMA since 2000 (Table 5j). In 2020, one extraction well (EW-2) exceeded the cadmium cleanup level of 0.005 mg/L in the fall monitoring event, but was below the cleanup level during the spring monitoring event.

Nickel

Nickel has been monitored routinely in the FMA since 2000. Nickel concentrations for the last 8 years are provided on Table 5j and show that nickel has not exceeded the cleanup level since fall 2012.

5.3.7 Radium-226/228

Radium-226 and radium-228 are COCs in the FMA and have a combined cleanup level of 5 picocuries per liter. The lateral extent of the combined radium-226/228 FMA plume has decreased since 2000, but still persists in the source area, particularly in monitoring well PW-28A and extraction well EW-2 (Table 5k and Figure 14). Perimeter monitoring well PW-21A was above the combined cleanup level in the fall 2020 monitoring event only (Table 5k). When sampling PW-21A, the well cannot be low-flow sampled and was therefore purged dry; a week after purging, the water column was only approximately 0.25 ft in the fall, and only approximately 0.5 ft in the spring. Therefore, the data quality from PW-21A is considered suspect; see Section 5.5.2 for further discussion regarding replacement of PW-21A.

5.3.8 Other Constituents of Concern

Cyanide, methyl isobutyl ketone (MIBK), and pentachlorophenol were recognized as COCs in some wells in the Extraction, Fabrication, and Solids Areas during the 2016 sitewide sampling event (GSI, 2018; Table 5k).

Cyanide

Cyanide was identified as a COC in two monitoring wells (PWF-1 and PWF-2) in the Solids Area. Both wells continued to have low level exceedances above the cyanide cleanup level of 0.2 mg/L (Table 5k).

MIBK

In the Optimization Review Report (Recommendation 5.8.5), EPA suggested that ATI analyze samples for MIBK at perimeter monitoring wells PW-21A and PW-22A. This constituent was subsequently added to the 2020 monitoring schedule (GSI, 2020a). MIBK was not detected in either well in 2020 (Table 5k).

Pentachlorophenol

Pentachlorophenol was identified as a COC in two wells in the FMA and five wells in the Fabrication Area during the 2016 sitewide sampling event (GSI, 2018). One well in the FMA and four wells in the Fabrication Area exceeded the cleanup level of 1 µg/L in 2020; the other two wells were validated to be non-detects due to method blank contamination (Table 5k).

A well on the upgradient side of the Site (PW-31A) and located immediately adjacent to the Union Pacific Railroad track, had a pentachlorophenol cleanup level exceedance. PW-31A is adjacent to the railroad ties, which may be the source of the contamination.

The Site is an old facility, originating in the 1960s, with numerous older buildings onsite. As pentachlorophenol was not used in production processes, the source(s) for pentachlorophenol for the remaining wells could be railroad ties (such as the one near the Acid Sump Area and extraction well FW-3), old power poles and crossarms, and/or treatment of older buildings.

5.4 Surface Water Analytical Results

Surface water samples were collected from Murder Creek and Truax Creek during the spring and fall monitoring events (sampling locations are shown in Figure 3). Field parameters are available in Table 9, and the analytical results are available in Table 13. Low levels of CVOCs were detected in both creeks in downstream samples and mid-creek location in Murder Creek. In addition, ammonium was detected in Truax Creek upstream and downstream samples, nitrate was detected in Murder Creek in upstream, mid, and downstream samples, and fluoride was detected in Murder Creek in mid and downstream samples. All detections were significantly below DEQ's applicable AWQC for aquatic receptors.

5.5 Data Gaps

Based on the 2020 monitoring events in the Fabrication, Extraction, and Solids Area, the following data gaps were identified.

5.5.1 Water Level Data Gaps

Based on historical groundwater level data, the location of the groundwater divide at the Acid Sump Area can shift during the year. To further define the groundwater flow in this area, ATI proposes collecting additional groundwater data. Transducers will be installed in seven wells: EI-5, I-3, PW-12, PW-13, PW-14, PW-92A, and PW-99A. Monitoring the groundwater level for 12 months once a day will help delineate the location of the groundwater divide over each season and the groundwater flow directions.

Pavement will be removed from the manhole covers for wells EW-5 and PW-57A to enable groundwater level measurement to be collected in the fall 2021 monitoring event.

Additionally, ATI recommends collecting water levels at PW-102A and PW-103A for a better understanding of hydrology in the FMA.

5.5.2 Water Quality Data Gaps

Based on the TOC concentrations in the FCCA, ATI will be collecting samples from monitoring wells PW-93A, PW-94A, and PW-100A for volatile fatty analysis (VFA) during the fall 2021 event. The VFA data will be used to better understand the breakdown of TOC in the area post-EISB injection. Further discussion of the EISB results in the FCCA is included in Section 6.1.1.2.

ATI proposes replacing perimeter monitoring well PW-21A. As mentioned in Section 5.3.7, this well produces very little water. Therefore, the data quality from PW-21A is considered suspect. ATI has proposed that this well be replaced when further assessment is performed in the FMA (Table 2).

Based on the SEA Restoration Completeness Evaluation (Appendix D), additional monitoring is needed in wells where groundwater remediation is ongoing for arsenic (PW-47A, PW-48A, PW-97A, and EW-6) and fluoride (PW-26A, EW-4, and EW-5). The evaluation recommends that these constituents at the select wells be sampled every 5 years, so ATI recommends adding this to the fall 2021 monitoring event. Additionally,

the evaluation recommends that monitoring well PW-97A be sampled once every 5 years for CVOCs, as it is a perimeter well downgradient of monitoring well PW-96A where groundwater remediation is ongoing for VC. ATI recommends adding CVOCs at PW-97A to the fall 2021 monitoring event.

Monitoring well PW-9 in the Solids Area is routinely dry in August, which is when the annual Solids Area monitoring event occurs. This well is screened across the Willamette Silt and fully penetrates the unit. Due to the water table depth, there is very little groundwater present in the Willamette Silt during the summer months. The annual Solids Area monitoring event was established in August (1) to target a time with low water levels for the annual monitoring event, and (2) because the Fabrication and Extraction Areas occupy the prime sampling month of September and October. ATI recommends shifting the timing of the Solids Area annual monitoring event to the spring to increase the probability of water being present in monitoring well PW-9.

SECTION 6: **Status Review**

This section presents a status review of each remediation subarea and of the compliance boundary (i.e., property boundary) as outlined in EPA's OU2 ROD and 1996 ESD.

6.1 Review of Data

This section presents the status of each remediation subarea and the results of the initial restoration completeness evaluation.

6.1.1 Status of Remediation Subareas

This section presents the status of each remediation subarea. Figure 2 displays the location of each remediation subarea and Table 10 presents the COCs in each remediation subarea in 2020.

6.1.1.1 Acid Sump Area

The COCs in the Acid Sump Area include CVOCs, fluoride, nitrate, and pentachlorophenol. At this time, remedial efforts focus on the key COCs: CVOCs. As discussed in Sections 5.3.1, there is a TCA source area present in the Acid Sump Courtyard. ATI has further action planned for the Acid Sump Area to address the TCA, TCE, and associated daughter compounds. As discussed in Section 2.2.3, ATI plans an investigation to delineate the source area in the Acid Sump Area, which will be followed by a remediation feasibility analysis to identify a remediation pathway for CVOCs (see Section 7.1 for more details). Upon completion of the remedial feasibility analysis, a path forward will be identified to remediate CVOCs in the Acid Sump Area.

ATI also anticipates completing a restoration completeness evaluation (details for the evaluation discussed in Section 6.1.2) for the Acid Sump Area in 2021.

6.1.1.2 FCCA

The COCs in the FCCA include CVOCs, fluoride, nitrate, arsenic, and pentachlorophenol. At this time, remedial efforts focus on the key COCs: CVOCs. As discussed in Section 2.2.2, a round of EISB injections occurred in the FCCA in August 2019 to address TCA, TCE, and associated daughter compound concentrations. EISB was selected because it has been very successful at the site in addressing other areas of CVOC impact. A 14-month performance monitoring period followed the EISB injections (GSI, 2019a). This initial monitoring period consisted of four monitoring events[4] and two bacteria[5] assays. The analytical groundwater results are available in Table 12. Some key observations at the end of the 14-month performance monitoring period are:

- The Dhb and Dhc concentrations increased as a result of the EISB and KB-1 Plus culture injections in August 2019, and have remained elevated enabling continued dechlorination of chlorinated solvents to occur.
- Concentrations of daughter products have increased significantly in wells near the injection area (PW-93A, PW-94A, and PW-100A). Concentrations of chloroethane (daughter product of TCA) have

[4] The performance monitoring well network consisted of monitoring wells PW-69A, PW-93A, PW-94A, PW-95A, and PW-100A. Wells PW-101A and FW-1 are included in Table 12 due to proximity to injection area. In addition to the biannual monitoring events, wells PW-94A and FW-1 were sampled in July and December for CVOCs as part of the GETS Fabrication Area Shutdown Pilot Test performance monitoring, the results of which are available in Table 12. Lastly, well PW-93A was sampled in December 2020 for the final bacteria assay; CVOC and EISB parameters were also analyzed at that time and are shown in Table 12.

[5] A Dhc/Dhb assays were collected at monitoring well PW-93A in October 2019 and December 2020.

increased in well PW-93A by two orders of magnitude over the performance period. PCE/TCE daughter products VC and ethene have also increased in concentration indicating reductive dechlorination is progressing.

- TOC levels remain above 20 mg/L in wells near the injection area, which is considered favorable for reductive dechlorination to continue to occur. VFA data (lactate, acetate, propionate, formate, butyrate, and pyruvate) will be collected to evaluate the type and amount of electron donor material present in the injection area.
- Methane levels have greatly increased during the performance monitoring period, which confirms reducing conditions are present and reductive dechlorination processes are occurring.
- Oxidation–reduction potential and dissolved oxygen levels are near the optimal ranges (below 0.5 to 1 mg/L and less than -75 millivolt, respectively) to support further EISB and reductive dechlorination.

Overall, EISB has been effectively remediating TCA and TCE in the FCCA. A TM will be submitted to EPA and DEQ in May 2021, which will include field injection details and a detailed analysis of the performance monitoring period. As demonstrated by the multiple lines of evidence above, the EISB injections have been successful in promoting reductive dechlorination of the target COCs. ATI will continue to let the process "cook" and monitor for CVOCs and EISB parameters (TOC, nitrate, chloride, sulfate, alkalinity, methane, ethane, and ethene) during 2021. Additionally, a VFA sample will be collected at wells PW-93A, PW-94A, and PW-100A during the fall 2021 monitoring event to evaluate the TOC levels near the injection area.

ATI also anticipates completing a restoration completeness evaluation for the FCCA in 2021. Additionally, ATI is continuing a background study for arsenic (see Section 7.4).

6.1.1.3 FMA

The COCs in the FMA include radium-226/228, fluoride, nitrate, metals (arsenic, beryllium, cadmium, and nickel), and pentachlorophenol. The low pH of the groundwater has likely mobilized radium-226/228 and potentially some of the metals. ATI supports EPA's Optimization Review Report recommendation that the remediation approach needs to be modified in the FMA to address elevated COC concentrations, particularly radium-226/228 (EPA, 2019). However, the findings from the FMA hydraulic test suggest that modifying the GETS is not the best path forward (GSI, 2020c).

As discussed with EPA and DEQ in January 2021, ATI plans to update the CSM for the FMA and create a work plan for additional assessment (with input from EPA and DEQ), including additional groundwater data to evaluate remedial options for radium-226/228 and low groundwater pH.

ATI also anticipates completing a restoration completeness evaluation for the FMA in 2021. Additionally, ATI is continuing a background study for arsenic (see Section 7.4).

6.1.1.4 Ammonium Sulfate Storage Area

The COCs in the Ammonium Sulfate Storage Area are the following:

- CVOCs
- Ammonium
- Fluoride
- Nitrate
- Pentachlorophenol

Extraction well FW-5 is located downgradient of this area, which continues to operate, and is the active remedial effort to address the COCs. Similar to other areas at the Site, ATI anticipates completing a restoration completeness evaluation for the Ammonia Sulfate Storage Area in 2021.

6.1.1.5 Dump Master Area and Material Recycling Area

The COCs in the Dump Master Area and Material Recycling Area consist of CVOCs. ATI anticipates completing a restoration completeness evaluation for both the Dump Master Area and Material Recycling Area in 2021.

6.1.1.6 East Perimeter Area

The COCs in the East Perimeter Area are CVOCs and arsenic, and has been addressed using MNA. Similar to other areas, ATI anticipates completing a restoration completeness evaluation for the area in 2021. Additionally, ATI is continuing a background study for arsenic (see Section 7.4).

6.1.1.7 Northwest Extraction Area

The Northwest Extraction Area is a newer remediation subarea that EPA proposed in the Optimization Review Report (EPA, 2019), and encompasses monitoring wells PW-21A and PW-22A. The COCs in the Northwest Extraction Area include VC and radium-226/228. Radium-226/228 has inconsistently been detected at monitoring well PW-21A. As data from PW-21A are considered suspect (Sections 5.3.7 and 5.5.2), ATI will replace the monitoring well when further assessment is performed in the FMA, which is the next time ATI anticipates having a driller onsite. In the meantime, ATI anticipates completing a restoration completeness evaluation for the area in 2021.

6.1.1.8 SEA

The historical COCs in the SEA are the following:

- CVOCs
- Fluoride
- Nitrate
- Metals (arsenic, chromium, and lead)
- Radium-226/228

ATI completed a restoration completeness evaluation (Appendix D), which is discussed in more detail in Section 6.1.2.2. The outcome of the evaluation is that the remaining COCs (VC, fluoride, and arsenic at select wells) are still in the remediation monitoring phase and will be addressed using MNA. Additionally, ATI is completing a background study for arsenic.

6.1.1.9 Solids Area

The COCs in the Solids Area are fluoride, arsenic, cyanide, and radium-226/228. The Solids Area has been addressed using MNA since waste material was excavated in the early 1990s. Similar to other areas, ATI anticipates completing a restoration completeness evaluation for the area in 2021. Additionally, ATI is completing a background study for arsenic.

6.1.2 Restoration Analysis

EPA's Optimization Review Report recommended further analysis of the data using methods outlined in the existing EPA guidance documents to evaluate COCs on a well-by-well basis to determine whether groundwater cleanup requirements have been met (Recommendation 5.8.1; EPA, 2019).

In 2020, EPA and DEQ assisted ATI in creating an analysis approach described in Section 6.1.2.1 and implemented in the form of a restoration completeness evaluation as discussed in Section 6.1.2.2 and Appendix D. This approach is based on an EPA guidance document (EPA, 2014).

6.1.2.1 Monitoring Phases

Each COC at each well goes through two phases: the remediation monitoring phase (RMP) and the attainment monitoring phase (AMP).

- **Remediation Monitoring Phase**
  - The RMP refers to the phase of the remedy during which active (e.g., pump-and-treat) or passive (e.g., MNA) remedial activities are being implemented to reach groundwater cleanup levels.
  - The RMP continues until the groundwater has reached cleanup levels.
- **Attainment Monitoring Phase**
  - The AMP occurs after the RMP is complete (i.e., after the groundwater has reached cleanup levels set forth in the OU2 ROD) and the area is no longer affected by active remediation activities.
  - The AMP is completed (i.e., restoration has been achieved) when data show that:
    - The cleanup level for the COC has been met; and
    - The groundwater will continue to meet the cleanup level for each COC in the future.
- **Characterization Wells**
  - Certain wells at the Site have never had a COC analytical result above its corresponding cleanup level. These wells are classified as Characterization wells.

6.1.2.2 Restoration Completeness Evaluation

In 2020, ATI determined that it would be prudent to obtain agreement with EPA and DEQ on the COC analysis approach before embarking on an extensive evaluation for the entire Site, given the huge number of wells present (i.e., approximately 138 wells). As mentioned previously, ATI reviewed a COC analysis approach with EPA and DEQ in 2020. This approach was applied to the SEA in the form of a restoration completeness evaluation (Appendix D). The evaluation uses the monitoring phases described in Section 6.1.2.1 for all wells in the SEA. The following is a summary of the SEA restoration completeness evaluation findings (see Appendix D for more details):

- **The restoration is complete for all COCs in the following wells**: PW-25A, PW-29A, PW-49A, and PW-57A.
- **The restoration is incomplete because remediation is ongoing for one or more COCs in the following wells**: PW-26A (fluoride), PW-47A (arsenic, total), PW-48A (arsenic, total), PW-96A (VC and arsenic, total), PW-97A (arsenic, total), EW-4 (fluoride), EW-5 (fluoride), and EW-6 (arsenic, total).

The restoration completeness evaluation recommends continued sampling for well/COC pairings where groundwater remediation is ongoing.

- **Wells in RMP for arsenic and fluoride**: As the mechanism for remediation of arsenic and fluoride, natural attenuation, is a relatively slow process, ATI recommends a longer sampling interval of once every 5 years. Additionally, ATI is working with EPA and DEQ on a background study to determine appropriate background levels of arsenic at the Site (see Section 7.4).
- **Wells in RMP for VC**: ATI recommends continuing MNA for VC at monitoring well PW-96A, sampling annually. Additionally, ATI recommends that perimeter monitoring well PW-97A, downgradient of PW-96A, be monitored once every 5 years to confirm the remedy continues to meet compliance criteria at the property boundary.

6.2 Groundwater Monitoring at Compliance Boundaries

As outlined above, ATI is addressing COCs at each remediation subarea. Concurrently, monitoring is being performed to evaluate whether groundwater concentrations exceed the applicable criteria at the site compliance boundary (i.e., property boundary) as outlined in EPA's OU2 ROD and 1996 ESD. The section below provides a review of the property boundary compliance status.

6.2.1 Property Boundary Compliance Criteria

As discussed in Section 1.2, three different groundwater compliance criteria apply to various sections of the property boundary at Main Plant and Solids Area. These are depicted in Figure 3 and include the following:

- The **EPA MCL** as outlined in the OU2 ROD. This compliance criterion would be applied where groundwater is flowing onsite as well as where groundwater is flowing offsite. At the Site, groundwater flows offsite predominantly toward surface water features and there are no COCs currently migrating toward one of these boundaries (Figure 3) subject to the MCL compliance criterion.
- The surface water **AWQC for aquatic receptors** is applied where groundwater flows from the Site and into a surface water body where the protection of fish and aquatic life is the designated use. This applies to the property boundary along Murder Creek and Truax Creek. These standards are available in DEQ's Table 30, Aquatic Life Water Quality Criteria for Toxic Pollutants for "freshwater" (DEQ, 2014a).
- The surface water **AWQC for human health and fish consumption** is applied where groundwater flows from the Site and into a surface water body where consumption of drinking water, fish, and shellfish are the designated uses. This applies to the property boundary along Second Lake and the Willamette River. These standards are available in DEQ's Table 40, Human Health Water Quality Criteria for Toxic Pollutants, for "water + organism" (DEQ, 2014b).

6.2.2 Groundwater Concentrations at Compliance Boundaries

The concentrations of the various COCs at the site boundaries where groundwater discharges are evaluated against the associated standard, as outlined in Section 6.2.1. Figure 3 outlines the applicable standard by site boundary.

6.2.2.1 Murder Creek

The applicable standard for this compliance boundary is the AWQC for aquatic receptors.

Groundwater in the north part of the Fabrication Area flows toward Murder Creek (Figure 4). There are five perimeter monitoring wells (PW-15AR, PW-76A, PW-77A, PW-78A, and PW-79A) along the northwest property boundary of the Fabrication Area and along Murder Creek, four of which were sampled in 2020. The only COC present above applicable cleanup levels in perimeter monitoring wells along Murder Creek was DCE, at concentrations ranging from non-detect to 37.5 µg/L in the fall of 2020 (Table 11). These concentrations are significantly lower than the DCE AWQC aquatic receptor standard of 11,600 µg/L (DEQ, 2014a).

Surface water samples were collected at three locations in Murder Creek (Figure 3). There were no detections above the applicable AWQC (Table 13). Therefore, groundwater discharges to surface water are not causing exceedances of the applicable AWQC in the receiving water body, Murder Creek.

6.2.2.2 Truax Creek

The applicable standard for Truax Creek is the AWQC for aquatic receptors.

Groundwater in the southern part of the Fabrication Area flows toward Truax Creek (Figure 4). There are four monitoring wells (PW-03A, PW-89A, PW-88A, and PW-75A) and one extraction well (FW-5) immediately upgradient of Truax Creek in the Fabrication Area. The COCs present above applicable cleanup levels in immediately upgradient monitoring wells along Truax Creek were TCE, fluoride, nitrate, and pentachlorophenol (Table 10 and Tables 5d-5k). TCE concentrations in these monitoring wells were significantly below the AWQC standard of 21,900 µg/L, and there is not an AWQC for aquatic receptors for nitrate or fluoride. The AWQC for aquatic receptors for pentachlorophenol is a function of pH, but the immediately upgradient well was still below the AWQC (result of 1.33 µg/L with a standard of 7.65 µg/L in fall 2020).

Groundwater in the southern part of the Solids Area flows toward Truax Creek (Figure 4). The monitoring well (PW-09) along the southern property boundary in the Solids Area was not sampled in 2020 as the monitoring well was dry.

Surface water samples were collected at two locations in Truax Creek (Figure 3). There were no detections above the applicable AWQC (Table 13). Therefore, groundwater discharges to surface water are not causing exceedances of the applicable AWQC in the receiving water body, Truax Creek.

6.2.2.3 Second Lake

The applicable standard for Second Lake is the AWQC for human health and fish consumption.

Groundwater from the Extraction Area flows toward Second Lake (Figure 4). There are nine perimeter monitoring wells (PW-21A, PW-22A, PW-23A, PW-24A, PW-25A, PW-97A, PW-57A, PW-26A, and PW-49A) and one inactive extraction well (EW-4) along the west property boundary of the Extraction Area and along Second Lake, four of which were sampled in 2020.

There were two COCs present in compliance boundary monitoring wells above the AWQC: VC at PW-22A and radium-226/228 at PW-21A. As discussed in previous sections, data from PW-21A are considered suspect and ATI plans to replace the well. Vinyl chloride at PW-22A was measured at 17 µg/L in fall 2020 against an AWQC for human health and fish consumption of 0.023 µg/L. This well is located over 300 ft from the lake, so it is considered unlikely that this impact will result in an AWQC exceedance in groundwater discharges to Second Lake.

The SEA Restoration Completeness Evaluation identified fluoride as a COC in one perimeter monitoring (PW-26A) and one inactive extraction well (EW-4). There is no established AWQC for human health and fish consumption for fluoride. Arsenic was also identified as a COC in one perimeter monitoring well (PW-97A), with a concentration of 11.1 µg/L in 2016 (GSI, 2018) and the AWQC for human health and fish consumption of 2.1 µg/L. Perimeter monitoring well PW-97A is located approximately 250 ft from the lake, so it is considered unlikely that this impact will result in an AWQC exceedance in groundwater discharges to Second Lake. As mentioned above, ATI will be evaluating arsenic concentrations to determine if they reflect background concentrations for the region.

Therefore, as noted above, groundwater discharges to the receiving water body, Second Lake, likely do not exceed the applicable AWQC. Additional investigation is required to evaluate and, if necessary, address the VC exceedance at perimeter well PW-22A in the Northwest Extraction Area and arsenic exceedance in 2016 at perimeter monitoring well PW-97A in the SEA. The PW-22A issue was addressed as part of Optimization Recommendation 5.6.1.

6.2.2.4 Willamette River

The applicable standard for Willamette River is the AWQC for human health and fish consumption.

Groundwater from the Solids Area flows toward the Willamette River (Figure 4). There are three perimeter monitoring wells (PW-18B, PWD-1, and PWD-2) in the Solids Area along the Willamette River. The only exceedance at a perimeter monitoring well (PWD-1) was arsenic at a concentration of 3 µg/L in August 2020 (Table 5j), with the AWQC for human health and fish consumption of 2.1 µg/L. As monitoring well PWD-1 is approximately 145 ft from the Willamette River and is just above the AWQC, it is very likely that the arsenic concentration decreases below the AWQC before reaching the river.

Therefore, groundwater discharges to the receiving water body, the Willamette River, likely do not exceed the applicable AWQC.

6.2.2.5 Offsite Groundwater

As outlined in the ROD, the MCL is the applicable standard for groundwater flowing offsite and not to a surface water body. The MCL is the applicable standard at only two locations on the site, the northern property boundary of the Solids Area and along the eastern Site boundary.

As shown on Figure 4, groundwater flows toward the eastern property boundary at the most upgradient portion of the site at the East Perimeter Area. In this area, perimeter monitoring wells MW-05A and MW-06A were last sampled in 2016 and there were no COCs present above laboratory practical quantitation limits. In the Solids Area, groundwater flows toward Truax Creek and the Willamette River. Perimeter monitoring wells are present along the northern property boundary to confirm the protectiveness of the remedy.

The groundwater data confirms that groundwater discharges meet the MCLs at the remaining compliance boundaries of the Site.

SECTION 7: **Proposed Actions**

The current status and tasks ATI plans to undertake in the Main Plant and Solids Area in 2021 are outlined below.

7.1 Acid Sump Area Investigation

Before undertaking further remedial actions to address the TCE and TCA plume in the Acid Sump Area, ATI recognizes there are gaps in the data needed to inform the nature and scope of the future source remediation. The purpose of the revised work plan ATI submitted in February 2021 were to (1) delineate, to the extent feasible, the source zone in the Acid Sump Area, and (2) determine the radius of influence of injectate that can be introduced to the source zone at a given point using a tracer test (if groundwater quality data indicate the need for tracer analysis because of DNAPL or high CVOC zones) (GSI, 2021c).

After delays in 2020 due to COVID-19, ATI plans to conduct the first phase of field work (i.e., delineate the source area) associated with the work plan when COVID-19 vaccines are readily available (currently anticipated to be in summer 2021). Prior to the field work, ATI, EPA, and DEQ will discuss the field objectives to allow for faster field decision making processes. A summary of the findings from the investigation will be provided to EPA and DEQ 3 months after the field work event, tentatively scheduled to be submitted in October 2021, and investigation findings will be discussed with EPA and DEQ, tentatively scheduled for the fourth-quarter call in November 2021.

7.2 FMA CSM and Assessment

ATI supports EPA's recommendation in the Optimization Review Report that the approach needs to be modified in the FMA (EPA, 2019). However, modifying the extraction system, as suggested in the Optimization Review Report, does not appear to be the best path based on the FMA hydraulic test findings (GSI, 2020c). Additionally, a significant volume of GEM was removed from the FMA during an excavation in November 2020 (Appendix A). A January 2021 discussion with EPA and DEQ determined that the next steps for the FMA are to update the CSM and then create a work plan for additional assessment. The additional assessment will include collecting additional groundwater data to evaluate remedial options.

ATI will discuss the updated CSM with EPA and DEQ before moving forward with developing a scope for additional assessment. ATI, EPA, and DEQ have planned to discuss the FMA CSM during the second-quarter meeting, tentatively scheduled in April 2021.

7.3 Restoration Completeness Evaluations

Based on the COC attainment analysis approach discussions with EPA and DEQ in 2020, a restoration completeness evaluation was performed for the SEA and is presented in Appendix D. Once ATI, EPA, and DEQ agree on the restoration completeness evaluation protocol, ATI anticipates completing the restoration completeness evaluation for other remediation subareas at the Site. ATI, EPA, and DEQ plan to discuss the SEA restoration completeness evaluation during the second-quarter meeting, tentatively scheduled in April 2021.

7.4 Arsenic Background Study

ATI informally provided an initial arsenic and manganese background study to EPA and DEQ in January 2021 as a starting point for discussing the background study approach. During the January 2021 meeting, EPA suggested identifying background wells offsite, rather than the onsite upgradient wells proposed in the initial

background study. ATI will also determine whether there is suitable regional data available for the background study, and will discuss the findings with EPA and DEQ in a meeting tentatively scheduled for June 2021.

7.5 Transducers in Acid Sump Area

In 2020, ATI proposed installing transducers in four monitoring wells to observe the groundwater divide in the Acid Sump Area (GSI, 2020c). Upon further discussion with EPA and DEQ during the January 2021 (GSI, 2021b), it was agreed that placement will include transducers installed in five monitoring across the divide in the Acid Sump Area, as well as upgradient and downgradient wells. The proposed plan was formally submitted with the 2021 monitoring schedule (GSI, 2021d). ATI plans to install the transducers, which will collect data once per day, in April 2021, and leave them in place for 1 year.

7.6 Trigger and Threshold Establishment

The Optimization Review Report recommendation to develop decision logic to identify threshold criteria was discussed during the January 2021 meeting (EPA, 2019; GSI, 2021b). During the meeting, EPA, DEQ, and ATI discussed possible examples to establish a threshold and trigger framework for the Site. EPA will gather examples for further discussion in the second-quarter meeting, tentatively scheduled for April 2021.

7.7 Sitewide SMWU and Excavation Report

EPA's Optimization Review Report had a recommendation to eliminate redundant sampling of previously excavated areas (EPA, 2019). ATI created a draft report that contained historical excavation data related to the Site's solid waste management unit (SMWU). The report was shared with EPA and DEQ for the January 2021 meeting (ATI, 2021; GSI, 2021b). ATI will submit the final version of this report in March or April 2021.

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Tables

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Table 1. Fifth Five-Year Review Recommendation Status

ATI Millersburg Operations, Oregon

Operable Unit	Issue Category	Issue	Recommendation	Status
OU2	Remedy Performance	Wah Chang complete source removal and chemical oxidation treatment in the ASA in 2016. Because some source material was left in place and current hot spots remain, the cleanup levels are not expected to be achieved by the time frame specified in the ROD.	Wah Chang must determine when and if ROD cleanup levels will be achieved and determine whether additional response actions are needed in order to achieve ROD cleanup levels.	(1) An optimization recommendation (5.2.1) and outcome[1] was to remove the 15-year cleanup level time frame, as it was not reasonable given site conditions. (2) ATI submitted a source area remedial design work plan to further investigate and delineate the extent of the source area. The investigation was scheduled for June and December 2020, but it was delayed both times due to health concerns related to the COVID-19 pandemic. With EPA and DEQ approval, the investigation is postponed until a vaccine is readily available, currently projected to be in the summer of 2021.
OU2	Remedy Performance	Wah Chang implemented EISB in the FCCA, and while there have been reductions in contaminant levels, the trends are inconsistent. Areas of contamination still exceed the ROD cleanup levels.	Wah Chang must evaluate groundwater monitoring data in the FCCA and recommend modifications to reduce contaminant concentration levels.	ATI performed an additional EISB string in August 2019 to address contaminant levels, with the performance monitoring period ending in December 2020. A summary technical memorandum will be submitted in May 2021.

Table 1. Fifth Five-Year Review Recommendation Status

ATI Millersburg Operations, Oregon

Operable Unit	Issue Category	Issue	Recommendation	Status
OU2	Remedy Performance	Low pH conditions persist in the FMA that contribute to COCs above ROD cleanup levels. ROD cleanup levels are not likely to be achieved in 2017.	Wah Chang must evaluate GETS and the current soil flushing regime and improve effectiveness.	(1) An optimization recommendation (5.2.1) and outcome[1] was to remove the 15-year cleanup level time frame because it was not reasonable given site conditions. (2) ATI identified an unknown source in the FMA during an excavation in November 2020. EPA, DEQ, and ATI have agreed to create an updated CSM for the FMA and create a work plan based on the updated CSM to address radium and low pH.
OU2	Monitoring	Results from the 2016 sitewide monitoring event noted concentrations of manganese, cyanide, arsenic, and radium-226/228 that exceeded ROD cleanup levels in wells not currently in the monitoring program. Of note are exceedances of radium-226/228 concentrations in groundwater from perimeter monitoring well PW-15AR.	Exceedances must be evaluated to determine whether additional wells need to be added to the monitoring program and whether further measures need to be taken to address the exceedances of the ROD cleanup levels.	(1) All 2016 sitewide monitoring event exceedances have been resampled and results provided in the 2018 progress summaries. If the confirmation sample results were also above the ROD cleanup level, constituents were added to the 2020 monitoring schedule submitted to EPA in January 2020. (2) The confirmation sample for radium-226/228 at PW-15AR was below the combined radium cleanup level.

Table 1. Fifth Five-Year Review Recommendation Status

ATI Millersburg Operations, Oregon

Operable Unit	Issue Category	Issue	Recommendation	Status
OU3	Monitoring	The last FYR noted that tilling for agricultural purposes was being conducted at the SAA. Although the RI/FS determined that agricultural practices did not pose a risk to human health or the environment, EPA is revisiting the issue because it has been more than 20 years since soil radionuclide data were collected and the original evaluation did not address risks to agricultural workers from soil resuspension due to tilling.	Wah Chang must collect and analyze air samples for radium at the next opportunity to measure the risk to human health and the environment from the disturbance/resuspension of soil and remaining levels of radionuclides in soils. Because earlier testing did not demonstrate human health risk, the City may continue to use the property for agricultural activities. Following EPA's reassessment of the contaminated soils, should there be an indication of human health risk to those exposed to these soils under current agricultural practices, EPA will share those results with the City of Millersburg and discuss appropriate actions for future use of the property.	A personal breathing zone sample was collected by ATI in September 2018 following OSHA-approved methods. Due to a lack of particulate recovery in the positive pressure cab, the laboratory was unable to analyze the sample.

Notes

[1] Optimization recommendations are from the Optimization Review Report Remedial Process Optimization Study Teledyne Wah Chang Superfund Site Millersburg, Linn County, Oregon, EPA Region 10 (2019) and the subsequent outcomes from January 2020 meeting with EPA, DEQ, and ATI.

ASA = Acid Sump Area
COC = constituent of concern
CSM = conceptual site model
DEQ = Oregon Department of Environmental Quality
EISB = enhanced in situ bioremediation
EPA = U.S. Environmental Protection Agency
FCCA = Former Crucible Cleaning Area
FMA = Feed Makeup Area
FYR = five year review
GETS = groundwater extraction and treatment system
RI/FS = remedial investigation and feasibility study
ROD = record of decision
SAA = Soil Amendment Area
OU = operable unit

Table 2. Optimization Recommendation Status

ATI Millersburg Operations, Oregon

Recommendation	Title	Synopsis	Actions	Schedule	Status
5.1	Eliminate Redundant Sampling of Previously Excavated Areas	Change the excavation sampling requirements to eliminate the current practice of sampling and evaluating in areas that have been previously excavated and backfilled with clean material.	Excavation information has been provided to EPA and DEQ. EPA and DEQ will review the data to determine whether site assessment can be considered complete. Data will be used to close the sitewide SWMU.	(1) Data were provided to EPA and DEQ in January 2021 and discussed in the 2021 annual meeting. (2) Sitewide SWMU and excavation report will be submitted to EPA and DEQ in March or April 2021.	In Process
5.2.1	Remedy Approach and Exit Strategy: Eliminate 15-Year Time Horizon to Achieve Cleanup Standards	Modify the 15-year time horizon to achieve cleanup standards and acknowledge that low levels of contamination in groundwater under portions of the property may exist for decades due to site conditions.	Since many areas are inaccessible, source control will be the focus to minimize potential of offsite migration of constituents of concern (COCs) exceeding applicable standards (see 5.2.2).	No additional administrative action is needed at this time; the decision can be clarified in future decision documents.	In Process
5.2.2	Remedy Approach and Exit Strategy: Clarify/Update RAO Regarding Impacted Groundwater Leaving Property Boundary	Seek clarification of 1996 ESD that if (1) contaminated groundwater discharge is not subject to a 15-year time frame, (2) surface water receiving groundwater discharge is not adversely impacted (e.g., applicable AWQCs are not exceeded), and (3) ICs are in place to prevent exposure, then discharge is allowed under the remedy.	ATI provided a sitewide map showing applicable regulatory limits for each property boundary. Down-gradient property lines were shown as being subject to AWQC based on aquatic receptors or human health and fish consumption.	(1) Map showing regulatory limits for each property boundary is now being used in progress summaries and other applicable reports. (2) Per EPA, an ESD is not needed; EPA agreed that inclusion of the map in future reports is sufficient.	Complete
5.2.3	Remedy Approach and Exit Strategy: Overall Remedy Approach	Focus activities on identifying and eliminating as much remaining source material as possible. Additionally, pump-and-treat (P&T) should generally not be a priority as a management approach unless it is part of a specific source remediation, provides beneficial mass removal, or is required for hydraulic containment at the property perimeter.	P&T will not be a management approach going forward unless it (1) is part of a specific source remediation, (2) is providing sufficient mass removal, or (3) is required for hydraulic containment to prevent exceedance of AWQC at the property perimeter. Select areas of concern will be addressed on a case-by-case basis. ATI will implement actions to address source areas and move to a sitewide MNA approach.	Four extraction wells in the Fabrication Area were shut down in June 2020 with EPA and DEQ's approval. See 5.4 for more details.	In Process
5.3	Modify Extraction Approach at FMA	Seeks a significant modification of the remedial action in the FMA. It includes termination of the current soil flushing approach and replacing the current approach with a recirculation system.	(1) Hydraulic testing results were provided in the 2019 annual progress summary (submitted in March 2020). (2) After discussing the hydraulic test results and excavation with EPA and DEQ in January 2021, it was decided to update the FMA conceptual site model (CSM) and create a work plan for additional assessment based on the updated CSM.	(1) ATI, EPA, and DEQ will continue discussions regarding the updated FMA CSM in February 2021 and the second quarter 2021 meeting (scheduled for April 2021). (2) Details regarding source removal activities are included in Appendix B of this report. (3) Work plan for additional assessment will be prepared following the development of an updated CSM that is approved by EPA and DEQ.	In Process
5.4	Consider "Shutdown Tests" at FW-1 to FW-4	Environmental benefits provided by extraction at pumping wells FW-1, FW-2, FW-3, and FW-4 may be limited. ICs in place prevent human exposure, and no additional protectiveness is provided by pumping at these wells. In conjunction with continued efforts to characterize and remediate sources, recommend that “shutdown tests" be conducted to assess changes in water quality without extraction.	ATI submitted a revised Fabrication Area Extraction Well Shutdown Pilot Test Work Plan submitted to EPA and DEQ on June 9, 2020. The work plan outlined ceasing pumping at 4 extraction wells (FW-1, FW-2, FW-3, and FW-4) and transitioning to MNA. With EPA and DEQ's approval of the revised Work Plan, extraction wells FW-1, FW-2, FW-3, and FW-4 were shut down on June 9, 2020.	Performance monitoring described in the Fabrication Area Extraction Well Shutdown Pilot Test Work Plan will continue through 2024. Results from the ongoing performance monitoring will be discussed in the annual progress summaries.	In Process
5.5	Enhancement of ASA Source Area Treatment	States the remediation efforts to date at the ASA have resulted in mixed success. To enhance the effectiveness of the current EISB remedy, recommends injecting steam from the nearby steam plant into the subsurface to increase temperature in the contaminated source area to accelerate dechlorination of the dissolved solvents in groundwater.	ATI will perform additional assessment activities to further delineate the extent of the source material. Based on the findings, a feasibility study will be performed to evaluate remedial alternatives.	The source area investigation has been delayed twice (originally scheduled for June 2020 and then December 2020) due to health concerns related to COVID-19. ATI, in agreement with EPA and DEQ, decided in December 2020 to postpone the investigation until a vaccine was readily available, which is projected to be in the summer of 2021.	On Hold

Table 2. Optimization Recommendation Status

ATI Millersburg Operations, Oregon

Recommendation	Title	Synopsis	Actions	Schedule	Status
5.6.1	Characterize Potential Sources: Northwest Extraction Area	Contaminants were identified in perimeter wells PW-21A and PW-22A, and the conceptual model does not adequately explain the source of these chemicals. EPA recommended further investigation using direct push sampling, rapid turnaround analytical work, and additional monitoring wells.	Prior to additional investigation activities, ATI suggested that PW-21A be replaced and that the data from the new well be evaluated to determine next steps. EPA and DEQ agreed in 2020 that this is a lower priority item considering the significant amount of work planned for that year.	Replacement of PW-21A is likely to coincide with additional assessment work in the FMA. PW-22A will continue to be monitored in 2021 for new constituents added to the 2020 monitoring schedule, but this is a lower priority item and will be further discussed in 2022.	On Hold
5.6.2	Characterize Potential Sources: FCCA	States there may be additional source mass in the FCCA, particularly in the vadose zone. Recommends using direct push sampling for unsaturated soil and groundwater to complete a "three-dimensional" characterization.	An additional EISB injection event occurred in August 2019, and the performance monitoring period ended December 2020.	(1) Results indicate that biodegradation is still occurring, and ATI will continue to monitor the area. (2) A summary technical memorandum will be submitted in May 2021 outlining the injection activities conducted in 2019 and results obtained in 2019 and 2020.	In Process
5.7	Actions at the Farm Ponds Area	Acknowledges redevelopment potential of the Farm Ponds Area and identifies a path to transfer ownership and to remediate the residual groundwater contamination measured in one shallow well (PW-104S).	Ready for Reuse (RfR) issuance is on hold due to additional data needs identified in the Farm Ponds risk evaluation to address uncertainty in the Record of Decision (ROD) around COCs for the Soil Amendment Area (SAA). EPA to verify COCs for the SAA in the ROD if further soil analysis is required or if a ROD amendment is the next step. ATI has not determined whether the property will be sold or kept and redeveloped for use by ATI.	(1) ATI, EPA, and DEQ will work together to identify data gaps to move forward with a partial deletion or RfR of the Farm Ponds Area. Meetings are to be scheduled in February 2021 and the second quarter meeting (scheduled for April 2021). (2) Work plan will be submitted in May or June 2021 to address soil and groundwater analyses needed for data gaps. (3) Work plan sampling event scheduled for August or September 2021.	In Process
5.8.1	Groundwater Monitoring: Attainment Analysis	Use existing EPA attainment guidance for evaluating contaminant concentrations on a well-by-well basis in the South Extraction Area, Solids Area, and Farm Ponds Area to develop the statistical power required to demonstrate that groundwater cleanup requirements have been met.	ATI, EPA, and DEQ discussed the applicable guidance documents and attainment analysis multiple times in 2020. To better outline ATI's approach of the contaminant evaluation on a well-by-well basis with a more manageable dataset, ATI will perform an attainment analysis in the South Extraction Area (SEA). With EPA and DEQ's formal approval of approach, ATI will implement analysis in other areas at the Site.	SEA attainment analysis will be incorporated into the 2020 annual report to be submitted to EPA and DEQ in March 2020.	In Process
5.8.2	Groundwater Monitoring: Intrinsic Background for Arsenic and Manganese Boundary	Recommends performing a background study to evaluate the range of naturally occurring arsenic and manganese in groundwater.	(1) ATI created an initial background analysis using the 2016 sitewide sample event results. Analysis was shared and discussed with EPA and DEQ in the January 2021 annual meeting. (2) Based on EPA's recommendation during the 2021 annual meeting, ATI will review available offsite data.	ATI will review offsite arsenic data in the Linn Gravels to develop a mutually agreeable background groundwater data set. ATI, EPA, and DEQ will discuss findings in a meeting tentatively scheduled for June 2021.	In Process
5.8.3	Groundwater Monitoring: Frequent Water Level Measurements at a Few Wells	Recommends frequent water level measurements (twice per month) for approximately five selected wells to provide data to evaluate potential future changes in water quality with respect to water level fluctuations.	ATI understands this option is available and will use it when site activities warrant. DEQ representatives indicated that the water level data may be useful in delineating the groundwater divide to give resolution to the identification of the time each year the divide shifts.	ATI submitted a plan to install seven transducers near the ASA to map seasonal fluctuations in the groundwater divide for a period of one year. With EPA and DEQ's approval, transducers will be installed in April 2021.	In Process
5.8.4	Groundwater Monitoring: Consider No-Purge Sampling Methods	Suggests considering no-purge sampling using HydraSleeves or other similar monitoring products.	Based on the volume of sample required for analytes such as radionuclides, no-purge sample methods may not be appropriate and, when used previously, the data were not comparable.	ATI will reevaluate potential use of these methods in 2021 or 2022.	On Hold

Table 2. Optimization Recommendation Status

ATI Millersburg Operations, Oregon

Recommendation	Title	Synopsis	Actions	Schedule	Status
5.8.5	Groundwater Monitoring: Monitoring Network	ATI provided recommendations for updating the groundwater monitoring schedule to EPA in June 2019. In general, the report supports the revised schedule with a couple of suggested changes.	EPA, DEQ, and ATI agreed at the January 2020 meeting that the monitoring schedule will be evaluated annually as part of annual meetings and adjusted as needed based on current site conditions and active remedies. ATI submitted the 2020 groundwater monitoring schedule on January 31, 2020, which was implemented in the 2020 spring monitoring event.	(1) ATI proposed the 2021 Water Monitoring Schedule to EPA and DEQ in the January 2021 meeting. (2) ATI submitted the 2021 Water Monitoring Schedule in February 2021.	Complete
5.8.6	Groundwater Monitoring: Integrate Sampling Data and Geologic Data into a GIS	Recommends integration of chemical, geological, and hydrological data into a geographical information system (GIS) to facilitate spatial analysis and data interpretation.	ATI will be developing a database to include chemical and groundwater data. Because the historical data are not comprehensive, the database will include data collected over the last 10 years plus historical data when available in electronic format.	The database was created in 2020, which includes all available electronic water data available for the Site, along with some soil data. Quality assurance and quality control of the database were initiated in the summer of 2020 and will continue through 2021 as historical data is verified and processes streamlined. Database current through 2020.	Complete
5.9.1	Report: Produce Water Level Maps across Multiple Areas	Recommends that future water level maps consist of two maps—one for the Main Plant and Solids Area and one for the Farm Ponds Area.	ATI initially incorporated the recommendation into the 2019 annual report.	A potentiometric map for the Main Plant and Solids Area was submitted in the 2019 comprehensive annual report and continue in subsequent annual reports.	Complete
5.9.2	Report: Produce One Comprehensive Annual Report	Recommends one comprehensive annual groundwater monitoring report be prepared for the entire Site (i.e., Fabrication, Extraction, Solids, and Farm Ponds Areas) and include the groundwater monitoring results, a summary of remedial actions and associated remedy process monitoring, updates regarding ICs, and any other pertinent information regarding remedy progress. It is further recommended that updates regarding other areas (e.g., Soil Amendment Area, East Perimeter Area) also be included in the comprehensive annual report.	One report will be prepared for the Main Plant and Solids Area, and a separate report will be prepared for the Farm Ponds Area. ATI initially incorporated recommendation in the 2019 annual reports.	Comprehensive report for the Main Plant and Solids Area was submitted in the 2019 comprehensive annual report and continue in subsequent annual reports.	Complete
5.9.3	Report: Include Statistical Trend in Annual Report	Recommends statistical trend analysis (such as the Mann-Kendall test) be conducted at selected wells; includes criteria for target wells and chemicals.	ATI developed a statistical analysis approach in 2020 with assistance from EPA and DEQ. See 5.8.1 for more details.	(1) SEA attainment analysis is provided in Appendix C of this report. (2) EPA, DEQ, and ATI will discuss the SEA attainment analysis during the second quarter 2021 meeting, currently scheduled for April.	In Process
5.9.4	Report: Evaluate Triggers for Additional Discussion or Action	Recommends development of a decision logic to identify threshold criteria for taking actions or transitioning remedial technologies. Recommends possibly including triggers for additional discussion, additional characterization or investigation, supplemental remedial actions, or ceasing active remediation.	EPA, DEQ, and ATI discussed possible examples during the January 2021 annual meeting.	EPA will provide examples for discussion with DEQ and ATI in the second quarter 2021 meeting, which s currently scheduled for April.	On Hold

Notes

ASA = Acid Sump Area
AWQC = ambient water quality criteria
COC = constituent of concern
CSM = conceptual site model
ESD = explanation of significant differences
FCCA = Former Crucible Cleaning Area
FMA = Feed Makeup Area
GIS = geographical information system
IC = institutional control
MNA = monitored natural attenuation
P&T = pump and treat
RfR = Ready for Reuse
RAO = remedial action objection
ROD = Record of Decision
SAA = Soil Amendment Area
SEA = South Extraction Area
SWMU = soil waste management unit

Table 3. GETS Monthly Average of Groundwater Extraction Volumes

ATI Millersburg Operations, Oregon

Extraction Well	Monthly Average Volume of Groundwater Extracted (gallons)																		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
FW-1	151,700	162,900	166,000	171,000	207,900	393,800	422,484	357,322	301,511	289,316	202,304	232,099	306,696	198,260	285,497	149,133	446,185	423,207	58
FW-2	281,800	234,800	160,000	219,800	231,500	685,800	682,640	749,026	675,762	909,635	619,699	378,371	597,127	421,505	408,869	167,358	221,087	42,658	-
FW-3	65,500	90,900	88,900	85,100	93,400	100,500	100,532	96,235	--	60,804	100,868	117,719	99,340	102,326	159,783	154,528	97,511	89,809	121
FW-4	125,900	144,000	113,500	168,700	172,200	183,900	183,930	148,071	110,757	226,808	192,976	184,057	154,537	174,856	179,885	145,678	69,915	101,754	90,868
FW-5	94,900	63,200	47,100	35,100	39,800	52,900	156,772	217,659	256,701	718,223	95,637	130,918	160,928	82,015	93,387	258,035	454,878	83,873	119,731
FW-7	91,900	109,130	85,900	107,700	153,000	147,900	177,355	177,622	--	--	--	--	--	--	--	--	--	--	--
EW-1	62,585	96,470	40,845	52,698	38,330	58,508	73,969	82,988	77,660	92,754	9,504	8,551	3,681	3,841	3,072	4,381	1,702	1,243	--
EW-2	43,427	148,201	183,317	218,402	220,624	152,305	151,512	257,522	239,106	217,849	18,099	8,186	7,270	10,545	6,732	2,102	7,543	40,229	35,257
EW-3	103,247	97,108	85,156	112,590	145,051	147,420	136,499	156,515	74,263	44,471	7,640	6,870	3,857	3,575	2,630	5,893	7,541	3,323	--
EW-4	1,312,229	1,634,247	1,024,910	1,232,475	2,099,331	1,461,224	1,247,634	397,524	1,794,533	50,055	--	--	--	--	--	--	--	--	--
EW-5	43,272	64,506	83,517	107,667	552,351	430,920	271,403	69,607	203,440	--	--	--	--	--	--	--	--	--	--
EW-6	62,290	88,846	67,763	62,343	73,845	81,665	37,950	0	0	--	--	--	--	--	--	--	--	--	--
GETS Monthly Average	2,438,750	2,934,308	2,146,908	2,573,575	4,027,332	3,896,842	3,642,679	2,710,091	3,733,734	2,609,916	1,246,725	1,066,771	1,333,436	996,924	1,139,855	887,107	1,306,363	786,096	246,033
Annual Rainfall (inches)	43.5	46.9	35.4	39.3	53.4	37.6	31.62	34.09	50.52	32.48	59.17	25.15	46.24	40.98	51.43	50.4	33.67	29.05	39.51

Notes

FW-1 shut down between August 2019 and June 2020 for the Former Crucible Cleaning Area enhanced in-situ bioremediation project.

FW-3 shut down in 2010 for the Acid Sump Area enhanced in-situ bioremediation project.

FW-1, FW-2, FW-3, and FW-4 shut down on June 9, 2020, with EPA's approval.

FW-7 shut down on July 30, 2009, with EPA's approval.

Between 2017 and 2019, only one or two of the extraction wells in the Feed Makeup Area (EW-1, EW-2, and EW-3) were operating at a time during GETS optimization tests.

EW-1 and EW-3 were not operational in 2020.

EW-4 through EW-6 shut down on April 15, 2011, per U.S. Environmental Protection Agency approval.

EPA = U.S. Environmental Protection Agency

FW = Fabrication Area extraction well

EW = Extraction Area extraction well

GETS = groundwater extraction and treatment system

Table 4. GETS Mass Recovery for Constituents of Concern

ATI Millersburg Operations, Oregon

2019							
Ammonium (lbs)		Fluoride (lbs)	Nickel (lbs)	TDS (lbs)	Radium-226 (lbs)	Radium-228 (lbs)	Total VOCs (lbs)
EW-2	FW-5	EW-2	EW-2	EW-2	EW-2	EW-2	FW-1, FW-2, FW-3, FW-4, FW-5
227	1,680	0	2.7	12,407	2.08E-08	2.52E-10	5.9

2020							
Ammonium (lbs)		Fluoride (lbs)	Nickel (lbs)	TDS (lbs)	Radium-226 (lbs)	Radium-228 (lbs)	Total VOCs (lbs)
EW-2	FW-5	EW-2	EW-2	EW-2	EW-2	EW-2	FW-1, FW-2, FW-3, FW-4, FW-5
169	2,151	15	2.1	14,245	1.41E-08	1.90E-10	1.6

Notes

Revised table includes 2019 mass recovery to correct the record due to incorrect calculations and/or incorrect recovery volumes used in the calculations.

EW-1 and EW-3 were not operational in 2020.

FW-1 shut down between August 2019 and June 2020 for the Former Crucible Cleaning Area enhanced in-situ bioremediation project.

FW-1, FW-2, FW-3, and FW-4 shut down on June 9, 2020, with U.S. Environmental Protection Agency's approval.

EW = Extraction Area extraction well

FW = Fabrication Area extraction well

lbs = pounds

GETS = groundwater extraction and treatment system

TDS = total dissolved solids

VOCs = volatile organic compounds

Table 5a. TCA Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	200		0.5 U	0.5 U	1.44	0.41 J	0.5 U					0.50 U	0.50 U								
EW-5	µg/L	200		0.5 U	0.5 U	1.88	0.5 U	7.28					0.34 J	0.23 J								
EW-6	µg/L	200		0.5 U	0.5 U	0.59	0.5 U	0.5 U					0.50 U	0.50 U								
PW-25A	µg/L	200	4.1	0.5 U	0.5 U	0.34 J	0.5 U	0.5 U					0.18 J									
PW-26A	µg/L	200	2.1	0.5 U	0.5 U	0.95	0.5 U	0.89	0.2 U	0.16 J	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	2.65						
PW-29A	µg/L	200		0.5 U	0.5 U	0.2 U	0.5 U	0.28 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U		0.50 U	0.50 U						
PW-47A	µg/L	200	68	0.5 U	0.5 U	0.2 U	0.5 U	0.63	0.34 J	0.27 J	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U						
PW-48A	µg/L	200	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.26 J					0.50 U									
PW-49A	µg/L	200	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-57A	µg/L	200	42.1	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U		0.50 U						
PW-96A	µg/L	200		0.5 U	0.5 U	3.27	0.5 U	0.5 U	22.1	47.6	3.15	0.66	0.90	4.89	1.85	0.50 U			10.2	9.39		0.4 U
PW-97A	µg/L	200		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.36 J	0.50 U						
Fabrication Area																						
E-11	µg/L	200		0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.29 J	1.6	6.28	1	0.5	0.74	0.52	3.04	9.39	7.71	8.08	8.88		50.9
EI-5	µg/L	200												15.3 [3]	**4,040**	40.2	**766**	90.2 J	144	10 U		40 U
FW-1	µg/L	200	1 U	**1,403**	**1,089**	**858**	**494**	113.2	88.2	59.2	40.2	77.1	**298**	174	67.1	71.7		**445**		5.45	8.16	0.35 J
FW-2	µg/L	200	15	0.43 J	0.53	0.5 U	0.51	0.5 U	0.5 U	0.5 U	0.5 U	0.66	0.88	0.68	0.33 J	0.43 J	0.4 U	0.936		0.22 J	0.4 U	0.4 U
FW-3	µg/L	200	**9,900** D	13.6	10.2	7.25	6.49	7.93	6.39	18.3	13.2	**236**	181	161	5.58	5.01	4.92	4.51	186	0.893	119	23.5
FW-4	µg/L	200		183.5	166.6	124.3	94.8	74.3	68.2	55.9	44.4	**254**	**304**	88.2	**373**	**475**	**387**	**537**	186	172	158	**360**
FW-5	µg/L	200											0.5 U							0.4 U	0.4 U	0.4 U
FW-6	µg/L	200		6.25	1.11	0.2 U	0.98	0.49 J	0.5 U	1.61	2.15	39	0.74	2.01	0.500 U	1.49	0.995	0.400 U	0.4 U	1.18		0.4 U
FW-7	µg/L	200		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.500 U	0.500 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
I-2	µg/L	200												**30,000** [3]	**18,400**	**28,300**	**25,100**	**38,400**	**31,400**	**22,900**		**20,000**
I-3	µg/L	200												1.46 [3]	**1,750**	1.44	**1,800**	5.44	62.4	0.332 J		0.5
MW-01A	µg/L	200	2.4	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
MW-02A	µg/L	200	37	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
MW-03A	µg/L	200	3.7	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	1.65	0.275 J	0.400 U	0.4 U	0.4 U		0.4 U
MW-04A	µg/L	200	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-01A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	31.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-03A	µg/L	200	26.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-10	µg/L	200	125	0.68	0.5 U	0.55	0.5 U	0.5 U	41.9	51.4	25.6	39.1	25.6	15.3	23.8	33.2	24.1	15.5	22.5	23.1		18.5
PW-11	µg/L	200	135	3.1	1.65	13.9	11.5	10.2	**254**	176	43.5	85.4	131	11.3	11.00	66.1	9.78	8.03	3	1.71		0.94 J
PW-12	µg/L	200	**8,100**	**364**	65	**1,710** E	**308**	**251**	**1,160**	**1,170**	**894**	**1,360**	**527**	**616**	166	155	**640**	**504**	6.8	149	36.2	**666**
PW-13	µg/L	200	**564**	56	8.77	10.4	9.98	9.77	154	197	113	139	13.5	38.2	24.2	41.7	92.4	68.5	**2,080**	**3,960**		**10,300**
PW-14	µg/L	200	1 U										0.50 U									
PW-15AR	µg/L	200	39										0.38 J									
PW-16A	µg/L	200	2.6	1.2	0.53	0.74	0.5 U	0.5 U	0.5 U	2.89	2.92	0.31 J	0.40 J	0.91	0.27 J	0.18 J	0.400 U		0.4 U	0.257 J	0.21 J	0.36 J
PW-19A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.77	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-20A	µg/L	200	1 U										0.50 U									
PW-30A	µg/L	200	**1,680**	**286**	**264**	**213** E	**212** E	**390**	**211**	**280**	200	**372**	**551**	184	**500**	**827**	**509**	**741**	**321**	**370**	**424**	**574**

Table 5a. TCA Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	200	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-45A	µg/L	200	6.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.45	0.4 U		0.4 U
PW-46A	µg/L	200	1 U	0.5 U	0.5 U	0.46 J	0.5 U	0.35 J	0.5 U	0.2 J	0.52	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-68A	µg/L	200	**652**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	1.16	0.4 U	0.4 U	0.400 U	0.4 U
PW-69A	µg/L	200	**3,790**	**245**	13.4	43.4	127 E	111	145	9.5	103	95.4	60.5	55.4	96.2	117	**281**	102	86	2.44	47.2	**353**
PW-70AR	µg/L	200	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	200	18.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-72A	µg/L	200	2.4							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	200	1.9	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-74B	µg/L	200	1.1	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-75A	µg/L	200	**311**	21.3	11.6	13.1	15.9	8.24	12.5	7.26	20.8	10.2	21.7	28.6	62.6	18	65.3	28.9	56	22.9	44.8	59.2
PW-76A	µg/L	200	14.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1	2.02	0.16 J	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	200	50 U	1.26	0.53	0.33 J	0.49 J	0.35 J	0.55	5.25	2.05	0.32 J	0.25 J	0.19 J	1.6	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-78A	µg/L	200	22.8	4.38	0.67	0.5 U	0.5 U	0.5 U	7.37	17.2	12.5	8.55	8.0	6.19	10.2	9.69	16.7	10.4	19.6	19.8	28	21.2
PW-79A	µg/L	200	28.9	4.34	0.69	2.81	0.44 J	0.32 J	2.3	3.07	2.52	0.21 J	0.35 J	0.5 U	13.9	3.73	16.6	19.1	11.3	10.8	5.95	6.67
PW-80A	µg/L	200	108	1.25	0.5 U	0.32 J	0.5 U	0.5 U	0.78	5.04	3.66	3.1	10.2	18	5.34	6.16	13.8	4.3	24.5	9.13		4.42
PW-81A	µg/L	200	1 U										0.28 J							0.4 U		0.4 U
PW-82A	µg/L	200	9.4	0.59	0.23 J	0.2 U	0.5 U	0.5 U	0.5 U	1.75	1.23	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	200	10.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-84AR	µg/L	200	18.2	2.81	1.42	1.48	2.37	1.95	1.26	0.48 J	0.48 J	0.44 J	0.38 J	0.33 J	0.27 J	0.51	0.92	1.09	0.718	0.65		0.26 J
PW-85A	µg/L	200	37.3	6.34	2.34	4.56	3.07	2.91	2.34	1.71	0.68	0.61	0.33 J	0.28 J	0.4 J		1.2	1.19	1.04	0.87		0.43
PW-86A	µg/L	200	2.6	0.54	0.5 U	0.21 J	0.5 U	0.5 U	0.75	0.57	0.5 U	0.26 J	0.50 J	0.50 U	0.50 U		0.800 U	0.400 U	1 U	0.4 U		0.8 U
PW-87A	µg/L	200	1.018	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-88A	µg/L	200	2.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.15 J	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-89A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.15 J	0.17 J	0.400 U	0.400 U	0.212 J	0.321 J	0.4 U	0.4 U
PW-91A	µg/L	200	**391**	0.54	0.64	16.4 0	0.39 J	10	6.8	3.38	3.59	8.73	6.49	0.55	8.45	11.4	15.2	5.63	5.62	1.14	4.08	0.85
PW-92A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	200		**5,970**	**845**	**350**	19.6	16.7	11.5	10.1	28.2	28.7	18.8	26.6	46.6	29.1	76.7	29.3	22.8	6.9	6.93	55 J
PW-94A	µg/L	200		12	156	129 E	153 E	146	**260**	**1,380**	**1,610**	**1,830**	**2,460**	**2,260**	**1,430**	**1,190**	**1,630**	**525**	**748**	**233**	476	**262**
PW-95A	µg/L	200		**234**	45.2		175 E	156	132	65.2	**582**	**259**	**373**	149	**699**	153	26	**363**	**805**	**568**	**271**	**324**
PW-98A	µg/L	200		123	128	6.53	37.8	24.2	1.12	26.5	73.2	**407**	**1,000**	**548**	**1,270**	**1,340**	**894**	**2,600**	**466**	**474**	**335**	**1,970**
PW-99A	µg/L	200		8.94	5.18	24	19.3	11.2	43.5	131	43	26.7	38.3	157	86.9	74.9	70.6	54.7	41.5	13.2	19	25.9
PW-100A	µg/L	200		102	84.5	35.3	0.95	0.81	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	**1,060**	**1,080**	**436**	0.823	149	4.1	4 U	4 U
PW-101A	µg/L	200		6.78	5.67	0.3 J	0.5 U	0.5 U	1.25	0.5	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.408	4 U	3.35		0.4 U

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

µg/L = microgram per liter

D = diluted

E = estimated value above the calibration range

J = estimated value

TCA = 1,1,1-trichloroethane

U = not detected above reporting limit

Table 5b. DCA Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level[1]	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[2]	Spring 2015	Spring 2016[3]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	1,280		0.5 U	0.5 U	3.45	0.49 J	0.5 U					0.50 U	0.50 U								
EW-5	µg/L	1,280		0.5 U	0.5 U	3.52	1.67	10.4					0.5	0.3 J								
EW-6	µg/L	1,280		0.5 U	0.5 U	1.5	1.1	0.51					0.35 J	0.47 J								
PW-25A	µg/L	1,280	6.5	0.5 U	0.5 U	1.72	1.13	4.12					1.22									
PW-26A	µg/L	1,280	1.4	0.5 U	0.5 U	0.59	0.5 U	0.2 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.15 J	10.4						
PW-29A	µg/L	1,280		0.5 U	0.5 U	0.25 J	0.5 U	0.61	0.2 U	0.51	0.5 U	0.5 U	0.50 U		0.50 U	0.50 U						
PW-47A	µg/L	1,280	41.2	0.5 U	0.5 U	2.36	0.5 U	2.56	2.63	1.91	1.33	0.97	1.22	1.38	1.50	1.62						
PW-48A	µg/L	1,280	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-49A	µg/L	1,280	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-57A	µg/L	1,280	22.8	0.5 U	0.5 U	0.94	0.5 U	1.29	1.28	0.62	1.02	0.48 J	0.58	0.73		1.02						
PW-96A	µg/L	1,280		0.5 U	0.5 U	26	0.5 U	18.7	35.6	52.5	10.6	2.97	5.31	9.85	15.2	0.24 J			22.7	28		4.45
PW-97A	µg/L	1,280		0.5 U	0.5 U	3.74	0.5 U	3.51	4.33	4.34	3.56	0.83	0.62	0.63	2.49	0.43 J						
Fabrication Area																						
E-11	µg/L	3,700		0.5 U	0.5 U	0.43 J	0.46 J	0.5 U	0.25 J	0.55	0.53	1.43	0.81	0.19 J	0.41 J	0.96	2.86	2.47	2.02	2.34		29
EI-5	µg/L	3,700												108 [4]	2950	731	572	169	148	22.8		352
FW-1	µg/L	3,700	1			101.1	111	55.1	48.3	43.2	38.4	133	440	6.12	154	173		119		9.8	103	3.64
FW-2	µg/L	3,700	35.7			0.54	0.64	3.11	2.12	2.11	1.64	0.68	0.15 J	0.27 J	0.50 U	0.50 U	0.400 U	0.614		0.33 J	0.35 J	0.4 U
FW-3	µg/L	3,700	912			7.22	3.61	1.41	1.14	8.15	5.68	118	123	3.19	6.11	3.52	5.13	5.45	63.5	1.48	50.8	50.5
FW-4	µg/L	3,700				2.54	0.72	6.55	5.92	2.85	2.03	7.33	8.85	0.5 U	7.08	7.63	7.59	12.7	5.81	5.81	5.85	10.5
FW-5	µg/L	3,700											0.66							5.42	4.94	5.99
FW-6	µg/L	3,700		3.1	4.18	0.73	3.78	2.55	0.31 J	0.35 J	0.21 J	76.4	0.37 J	0.47 J	0.96	0.98	0.685	1.12	0.951	1.9		1.34
FW-7	µg/L	3,700				0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.49	0.16 J	2.11	0.50 U	1.92	3.92	2.54	1.6		2.29
I-2	µg/L	3,700												**6,460** [4]	**6,550**	**11,800**	**13,200**	**17,600**	**12,200**	**17,600**		**13,300**
I-3	µg/L	3,700												0.95 [4]	341	4.35	103	12.5	12.1	1.15		0.68
MW-01A	µg/L	3,700	58.2	0.5 U	0.5 U	5.14	6.97	6.59	17.6	14	13.5	15.2	8.20	10.40	12.6	12.0	10.3	19.4	12	10.1	11.6	11.3
MW-02A	µg/L	3,700	154	3.81	1.25	4.43	2.11	2.02	1.81	1.87	0.5 U	1.53	1.32	1.03	1.21	1.46	1.46	6.86	7.53	8.74		4.01
MW-03A	µg/L	3,700	2.806	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	1.54	0.5 U	0.50 U	0.50 U	0.50 U	1.2	0.355 J	0.276 J	0.4 U	0.979		0.83
MW-04A	µg/L	3,700	75	2.84	2.11	2.07	3.36	3.18	1.96	2.16	1.6	1.81	0.65 J	0.69	0.79	0.76	0.400 U	0.673	0.45	0.703		0.89
PW-01A	µg/L	3,700	24.3	0.88	0.55	0.72	14	12.7	12.7	9.17	10.1	9.14	7.61	7.38	0.75	0.50 U	5.440	7.290	0.26 J	0.8		3.68
PW-03A	µg/L	3,700	49.9	0.5 U	0.5 U	0.5 U	0.38 J	0.3 J	0.29 J	0.26 J	0.18 J	0.17 J	0.50 U	0.50 U	0.21 J	0.28 J	0.580	0.798	1.16	1.91		2.22
PW-10	µg/L	3,700	327	23.9	22.2	18.1	15.6	14.9	67.5	81.3	60.9	77.5	26.7	24.9	37.3	50.7	27.7	31.5	34.3	34.5		33.6
PW-11	µg/L	3,700	54.3	2.68	3.12	31.6	29.6	24.8	80.8	52.9	16.3	31.8	86.3	5.57	10.30	26.1	4.09	7.87	2.35	1.67		0.84 J
PW-12	µg/L	3,700	901	189	289	296	774 E	725	299	335	236	426	199	173	36.8	26.9	124	99.7	6.07	30.6	11.5	240
PW-13	µg/L	3,700	1,660	789	1125	117 E	112	105	1280	2400	1970	3030	308	1010	568	715	2,670	1,710	2,300	3,190		**5,310**
PW-14	µg/L	3,700	2.2										0.50 U									
PW-15AR	µg/L	3,700	5 U										0.76									
PW-16A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6	0.28 J	0.24 J	0.34 J	0.36 J	0.87	0.42 J	0.37 J	0.217 J		0.4 U	0.395 J	0.27 J	0.37 J
PW-19A	µg/L	3,700	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-20A	µg/L	3,700	1 U										0.50 U									
PW-30A	µg/L	3,700	34	4.5	3.9	4.54	4.25	7.54	4.57	5.51	4.23 J	7.05	10.6	3.51	7.08	10.3	6.23	11.2	5.42	8.06	8	9.8

Table 5b. DCA Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level[1]	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[2]	Spring 2015	Spring 2016[3]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	3,700	21.8	2.01	0.84	1.89	3.07	2.09	2.2 J	1.91	1.61	1.26	1.40	1.17	1.04	1.42	28.1	46.8	63.4	48.4		24.7
PW-45A	µg/L	3,700	128 D	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.21 J	0.62	0.5 U	0.35 J	1.29	0.50 U	0.50 U	1.80	0.856	4.060	1.19	2.82		1.04
PW-46A	µg/L	3,700	9.5	2.64	1.34	5.27	1.16	4.81	0.68	1.66	0.55	0.36 J	0.50 U	0.68	0.93	0.50 U	0.396 J	0.400 U	1.27	0.464		0.67
PW-68A	µg/L	3,700	53.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.461	0.4 U	0.4 U	0.4 U	0.4 U
PW-69A	µg/L	3,700	648	189	135	56.8	100	97.3	149	11.3	38.3	38	31.5	38.3	84.7	112	143	28.5	47.6	45.1	151	460
PW-70AR	µg/L	3,700	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	3,700	51.4	0.5 U	0.5 U	0.5 U	1.56	1.32	0.56	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.27 J	0.25 J	3.250	0.400 U	8.150	0.74		0.4 U
PW-72A	µg/L	3,700	3.1							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	3,700	41.6	1.18	1.65	2.85	1.11	1.17	1.43	1.23	1.25	0.5 U	1.40	1.15	1.97	0.93	1.730	0.890	0.773	1.29	1.06	1.22
PW-74B	µg/L	3,700	3.2	1.15	0.49 J	3.47	0.5 U	2.84	1.31	0.88	2.18	1.18	1.14	0.64	1.16	0.65	0.812	0.640	0.762	0.59		0.430
PW-75A	µg/L	3,700	54.6	2.33	6.47	3.21	1.85	1.24	1.87	1.17	2.98	2.53	3.48	2.17	5.13	2.22	8.06	5.70	4.95	3.46	4.97	7.5
PW-76A	µg/L	3,700	2.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 J	0.33 J	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	3,700	189	143	142	156	134	126	83	83.8	46.4	70.2	55.5	20.3	36.9	36.50	37.8	40.4	8.88	11.9	8.87	6.83
PW-78A	µg/L	3,700	118	73.4	25.8	22.9	18.1	17.2	62.2	62	59.3	65.1	51.2	58	58.8	59.7	58.9	51	50.7	30.4	40.6	35.7
PW-79A	µg/L	3,700	12.3	1.26	1.16	0.55	0.67	0.61	2.56	1.52	0.5 U	0.59	1.23	0.5 U	14.4	6.77	13.3	21.3	11.6	11.7	9.05	12.4
PW-80A	µg/L	3,700	15.6	0.54	0.5 U	0.5 U	0.5 U	0.5 U	1.09	3.84	2.39	2.95	14.7	21.9	9.58	11.8	20.3	10.8	30.5	13.1		5
PW-81A	µg/L	3,700	1 U										4.43							0.42		1.390
PW-82A	µg/L	3,700	1.8	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	3,700	11.4	0.5 U	0.5 U	0.5 U	0.89	0.51	0.51	0.87	0.5	0.24 J	0.30 J	0.38 J	0.48 J	0.47 J	0.870	0.580	0.577	0.51		0.61
PW-84AR	µg/L	3,700	6.5	2.18	1.98	1.46	3.12	2.9	2.12	2.02	2.2	2.25	1.76	1.15	1.41	1.47	4.34	13	12.1	11.1		4.96
PW-85A	µg/L	3,700	17.4	4.18	5.54	3.15	3.86	4.28	3.5	3.59	2.27	2.34	1.66	1.31	1.95		3.96	10.4	6.72	8.18		5.4
PW-86A	µg/L	3,700	243	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.42 J	0.17 J	0.89	0.5 U	0.50 U	0.28 J	0.50 U		0.764 J	1.160	2.19	2.01		2.08
PW-87A	µg/L	3,700	1.5	0.5 U	0.5 U	0.5 U	0.5 U	0.31 J	0.5 U	0.17 J	0.16 J	0.5 U	0.15 J	0.26 J	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-88A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.2 J	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-89A	µg/L	3,700	5.7	0.5 U	0.5 U	0.5 U	0.5 U	0.31 J	0.33 J	0.62	0.5	0.27 J	0.50 U	0.62	1.19	1.25	1.810	3.070	6.05	7.3	5.9	4.3
PW-91A	µg/L	3,700	63.2	0.89	0.84	3.05	0.69	2.84	3.8	2.44	2.44	4.73	5.86	1.8	3.4	4.73	5.67	3.57	2.74	0.816	3.07	1.64
PW-92A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	3,700		3,380	**6,218**	3150 E	185	166	171	83.4	58	83.1	59.2	49.7	105	94	81.3	112	59.6	928	192	668
PW-94A	µg/L	3,700		8.96	81	43.3	60.1	58.2	75.4	118	121	166	187	130	599	522	358	469	220	231	562	547
PW-95A	µg/L	3,700		3.16	45.1		43.9	41.6	50.2	40.3	79.8	45.8	63.7	36.4	799	275	66.1	155	564	1,830	334	210
PW-98A	µg/L	3,700		268	384	7.63	39.4	37.1	12	18.8	52.2	111	311	308	621	552	515	1,170	326	399	224	432
PW-99A	µg/L	3,700		41.5	14.8	56.6	52.3	49.1	37.3	54.8	46.9	15.9	32.5	120 E	34.9	58.2	68.2	76.2	37.4	17.2	27.8	52.9
PW-100A	µg/L	3,700		2100	1850	222	10.7	10.2	2.78	3.18	2.54	2.2	0.99	1.06	1,680	2,040	1,970	56.7	333	62.6	15.3	19 UJ
PW-101A	µg/L	3,700		591	513	2.99	0.95	0.87	0.75	0.42 J	0.51	1.85	0.51	0.67	2.85	2.89 J	13.7	6.03	19.4	30.8		0.5

Notes

[1] The cleanup level differs for each area. See the Quality Assurance Project Plan for Sitewide Remedial Action (GSI, 2015) for more details.

[2] The fall 2014 monitoring event was conducted in February 2015.

[3] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[4] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

µg/L = microgram per liter

D = diluted

DCA = 1,1-dichloroethane

E = estimated value above the calibration range

J = estimated value

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

Table 5c. PCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	5		0.5 U	0.5 U	0.33 J	0.5 U	0.5 U					0.50 U	0.50 U								
EW-5	µg/L	5		0.5 U	0.5 U	0.28 J	0.5 U	0.48 J					0.22 J	0.15 J								
EW-6	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.1 J					0.50 U	0.50 U								
PW-25A	µg/L	5	3	0.5 U	0.5 U	0.32 J	0.5 U	0.47 J					0.22 J									
PW-26A	µg/L	5	1 U	0.5 U	0.5 U	0.3 J	0.5 U	0.14 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U						
PW-29A	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U		0.50 U	0.50 U						
PW-47A	µg/L	5	**5.5**	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.17 J	0.5 U	0.5 U	0.50 U	0.19 J	0.15 J	0.30 J						
PW-48A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-49A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-57A	µg/L	5	3.9	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U		0.50 U						
PW-96A	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.50 U	0.50 U			0.4 U	0.4 U		0.4 U
PW-97A	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.50 U	0.50 U						
Fabrication Area																						
E-11	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.34 J
EI-5	µg/L	5												5.0 U[3]	**6.02** J	10 U	4.00 U	100 U	20 U	10 U		40 U
FW-1	µg/L	5	1 U	1	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.14	0.82	0.50 U	0.50 U		4.00 U		0.7	0.81	0.32 J
FW-2	µg/L	5	**28.8**	0.32 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.6	0.37 J	0.50 U	0.50 U	0.742	0.284 J		0.26 J	0.4 U	0.4 U
FW-3	µg/L	5	50 U	0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.61	1.1	0.50 U	0.50 U	0.400 U	0.400 U	1.43	0.4 U	0.88	0.48
FW-4	µg/L	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.5 U	0.50 U	0.33 J	0.800 U	0.642	0.23 J	0.4 U	2 U	0.45
FW-5	µg/L	5																		1.04	1.13	0.99
FW-6	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.68	0.5 U	0.21 J	0.500 U	0.16 J	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
FW-7	µg/L	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.500 U	0.500 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
I-2	µg/L	5												50 U[3]	**10.6** J	**26.5** J	**20.5**	**29.0**	80 U	**30.6** J		200 UJ
I-3	µg/L	5												0.5 U[3]	**6.69**	0.50 U	2.5 J	0.4 U	1.7	0.4 U		0.4 U
MW-01A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
MW-02A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
MW-03A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
MW-04A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-01A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.41 J	0.35 J	0.400 U	0.400 U	0.84	0.65		0.29 J
PW-03A	µg/L	5	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.38 J
PW-10	µg/L	5	2.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.79	1.91	0.79	1.75	1.2	0.74	1.16	1.2	1.14	1.06	1.16	1.2		1.25
PW-11	µg/L	5	3.3	0.5 U	0.5 U	0.98	0.77	0.67	**5.55**	5 U	1.32	0.94	0.88	0.55	0.66	1.97	0.392 J	0.43	0.25 J	0.4 U		0.4 UJ
PW-12	µg/L	5	**34**	2.5 U	2.5 U	**7.27**	4.35	3.33	**7.05**	25 U	25 U	**6.67**	4.22	3.83	1.4	1.08	2.66	2.60 J	0.4 U	0.841	0.33 J	4.58
PW-13	µg/L	5	2.8	2.5 U	2.5 U	0.33 J	0.5 U	0.5 U	1.87 J	25 U	25 U	3.16 J	0.54	1.1	0.91	1.21	20.0 U	8.00 U	8 U	8 U		**6.8** J
PW-14	µg/L	5	1 U										0.50 U									
PW-15AR	µg/L	5	5 U										0.50 U									
PW-16A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.5 U	0.5 U	0.400 U		0.4 U	0.4 U	0.4 U	0.4 U
PW-19A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-20A	µg/L	5	1 U										0.50 U									
PW-30A	µg/L	5	1	1.1 U	1.1 U	0.22 J	0.22 J	0.4 J	0.5 U	5 U	5 U	0.31 J	0.33 J	0.16 J	0.37 J	0.75	2.00 U	2.00 U	1 U	2 U	2 U	2 UJ

Table 5c. PCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	5	2.5	0.5 U	0.5 U	0.5 U	0.59	0.5 U	2.56	0.5 U	0.5 U	0.25 J	0.50 U	0.50 U	0.50 U	0.50 U	1.020	1.860	1.25	2.74		1.21
PW-45A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-46A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-68A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-69A	µg/L	5	**9**	**7.12**	4.26	**5.71**	**8.55**	**7.68**	**5.06**	0.48 J	4 J	3.61	2.13	2.77	**7.47**	**6.48**	**10.8**	2.07 J	**5.95**	1.38	**5.63**	**7.41**
PW-70AR	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	5	2.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.400 U	0.40 U		0.4 U
PW-72A	µg/L	5	1 U							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-74B	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-75A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-76A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	5	50 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.27 J	0.26 J	0.23 J	0.19 J	0.21 J	0.5 U	0.2 J	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.309 J
PW-78A	µg/L	5	2 U	0.44 J	0.5 U	0.5 U	0.5 U	0.5 U	0.65	0.52	0.75	0.75	0.61	0.8	0.80	0.70	0.825	0.72	0.613	0.56	0.59	0.63
PW-79A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U	0.34 J	0.58	0.798	0.68	0.58	0.363 J	0.53	0.58
PW-80A	µg/L	5	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.45 J	0.34 J	0.35 J	0.36 J	0.719	0.38 J	0.861	0.558		0.45
PW-81A	µg/L	5	1 U										0.40 J							0.4 U		0.4 U
PW-82A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-84AR	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.69	0.72	0.49 J	0.29 J	0.4 J	0.32 J	0.27 J	0.5 U	0.26 J	0.54	0.537	0.89	1.03	1.73		0.43
PW-85A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.68	0.81	0.72	0.65	0.33 J	0.46 J	0.35 J	0.24 J	0.43 J		0.341 J	0.76	0.655	1.34		0.43
PW-86A	µg/L	5	2.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.46	0.5 U	0.50 U	0.17 J	0.55		0.582 J	0.469	1 U	0.23 J		0.8 U
PW-87A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-88A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-89A	µg/L	5	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.23 J	0.2 J	0.16 J	0.20 J	0.19 J	0.4 J	0.48 J	0.380 J	0.749	0.652	0.666	0.73	0.65
PW-91A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.54	0.5 U	0.50 U	1.36	0.15 J	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-92A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	5		**14**	1.18 J	**19**	3.92	3.12	0.98	5 U	0.32 J	0.35 J	0.22 J	0.44 J	2.18	0.63	0.702	2.49 J	1.05 J	**5.25**	3.29	40 UJ
PW-94A	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	1.16	25 U	25 U	1.31 J	**5.7**	1.66 J	2.29 J	2.2 J	4.00 U	2.24	4 U	2.7	4 U	4 U
PW-95A	µg/L	5		0.65	0.78		1.67	1.25	1.22	3.27	25 U	0.68	1.06	0.65	2.11	0.84	0.257 J	0.639	1.68	3.7 J	4 U	4 U
PW-98A	µg/L	5		3.11	1.57	0.2 U	0.25 J	0.5 U	0.8	5 U	5 U	2.66	4.5	2.08	**5.82**	**7.37**	4.70	**14.2**	2.85	2.24 J	2.8 J	**12.7**
PW-99A	µg/L	5		0.5 U	0.5 U	3.68	3.55	2.78	0.31 J	1.83 J	5 U	0.18 J	0.26 J	1.05	0.54	1.97	0.786	4.00 U	2 U	1 U	0.39 J	0.68 J
PW-100A	µg/L	5		2.46	1.45	4.14	0.49 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	**6.77**	**9.4**	**10.1**	0.982	4.20	1.6 J	4 U	4 U
PW-101A	µg/L	5		3.89	4.18	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.4 U	4 U	0.4 U		0.4 U

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

µg/L = microgram per liter

J = estimated value

PCE = tetrachloroethene

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

Table 5d. TCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	5		0.5 U	0.5 U	1.49	0.41 J	0.33 J					0.27 J	0.22 J								
EW-5	µg/L	5		0.5 U	0.5 U	0.73	1.77	4.77					1.13	0.72								
EW-6	µg/L	5		0.5 U	0.5 U	0.51	1.32	0.86					0.50 U	0.50 U								
PW-25A	µg/L	5	**6.5**	0.5 U	0.5 U	0.76	0.44 J	1.54					0.49 J									
PW-26A	µg/L	5	**8.1**	0.5 U	0.5 U	1.66	0.5 U	0.76	0.7	0.65	0.52	0.48 J	0.42 J	0.36 J	0.61	0.68						
PW-29A	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.2 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U		0.50 U	0.34 J						
PW-47A	µg/L	5	**38.4**	0.5 U	0.5 U	1.23	0.5 U	1.46	2	1.6	0.82	0.65	0.42 J	0.90	0.93	1.21						
PW-48A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-49A	µg/L	5	**8.4**	0.5 U	0.5 U	0.23 J	0.5 U	0.19 J					0.50 U									
PW-57A	µg/L	5	**32.8**	0.5 U	0.5 U	0.68	0.5 U	0.77	0.81	0.31 J	0.64	0.2 J	0.58	0.73		1.11						
PW-96A	µg/L	5		0.5 U	0.5 U	0.64	0.5 U	0.21 J	3.53	**7.24**	0.21 J	0.5 U	0.50 U	1.04	0.61	0.50 U			3.04	3.02		0.4 U
PW-97A	µg/L	5		0.5 U	0.5 U	1.23	0.5 U	0.45 J	0.2 U	0.32 J	0.2 J	0.5 U	0.50 U	0.5 U	0.49 J	0.50 U						
Fabrication Area																						
E-11	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.57
EI-5	µg/L	5												5.0 U[3]	**24**	10 U	3.0 J	100 U	20 U	10 U		40 U
FW-1	µg/L	5	1 U	0 J	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.83	1.98	0.50 U	0.50 U		4.00 U		**6.78**	2.32	**5.19**
FW-2	µg/L	5	**438** D	**60.9**	**54.4**	**44.3**	**26.1**	**22.1**	**19.4**	**22.8**	**19.3**	**72.3**	**22.4**	**6.48**	0.46 J	0.38 J	**9.17**	**6.40**		4.34	**8.49**	1.2
FW-3	µg/L	5	**190**	0.34 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**25.3**	**27.6**	**8.14**	0.53	0.28 J	0.230 J	0.241 J	**7.17**	0.4 U	**8.17**	1.16
FW-4	µg/L	5		0.31 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.81	0.92	0.39 J	0.71	0.89	0.880	1.32	0.64	0.643	2 U	0.86
FW-5	µg/L	5											**5.78**					**41.8**		**23.5**	**29.9**	**32.7**
FW-6	µg/L	5		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.99	0.5 U	0.5 U	0.500 U	0.5 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
FW-7	µg/L	5		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.500 U	0.500 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
I-2	µg/L	5												**34.5** J[3]	**38.4**	**78.3**	**84.5**	**83.3**	**110**	**67.5**		200 UJ
I-3	µg/L	5												0.5 U[3]	**34**	0.5 U	**7.80**	0.297 J	0.47	0.4 U		0.4 U
MW-01A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
MW-02A	µg/L	5	2.4	0.5 U	0.5 U	0.42 J	0.26 J	0.21 J	0.32 J	0.33 J	0.5 U	0.2 J	0.17 J	0.25 J	0.22 J	0.50 U	0.400 U	0.239 J	0.2 J	0.4 U		0.4 U
MW-03A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.34 J	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
MW-04A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-01A	µg/L	5	**5.5**	0.33 J	0.5 U	0.5 U	2.26	2	2.18	1.42	1.56	1.43	0.94	0.94	1.26	0.64	1.10	1.31	2.13	2.26		1.27
PW-03A	µg/L	5	**6.4**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.16 J	0.43 J	0.720	1.13	1.94	3.42		**7.95**
PW-10	µg/L	5	**6**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.55	1.63	1.89	2.04	1.04	0.97	1.14	1.38	1.14	1.38	1.32	1.24		1.31 J
PW-11	µg/L	5	**13.9**	0.5 U	0.5 U	3.38	2.31	1.02	**22.6**	4.78 J	2.08	2.44	3.5	0.96	0.80	4.73	0.320 J	0.63	0.2 J	0.4 U		0.4 UJ
PW-12	µg/L	5	**186**	2.5 U	2.5 U	**12.4**	**19.8**	**16.2**	**153**	**134**	**128**	**143**	**98.8**	**54.3**	**33.6**	**26.5**	**20.2**	**19.4**	**7.23**	**10.8**	**6.85**	**56.3**
PW-13	µg/L	5	**14.1**	1.2 J	2.5 U	1.27	1.21	1.03	**9**	**16.2** J	**13.6** J	**15.7**	2.19	4.98	3.82	**5.3**	**13.8** J	**10.1**	**18.2**	**24.3**		**47.6**
PW-14	µg/L	5	1 U										0.50 U									
PW-15AR	µg/L	5	5 U										0.50 U									
PW-16A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.18 J	0.5 U	0.5 U	0.400 U		0.4 U	0.4 U	0.4 U	0.4 U
PW-19A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-20A	µg/L	5	1 U										0.50 U									
PW-30A	µg/L	5	5	1.1 U	1.1 U	0.64	0.52	1.16	0.77	5 U	5 U	0.95	1.21	0.43 J	0.96	1.77	2.00 U	1.88 J	0.7 J	2 U	2 U	1.05 J

Table 5d. TCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	5	**112**	**5.7**	3.7	2.65	**28.6**	2.03	**142**	1.3	4.21	**28**	**8.47**	0.92	**46.2**	**57.3**	**53.9**	**80.9**	**68**	**166**		**95.7** J
PW-45A	µg/L	5	3.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-46A	µg/L	5	**5.2**	1.86	1.89	2.96	1.34	2.4	0.5 U	1.19	0.5 U	0.5 U	0.50 U	0.62	0.88	0.50 U	0.339 J	0.400 U	1.29	0.54		0.75
PW-68A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-69A	µg/L	5	**11**	3.96	1.96	2 U	1.37	1.26	1.04	0.18 J	5 U	0.43 J	0.24 J	0.31 J	0.82	0.73	2.00 U	4.00 U	2 U	0.35 J	0.87	1.04
PW-70AR	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	5	**13.6**	0.5 U	0.5 U	0.5 U	0.52	0.46 J	0.45 J	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-72A	µg/L	5	1 U							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	5	**31**	0.89	0.26 J	3.4	0.5 U	1.35	1.65	1.53	1.63	0.5 U	2.14	1.62	2.85	1.55	3.17	1.37	1.13	1.91	1.49	1.66
PW-74B	µg/L	5	3.7	0.33 J	0.5 U	1.26	0.5 U	1.03	0.56	0.36 J	0.81	0.5	0.53	0.29 J	0.52	0.39 J	0.410	0.350 J	0.375 J	0.32 J		0.26 J
PW-75A	µg/L	5	**6.3**	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.17 J	0.20 J	0.50 U	0.400 U	0.400 U	0.2 J	0.4 U	0.2 J	0.2 J
PW-76A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.35 J	0.35 J	0.27 J	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	5	50 U	1.45	0.69	0.31 J	0.24 J	0.18 J	1.98	1.91	1.96	1.84	1.83	1.12	1.73	1.03	1.42	1.37	1.08	1.05	1.04	1.07 J
PW-78A	µg/L	5	2 U	0.63	0.55	0.5 U	0.21 J	0.5 U	1.96	2	2.33	2.29	1.96	2.27	2.46	2.15	2.10	2.12	2.21	1.41	1.27	1.22 J
PW-79A	µg/L	5	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.21	0.91	0.5 U	0.19 J	0.44 J	0.5 U	1.11	2.33	1.84	1.88	1.29	1.09	1.24	1.68
PW-80A	µg/L	5	**19.7**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U	0.32 J	1.14	1.96	0.77	0.81	1.64	0.810	2.77	1.38		1.18
PW-81A	µg/L	5	1 U										1.41							0.850		2.19
PW-82A	µg/L	5	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	5	1.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-84AR	µg/L	5	1.2	1.48	0.67	1.11	**5.89**	**6.35**	**5.68**	**8.38**	2.96	**6.51**	4.81	3.64	**7.19**	**24.7**	**31.6**	**46.5**	**53.5**	**78.9**		**41.8**
PW-85A	µg/L	5	4.3	0.81	0.23 J	0.61	1.76	2.21	1.85	1.75	1.09	2.16	**7.74**	**5.09**	**8.41**		**14.5**	**35.2**	**25**	**48.8**		**32.6**
PW-86A	µg/L	5	**373**	2.41	0.47 J	1.11	0.98	0.72	1.05	0.32 J	**57.7**	0.52	0.22 J	4.73	**20.1**		**18.9**	**14.7**	**13.3**	**10.2**		**7.88**
PW-87A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-88A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J	0.46 J	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.42 J	2.56	1.89	0.760	2.34	0.4 U	0.61	0.4 U
PW-89A	µg/L	5	**20.3**	0.26 J	0.5 U	0.5 U	0.5 U	0.88	1.07	1.57	1.29	0.78	0.34 J	1.64	**9.22**	**10.4**	**5.71**	**9.00**	**21.4**	**19.8**	**19.7**	**13.1**
PW-91A	µg/L	5	4.3	0.5 U	0.5 U	0.39 J	0.5 U	0.25 J	0.5 U	0.27 J	0.65	0.21 J	0.27 J	0.96	0.34 J	0.15 J	0.207 J	0.400 U	0.327 J	0.4 U	0.4 U	0.4 U
PW-92A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	5		2 J	**17.4**	**31.3**	2.71	2.54	1.16	5 U	0.25 J	0.2 J	0.16 J	0.16 J	0.62	0.49 J	0.386 J	4.00 U	2 U	2.28	**5.29**	40 UJ
PW-94A	µg/L	5		0.5 U	0.5 U	0.26 J	0.28 J	0.5 U	2.88	25 U	25 U	1.58 J	4.29 J	2.72 J	2.56	3.06	4.00 U	2.49	4 U	1.5 J	4 U	4 U
PW-95A	µg/L	5		1.9	0.23 J		0.46 J	0.5 U	1.43	0.51	25 U	0.65	0.86	0.58	2.84	1.12	0.320 J	0.638	2.88	4.5	2.2 J	2.5 J
PW-98A	µg/L	5		**46.1**	**18.4**	0.2 U	1	0.78	**8.1**	5 U	5 U	**52.1**	**59.9**	**27.3**	**41.1**	**38.7**	**32.1**	**44.6**	**21.8**	**20.7**	**22.7**	**63.3**
PW-99A	µg/L	5		0.5 U	0.5 U	**50.5**	**49.6**	**41.3**	1.08	**72.6**	**46.7**	0.52	0.82	3.65	1.3	**5.58**	1.93	2.60	1.35 J	0.6 J	0.79	1.26
PW-100A	µg/L	5		**5.11**	4.81	2.96	0.37 J	0.33 J	0.3 J	0.5 U	0.5 U	0.5 U	0.73	0.50 U	**8.61**	**10.9**	**8.54**	1.39	2.8 J	2 U	4 U	4 U
PW-101A	µg/L	5		3.89	1.84	0.32 J	0.61	0.59	0.5 U	0.17 J	0.5 U	0.44 J	0.28 J	0.71	0.74	0.43 J	0.526	0.458	4.2	1.63		0.34 J

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

µg/L = microgram per liter

D = diluted

J = estimated value

TCE = trichloroethene

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

Table 5e. DCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	7		0.5 U	0.5 U	0.39 J	0.5 U	0.5 U					0.50 U	0.50 U								
EW-5	µg/L	7		0.5 U	0.5 U	0.35 J	0.23 J	0.35 J					0.50 U	0.50 U								
EW-6	µg/L	7		0.5 U	0.5 U	1.83	0.34 J	0.5 U					0.50 U	0.50 U								
PW-25A	µg/L	7	2.6	0.5 U	0.5 U	0.43 J	0.28 J	1.03					0.34 J									
PW-26A	µg/L	7	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U						
PW-29A	µg/L	7		0.5 U	0.5 U	0.2 U	0.5 U	0.23 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U		0.50 U	0.50 U						
PW-47A	µg/L	7	11.7	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.22 J	0.5 U	0.5 U	0.50 U	0.50 U	0.20 J	0.19 J						
PW-48A	µg/L	7	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-49A	µg/L	7	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-57A	µg/L	7	8.1	0.5 U	0.5 U	0.2 U	0.5 U	0.17 J	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U		0.50 U						
PW-96A	µg/L	7		0.5 U	0.5 U	0.59	0.5 U	0.37 J	1.88	3.22	0.27 J	0.5 U	0.50 U	0.29 J	0.33 J	0.50 U			1.15	0.77		0.4 U
PW-97A	µg/L	7		0.5 U	0.5 U	1.03	0.5 U	0.33 J	0.34 J	0.29 J	0.5 U	0.5 U	0.50 U	0.50 U	0.22 J	0.50 U						
Fabrication Area																						
E-11	µg/L	7		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.28 J	0.65	0.56	1.87	1.25	0.50 U	0.62	4.92	13.0	15.3	13	15.3		77
EI-5	µg/L	7												6.3 [3]	1,270	105	212	100 U	48.5	10 U		31 J
FW-1	µg/L	7	1 U	168	108	78.3	76.1	49.3	45.8	39.4	40.2	45.1	81.4	47.1	88.2	103		41.9		1.36	4.44	0.5
FW-2	µg/L	7	47.3	13.3	10.1	6.54	5.23	2.56	2.07	3.24	0.5 U	4.58	0.2 J	0.22 J	0.50 U	0.50 U	0.400 U	0.234 J		0.2 J	0.26 J	0.4 U
FW-3	µg/L	7	11,600 E	7.18	6.03	2.45	4.11	3.14	3.36	2.12	13.2	151	130	82	1.82	1.56	1.52	1.66	97.7	0.274 J	59.9	128
FW-4	µg/L	7		9.74	7.07	6.81	4.23	4.12	2.01	1.11	44.4	16.9	20.2	8.88	15.9	18.1	18.4	29.2	13.2	11	9.05	19.9
FW-5	µg/L	7											0.25 J							2.35	2.17	3.34
FW-6	µg/L	7		0.18 J	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.38	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.325 J		0.4 U
FW-7	µg/L	7		0.36 J	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	11.3	2.02	17.6	0.50 U	19.3	25.4	22.4	5.4		27.7
I-2	µg/L	7												2,850 [3]	2,080	3,260	2,110	3,050	2,990	3,290		3,440
I-3	µg/L	7												3.87 [3]	2,440	9.51	1,830	52.4	95.6	3.96		5
MW-01A	µg/L	7	131	0.89	0.12 J	12.6	15.3	12.8	46.8	36.1	35.6	41.8	25.3	32.80	38.50	38.40	42.7	74	48.3	43.7	52.4	60.4
MW-02A	µg/L	7	455	41.3	35.6	52.9	30	24.3	29.1	26.8	0.5 U	12.5	8.38	9.83	9.35	4.14	5.28	12.3	15.5	20.2		23.9
MW-03A	µg/L	7	9.6	0.5 U	0.5 U	0.2	0.5 U	0.5 U	0.5 U	0.5 U	21.9	0.5 U	0.50 U	0.50 U	0.50 U	1.99	0.616	0.462	0.22 J	2.32		5.88
MW-04A	µg/L	7	224	22.2	12.4	21	56.5	52.6	33.3	28.1	26	24.4	8.5 J	11.5	12.3	10.8	4.25	11.7	7.96	12.3		17.2
PW-01A	µg/L	7	57.7	0.89	0.51	0.66	24.1	25.5	30.7	11.6	15.6	12.7	13.0	13.6	1.48	0.50 U	28.9	29	0.46	1.97		13.8
PW-03A	µg/L	7	156	0.98	0.5 U	0.56	1.33	1.05	1.01	0.68	0.42 J	0.45 J	0.36 J	0.24 J	0.60	0.75	2.32	2.66	3.22	3.85		3.34
PW-10	µg/L	7	18.6	1.45	1.38	0.79	0.58	0.49 J	4.73	6.06	2.72	3.76	2.3	2.41	2.79	2.92	1.98	2.25	2.33	2.99		2.14
PW-11	µg/L	7	118	1.64	0.73	13.1	12.99	10.84	267	204	34.4	131	214	4.66	11.30	28.6	7.92	21.6	3.61	2.46		0.53 J
PW-12	µg/L	7	9,830	235	175	343	1,350 E	1,280	335	266	233	340	196	175	54.8	40	155	120	15.6	39	17.4	185 J
PW-13	µg/L	7	773	189	135	50.7	48.6	46.2	327	520	390	545	95.6	177	157	201	525	379	588	878		1,360
PW-14	µg/L	7	1 U										0.50 U									
PW-15AR	µg/L	7	5 U										0.20 J									
PW-16A	µg/L	7	1.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J	0.75	0.29 J	0.20 J	0.400 U		0.4 U	0.4 U	0.22 J	0.28 J
PW-19A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-20A	µg/L	7	1 U										0.50 U									
PW-30A	µg/L	7	117	7.5	8.4	16.2	9.96	26.6	17.1	22.2	14.4	23.1	33.3	13.4	23.4	32.4	20.9	34.0	16.4	20	18.4	25

Table 5e. DCE Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.0 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	7	**69.3**	**18.1**	**13.5**	**12.5**	**27**	**19.7**	**19**	**23.9**	**17.5**	**11.2**	**9.00**	**8.12**	6.34	4.56	**7.81**	**8.41**	**11.8**	**9.78**		**8.3**
PW-45A	µg/L	7	**164** D	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.46	**7.42**	1.1	3.42	5.15	0.30 J	0.79	3.11	2.46	5.07	4.64	6.09		4.15
PW-46A	µg/L	7	**9.2**	3.14	3.48	5.71	2.14	4.33	0.5 U	2.16	0.5 U	0.5 U	0.50 U	0.91	1.30	0.50 U	0.509	0.400 U	1.72	0.674		1.09
PW-68A	µg/L	7	**222**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.750	0.4 U	0.4 U	0.4 U	0.4 U
PW-69A	µg/L	7	**247**	**28.4**	**28.6**	5.92	**9.73**	**8.21**	**13.2**	1.25	**10.4**	**8.48**	6.28	5.21	**14.5**	**17.4**	**30.9**	**8.08**	**9.95**	**7.99**	**23.8**	**69.5**
PW-70AR	µg/L	7	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	7	**74.2**	0.5 U	0.5 U	0.5 U	1.01	0.9	3.23	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.494	0.400 U	1.01	0.4 U		0.4 U
PW-72A	µg/L	7	2.2							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	7	**56.8**	5.11	1.28	3.81	0.89	1.46	1.77	1.64	1.52	0.5 U	1.89	1.40	2.39	1.40	2.66	1.26	0.821	1.75	1.43	1.54
PW-74B	µg/L	7	5.1	0.76	0.63	2.84	0.51	2.22	1.12	0.82	1.66	1	1.02	0.53	0.99	0.71	0.866	0.550	0.713	0.53		0.44
PW-75A	µg/L	7	**51.4**	3.16	3.67	2.9	2.63	2.34	2.88	1.72	2.11	1.61	1.99	3.35	3.53	1.89	4.19	3.97	3.94	3.48	3.97	5.18
PW-76A	µg/L	7	6.9	0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	7	**90.7**	**26.4**	**18.4**	**16.3**	**14.8**	**12.4**	**18.8**	**16.3**	**15.4**	**18.3**	**16**	**9.38**	**15.7**	**10.0**	**17.7**	**17.9**	**12.2**	**9.74**	**11.7**	**9.18**
PW-78A	µg/L	7	**67**	**42.3**	**46.2**	**38.2**	**34.2**	**31.3**	**74.7**	**69**	**77.3**	**84.1**	**66.3**	**77.2**	**84.0**	**83.5**	**82.9**	**79**	**73.8**	**43.6**	**48.8**	**37.5**
PW-79A	µg/L	7	**16.6**	1.56	0.76	0.72	0.61	0.59	5.42	3.66	0.5 U	1.14	2.54	0.50 U	**10.5**	**9.79**	**12.9**	**15.2**	**8.95**	6.8	**7.3**	**9.84**
PW-80A	µg/L	7	**93.6**	0.88	0.5 U	0.64	0.5 U	0.5 U	0.86	2.45	0.57	1.33	**8.26**	**15.5**	4.59	4.23	**10.1**	4.20	**19.3**	6.65		4.26
PW-81A	µg/L	7	1 U										**7.53**					**25.2**		0.94		3.48
PW-82A	µg/L	7	**9.3**	0.5 U	0.5 U	0.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	7	**64**	1.11	0.21 J	0.5 U	2.76	1.36	1.52	2.19	1.49	0.82	0.88	0.80	0.93	0.79	1.38	0.990	0.964	0.91		1.42
PW-84AR	µg/L	7	**22.9**	2.58	0.54	1.46	**8.24**	**8.82**	**7.01**	**7.62**	5.9	6.45	5.78	3.84	5.43	6.29	**8.61**	**9.87**	**11.4**	**14**		**11.4**
PW-85A	µg/L	7	**76.9**	**10.2**	**8.49**	**8.12**	**7.32**	**9.32**	**7.33**	6.81	3.71	4.44	6.2	4.05	5.4		**9.69**	**10.3**	**7.42**	**10.6**		**10.5**
PW-86A	µg/L	7	**169**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.06	0.5 U	0.50 U	0.29 J	0.65		1.10	1.04	1.06	1.02		0.88
PW-87A	µg/L	7	1.4	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.24 J	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-88A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-89A	µg/L	7	3.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.47 J	0.48 J	0.410	0.60	1.92	1.8	1.73	1.09
PW-91A	µg/L	7	**70.6**	0.76	0.33 J	3.28	0.5 U	2.5	2.63	1.74	1.02	1.78	1.97	1.01	1.46	3.32	3.44	4.31	2.5	1.86	1.34	1.17
PW-92A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	7		**785**	**315**	**1280**	**140**	**128**	**16.2**	**9.77**	**11.8**	**17.2**	**7.54**	6.71	**14.8**	**14.9**	**21.4**	**13.40**	**14.7**	**26.7**	**89.6**	**46** J
PW-94A	µg/L	7		0.23 J	**8.12**	4.04	5.16	4.99	**10.1**	**71**	**97.3**	**90.8**	**116**	**110**	**122**	**122**	**154**	**138**	**57.8**	**80.6**	**44.2** J	**42**
PW-95A	µg/L	7		**8.18**	**12.3**		**9.56**	**9.21**	**10.5**	4.55	**43.9**	**19.9**	**28.8**	**14.1**	**104**	**49.5**	**12.2**	**39.3**	**68.2**	**191**	**49.9**	**65.4**
PW-98A	µg/L	7		**125**	**245**	**31.8**	**134** E	**126**	**28.3**	**110**	**203**	**651**	**1,110**	**588**	**1,390**	**1,340**	**1,120**	**2,830**	**772**	**830**	**494**	**1,610**
PW-99A	µg/L	7		**155**	**143**	**135** E	**123**	**125**	**143**	**303**	**145**	**110**	**132**	**365** E	**375**	**262**	**773**	**516**	**368**	**139**	**174**	**247**
PW-100A	µg/L	7		**99.9**	**81.4**	**43.6**	1.85	1.78	0.45 J	0.37 J	0.31 J	0.5 U	0.50 U	0.50 U	**77.3**	**128**	**168**	2.4	**51**	1.50 J	4 U	4 U
PW-101A	µg/L	7		**183**	**64.8**	0.33 J	0.5 U	0.5 U	0.55	0.35 J	0.5 U	0.5 U	0.50 U	0.50 U	0.17 J	0.16 J	1.66	0.615	4 U	2.13		0.2 J

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

µg/L = microgram per liter

D = diluted

DCE = 1,1-dichloroethene

E = estimated value above the calibration range

J = estimated value

U = not detected above reporting limit

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

Table 5f. VC Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-4	µg/L	2		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U	0.50 U								
EW-5	µg/L	2	2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.8					0.50 U	0.50 U								
EW-6	µg/L	2		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.70	0.64								
PW-21A	µg/L	2											0.50 U								0.4 U	0.4 U
PW-22A	µg/L	2											34.5		17.9		23.5	16.1				17
PW-25A	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-26A	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	1.18						
PW-29A	µg/L	2		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.50 U		0.50 U	0.50 U						
PW-47A	µg/L	2	1 U	0.5 U	0.5 U	0.95	0.5 U	0.73	0.4 J	0.25 J	0.42 J	0.5 U	0.27 J	0.50 U	0.50 U	0.50 U						
PW-48A	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-49A	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U									
PW-57A	µg/L	2	1 U	0.5 U	0.5 U	0.26 J	0.5 U	0.63	0.2 U	0.49 J	0.5	0.34 J	0.50 U	0.50 U		0.45 J						
PW-96A	µg/L	2		0.5 U	0.5 U	1.43	0.5 U	4.03	7.46	9.29	2.03	0.89	1.98	1.84	5.58	0.50 U			2.98	4.37		1.38
PW-97A	µg/L	2		0.5 U	0.5 U	0.6	0.5 U	0.29 J	0.2 U	0.62	0.38 J	0.19 J	0.25 J	0.50 U	0.23 J	0.50 U						
Fabrication Area																						
E-11	µg/L	2		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.46 J	0.50 U	0.50 U	0.50 U	0.16 J	0.530	0.730	0.44	0.76		4.93
EI-5	µg/L	2												8 [3]	106	127	93.5	52.5 J	26.5	10 U		28 J
FW-1	µg/L	2	1 U	3	3	0.89	1.54	2.59	1.32	1.08	0.91	2.3	11	6.12	5.39	4.1		6.03		0.77	4.63	2.71
FW-2	µg/L	2	4.8	2.49	1.55	0.65	0.89	1.85	1.36	1.32	1.18	3.11	0.5 U	0.27 J	0.50 U	0.50 U	0.400 U	0.400 U		0.27 J	1.38	0.4 U
FW-3	µg/L	2	50 U	0.5	0.5 U	0.5 U	0.5 U	0.5 U	0.56	0.74 U	0.59	3.45	3.6	3.19	0.50 U	0.50 U	0.400 U	0.400 U	7.5	0.4 U	3.97	3.23
FW-4	µg/L	2		0.49 J	0.5 U	2.11	0.5 U	1.01	0.5 U	0.5 U	0.5 U	0.5 U	0.39 J	0.50 U	0.50 U	0.21 J	0.800 U	0.387 J	0.29 J	0.299 J	2 U	0.4 U
FW-5	µg/L	2											0.50 U							1.33	1.14	1.77
FW-6	µg/L	2		0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400	0.4 U	0.4 U		0.4 U
FW-7	µg/L	2		0.61	0.46 J	0.49 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.0	0.16 J	3.89	0.50 U	8.03	10.6	4.74	2.43		8.47
I-2	µg/L	2												226 [3]	334	474	543	682	560	724		520
I-3	µg/L	2												0.5 U[3]	200	1.0	173	10.7	156	0.381 J		0.3 J
MW-01A	µg/L	2	36.3	0.62	0.61	2.89	1.47	1.36	13.4	10.5	5.3	13.6	8.6	7.78	5.94	9.28	12.2	21.2	9.72	13.4	12.1	14.4
MW-02A	µg/L	2	166	42.1	16.4	49.2	21.4	19.6	53.6	46.8	0.5 U	47.5	42.3	17.7	21.5	28.8	35.8	24.3	26.6	27.1		25.4
MW-03A	µg/L	2	1.1	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	25.8	0.5 U	0.50 U	0.50 U	0.50 U	0.45 J	0.400 U	0.400	0.4 U	0.555		1.05
MW-04A	µg/L	2	29.3	6.21	5.41	5.06	30.1	26.5	9.68	7.57	8.71	8.6	3.26 J	3.49	5.52	3.8	1.69	4.57	2.87	5.27		6.98
PW-01A	µg/L	2	28.4	0.43 J	0.42 J	0.5 U	10.9	13.3	10.4	8.51	8.21	6	5.85	5.21	0.66	0.50 U	6.95	9.16	0.4 U	0.73		6.19
PW-03A	µg/L	2	4.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.390 J	0.335 J	0.372 J	0.283 J		0.4 U
PW-10	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400	0.4 U	0.4 U		0.4 U
PW-11	µg/L	2	1.2	0.5 U	0.5 U	4.75	4.61	4.19	19.4	2.54 J	0.5 U	1.66	3.93	0.50 U	0.34 J	0.48 J	0.400 U	0.21 J	0.4 U	0.4 U		0.4 UJ
PW-12	µg/L	2	29	4.3	6.3	25.7	390	377	21.5	25.4	24.3 J	36.1	22.6	15.3	3.79	3.52	14.6	11.8	2.36	3.35	4.86	19.6
PW-13	µg/L	2	11.1	2.5 U	1.11 J	2.23	2.15	1.98	0.5 U	25 U	25 U	5 U	1.53	0.59	0.93	1.06 J	20.0 U	8.00 U	4.4 J	5.1 J		8.8
PW-14	µg/L	2	1 U										0.50 U									
PW-15AR	µg/L	2	5 U										0.50 U									
PW-16A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U		0.4 U	0.4 U	0.4 U	0.4 U
PW-19A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U

Table 5f. VC Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-20A	µg/L	2	1 U										0.5 U									
PW-30A	µg/L	2	1 U	1.1 U	1.1 U	0.2 U	0.5 U	0.5 U	0.5 U	5 U	5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	2.00 U	2.00 U	1 U	2 U	2 U	2 U
PW-31A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.00 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-42A	µg/L	2	**4.9**	**2.11**	0.84	1.13	**2.43**	**5.23**	0.69	**2.45**	1.68	1.27	1.42	**2.97**	**3.74**	**4.77**	**5.08**	**3.72**	**4.58** J	**4.85**		**9.14**
PW-45A	µg/L	2	**29**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**3.62**	0.5 U	0.9	**10.0**	0.50 U	0.79	**9.74**	**4.02**	**20.4**	0.86	**11.7**		1.68
PW-46A	µg/L	2	1 U	1.89	1.32	1.62	0.63	1.19	0.5 U	0.62	0.5 U	0.5 U	0.50 U	0.50 U	0.36 J	0.50 U	0.400 U	0.400 U	0.575	0.4 U		0.39 J
PW-68A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-69A	µg/L	2	**4**	**3.8** J	0.43 J	2 U	**2.06**	1.88	**3.19**	0.28 J	1.77 J	1.42	1.03	1	1.75	**2.26**	**5.14**	4.00 U	**2.2**	1.39	**8.89**	**6.59**
PW-70AR	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-71A	µg/L	2	**3.2**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.41	0.4 U		0.4 U
PW-72A	µg/L	2	1 U							0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-73B	µg/L	2	**8.3**	**6.58**	**3.48**	**2.54**	**2.45**	1.76	**2.1**	1.44	1.64	0.5 U	1.65	1.20	**2.08**	1.36	**2.46**	1.30	0.725	1.49	1.08	1.28
PW-74B	µg/L	2	1 U	0.5 U	0.5 U	0.66	0.5 U	0.82	0.36 J	0.31 J	0.75	0.44 J	0.34 J	0.38 J	0.51	0.35 J	0.529	0.420	0.358 J	0.34 J		0.29 J
PW-75A	µg/L	2	1.8	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-76A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.4 U
PW-77A	µg/L	2	50 U	1.89	1.13	0.41 J	0.72	0.69	1.26	0.5 U	0.37 J	0.2 J	0.60	0.50 U	0.50 U	0.50 U	0.400 U	**3.66**	0.4 U	0.38 J	0.4 U	0.4 UJ
PW-78A	µg/L	2	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.5 U	0.26 J	0.28 J	0.22 J	0.20 J	0.25 J	0.253 J	0.230 J	0.4 U	0.4 U	0.4 U	0.4 U
PW-79A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U	0.4 U	0.35 J
PW-80A	µg/L	2	1.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.77	1.9	0.83	0.71	**2.35**	1.21	**2.05**	0.4 U		0.4 U
PW-81A	µg/L	2	1 U										0.41 J							0.37 J		0.33 J
PW-82A	µg/L	2	1 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-83A	µg/L	2	**4.7**	0.33 J	0.11 J	0.5 U	**2.34**	0.88	0.83	1.14	0.77	0.43 J	0.53	0.50 U	0.26 J	0.46 J	0.430	0.510	0.433	0.42		0.48
PW-84AR	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.260 J	0.4 UJ	0.31 J		0.21 J
PW-85A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U		0.400 U	0.300 J	0.4 UJ	0.24 J		0.4 U
PW-86A	µg/L	2	**45.8**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**3.21**	0.5 U	0.50 U	0.94	**2.5**		**6.88**	**5.49**	**4.80**	**5.36**		**4.02**
PW-87A	µg/L	2	1 U	0.89	0.34 J	0.55	0.5 U	0.68	0.28 J	0.5 U	0.29 J	0.29 J	0.31 J	0.37 J	0.27 J	0.16 J	0.400 U	0.400 U	0.4 U	0.4 U		0.22 J
PW-88A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.26 J	0.400 U	0.400 U	0.4 UJ	0.4 U	0.4 U	0.4 U
PW-89A	µg/L	2	1.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.331 J	0.375 J	0.38 J	0.21 J
PW-91A	µg/L	2	**3**	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.22 J	0.400 U	0.470	0.4 U	0.4 U	0.4 U	0.4 U
PW-92A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.50 U	0.50 U	0.400 U	0.400 U	0.4 U	0.4 U		0.4 U
PW-93A	µg/L	2		25 U	10 U	**88.4**	**41.4**	**38.3**	**7.43**	**5.07**	**2.49**	**4.1**	**2.51**	**2.52**	**3.45**	**5.51**	**2.88**	**16.8**	**3.7**	**15.4**	**40.5**	**41**
PW-94A	µg/L	2		0.68	0.81	0.67	0.76	0.71	**2.24**	25 U	25 U	**2.23** J	1.93 J	**2.54** J	**11.4**	**4.91**	**11.6**	**4.78**	**4.6**	**24.8**	**11.7**	**11.2**
PW-95A	µg/L	2		**2.1**	0.5 U		0.84	0.76	**3.16**	1.43	25 U	1.04	1.41	0.95	0.76	0.38 J	0.235 J	**2.62**	0.9 J	**6.1**	**3.2** J	**2.8** J
PW-98A	µg/L	2		**25.3**	**34.4**	0.23 J	0.6	0.54	**2.56**	5 U	5 U	**13**	**52.1**	**64**	**109**	**114**	**110**	**196**	**93.6**	**99.5**	**53.8**	**61.2**
PW-99A	µg/L	2		**2.48**	**2.84**	**12.3**	**11.1**	**9.82**	0.45 J	**5.63**	**10.9**	0.42 J	0.72	1.78	**2.11**	**2.93**	**2.02**	**2.40** J	1.6 J	0.6 J	1.06	1.06
PW-100A	µg/L	2		**16.8**	**7.64**	**6.44**	1.05	1.04	**2.03**	**4.12**	0.97	0.67	**14.2**	**4.43**	**14**	**21.2**	**37.0**	**30.5**	**23.8**	**4.4**	**3.5** J	**4.6**
PW-101A	µg/L	2		**31.2**	**26.4**	0.2 U	1.05	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.26 J	0.52 J	1.83	0.400 U	**4.3**	0.8		0.6

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

µg/L = microgram per liter J = estimated value U = not detected above reporting limit UJ = not detected above reporting limit and estimated VC = vinyl chloride

Table 5g. Ammonium Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-1	mg/L	250	**316**	19	16	41.7	57	39.7	75.4	51.8	51.4	65.75	62.5	63.5	75.1	42.0	54.3	61.5	54.1	77.1		55.5
EW-2	mg/L	250	**410**	53	25	42.7	75.2	49			66.7	73.38	69.9	84.3	64.1	70.1	49.0	50.3	50.9	61.8	49.8	46.3
EW-3	mg/L	250	87.6	23	22	29.6	42.1	30.1	45.4	28.6	31	55.9	33.4	46.8	26.6	34.4	38.3	32.8	36.1	34.1		34.3
PW-21A	mg/L	250		31	18	30.9	69.2	20	57.1	14.6	70.7		13.8	57.1	26.1	98.3	56.1	114	27.5	126	83.8	140
PW-22A	mg/L	250	**252**	**265**	236	73.2	127	134	96.8	68.6	160	196.3	145	59.2	123	108	117	107	120	118		97.3
PW-23A	mg/L	250	81.5	35	29	64.8	51.6	39.2	54.5	39.4	38.6	47.38	41.6	38.3	38.3	39.0	52.8	38.4	35.9	36.0	37.5	34.4
PW-24A	mg/L	250	**265**	165	148	81.2	40.7	61.9	96.8	122	60.5	120.1	187.5	84.1	52.6	161	158	184	120	164		101
PW-27A	mg/L	250		20	18	11.9		15.7	25.3	26.6	7.58	11.39	22.5	25.5	18.3	18.6	19.5	10.7	15.8	12.2		26.6
PW-28A	mg/L	250	**450**	167	145	**324**	**352**	**259**	216.3	170	**262**	**292.5**	145	210	221	139	173	6.01	117	139	113	190
PW-50A	mg/L	250	161	0.33	0.14	32.1	11.1	19.9	15.5	26.3	3.77	23.75	44.4	26	7.24	13.2	10.1	63.3	11.8	55.1		53
PW-51A	mg/L	250	195	48	28	73.2	95.2	69.5	133.8	106	88.4	126.3	157.5	141	125	102	119	109	148	126		103
PW-52A	mg/L	250	**367**	131	175	101		92.6	230	140	128	152.5	145	149	140	112	114	178	122	183		110
Fabrication Area																						
E-11	mg/L	250											0.25									
EI-5	mg/L	250																				
FW-1	mg/L	250	0.2										0.063 UJ									
FW-2	mg/L	250											0.093 U									
FW-3	mg/L	250											0.038 J									
FW-4	mg/L	250											0.063 U									
FW-5	mg/L	250				**265**	129	236	190	156	**256**	**1585**	**1,001**	**434**	**294**	**358**	**308.8**	215	204	196	156	203
FW-6	mg/L	250											0.063 U									
FW-7	mg/L	250											0.12									
I-2	mg/L	250																				
I-3	mg/L	250																				
MW-01A	mg/L	250	0.125 U										0.063 U									
MW-02A	mg/L	250	0.25 U										0.049 J									
MW-03A	mg/L	250	0.125 U										0.079 J									
MW-04A	mg/L	250	0.175										0.063 U									
PW-01A	mg/L	250	**4,413**	68.8	75.0	56.3	139	129	119.8	**735**	229	224	176	189	**2,400**	**1,400**	**723**	189	**1,205**	**1,350**		**733**
PW-03A	mg/L	250	**274**	35	28.8	18.8	71.1	63.6	80.0	86.4	70.0	69.9	67.0	59.6	116	188	166	204	235	218		248
PW-10	mg/L	250	1.75										0.063 U									
PW-11	mg/L	250	7.5										4.85									
PW-12	mg/L	250	2										0.325									
PW-13	mg/L	250	8.75										2.93									
PW-14	mg/L	250	0.125 U										0.063 U									
PW-15AR	mg/L	250	0.125 U										0.030 J									
PW-16A	mg/L	250	0.125 U										0.063 U									
PW-19A	mg/L	250	0.125 U										0.063 U									
PW-20A	mg/L	250	0.125 U										0.063 U									
PW-30A	mg/L	250	0.125 U										0.064									

Table 5g. Ammonium Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	mg/L	250	0.125 U										0.063 U									
PW-42A	mg/L	250	0.125 U										0.121									
PW-45A	mg/L	250	0.25										0.175									
PW-46A	mg/L	250	0.375										0.063 U									
PW-68A	mg/L	250	0.375										0.063 U									
PW-69A	mg/L	250	0.75										1.11									
PW-70AR	mg/L	250	0.125 U										0.063 U									
PW-71A	mg/L	250	0.375										0.675									
PW-72A	mg/L	250	0.125 U										0.063 U									
PW-73B	mg/L	250	0.125 U										0.063 U									
PW-74B	mg/L	250	0.125 U										0.188									
PW-75A	mg/L	250	0.625										0.03 J									
PW-76A	mg/L	250	0.125 U										0.063 U									
PW-77A	mg/L	250	0.463										0.063 U									
PW-78A	mg/L	250	0.125 U										0.063 U									
PW-79A	mg/L	250	0.25										0.063 U									
PW-80A	mg/L	250	2.68										0.575									
PW-81A	mg/L	250	0.125 U										0.119									
PW-82A	mg/L	250	81.5										25.4									
PW-83A	mg/L	250	42.63	17.5	15.0	10.0	18.5	25.3	19.5	11.5	14.1		21.3	14.0	28.1	33.8	33.0	35.8	50.0	41.3		26.5
PW-84AR	mg/L	250	0.175	0.625 U	0.625 U	0.625 U	0.125 U	0.125 U	0.125 U	0.041 J	0.063 U	0.027 J	0.093 U	0.063 U	0.048 J	0.15	0.02 U	0.02 U	0.025 U	0.099		
PW-85A	mg/L	250	0.438									18.3	0.063 U									
PW-86A	mg/L	250	0.875										0.063 U									
PW-87A	mg/L	250	0.588										1.08									
PW-88A	mg/L	250	6.53										3.64									
PW-89A	mg/L	250	107	17.5	15.0	12.5	11.3	10.2	48.0	78.1	40.0	31.5	0.093	25.3	16.9	8.9	40.8	18.8	10.8	4.4	5.9	9.2 J
PW-91A	mg/L	250	1.13										0.838									
PW-92A	mg/L	250	8.78	5	5	6.25 U	5.08	4.44	3.96	5.01	4.24	4.49	4.31	4.39	4.73	2.38	3.85	3.45	3.53	4.81		
PW-93A	mg/L	250											0.675									
PW-94A	mg/L	250											1.15									
PW-95A	mg/L	250											0.063 U									
PW-98A	mg/L	250											0.041 J									
PW-99A	mg/L	250											0.063 U									
PW-100A	mg/L	250											0.263									
PW-101A	mg/L	250											0.238									

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

J = estimated value

mg/L = milligrams per liter

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

Table 5h. Fluoride Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
EW-1	mg/L	4	40.8	1.2	1.2	12.9	11.7	13.5	8.16	10	2.99	3.28	9.76 J	13.3	12.4 J	9.94	1.0 U	11.2	9.01	15.2		14.4
EW-2	mg/L	4	12.7	0.1 U	0.1 U	0.52	1.99	3.98			0.199 J	0.431 J	4.54 J	6.34	3.62 J	2.99	1.0 U	1.98	1 U	10 U	20 U	8.38
EW-3	mg/L	4	31.3	3.8	3.3	13.4	9.85	5.41	8.43	5.89	5.35	6.66	3.99 J	23.1	3.68 J	11.4	6.16	15.2	16.4	13.3		17.7
PW-21A	mg/L	4		1.1	1.1	6.66	1.21	0.46	1.28	0.448 J	1.78		0.46 J	1.82	0.52 J	2.16	1.54	2.66	1 U	2.79	1.57	2.77
PW-22A	mg/L	4	10 U	2.4	2.4	3.18	2.25	2.23	1.21	1.91	3.53	2.97	2.59	2.71	2.94	2.01	3.32	3.0	3.53	5.02		3.27
PW-23A	mg/L	4	13.6	12	11	19.5	22.3	15.3	16.8	17.1	24.4	26.1	22.8	23.4	23.6	25	23	25.2 J	24.7	27	23.8	23.1
PW-24A	mg/L	4	4.6	1 U	1 U	0.56	0.69	0.84	0.707	0.693 J	0.605 J	0.66 J	0.79 J	0.727 J	0.84 J	0.51 J	1.0 U	1.0 U	1 U	1 U		0.665 J
PW-27A	mg/L	4		1 U	1 U	0.1	0.11	0.023 J	0.1 U	1 U	0.044 J	0.056 U	0.43 J	0.093 J	0.11 U	1.0 U	1.0 U	1.0 U	1 U	1 U		1 U
PW-28A	mg/L	4	12.9	1 U	1 U	24.6	6.84	0.79	19.6	7.61	0.118 J	0.158 J	2.89	3.41	4.13 J	10.4	100 U	1.05	1 U	10 U	20 U	11.3 J
PW-50A	mg/L	4	12.4	1 U	1 U	2.63	1.29	2.43	1.02	2.69	0.775 J	1.31	2.48 J	1.8	1.57 J	1.26	1.08	6.03	1.32	6.08		8.84
PW-51A	mg/L	4	148	1.2	1.1	3.66	4.99	2.69	0.404	0.286 J	0.413 J	0.752 J	1.09 J	1.19	1.26 J	1.08	1.0	1.0	1.14	5 U		1.23
PW-52A	mg/L	4	30.2	0.16	0.15	9.5	2.9	8.74	13.7	15.9	3.34	1.73	9 J	11.5	11.9 J	9.84	17.8	1.0 U	1 U	20.8		14.3
Fabrication Area																						
E-11	mg/L	4		9	8	7.8	3.1	2.9	3.07	2.96	5.25	5.09	5.94	6.84	6.41	6.19	4.86	5.33	4.46	5.54		5.69
EI-5	mg/L	4												17.5 [3]	26.1	20.9	19.1	20.5	9.03	16.1		13.9
FW-1	mg/L	4	2.47										1.32									
FW-2	mg/L	4	0.8										0.88 J									
FW-3	mg/L	4	1.86	1.51	1.5	1.51	1.44	1.77	1.44	1.49	1.22	1.23	2.12	2.11	2.07	2.16	5.7	2.9 J	2.11	2.25	1.89	2.18
FW-4	mg/L	4											0.19 J									
FW-5	mg/L	4		16.1									16.6					23.2		24.3	22.8	24.6
FW-6	mg/L	4		1.8	1.5	1.5	1.2	1.1	7.34	4.3	8.47	42.8	9.8	11.7	6.23	8.96	9.45	7.06	8.79	8.73		9.7
FW-7	mg/L	4		0.15									0.12									
I-2	mg/L	4												9.33 [3]	10.9	13.3	8.67	24.4	13.2	14.9		13.7
I-3	mg/L	4												4.4 [3]	2.57 J	2.94	2.22	2.81	5.45	1.04		0.647 J
MW-01A	mg/L	4	0.12										0.12 J									
MW-02A	mg/L	4	0.17										0.43 J									
MW-03A	mg/L	4	0.16										0.18 J									
MW-04A	mg/L	4	0.18										0.18 J									
PW-01A	mg/L	4	20 U										0.78 U									
PW-03A	mg/L	4	1.44										1.2									
PW-10	mg/L	4	50	15	14	9	12	11.3	26.2	20.1	25.8	42.1	26.7	19.2	22.8	21	20.1	22	22.9 J	20.7		24.4
PW-11	mg/L	4	2.44	2 U	2 U	1 U	1 U	1 U	1.73	1.43	2.99	2.51	2.4	2.68	2.54	2.18	2.3	2.32	2.07	2.06		2.04
PW-12	mg/L	4	0.7	1 U	1 U	1 U	9.65	9.56	2.27	1.77	2.8	2.97	3.04	3.13	2.45	2.45	2.33	2.96	1.53	2.06	1.67	2.13
PW-13	mg/L	4	43.2	16	21	19	17	14	28.7	27.6	25.9	31.2	17.7	17.6	16.8	17	39	28.1	31.3	26		38.2
PW-14	mg/L	4	2.06										0.86 J									
PW-15AR	mg/L	4	0.1 U										0.32 J									
PW-16A	mg/L	4	0.1 U	1 U	1 U	1 U	1 U	1 U	0.01 U	0.213 I	0.066 J	0.081 J	0.24 J	0.099 U	0.073 J	0.061 J	1.0 U		1 U	1 U	1 U	1 U
PW-19A	mg/L	4	0.1						0.443	0.539 I	0.119 J	0.146 J	0.28 J	0.205 U	1.21	0.057 J	1.0 U	1.0 U	1 U	1 U	1 U	1 U
PW-20A	mg/L	4	0.27										0.29 J									
PW-30A	mg/L	4	0.38										0.27 J									

Table 5h. Fluoride Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-31A	mg/L	4	0.13										0.046 J									
PW-42A	mg/L	4	0.16										0.13 J									
PW-45A	mg/L	4	0.1 U										0.094 J									
PW-46A	mg/L	4	0.29										0.19 J									
PW-68A	mg/L	4	0.15										0.19 J									
PW-69A	mg/L	4	**11**				1.39		**6.14**				**8.89**					**10.2**	**9.98**	**12.9**	**9.04**	**11.5**
PW-70AR	mg/L	4	0.1 U										0.093 J									
PW-71A	mg/L	4	1.1										1.8									
PW-72A	mg/L	4	**5.62**										2.64									
PW-73B	mg/L	4	0.15										0.32 J									
PW-74B	mg/L	4	0.17										0.29 J									
PW-75A	mg/L	4	0.8										1.12									
PW-76A	mg/L	4	0.35	1 U	1 U	1 U	1 U	1 U	0.524	0.374 J	0.286 J	0.357 J	0.47 J	0.324 U	0.67 J	0.25 J	1.0 U	1.0 U	1 U	1 U	1 U	1 U
PW-77A	mg/L	4	0.64	1 U	1 U	1 U	1 U	1 U	0.686	0.464 J	0.287 J	0.311 J	0.45 J	0.426 U	0.35 J	0.26 J	1.0 U	1.0 U	1 U	1 U	1 U	1 U
PW-78A	mg/L	4	0.19	1 U	1 U	1 U	1 U	1 U	0.494	0.288 J	0.273 J	0.33 J	0.45 U	0.678 J	0.37 J	0.27 J	1.0 U	1.0 U	1 U	1 U	0.548 J	0.7 J
PW-79A	mg/L	4	0.96	1 U	1 U	1 U	1 U	1 U	0.01 U	0.236 J	0.127 J	0.153 J	0.29 J	0.166 U	1.06	0.077 J	1.15	2.0	1.7	2	1.53	1.3
PW-80A	mg/L	4	0.17	1 U	1 U	1 U	1 U	1 U	0.486	0.273 J	0.143 J	0.186 J	0.35 J	0.561 J	0.28 J	0.13 J	1.0 U	1.0 U	1 U	1 U		
PW-81A	mg/L	4	0.1 U										0.065 J									
PW-82A	mg/L	4	0.42	1 U	1 U	1 U	1 U	1 U	0.648	0.51 J	0.429 J	0.678 J	0.982 J	0.626 J	0.65 J	0.62 J	1.0 U	1.0 U	1 U	1 U		0.8 J
PW-83A	mg/L	4	0.16										0.622 J									
PW-84AR	mg/L	4	0.83										0.64 J									
PW-85A	mg/L	4	1										0.65 J									
PW-86A	mg/L	4	0.1 U										1.4									
PW-87A	mg/L	4	0.27										0.32 J									
PW-88A	mg/L	4	0.4										0.55 J									
PW-89A	mg/L	4	**17**	**7.8**	**6.4**	**5.5**	**5.5**	**9.87**	**9**	**9.9**	**13.5**	**14.5**	**13.6**	**11.2**	**17.2**	**16.1**	**17**	**18.2**	**17.3**	**15.6**	**15.6**	**16.4**
PW-91A	mg/L	4	0.6										1.15									
PW-92A	mg/L	4	0.23										0.54 J									
PW-93A	mg/L	4					**9.85**		1.97				3.99				3.56	2.78 J		1.54	1.48	3.6
PW-94A	mg/L	4					**9.75**						**7.04**				**7.1**	**6.26**		**9.84**	**12.1**	**13.3**
PW-95A	mg/L	4					**7.33**						**9.84**					**4.52** J		**10.1**	**7.63**	**7.43**
PW-98A	mg/L	4				**11.1**	**10.2**		**9.11**	**9.87**	**8.84**	**13.7**	**16.8**	**17.4**	**15.9**	**17.6**	**14.9**	**65** J	**14.8**	**15.2**	**13.9**	**21**
PW-99A	mg/L	4		**9.4**	3.4	**15**	**13**	**12**	**9.69**	**9.86**	**12.8**	**12.8**	**12.9**	**9.56**	**10**	**10.1**	**9.58**	**11.3**	**12.2**	**11.3**	**11.1**	**9.78**
PW-100A	mg/L	4					**11.7**	**10.3**					0.11 U					1.0 U		1 U	1 U	1 U
PW-101A	mg/L	4					1.57	1.46					1.88									1 U
Solids Area																						
PW-07	mg/L	4			1 U		1 U		1 U		0.163 J		0.173 J			0.12		1.0 U		1 U		
PW-09	mg/L	4	2.65		1 U		1 U		1 U				1.69			1.87						
PW-17B	mg/L	4	2.5		1 U		1 U		1 U		0.472 J		1.06			0.62		1.3		1 U		
PW-18B	mg/L	4	**4.49**		1.8		1.4		1.36		0.458 J		1.96			1.89		1.89		1.75		
PWA-1	mg/L	4	3.67										0.22 J									

Table 5h. Fluoride Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PWA-2	mg/L	4											1 U									
PWB-1	mg/L	4	3.73		2		2		1.89		1.33		1.36			1.08		1.11		1.33		
PWB-2	mg/L	4	3.81		1 U		1 U		1 U		1.22		1.48			1.8		1.15		1.24		
PWB-3	mg/L	4	10 U		1.7		1.5		1.48		1.79		**10.4**			**5.15**		2.08		10 U		10 U
PWC-1	mg/L	4											0.34 J									
PWC-2	mg/L	4											0.29 J									
PWD-1	mg/L	4											0.063 J									
PWD-2	mg/L	4											0.135 J									
PWE-1	mg/L	4	**4.6**		2.1		2		1.93				2.67			2.67		2.06		2.57		2.35
PWE-2	mg/L	4	0.2 U		1 U		1 U		1 U				0.053 J			0.017		1.0 U		1 U		1 U
PWF-1	mg/L	4											0.274 J									
PWF-2	mg/L	4											0.122 J									

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

Solids Area sampled annually in August.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

Table 5i. Nitrate Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																						
PW-21A	mg/L	10											**15.8** J					**107**		**98.8**	**64.4**	**75.8**
PW-23A	mg/L	10											0.24								0.25 U	0.25 U
PW-24A	mg/L	10	**11.1**										**16.6** J					**14.2**				**10.1**
PW-27A	mg/L	10											**42.2** J					**27.9**				**26.2**
PW-51A	mg/L	10	4.7 J										**107** J					**74.0**				**110**
PW-52A	mg/L	10	1.5 J										**21.0** J					0.250 U				
Fabrication Area																						
E-11	mg/L	10		5 U	5 U	0.24	0.21	2.6	**16.7**	0.1 U	0.031 J	0.004 J	0.085 J	2.17	0.33	0.10 U	6.93	0.250 U	**14.1**	0.250 U		0.250 U
EI-5	mg/L	10												0.069 J[3]	0.1 U	0.12	0.250 U	0.250 U	0.250 U	0.250 U		0.250 U
FW-1	mg/L	10	0.1 U										0.09 U									
FW-2	mg/L	10	1.32										3.45									
FW-3	mg/L	10	**36.3**	4.8	4.8	4.2	3.9	3.6	3.9	3.5	3.1	2.13	1.47	1.49	0.81	0.71	0.724	0.53	0.961	0.965	0.957	0.9
FW-4	mg/L	10											0.69									
FW-5	mg/L	10											**62.2**					**14.7**		**11.8**	3.41	0.703
FW-6	mg/L	10		5 U	5 U	1.81	5 U	5 U	1.83	1.48	1.59	0.895 J	1.31	1.16	0.12	0.58	0.250 U	0.250 U	0.250 U	0.250 U		0.340
FW-7	mg/L	10											0.044 J									
I-2	mg/L	10												0.1 U[3]	0.1 U	0.11	0.250 U	**13.5**	0.250 U	0.250 U		0.250 U
I-3	mg/L	10												**16.5** [3]	0.17 J	1.88	1.86	**34.3**	**16.7**	3.35		0.708
MW-01A	mg/L	10	0.1 U										0.26									
MW-02A	mg/L	10	0.1 U										0.09 J									
MW-03A	mg/L	10	0.1 U										0.1 U									0.276
MW-04A	mg/L	10	1.22										0.1 U									
PW-01A	mg/L	10	20 U										1.03 U									
PW-03A	mg/L	10	**13.1**										**19.9**					**17.5**		**71.5**		**52.5** J
PW-10	mg/L	10	0.1 U	5 U	5 U	5 U	5 U	5 U	0.489	0.205	0.126	0.926	0.36 U	0.507	0.25	0.38	0.442	0.250 U	0.250 U	0.250 U		0.250 U
PW-11	mg/L	10	**10.6**	4.8	5 U	7	6.25	5.69	6.78	4.69	5.43	1.51	3.59	4.52	2	7.08	1.18	1.04	0.912	2.05		2.59 J
PW-12	mg/L	10	0.1 U	5 U	5 U	0.42	0.068 J	5 U	0.008 U	0.1 U	0.006 J	0.1 U	0.33 U	0.28	0.48	0.34	0.322	0.25 U	1.33	0.336	0.755	0.426
PW-13	mg/L	10	**97.5**	**22**	**22**	1.44	1.02	0.99	**39.3**	**60.5**	**45.8**	**57.7**	0.85	9.53	3.39	5.67	**20.0**	6.28	9.79	**11.2**		**12.8**
PW-14	mg/L	10	0.1 U										2.78									
PW-15AR	mg/L	10	0.1 U										0.66									
PW-16A	mg/L	10	0.1 U	5 U	5 U	5 U	5 U	5 U	1.67	1.2	1.87	1.5	1.34	1.84	0.93	0.78	0.867		1.38	0.894	1.2	0.784
PW-19A	mg/L	10	1.63	5 U	5 U	5 U	5 U	5 U	3.1	2.4	2.71	2.96	2.82	1.52	1.92	3.64	2.84	2.11	2.77	4.03	3.07	3.5
PW-20A	mg/L	10	**10.1**										4.6									
PW-30A	mg/L	10	0.66										0.83									
PW-31A	mg/L	10	4.66										**13.2**					**10.7**		**13.1**		**10.7**
PW-42A	mg/L	10	0.1 U										0.09 U									
PW-45A	mg/L	10	0.1 U										0.17 U									
PW-46A	mg/L	10	0.1 U										0.26 U									
PW-68A	mg/L	10	2.33										1.45								1.48	2
PW-69A	mg/L	10	0.1 U			0.017 U	0.1 U	0.1 U	0.008 U		0.007 J	0.1 U	0.09 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U

Table 5i. Nitrate Groundwater Concentrations in 2011 to 2020

ATI Millersburg Operations, Oregon

Well	Unit	Cleanup Level	Baseline 2000	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-70AR	mg/L	10	0.1 U										0.634									
PW-71A	mg/L	10	0.12										0.12 U									
PW-72A	mg/L	10	0.1 U										0.57									
PW-73B	mg/L	10	0.1 U										0.11 U									
PW-74B	mg/L	10	0.23										0.13 U									
PW-75A	mg/L	10	0.1 U										0.65									
PW-76A	mg/L	10	0.62	5 U	5 U	5 U	5 U	5 U	0.516	0.408	0.547	0.265	0.41 U	0.64	0.31	0.31	0.276	0.344	0.561	0.351	0.275	0.341
PW-77A	mg/L	10	0.1 U	5 U	5 U	0.31	5 U	5 U	0.234	0.402	0.274	0.312	0.27 U	0.461 U	0.24	0.34	0.325	0.250 U	0.250 U	0.380	0.307	0.250 U
PW-78A	mg/L	10		5 U	5 U	0.11	5 U	5 U	0.315	0.411	0.315	0.507	0.46 U	0.319	0.49	0.42	0.561	5.21	5.77	3.65	2.06	1.47
PW-79A	mg/L	10	7.54	5 U	5 U	5 U	5 U	5 U	0.55	0.312	0.029 J	0.022 J	0.16 U	0.078 J	2.31	1.56	2.51	2.29	2.84	2.63	1.85	1.32
PW-80A	mg/L	10	4.22	5 U	5 U	5 U	5 U	5 U	0.584	1.11	0.252	0.735	0.97	0.769	0.8	0.48	0.42	0.25 U	1.31 J	0.841		
PW-81A	mg/L	10	0.1 U										0.086 J									
PW-82A	mg/L	10	9.25	6	5	6.81	6.23	5.99	4.34	2.61	2.59	3.83	3.72	3.48	2.86	2.45	2.93	1.65	3.75	5.59		3.85 J
PW-83A	mg/L	10	3.41										0.632									
PW-84AR	mg/L	10	0.65										1.35									
PW-85A	mg/L	10	1.02										3.06									
PW-86A	mg/L	10	0.1 U										0.85									
PW-87A	mg/L	10	0.1 U										0.1 U									
PW-88A	mg/L	10	0.1 U										0.1 U									
PW-89A	mg/L	10	**177**	**23**	**22**	**18**	**18**	**76.5**	**40.8**	**116**	**74.3**	**77**	**140**	**59.6** J	8.38	8.5	**21.2** J	4.49	4.78	1.55	3.11	6.33 J
PW-91A	mg/L	10	0.1 U										0.1 U									
PW-92A	mg/L	10	1.43										0.1 U									
PW-93A	mg/L	10				0.017 U	0.1 U	0.1 U	0.1 U		0.014 J	0.004 J	0.1 U	0.037 J	0.1 U	0.1 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
PW-94A	mg/L	10				0.017 U	0.1 U	0.1 U	0.1 U		0.004 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
PW-95A	mg/L	10				0.33	0.18	0.1 U	0.1 U		0.487	0.588	0.29 U	0.33	0.57	0.57	1.13	0.250 U	0.600	0.250 U	0.525	0.694
PW-98A	mg/L	10		2.4	2.4	2.65	**13.3**	**11.9**	0.1 U	1.16	5.41	**21.7**	**24.3** J	9.29	**13.9**	**10.6**	8.10	**18.3**	3.51	5.20	3.31	**17.1**
PW-99A	mg/L	10		5 U	5 U	0.97	0.96	0.94	5.9	**13.2**	6.66	0.34	2.57	6.38	1.51	1.33	1.10	0.250 U	1.65	0.823	2.7	0.856
PW-100A	mg/L	10				0.017 U	0.1 U	0.1 U	0.008 U		0.033 J	0.029 J	0.1 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U
PW-101A	mg/L	10				0.017 U	0.1 U	0.1 U	0.142		0.012 J	0.1 U	0.1 U	0.1 U								0.25 U
Solids Area																						
PW-07	mg/L	10	**14.8**		5 U		5 U		5 U		9.14		2.58			1.84		0.354		1.61		
PWF-1	mg/L	10			5 U		5 U		5 U		1.38		2.31			1.46		1.14		0.429		
PWF-2	mg/L	10			5 U		5 U		5 U		0.016		0.10 U			0.10 U		0.250 U		0.250 U		

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Initial samples were collected in fall 2016 for EI-5, I-2, and I-3.

Solids Area sampled annually in August.

10-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

Table 5j. Metal Groundwater Concentrations in 2013 to 2020

ATI Millersburg Operations, Oregon

Well	Analyte	Unit	Cleanup Level	Baseline 2000	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																			
EW-1	Arsenic	mg/L	0.01	0.202	0.0361	0.01 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.01 U	0.00065 J	0.00494	0.00313 J	0.005 U	0.00234		0.00125
EW-2	Arsenic	mg/L	0.01	0.203	0.0319			0.05 U	0.05 U	0.00454 J	0.025 U	0.005 U	0.0025 U	0.00444	0.00327	0.005 U	0.00338	0.0019	0.0012
EW-3	Arsenic	mg/L	0.01	0.056	0.0253	0.01 U	0.00085 J	0.01 U	0.0012 J	0.05 U	0.025 U	0.00051 J	0.00027 J	0.00122	0.005 U	0.005 U	0.001 U		0.001 U
PW-21A	Arsenic	mg/L	0.01		0.025 U	0.01 U	0.00021 J	0.01 U		0.0002 J	0.00012 J	0.00017 J	0.00053	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
PW-22A	Arsenic	mg/L	0.01	0.0105	0.0129 J	0.01 U	0.00068	0.00552 J	0.00457	0.00483	0.00907	0.00444	0.00409	0.00417	0.0044	0.00368	0.00442		0.00435
PW-23A	Arsenic	mg/L	0.01	0.124	0.00999 J	0.01 U	0.00613	0.0152	0.0327	0.00854	0.00702	0.00653	0.00584	0.0049	0.00486	0.00446	0.00568	0.00496	0.00427
PW-24A	Arsenic	mg/L	0.01		0.00665 J	0.01 U	0.00059	0.01 U	0.00082	0.00067	0.00057	0.00032 J	0.00048 J	0.001 U	0.001 U	0.001 U	0.001 U		0.001 U
PW-27A	Arsenic	mg/L	0.01		0.0124 J	0.01 U	0.00044	0.01 U	0.00038 J	0.00046 J	0.00094	0.00027 J	0.0004 J	0.001 U	0.001 U	0.001 U	0.001 U		0.001 U
PW-28A	Arsenic	mg/L	0.01	0.239	0.11	0.0109 J	0.05 U	0.05 U	0.05 J	0.05 U	0.05 U	0.00049 J	0.00079 J	0.0027	0.009	0.00273 J	0.00357	0.00234	0.005 UJ
PW-50A	Arsenic	mg/L	0.01	0.107	0.0178 J	0.01 U	0.00113 J	0.00075 J	0.001 J	0.05 U	0.025 U	0.00089 J	0.00062 J	0.00153	0.00274 J	0.01 U	0.00235		0.005 UJ
PW-51A	Arsenic	mg/L	0.01	0.044	0.013 J	0.01 U	0.00062 J	0.05 U	0.00122	0.00038 J	0.00064	0.0011	0.00369	0.00148	0.00207	0.00094 J	0.00571		0.0011
PW-52A	Arsenic	mg/L	0.01	0.099	0.0286	0.01 U	0.05 U	0.05 U	0.0175 J	0.05 U	0.025 U	0.01 U	0.025 U	0.00554	0.00889	0.01 U	0.00627		0.00212
PW-96A	Arsenic	mg/L	0.01							0.0174						0.0138			0.0139
EW-1	Beryllium	mg/L	0.001							0.0161 J					0.0129		0.0102		0.0113 J
EW-2	Beryllium	mg/L	0.001							0.0107 J					0.00975		0.00951	0.00849	0.00875 J
PW-21A	Beryllium	mg/L	0.001							3.5E-05 J								0.00075	
PW-23A	Beryllium	mg/L	0.001							0.00012 J								0.00011 J	0.00013 J
PW-28A	Beryllium	mg/L	0.001							0.00375 J						0.00913	0.00902	0.00916	0.00826
PW-50A	Beryllium	mg/L	0.001							0.00308 J					0.00751		0.00563		0.00707
PW-52A	Beryllium	mg/L	0.001							0.02 J					0.0236		0.019		0.016 J
EW-1	Cadmium	mg/L	0.005	0.0229	0.00622	0.0033 J	0.00924	0.0109	0.0146	0.05 U	0.05 U	0.00844 J	0.00878	0.00979	0.00864	0.00647	0.00461		0.00471
EW-2	Cadmium	mg/L	0.005	0.0465	0.00446 J			0.271	0.108	0.911	0.0815	0.0546	0.0346	0.0216	0.0177	0.0113	0.00558	0.00492	0.00537
EW-3	Cadmium	mg/L	0.005	0.026	0.00113 J	0.0013 J	0.00513	0.00686 J	0.0266	0.05 U	0.025 U	0.00184 J	0.00224	0.00153	0.00159	0.0024	0.00074		0.00131
PW-21A	Cadmium	mg/L	0.005		0.005 U	0.0005 U	0.0005 U	0.01 U		0.005 U	0.0005 U	0.0005 U	0.0005	8.2E-05 J	7.7E-05 J	0.0002 U	0.0002 U		0.0002 U
PW-22A	Cadmium	mg/L	0.005	0.00025 U	0.00025 J	0.0005 U	0.0005 U	0.01 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U		0.0002 U
PW-23A	Cadmium	mg/L	0.005	0.00025 U	0.005 U	0.0005 U	0.0005 U	0.01 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
PW-24A	Cadmium	mg/L	0.005		0.005 U	0.0006 J	0.0005 U	0.01 U	0.0005 U	0.0005 U	0.00016 J	0.0005 U	0.0005 U	4.3E-05 J	4.5E-05 J	0.0002 U	0.0002 U		0.0002 U
PW-27A	Cadmium	mg/L	0.005		0.005 U	0.0005 U	0.00017 J	0.01 U	0.001 U	0.00013 J	0.00019 J	3.7E-05 J	0.0005 U	6.9E-05 J	7.4E-05 J	0.00012 J	5E-05 J		0.0002 U
PW-28A	Cadmium	mg/L	0.005	0.0361	0.0217	0.0072	0.078 U	0.196	0.0655	0.05 U	0.05 U	0.00091 J	0.005 U	0.00585	0.0273	0.00494	0.00373	0.00296	0.00356
PW-50A	Cadmium	mg/L	0.005	0.025	0.00154 J	0.0005 U	0.00136 J	0.00174 J	0.0114 J	0.05 U	0.025 U	0.0447	0.0583	0.0253	0.00572	0.0134	0.00204		0.00291
PW-51A	Cadmium	mg/L	0.005	0.0127	0.00122 J	0.0005 U	0.005 U	0.01 U	0.00013 J	0.00073	0.00105	0.00115	0.00073 J	0.00112	0.00117	0.00095 J	0.00133		0.00108
PW-52A	Cadmium	mg/L	0.005	0.0171	0.00351 J	0.0006 J	0.021	0.0469	3.07	0.05 U	0.00883 J	0.0067	0.00385 J	0.00559	0.00633	0.00513	0.00315		0.00297
EW-1	Nickel	mg/L	2	3.98		0.664	0.681	0.625	0.644	0.05 U	0.634	0.786 J	0.344	0.611	0.743	0.579	0.618		0.529
EW-2	Nickel	mg/L	2	5.65				0.988	0.919	0.911	0.755	0.664 J	0.362	0.63	0.716	0.558	0.776	0.611	0.594
EW-3	Nickel	mg/L	2	2.58		0.138	0.126	0.146	0.594	0.05 U	0.212	0.0779 J	0.0912	0.119	0.161	0.218	0.147		0.121
PW-21A	Nickel	mg/L	2			0.0062 J	0.00163	0.00764		0.0005 U	0.00966	0.00273	0.00915	0.00542	0.00983	0.00261	0.014	0.00789	0.0136
PW-22A	Nickel	mg/L	2	0.2 U		0.0025 U	0.00084	0.00971 J	0.00136	0.0005 U	0.00064	0.00066	0.0008	0.001 U	0.001 U	0.001 U	0.001 U		0.002 U
PW-23A	Nickel	mg/L	2	0.2 U		0.0025 U	0.00084	0.00071 J	0.0007	0.0005 U	0.00072	0.00033 I	0.00042 J	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.002 U
PW-24A	Nickel	mg/L	2	0.2 U		0.0064 J	0.00754	0.00246 J	0.0048	0.0005 U	0.00386	0.00315	0.00504	0.00125	0.00284	0.00164	0.00237		0.00144 J
PW-27A	Nickel	mg/L	2			0.0039 J	0.00917	0.00769 J	0.00576	0.00013 J	0.0121	0.00468	0.00492	0.00212	0.00098 J	0.00222	0.0016		0.0013 J
PW-28A	Nickel	mg/L	2	6.25		1.5	0.922	1.37	1.21	0.05 U	0.805	0.637 J	0.55	0.875	0.0309	1.11	1.06	0.914	1.01

Table 5j. Metal Groundwater Concentrations in 2013 to 2020

ATI Millersburg Operations, Oregon

Well	Analyte	Unit	Cleanup Level	Baseline 2000	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
PW-50A	Nickel	mg/L	2	**3**		0.109	0.162	0.0648	0.254 J	0.05 U	0.155	0.0632 J	0.0549	0.068	0.497	0.0831	0.34		0.428
PW-51A	Nickel	mg/L	2	2 U		0.0287	0.075	0.0368	0.0824	0.00073	0.141	0.131	0.0879	0.0978	0.069	0.0945	0.0763		0.117
PW-52A	Nickel	mg/L	2	**3.54**		1.17	1.14	1.04	0.907	0.05 U	0.857	0.899 J	0.685	0.689	0.964	0.718	0.869		0.672
Fabrication Area																			
FW-7	Arsenic	mg/L	0.01							0.00493									0.0025
MW-02A	Arsenic	mg/L	0.01							**0.0199**					**0.0215**		**0.0200**		**0.0204**
MW-03A	Arsenic	mg/L	0.01							**0.0114**					**0.0103**		**0.0111**		0.00857
PW-69A	Arsenic	mg/L	0.01							**0.0198**					**0.0201**		**0.0221**		**0.0199**
PW-72A	Arsenic	mg/L	0.01																0.001 U
PW-93A	Arsenic	mg/L	0.01							**0.0232**					**0.0235**		**0.0250**		**0.0265**
PW-94A	Arsenic	mg/L	0.01							**0.0127**					**0.0119**		**0.0254**		**0.0481**
Solids Area																			
PWB-1	Arsenic	mg/L	0.01							**0.0101**					**0.0113**		**0.0114**		**0.0101**
PWB-2	Arsenic	mg/L	0.01							**0.0142**					**0.0161**		**0.0133**		**0.0121**
PW-18B	Arsenic	mg/L	0.01							7.8E-05 J									0.001 U
PWD-1	Arsenic	mg/L	0.01							0.00282									0.00302
PWE-1	Arsenic	mg/L	0.01							**0.0103**					**0.0109**		**0.0102**		0.0091

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

Solids Area sampled annually in August.

8-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

Table 5k. Miscellaneous Constituent Groundwater Concentrations in 2013 to 2020

ATI Millersburg Operations, Oregon

Well	Analyte	Unit	Cleanup Level	Baseline 2000	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Extraction Area																			
EW-3	Pentachlorophenol	µg/L	1							4.08 J					1.7		1.32		1.45
PW-22A	Pentachlorophenol	µg/L	1							4.75 U									0.2 U
PW-23A	Pentachlorophenol	µg/L	1							4.77 U								0.202 U	0.113 J
PW-50A	Pentachlorophenol	µg/L	1							30.4					17.5		11.3		13 UJ
PW-21A	MIBK	µg/L	-							0.5 U								10 U	10 U
PW-22A	MIBK	µg/L	-							0.5 U		0.5 U							10 U
EW-1	Radium-226	pCi/L	5 [3]	51	1.1	0.72	0.9	1.1	1.8	0.58	0.52	1.1	0.71	0.92	0.67	0.6	0.48		0.8 J
EW-2	Radium-226	pCi/L	5 [3]	68	8.2			14	10.6	6.3	7.7	7.6	10	4.7	3.3	3.8	6.4	3	4.6
EW-3	Radium-226	pCi/L	5 [3]	6.2	0.2	0.14	0.16	0.48	2.2	0.18	0.09	0.18	0.43	0.06	0.05	0.21	0.2		-0.03 UJ
PW-21A	Radium-226	pCi/L	5 [3]		0.04 U	0.46	0.43	1.2		0.67	1.2	1.2	2.2	0.13	1.4	0.36	1.8	0.72	1.8
PW-22A	Radium-226	pCi/L	5 [3]	0.2	0.2	-0.06	0.18	0.39	0.3	0.19	0.41	0.12 J	0.13 U	0.17	0.13 J	0.2	0.25		0.03 UJ
PW-23A	Radium-226	pCi/L	5 [3]	13	0.04 U	0.1	-0.001	0.31	0.5	0.02	-0.02	0.06 J	0.04 U	0.13	0.15 J	0.06	0.32	0.33	0.24 UJ
PW-24A	Radium-226	pCi/L	5 [3]	0.1	0.06 U	0.04	0.11	0.04	0.2	0.06	0.07	0.05 J	0.13 U	0.13	0.13 J	0.09	0.23		0.09 UJ
PW-27A	Radium-226	pCi/L	5 [3]		0.2	0.09	0.03	0.62	0.3	0.08	0.1	0.2 J	0.03 U	0.13	0.13 J	0.13	0.21		0.13 UJ
PW-28A	Radium-226	pCi/L	5 [3]	69	47.5	17	21	25	35.3	8.4	11	8.3	17	19	0.53	14	15	10	12
PW-50A	Radium-226	pCi/L	5 [3]	4.5	1.8	1.2	1.7	0.67	2.1	1.3	0.74	0.44	0.5	2	1	0.4 J	0.91		0.87 J
PW-51A	Radium-226	pCi/L	5 [3]	0.5	0.1	0	0.06	0.34	0.4	0.22	0.12	0.2	0.62	0.2	0.38	0.27 J	0.72		0.13 UJ
PW-52A	Radium-226	pCi/L	5 [3]	12	1.6	0.42	1.8	1.7	3.3	0.38	0.25	0.29	0.25	0.27	0.35	0.3 J	0.52		0.25 UJ
EW-1	Radium-228	pCi/L	5 [3]	14	1.8	2.2	3.5	4.5	4	1.8	2.9	2.7	1.3	3.9	7.1	4.2	5.3		5.7
EW-2	Radium-228	pCi/L	5 [3]	150	24.4			31	17	16	23	18	14	15	19	16	18	20	9.3
EW-3	Radium-228	pCi/L	5 [3]	0	0	0.4 J	1.5	1.6	3.2	1	0.5	0.55	0.63 U	0.39	0.1	-0.05	0.29		0.82 UJ
PW-21A	Radium-228	pCi/L	5 [3]		0.2 U	2.4	-0.3	1.2		1.4	3.1	1.5	3.6	0.65	4.1	0.3	1.8	1.7	5.7 J
PW-22A	Radium-228	pCi/L	5 [3]	1.4	0.4 U	1.9	-0.2	0.45	0.7 U	0.39	0.22	0.11	-0.09 U	0.64	1.5	-0.21	0.68		0.34 UJ
PW-23A	Radium-228	pCi/L	5 [3]	2.6	0.2 U	1.4	-1	-0.3	1.4	0.45	0.34	0.08	0.23 U	0.17	1.5	-0.17	0.06	0.54	0.55 UJ
PW-24A	Radium-228	pCi/L	5 [3]	1	0.2 U	1.1	-0.07	1.4	0.7 U	-0.94	0.24	-0.2	-0.3 U	1.4	-0.79	0.37	1.2		0.4 UJ
PW-27A	Radium-228	pCi/L	5 [3]		0.6 U	3.3	-0.1	1.4	1.5	1.4	0.45	0.05	-0.21 U	0.65	1.2	0.23	0.5		0.3 UJ
PW-28A	Radium-228	pCi/L	5 [3]	140	56.5	32	34	54	42.6	13	23	15	19	27	1.4	29	31	38	32 J
PW-50A	Radium-228	pCi/L	5 [3]	44	4.4	5.3	6.8	4.7	6	3.3	4.2	2.4	2.5	7.4	9.3	4.1	4.6		14 J
PW-51A	Radium-228	pCi/L	5 [3]	1.7	0.3 U	0.05	0.55	0.77	1.5	0.42	-0.3	0.49	0.7 U	1.2	0.33	1	3.2		1.7 UJ
PW-52A	Radium-228	pCi/L	5 [3]	9.3	2.6	3	2.3	0.71	4.2	-0.02	3.2	1.9	1.6	3.7	5.1	3.2	5		3.9
Fabrication Area																			
FW-3	Pentachlorophenol	µg/L	1							2.51 J					1.80		0.752	0.763	3.2
MW-03A	Pentachlorophenol	µg/L	1							5.49 U									0.196 U
PW-01A	Pentachlorophenol	µg/L	1							4.73 U									0.156 J
PW-03A	Pentachlorophenol	µg/L	1							5.55					1.80		1.73		1.33
PW-31A	Pentachlorophenol	µg/L	1							2.61					2.27				1.98
PW-68A	Pentachlorophenol	µg/L	1							4.78 U								0.792 U	0.198 U
PW-82A	Pentachlorophenol	µg/L	1							2.59					1.00		0.314		0.575
PW-83A	Pentachlorophenol	µg/L	1							2.51					2.09		2.31		1.59 U
PW-89A	Pentachlorophenol	µg/L	1							4.75 U								0.274	0.242

Table 5k. Miscellaneous Constituent Groundwater Concentrations in 2013 to 2020

ATI Millersburg Operations, Oregon

Well	Analyte	Unit	Cleanup Level	Baseline 2000	Spring 2013	Fall 2013	Spring 2014	Fall 2014[1]	Spring 2015	Spring 2016[2]	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020
Solids Area																			
PWF-1	Cyanide	mg/L	0.2							**0.275**					**0.224**		**0.251**		**0.246**
PWF-2	Cyanide	mg/L	0.2							**0.323**					0.0957		**0.393**		**0.302**
PW-07	Radium-226	pCi/L	5 [3]			2.5 U		1.0		0.21			0.18		0.32		0.3		
PW-07	Radium-228	pCi/L	5 [3]			2.5 U		0.35		0.69			-0.11		-0.21		0.25		
PWB-3	Radium-226	pCi/L	5 [3]							**1.5**					**11**		0.65		0.49
PWB-3	Radium-228	pCi/L	5 [3]							**5.5**					**3.3**		3.5		2.2

Notes

[1] The fall 2014 monitoring event was conducted in February 2015.

[2] The spring 2016 event was a sitewide groundwater and surface water sampling event.

[3] Radium exceeds cleanup level if total of radium-226 and radium-228 exceeds 5 pCi/L.

Solids Area sampled annually in August.

8-year rolling table. Refer to past annual reports for a full record of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

µg/L = microgram per liter

J = estimated value

mg/L = milligram per liter

MIBK = methyl isobutyl ketone

pCi/L = picocurie per liter

U = not detected above reporting limit

UJ = not detected above reporting limit and estimated

Table 6. Fabrication Area Extraction Well Shutdown Performance Monitoring

ATI Millersburg Operations, Oregon

Associated Extraction Well	Well	Analyte	Unit	Cleanup Level	Fall 2019	Spring 2020	July 2020	Fall 2020	December 2020	Mann-Kendall Trend[1]
Monitoring Event (Days Post Shutdown)[2]					Baseline	Baseline	30 days	90 days	180 days	--
FW-1	FW-1	TCA	µg/L	200	5.45	8.16	0.44	0.35 J	0.40 U	--
		DCA	µg/L	3,700	9.8	103	3.09	3.64	2.78	--
		PCE	µg/L	5	0.7	0.81	0.46	0.32	0.33	--
		TCE	µg/L	5	**6.78**	2.32	**5.07**	**5.19**	4.08	--
		DCE	µg/L	7	1.36	4.44	0.39 J	0.5	0.26 J	--
		cis-DCE	µg/L	70	9.24	3.97	5.9	10.1	6.07	--
		VC	µg/L	2	0.77	**4.63**	0.92	**2.71**	**2.07**	--
		Temp.	°C	--	18.99	15.97	17.04	19.42	17.42	--
		SC	µS/cm	--	155	178	175	172	166	--
		DO	mg/L	--	0.17	4.73	0.05	0.32	0.35	--
		pH	unit	--	6.66	6.95	6.60	6.87	7.07	--
		ORP	mV	--	7.3	-14.3	97.7	34.4	-105.9	--
	PW-73B	TCA	µg/L	200	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		DCA	µg/L	3,700	1.29	1.06	0.97	1.22	1.12	--
		PCE	µg/L	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		TCE	µg/L	5	1.91	1.49	1.56	1.66	2.08	Probably Increasing
		DCE	µg/L	7	1.75	1.43	1.28	1.54	1.51	No Trend
		cis-DCE	µg/L	70	2.03	1.63	1.78	2.06	1.97	--
		VC	µg/L	2	1.49	1.08	1.29	1.28	1.24	Probably Decreasing
		Temp.	°C	--	14.31	14.33	14.91	15.10	14.09	--
		SC	µS/cm	--	202	174	207	208	211	--
		DO	mg/L	--	0.20	0.12	0.49	1.46	2.52	--
		pH	unit	--	7.79	7.12	6.88	6.85	7.15	--
		ORP	mV	--	78.4	69.6	140.7	80.4	-46.0	--
	PW-94A	TCA	µg/L	200	**233**	**476**	**389**	**262**	**322**	Probably Decreasing
		DCA	µg/L	3,700	231	562	582	547	277	No Trend
		PCE	µg/L	5	2.7	4.0 U	2.0 U	4.0 U	4.0 U	--
		TCE	µg/L	5	1.5 J	4.0 U	2.0 U	4.0 U	4.0 U	--
		DCE	µg/L	7	**80.6**	**44.2** J	**46.7**	**42**	**36.6**	Decreasing
		cis-DCE	µg/L	70	2.35	4.0 U	2.0 U	4.0 U	4.0 U	--
		VC	µg/L	2	**24.8**	**11.7**	**12**	**11.2**	**8.9**	No Trend
		Temp.	°C	--	18.95	15.6	17.81	18.84	17.51	--
		SC	µS/cm	--	437	320	346	334	297	--
		DO	mg/L	--	0.07	0.12	0.49	1.46	0.32	--
		pH	unit	--	6.69	6.79	6.58	6.78	7.14	--
		ORP	mV	--	-99.5	-123.6	-46.0	-82.2	-136.7	--

Table 6. Fabrication Area Extraction Well Shutdown Performance Monitoring

ATI Millersburg Operations, Oregon

Associated Extraction Well	Well	Analyte	Unit	Cleanup Level	Fall 2019	Spring 2020	July 2020	Fall 2020	December 2020	Mann-Kendall Trend[1]
Monitoring Event (Days Post Shutdown)[2]					Baseline	Baseline	30 days	90 days	180 days	--
FW-2	FW-2	TCA	µg/L	200	0.22 J	0.40 U	0.40 U	0.40 U	0.56	--
		DCA	µg/L	3,700	0.33 J	0.35 J	0.3 J	0.40 U	0.54	--
		PCE	µg/L	5	0.26 J	0.40 U	0.21 J	0.40 U	0.39 J	--
		TCE	µg/L	5	4.34	**8.49**	4.33	1.2	**10.7**	--
		DCE	µg/L	7	0.2 J	0.26 J	0.40 U	0.40 U	0.40 U	--
		cis-DCE	µg/L	70	7.33	37.3	7.37	2.36	8.56	--
		VC	µg/L	2	0.27 J	1.38	0.25 J	0.40 U	0.40 U	--
		Temp.	°C	--	17.26	15.06	15.80	18.10	15.79	--
		SC	µS/cm	--	141	108	135	91	149	--
		DO	mg/L	--	0.85	0.26	1.02	0.84	0.52	--
		pH	unit	--	7.29	6.46	6.23	6.18	6.66	--
		ORP	mV	--	84.6	34.5	119.9	171.4	20.9	--
	PW-88A	TCA	µg/L	200	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		DCA	µg/L	3,700	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		PCE	µg/L	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		TCE	µg/L	5	0.40 U	0.61	0.40 U	0.40 U	0.40 U	--
		DCE	µg/L	7	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		cis-DCE	µg/L	70	0.40 U	2.8	0.40 U	0.40 U	0.40 U	--
		VC	µg/L	2	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		Temp.	°C	--	17.33	15.96	16.73	17.80	16.34	--
		SC	µS/cm	--	148	134	154	167	142	--
		DO	mg/L	--	0.23	0.13	0.05	0.71	0.40	--
		pH	unit	--	7.94	6.76	6.65	6.51	6.86	--
		ORP	mV	--	0.7	-36.8	49.2	48.1	-58.1	--
	PW-89A	TCA	µg/L	200	0.321 J	0.40 U	0.40 U	0.40 U	0.40 U	--
		DCA	µg/L	3,700	7.3	5.9	5.71	4.3	4.24	--
		PCE	µg/L	5	0.666	0.73	0.76	0.65	0.68	No Trend
		TCE	µg/L	5	**19.8**	**19.7**	**21.7**	**13.1**	**14.3**	No Trend
		DCE	µg/L	7	1.8	1.73	1.6	1.09	1.14	No Trend
		cis-DCE	µg/L	70	11.1	8.84	9.65	6.1	7.72	No Trend
		VC	µg/L	2	0.375 J	0.38 J	0.35 J	0.21	0.38 J	Stable
		Temp.	°C	--	17.73	15.64	17.71	19.18	16.00	--
		SC	µS/cm	--	650	601	614	708	640	--
		DO	mg/L	--	0.26	0.19	0.23	0.31	0.35	--
		pH	unit	--	8.47	8.05	7.81	8.04	8.00	--
		ORP	mV	--	22.2	174.7	61.4	134.7	-113.6	--

Table 6. Fabrication Area Extraction Well Shutdown Performance Monitoring

ATI Millersburg Operations, Oregon

Associated Extraction Well	Well	Analyte	Unit	Cleanup Level	Fall 2019	Spring 2020	July 2020	Fall 2020	December 2020	Mann-Kendall Trend[1]
Monitoring Event (Days Post Shutdown)[2]					Baseline	Baseline	30 days	90 days	180 days	--
FW-3	FW-3	TCA	µg/L	200	0.893	119	99.2	23.5	17.5	--
		DCA	µg/L	3,700	1.48	50.8	60.6	50.5	37.8	--
		PCE	µg/L	5	0.40 U	0.88	0.84	0.48	0.55	--
		TCE	µg/L	5	0.40 U	**8.17**	**6.23**	1.16	1.29	--
		DCE	µg/L	7	0.274 J	**59.9**	**92.2**	**128**	**84.6**	--
		cis-DCE	µg/L	70	0.40 U	4.84	2.61	0.41	0.41	--
		VC	µg/L	2	0.40 U	**3.97**	**3.81**	**3.23**	**2.09**	--
		Temp.	°C	--	15.19	14.43	14.38	16.72	15.05	--
		SC	µS/cm	--	278	278	235	213	283	--
		DO	mg/L	--	9.66	1.30	0.86	0.50	0.98	--
		pH	unit	--	8.02	7.05	6.19	6.85	6.69	--
		ORP	mV	--	94.3	105.0	174.7	144.3	48.5	--
	PW-82A	TCA	µg/L	200	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		DCA	µg/L	3,700	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		PCE	µg/L	5	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		TCE	µg/L	5	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		DCE	µg/L	7	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		cis-DCE	µg/L	70	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		VC	µg/L	2	0.40 U	--	0.40 U	0.40 U	0.40 U	--
		Temp.	°C	--	17.13	--	17.69	19.94	15.57	--
		SC	µS/cm	--	347	--	271	329	353	--
		DO	mg/L	--	0.19	--	0.10	0.42	0.77	--
		pH	unit	--	6.35	--	6.41	6.77	6.72	--
		ORP	mV	--	186.2	--	124.8	127.4	12.8	--
	PW-99A	TCA	µg/L	200	13.2	19	8.12	25.9	5.38	Decreasing
		DCA	µg/L	3,700	17.2	27.8	16.5	52.9	11.2	--
		PCE	µg/L	5	1.0 U	0.39 J	0.80 U	0.68	0.40 U	--
		TCE	µg/L	5	0.60 J	0.79	0.44 J	1.26	0.40 U	No Trend
		DCE	µg/L	7	**139**	**174**	**104**	**247**	**69.7**	Probably Decreasing
		cis-DCE	µg/L	70	1.0 U	0.40 U	0.80 U	0.80 U	0.40 U	--
		VC	µg/L	2	0.6 J	1.06	0.54 J	1.06	0.40 U	Stable
		Temp.	°C	--	17.35	13.31	15.23	17.32	14.83	--
		SC	µS/cm	--	332	211	349	351	342	--
		DO	mg/L	--	1.95	3.62	1.00	1.27	1.68	--
		pH	unit	--	6.99	6.30	6.23	6.67	6.60	--
		ORP	mV	--	104.5	263.4	163.0	130.0	35.5	--

Table 6. Fabrication Area Extraction Well Shutdown Performance Monitoring

ATI Millersburg Operations, Oregon

Associated Extraction Well	Well	Analyte	Unit	Cleanup Level	Fall 2019	Spring 2020	July 2020	Fall 2020	December 2020	Mann-Kendall Trend[1]
Monitoring Event (Days Post Shutdown)[2]					Baseline	Baseline	30 days	90 days	180 days	--
FW-4	FW-4	TCA	µg/L	200	172	158	**217**	**360**	140	--
		DCA	µg/L	3,700	5.81	5.85	6.55	10.5	5.99	--
		PCE	µg/L	5	0.40 U	2.0 U	2.0 U	0.45	0.40 U	--
		TCE	µg/L	5	0.643	2.0 U	2.0 U	0.86	0.258 J	--
		DCE	µg/L	7	**11**	**9.05**	**11.8**	**19.9**	**9.32**	--
		cis-DCE	µg/L	70	0.864	2.0 U	2.0 U	0.53	0.304 J	--
		VC	µg/L	2	0.299 J	2.0 U	2.0 U	0.40 U	0.40 U	--
		Temp.	°C	--	16.93	14.02	17.48	20.40	15.79	--
		SC	µS/cm	--	210	185	169	203	167	--
		DO	mg/L	--	3.23	4.95	0.85	0.34	0.20	--
		pH	unit	--	6.96	6.60	6.28	6.13	6.46	--
		ORP	mV	--	105.4	146.9	141.8	157.9	-29.1	--
	PW-91A	TCA	µg/L	200	1.14	4.08	2.72	0.85	1.79	--
		DCA	µg/L	3,700	0.816	3.07	2.8	1.64	2.14	--
		PCE	µg/L	5	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		TCE	µg/L	5	0.40 U	0.40 U	0.40 U	0.40 U	0.29 J	--
		DCE	µg/L	7	1.86	1.34	1.16	1.17	1.63	Probably Decreasing
		cis-DCE	µg/L	70	0.286 J	0.55	0.46	0.33 J	0.51	--
		VC	µg/L	2	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	--
		Temp.	°C	--	17.84	14.90	16.13	18.20	16.94	--
		SC	µS/cm	--	347	322	339	337	350	--
		DO	mg/L	--	0.12	0.14	0.01	0.73	0.38	--
		pH	unit	--	7.58	6.59	6.39	6.36	6.71	--
		ORP	mV	--	10.7	-12.2	70.2	57.9	-11.2	--

Notes

[1] Mann-Kendall confidence level of 95% was calculated based on detected results in monitoring wells within an order of magnitude of the cleanup leavel. Trend options consist of no trend, stable, (probably) increasing, or (probably) decreasing. Data from fall 2017 and fall 2018 (see Table 5) were used in the Mann-Kendall trend analysis, as well as the data provided in this table. The analysis was run only if 4 or more detected results were available.

[2] Extraction Wells FW-1, FW-2, FW-3, and FW-4 were shut down on June 9, 2020.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

– = not sampled/not analyzed for trend

°C = degree Celsius
µg/L = microgram per liter
µS/cm = microsiemens per centimeter
cis-DCE = cis-1,2-dichloroethene
DCA = 1,1-dichloroethane
DCE = 1,1-dichloroethene
DO = dissolved oxygen
J = estimated value
mg/L = milligram per liter
mV = millivolt
ORP = oxidation-reduction potential
PCE = tetrachloroethene
SC = specific conductivity
Temp. = temperature
TCA = 1,1,1-trichloroethane
TCE = trichloroethene
U = not detected above reporting limit
VC = vinyl chloride

Table 7a. Spring Monitoring Event Schedule Summary in 2020

ATI Millersburg Operations, Oregon

Sample Location	Water Levels	Field Parameters	CVOCs	Ammonia[1]	Chloride	Fluoride	Nitrate	Total Metals	Radium-226/228	TDS	EISB MNA	Other
Extraction Area												
EW-2		x		x	x	x		As, Cd, Ni, Be	x	x		
PW-21A	x	x	VC, MIBK	x	x	x	x	As, Be, Ni	x	x		
PW-23A	x	x		x	x	x	x	As, Cd, Ni, Be	x	x		PCP
PW-28A	x	x		x	x	x		As, Cd, Ni, Be	x	x		
Fabrication Area												
FW-1, FW-4		x	x									
FW-3		x	x			x	x					PCP
FW-5		x	x	x		x	x					
FW-2, MW-01A, PW-30A, PW-72A, PW-73B, PW-75A, PW-88A, PW-91A	x	x	x									
PW-89A	x	x	x	x		x	x					PCP
PW-19A	x	x	x			x	x					
PW-77A, PW-78A	x	x	x			x	x				EISB	
PW-12, PW-16A, PW-76A, PW-79A, PW-98A, PW-99A	x	x	x			x	x				MNA	
PW-69A, PW-94A, PW-95A	x	x	x			x					EISB	TOC
PW-68A	x	x	x				x					PCP
PW-93A, PW-100A	x	x	x			x					EISB	TOC
Surface Water												
MC-D, MC-M, MC-U		x	x			x	x					
TC-D, TC-U		x	x	x								

Table 7a. Spring Monitoring Event Schedule Summary in 2020

ATI Millersburg Operations, Oregon

Sample Location	Water Levels	Field Parameters	CVOCs	Ammonia[1]	Chloride	Fluoride	Nitrate	Total Metals	Radium-226/228	TDS	EISB MNA	Other
Farm Ponds Area[2]												
ND, ND-1, ND-2, NS, PW-35A, PW-36A, PW-37A, PW-38A, PW-39A, PW-40A, PW-40S, PW-43A, PW-43S, PW-44A, PW-44S, PW-64A, PW-64S, PW-65A, PW-65S, PW-66A, PW-66S, PW-67A, PW-67S, WD-1, WD-2, WS	x											
PW-104S, PW-105S, PW-106S, PW-107S, PW-108A	x	x	x									

Notes

[1] Sample is analyzed for ammonia, and the result is converted to ammonium.

[2] Farm Ponds Area monitoring results submitted in a standalone technical memorandum.

Spring monitoring event occurred between April 27 and May 14, 2020, in the Extraction and Fabrication Areas. Farm Ponds Area monitoring occurred on June 18 and 19, 2020.

QC samples taken at a frequency of 5%; 2 duplicates and MS/MSD analyzed for spring monitoring event.

As = total arsenic

Be = total beryllium

Cd = total cadmium

CVOC = chlorinated volatile organic compound

EISB = enhanced in-situ bioremediation (CVOCs, nitrate, chloride, sulfate, alkalinity, methane/ethane/ethene)

Field parameters = temperature, specific conductivity, dissolved oxygen, pH, and oxidation-reduction potential

MC = Murder Creek

MIBK = methyl isobutyl ketone

MNA = monitored natural attenuation parameters (CVOCs, nitrate, chloride, sulfate, alkalinity)

Ni = total nickel

PCP = pentachlorophenol

TC = Truax Creek

TDS = total dissolved solids

TOC = total organic carbon

VC = vinyl chloride

x = analyzed

Table 7b. Fall Monitoring Event Schedule Summary in 2020

ATI Millersburg Operations, Oregon

Sample Location	Water Levels	Field Parameters	CVOCs	Ammonia[1]	Chloride	Fluoride	Nitrate	Total Metals	Radium-226/228	TDS	EISB MNA	Other
Extraction Area												
EW-4, EW-6, PW-25A, PW-26A, PW-29A, PW-47A, PW-48A, PW-49A, PW-97A	x											
EW-1	x			x	x	x		As, Cd, Ni, Be	x	x		
EW-2				x	x	x		As, Cd, Ni, Be	x	x		
EW-3	x			x	x	x		As, Cd, Ni	x	x		PCP
PW-21A	x	x	VC, MIBK	x	x	x	x	As, Cd, Ni	x	x		
PW-22A	x	x	VC, MIBK	x	x	x		As, Cd, Ni	x	x		PCP
PW-23A	x	x		x	x	x	x	As, Cd, Ni, Be	x	x		PCP
PW-24A, PW-27A, PW-51A	x	x		x	x	x	x	As, Cd, Ni	x	x		
PW-28A, PW-52A	x	x		x	x	x		As, Cd, Ni, Be	x	x		
PW-50A	x	x		x	x	x		As, Cd, Ni, Be	x	x		PCP
PW-96A	x	x	x					As				
Fabrication Area												
MW-05A, MW-06A, MW-07A, MW-08A, MW-09A, MW-10A, MW-11A, PW-15AR, PW-20A, PW-32A, PW-33A, PW-34A, PW-73A, PW-74A, PZ-01A	x											

Table 7b. Fall Monitoring Event Schedule Summary in 2020

ATI Millersburg Operations, Oregon

Sample Location	Water Levels	Field Parameters	CVOCs	Ammonia[1]	Chloride	Fluoride	Nitrate	Total Metals	Radium-226/228	TDS	EISB MNA	Other
FW-1, FW-2, FW-4, MW-01A, MW-04A, PW-30A, PW-42A, PW-45A, PW-46A, PW-70AR, PW-71A, PW-73B, PW-74B, PW-75A, PW-80A, PW-81A, PW-84AR, PW-85A, PW-86A, PW-87A, PW-88A, PW-91A, PW-92A	x	x	x									
PW-01A, PW-83A	x	x	x	x								PCP
FW-5	x	x	x	x		x	x					
E-11, EI-5, I-2, I-3, PW-13, PW-77A, PW-78A	x	x	x			x	x				EISB	
PW-89A	x	x	x	x		x	x					PCP
PW-03A	x	x	x	x			x					PCP
TMW-5	x	x	x			x	x	As, Be			EISB	
TMW-3	x	x	x			x	x	As, Be				
FW-6, PW-11, PW-12, PW-16A, PW-76A, PW-79A, PW-98A, PW-99A	x	x	x			x	x				MNA	
FW-3, PW-82A	x	x	x			x	x					PCP
PW-19A	x	x	x			x	x					
PW-69A, PW-94A	x	x	x			x		As			EISB	TOC
PW-95A	x	x	x			x					EISB	TOC
PW-10	x	x	x			x						
MW-03A	x	x	x				x	As				PCP
PW-31A, PW-68A	x	x	x				x					PCP

Table 7b. Fall Monitoring Event Schedule Summary in 2020

ATI Millersburg Operations, Oregon

Sample Location	Water Levels	Field Parameters	CVOCs	Ammonia[1]	Chloride	Fluoride	Nitrate	Total Metals	Radium-226/228	TDS	EISB MNA	Other
PW-93A	x	x	x			x		As			EISB	TOC
FW-7, MW-02A, PW-72A	x	x	x					As				
PW-100A	x	x	x			x					EISB	TOC
PW-101A	x	x	x			x					EISB	
Solids Area												
PW-07, PWC-1, PWC-2	x											
PW-09, PW-17B, PWA-1, PWA-2, PWD-2	x	x			x							
PWB-3	x	x			x	x			x			
PWB-1, PWB-2 PW-18B, PWD-1	x	x			x			As				
PWE-1	x	x			x	x						
PWE-2	x	x			x	x		As				
PWF-1, PWF-2	x	x			x			Cn				
Surface Water												
MC-D, MC-M, MC-U		x	x			x	x					
TC-D, TC-U		x	x	x								

Notes

Fall monitoring event occurred between September 1 and 30, 2020, in the Fabrication and Extraction Areas. Solids Area monitoring between August 4 and 6, 2020.

[1] Sample is analyzed for ammonia, and the result is converted to ammonium.

As = arsenic

Be = beryllium

Cd = cadmium

Cn = cyanide

CVOC = chlorinated volatile organic compound

EISB = enhanced in-situ bioremediation (CVOCs, nitrate, chloride, sulfate, alkalinity, methane/ethane/ethene)

Field parameters = temperature, specific conductivity, dissolved oxygen, pH, and oxidation-reduction potential

MNA = monitored natural attenuation parameters (CVOCs, nitrate, chloride, sulfate, alkalinity)

MC = Murder Creek

MIBK = methyl isobutyl ketone

Ni = nickel

PCP = pentachlorophenol

TC = Truax Creek

TDS = total dissolved solids

TOC = total organic carbon

VC = vinyl chloride

X = analyzed

Table 8. Groundwater Elevations in 2020

ATI Millersburg Operations, Oregon

Well Information		Spring			Fall		
Well	TOC Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)
Extraction Area (Biannual)							
EW-1	209.77	--	--	--	9/1/2020	14.7	195.07
EW-3	210.18	--	--	--	9/1/2020	14.41	195.77
EW-4	210.00	--	--	--	9/1/2020	23.02	186.98
EW-5	208.92	--	--	--	NM[1]	NM[1]	NM[1]
EW-6	208.70	--	--	--	9/1/2020	21.18	187.52
PW-21A	209.36	4/27/2020	22.73	186.63	9/1/2020	23.6	185.76
PW-22A	210.37	--	--	--	9/1/2020	19.53	190.84
PW-23A	212.02	4/28/2020	21.44	190.58	9/1/2020	21.74	190.28
PW-24A	212.05	--	--	--	9/1/2020	21.88	190.17
PW-25A	211.88	--	--	--	9/1/2020	23.68	188.20
PW-26A	213.18	--	--	--	9/1/2020	26.44	186.74
PW-27A	210.99	--	--	--	9/1/2020	16.91	194.08
PW-28A	209.13	4/27/2020	14.53	194.60	9/1/2020	15.81	193.32
PW-29A	214.22	--	--	--	9/1/2020	21.7	192.52
PW-47A	210.79	--	--	--	9/1/2020	25.72	185.07
PW-48A	214.50	--	--	--	9/1/2020	19.51	194.99
PW-49A	216.98	--	--	--	9/1/2020	30.76	186.22
PW-50A	209.08	--	--	--	9/1/2020	16.63	192.45
PW-51A	209.27	--	--	--	9/1/2020	16.08	193.19
PW-52A	210.36	--	--	--	9/1/2020	16.02	194.34
PW-57A	210.87	--	--	--	NM[1]	NM[1]	NM[1]
PW-96A	210.54	--	--	--	9/1/2020	22.7	187.84
PW-97A	210.24	--	--	--	9/1/2020	24.81	185.43
Fabrication Area (Biannual)							
E-11	208.23	--	--	--	9/2/2020	7.09	201.14
EI-5	208.70	--	--	--	9/2/2020	6.69	202.01
FW-1	210.26	--	--	--	9/2/2020	6.91	203.35
FW-2	208.35	5/11/2020	10.01	198.34	9/1/2020	10.6	197.75
FW-3	206.66	--	--	--	9/1/2020	6.88	199.78
FW-4	195.37	--	--	--	9/1/2020	3.67	191.70
FW-5	201.86	--	--	--	9/1/2020	10.27	191.59
FW-6	207.51	--	--	--	9/1/2020	11.48	196.03
FW-7	201.60	--	--	--	9/1/2020	11.13	190.47
I-2	207.35	--	--	--	9/2/2020	5.11	202.24
I-3	208.41	--	--	--	9/2/2020	5.12	203.29
MW-01A	205.20	5/13/2020	11.74	193.46	9/1/2020	12.5	192.70
MW-02A	204.83	--	--	--	9/1/2020	8.85	195.98
MW-03A	207.59	--	--	--	9/1/2020	7.35	200.24

Table 8. Groundwater Elevations in 2020

ATI Millersburg Operations, Oregon

Well Information		Spring			Fall		
Well	TOC Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)
MW-04A	204.62	--	--	--	9/1/2020	9.25	195.37
MW-05A	213.98	--	--	--	9/1/2020	16.12	197.86
MW-06A	211.64	--	--	--	9/1/2020	14.04	197.60
MW-07A	200.49	--	--	--	9/1/2020	9.43	191.06
MW-08A	201.23	--	--	--	9/1/2020	9.08	192.15
MW-09A	210.00	--	--	--	9/1/2020	13.39	196.61
MW-10A	212.49	--	--	--	9/1/2020	16.3	196.19
MW-11A	211.02	--	--	--	9/1/2020	18.53	192.49
PW-01A	211.44	--	--	--	9/1/2020	15.83	195.61
PW-03A	210.50	--	--	--	9/1/2020	16.47	194.03
PW-10	211.53	--	--	--	9/1/2020	10.72	200.81
PW-11	208.53	--	--	--	9/2/2020	7.25	201.28
PW-12	209.97	4/30/2020	16.77	193.20	9/1/2020	9.19	200.78
PW-13	207.78	--	--	--	9/2/2020	6.45	201.33
PW-14	209.52	--	--	--	9/1/2020	7.61	201.91
PW-15AR	206.50	--	--	--	9/1/2020	20.15	186.35
PW-16A	209.97	4/30/2020	17.74	192.23	9/1/2020	18.18	191.79
PW-19A	210.43	4/30/2020	14.05	196.38	9/1/2020	15.78	194.65
PW-20A	210.42	--	--	--	9/1/2020	17.61	192.81
PW-30A	199.75	5/11/2020	5.77	193.98	9/1/2020	5.43	194.32
PW-31A	214.71	--	--	--	9/2/2020	11.15	203.56
PW-32A	212.56	--	--	--	9/1/2020	10.08	202.48
PW-33A	212.40	--	--	--	9/1/2020	8.73	203.67
PW-34A	210.73	--	--	--	9/1/2020	10.63	200.10
PW-42A	209.98	--	--	--	9/1/2020	9.82	200.16
PW-45A	211.69	--	--	--	9/2/2020	13.12	198.57
PW-46A	209.61	--	--	--	9/1/2020	14.71	194.90
PW-68A	211.63	5/14/2020	7.74	203.89	9/2/2020	9.62	202.01
PW-69A	209.70	4/29/2020	4.65	205.05	9/2/2020	5.95	203.75
PW-70AR	210.57	--	--	--	9/2/2020	8.36	202.21
PW-71A	210.06	--	--	--	9/2/2020	7.72	202.34
PW-72A	210.13	5/14/2020	4.92	205.21	9/2/2020	5.85	204.28
PW-73A	210.86	--	--	--	9/1/2020	4.52	206.34
PW-73B	211.23	5/11/2020	12.72	198.51	9/1/2020	13.14	198.09
PW-74A	209.81	--	--	--	9/1/2020	9.25	200.56
PW-74B	209.64	--	--	--	9/1/2020	17.1	192.54
PW-75A	197.57	5/11/2020	6.88	190.69	9/1/2020	7.55	190.02
PW-76A	207.94	5/14/2020	16.63	191.31	9/1/2020	16.56	191.38
PW-77A	209.03	5/13/2020	18.42	190.61	9/1/2020	18.6	190.43
PW-78A	208.96	5/13/2020	18.81	190.15	9/1/2020	19.21	189.75

Table 8. Groundwater Elevations in 2020

ATI Millersburg Operations, Oregon

Well Information		Spring			Fall		
Well	TOC Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)	Date	DTW (ft bgs)	GW Elev (ft amsl)
PW-79A	198.28	5/13/2020	7.74	190.54	9/1/2020	7.91	190.37
PW-80A	211.03	--	--	--	9/1/2020	13.31	197.72
PW-81A	208.73	--	--	--	9/1/2020	6.87	201.86
PW-82A	208.64	--	--	--	9/1/2020	9.1	199.54
PW-83A	210.28	--	--	--	9/1/2020	14.46	195.82
PW-84AR	209.70	--	--	--	9/1/2020	11.29	198.41
PW-85A	212.85	--	--	--	9/1/2020	14.89	197.96
PW-86A	208.91	--	--	--	9/1/2020	10.69	198.22
PW-87A	211.49	--	--	--	9/1/2020	10.92	200.57
PW-88A	211.89	5/11/2020	16.96	194.93	9/1/2020	17	194.89
PW-89A	202.40	4/30/2020	10.34	192.06	9/1/2020	10.49	191.91
PW-91A	198.19	5/11/2020	6.85	191.34	9/1/2020	7.67	190.52
PW-92A	208.77	--	--	--	9/1/2020	11.29	197.48
PW-93A	209.95	4/29/2020	6.01	203.94	9/2/2020	5.34	204.61
PW-94A	210.03	4/29/2020	5.85	204.18	9/2/2020	6.67	203.36
PW-95A	210.81	4/29/2020	7.36	203.45	9/2/2020	7.13	203.68
PW-98A	209.15	5/14/2020	8.15	201.00	9/2/2020	8.47	200.68
PW-99A	207.44	5/14/2020	6.95	200.49	9/2/2020	5.98	201.46
PW-100A	210.34	4/28/2020	6.75	203.59	9/2/2020	8.14	202.20
PW-101A	210.67	--	--	--	9/2/2020	6.47	204.20
PZ-01A	210.83	--	--	--	9/1/2020	10.01	200.82
Solids Area [2]							
PW-07	205.80	8/4/2020	12.99	187.14	9/2/2020	13.13	192.67
PW-09	200.13	8/4/2020	dry	--	9/2/2020	22.45	177.68
PW-17B	184.14	8/4/2020	11.01	173.13	9/2/2020	10.86	173.28
PW-18B	188.24	8/4/2020	20.25	167.99	9/2/2020	20.37	167.87
PWA-1	192.82	8/4/2020	16.40	176.42	9/2/2020	16.31	176.51
PWA-2	193.04	8/4/2020	15.97	177.07	9/2/2020	15.82	177.22
PWB-1	182.90	8/4/2020	5.64	177.26	9/2/2020	5.39	177.51
PWB-2	182.94	8/4/2020	5.80	177.14	9/2/2020	5.66	177.28
PWB-3	182.86	8/4/2020	5.66	177.20	9/2/2020	5.48	177.38
PWC-1	202.69	8/4/2020	16.19	186.50	9/2/2020	17.03	185.66
PWC-2	202.65	8/4/2020	16.20	186.45	9/2/2020	17.06	185.59
PWD-1	192.51	8/4/2020	22.38	170.13	9/2/2020	22.39	170.12
PWD-2	192.49	8/4/2020	19.41	173.08	9/2/2020	19.32	173.17
PWE-1	190.50	8/4/2020	13.16	177.34	9/2/2020	12.89	177.61
PWE-2	190.53	8/4/2020	13.22	177.31	9/2/2020	13.04	177.49
PWF-1	204.76	8/4/2020	19.96	184.80	9/2/2020	20.03	184.73
PWF-2	204.68	8/4/2020	19.87	184.81	9/2/2020	19.95	184.73

Table 8. Groundwater Elevations in 2020

ATI Millersburg Operations, Oregon

Notes

[1] Unable to gain access at EW-5 and PW-57A because the manhole covers were partially paved over during nearby construction.

[2] Water levels measured prior to the annual monitoring event in August. Additional water level measurements were collected in September to coincide with the Fabrication and Extraction Areas fall monitoring event.

-- = not collected as indicated in the 2020 Monitoring Schedule (GSI, 2020).

DTW = depth to water

ft amsl = feet above mean sea level

ft bgs = feet below ground surface

GW Elev = groundwater elevation

NM = not measured

TOC Elev = top of casing elevation

Table 9. Field Parameters in 2020

ATI Millersburg Operations, Oregon

Well	Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Extraction Area (Biannual)										
EW-1	--	NM	--	NM	--	NM	--	NM	--	NM
EW-2	17.17	NM	5,895	NM	4.72	NM	3.02	NM	500.1	NM
EW-3	--	NM	--	NM	--	NM	--	NM	--	NM
PW-21A	15.03	20.2	1,029	1,447	4.99	1.24	6.02	5.59	168.2	104.1
PW-22A	--	15.3	--	1,251	--	0.37	--	6.70	--	-2.1
PW-23A	17.58	18.3	474	468	0.29	1.02	7.06	6.91	30.5	87.9
PW-24A	--	16.8	--	1,261	--	0.13	--	6.31	--	131.0
PW-27A	--	16.4	--	1,826	--	0.20	--	5.94	--	132.5
PW-28A	16.4	17.6	6,479	10,913	0.53	0.14	3.71	3.19	295.8	236.4
PW-50A	--	16.7	--	4,440	--	0.62	--	3.43	--	257.2
PW-51A	--	17.6	--	4,415	--	0.32	--	6.22	--	122.4
PW-52A	--	17.6	--	5,507	--	0.22	--	3.41	--	260.9
PW-96A	--	19.1	--	603	--	0.44	--	6.58	--	-33.3
Fabrication Area (Biannual)										
E-11	--	20.24	--	582	--	1.21	--	6.80	--	98.4
EI-5	--	18.9	--	1,339	--	0.56	--	6.56	--	-74.7
FW-1	15.97	19.42	178	172	4.73	0.32	6.95	6.87	-14.3	34.4
FW-2	15.06	18.1	108	91	0.26	0.84	6.46	6.18	34.5	171.4
FW-3	14.43	16.72	278	213	11.30	0.50	7.05	6.85	105.0	144.3
FW-4	14.02	20.4	185	203	4.95	0.34	6.60	6.13	146.9	157.9
FW-5	16.57	17.79	1,391	1,860	4.81	5.03	6.98	7.10	213.5	116.0
FW-6	--	16.9	--	422	--	2.31	--	6.54	--	110.8
FW-7	--	13.92	--	324	--	0.55	--	6.77	--	0.5
I-2	--	17.6	--	1,422	--	0.48	--	6.54	--	-80.3
I-3	--	21.4	--	195	--	1.34	--	8.08	--	36.5
MW-01A	12.03	14.49	268	315	0.73	0.85	6.34	6.59	118.5	87.4
MW-02A	--	15.93	--	348	--	0.38	--	7.08	--	-103.2
MW-03A	--	14.32	--	446	--	0.43	--	6.87	--	-113.7
MW-04A	--	16.32	--	347	--	0.49	--	6.95	--	78.9
PW-01A	--	19.62	--	9212	--	0.44	--	6.63	--	212.8
PW-03A	--	16.68	--	3,650	--	0.51	--	6.87	--	147.0
PW-10	--	20.5	--	141	--	0.78	--	5.62	--	129.0
PW-11	--	21.88	--	120	--	0.41	--	6.29	--	155.3
PW-12	14.8	16.25	309	362	0.18	1.02	6.95	6.80	-12.1	48.2
PW-13	--	19.21	--	1,186	--	1.05	--	6.12	--	166.1
PW-16A	14.42	15.9	187	257	0.65	0.41	6.41	6.12	176.3	129.1
PW-19A	13.78	16.9	107	165	3.34	2.27	5.94	5.77	223.5	141.9
PW-30A	16.11	22.1	146	157	0.20	1.20	6.20	6.09	154.7	116.6

Table 9. Field Parameters in 2020

ATI Millersburg Operations, Oregon

Well	Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
PW-31A	--	16.71	--	261	--	0.71	--	6.24	--	198.0
PW-42A	--	18.49	--	266	--	0.33	--	7.16	--	-55.6
PW-45A	--	19.7	--	194	--	2.11	--	5.90	--	98.1
PW-46A	--	16.3	--	167	--	1.43	--	6.74	--	-38.6
PW-68A	14.35	19.26	119	160	5.01	1.85	6.50	6.45	242.9	185.5
PW-69A	15.57	19.14	323	292	0.18	0.42	6.53	6.72	-72.0	-83.4
PW-70AR	--	16.6	--	337	--	1.38	--	6.27	--	103.3
PW-71A	--	21.1	--	199	--	1.47	--	6.61	--	21.4
PW-72A	14.91	19.8	114	153	1.35	0.83	6.73	6.46	230.2	120.7
PW-73B	14.33	15.1	174	208	0.12	1.46	7.12	6.85	69.6	80.4
PW-74B	--	16	--	153	--	1.24	--	6.71	--	-50.3
PW-75A	13.69	19.4	193	244	0.14	2.74	6.27	6.09	173.7	-54.4
PW-76A	18.25	21.53	94	105	1.91	1.55	6.54	6.49	229.5	168.9
PW-77A	16.77	18.1	716	882	1.26	0.95	6.36	6.11	208.2	127.7
PW-78A	14.54	16.8	301	330	0.26	0.06	6.46	6.16	214.7	122.3
PW-79A	16.02	19.5	210	288	2.32	1.41	6.67	6.32	207.9	123.9
PW-80A	--	17.8	--	158	--	0.23	--	6.29	--	124.0
PW-81A	--	17.93	--	452	--	0.50	--	6.81	--	-60.1
PW-82A	--	19.94	--	329	--	0.42	--	6.77	--	127.4
PW-83A	--	20.85	--	582	--	0.63	--	7.15	--	136.1
PW-84AR	--	18.16	--	269	--	0.41	--	6.76	--	146.0
PW-85A	--	18.83	--	350	--	0.50	--	6.59	--	160.0
PW-86A	--	17.26	--	201	--	0.48	--	7.04	--	16.4
PW-87A	--	15.75	--	208	--	0.40	--	7.02	--	-74.9
PW-88A	15.96	17.8	134	167	0.13	0.71	6.76	6.51	-36.8	48.1
PW-89A	15.64	19.18	601	708	0.19	0.31	8.05	8.04	174.7	134.7
PW-91A	14.9	18.2	322	337	0.14	0.73	6.59	6.36	-12.2	57.9
PW-92A	--	18.66	--	205	--	0.52	--	6.83	--	122.9
PW-93A	15.72	18.77	1,047	309	0.10	0.32	6.16	6.00	-49.5	-8.8
PW-94A	15.6	18.84	320	334	0.12	0.47	6.79	6.78	-123.6	-82.2
PW-95A	15.98	18.12	248	250	0.12	0.39	6.82	6.60	-5.5	4.6
PW-98A	18.15	20.22	577	708	0.18	0.50	6.64	6.38	229.8	193.1
PW-99A	13.31	17.32	211	351	3.62	1.27	6.30	6.67	263.4	130.0
PW-100A	17.17	17.45	1,605	1,358	0.24	0.37	6.36	6.64	-93.9	-88.9
PW-101A	--	18.51	--	790	--	0.35	--	6.60	--	-62.9
TMW-3	--	18.6	--	2728	--	1.33	--	5.99	--	-31.7
TMW-5	--	18.89	--	1828	--	0.86	--	6.32	--	-54.5

Table 9. Field Parameters in 2020

ATI Millersburg Operations, Oregon

Well	Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Solids Area (Annual)										
PW-09	--	Dry	--	Dry	--	Dry	--	Dry	--	Dry
PW-17B	--	14.4	--	1,401	--	0.08	--	6.58	--	-81.9
PW-18B	--	14.5	--	321	--	4.17	--	5.68	--	173.2
PWA-1	--	15.1	--	3,475	--	0.13	--	6.65	--	-70.4
PWA-2	--	15.2	--	4,729	--	0.10	--	6.53	--	-40.0
PWB-1	--	15.27	--	1,568	--	2.63	--	6.77	--	-54.5
PWB-2	--	13.92	--	1,563	--	1.80	--	6.82	--	-82.3
PWB-3	--	14.5	--	9,112	--	0.19	--	6.40	--	-9.3
PWD-1	--	14.62	--	3,798	--	4.37	--	6.55	--	-74.0
PWD-2	--	18.51	--	4,568	--	3.51	--	6.78	--	-51.7
PWE-1	--	12.4	--	944	--	1.51	--	6.90	--	-58.2
PWE-2	--	13.7	--	1,563	--	0.16	--	6.59	--	-91.1
PWF-1	--	15.6	--	2,569	--	0.26	--	6.92	--	-54.6
PWF-2	--	15.2	--	3,762	--	0.22	--	6.81	--	-56.8
Surface Water (Biannual)										
MC-U	14.97	18.05	261	337	7.63	4.45	7.64	7.82	216.9	128.0
MC-M	14.57	18.2	226	246	8.05	3.44	7.34	7.48	154.6	47.4
MC-D	14.21	18.17	238	208	8.32	4.79	7.36	7.20	195.8	72.0
TC-U	15.19	20.9	234	297	5.80	2.33	7.40	7.16	168.6	34.1
TC-D	15.43	21	307	334	7.20	6.02	7.42	6.82	186.1	67.1

Notes

Solids Area was sampled in August.

-- = not sampled as indicated in the 2020 Monitoring Schedule (GSI, 2020).

°C = degrees Celsius

µS/cm = microsiemens per centimeter

MC = Murder Creek

mg/L = milligram per liter

mV = millivolt

NM = not measured

TC = Truax Creek

Table 10. Groundwater Exceeding Cleanup Levels in 2020

ATI Millersburg Operations, Oregon

Area	Remediation Subarea	TCA	DCA	PCE	TCE	DCE	VC	Ammonium	Arsenic	Beryllium	Cadmium	Cyanide	Fluoride	Nitrate	PCP	Radium-226/228
	Cleanup Level	200 µg/L	3,700 µg/L 1,280 µg/L[1]	5 µg/L	5 µg/L	7 µg/L	2 µg/L	250 mg/L	0.01 mg/L	0.001 mg/L	0.005 mg/L	0.2 mg/L	4 mg/L	10 mg/L	1 mg/L	5 pCi/L
Fabrication	Acid Sump Area	I-2, PW-12, PW-13, PW-98A	I-2, PW-13	PW-13, PW-98A	FW-3, PW-12, PW-13, PW-98A	E-11, EI-5, FW-3, I-2, PW-12, PW-13, PW-77A, PW-78A, PW-79A, PW-98A, PW-99A	E-11, EI-5, FW-3, I-2, PW-12, PW-13, PW-98A	–	–	–	–	–	E-11, EI-5, FW-6, I-2, PW-10, PW-13, PW-98A, PW-99A	PW-13, PW-98A	FW-3	–
	Ammonia Sulfate Storage Area	–	–	–	FW-5, PW-03A, PW-89A	PW-01A	PW-01A	PW-01A	–	–	–	–	FW-5, PW-89A	PW-03A	PW-03A	–
	Dump Master Area	FW-4, PW-30A	–	–	–	FW-4, PW-30A	–	–	–	–	–	–	–	–	–	–
	East Perimeter Area	–	–	–	–	FW-7, MW-01A, MW-02A, MW-04A	FW-7, MW-01A, MW-02A, MW-04A	–	MW-02A	–	–	–	–	–	–	–
	Former Crucible Cleaning Area	PW-69A, PW-94A, PW-95A	–	PW-69A	FW-1, PW-93A,	PW-69A, PW-93A, PW-94A, PW-95A	FW-1, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A	–	PW-69A, PW-93A, PW-94A	–	–	–	PW-69A, PW-94A, PW-95A	PW-31A	PW-31A	–
	Material Recycling Area	–	–	–	FW-2, PW-42A, PW-84AR, PW-85A, PW-86A	PW-42A, PW-84AR, PW-85A	PW-42A, PW-86A	–	–	–	–	–		–	–	–
Extraction	Feed Makeup Area	–	–	–	–	–	–	–	–	EW-1, EW-2, PW-28A, PW-50A, PW-52A	EW-2	–	EW-1, EW-2, EW-3, PW-23A, PW-28A, PW-50A, PW-52A	PW-24A, PW-27A, PW-51A	EW-3	EW-1, EW-2, PW-28A, PW-50A
	Northwest Extraction Area	–	–	–	–	–	PW-22A	–	–	–	–	–	–	PW-21A	–	PW-21A
	South Extraction Area	–	–	–	–	–	–	–	PW-96A	–	–	–	–	–	–	–
Solids	--	–	–	–	–	–	–	–	PWB-1, PWB-2	–	–	PWF-1, PWF-2	–	–	–	–

Table 10. Groundwater Exceeding Cleanup Levels in 2020

ATI Millersburg Operations, Oregon

Notes

[1] DCA cleanup level is 3,700 µg/L in the Fabrication Area and 1,280 µg/L in the Extraction Area. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

Wells analyzed for constituents listed in the Quality Assurance Project Plan for Sitewide Remedial Action Table B-1 (GSI, 2015) are presented if detected above the associated cleanup level.

Wells that exceeded the cleanup standard in the spring monitoring event and/or the fall monitoring event are listed.

µg/L = micrograms per liter

DCA = 1,1-dichloroethane

DCE = 1,1-dichloroethene

mg/L = milligram per liter

pCi/L = picocurie per liter

PCE = tetrachloroethene

PCP = pentachlorophenol

TCA = 1,1,1-trichloroethane

TCE = trichloroethene

VC = vinyl chloride

Table 11. CVOC Results in 2020

ATI Millersburg Operations, Oregon

	TCA (µg/L)		DCA (µg/L)		PCE (µg/L)		TCE (µg/L)		DCE (µg/L)		VC (µg/L)	
Cleanup Level	200		1,280 (Extraction) 3,700 (Fabrication)		5		5		7		2	
Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Extraction Area												
PW-21A											0.400 U	0.400 U
PW-22A												**17.0**
PW-96A		0.400 U		4.45		0.400 U		0.400 U		0.400 U		1.38
Fabrication Area												
E-11		50.9		29.0		0.340 J		0.570		**77**		**4.93**
EI-5		40.0 U		352		40.0 U		40.0 U		**31.0** J		**28.0** J
FW-1	8.16	0.35 J	103	3.64	0.810	0.320 J	2.23	**5.19**	4.44	0.500	**4.63**	**2.71**
FW-2	0.400 U	0.400 U	0.350 J	0.400 U	0.400 U	0.400 U	**8.49**	1.2	0.26 J	0.400 U	1.38	0.400 U
FW-3	119	23.5	50.8	50.5	0.880	0.480	**8.17**	1.160	**59.9**	**128**	**3.97**	**3.23**
FW-4	158	**360**	5.85	10.5	2.00 U	0.450	2.000 U	0.86	**9.05**	**19.9**	2.00 U	0.400 U
FW-5	0.400 U	0.400 U	4.94	5.99	1.13	0.99	**29.9**	**32.7**	2.17	3.34	1.14	1.77
FW-6		0.400 U		1.34		0.400 U		0.400 U		0.400 U		0.400 U
FW-7		0.400 U		2.29		0.400 U		0.400 U		**27.7**		**8.47**
I-2		**20,000**		**13,300**		200 UJ		200 UJ		**3,440**		**520**
I-3		0.500		0.680		0.400 U		0.400 U		5.00		0.300 J
MW-01A	0.400 U	0.400 U	11.6	11.3	0.400 U	0.400 U	0.400 U	0.400 U	**52.4**	**60.4**	**12.1**	**14.4**
MW-02A		0.400 U		4.01		0.400 U		0.400 U		**23.9**		**25.4**
MW-03A		0.400 U		0.830		0.400 U		0.400 U		5.88		1.05
MW-04A		0.400 U		0.890		0.400 U		0.400 U		**17.2**		**6.98**
PW-01A		0.400 U		3.68		0.290 J		1.27		**13.8**		**6.19**
PW-03A		0.400 U		2.22		0.380 J		**7.95**		3.34		0.400 U
PW-10		18.5		33.6		1.25		1.31 J		2.14		0.400 U
PW-11		0.940 J		0.840 J		0.400 UJ		0.400 UJ		0.53 J		0.400 UJ
PW-12	36.2	**666**	11.5	240	0.330 J	4.58	**6.85**	**56.3**	**17.4**	**185.0** J	**4.86**	**19.6**
PW-13		**10,300**		**5,310**		**6.80**		**47.6**		**1,360**		**8.80**

Table 11. CVOC Results in 2020

ATI Millersburg Operations, Oregon

	TCA (µg/L)		DCA (µg/L)		PCE (µg/L)		TCE (µg/L)		DCE (µg/L)		VC (µg/L)	
Cleanup Level	200		1,280 (Extraction) 3,700 (Fabrication)		5		5		7		2	
Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
PW-16A	0.210 J	0.36 J	0.270 J	0.370 J	0.400 U	0.400 U	0.400 U	0.400 U	0.220 J	0.280 J	0.400 U	0.400 U
PW-19A	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
PW-30A	**424**	**574**	8.00	9.80	2.00 U	2.00 UJ	2.00 U	1.05 J	**18.4**	**25.0**	2.00 U	2.00 U
PW-31A		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U
PW-42A		0.400 U		24.7		1.21		**95.7** J		**8.3**		**9.14**
PW-45A		0.400 U		1.04		0.400 U		0.400 U		4.15		1.68
PW-46A		0.400 U		0.670		0.400 U		0.750		1.09		0.390 J
PW-68A	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
PW-69A	47.2	**353**	151	460	**5.63**	**7.41**	0.870	1.040	**23.8**	**69.5**	**8.89**	**6.59**
PW-70AR		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U
PW-71A		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U
PW-72A	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
PW-73B	0.400 U	0.400 U	1.06	1.22	0.400 U	0.400 U	1.49	1.66	1.43	1.54	1.08	1.28
PW-74B		0.400 U		0.430		0.400 U		0.260 J		0.440		0.290 J
PW-75A	44.8	59.2	4.97	7.50	0.400 U	0.400 U	0.200 J	0.230 J	3.97	5.18	0.400 U	0.400 U
PW-76A	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
PW-77A	0.400 U	0.400 U	8.87	6.83	0.400 U	0.309 J	1.04	1.07 J	**11.7**	**9.18**	0.400 U	0.400 UJ
PW-78A	28.0	21.2	40.6	35.7	0.590	0.630	1.27	1.22 J	**48.8**	**37.5**	0.400 U	0.400 U
PW-79A	5.95	6.67	9.05	12.4	0.530	0.58	1.24	1.68	**7.30**	**9.84**	0.400 U	0.350 J
PW-80A		4.42		5.00		0.45		1.18		4.26		0.400 U
PW-81A		0.400 U		1.39		0.400 U		2.190		3.480		0.330 J
PW-82A		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U
PW-83A		0.400 U		0.610		0.400 U		0.400 U		1.42		0.480
PW-84AR		0.260 J		4.96		0.43		**41.8**		**11.4**		0.210 J
PW-85A		0.430		5.40		0.43		**32.6**		**10.5**		0.400 U
PW-86A		0.800 U		2.08		0.800 U		**7.88**		0.880		**4.02**

Table 11. CVOC Results in 2020

ATI Millersburg Operations, Oregon

	TCA (µg/L)		DCA (µg/L)		PCE (µg/L)		TCE (µg/L)		DCE (µg/L)		VC (µg/L)	
Cleanup Level	200		1,280 (Extraction) 3,700 (Fabrication)		5		5		7		2	
Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
PW-87A		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.220 J
PW-88A	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.610	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
PW-89A	0.400 U	0.400 U	5.90	4.30	0.730	0.650	**19.7**	**13.1**	1.73	1.09	0.380 J	0.210 J
PW-91A	4.08	0.850	3.07	1.64	0.400 U	0.400 U	0.400 U	0.400 U	1.34	1.17	0.400 U	0.400 U
PW-92A		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U		0.400 U
PW-93A	6.93	55.0 J	192	668	3.29	40 UJ	**5.29**	40 UJ	**89.6**	**46** J	**40.5**	**41**
PW-94A	**476**	**262**	562	547	4.000 U	4.00 U	4.00 U	4 U	**44.2** J	**42**	**11.7**	**11.2**
PW-95A	**271**	**324**	334	210	4 U	4.00 U	2.2 J	2.5 J	**49.9**	**65.4**	**3.20** J	**2.80** J
PW-98A	**335**	**1,970**	224	432	2.8 J	**12.7**	**22.7**	**63.3**	**494**	**1,610**	**53.8**	**61.2**
PW-99A	19.0	25.9	27.8	52.9	0.39 J	0.68 J	0.79	1.26	**174**	**247**	1.06	1.06
PW-100A	4.00 U	4.00 U	15.3	19.0 UJ	4.00 U	4.00 U	4.00 U	4.00 U	4.00 U	4.00 U	**3.50** J	**4.60**
PW-101A		0.4 U		0.500		0.400 U		0.34 J		0.2 J		0.620
Surface Water												
MC-D	1.63	3.87	0.410	0.750	0.400 U	0.400 U	0.400 U	0.400 U	0.330 J	0.430	0.400 U	0.400 U
MC-M	2.57	3.19	0.560	0.610	0.400 U	0.400 U	0.400 U	0.400 U	0.470	0.480	0.400 U	0.400 U
MC-U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
TC-D	0.400 U	0.300 J	0.400 U	0.400 UJ	0.400 U	0.400 U	0.400 U	0.270 J	0.220 J	0.340 J	0.400 U	0.300 J
TC-U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U

Notes

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

µg/L = microgram per liter
DCA = 1,1-dichloroethane
DCE = 1,1-dichloroethene
J = estimated value
PCE = tetrachloroethene
TCA = 1,1,1-trichloroethane
TCE = trichloroethene
U = not detected above reporting limit
UJ = not detected above reporting limit; however, the reported detection limit is estimated
VC = vinyl chloride

Table 12. FCCA EISB Performance Monitoring
ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Source Area Well						Injection Area Well				
			PW-93A						PW-100A				
			Baseline 5/10	Inj #2 Baseline 5/19	10/19	4/20	9/20	12/20	Baseline 8/10	Inj #2 Baseline 5/19	10/19	4/20	9/20
CVOCs													
1,1,1- TCA	µg/L	200	**11,100**	22.8	6.90	6.93	55 J	11.3	0.99	149	4.10	4 U	4 U
1,1-DCA	µg/L	3,700	2,370	59.6	928	192	668	388	5.5	333	62.6	15.3	19 UJ
1,2-DCA	µg/L	5	25 U	2.00 U	1.00 U	0.4 U	40 U	4 U	0.5 U	4.00 U	2.00 U	4 U	4 U
Chloroethane	µg/L	--	288	708	6,220	12,600	11,800	4,570 J	0.72	1,880	890	1,490	1,930
PCE	µg/L	5	**31.5**	1.05 J	**5.25**	3.29	40 UJ	5 J	**7.23**	4.20	1.60 J	4 U	4 U
TCE	µg/L	5	**16.7** J	2.00 U	2.28	**5.29**	40 UJ	2.6 J	**43**	2.80 J	2.00 U	4 U	4 U
1,1-DCE	µg/L	7	**905**	**14.7**	**26.7**	**89.6**	**46** J	19	6.09	**51.0**	1.50 J	4 U	4 U
cis-1,2-DCE	µg/L	70	31.9	2.00 U	11.7	36.9	40 UJ	4 U	**83.4**	9.30	5.80	3.7 J	5
trans-1,2-DCE	µg/L	100	25 U	2.00 U	1.00 U	0.22 J	40 U	4 U	12.2	4.00 U	2.25	4 U	2.1 J
VC	µg/L	2	**13.5** J	**3.70**	**15.4**	**40.5**	**41**	33.4	**5.18**	**23.8**	**4.40**	**3.5** J	**4.6**
Dissolved Hydrocarbon Gases													
Methane	µg/L	--	539	13,000	8,500	10,000	15,000	11,000	31.5	15,000	4,200	5,200	11,000
Ethane	µg/L	--	0.54 J	1.0 U	1.0 U	1 U	1 U	1 U	0.15 J	2.5	1.0 U	1 U	1 U
Ethene	µg/L	--	1.92	4.8	3.3	3.9	14	15	0.76 J	17	8.1	6	5.8
General Chemistry													
Chloride	mg/L	--	57	10.3	48.8	68.4	18.2	14.2	12	16.2	20.5	23.4	28.1
Nitrate	mg/L	10	5 U	0.250 U	0.250 U	0.25 U	0.25 U	0.25 U	5 U	0.250 U	0.250 U	0.25 U	0.25 U
Sulfate	mg/L	--	10 U	1.00 U	1.00 U	1 U	1 U	1 U	10 U	1.00 U	1.00 U	1 U	1 U
Alkalinity	mg/L	--	128	85.0	534	420	123	109	112	154.0	753	780	732
Total Organic Carbon													
Total Organic Carbon	mg/L	--	5	NA	461	154	20.3	11.5	13	NA	369	29	42.7
Metals													
Iron	mg/L	--	4	NA	NA	NA	NA	NA	3.21	NA	NA	NA	NA
Sodium	mg/L	--	29	NA	NA	NA	NA	NA	11.6	NA	NA	NA	NA
Parameters													
ORP	mV	--	28.7	-2.6	-30.0	-49.5	-8.8	-85.9	33.1	-34.2	-71.9	-93	-88.9
Dissolved Oxygen	mg/L	--	0.86	0.27	0.08	0.1	0.32	0.14	0.64	0.23	0.08	0.24	0.37

Table 12. FCCA EISB Performance Monitoring
ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Well							Near Injection Area Well				
			PW-94A							PW-69A				
			Baseline 5/10	Inj #2 Baseline 5/19	10/19	4/20	7/20	9/20	12/20	Baseline 5/10	Inj #2 Baseline 5/19	10/19	4/20	9/20
CVOCs														
1,1,1- TCA	µg/L	200	39	**748**	**233**	**476**	**389**	**262**	**322**	**368**	86.0	2.44	47.2	353
1,1-DCA	µg/L	3,700	25.7	220	231	562	582	547	277	246	47.6	45.1	151	460
1,2-DCA	µg/L	5	0.5 U	4.00 U	2.00 U	4.00 U	2.00 U	4.00 U	4.00 U	5.00 U	2.00 U	0.400 U	0.400 U	0.400 U
Chloroethane	µg/L	--	85.5	79.0	1,680	511	944	870	306	72.6	92.4	32.3	342	289
PCE	µg/L	5	0.5 U	4.00 U	2.70	4 U	2 U	4 U	4.00 U	**8.21**	**5.95**	1.38	**5.63**	**7.41**
TCE	µg/L	5	0.31 J	4.00 U	1.50 J	4 U	2 U	4 U	4.00 U	**5.3**	2.00 U	0.350 J	0.87	1.04
1,1-DCE	µg/L	7	1.9	**57.8**	**80.6**	**44.2** J	**46.7**	**42**	**36.6**	**31.2**	**9.95**	**7.99**	**23.8**	**69.5**
cis-1,2-DCE	µg/L	70	1.2	4.00 U	2.35	4 U	2 U	4 U	4.00 U	5.2 J	6.80	7.67	12.5	4.57
trans-1,2-DCE	µg/L	100	0.5 U	4.00 U	2.00 U	4 U	2 U	4 U	4.00 U	5 U	2.00 U	0.400 U	0.400 U	0.400 U
VC	µg/L	2	1.7	**4.60**	**24.8**	**11.7**	**12**	**11.2**	**8.9**	**4.8** J	**2.20**	1.39	**8.89**	**6.59**
Dissolved Hydrocarbon Gases														
Methane	µg/L	--	NA	4,800	6,700	16,000	NA	14,000	NA	890	2,700	4,100	7,700	9,400
Ethane	µg/L	--	NA	1.8	1.5	1.3	NA	1 U	NA	0.12 J	1.0 U	1.0 U	1 U	1 U
Ethene	µg/L	--	NA	1.9	19	10	NA	10	NA	0.13 J	1.0 U	1.0 U	1.8	2.1
General Chemistry														
Chloride	mg/L	--	13	20.2	16.9	13.6	NA	11.8	NA	12	14.8	9.49	12.9	10.8
Nitrate	mg/L	10	5 U	0.250 U	0.250 U	0.25 U	NA	0.25 U	NA	5 U	0.250 U	0.250 U	0.25 U	0.25 U
Sulfate	mg/L	--	10 U	1.00 U	1.00 U	1 U	NA	1 U	NA	10 U	1.00 U	1.00 U	1 U	1 U
Alkalinity	mg/L	--	174	103	152	112	NA	121	NA	14	100	96.9	131	116
Total Organic Carbon														
Total Organic Carbon	mg/L	--	5 U	NA	82.2	6.67	NA	5.13	NA	5 U	NA	14.5	19.7	4.22
Metals														
Iron	mg/L	--	5.4	NA	NA	NA	NA	NA	NA	0.65	NA	NA	NA	NA
Sodium	mg/L	--	32	NA	NA	NA	NA	NA	NA	12.5	NA	NA	NA	NA
Parameters														
ORP	mV	--	-66.2	-101.3	-99.5	-123.6	-46	-82.2	-136.7	-98.5	-72.7	-99.4	-72	-83.4
Dissolved Oxygen	mg/L	--	0.36	1.08	0.07	0.12	0.35	0.47	0.32	0.29	0.53	0.08	0.18	0.42

Table 12. FCCA EISB Performance Monitoring
ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Near Injection Area Well								
			PW-95A					PW-101A			
			Baseline 5/10	Inj #2 Baseline 5/19	10/19	4/20	9/20	Baseline 8/10	Inj #2 Baseline 5/19	10/19	9/20
CVOCs											
1,1,1- TCA	µg/L	200	**348**	**805**	**568**	**271**	**324**	0.08 J	4.00 U	3.35	0.400 U
1,1-DCA	µg/L	3,700	152	564	1,830	334	210	1.56	19.4	30.8	0.500
1,2-DCA	µg/L	5	0.500 U	1.00 U	4.00 U	4.00 U	4.00 U	0.5 U	4.00 U	0.400 U	0.400 U
Chloroethane	µg/L	--	25.2	180	668	175	152 J	0.5 U	1,500	329	402
PCE	µg/L	5	1.51	1.68	3.70 J	4.00 U	4.00 U	0.5 U	4.00 U	0.400 U	0.400 U
TCE	µg/L	5	2.3	2.88	4.50	2.2 J	2.5 J	0.12 J	4.20	1.63	0.340 J
1,1-DCE	µg/L	7	**15.2**	**68.2**	**191**	**49.9**	**65.4**	0.16 J	4.00 U	2.13	0.200 J
cis-1,2-DCE	µg/L	70	4.2	7.35	7.30	3.5 J	2.9 J	0.19 J	5.00	2.50	2.23
trans-1,2-DCE	µg/L	100	0.500 U	1.00 U	4.00 U	4.00 U	4.00 U	0.5 U	4.00 U	0.400 U	0.4 U
VC	µg/L	2	**3.8**	0.900 J	**6.10**	**3.2** J	**2.8** J	0.5 U	**4.30**	0.810	0.62
Dissolved Hydrocarbon Gases											
Methane	µg/L	--	NA	720	1,700	3,300	4,600	23.6	NA	NA	8,900
Ethane	µg/L	--	NA	1.0 U	1.0 U	1 U	1 U	0.079 J	NA	NA	1 U
Ethene	µg/L	--	NA	1.0 U	1.6	2.7	4	0.05 U	NA	NA	1.2
General Chemistry											
Chloride	mg/L	--	17	14.5	14.5	11	11.2	21	NA	NA	11.6
Nitrate	mg/L	10	5 U	0.600	0.250 U	0.525	0.694	5 U	NA	NA	0.25 U
Sulfate	mg/L	--	10 U	4.00	1.43	4.36	3.93	10 U	NA	NA	0.556 J
Alkalinity	mg/L	--	46	101	110	100	101	11	NA	NA	430
Total Organic Carbon											
Total Organic Carbon	mg/L	--	5 U	NA	4.17	1.6	1.7	1.08	NA	NA	NA
Metals											
Iron	mg/L	--	0.75	NA	NA	NA	NA	0.37	NA	NA	NA
Sodium	mg/L	--	20	NA	NA	NA	NA	12.3	NA	NA	NA
Parameters											
ORP	mV	--	-91.2	28.1	-119	-5.5	4.6	48.2	26.6	-54.7	-62.9
Dissolved Oxygen	mg/L	--	0.15	0.26	0.06	0.12	0.39	0.48	0.37	0.14	0.35

Table 12. FCCA EISB Performance Monitoring
ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Area Well						
			FW-1						
			Baseline 9/10	Inj #2 Baseline 8/19	10/19	4/20	7/20	9/20	12/20
CVOCs									
1,1,1- TCA	µg/L	200	**1,922**	**511**	5.45	8.16	0.44	0.35 J	0.4 U
1,1-DCA	µg/L	3,700	366	480	9.80	103	3.09	3.64	2.78
1,2-DCA	µg/L	5	0.500 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U
Chloroethane	µg/L	--	38.1	310	5.00 U	360	7.4	5.00 U	5.00 U
PCE	µg/L	5	1.89	2.16	**6.78**	0.81	0.46	0.32 J	0.33 J
TCE	µg/L	5	3.58	3.52	**6.78**	2.32	**5.07**	**5.19**	4.08
1,1-DCE	µg/L	7	**239**	**110**	1.36	4.44	0.39 J	0.50	0.26 J
cis-1,2-DCE	µg/L	70	9.86	6.68	9.24	3.97	5.9	10.1	6.07
trans-1,2-DCE	µg/L	100	0.5 U	0.400 U	0.430	0.28 J	0.36 J	0.58	0.57
VC	µg/L	2	**5.89**	**9.23**	0.770	**4.63**	0.92	**2.71**	**2.07**
Dissolved Hydrocarbon Gases									
Methane	µg/L	--	NA	NA	NA	NA	NA	NA	NA
Ethane	µg/L	--	NA	NA	NA	NA	NA	NA	NA
Ethene	µg/L	--	NA	NA	NA	NA	NA	NA	NA
General Chemistry									
Chloride	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Alkalinity	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon									
Total Organic Carbon	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Metals									
Iron	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Sodium	mg/L	--	NA	NA	NA	NA	NA	NA	NA
Parameters									
ORP	mV	--	NA	43.6	7.3	-14.3	97.9	34.4	-105.9
Dissolved Oxygen	mg/L	--	NA	2.9	0.17	4.73	0.05	0.32	0.35

Notes

First round of EISB injections occurred in 2010. String 3 EISB injections occurred between August 23 and 25, 2019.

-- = no applicable cleanup level

µg/L = micrograms per liter

CVOC = chlorinated volatile organic compound

DCA = dichloroethane

DCE = dichloroethene

EISB = enhanced in situ bioremediation

Inj = injection

J = estimated value below reporting limit

mg/L = milligrams per liter

mV = millivolts

NA = not analyzed

ORP = oxidation-reduction potential

PCE = tetrachloroethene

TCA = trichloroethane

TCE = trichloroethene

U = not detected above reporting limit

VC = vinyl chloride

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for the Sitewide Remedial Action Table B-4 for more details (GSI, 2015).

Table 13. Surface Water Analytical Results in 2020

ATI Millersburg Operations, Oregon

	TCA (µg/L)		DCA (µg/L)		PCE (µg/L)		TCE (µg/L)		DCE (µg/L)		VC (µg/L)		Ammonium (mg/L)		Fluoride (mg/L)		Nitrate (mg/L)	
Cleanup Level [1]	18,000		none		840		21,900		11,600		none		FBV[2]		none		none	
Sample Location	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
Murder Creek																		
MC-U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	--	--	1.00 U	1.00 U	0.746	0.782
MC-M	2.57	3.19	0.560	0.610	0.400 U	0.400 U	0.400 U	0.400 U	0.470	0.480	0.400 U	0.400 U	--	--	1.00 U	1.71	0.783	1.09
MC-D	1.630	3.87	0.410	0.750	0.400 U	0.400 U	0.400 U	0.400 U	0.330 J	0.430	0.400 U	0.400 U	--	--	1.00 U	1.04	0.92	0.28
Truax Creek																		
TC-U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.070	0.245	--	--	--	--
TC-D	0.400 U	0.300 J	0.400 U	0.400 UJ	0.400 U	0.400 U	0.400 U	0.270 J	0.220 J	0.340 J	0.400 U	0.300 J	0.233	0.718	--	--	--	--

Notes

[1] Cleanup level is based on the DEQ's AWQC for aquatic receptors (Table 30).

[2] Ammonia standard is dependent on pH and temperature. For example, the standard would be 25 mg/L for a pH of 7.0 units at 15 degrees Celsius.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action, Table B-4, for more details (GSI, 2015).

-- = not analyzed

µg/L = microgram per liter

AWQC = ambient water quality criteria

DCA = 1,1-dichloroethane

DCE = 1,1-dichloroethene

DEQ = Oregon Department of Environmental Quality

FBV = function-based value; see Table 30(b) in the DEQ's AWQC for aquatic receptors for more details

J = estimated value

MC = Murder Creek

mg/L = milligram per liter

PCE = tetrachloroethene

TC = Truax Creek

TCA = 1,1,1-trichloroethane

TCE = trichloroethene

U = not detected above reporting limit

UJ = estimated nondetect

VC = vinyl chloride

Figures

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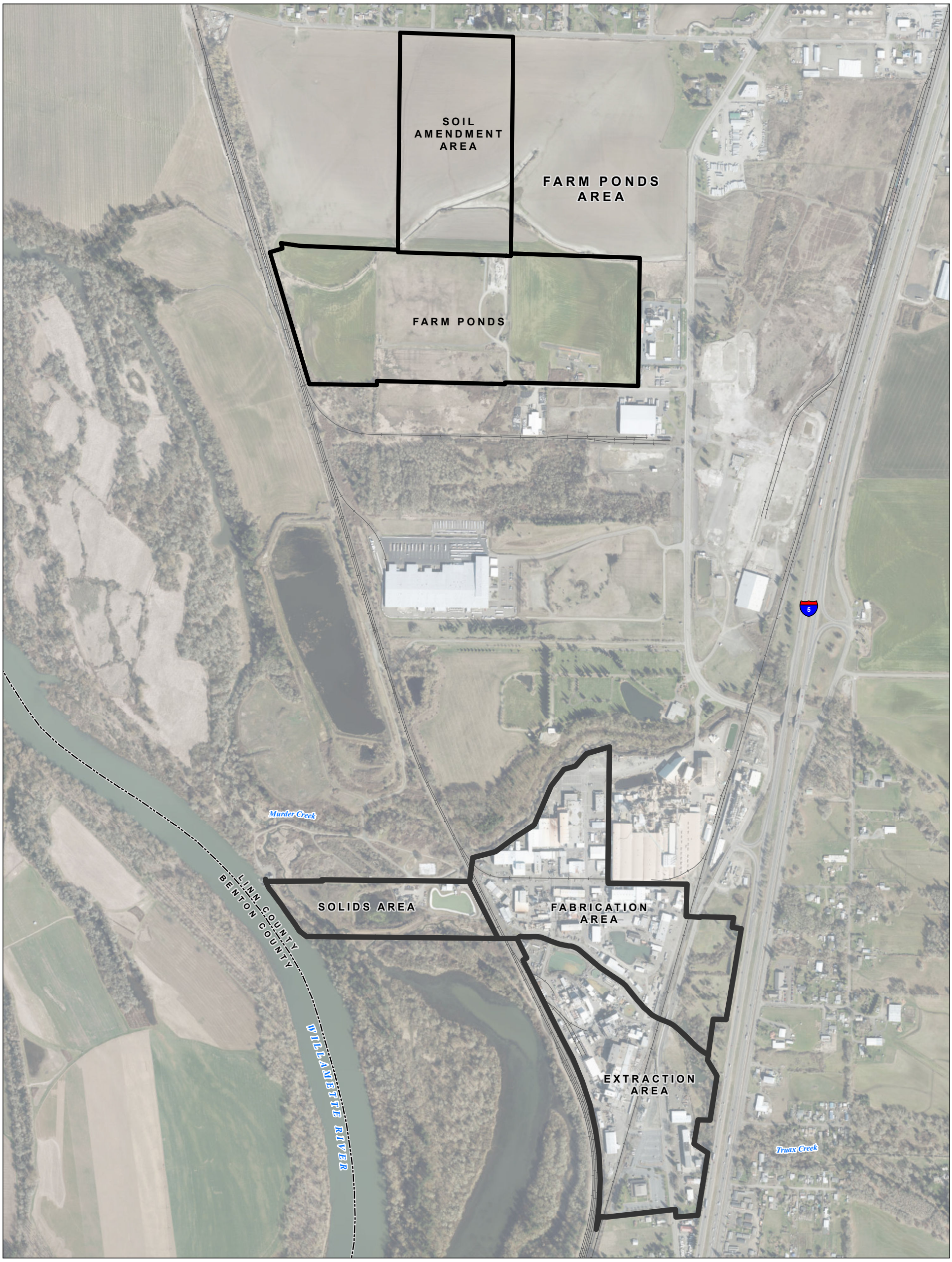

LEGEND

- Property Boundary
- Railroad
- County Boundary

FIGURE 1

Millersburg Operations

ATI Millersburg Operations, Oregon

N

0 400 800 1,200

Feet

GSI Water Solutions, Inc.

Date: January 11, 2021
Data Sources: OGIC, USGS, DigiGlobe

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure1_Millersburg_Operations.mxd

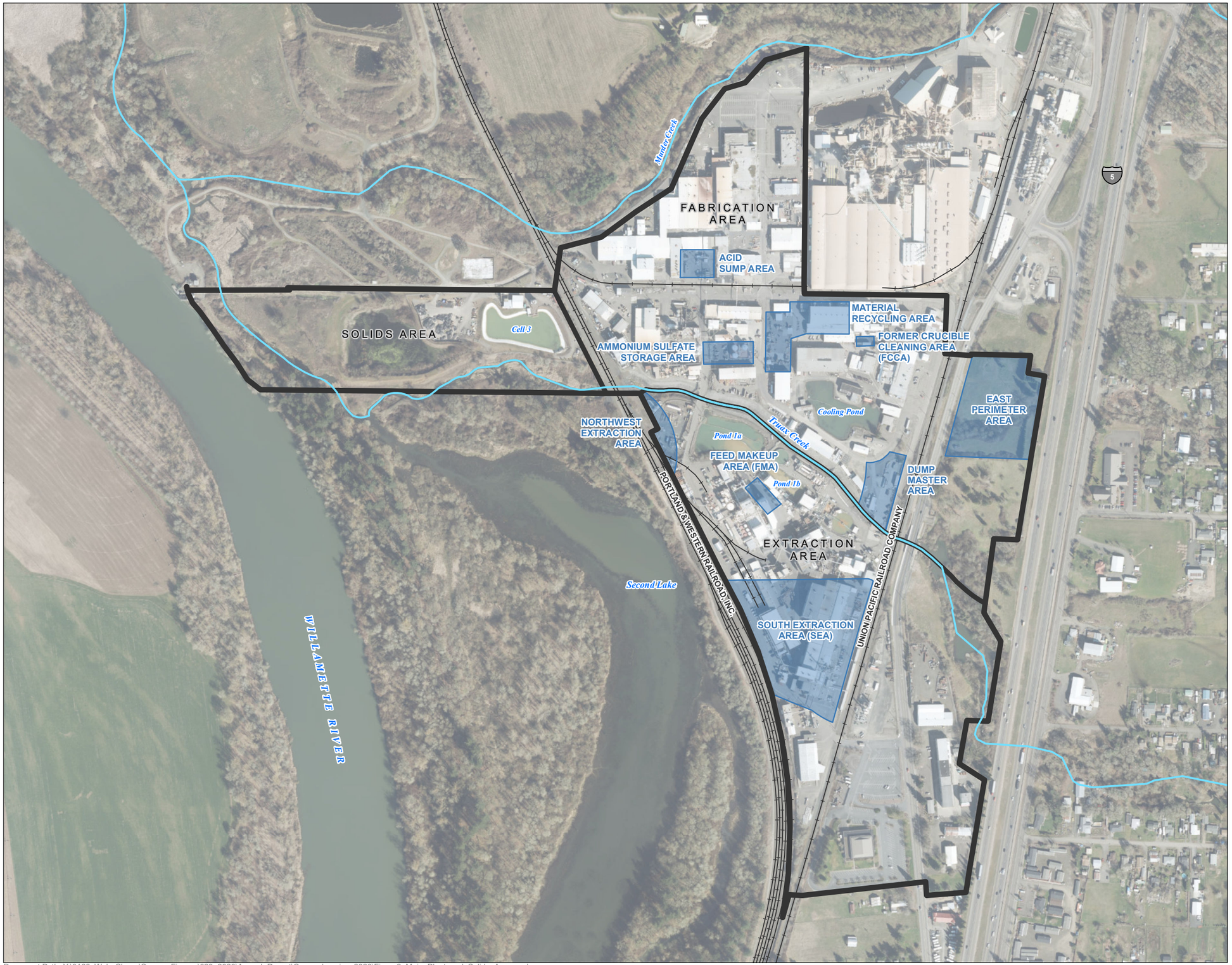

FIGURE 2

Main Plant and Solids Area

ATI Millersburg Operations, Oregon

LEGEND

- Watercourse
- Boundary
- Remediation Subarea
- Railroad

N

0 225 450 675
Feet

Date: March 18, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure2_Main_Plant_and_Solids_Area.mxd

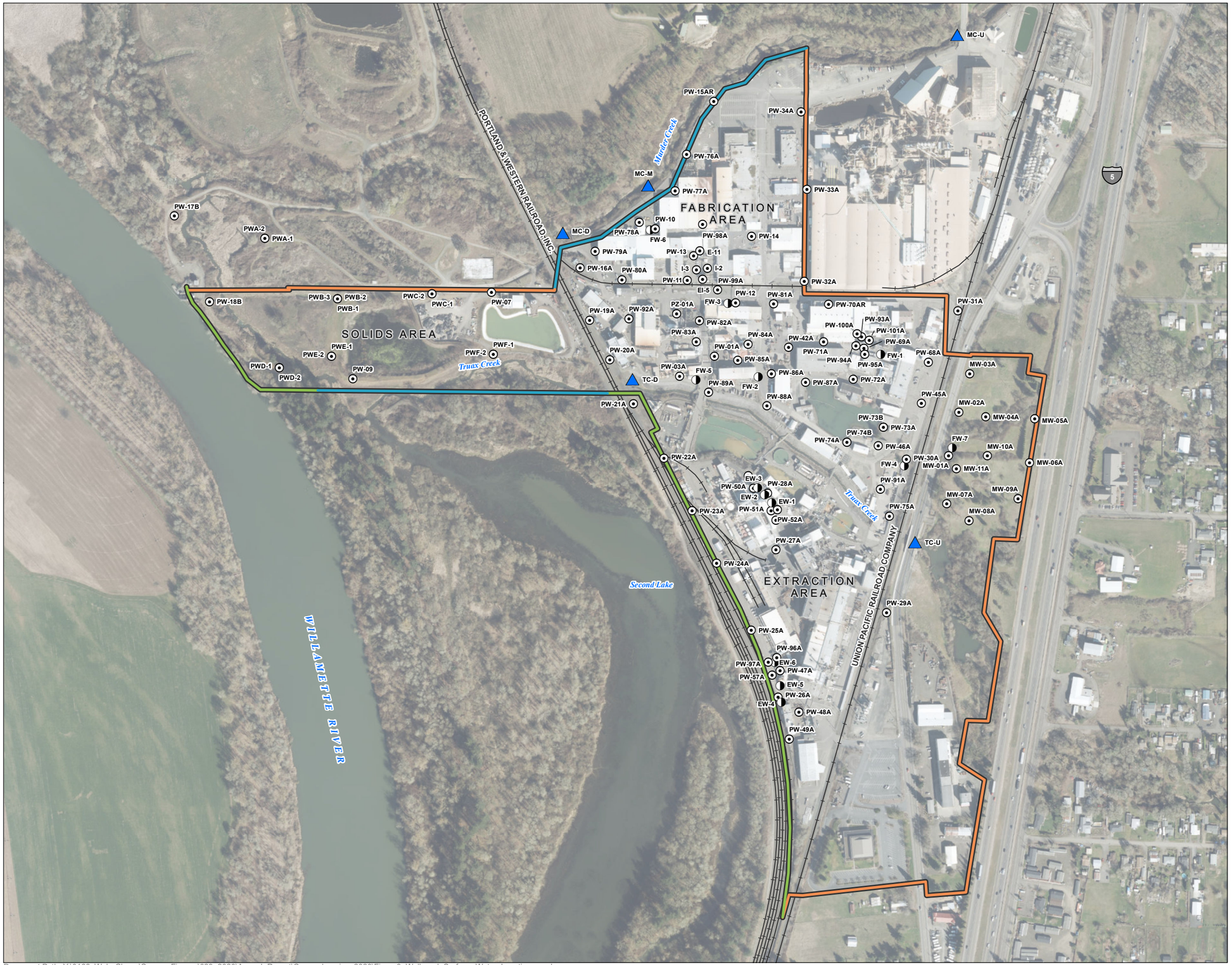

FIGURE 3

Well and Surface Water Locations in the Main Plant and Solids Area

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Surface Water Sample Location

Property Boundary

- AWQC for Aquatic Receptors
- AWQC for Human Health and Fish Consumption
- Groundwater MCL

All Other Features

- Railroad

NOTES

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure3_Well_and_Surface_Water_Locations.mxd

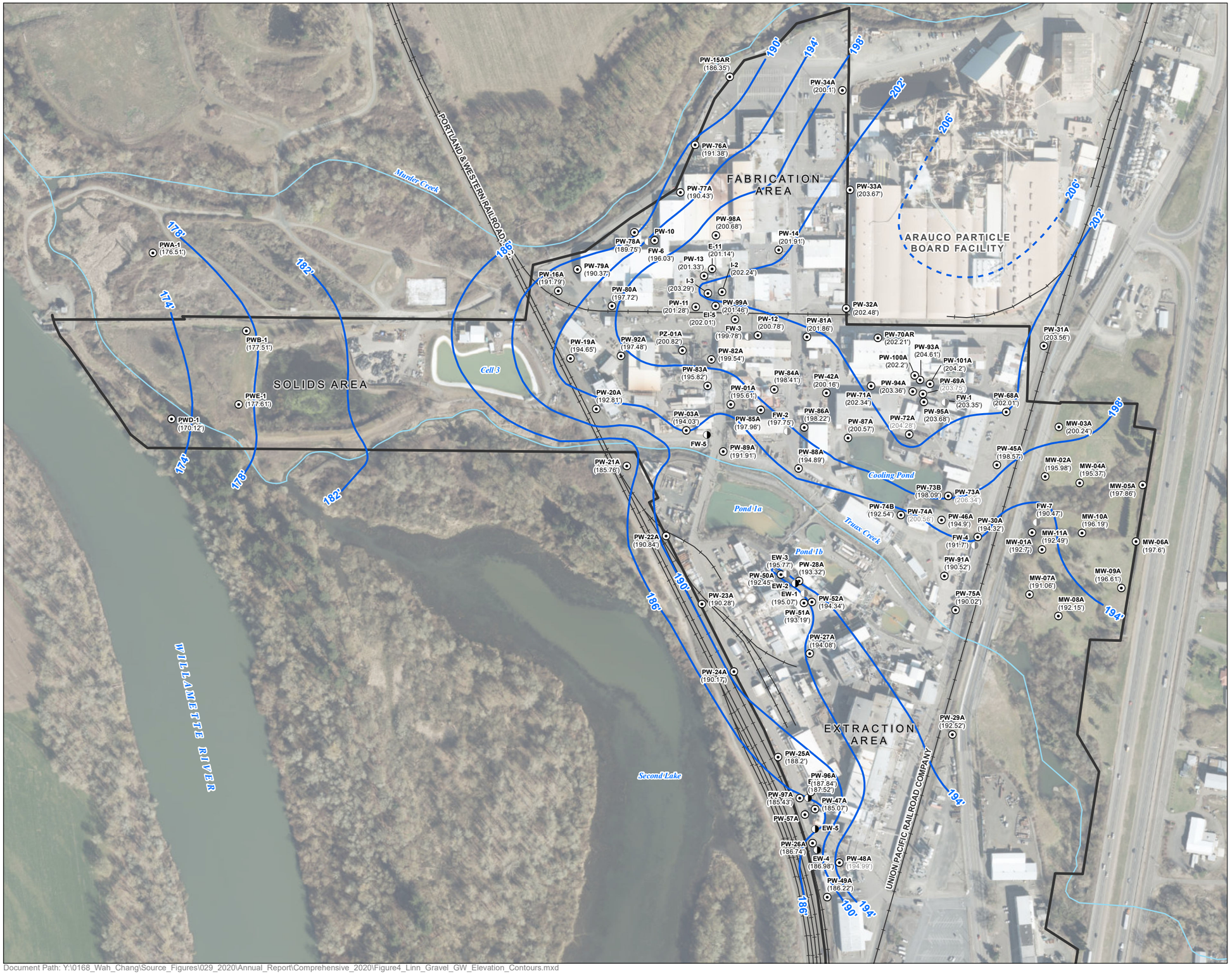

FIGURE 4

Linn Gravel Groundwater Elevation Contours Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Extraction Well, Inactive
- Groundwater Elevation Contour (feet) (dashed where inferred)

All Other Features

- Property Boundary
- Railroad
- Watercourse

NOTES

1. Water levels measured concurrently. Extraction Area and Solids Area wells measured on September 2, 2020. Fabrication Area measured on September 1 and 2, 2020.
2. The following Linn Gravel monitoring wells were not used for contouring and values shown in grey:
   - FW-6 is used for contouring instead of PW-10 at EPA's request.
   - PW-48A is a shallow well. The bottom of the screen (19.6') is above the static water level at other nearby Extraction Area wells.
   - PW-69A is 3 feet from an outdoor freshwater spraying station that operates 24 hours a day and may leak through cracks in concrete pads.
   - PW-72A, PW-73A, and PW-74A are likely hydraulically connected to the cooling pond.
3. Cell 3 is lined. Operational levels are from 197' to 202.5'.
4. Pond elevations are variable and controlled by float switches. Ponds discharge to publicly owned treatment work wetlands.

EPA: Environmental Protection Agency

N

0 175 350 525
Feet

Date: October 7, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure4_Linn_Gravel_GW_Elevation_Contours.mxd

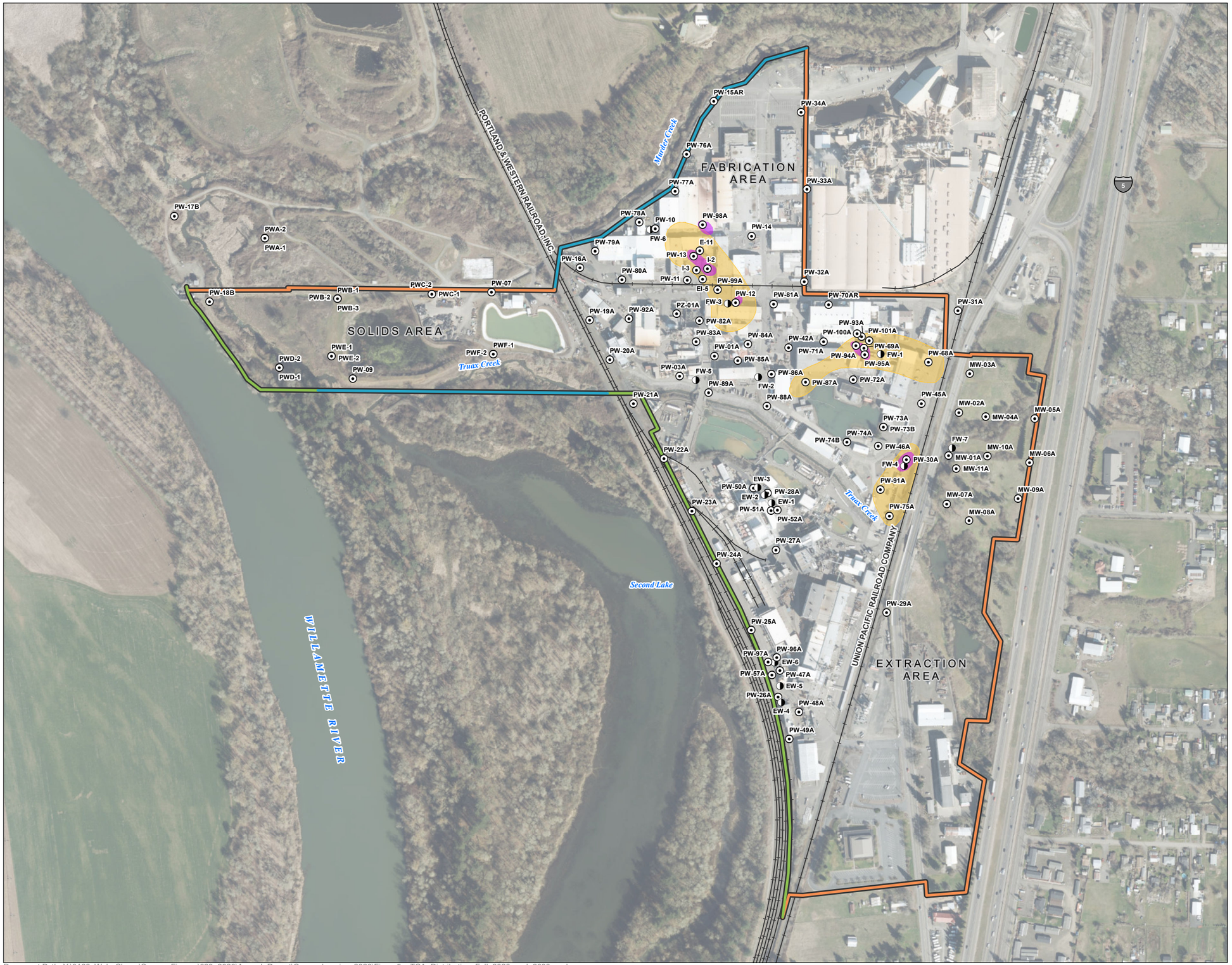

FIGURE 5a

TCA Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 TCA Concentrations Above the Cleanup Level (200 µg/L)
- 2000 TCA Concentrations Above the Cleanup Level (200 µg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 18,000 µg/L
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 200 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 200 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
TCA: 1,1,1-trichloroethane
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure5a_TCA_Distribution_Fall_2020_and_2000.mxd

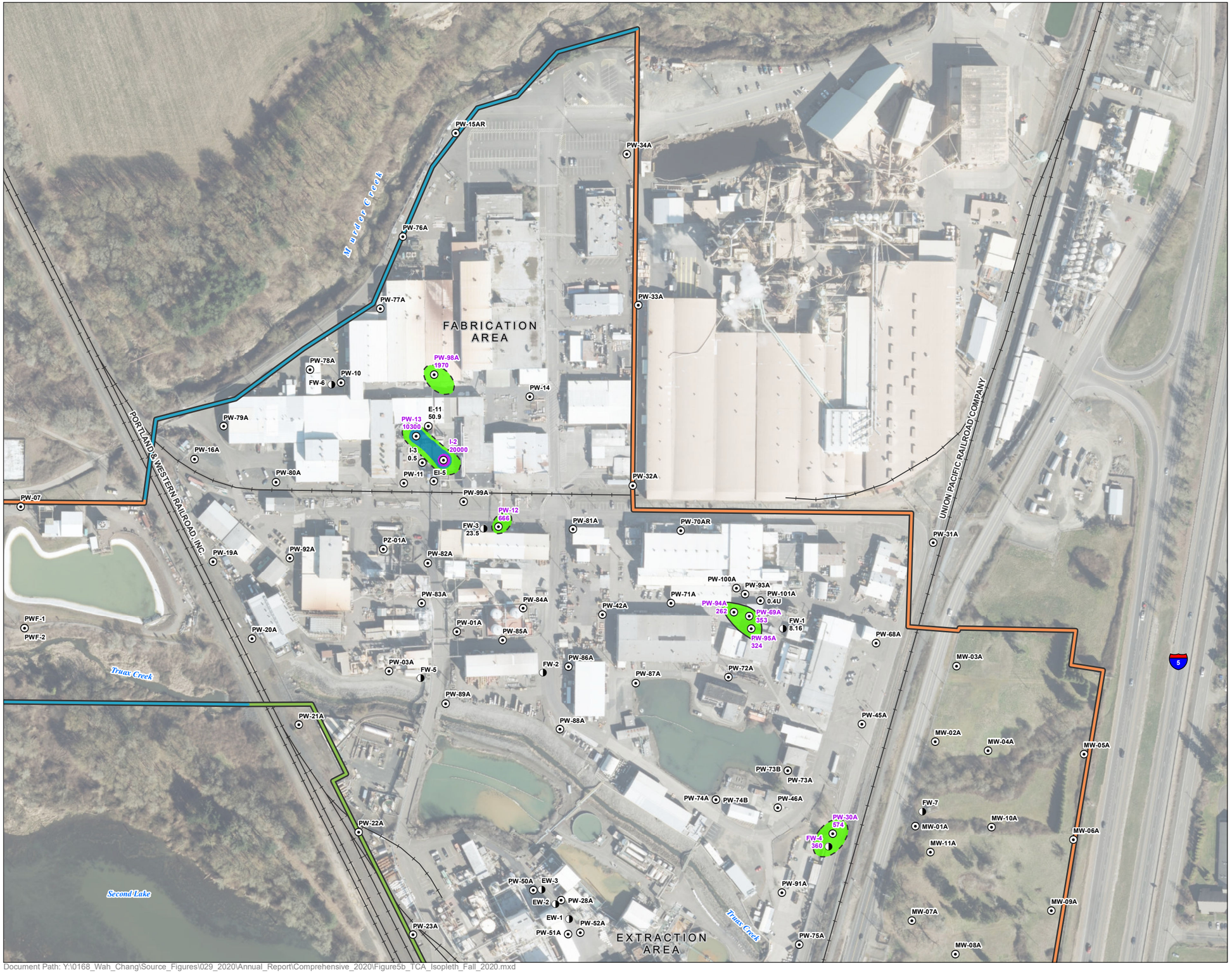

FIGURE 5b

TCA Isopleth in Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

Monitoring Well
Fall 2020 TCA Concentration in µg/L

Extraction Well
Fall 2020 TCA Concentration in µg/L

Fall 2020 TCA Concentrations (µg/L)

- 200 - 2,000
- 2,001 - 20,000
- > 20,000
- TCA Concentration Boundary (dashed where inferred)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 18,000 µg/L
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 200 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 200 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
TCA: 1,1,1-trichloroethane
U: not detected above reporting limit
J: estimate
µg/L: micrograms per liter

N

0 115 230 345
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure5b_TCA_Isopleth_Fall_2020.mxd

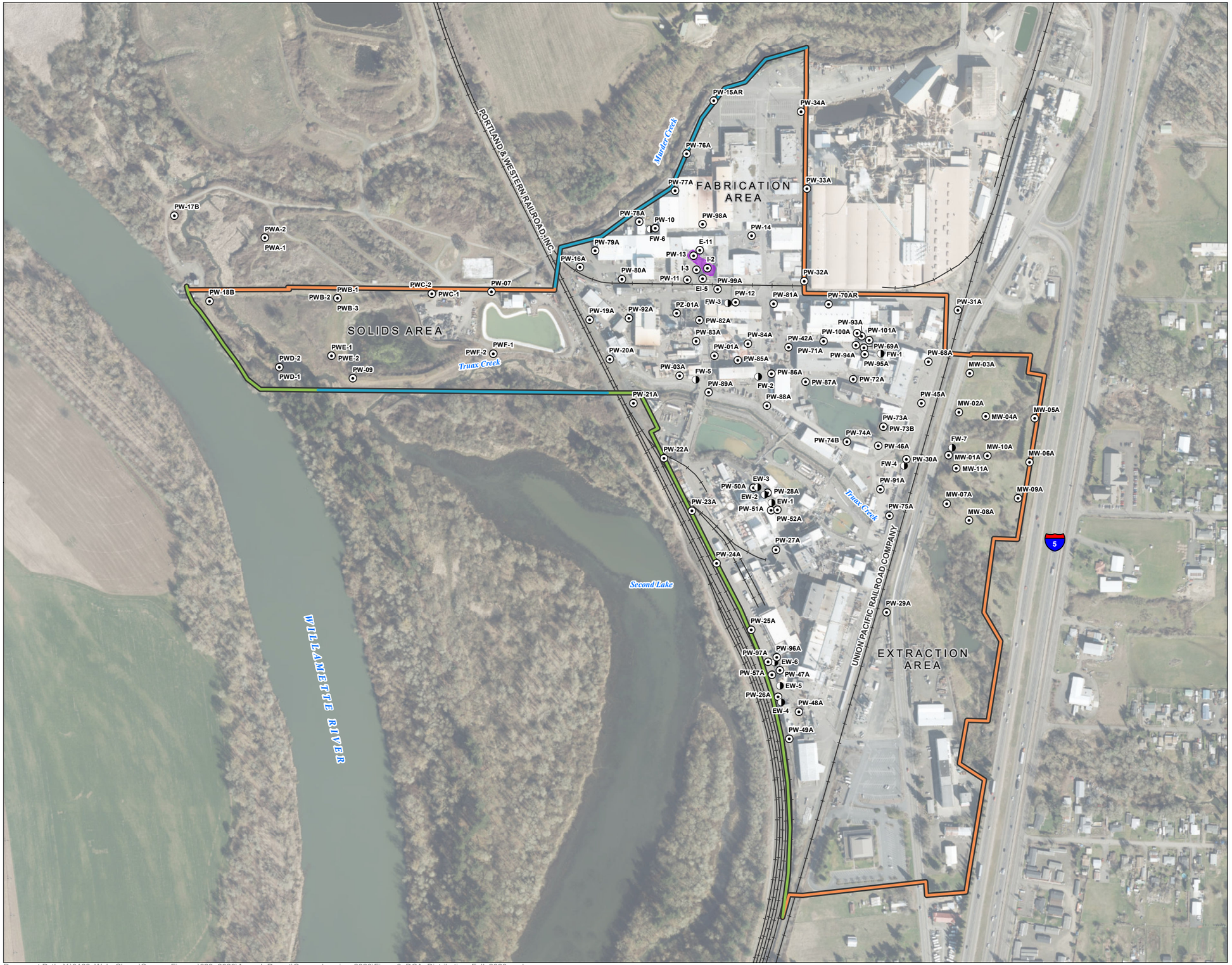

FIGURE 6

DCA Distribution in Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 DCA Concentrations Above the Cleanup Level (3,700 µg/L); boundary dashed where inferred

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 3,700 µg/L in Fabrication Area and 1,280 µg/L in Extraction Area

All Other Features

- Railroad

NOTES

1. There were no DCA cleanup level exceedances in 2000.
2. Wells without a displayed concentration were below the cleanup level in Fall 2020.
3. Cleanup Level = 3,700 µg/L in the Fabrication Area and 1,280 µg/L in the Extraction Area.

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
DCA: 1,1-dichloroethane
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

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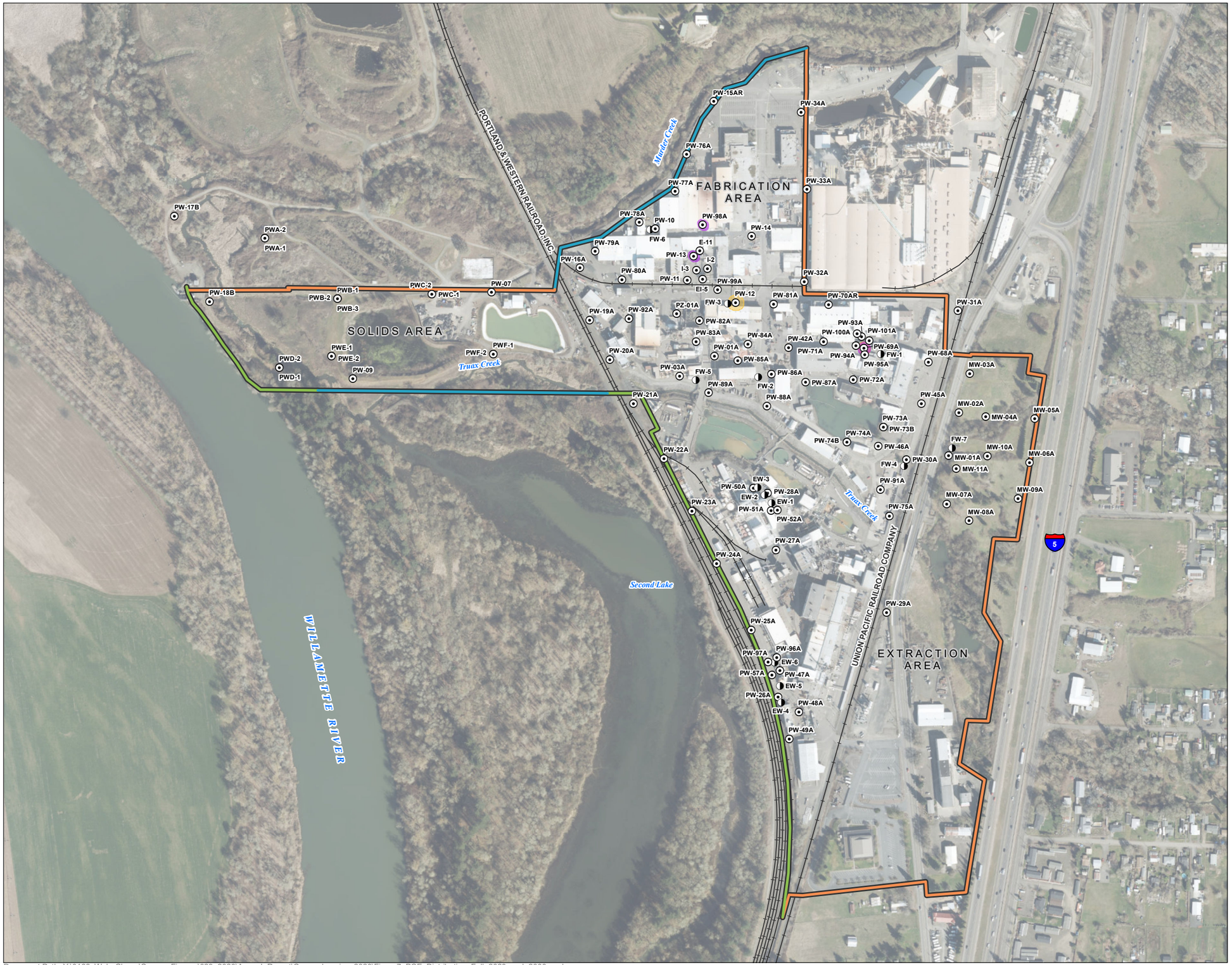

FIGURE 7

PCE Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 PCE Concentrations Above the Cleanup Level (5 µg/L)
- 2000 PCE Concentrations Above the Cleanup Level (5 µg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 840 µg/L
- AWQC for Human Health and Fish Consumption, Standard: 0.24 µg/L
- Groundwater MCL, Standard: 5 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 5 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
PCE: tetrachloroethene
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure7_PCE_Distribution_Fall_2020_and_2000.mxd

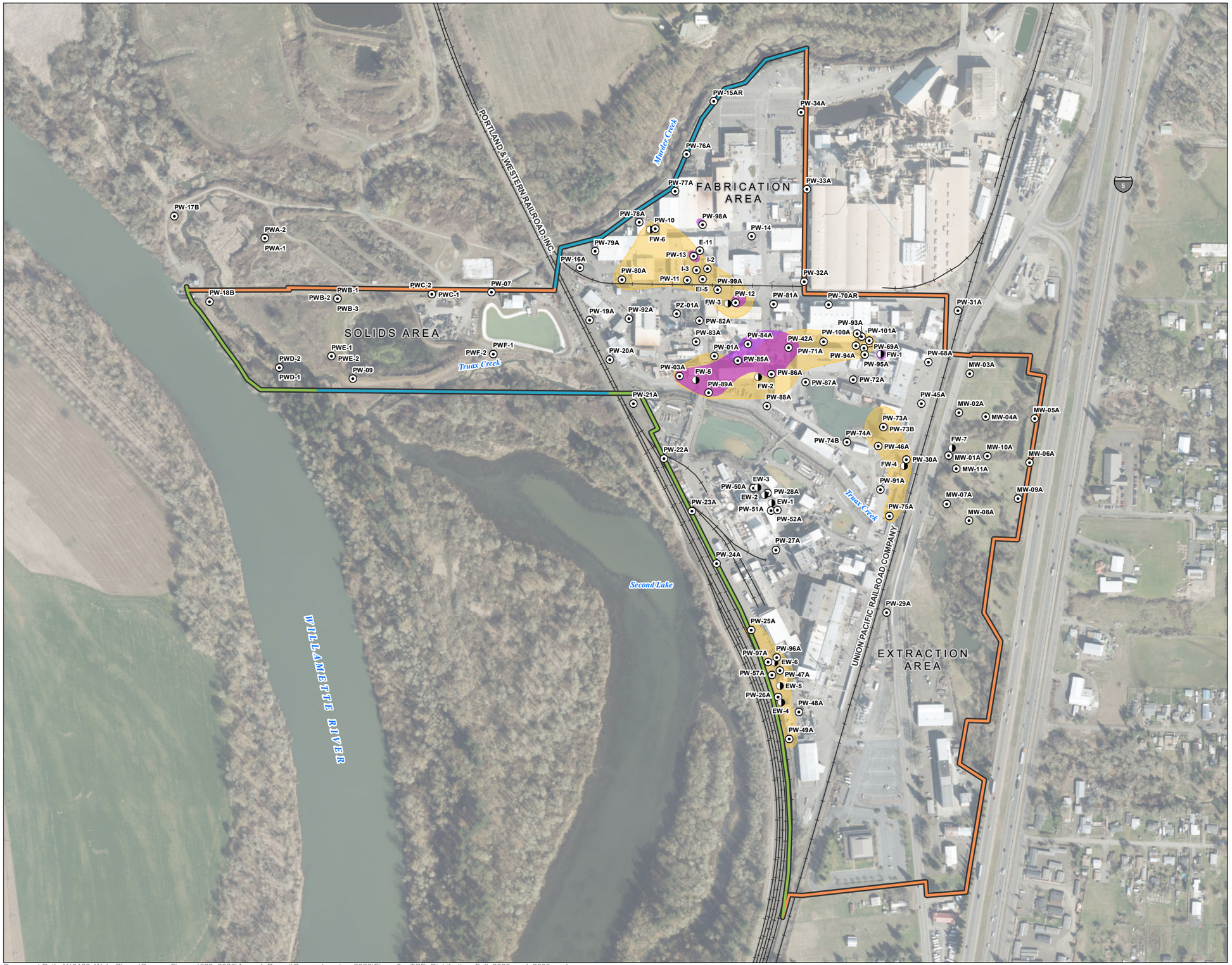

FIGURE 8a

TCE Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 TCE Concentrations Above the Cleanup Level (5 µg/L)
- 2000 TCE Concentrations Above the Cleanup Level (5 µg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 21,900 µg/L
- AWQC for Human Health and Fish Consumption, Standard: 1.4 µg/L
- Groundwater MCL, Standard: 5 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 5 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
TCE: trichloroethene
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure8a_TCE_Distribution_Fall_2020_and_2000.mxd

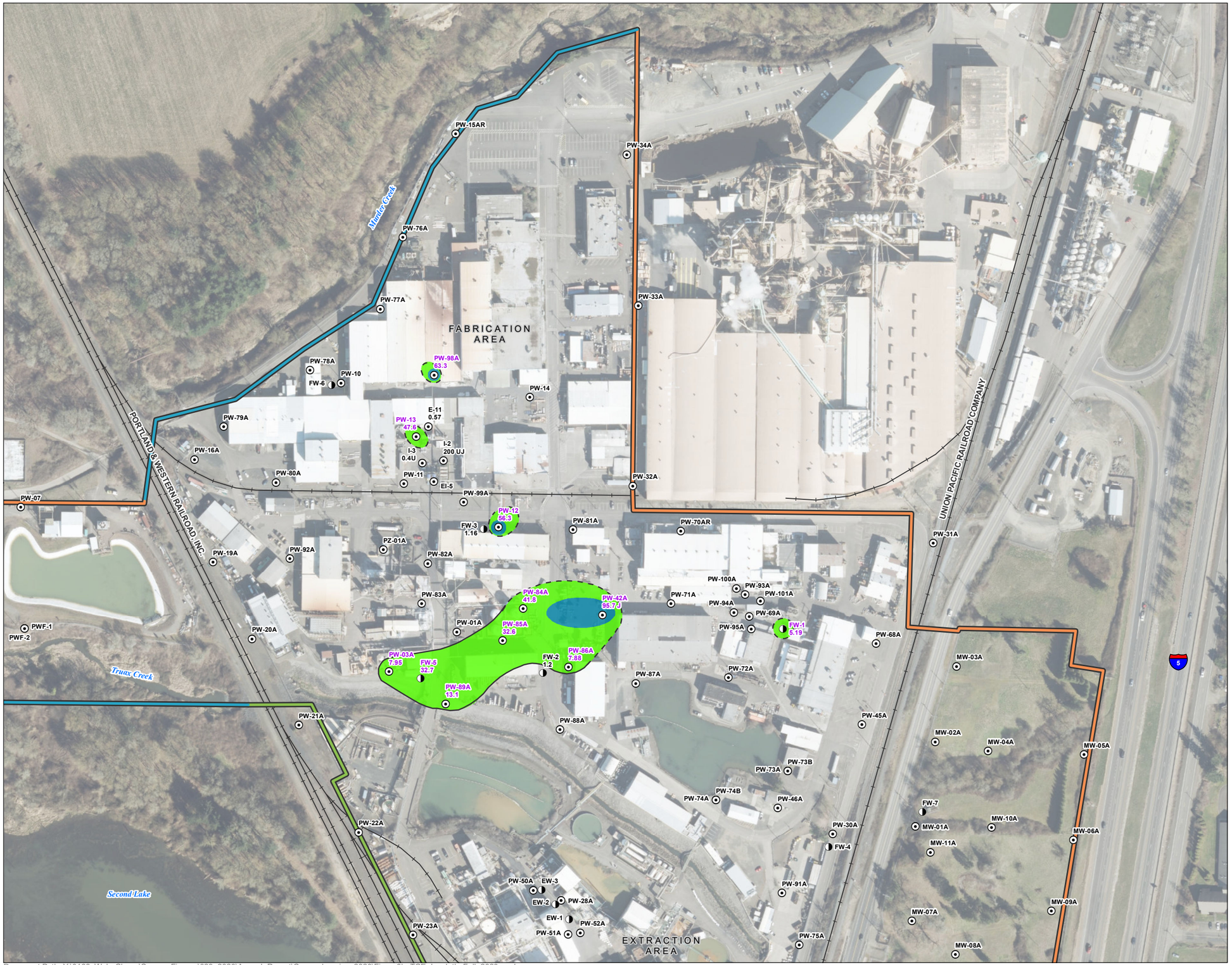

FIGURE 8b

TCE Isopleth in Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

Monitoring Well
Fall 2020 TCE Concentration in µg/L

Extraction Well
Fall 2020 TCE Concentration in µg/L

Fall 2020 TCE Concentrations (µg/L)

5 - 50

> 50

TCE Concentration Boundary (dashed where inferred)

Property Boundary

AWQC for Aquatic Receptors, Standard: 21,900 µg/L

AWQC for Human Health and Fish Consumption, Standard: 1.4 µg/L

Groundwater MCL, Standard: 5 µg/L

All Other Features

Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 5 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
TCE: trichloroethene
U: not detected above reporting limit
J: estimate
µg/L - micrograms per liter

N

0 115 230 345
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure8b_TCE_Isopleth_Fall_2020.mxd

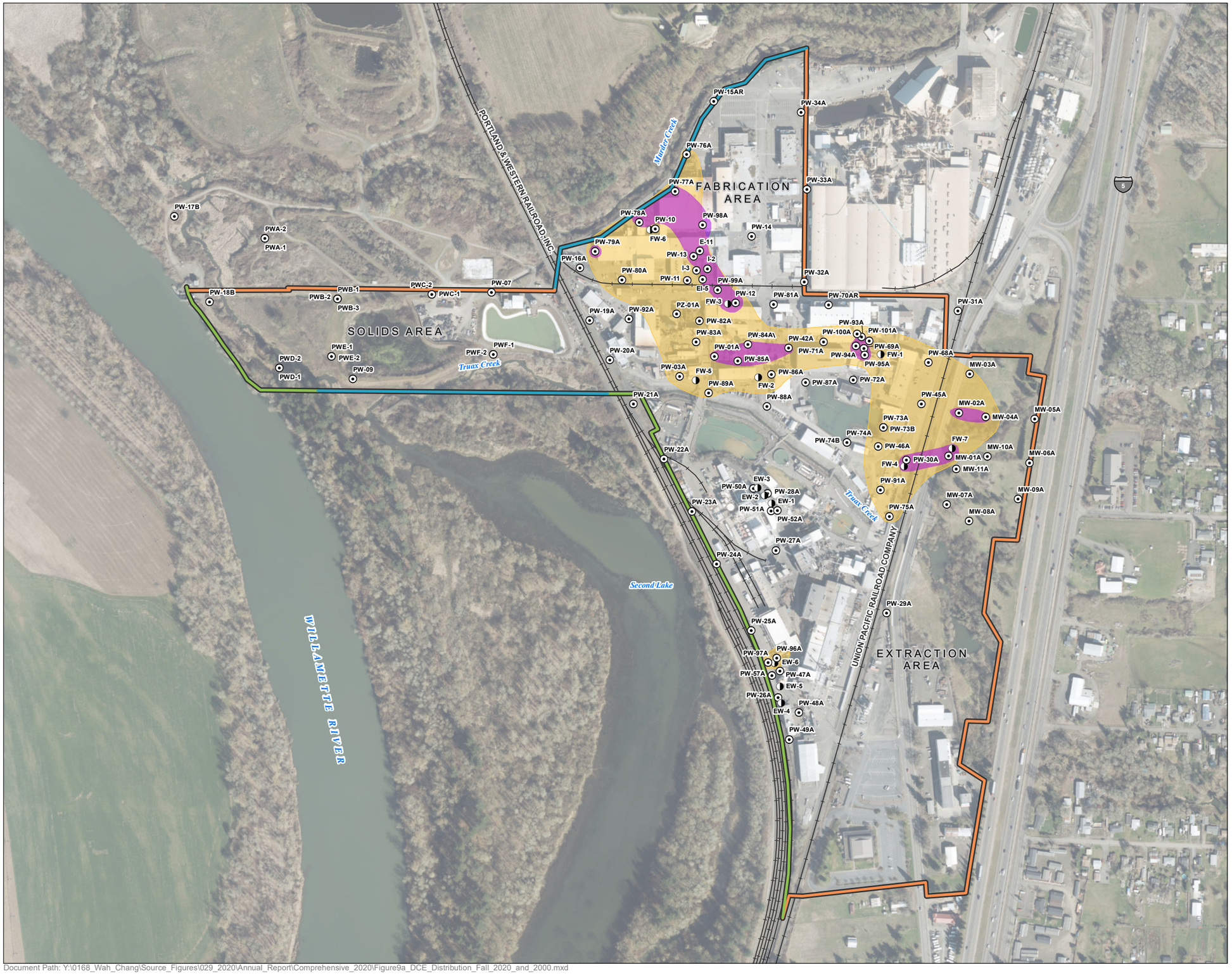

FIGURE 9a

DCE Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 DCE Concentrations Above the Cleanup Level (7 µg/L)
- 2000 DCE Concentrations Above the Cleanup Level (7 µg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 11,600 µg/L
- AWQC for Human Health and Fish Consumption, Standard: 230 µg/L
- Groundwater MCL, Standard: 7 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 7 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
DCE: 1,1-dichloroethene
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure9a_DCE_Distribution_Fall_2020_and_2000.mxd

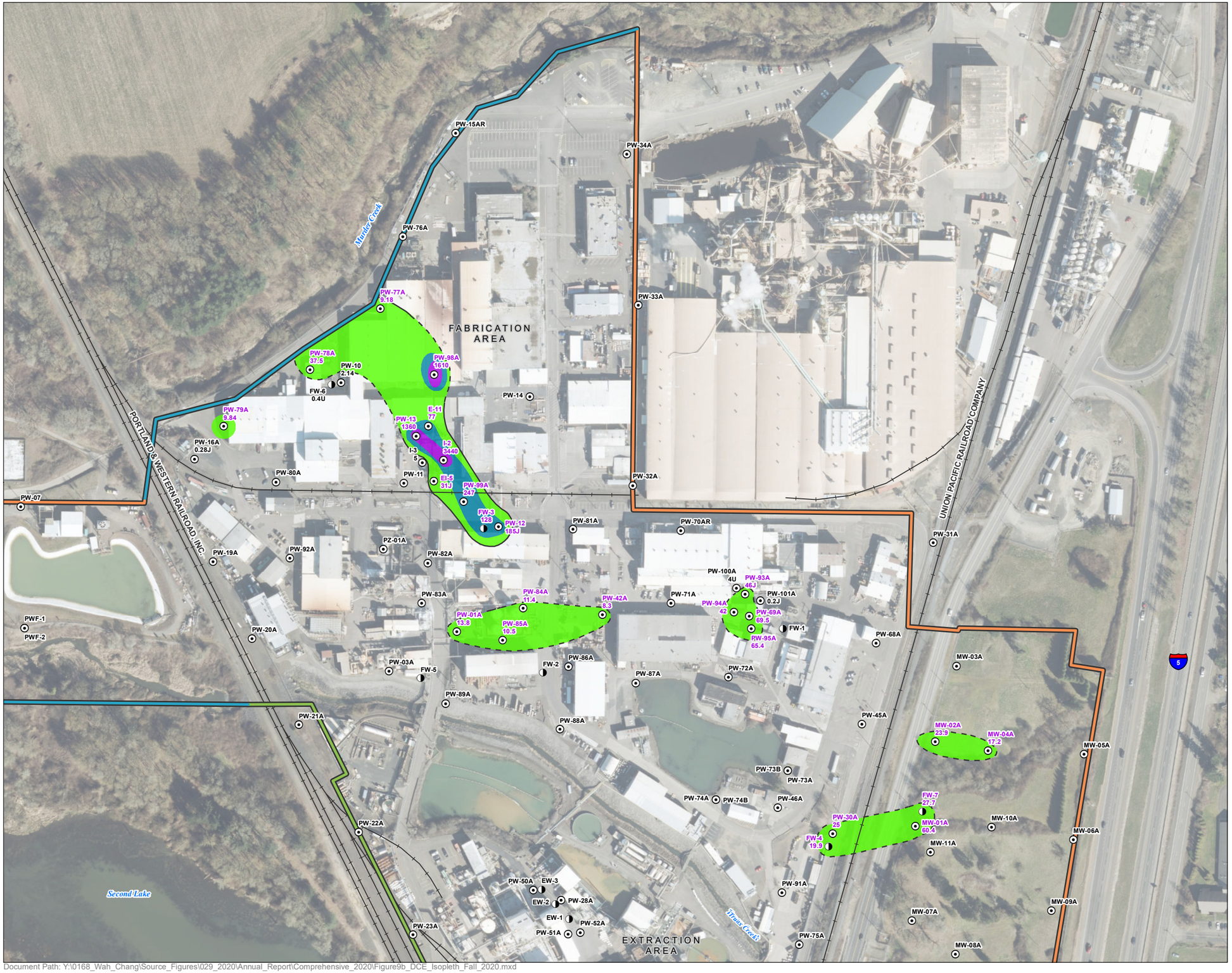

FIGURE 9b

DCE Isopleth in Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

Monitoring Well
Fall 2020 DCE Concentration in µg/L

Extraction Well
Fall 2020 DCE Concentration in µg/L

Fall 2020 DCE Concentrations (µg/L)

- 7 - 70
- 71 - 700
- > 700
- DCE Concentration Boundary (dashed where inferred)

Property Boundary

- AWQC for Aquatic Receptors, Standard: 11,600 µg/L
- AWQC for Human Health and Fish Consumption, Standard: 230 µg/L
- Groundwater MCL, Standard: 7 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 7 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
DCE: 1,1-dichloroethene
U: not detected above reporting limit
J: estimate
µg/L: micrograms per liter

N

0 115 230 345
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure9b_DCE_Isopleth_Fall_2020.mxd

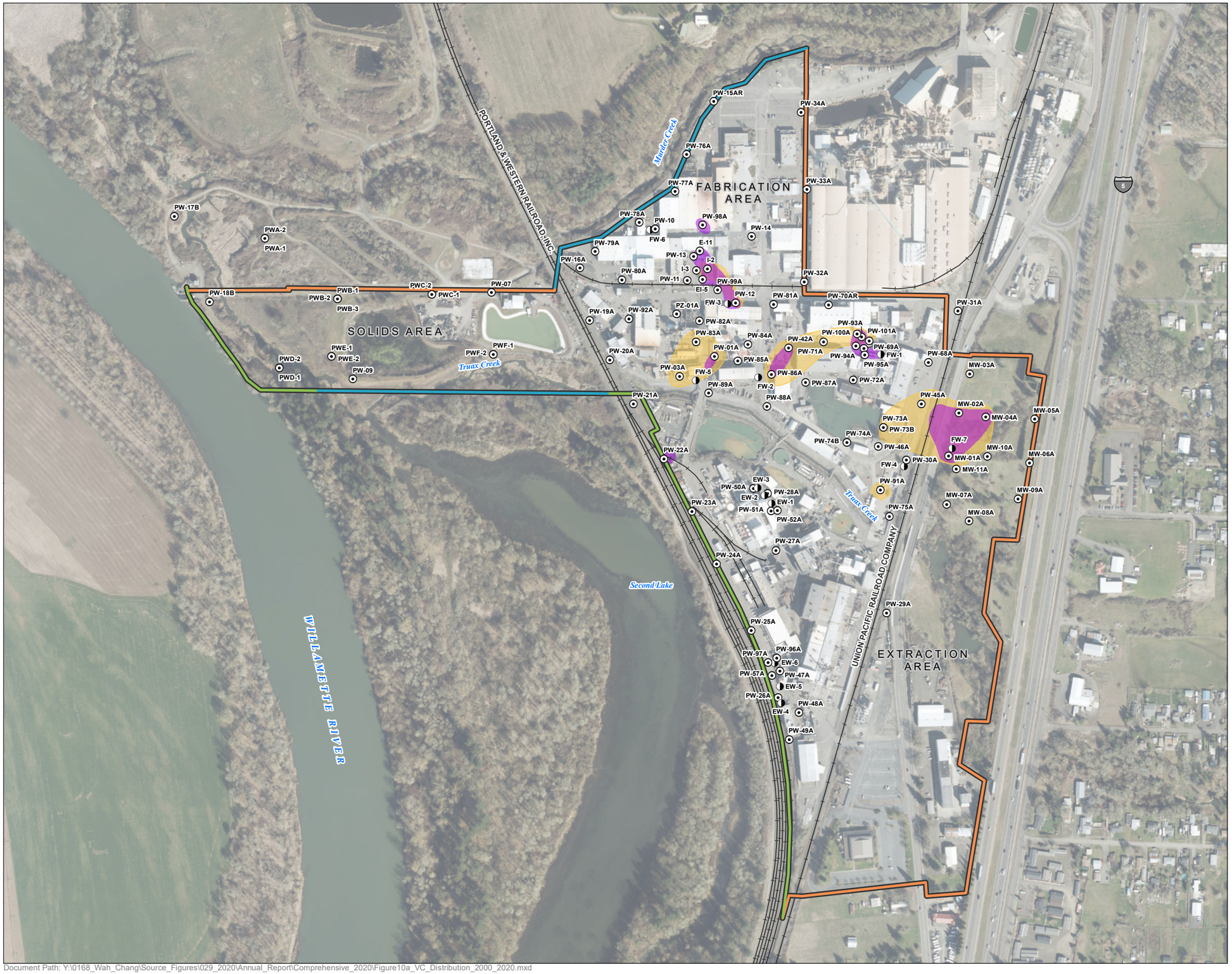

FIGURE 10a

VC Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 VC Concentrations Above the Cleanup Level (2 µg/L)
- 2000 VC Concentrations Above the Cleanup Level (2 µg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: 0.023 µg/L
- Groundwater MCL, Standard: 2 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 2 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
VC: Vinyl Chloride
µg/L: micrograms per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure10a_VC_Distribution_2000_2020.mxd

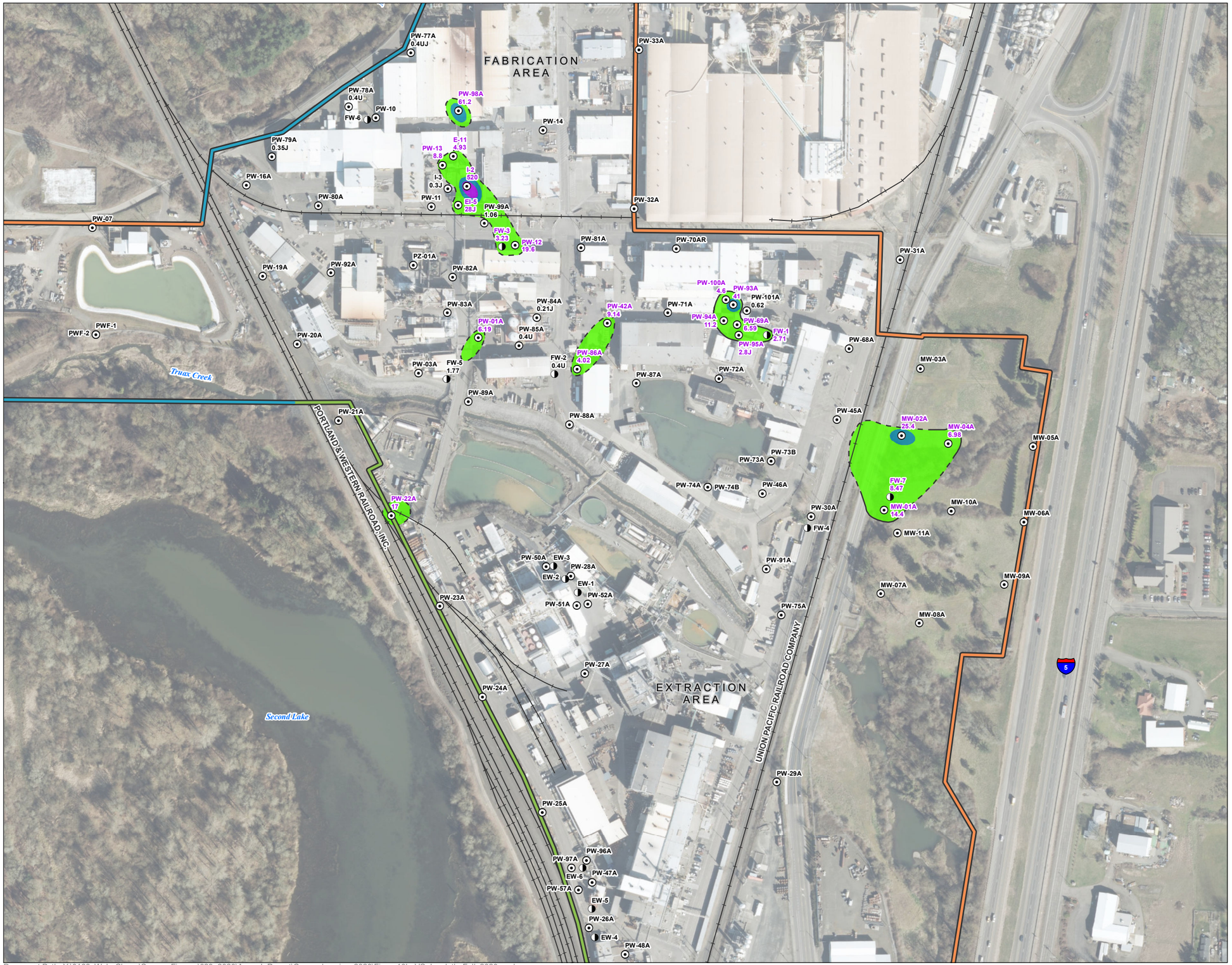

FIGURE 10b

VC Isopleth in Fall 2020

ATI Millersburg Operations, Oregon

LEGEND

Monitoring Well
Fall 2020 VC Concentration in µg/L

Extraction Well
Fall 2020 VC Concentration in µg/L

Fall 2020 VC Concentrations (µg/L)

- 2 - 20
- 21 - 200
- > 200
- VC Concentration Boundary (dashed where inferred)

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: 0.023 µg/L
- Groundwater MCL, Standard: 2 µg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 2 µg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
VC: Vinyl Chloride
U: not detected above reporting limit
J: estimate
µg/L: micrograms per liter

N

0 115 230 345
Feet

Date: July 12, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

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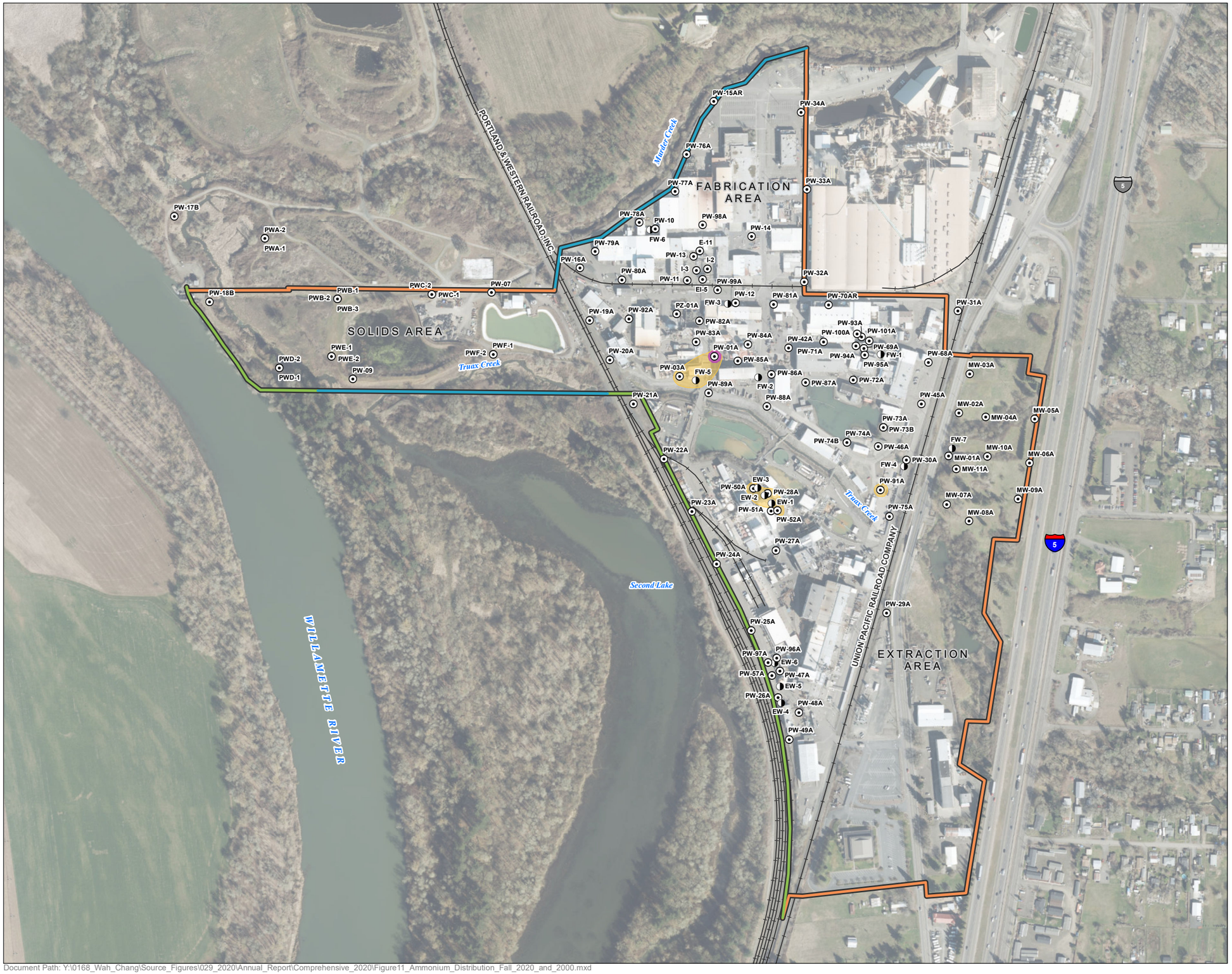

FIGURE 11

Ammonium Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 Ammonium Concentrations Above the Cleanup Level (250 mg/L)
- 2000 Ammonium Concentrations Above the Cleanup Level (250 mg/L)

Property Boundary

- AWQC for Aquatic Receptors: Standard function based value dependent on pH and temperature.
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 250 mg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 250 mg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
mg/L: milligrams per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure11_Ammonium_Distribution_Fall_2020_and_2000.mxd

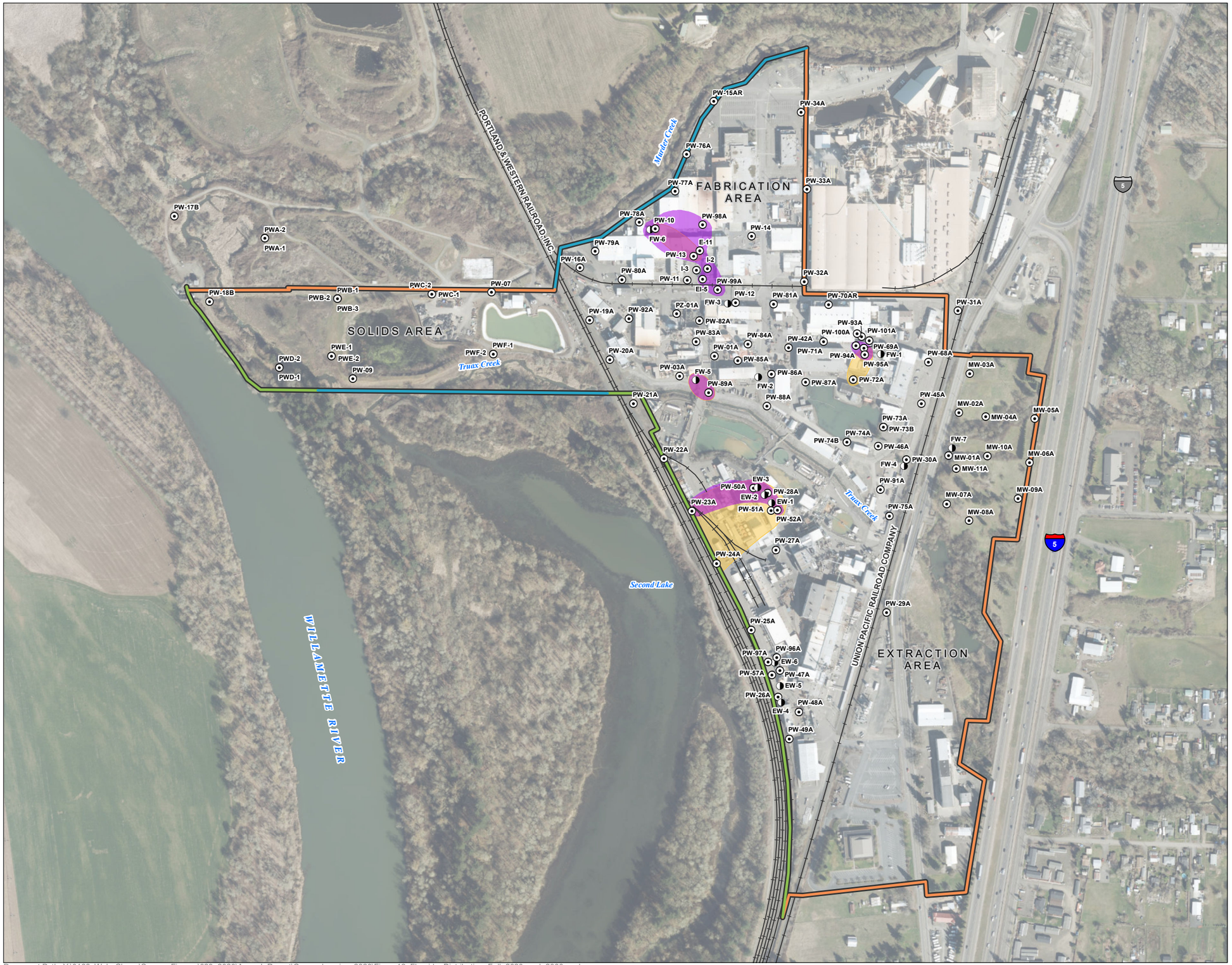

FIGURE 12

Fluoride Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 Fluoride Concentrations Above the Cleanup Level (4 mg/L)
- 2000 Fluoride Concentrations Above the Cleanup Level (4 mg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 4 mg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 4 mg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
mg/L: milligrams per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure12_Fluoride_Distribution_Fall_2020_and_2000.mxd

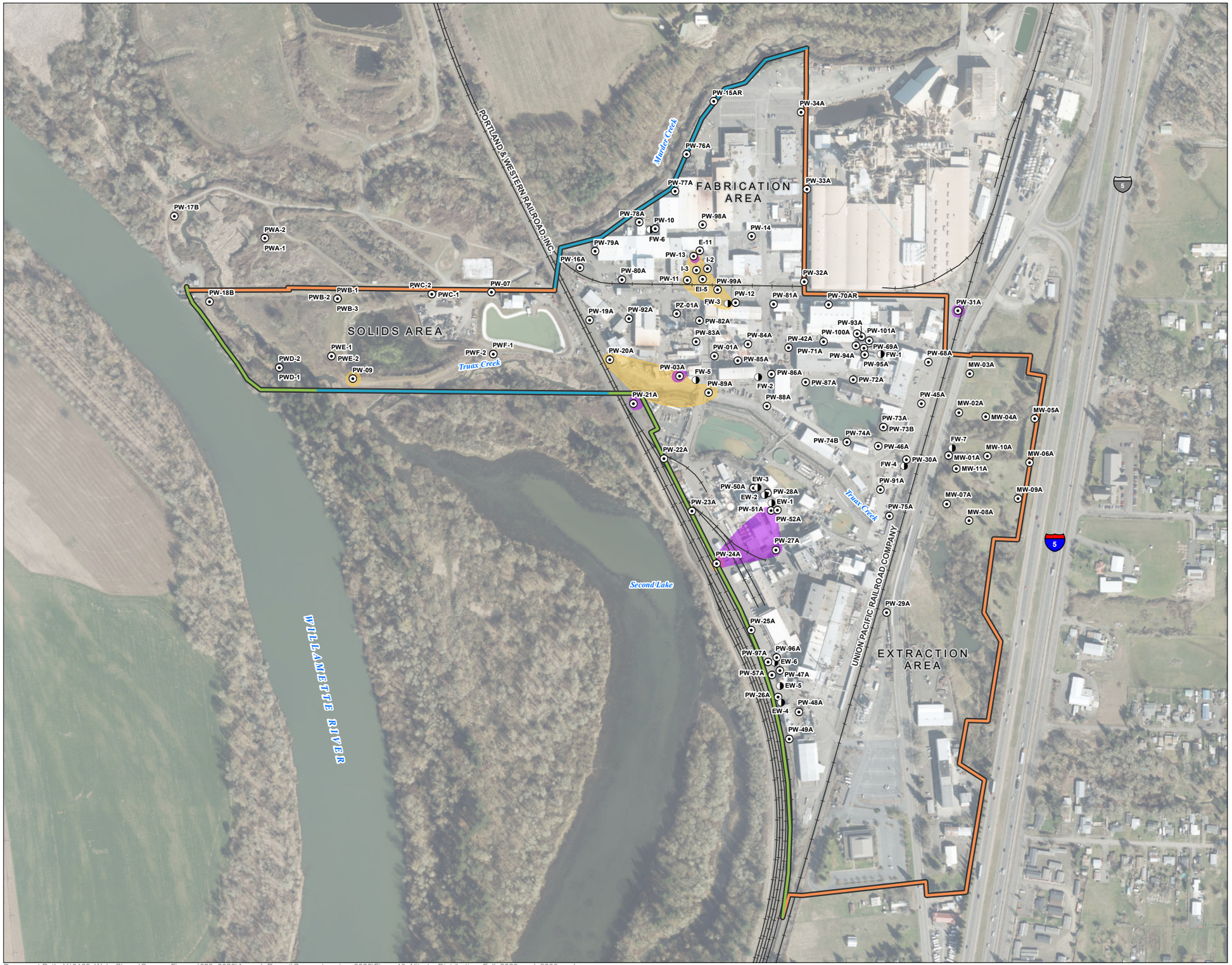

FIGURE 13

Nitrate Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 Nitrate Concentrations Above the Cleanup Level (10 mg/L)
- 2000 Nitrate Concentrations Above the Cleanup Level (10 mg/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 10 mg/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 10 mg/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
mg/L: milligrams per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure13_Nitrate_Distribution_Fall_2020_and_2000.mxd

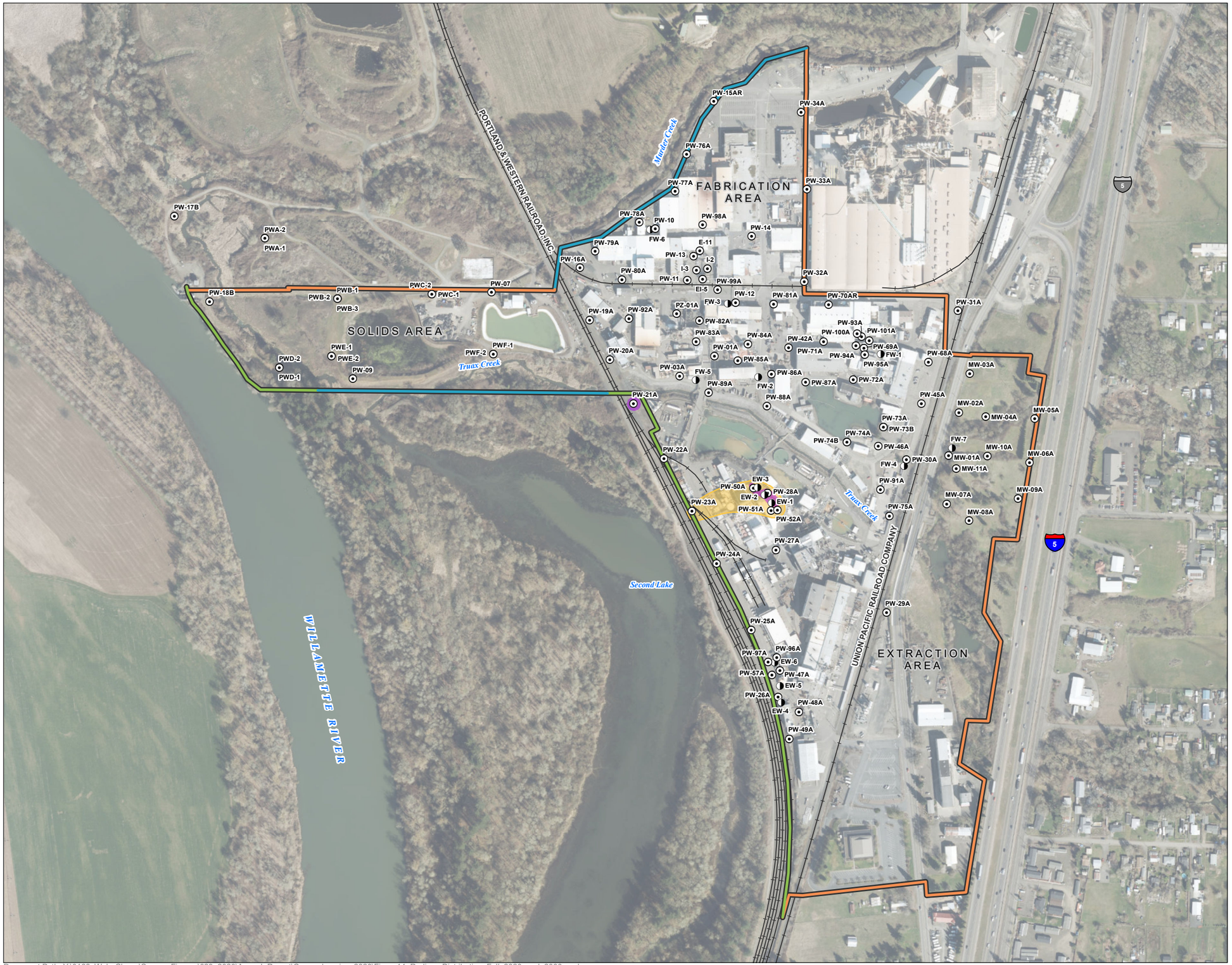

FIGURE 14

Radium-226/228 Distribution in Fall 2020 and 2000

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Fall 2020 Radium-226/228 Concentrations Above the Cleanup Level (5 pCi/L)
- 2000 Radium-226/228 Concentrations Above the Cleanup Level (5 pCi/L)

Property Boundary

- AWQC for Aquatic Receptors, Standard: not established
- AWQC for Human Health and Fish Consumption, Standard: not established
- Groundwater MCL, Standard: 5 pCi/L

All Other Features

- Railroad

NOTES

Wells without a displayed concentration were below the cleanup level in Fall 2020.
Cleanup Level = 5 pCi/L

AWQC: Ambient Water Quality Criteria, Oregon Department of Environmental Quality
MCL: Maximum Contamination Level, U.S. Environmental Protection Agency's Drinking Water Regulation
pCi/L: picocuries per liter

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\Annual_Report\Comprehensive_2020\Figure14_Radium_Distribution_Fall_2020_and_2000.mxd

Appendices

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APPENDIX A

Feed Makeup Area Gamma Emitting Material Excavation

APPENDIX A: FEED MAKEUP AREA GAMMA EMITTING MATERIAL EXCAVATION

This appendix describes the excavation of 1,900 cubic yards (cy), including gamma emitting material (GEM), in the Feed Makeup Area (FMA) of the Allegheny Technologies Incorporated (ATI) Millersburg Operations (Site) (Figure 1). The excavation and associated field screening and sampling methodology followed ATI's *Work Instruction WI-EMO-39 for Excavation of Soil* (Excavation Work Instruction; ATI, 2005). The excavation, and associated field screening and soil sampling, were conducted from November 9 through 12, 2020.

1. Excavation Overview

A 1,400 cy excavation in the FMA was initially advanced to prepare for the construction of a new building. At the planned limits of the excavation, two areas of the excavation walls and floor exhibited surface radiation readings greater than or equal to 20 microroentgens per hour (µR/hr) over background levels. ATI's Excavation Work Instruction, WI-EMO-039, requires the excavation of additional soils if the surface radiation reading is greater than or equal to 20 µR/hr over background; however, the further excavation requirement only applies until the depth of 4 feet below ground surface (bgs) has been reached. Nevertheless, in consideration of the FMA Conceptual Site Model aspect that elevated concentrations of radon are present in groundwater due to the collocation of GEM and low pH groundwater, the decision was made to expand the excavation to remove additional GEM despite the excavation already being greater than 4 feet in depth. Subsequently, the excavation volume was significantly expanded, guided by field screening results.

Results from screening and soil sampling conducted at the completion of the excavation of a given area were documented for inclusion in ATI's site soil sampling results records.

2. Field Screening Guided Excavation

To guide the excavation, field screening was conducted using a Ludlem Model 3000 survey meter, consistent with ATI's Excavation Work Instruction, WI-EMO-039, with two exceptions:

- A tighter 10-foot by 10-foot grid was used within the excavation in place of the standard 20-foot by 20-foot grid.
- Soils with surface radiation readings greater than or equal to 20 µR/hr over background were excavated from areas of the excavation with depths greater than 4 feet bgs.

The excavation was extended vertically and horizontally in two locations where the surface radiation readings exceeded the threshold of 20 µR/hr over background:

- The excavation was extended at the west exceedance to the north where a containment wall was encountered, to the west until readings were below threshold, and to a final depth of 12 feet where readings were below threshold.
- The excavation was extended at the east exceedance to a final depth of 22 feet, where safety considerations due to the adjacent building prevented further excavation. Although threshold were exceeded to the east, further excavation was prevented by the presence of the footprint of the existing building.

3. Excavation Base Screening and Soil Sampling

3.1 Excavation Base Screening and Soil Sampling Methodology

At the completion of the excavation of a given area, field screening and soil sampling were conducted, consistent with ATI's Excavation Work Instruction, WI-EMO-039, with two exceptions:

1. A tighter 10-foot by 10-foot grid was used within the excavation in place of the standard 20-foot by 20-foot grid for all constituents except polychlorinated biphenyls (PCBs). The standard grid spacing was used for PCB samples.
2. Sufficient material was collected for each grid location to run radionuclide analysis. Samples exceeding screening criteria were sent for lab analysis; all other samples are held at ATI.

Soil samples were labelled with the gridded coordinate system that describes the xy location of the sample relative to a benchmark. Sidewall samples were labeled with the joining x (1 through 10) or y (A through L) location followed by the sidewall name (North, South, East or West). The coordinate system used within the excavation is presented on Figure 2.

3.2 Soil Analytical Results

A total of 32 unique soil samples exceeded the field screening criteria and were analyzed for metals, PCBs, and/or radionuclides (Table 1). Soil analytical results were recorded in ATI's sitewide soil sampling results records.

As discussed in Section 1.2 of the main report, surface and subsurface soils are managed in accordance with Operable Unit 3's record of decision (EPA 1995), which identifies a cleanup level of 3 picocuries per gram (pCi/gram) for radium-226 but does not identify specific cleanup levels for metals, PCBs, or other radionuclides. Although the investigation is ongoing, thorium and uranium analytical results are consistent with thorium and uranium concentrations found in beach sands, as documented in publicly available literature such as *Uranium and Thorium in Zircon Sands Processed in Northeastern Brazil* (Hazin et al., 2008).

4. Excavation Observations

An old process vessel was uncovered approximately 4 feet bgs near the east wall of the excavation (Figure 2). The vessel was removed. ATI was not able to determine the source of the old process vessel, as there were no distinguishing marks. Furthermore, historical aerial photographs were not created frequently enough to determine what process the vessel would likely have been associated with. Historically, processes in the FMA had a higher turnover rate; therefore, the limited past documents that are available were not helpful in identifying this specific vessel.

There were no visual observations of any staining, discoloration, or zircon sand present in the excavation and spoils.

5. Summary

A 1,400 cy excavation in the FMA was initially advanced to prepare for the construction of a new building. The excavation volume was significantly expanded (to approximately 1,900 cy) to remove soils exhibiting elevated (greater than 20 µR/hr) gamma field screening values. Some soils exhibiting screening values greater than 20 µR/hr remained in place at the completion of excavation activities due to the existing building footprint along the east wall and safety considerations at deeper depths.

Excavated soils are being disposed at U.S. Ecology Idaho under profile #15444-0, consistent with the requirements of ATI's Radioactive Materials License #ORE-90001, issued by the Oregon Health Authority. Offsite disposal of the excavated soils is ongoing; therefore, all waste disposal documentation is not currently available but an example manifest is available in Attachment A.

6. References

ATI. 2005. Work Instruction WI-EMO-39, Revision 0, Excavation of Soils. ATI Millersburg Operations. August 2005.

EPA. 1995. Record of Decision: Declaration, Decision Summary, and Responsiveness Summary for Final Remedial Action for Surface and Subsurface Soil Operable Unit, Teledyne Wah Chang Albany Superfund Site, Millersburg, Oregon. U.S. Environmental Protection Agency. September 1995.

Hazin, Clovis A., Emerson E. G. de Farias, and Maria Helena P. Gazineu. 2008. Uranium and Thorium in Zircon Sands Processed in Northeastern Brazil. IRPA 12: 12 International Congress of the International Radiation Protection Association (IRPA): Strengthening Radiation Protection Worldwide, Argentina: SAR.

Table

Table 1. 2020 Feed Makeup Area Soil Excavation Anaytical Results

ATI Millersburg Operations, Oregon

Grid Location	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Total Aroclors (mg/kg)
A1	8.04	215	0.281 U	24.9	7.05	0.112 U	1.40 U	0.281 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0194	0.0131 U	0.0194
C1	6.18	190	0.279 U	19.4	6.52	0.112 U	1.40 U	0.279 U	0.0134 U	0.0134 U	0.0134 U	0.0192	0.0134 U	0.0839	0.0134 U	0.103
E1	6.91	193	0.280 U	24.9	11.2	0.112 U	1.40 U	2.10	0.0136 U	0.0136 U	0.0136 U	0.103	0.0136 U	0.163	0.0136 U	0.266
C2	8.60	205	0.308 U	21.8	7.28	0.123 U	1.54 U	0.308 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U	ND
5 South Wall	4.27	171	1.05	25.9	10.2	0.101 U	1.26 U	1.54	0.0125 U	0.0125 U	0.0125 U	0.104	0.0125 U	0.546	0.0125 U	0.650
E6	5.59	149	1.62	27.0	6.97	0.111 U	1.38 U	1.85	0.0123 U	0.0123 U	0.0123 U	0.0123 U	0.0123 U	0.0655	0.0123 U	0.0655
6 North Wall	3.72	30.4	0.221	15.6	6.54	0.0866 U	1.08 U	0.555	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.370	0.0103 U	0.0103 U	0.370
D8	6.00	202	3.00	41.9	10.6	0.110 U	1.38 U	3.80	0.0129 U	0.0129 U	0.0129 U	0.0129 U	0.0129 U	0.0759	0.0129 U	0.0759
F8	4.55	148	0.931	21.8	6.46	0.103 U	1.29 U	1.13	0.0124 U	0.0124 U	0.0124 U	0.0124 U	0.0124 U	0.0274	0.0124 U	0.0274
9 South Wall	3.87	174	2.93	22.1	14.0	0.115 U	1.44 U	3.72	0.0664 U	0.0664 U	0.0664 U	0.0664 U	0.0664 U	1.29	0.0664 U	1.29
E West Wall	5.35	63.0	23.5	56.0	12.3	0.103	1.28 U	30.7	0.0120 U	0.0120 U	0.0120 U	0.0506	0.0120 U	0.208	0.0120 U	0.259
F West Wall	3.79	31.5	18.3	17.9	5.65	0.117 U	1.46 U	23.2	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.193	0.0131 U	0.193

Grid Location	Radium 226 (pCi/g)	Radium 228 (pCi/g)	Thorium (mg/kg)	Uranium (mg/kg)
ROD Cleanup Level [1]	*3*	--	--	--
F East Wall	0.56	2.2	7.66	1.12
G East Wall	0.89	1.2	4.52	1.21
H East Wall	2.6	2.5	7.35	1.45
F1	**33**	31	275	25.4
G1	**150**	150	1610	11.4
H1	**11**	10	86.3	4.89
I1	1.5	1.2	6.74	1.24
F2	**220**	180	1810	30.7
G2	**140**	76	782	5.12
E8	**5.4**	8.9	115	4.15
D8	**13**	11	106	6.66
I8	2.2	3.2	13.2	7.76
D9	**28**	32	415	4.57
E9	**3.1**	2.6	24.9	4.83
H9	**14**	6.4	145	52.2
C10	0.99	1.5	6.27	0.699
D10	1.9	2.1	7.70	4.16
E10	**4.6**	4.8	34.2	4.14
B West Wall	**18**	11	141	6.41
C West Wall	**11**	4	39.8	4.96
D West Wall	**69**	41	495	4.97
E West Wall	**76**	47	948	15.6

Notes

Bold indicates that the concentration meets or exceeds the cleanup level in EPA's ROD for surface and subsurface soil (OU3), 1995.

[1] Cleanup level is from Section 10 of the Environmental Protection Agency's ROD for surface and subsurface soil (OU3), 1995.

EPA = U.S. Environmental Protection Agency

mg/kg = milligrams per kilograms

ROD = record of decision

pCi/g = picocuries per gram

ND = not detected

U = not detected above reporting limit

Figures

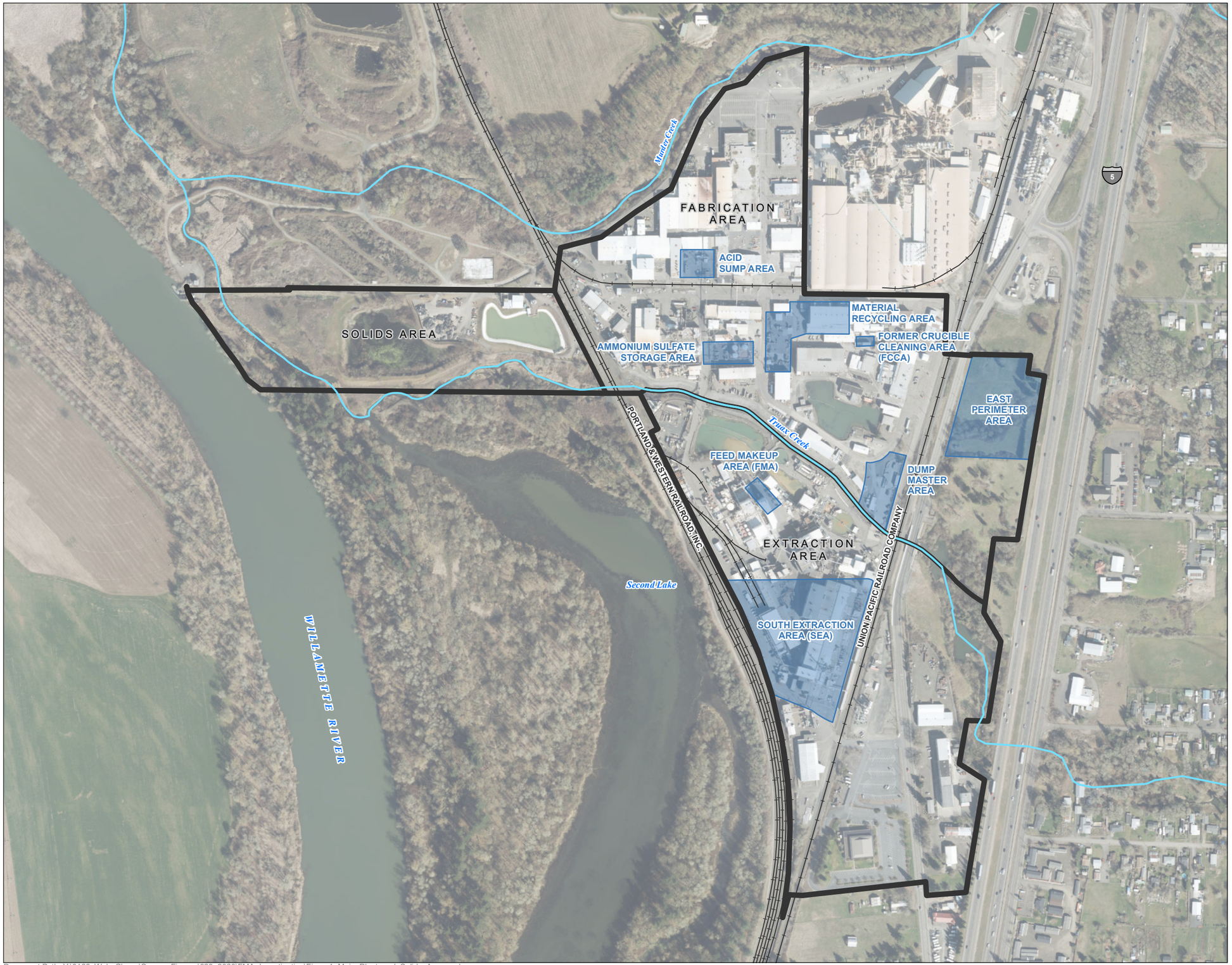


FIGURE 1

Main Plant and Solids Area

ATI Millersburg Operations, Oregon

LEGEND

- Watercourse
- Boundary
- Investigation Subarea
- Railroad

N

0 225 450 675
Feet

Date: February 22, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\FMA_Investigation\Figure1_Main_Plant_and_Solids_Area.mxd

FIGURE 2

Feed Makeup Area Source Area Excavation

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Sidewall Soil Radium-226 Concentrations Above the Cleanup Level (3 pCi/g)
- Soil Radium-226 Concentrations Above the Cleanup Level (3 pCi/g)
- 10'x10' Sampling Grid
- Approximate Excavation Area
- Former Feed Transfer Line
- Former Process Buildings
- Former Feed Tanks

NOTES

Excavation was to approximately 5 feet bgs unless otherwise noted.
Cleanup level: 3 pCi/g
pCi/g: picocuries per gram
bgs: below ground surface

N

0 20 40 60
Feet

Date: March 26, 2021
Data Sources: Wah Chang, City of Albany GIS

GSI Water Solutions, Inc.

Document Path: Y:\0168_Wah_Chang\Source_Figures\029_2020\FMA_Investigation\Figure2_FMA_Source_Area_Exc.mxd

Attachment A

Disposal Manifest Example

Please print or type 566
(Form designed for use on elite (12-pitch) typewriter.)

21011800155 30yds 60900#

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: ORD 050 955 848
2. Page 1 of 1
3. Emergency Response Phone
4. Waste Tracking Number: 21005

5. Generator's Name and Mailing Address
ATI MILLERSBURG
PO Box 460
Albany, OR 97321
Generator's Phone: 541-926-4211

Generator's Site Address (if different than mailing address)

RECEIVED 2/1/21

6. Transporter 1 Company Name: Bob Barker Trucking (541) 928 7609
U.S. EPA ID Number: N/A

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US ECOLOGY IDAHO, INC.
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: (800)274-1516
U.S. EPA ID Number: IDD 073 114 654

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. <SOIL> Non Regulated per 49 CFR (Zircon sand extraction residue)	001	DT	60,000	P
2. Non Regulated per 49 CFR (Spent Carbon Tubes)				P
3. Non Regulated per 49 CFR (Treated Thermax)				P
4.				

13. Special Handling Instructions and Additional Information
11.a 15444 → TOTAL NET WEIGHT 60,000 #
11.b 15187
11.c 15594
Waste is Commingled.

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Shane Slover
Signature:
Month 1 Day 18 Year 21

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: JASON BARKER
Signature:
Month 1 Day 18 Year 21

Transporter 2 Printed/Typed Name
Signature:
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Shilo Ottaway
Signature: S Ottaway
Month 1 Day 18 Year 21

GENERATOR

DESIGNATED FACILITY TO GENERATOR

GC Labels • Printed in the USA
1-800-997-6966

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

January 20,2021

ATI MILLERSBURG
1600 NE OLD SALEM ROAD
ALBANY, OR 97321

This is to certify that waste as defined on Waste Manifest number **21005/** was received by U.S. Ecology, Inc., on **1/18/2021** .The waste(s) were subsequently treated, if required by 40 CFR Part 26 and U.S. Ecology's permits and disposed of on **01/18/2021** in accordance with permits and laws regulating this facility.

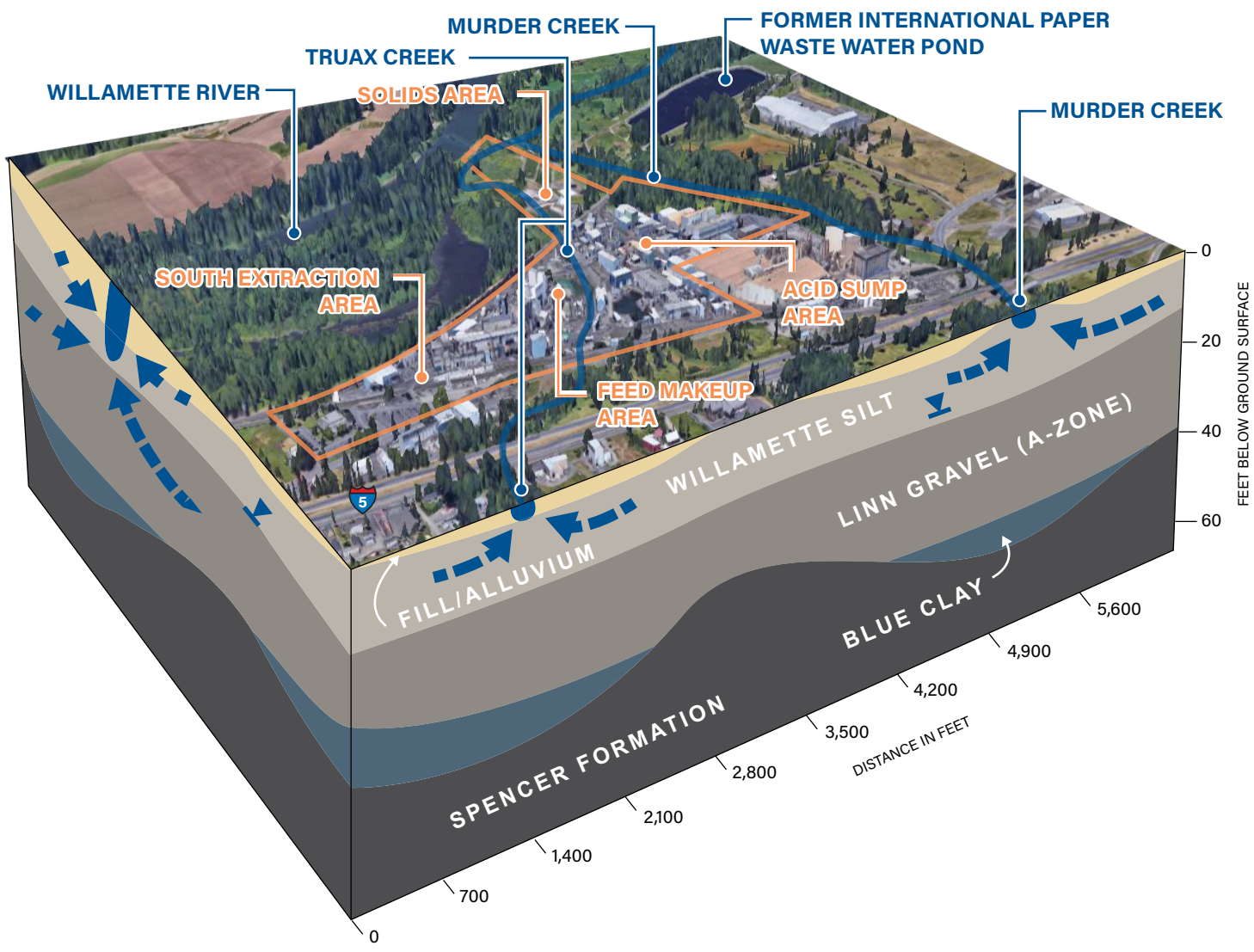
Customer Manifest#: 21005
State Manifest #:
Page/Ln: 1/1
Material: 1 DUMP TRUCK
Process: Direct Landfill
Management Code: H132 Landfill or surface impoundment that will be closed as landfill
Facility: US ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Stream #: 15444-0
Waste Type: **NON-HAZARDOUS**

Customer: ATI MILLERSBURG

Printed Name: CORIAN SCHMITZ
Signature: Corian Schmitz
Title: RECEIVING CLERK

APPENDIX B

Site Geology



Appendix B

Site Geology – Conceptual Site Model

ATI Millersburg Operations, Oregon

GSI Water Solutions, Inc.

Y:\0168_Wah_Chang\Source_Figures\034_2021_2022\Comprehensive_Annual_Report

APPENDIX C

Remedial Investigation and Feasibility Study Cross Sections (CH2M HILL, 1993, pp. 4-59–4-66)

08-24-92

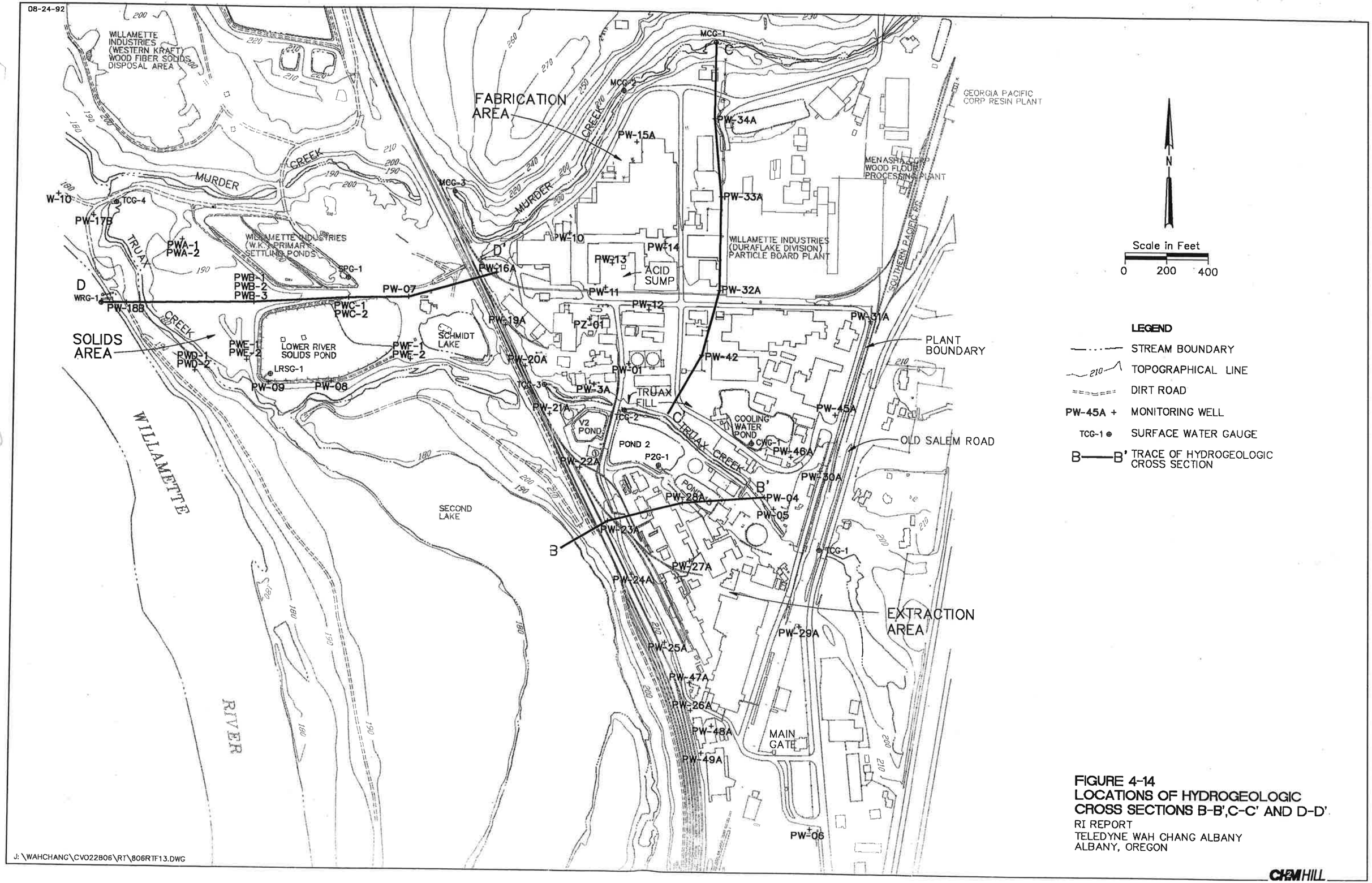
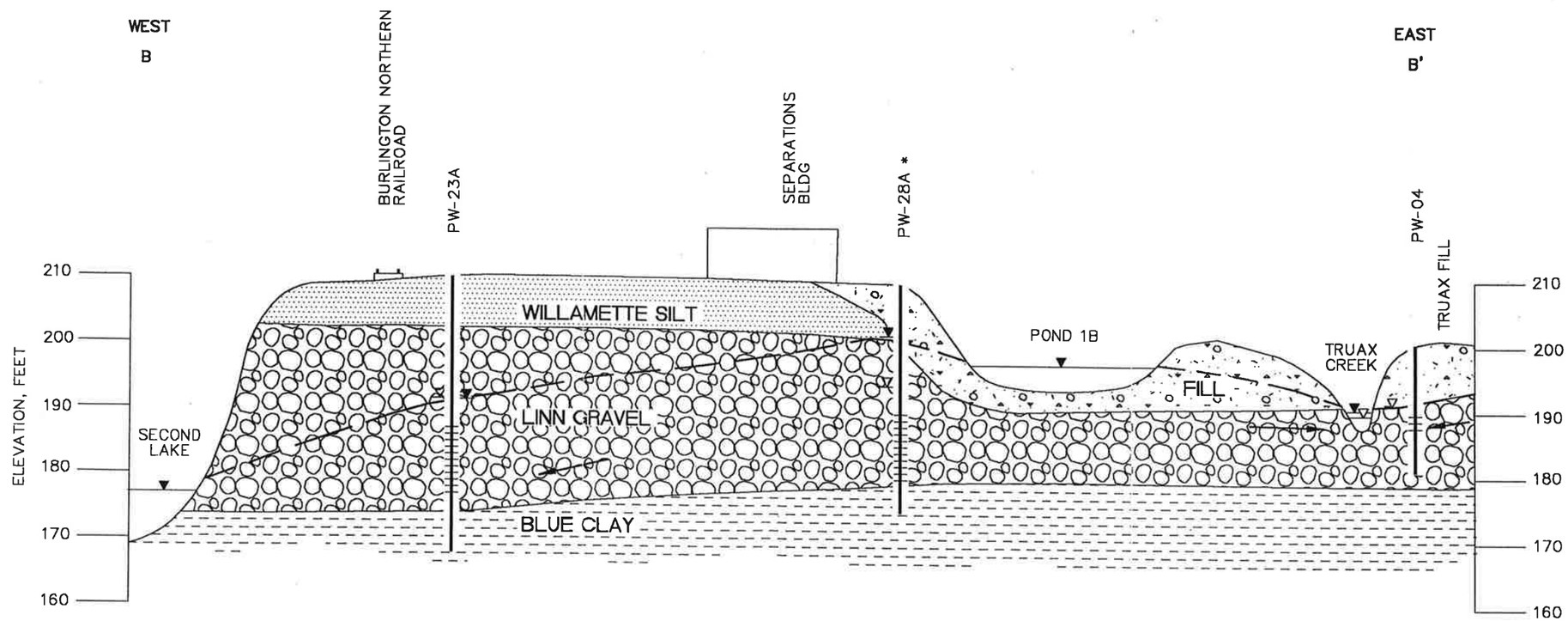


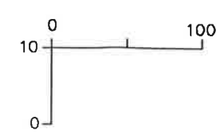
FIGURE 4-14
LOCATIONS OF HYDROGEOLOGIC CROSS SECTIONS B-B',C-C' AND D-D'
RI REPORT
TELEDYNE WAH CHANG ALBANY
ALBANY, OREGON

J:\WAHCHANG\CVO22B06\RT\806RTF13.DWG

CH2M HILL

08-26-92





SCALE IN FEET

VERTICAL EXAGGERATION: 5X

LEGEND

- WELL SCREEN INTERVAL
- GROUNDWATER ELEVATION ON 1/91
- GROUNDWATER ELEVATION ON 10/91
- SHALLOW GROUNDWATER TABLE ON 1/91
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- * WATER LEVEL ELEVATIONS INCONSISTENT WITH OTHER WELLS DUE TO PERIODS OF GROUNDWATER MOUNDING AND PUMPING

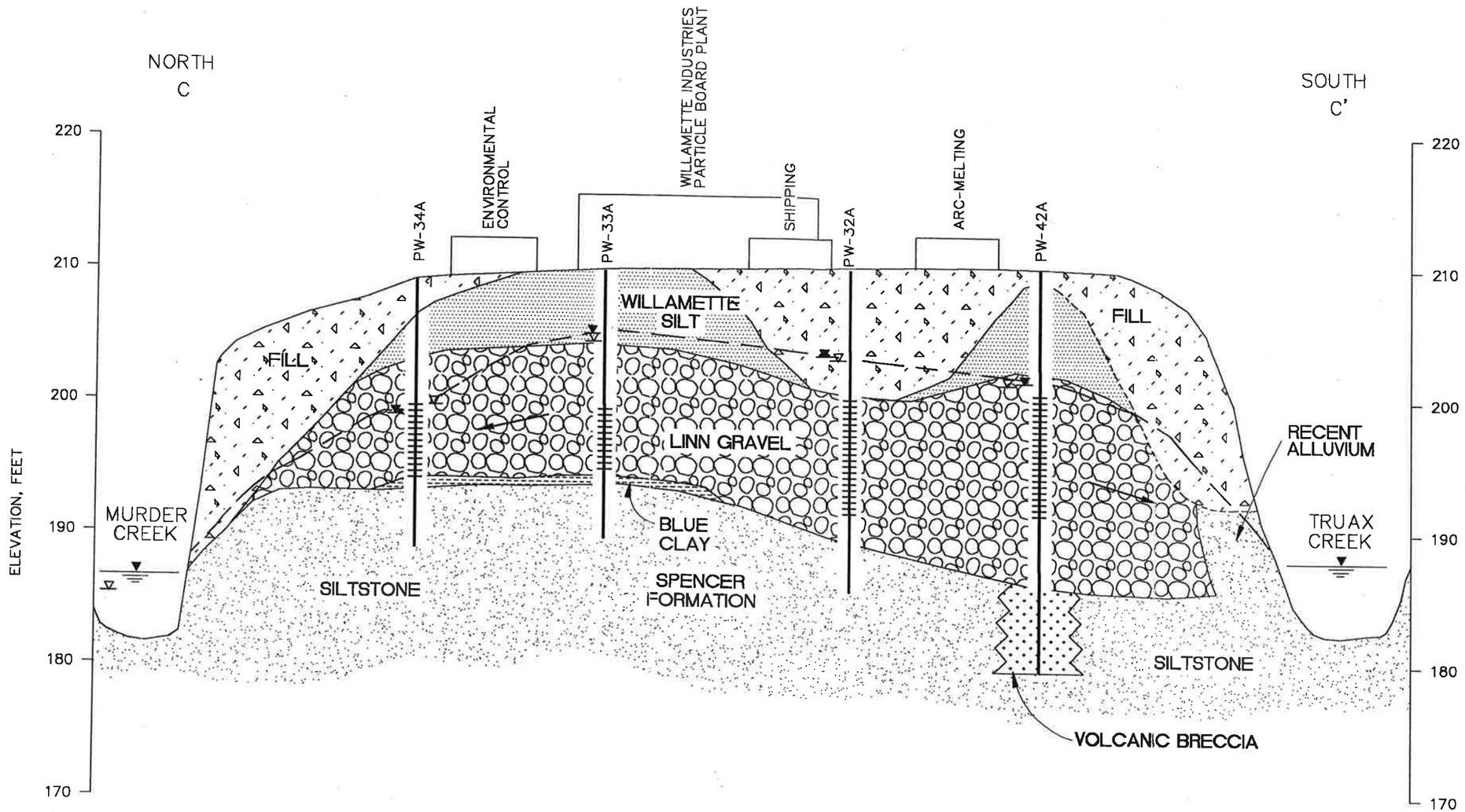
FIGURE 4-15
EXTRACTION AREA
CONCEPTUAL HYDROGEOLOGIC CROSS SECTION B-B'

RI REPORT
TELEDYNE WAH CHANG ALBANY
ALBANY, OREGON

J:\WAHCHANG\CVO22806\RT\806RTF14.DWG

CH2M HILL

09-15-92



LEGEND

- WELL SCREEN INTERVAL
- GROUNDWATER ELEVATION ON 1/91
- GROUNDWATER ELEVATION ON 10/91
- SHALLOW GROUNDWATER TABLE ON 1/91
- ESTIMATED CONTACT LOCATION
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

0 100
10
0

SCALE IN FEET
VERTICAL EXAGGERATION = 20X

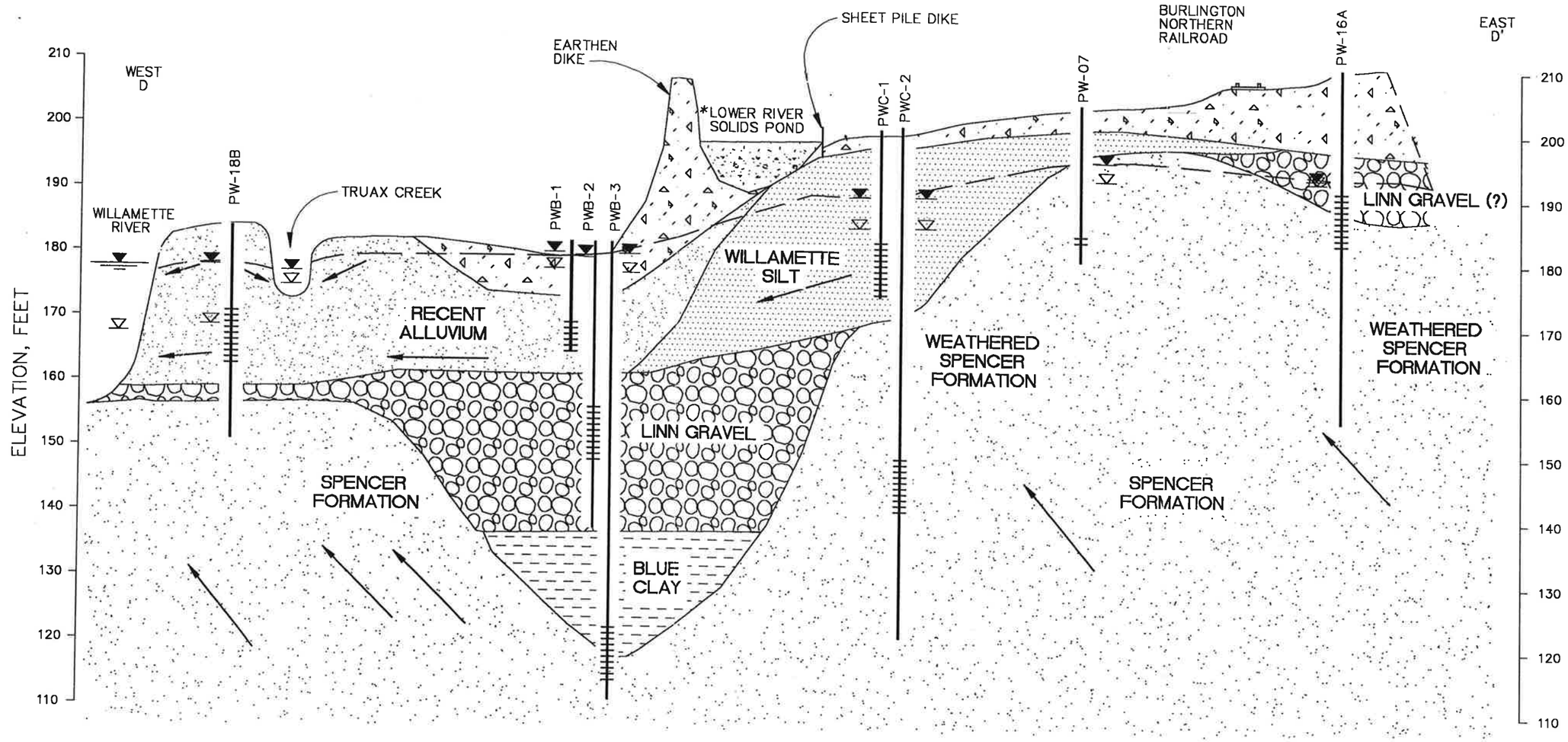
FIGURE 4-16
FABRICATION AREA
CONCEPTUAL HYDROGEOLOGIC CROSS SECTION C-C'
RI REPORT
TELEDYNE WAH CHANG ALBANY
ALBANY, OREGON

J:\WAHCHANG\CV022806\RT\806RTF12.DWG

CH2M HILL

=1.0

07-07-92



LEGEND

- WELL SCREEN INTERVAL
- GROUNDWATER ELEVATION ON 1/91
- GROUNDWATER ELEVATION ON 10/91
- SHALLOW GROUNDWATER TABLE ON 1/91
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW

NOTE:

* THE LOWER RIVER SOLIDS POND WAS EXCAVATED IN SUMMER AND FALL 1991.

0 100
10
0

SCALE IN FEET
VERTICAL EXAGGERATION = 10X

FIGURE 4-17
SOLIDS AREA
CONCEPTUAL HYDROGEOLOGIC CROSS SECTION D-D'
RI REPORT
TELEDYNE WAH CHANG ALBANY
ALBANY, OREGON

J:\WAHCHANG\CVO22806\RT\806RTF15.DWG

CH2M HILL

I=1.0

APPENDIX D

South Extraction Area Restoration Completeness Evaluation

APPENDIX D: SOUTH EXTRACTION AREA RESTORATION COMPLETENESS EVALUATION

This appendix to the *Millersburg Operations Remedial Action Progress Summary Year 2020* (GSI, 2021) summarizes an evaluation of restoration completeness in the South Extraction Area (SEA) of the Allegheny Technologies Incorporated (ATI) Millersburg Operations (Site) in Millersburg, Oregon. The evaluation was conducted in general accordance with the U.S. Environmental Protection Agency (EPA) guidance *Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well* (EPA, 2014). The appendix is organized as follows:

- Section 1: Background
- Section 2: Methods for Evaluating Restoration Completeness in the SEA
- Section 3: Results of the Restoration Completeness Evaluation
- Section 4: Conclusions and Recommendations
- Section 5: References

1. Background

In 2019, EPA performed a Remedial Process Optimization Study and published an Optimization Review Report (EPA, 2019). The Optimization Review Report included a useful overview of the Site and several valuable recommendations. Specifically, Optimization Recommendation 5.8.1 advocated that ATI use existing EPA attainment guidance for evaluating contaminant concentrations on a well-by-well basis in the SEA, Farm Ponds Area, and Solids Area to develop the statistical power required to demonstrate that groundwater cleanup requirements have been met (EPA, 2019)[1]. In order to not duplicate or confuse terminology, the attainment analysis EPA recommended will be called a restoration completeness evaluation.

This section provides background about the restoration completeness evaluation and the SEA, including the purpose and objectives of the evaluation (Subsection 1.1), an overview of the ATI Millersburg Operations (Subsection 1.2), and a conceptual site model (CSM) for the SEA (Subsection 1.3).

1.1 Purpose and Objectives

The purpose of this restoration completeness evaluation is to assess on a well-by-well basis whether constituents of concern (COC) concentrations in SEA groundwater have been reduced to below cleanup levels, and will remain below cleanup levels in the future. The objectives of the restoration completeness evaluation are:

- Identify COCs in the SEA based on exceedances of cleanup levels for groundwater during previous sampling.
- Identify extraction wells and monitoring wells in the SEA to include in the restoration completeness evaluation based on exceedances of cleanup levels for groundwater at the wells.
- Determine the remediation phase for each COC at each well based on EPA guidance (2014) (i.e., evaluate whether each COC at each well is in the Remediation Monitoring Phase [RMP], the Attainment Monitoring Phase [AMP], or Restoration Complete).

[1] The power of a statistical study is how likely the study is to distinguish an actual effect from one of chance (e.g., Helsel and Hirsch, 2002).

1.2 ATI Millersburg Operations Overview

The Site is approximately 225 acres and is located in the southern portion of Millersburg, Oregon. The Site consists of the Main Plant, which includes the Fabrication and Extraction Areas; the Solids Area; and the Farm Ponds Area (Figure 1). The SEA is an investigation subarea within the Extraction Area in the southern part of the Main Plant (Figure 2). The Extraction Area is the part of the ATI facility where zirconium and hafnium are isolated from feed stocks and historically were extracted from zircon sand.

1.3 Conceptual Site Model for the SEA

In the Remedial Investigation/Feasibility Study (RI/FS) (CH2M Hill, 1993), the SEA is identified as an area where groundwater is contaminated with chlorinated volatile organic compounds (CVOCs). In order to characterize and remediate CVOC contamination in the SEA, ATI installed 9 monitoring wells, 3 extraction wells, and 24 soil gas borings (Figure 3). This section presents an abbreviated CSM for the SEA, which includes identification of the source area (Subsection 1.3.1), a high-level overview of the geologic and hydrogeologic setting (Subsection 1.3.2), a discussion of historical groundwater remediation activities (Subsection 1.3.3), and current groundwater conditions (Subsection 1.3.4).

1.3.1 Source Area

Because no documented spills occurred in the SEA, the source area was delineated with a soil gas survey during the RI/FS (CH2M Hill, 1993). The soil gas survey results, which are shown in Figure 3 for 1,1,1-trichloroethane (TCA), indicated elevated CVOC concentrations[2] in soil in an area between the Zirconium Chlorination and Reduction Buildings and Maintenance Shop areas. The RI/FS assumed that this was the source area for CVOCs in groundwater, and attributed the elevated soil gas concentrations to activities at the maintenance shop, where cleaning solvents TCE and TCA were used. In the SEA, the use of TCE and TCA were discontinued in 1982 and 1988, respectively (CH2M Hill, 1993).

1.3.2 Geologic and Hydrogeologic Setting

This section provides a high-level overview of geology and hydrogeology in the SEA. Detailed documentation of geology and hydrogeology is presented in the RI/FS (CH2M Hill, 1993).

Soils in the SEA are comprised of unconsolidated clay, sand, and gravel. From deepest (oldest) to shallowest (youngest), the units are:

- The **Blue Clay** is an aquitard that was deposited in low-energy fluvial environments (i.e., lakes or rivers), and is generally encountered at 32 to 34 feet below ground surface (bgs).
- The **Linn Gravel** is the water-bearing unit in the SEA, and was deposited as an alluvial fan from streams draining the Cascade Mountains (CH2M Hill, 1993; Crenna and Yeats, 1994). In the SEA, the Linn Gravel is generally 25 to 30 feet thick. The saturated thickness of the Linn Gravel generally ranges from about 6 feet to 22 feet.
- The **Willamette Silt** is comprised of fine-grained sediments that settled out of floodwaters that inundated the Willamette Valley over 19,000 years ago (Glenn, 1965; O'Connor et al., 2001). In the SEA, the Willamette Silt is unsaturated, and is generally encountered from ground surface to 8 feet bgs.

Depth to groundwater in the SEA ranges from about 20 to 30 feet bgs. Groundwater flows southwest, towards Second Lake (Figure 4 of the main report). Depth to groundwater and geologic unit contacts in the SEA are provided in Attachment A.

[2] Specifically, elevated concentrations of trichloroethene (TCE) and TCA were detected.

1.3.3 Groundwater Remediation Activities in the SEA

ATI has actively remediated groundwater contamination in the SEA, under EPA oversight, using a pump and treat system and enhanced in-situ bioremediation (EISB) during three time periods:

- From October 2000 to April 2011, ATI operated a Groundwater Extraction and Treatment System (GETS) to remove CVOCs in the SEA with extraction wells EW-4, EW-5, and EW-6. During its approximately 11 years of operation, the GETS wells pumped about 16.5 million gallons of groundwater and removed about 11 pounds of CVOCs. The system was shut down due to decreased CVOC removal efficiency (GSI, 2015).
- From March to June of 2008, ATI conducted EISB injections to increase the rate of CVOC degradation. EISB consisted of injecting dechlorinating microbes and an emulsified soybean oil to remediate CVOCs in groundwater by enhanced reductive dechlorination. Performance monitoring was conducted at intervals of 1, 4, 8, 12 and 18 months following injections (GSI, 2010).
- From 2011 to 2017, EPA required that ATI monitor concentrations of CVOCs in select SEA groundwater monitoring wells biannually for 5 years to determine if rebound would occur after the GETS system was shut down. In the *Fifth Five-Year Review Report for the Teledyne Wah Chang Superfund Site*, dated 2017, EPA reviewed groundwater quality data from the SEA, concluded that CVOCs have been below cleanup levels since fall 2014, and stated that the SEA was "protective in the short term" (EPA, pg. 12, 2017). Based on EPA's finding, ATI reduced groundwater monitoring in the SEA.

1.3.4 Current Groundwater Quality Conditions

CVOC groundwater quality results from 2008 to 2020 are provided in Attachment B. Note that CVOC data are only shown at a well if the CVOC exceeded the cleanup level in one or more samples collected from 1989 to 2020. Concentrations of CVOCs have been below cleanup levels since 2015, with the exception of vinyl chloride, which is a breakdown product of TCE.

2. Methods for Evaluating Restoration Completeness in the SEA

This section summarizes the methods for identifying COCs to include in the restoration completeness evaluation (Subsection 2.1), selecting the wells to include in the restoration completeness evaluation (Subsection 2.2), and determining the phase of remediation and completeness of restoration for each COC at each well (Subsection 2.3).

2.1 Identification of COCs for the Restoration Evaluation

In the SEA, groundwater quality samples have been analyzed for numerous constituents over the past 30 years, including volatile organic compounds, semi-volatile organic compounds, metals, radionuclides, and general geochemical parameters. This restoration evaluation was conducted for the SEA's COCs, in which constituents are identified that have exceeded a cleanup level in one or more samples during groundwater sampling from 1989 to 2020. Constituents in the SEA groundwater that are not COCs (i.e., those that have always been below cleanup levels) are called "characterization constituents."

2.2 Identification of Wells for the Restoration Evaluation

EPA's *Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions* recommends evaluation of COC concentrations on a well-by-well basis (EPA, 2013). Wells that have a detection of one or more COCs above cleanup levels are included in the restoration evaluation. Wells that are not used to evaluate restoration completeness (i.e., all COCs have always been below cleanup levels) are called "characterization wells."

2.3 Methods to Determine Remediation Phase and Restoration Completeness

EPA guidance for evaluating whether groundwater restoration is complete recommends assigning one of two phases to each COC at each well (i.e., the RMP or the AMP). The RMP occurs while ". . . either active or passive remedial activities are being implemented to reach groundwater cleanup levels . . ." (EPA, pg. 2, 2014), and is completed when the data demonstrate that a COC has reached the cleanup level. The AMP ". . . occurs after a Region determines that the RMP is complete . . . [and] typically is complete when contaminant-specific data provide a technical and scientific basis that: (1) [t]he contaminant cleanup level for each COC has been met; and [t]he groundwater will continue to meet the contaminant cleanup level for each COC in the future" (EPA, pg. 2, 2014). Restoration is considered to be complete at the end of the AMP.

Each COC at each well is assigned to a remediation phase (i.e., RMP or AMP) using both qualitative and quantitative methods, depending on the number of data points that were available for the analysis.

- **Qualitative Methods.** For eight of the COCs in the SEA, there are not enough groundwater quality data for a quantitative analysis according to the procedures in EPA guidance (2014) [3]. In general, these eight COCs exceeded a cleanup level during early sampling (i.e., between the late 1980s and early 2000s), but regular sampling was later discontinued because the COCs were not considered to be a driver for cleanup in the SEA by EPA and ATI. For these COCs, the historical detections and exceedances of cleanup levels are summarized and qualitatively assessed whether the data supported a conclusion that restoration was complete.
- **Quantitative Methods.** For the remaining COCs, sufficient data has been collected to quantitatively evaluate remediation phase (i.e., RMP or AMP) and restoration completeness using the methods in EPA guidance (2014).

The RMP is considered to be complete (and the AMP to begin) for a given COC at a given well if: (a) at least four analytical results following the EISB injections are below the cleanup level[4] and (b) active remediation had stopped (EPA, 2014). Active remediation in the SEA ceased in April 2011, with the shutdown of its GETS. By that time, EISB in the SEA had also waned. COCs were demonstrated to be below the cleanup level using a visual analysis of the data (i.e., a statistical analysis was not necessary).

The AMP is considered to be complete (and, by extension, aquifer restoration to be complete) for a given COC at a given well when two conditions are met: (a) the contaminant cleanup level for each COC has been met and (b) the groundwater will continue to meet the cleanup level in the future (EPA, 2014). EPA guidance (2014) recommends that eight data points taken no more frequently than quarterly be used during the AMP to demonstrate that restoration is complete. Although eight data points have not been collected at several wells in the SEA during the AMP, the period of record for the AMP in the SEA (from 2011 to, in some cases, 2020) is a longer time period than the minimum, two-year period of record required by EPA guidance (2014) (i.e., eight samples collected quarterly). Specifically, some wells in the SEA where COCs were historically not detected or were detected below cleanup levels do not have eight data points during the AMP due to a gap in regular sampling that occurred between fall 2013 to fall 2015. In this scenario, where a gap in the data exists, at least four data points are used to evaluate whether the AMP is complete *if for all data points the COC was not detected above the cleanup level.* In this evaluation, restoration completeness was assessed with a non-statistical or visual review of groundwater quality data because COC concentrations were either below the cleanup level and did not exhibit an increasing trend, or COC concentrations were clustered around the cleanup level and did not exhibit a trend.

[3] The initial evaluation of the RMP was performed with data from the four most recent sampling events prior to cessation of active remediation in spring 2011.
[4] EPA (pg. 3, 2014) requires that at least four data points be used to make conclusions about completion of the RMP.

Note that a well and COC may enter the AMP but return to the RMP based on data collected during the AMP. Specifically, a well enters the AMP for a given COC, and multiple subsequent groundwater quality sampling events indicate that the COC concentration is exceeding the cleanup level, the well and COC may be returned to the RMP.

3. Results of the Restoration Completeness Evaluation

This section presents the results of the evaluation to determine the completeness of groundwater restoration in the SEA, and includes identification of COCs and characterization constituents (Subsection 3.1), identification of wells that were the subject of the restoration evaluation and characterization wells (Subsection 3.2), and determination of remediation phase (i.e., RMP or AMP) and restoration completeness (Subsection 3.3).

3.1 Constituents of Concern and Characterization Constituents

A total of 61 constituents have been detected in groundwater in the SEA, including naturally occurring and anthropogenic constituents. A list of the 61 detected constituents is provided in Attachment C. Fourteen of these 61 constituents have exceeded cleanup levels and, therefore, are considered to be COCs. The COCs include:

- Volatile organic compounds 1,1,2,2-tetrachloroethane; TCA; cis-1,2-dichloroethene; tetrachloroethene (PCE); TCE; 1,1-dichloroethene (DCE); vinyl chloride; and benzene.
- Metals arsenic (total), chromium (total), and lead (total).
- General geochemical parameters fluoride and nitrate.
- Radionuclide combined radium-226/228.

3.2 Characterization Wells and Wells for Evaluating Restoration Completeness

Table 1 shows the 12 monitoring wells in the SEA and the 14 COCs in the SEA. An “X” in Table 1 indicates that one or more COCs exceeded the associated cleanup level in the well. Because groundwater from every well in the SEA exceeded a cleanup level for at least one COC, the evaluation of restoration completeness in the SEA will be performed at every well (i.e., there are no characterization wells in the SEA).

Table 1. Monitoring Wells and Extraction Wells in the South Extraction Area.

COCs	PW-25A	PW-26A	PW-29A	PW-47A	PW-48A	PW-49A	PW-57A	PW-96A	PW-97A	EW-4	EW-5	EW-6
Volatile Organic Compounds												
1,1,2,2-tetrachloroethane										X		
TCA				X								X
cis-1,2-dichloroethene												X
PCE	X			X			X					X
TCE	X	X		X	X	X	X	X	X	X	X	X
DCE				X			X	X	X	X	X	X
Vinyl chloride		X						X	X		X	X
Benzene				X								
Metals												
Arsenic (total)	X	X		X	X	X		X	X			X
Chromium (total)		X										
Lead (total)		X	X			X						
Radiological												
Combined radium-226/228		X				X						
Anions/Cations												
Fluoride		X								X	X	
Nitrate	X	X	X	X		X						

Notes
X = COC has exceeded cleanup level
TCA = 1,1,1-trichloroethane
PCE = tetrachloroethene
TCE = trichloroethene
DCE = 1,1-dichloroethene

3.3 Remediation Phase and Evaluation of Restoration Completeness

As discussed in Subsection 2.3, eight COCs in the SEA have not historically been considered by EPA and ATI to be drivers for remediation; these COCs have not been sampled with sufficient regularity since 2008 to evaluate restoration completeness in accordance with the procedures in EPA's guidance (2014). A qualitative evaluation restoration status for these COCs is presented in Subsection 3.3.1. The remaining COCs in the SEA have historically been considered by EPA and ATI to be drivers for remediation, and were sampled regularly. A quantitative analysis of remediation phase (i.e., RMP and AMP) and restoration completeness, conducted in accordance with procedures in the EPA guidance (2014), is presented in Subsection 3.3.2 for these COCs.

3.3.1 Qualitative Restoration Completeness Evaluation

Eight COCs—benzene; 1,1,2,2-tetrachloroethane; chromium (total); arsenic (total); lead (total); combined radium-226/228; fluoride; and nitrate—cannot be quantitatively evaluated in accordance with EPA procedures (2014) due to insufficient data collected between 2008 and 2020. Table 2 presents a summary of the available groundwater quality data for these eight COCs.

Table 2. Qualitative Evaluation of Restoration Completeness.

Constituent	No. Samples	No. Detections Above MRL	No. Cleanup Level Exceedances	Notes
Restoration Complete				
Benzene	80	5	2	Two exceedances are from PW-47A in 1991. During the most recent sampling events at PW-47A (fall and spring of 2016 and 2017), all four results were non-detect at 0.5 U µg/L.
1,1,2,2-tetrachloroethane	275	1	1	Exceedance is from EW-4 in 2008 (0.65 µg/L). The next time EW-4 was sampled, in fall and spring of 2016, the two results were non-detect at 0.5 U µg/L.
Chromium (total)	30	14	3	Three exceedances are from PW-26A in 1989 (370 µg/L), 1990 (210 µg/L), and 1991 (270 µg/L). The next time PW-26A was sampled, in spring of 2016, the result was significantly below the cleanup level of 100 µg/L at 0.48 J µg/L.
Lead (total)	30	16	8	Exceedances are from PW-26A, PW-29A, and PW-49A between 1989 and 1991. The next time the wells were sampled, in spring of 2016, results were significantly below the cleanup level of 15 µg/L at 0.066 U µg/L (PW-26A), 1.39 µg/L (PW-29A), and 0.59 µg/L (PW-49A).
Radium-226/228	27	NA	3	Exceedances are from PW-26A and PW-49A in 1989 and 1991. During the most recent sampling event at PW-26A and PW-49A (spring 2016), results were significantly below the combined cleanup level of 5 pCi/L at 0.23 pCi/L (PW-26A) and 0.35 pCi/L (PW-49A).
Nitrate	45	41	15	Exceedances are from five different wells from sampling between 1991 and 2003. During the most recent sampling event (spring 2016), results were below the cleanup level of 10 mg/L at these wells: PW-25A (4.59 mg/L), PW-26A (5.78 mg/L), PW-29A (0.96 mg/L), PW-47A (0.1 U mg/L), and PW-49A (1.47 mg/L).
Restoration Incomplete (Remediation Ongoing)				
Arsenic (total)	31	28	15	Exceeds the cleanup level of 0.01 mg/L at five wells: PW-47A, PW-48A, PW-96A, PW-97A, and EW-6 (based on spring 2016 data). PW-96A was sampled in fall 2019 and fall 2020, with results slightly above the cleanup level at 0.014 mg/L for both years.
Fluoride	31	17	7	Exceeds the cleanup level of 4 mg/L at three wells: PW-26A, EW-4, and EW-5 (based on spring 2016 data). Fluoride has not been sampled since 2016.

Notes

NA = combined radium-226/228 activity was detected in all samples.

µg/L = micrograms per liter
J = estimated concentration
mg/L = milligrams per liter
MRL = method reporting limit
pCi/L = picoCuries per liter
U = constituent not detected above the MRL

Based on Table 2, it can be concluded that groundwater has been restored for six of the eight constituents—benzene; 1,1,2,2-tetrachloroethane, chromium (total), lead (total), combined radium-226/228, and nitrate—because:

- Most of the COCs were only detected above cleanup levels over 30 years ago, during the RI/FS stage of remediation, from 1989 to 1991. Exceptions are 1,1,2,2-Tetrachloroethane, (detected above the cleanup level over 10 years ago in 2008) and nitrate (detected above the cleanup level about 20 years ago in 2003).
- The most recent groundwater quality sampling in spring 2016 (Sitewide sampling event) indicates that concentrations of these six COCs are significantly below their respective cleanup levels (with the exception of nitrate, which is below its cleanup level).

As shown in Table 2, arsenic (total) and fluoride concentrations exceed their respective cleanup levels in the most recent (2016, 2019, and/or 2020) groundwater quality samples. Therefore, it can be concluded that these COCs are still in the remediation phase at certain wells. Specifically, arsenic is still in the remediation phase at wells PW-47A, PW-48A, PW-96A, PW-97A, and EW-6, and fluoride is still in the remediation phase at wells PW-26A, EW-4, and EW-5. The remediation status of arsenic will be reevaluated after arsenic background has been established, in accordance with Optimization Recommendation 5.8.2.

3.3.2 Quantitative Restoration Completeness Evaluation In Accordance with EPA Guidance (2014)

The remaining COCs have historically been considered by EPA and ATI to be the driver for remediation activities in the SEA, and wells have been regularly sampled for these COCs. As such, sufficient data exists to conduct a groundwater restoration analysis in accordance with EPA procedures (2014).

Attachment B presents an analysis of remediation phase (i.e., RMP and AMP) and restoration completeness for each COC, at each well. In Attachment B, the peach highlighting indicates a COC is in the RMP, the blue highlighting indicates a COC is in the AMP, and the green highlighting indicates that restoration has been completed for a COC at a well. The start and end of the RMP and AMP can generally be identified based on a visual analysis of data because CVOC concentrations exhibit a declining or stable trend over time, and remain below the cleanup level. Based on this visual analysis of the data in Attachment B, we conclude that restoration has been completed for all CVOCs at all wells with the exception of vinyl chloride at PW-96A. Note that vinyl chloride at PW-96A entered the AMP in fall 2012, but was returned to the RMP in fall 2014 based on three subsequent exceedances of cleanup levels. The analysis is summarized in Table 3.

Table 3. Quantitative Restoration Completeness Evaluation.

Well ID	Date that RMP Ended	Date that AMP Ended	Rationale for AMP Ending
PW-25A	Spring 2011	Spring 2016	Five data points below cleanup levels, gap from fall 2013–2015
PW-26A	Spring 2011	Spring 2015	Eight data points below cleanup levels
PW-29A	Spring 2011	Spring 2015	Eight data points below cleanup levels
PW-47A	Spring 2011	Spring 2015	Eight data points below cleanup levels
PW-48A	Spring 2011	Spring 2016	Five data points below cleanup levels, gap from fall 2013–2015
PW-49A	Spring 2011	Spring 2016	Five data points below cleanup levels, gap from fall 2013–2015
PW-57A	Spring 2011	Spring 2015	Eight data points below cleanup levels
PW-96A	NA[1]	NA	NA
PW-97A	Spring 2011	Spring 2015	Eight data points below cleanup levels
EW-4	Spring 2012	Fall 2016	Four data points below cleanup levels, gap from fall 2013–2015
EW-5	Spring 2011	Fall 2016	Six data points below cleanup levels, gap from fall 2013–2015
EW-6	Fall 2012	Fall 2016	Six data points below cleanup levels, gap from fall 2013–2015

Notes

(1) RMP ended for all CVOCs in spring 2012 except vinyl chloride.

AMP = Attainment Monitoring Phase NA = not applicable, RMP/AMP has not ended RMP = Remediation Monitoring Phase

As shown in Attachment B and Figure 4, vinyl chloride at PW-96A entered the AMP in fall 2012. However, due to multiple subsequent detections of vinyl chloride above the cleanup level, vinyl chloride at PW-96A was returned to the RMP in fall 2014, and remains in the RMP at present.

TCE at PW-96A entered the AMP in fall 2011. Although a single detection above the TCE cleanup level was observed during the AMP in spring 2014, the well remained in the AMP, and restoration was concluded to be complete in spring 2016 based on visual review of the data. This conclusion of restoration completeness is consistent with EPA guidance (2014), which allows for isolated exceedances of a cleanup level during the AMP, provided the data demonstrate that the COC concentration will remain below the cleanup level in the future (see Figure 5 of EPA, 2014).

4. Conclusions and Recommendations

A summary of the results of the restoration completeness evaluation for SEA groundwater (including the qualitative and quantitative analyses) is provided in Table 4.

Table 4. Restoration Completeness Evaluation (Including Qualitative and Quantitative Analyses)

Well ID	Result of Restoration Completeness Evaluation			Notes
	Restoration Complete for All COCs	Remediation Monitoring Phase Incomplete for One or More COCs	Attainment Monitoring Phase Incomplete: More Data Needed	
PW-25A	X			
PW-26A		X		**Still in Remediation:** Fluoride
PW-29A	X			
PW-47A		X		**Still in Remediation:** Arsenic (total)*
PW-48A		X		**Still in Remediation:** Arsenic (total)*
PW-49A	X			
PW-57A	X			
PW-96A		X		**Still in Remediation:** Vinyl Chloride, Arsenic (total)*
PW-97A		X		**Still in Remediation:** Arsenic (total)*
EW-4		X		**Still in Remediation:** Fluoride
EW-5		X		**Still in Remediation:** Fluoride
EW-6		X		**Still in Remediation:** Arsenic (total)*

Notes

* Analysis for arsenic includes a background study, as well as potentially more groundwater quality samples.

COC = Constituent of Concern

Based on Table 4, the following conclusions and recommendations about groundwater restoration in the SEA and future groundwater sampling can be made:

- **Groundwater Restoration Complete.** Restoration is complete for all COCs at four monitoring wells—PW-25A, PW-29A, PW-49A, and PW-57A. Therefore, ATI recommends discontinuing any future groundwater sampling at these wells.
- **Groundwater Remediation Ongoing.** In the remaining wells (i.e., PW-26A, PW-47A, PW-48A, PW-96A, PW-97A, EW-4, EW-5, and EW-6) groundwater remediation is ongoing for one or more COCs, as described in Table 4. ATI recommends continuing to sample these wells to determine when remediation is completed. Well PW-96A will be sampled annually to evaluate concentration trends of vinyl chloride and the progress of the monitored natural attenuation of this COC. Perimeter monitoring well PW-97A, located downgradient of PW-96A, will be sampled every 5 years to confirm protectiveness of the remedy at the property boundary.

Because the mechanism for attenuation of elevated arsenic (total) and fluoride concentrations is natural attenuation, ATI recommends a longer-term sampling interval of once every 5 years.

In the meantime, ATI is working in collaboration with EPA and Oregon Department of Environmental Quality on a background study to determine an appropriate arsenic background at the Site, in accordance with Optimization Recommendation 5.8.2. Until the background study is complete, arsenic will be considered a COC at the five wells identified in Table 4.

5. References

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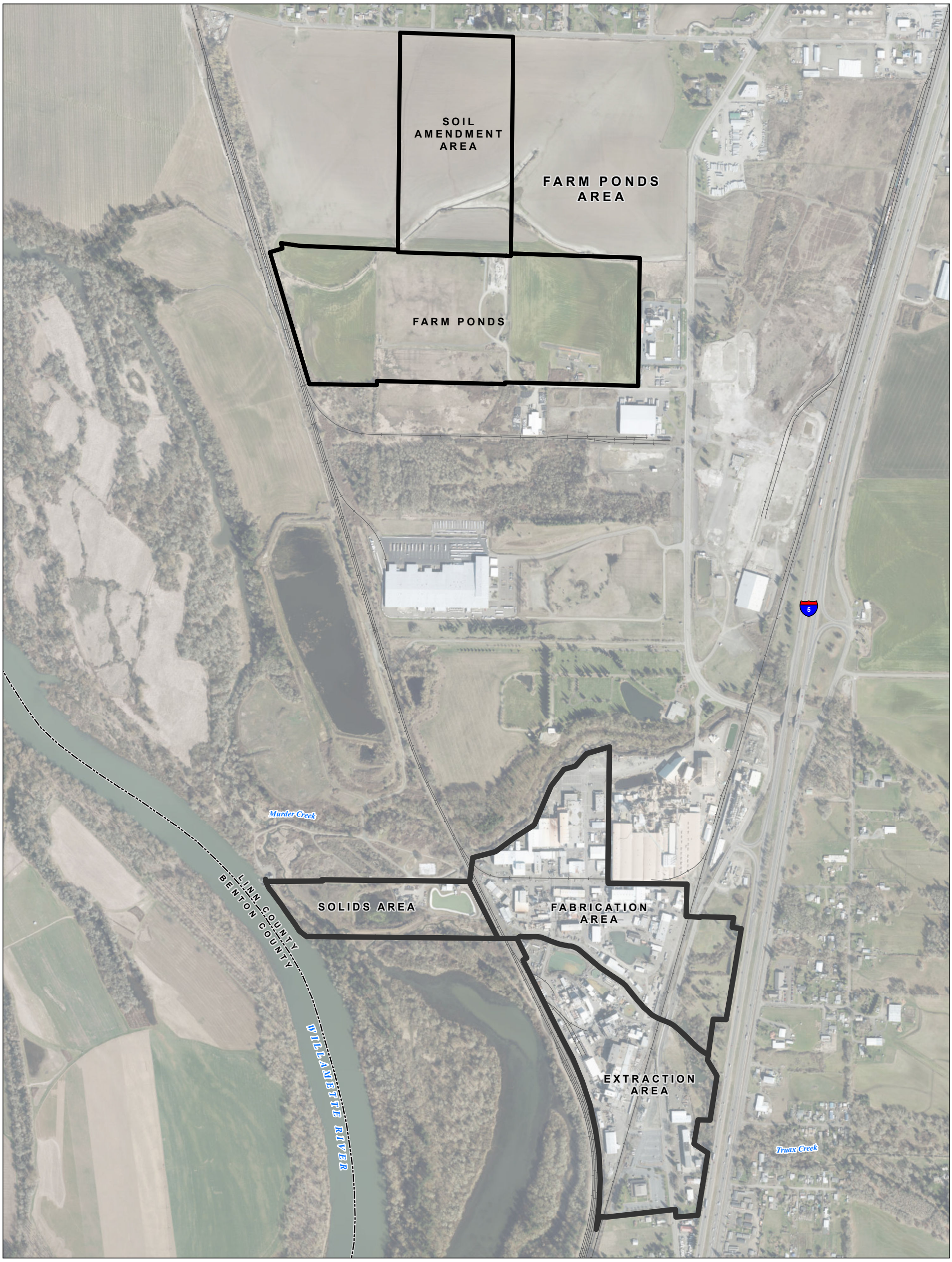
Figures



LEGEND

- Property Boundary
- Railroad
- County Boundary

FIGURE 1

Millersburg Operations

ATI Millersburg Operations, Oregon

N

0 400 800 1,200

Feet

GSI Water Solutions, Inc.

Date: January 11, 2021
Data Sources: OGIC, USGS, DigiGlobe

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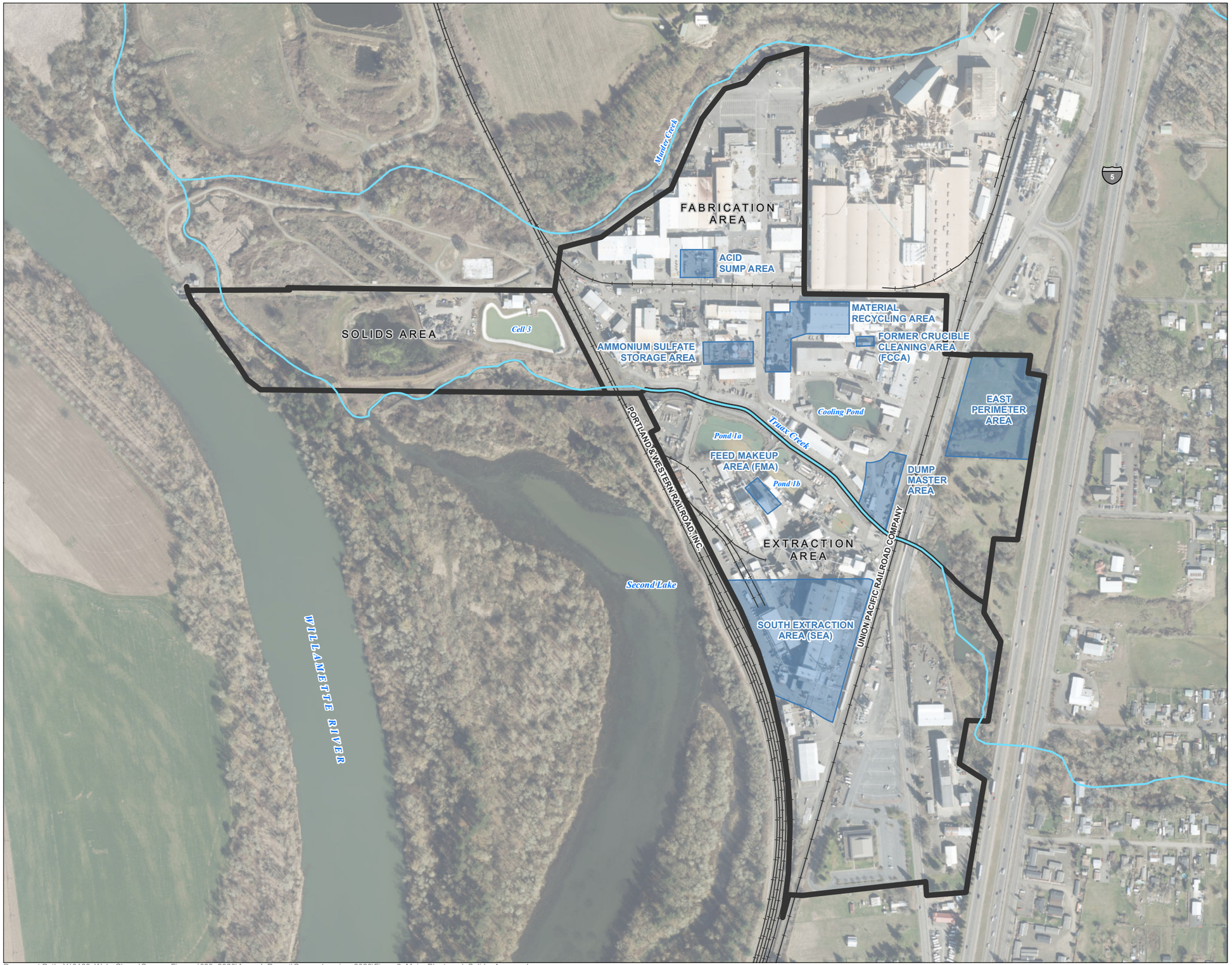

FIGURE 2

Main Plant and Solids Area

ATI Millersburg Operations, Oregon

LEGEND

- Watercourse
- Boundary
- Investigation Subarea
- Railroad

N

0 225 450 675
Feet

Date: March 1, 2021
Data Sources: Linn Co., ESRI, Digiglobe 2018

GSI Water Solutions, Inc.

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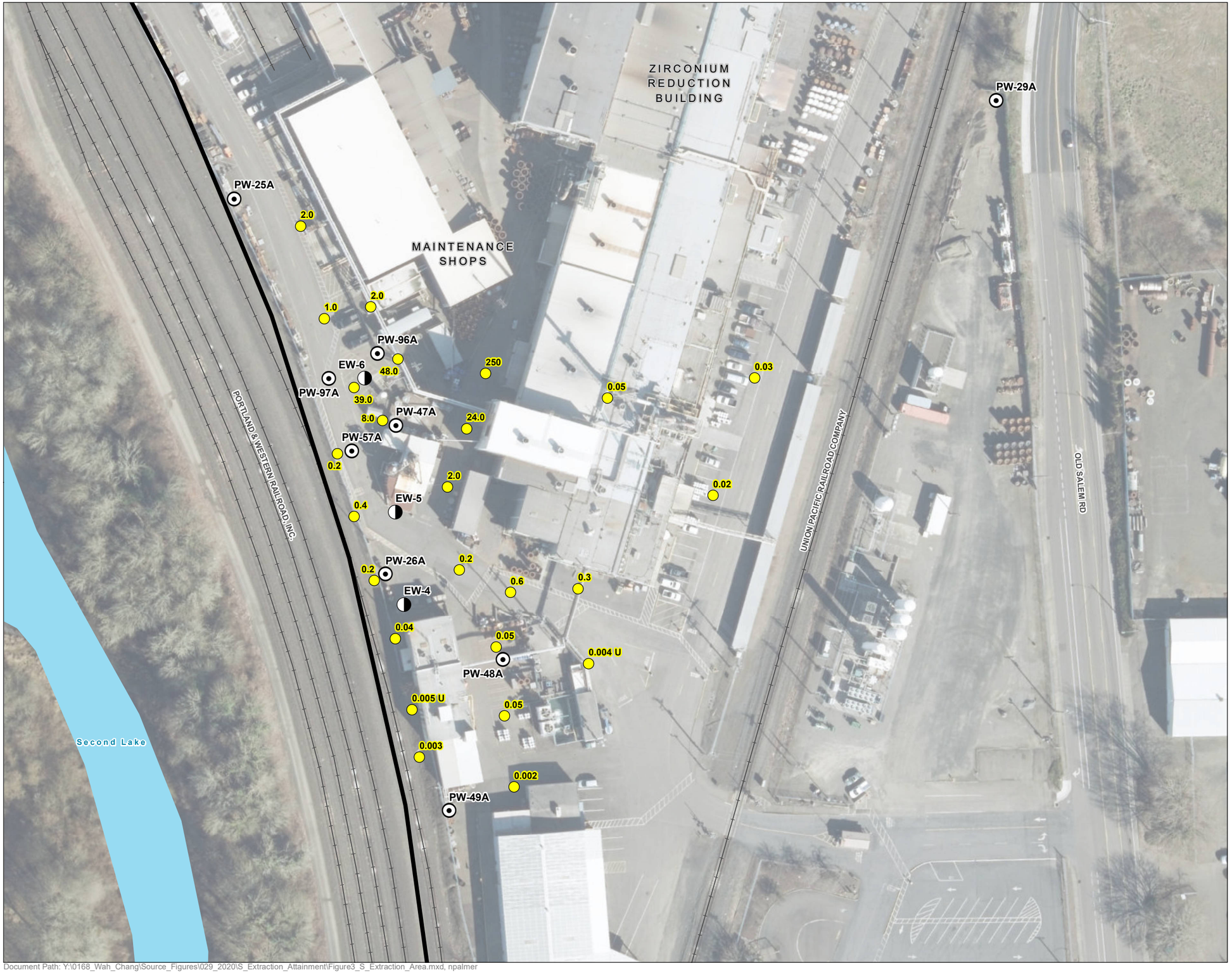

FIGURE 3

South Extraction Area Site Map

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- Soil Gas Boring with 1,1,1-TCA concentrations in ppb
- Property Boundary
- Railroad
- Watercourse
- Waterbody

NOTES

1,1,1-TCA	1,1,1 Trichloroethane
ppb	parts per billion
U	undetected

Boring locations and data are from Figure 5-10 of CH2M Hill (1993).

N

0 40 80 120
Feet

Date: March 8, 2021
Data Sources: ESRI, USGS, Aerial Photo 2019

GSI Water Solutions, Inc.

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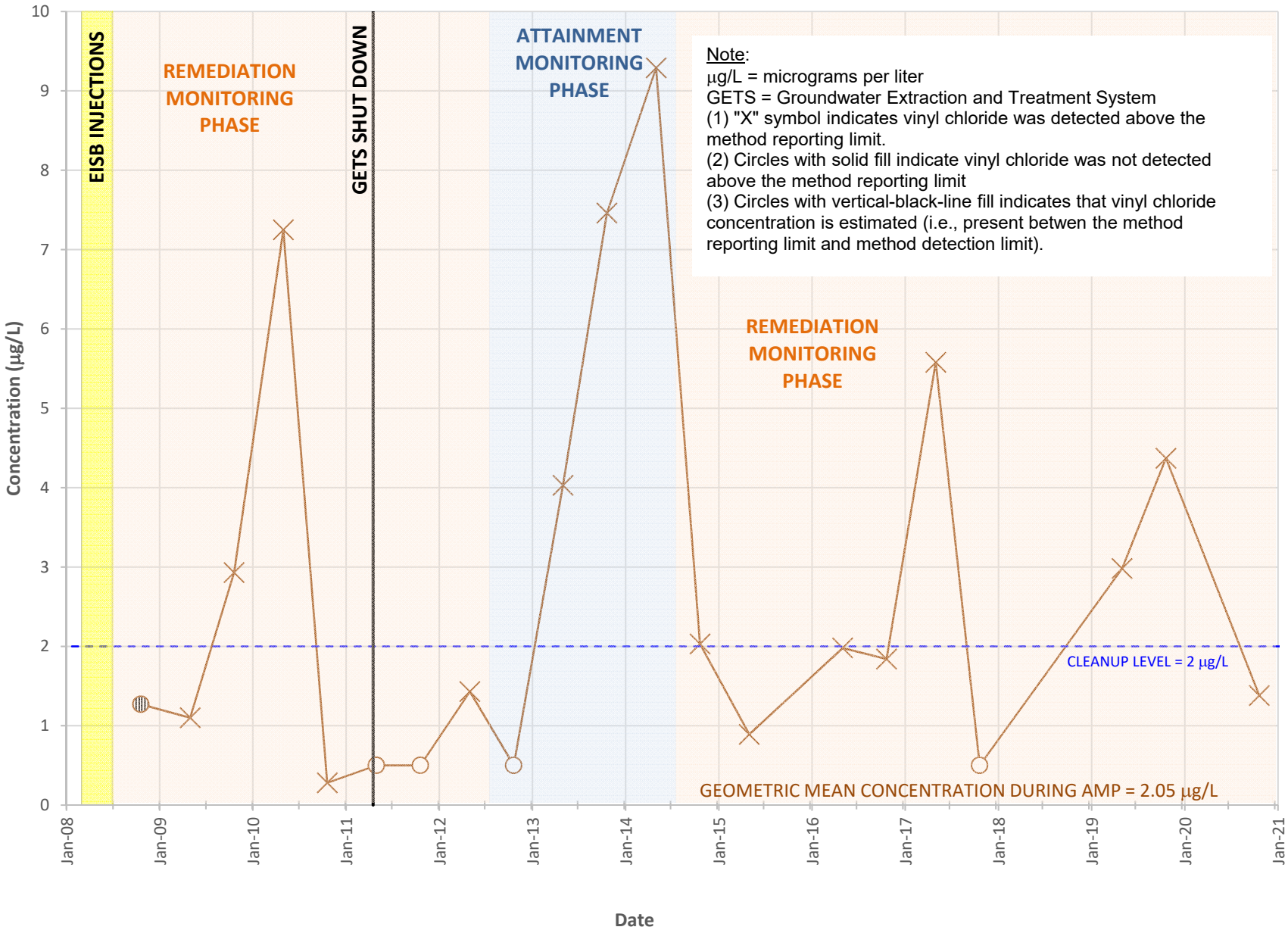

GSI Water Solutions, Inc.

FIGURE 4

Vinyl Cloride Concentrations in PW-96A

SEA Groundwater Restoration Evaluation

ATTACHMENT A

Geologic Unit Contacts and Depth to Groundwater in the South Extraction Area

Table A-1. Geologic Unit Contacts and Depth to Groundwater in the South Extraction Area.
SEA Groundwater Restoration Evaluation

Well ID	Bottom Willamette Silt (feet bgs)	Bottom Linn Gravel (feet bgs)	Linn Gravel Thickness (feet)	Depth to Groundwater: September 2019 (feet bgs)	Depth to Groundwater: September 2020 (feet bgs)
PW-25A	4.5	34.0	29.5	23.01	23.68
PW-26A	4.0	32.5	28.5	26.46	26.44
PW-29A	7.0	33.5	26.5	21.34	21.70
PW-47A	7.0	33.0	26.0	25.40	25.72
PW-48A	6.5	40.5	34.0	18.55	19.51
PW-49A	7.8	36.0	28.2	30.70	30.76
PW-57A	7.5	32.0	24.5	25.04	NM[1]
PW-96A	8.0	33.5	25.5	22.39	22.7
PW-97A	9.0	33.5	24.5	24.65	24.81
EW-4	2.0	36.0	34.0	22.95	23.02
EW-5	10.0	32.0	22.0	22.20	NM[1]
EW-6	8.0	30.0	22.0	21.07	21.18

Notes

(1) Unable to gain access at EW-5 and PW-57A because the manhole covers were partially paved over during nearby construction.

bgs = below ground surface

nm = not measured

ATTACHMENT B

Restoration Analysis According to EPA Guidance (2014)

Attachment B. Restoration Analysis According to EPA Guidance (2014).

SEA Restoration Completeness Evaluation

COC	Well	Cleanup Level (ug/L)	Post-Remedy Monitoring																								
			2008	2009		2010		2011		2012		2013		2014		2015	2016		2017		2018		2019		2020	
			FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL
1,1,1-Trichloroethane (TCA)	PW-47A	200	**29.1**	**3.84**	0.08 J	0.08 J	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	**0.63**	0.34 J	0.27 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	--
	EW-6		**34.9**	0.5 U	**1.67**	0.29 J	0.5 U	0.5 U	0.5 U	**0.59**	0.5 U	0.5 U	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	EW-6	70	**80.8**	**6.53**	**1.57**	**0.95**	0.5 U	0.5 U	0.5 U	0.89	0.74	0.29 J	--	--	--	--	**0.78**	**0.78**	--	--	--	--	--	--	--	--
Tetrachloroethene (PCE)	PW-25A	5	0.24 J	**0.51**	0.29 J	0.5 U	0.5 U	0.5 U	0.5 U	0.32 J	0.5 U	0.47 J	--	--	--	--	0.22 J	--	--	--	--	--	--	--	--	--
	PW-47A		0.37 J	0.42 J	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.17 J	0.5 U	0.5 U	0.5 U	0.19 J	0.15 J	0.3 J	--	--	--	--	--	--
	PW-57A		0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	0.5 U	--	--	--	--	--	--
	EW-6		**0.9**	0.5 U	0.32 J	0.12 J	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.1 J	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
Trichloroethene (TCE)	PW-25A	5	**1.52**	**1.22**	**0.61**	0.5 U	0.5 U	0.5 U	0.5 U	**0.76**	0.44 J	**1.54**	--	--	--	--	0.49 J	--	--	--	--	--	--	--	--	--
	PW-26A		**3.73**	**3.66**	**0.63**	**0.57**	0.5 U	0.5 U	0.5 U	**1.66**	0.5 U	**0.76**	**0.70**	**0.65**	**0.52**	0.48 J	0.42 J	0.36 J	**0.61**	**0.68**	--	--	--	--	--	--
	PW-47A		**12.9**	**1.94**	**1.18**	**0.76**	0.5 U	0.5 U	0.5 U	**1.23**	0.5 U	**1.46**	**2.00**	**1.60**	**0.82**	**0.65**	0.42 J	**0.90**	**0.93**	**1.21**	--	--	--	--	--	--
	PW-48A		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	0.5 U	--	--	--	--	--	--	--	--	--
	PW-49A		**1.49**	**0.70**	0.13 U	0.25 J	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.19 J	--	--	--	--	0.5 U	--	--	--	--	--	--	--	--	--
	PW-57A		**2.58**	0.23 J	0.33 J	0.31 J	0.5 U	0.5 U	0.5 U	**0.68**	0.5 U	**0.77**	**0.81**	0.31 J	**0.64**	0.20 J	**0.58**	**0.73**	--	**1.11**	--	--	--	--	--	--
	PW-96A		0.57 J	**0.66**	**1.08**	**1.9**	0.5 U	0.5 U	0.5 U	**0.64**	0.5 U	0.21 J	**3.53**	**7.24**	0.21 J	0.5 U	0.5 U	**1.04**	**0.61**	0.5 U	--	--	**3.04**	**3.02**	--	0.4 U
	PW-97A		**43.1**	**9.98**	**4.73**	**4.58**	0.5 U	0.5 U	0.5 U	**1.23**	0.5 U	0.45 J	0.2 U	0.32 J	0.20 J	0.5 U	0.5 U	0.5 U	0.49 J	0.5 U	--	--	--	--	--	--
	EW-4		**11.6**	**9.46**	**6.05**	**6.32**	**0.58**	0.5 U	0.5 U	**1.49**	0.41 J	0.33 J	--	--	--	--	0.27 J	0.22 J	--	--	--	--	--	--	--	--
	EW-5		**16.4**	**0.53**	**4.32**	**1.24**	0.5 U	0.5 U	0.5 U	**0.73**	**1.77**	**4.77**	--	--	--	--	**1.13**	**0.72**	--	--	--	--	--	--	--	--
	EW-6		**15.9**	**6.00**	**7.4**	**1.01**	0.5 U	0.5 U	0.5 U	**0.51**	**1.32**	**0.86**	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
1,1-Dichloroethene (DCE)	PW-47A	7	**2.82**	**0.94**	0.39 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.19 J	--	--	--	--	--	--
	PW-57A		**3.46**	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.17 J	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	0.5 U	--	--	--	--	--	--
	PW-96A		1.89 J	0.42 J	**1.13**	**0.88**	0.5 U	0.5 U	0.5 U	**0.59**	0.5 U	0.37 J	**1.88**	**3.22**	0.27 J	0.5 U	0.5 U	0.29 J	0.33 J	0.5 U	--	--	**1.15**	**0.77**	--	0.4 U
	PW-97A		**28.3**	**6.8**	**3.55**	**3.02**	0.5 U	0.5 U	0.5 U	**1.03**	0.5 U	0.33 J	0.34 J	0.29 J	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	--	--	--	--	--	--
	EW-4		0.39 J	0.36 J	0.21 J	0.17 J	0.5 U	0.5 U	0.5 U	0.39 J	0.5 U	0.5 U	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
	EW-5		0.5 U	0.1 J	**2.54**	**1.16**	0.5 U	0.5 U	0.5 U	0.35 J	0.23 J	0.35 J	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
	EW-6		**9.48**	**1.44**	0.31 J	**0.58**	0.5 U	0.5 U	0.5 U	**1.83**	0.34 J	0.5 U	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
Vinyl Chloride	PW-26A	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**1.18**	--	--	--	--	--	--
	PW-96A		1.27 J	**1.10**	**2.93**	**7.25**	**0.28**	0.5 U	0.5 U	**1.43**	0.5 U	**4.03**	**7.46**	**9.29**	**2.03**	**0.89**	**1.98**	**1.84**	**5.58**	0.5 U	--	--	**2.98**	**4.37**	--	**1.38**
	PW-97A		**1.39**	**3.02**	**1.70**	**0.93**	0.5 U	0.5 U	0.5 U	**0.60**	0.5 U	0.29 J	0.2 U	**0.62**	0.38 J	0.19 J	0.25 J	0.5 U	0.23 J	0.5 U	--	--	--	--	--	--
	EW-5		0.5 U	**2.51**	0.48 J	**1.49**	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	**0.80**	--	--	--	--	0.5 U	0.5 U	--	--	--	--	--	--	--	--
	EW-6		**1.55**	**3.11**	0.25 J	**0.58**	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	--	--	--	--	**0.70**	**0.64**	--	--	--	--	--	--	--	--

Remediation Monitoring Phase

Attainment Monitoring Phase

Restoration Complete

Notes

ug/L = micrograms per liter

COC = Constituent of Concern

U = Constituent not detected above the method reporting limit of "U"

J = Estimated concentration

-- = No sample collected

BOLD BLACK = Constituent detected above the method reporting limit

BOLD RED = Constituent detected above the cleanup level

ATTACHMENT C

Constituents Detected in the South Extraction Area

Table C-1. Constituents Detected in the South Extraction Area.
SEA Groundwater Restoration Evaluation

Constituent	Detected During 1989-2008 Monitoring?[1]	Detected During 2016 Sitewide Event?[2]	Detected in Groundwater?
1,1,1-Trichloroethane (TCA)	Yes	Yes	Yes
1,1,2,2-Tetrachloroethane	Yes	No	Yes
1,1-Dichloroethane	Yes	Yes	Yes
1,1-Dichloroethene (DCE)	Yes	No	Yes
1,2,3-Trichlorobenzene	Yes	No	Yes
1,2-Dichloroethane (DCA)	Yes	No	Yes
1,2-Dichloroethene	Yes	No	Yes
2-Butanone	Yes	No	Yes
Acetone	Yes	No	Yes
Alkalinity as $CaCO_3$	Yes	Yes	Yes
Aluminum	Yes	Yes	Yes
Ammonium	Yes	No	Yes
Ammonia	No	Yes	Yes
Arsenic	Yes	Yes	Yes
Barium	Yes	Yes	Yes
Benzene	Yes	No	Yes
Beryllium	Yes	Yes	Yes
Bromodichloromethane	Yes	No	Yes
Bromoform	Yes	No	Yes
Cadmium	Yes	Yes	Yes
Calcium	Yes	No	Yes
Chloride	Yes	Yes	Yes
Chloroethane	Yes	Yes	Yes
Chloroform	Yes	Yes	Yes
Chloromethane	Yes	No	Yes
Chromium	Yes	Yes	Yes
Cis-1,2-Dichloroethene	Yes	Yes	Yes
Copper	Yes	Yes	Yes
Cyanide	No	Yes	Yes
Dibromochloromethane	Yes	No	Yes
Ethane	Yes	No	Yes
Ethene	Yes	No	Yes
Fluoride	Yes	Yes	Yes
Iron	Yes	Yes	Yes

Table C-1. Constituents Detected in the South Extraction Area.

Constituent	Detected During 1989-2008 Monitoring?1	Detected During 2016 Sitewide Event?2	Detected in Groundwater?
Lead	Yes	Yes	Yes
Magnesium	Yes	Yes	Yes
Manganese	Yes	Yes	Yes
Mercury	Yes	Yes	Yes
Methane	Yes	No	Yes
Nickel	Yes	Yes	Yes
Nitrate	Yes	Yes	Yes
Potassium	Yes	No	Yes
Radium 226/228	Yes	Yes	Yes
Selenium	Yes	Yes	Yes
Sodium	Yes	Yes	Yes
Specific Conductivity	Yes	No	Yes
Sulfate	Yes	Yes	Yes
Tetrachloroethene (PCE)	Yes	No	Yes
Thiocyanate	Yes	No	Yes
Thorium	Yes	No	Yes
Thorium 228	Yes	No	Yes
Thorium 230	Yes	No	Yes
Thorium 232	Yes	No	Yes
Titanium	Yes	No	Yes
Total Dissolved Solids	Yes	Yes	Yes
Total Organic Carbon	Yes	Yes	Yes
Total Suspended Solids	Yes	Yes	Yes
Trichloroethene (TCE)	Yes	Yes	Yes
Uranium	Yes	Yes	Yes
Vinyl Chloride	Yes	Yes	Yes
Zinc	Yes	Yes	Yes

Notes

Purpose of this table is to identify which constituents have been detected (above or below the cleanup level) in the SEA groundwater in the past.

(1) Timeframe of 1989 to 2008 includes the Phase 1 sampling, remedial investigation, and subsequest sampling events before analyte list for the SEA was streamlined to only chlorinated volatile organic compounds.

(2) A sitewide sampling event was conducted in 2016 in which every well was sampled for all constituents in the remedial investigation.

SEA = South Extraction Area

APPENDIX E

Well Construction Details

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
Extraction Area												
EW-1	10	4	209.77	--	34	21	31	188.77	178.77	1/14/2000	7534746.57	372294.7
EW-2	10	4	209.66	--	32	19	29	190.66	180.66	3/27/2000	7534713.54	372331.76
EW-3	10	4	210.18	--	33	20	30	190.18	180.18	3/28/2000	7534680.78	372366.13
EW-4	10	4	210.00[1]	--	36	25	35	185.001	175.001	3/30/2000	7534792.58	371360
EW-5	10	4	208.92[1]	--	34.5	21	31	187.921	177.921	1/13/2000	7534785.039	371435.368
EW-6	10	4	208.70[1]	--	36	23	33	185.701	175.701	3/29/2000	7534746.555	371550.308
PW-21A	8	4	209.36	2.46	23.3	11.3	21.3	198.06	188.06	4/18/1989	7534098.87	372759.67
PW-22A	8	4	210.37	2.27	29	17	27	193.37	183.37	4/14/1989	7534242	372503
PW-23A	8	4	212.02	2.52	34.6	22.6	32.6	189.42	179.42	4/12/1989	7534373	372257
PW-24A	8	4	212.05	2.15	31.8	19.8	29.8	192.25	182.25	4/7/1989	7534489	372011
PW-25A	8	4	211.88	1.88	33.4	21.4	31.4	190.48	180.48	4/4/1989	7534651	371698
PW-26A	8	4	213.18	2.08	32.5	20.5	30.5	192.68	182.68	3/29/1989	7534777	371385
PW-27A	8	4	210.99	-0.41	31.62	14.62	29.62	196.37	181.37	5/4/1989	7534766	372075
PW-28A	8	4	209.13	-0.17	32	20	30	189.13	179.13	4/28/1989	7534727.93	372339.59
PW-29A	8	4	214.22	2.42	26.5	14.5	24.5	199.72	189.72	3/16/1989	7535286	371780
PW-47A	8	4	210.79	-0.31	27.5	15	25	195.79	185.79	9/26/1990	7534785.78	371509.24
PW-48A	8	4	214.5	-0.3	21.6	9.6	19.6	204.9	194.9	9/21/1990	7534875	371314
PW-49A	8	4	216.98	2.48	33.8	21.7	31.7	195.28	185.28	9/17/1990	7534830	371188
PW-50A	10	4	209.08	0.8	32	20	30	189.08	179.08	10/19/1997	7534661.29	372364.16
PW-51A	10	4	209.27	-0.36	31	19	29	190.27	180.27	10/18/1997	7534744.58	372258.62
PW-52A	8	2	210.36	--	32	22	32	188.36	178.36	11/18/1999	7534773.56	372262.59
PW-57A	8	2	210.87	--	31	21	31	189.87	179.87	11/17/1999	7534748.98	371487.82
PW-96A	10	2	210.54	--	33.5	23.5	33.5	187.04	177.04	5/6/2008	7534770.43	371569.02
PW-97A	10	2	210.24	--	33.5	23.5	33.5	186.74	176.74	5/6/2008	7534729.88	371547.93
PW-102A	4	2	209.07	-0.54	30.7	15.7	30.7	193.37	178.37	5/29/2013	7534652.501	372415.712
PW-103A	4	2	211.02	-0.38	32	17	32	194.02	179.02	5/29/2013	7534767.739	372220.445

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
Fabrication Area												
E-11	4	2	208.23	-0.2	13.45	9	13.5	199.23	194.73	7/7/2009	7534410.7	373474.882
EI-5	4	2	--	-0.5	16.1	11	16	--	--	7/9/2009	--	--
FW-1	12	6	210.26	-	29.5	12	27	198.26	183.26	4/5/2000	7535259.1	372991.9
FW-2	12	6	208.35	-	30.5	13	28	195.35	180.35	4/4/2000	7534684.1	372885.65
FW-3	12	6	206.66	-	21.5	9	19	197.66	187.66	4/3/2000	7534541.83	373230.98
FW-4	12	6	195.37	-	25	7.5	22.5	187.87	172.87	8/4/2000	7535368.47	372468.98
FW-5	12	6	201.86	-	24.2	11.7	21.7	190.16	180.16	8/2/2000	7534391.39	372872.11
FW-6	12	6	207.51	-2.1	20.4	8	18	199.51	189.51	8/3/2000	7534176.99	373575.66
FW-7	12	6	201.6	-0.55	28.5	13.5	28.5	188.1	173.1	3/1/2001	7535592.91	372553.28
I-2	4	2	--	-0.5	13.9	9	15.5	--	--	7/8/2009	--	--
I-3	4	2	--	-0.5	14.3	10	15	--	--	7/8/2009	--	--
MW-01A	-	2	205.2	2.55	19.5	9.5	19.5	195.7	185.7	9/30/1998	7535576.24	372516.82
MW-02A	-	2	204.83	-0.39	19.3	9.3	19.3	195.53	185.53	9/30/1998	7535624.16	372719.94
MW-03A	-	2	207.59	-0.3	19.8	9.8	19.8	197.79	187.79	9/30/1998	7535675.2	372901.19
MW-04A	-	2	204.62	1.66	17.5	7.5	17.5	197.12	187.12	10/1/1998	7535750.2	372698.07
MW-05A	6.5	2	213.98	2.32	26.5	16	26	197.98	187.98	3/25/1999	7535980.41	372689.74
MW-06A	6	2	211.64	-0.38	29.5	19	29	192.64	182.64	3/23/1999	7535955.41	372484.53
MW-07A	8.5	2	200.49	-0.38	19.5	9	19	191.49	181.49	3/24/1999	7535567.91	372290.78
MW-08A	6.5	2	201.23	-0.5	19.5	9	19	192.23	182.23	3/25/1999	7535672.08	372210.57
MW-09A	6	2	210	-0.34	34.5	24	34	186	176	3/24/1999	7535902.29	372314.74
MW-10A	6	2	212.49	2.52	25.5	15	25	197.49	187.49	3/26/1999	7535758.54	372514.74
MW-11A	6	2	211.02	-0.11	25.5	15.5	25.5	195.52	185.52	8/4/1999	7535612.7	372455.36
PW-01A	8	4	211.44	2.42	21	9	19	202.44	192.44	5/7/1989	7534477.85	372983.56
PW-03A	8	4	210.5	1.95	22	15	20	195.5	190.5	5/5/1989	7534315.35	372888.77
PW-10	6	2	211.53	2.14	12	7	11	204.53	200.53	10/31/1986	7534200.49	373580.47
PW-11	6	2	208.53	-0.45	17.8	11.8	16.8	196.73	191.73	10/29/1986	7534362.11	373341.62
PW-12	6	2	209.97	1.7	19.2	10.9	17.4	199.07	192.57	10/30/1986	7534562.525	373235.784
PW-13	8	4	207.78	-0.35	16.7	11.8	16.3	195.98	191.48	11/6/1986	7534383.405	373449.948
PW-14[2]	-	-	209.52	0.43	-	-	-	-	-	-	7534652.85	373546.06

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-15AR	10	2	206.5	1.85	20.5	10	20	196.5	186.5	9/14/1999	7534474.66	374177.6
PW-16A	8	4	209.97	2.45	29	17	27	192.97	182.97	4/26/1989	7533848.68	373397.11
PW-19A	8	4	210.43	1.75	20	8	18	202.43	192.43	4/20/1989	7533893.47	373151.27
PW-20A	8	4	210.42	2.12	22	10	20	200.42	190.42	4/18/1989	7533987.22	372966.9
PW-30A	8	4	199.75	1.5	17.17	5	15	194.75	184.75	4/5/1989	7535378.888	372499.1895
PW-31A	8	4	214.71	2.16	28.2	16.2	26.2	198.51	188.51	4/7/1989	7535619.51	373196.06
PW-32A	8	4	212.56	2.34	21.5	9.5	19.5	203.06	193.06	4/27/1989	7534899.23	373333.59
PW-33A	8	4	212.4	2.4	18.5	11.5	16.5	200.9	195.9	4/13/1989	7534912.44	373764.91
PW-34A	8	4	210.73	2.55	16.1	9	14	201.73	196.73	4/11/1989	7534884.84	374127.42
PW-42A	8	4	209.98	-0.16	22	10	20	199.98	189.98	4/25/1989	7534826.8	373024.19
PW-45A	8	4	211.69	-0.4	24.2	11.7	21.7	199.99	189.99	9/5/1990	7535448.68	372761.69
PW-46A	8	4	209.61	-0.34	23	10.5	20.5	199.11	189.11	9/11/1990	7535246.6	372561.69
PW-68A	10	2	211.63	-0.36	20.5	10	20	201.63	191.63	8/16/1999	7535482.01	372955.44
PW-69A	10	2	209.7	-0.23	20.5	10	20	199.7	189.7	8/20/1999	7535163.226	373020.79
PW-70AR	10	2	210.57	-0.25	20.5	10	20	200.57	190.57	9/16/1999	7535014.3	373225.23
PW-71A	10	2	210.06	-0.19	20.5	10	20	200.06	190.06	8/20/1999	7534990.35	373051.27
PW-72A	10	2	210.13	-0.38	20.5	10	20	200.13	190.13	8/18/1999	7535128.89	372874.19
PW-73A	10	2	210.86	-0.4	15.5	5	15	205.86	195.86	8/18/1999	7535270.55	372650.23
PW-73B	10	2	211.23	-0.41	38.2	27.5	37.5	183.73	173.73	8/17/1999	7535270.55	372650.23
PW-74A	10	2	209.81	-0.19	15.5	5	15	204.81	194.81	8/20/1999	7535098.68	372580.44
PW-74B	10	2	209.64	-0.39	35.5	24.8	34.8	184.84	174.84	8/20/1999	7535098.68	372580.44
PW-75A	10	2	197.57	-0.43	19.5	9	19	188.57	178.57	8/20/1999	7535298.17	372233.56
PW-76A	10	2	207.94	2.15	19.5	9	19	198.94	188.94	9/13/1999	7534347.97	373929.23
PW-77A	10	2	209.03	-0.4	21.5	11	21	198.03	188.03	9/14/1999	7534294.43	373757.1
PW-78A	10	2	208.96	-0.45	31	20	30	188.96	178.96	9/13/1999	7534126.15	373610.68
PW-79A	10	2	198.28	-0.45	21	9	19	189.28	179.28	9/10/1999	7533918.47	373475.23
PW-80A	10	2	211.03	2	19.5	9	19	202.03	192.03	9/15/1999	7534044.51	373341.9
PW-81A	10	2	208.73	-	18	7.5	17.5	201.23	191.23	9/16/1999	7534755.97	373228.36
PW-82A	10	2	208.64	-0.25	19.5	9	19	199.64	189.64	9/17/1999	7534408.05	373148.15
PW-83A	10	2	210.28	-	22.5	12	22	198.28	188.28	9/20/1999	7534393.47	373051.27

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-84A	10	2	209.7	-	20.5	10	20	199.7	189.7	8/20/2014	7534629.102	373054.658
PW-85A	10	2	212.85	-	20.5	10	20	202.85	192.85	9/21/1999	7534587.22	372962.73
PW-86A	10	2	208.91	-0.24	25.5	15	25	193.91	183.91	9/20/1999	7534745.55	372899.19
PW-87A	10	2	211.49	1.9	26	15	25	196.49	186.49	9/15/1999	7534905.97	372860.65
PW-88A	10	2	211.89	-	32.5	20.5	30.5	191.39	181.39	9/22/1999	7534724.72	372749.19
PW-89A	10	2	202.4	2.9	15.5	5	15	197.4	187.4	10/4/1999	7534450.76	372811.69
PW-91A	6	2	198.19	-0.5	19.3	9	18.8	189.19	179.39	2/22/2000	7535257.01	372357.52
PW-92A	6	2	208.77	-0.5	20.5	10	20	198.77	188.77	2/22/2000	7534077.85	373159.61
PW-93A	8	4	209.95	0.5	30	7.5	27.5	202.45	182.45	9/21/2007	7535168.19	373072.9
PW-94A	8	4	210.03	0.5	30	7.5	27.5	202.53	182.53	9/21/2007	7535141.84	373030.99
PW-95A	8	4	210.81	0.5	30	7.5	27.5	203.31	183.31	9/21/2007	7535182.9	372991.16
PW-98A	4	2	209.15	-0.35	16	11	16	198.15	193.15	7/6/2009	7534423.23	373594.35
PW-99A	4	2	207.44	-0.35	15	10	15	197.44	192.44	7/7/2009	7534497.11	373292.22
PW-100A	4	2	210.34	-	27.3	7	27	203.34	183.34	8/12/2010	7535148.05	373087.94
PW-101A	4	2	210.67	-	25	11	25	199.67	185.67	8/11/2010	7535204.91	373057.24
PZ-1A	8	2	210.82	2.5	18.4	6.4	16.4	204.42	194.42	5/2/1989	7534301.07	373180.84
Farm Ponds Area												
HW	6	3	238.5	0	35	15	25	223.5	213.5	8/31/1979	7533949	377832
ND	6	3	232.85	2.65	57	53	57	177.2	173.2	1/21/1981	7533615	378572
ND-1	8	4	216.86	2.36	41.5	31	41	183.5	173.5	10/5/1983	7533127	378892
ND-2	8	4	217.34	2.84	29	21	29	193.5	185.5	10/5/1983	7533127	378908
NS	--	3	221.15	2.65	12	8.5	12	210	206.5	8/31/1979	7533520	378619
PW-35A	8	4	234.99	1.89	45	33	43	200.1	190.1	7/28/1988	7534545	377533
PW-36A	8	4	235.99	2.79	27	15	25	218.2	208.2	8/9/1988	7535114	377834
PW-37A	8	4	227.32	2.52	38	24.6	34.6	200.2	190.2	8/11/1988	7535131	378206
PW-38A	8	4	223.04	1.84	33.9	26.9	31.9	194.3	189.3	7/12/1988	7534300	378544
PW-39A	8	4	238.7	2.9	45.8	33.8	43.8	202	192	7/1/1988	7534078	378015
PW-40A	8	4	217.17	1.67	42.4	30	40	185.5	175.5	3/21/1989	7532997	377816
PW-40S	8	4	217.51	2.01	18	11	16	204.5	199.5	3/22/1989	7533007	377815
PW-43A	8	4	214.12	1.92	40.1	28.1	38.1	184.1	174.1	8/22/1990	7532599	377934

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-43S	8	4	214.35	2.35	17.6	10.6	15.6	201.4	196.4	8/23/1990	7532600	377916
PW-44A	8	4	214.4	2.6	34.9	22.4	32.4	189.4	179.4	8/29/1990	7532629	377567
PW-44S	8	4	214.44	2.54	16.7	9.2	14.2	202.7	197.7	8/30/1990	7532625	377548
PW-64A	6	2	212.93	1.15	38.5	28	38	183.78	173.78	9/27/1999	7533224	377576
PW-64S	10	2	212.96	2.9	17	7	17	203.06	193.06	9/23/1999	7533206	377582
PW-65A	6	2	212.52	2.3	38	27.5	37.5	182.72	172.72	9/28/1999	7532990	377595
PW-65S	10	2	213.06	2.5	16	5	15	205.56	195.56	9/23/1999	7532980	377589
PW-66A	6	2	211.46	2	37	27	37	182.46	172.46	9/24/1999	7532585	378133
PW-66S	10	2	211.36	2	16	5	15	204.36	194.36	9/24/1999	7532585	378148
PW-67A	6	2	215.18	2.2	37.5	27	37	185.98	175.98	9/23/1999	7532559	378489
PW-67S	10	2	212.71	2.5	16	5	15	205.21	195.21	9/23/1999	7532563	378491
PW-104S	3.25	2	222.76	2.61	20.24	15	20	205.15	200.15	8/27/2015	7533516.113	377800.838
PW-105S	3.25	2	218.52	2.5	20.37	15	20	201.02	196.02	8/27/2015	7533450.798	377686.139
PW-106S	3.25	2	219.55	2.64	19.66	15	20	201.91	196.91	8/27/2015	7533508.537	377647.3
PW-107S	3.25	2	220.65	2.42	19.98	15	20	203.23	198.23	8/26/2015	7533566.641	377665.915
PW-108A	3.25	2	223.58	2.73	42.2	37	42	183.85	178.85	8/25/2015	7533557.983	377798.481
SD	--	3	227.51	1.81	42	39	42	186.7	183.7	1/20/1981	7533538.5	377806.76
WD1	8	4	220.45	0.55	47	34	44	185.9	175.9	10/5/1983	7532967	378273
WD2	8	4	220.6	0.9	34	24	34	195.7	185.7	10/5/1983	7532966	378289
WS	--	3	220.37	0.97	12	8	12	211.4	207.4	8/31/1979	7532965	378237
Solids Area												
PW-07	10	6	205.8	0.7	25	21	22	184.8	183.8	12/6/1978	7533432.4	373282.82
PW-09	6	4	200.13	-0.47	20.7	--	--	200.13	200.13	5/19/1981	7532784	372877.57
PW-17B	8	4	184.14	2.64	23.5	11.5	21.5	172.64	162.64	3/22/1989	7531945.95	373641.05
PW-18B	8	4	188.24	2.34	26.3	14.3	24.3	173.94	163.94	3/20/1989	7532111.29	373239.05
PWA-1	10	2	192.82	1.12	25	19	24	173.82	168.82	8/4/1982	7532370.65	373535.69
PWA-2	10	2	193.04	1.34	38	31	38	162.04	155.04	8/4/1982	7532370.65	373535.69
PWB-1	10	2	182.9	2.1	13	9.2	13	173.7	169.9	8/2/1982	7532711.06	373252.02
PWB-2	10	2	182.94	2.14	42	25	37	157.94	145.94	8/2/1982	7532711.06	373252.02
PWB-3	10	2	182.86	2.06	68	58	68	124.86	114.86	8/2/1982	7532711.06	373252.02

Appendix E. Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PWC-1	10	2	202.69	1.39	29	16	26	186.69	176.69	8/3/1982	7533153.59	373274.71
PWC-2	10	2	202.65	1.35	65	50	60	152.65	142.65	8/3/1982	7533153.59	373274.71
PWD-1	10	2	192.51	1.91	37	31	37	161.51	155.51	7/30/1982	7532438.73	372929.44
PWD-2	10	2	192.49	1.89	72	60	70	132.49	122.49	7/30/1982	7532438.73	372929.44
PWE-1	10	2	190.5	2.1	24	12	22	178.5	168.5	7/30/1982	7532683.5	372982.93
PWE-2	10	2	190.53	2.13	46.5	32.5	42.5	158.03	148.03	7/30/1982	7532683.5	372982.93
PWF-1	10	2	204.76	0.96	22	17	22	187.76	182.76	8/3/1982	7533442.12	372992.66
PWF-2	10	2	204.68	0.88	54	39	49	165.68	155.68	8/3/1982	7533442.12	372992.66

Notes

[1] Elevation measured to top of well cap

[2] PW-14 well log contains only top of casing elevation and ground surface elevation. No other information is present.

-- = not available

ft ags = feet above ground surface

ft bgs = feet below ground surface

ft msl = feet above mean sea level

TOC = top of casing