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Revision 0

DATA SCREENING PROCEDURE FOR THE 216-A-29 DITCH RCRA FIRST DETERMINATION REPORT

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

CH2MHILL
Plateau Remediation Company

P.O. Box 1600
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

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ENVIRONMENTAL CALCULATION COVER PAGE (Continued)

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ENVIRONMENTAL CALCULATION COVER PAGE (Continued)

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Terms

BTV	background threshold value
ECF	environmental calculation file
Ecology	Washington State Department of Ecology
EDA	Environmental Dashboard Application
HEIS	Hanford Environmental Information System
MDL	method detection limit
PQL	practical quantitation limit
RCRA	*Resource Conservation and Recovery Act of 1976*
SVOC	semi-volatile organic compound
VOC	volatile organic compound

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1 Purpose

The purpose of this environmental calculation file (ECF) is to explain the steps involved in the screening of groundwater monitoring data for further evaluation of dangerous waste impacts to groundwater from the 216-A-29 Ditch (216-A-29), an inactive treatment, storage, and disposal unit. This screening resulted in the selection of six constituents, which will be used for further evaluation of whether 216-A-29 is the original source impacting groundwater (ECF-200PO1-19-0034, *Statistical Evaluation of Assessment Sampling Results for 216-A-29 Ditch*).

2 Background

216-A-29 (Figures 1 and 2) was placed in groundwater quality assessment monitoring (40 CFR 265.93[d], "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," "Preparation, Evaluation, and Response") in 2016 because the indicator parameter specific conductance exceeded the statistical comparison value in samples at three downgradient wells (40 CFR 265.93[b]). Quadruplicate measurements of specific conductance collected in October 2015 from downgradient wells 299-E25-32P, 299-E25-35, and 299-E25-48 averaged 454 µS/cm, 493 µS/cm, and 577 µS/cm, respectively, which exceeded the critical mean value of 401 µS/cm (DOE/RL-2016-23, Rev. 2, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*).

An assessment groundwater monitoring plan (DOE/RL-2016-23) was subsequently drafted, based on requirements for interim status facilities, as defined by the *Resource Conservation and Recovery Act of 1976* (RCRA). Regulations for the 216-A-29 assessment monitoring plan are defined by the Washington State Department of Ecology (Ecology) in the Washington Administrative Code, and the Code of Federal Regulations (WAC 173-303-400, "Dangerous Waste Regulations," "Interim Status Facility Standards"; 40 CFR 265 Subpart F, "Ground-Water Monitoring"). Under the assessment monitoring plan (DOE/RL-2016-23), the 216-A-29 monitoring well network was sampled on a quarterly basis from October of 2016 through October of 2018. In 2017, seven wells were removed from the monitoring network and others were added in order to improve the well network coverage for 216-A-29 (DOE/RL-2016-23, Rev. 2, Figure 2).

Groundwater flow direction determinations indicated flow is to the south near the north end of the ditch, and to the southeast near the south end of the ditch. The revised assessment plans (DOE/RL-2016-23, Rev. 1, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*, and DOE/RL-2016-23, Rev. 2) changed the well network from that in DOE/RL-2016-23, Rev. 0, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*, to align with the perceived changed flowpaths. As a result, wells that are not in the current flowpath (299-E25-2, 299-E25-48, and 699-43-45) were removed from the network. Two existing upgradient wells (299-E25-43 and 299-E25-47) were added to the network. Well 299-E26-12 was removed from the network because it is in an area monitored by well 299-E26-13. Three new downgradient wells were drilled and constructed in 2017 to improve well network coverage. Two wells (299-E26-80 and 299-E25-238) were located close to the ditch boundary, eliminating the need for well 299-E25-32P, which was considered to be too far from the ditch to provide adequate monitoring. Well 299-E25-239 replaced well 299-E25-26, which is not compliant with WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells."

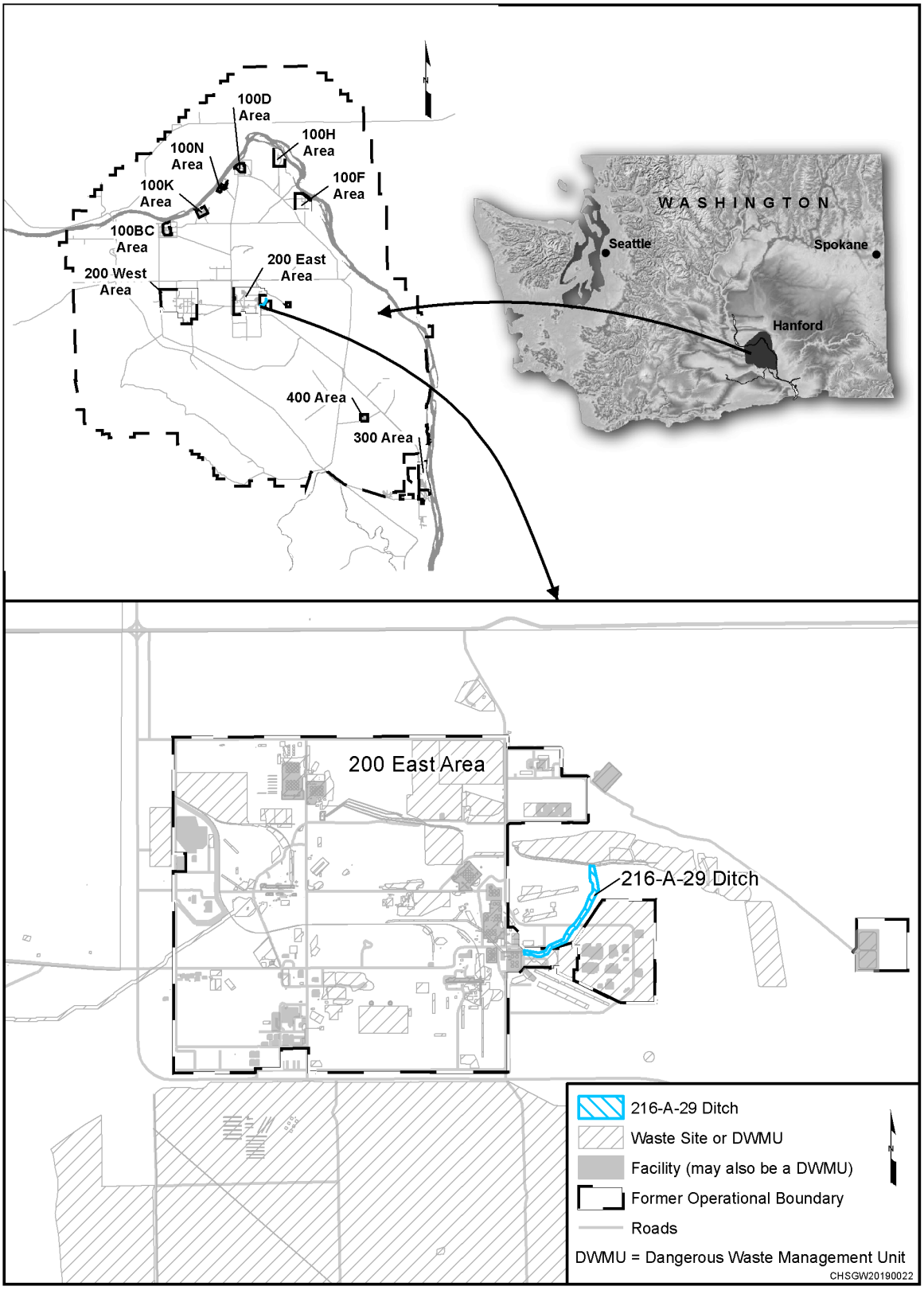

Figure 1. 216-A-29 Location Map

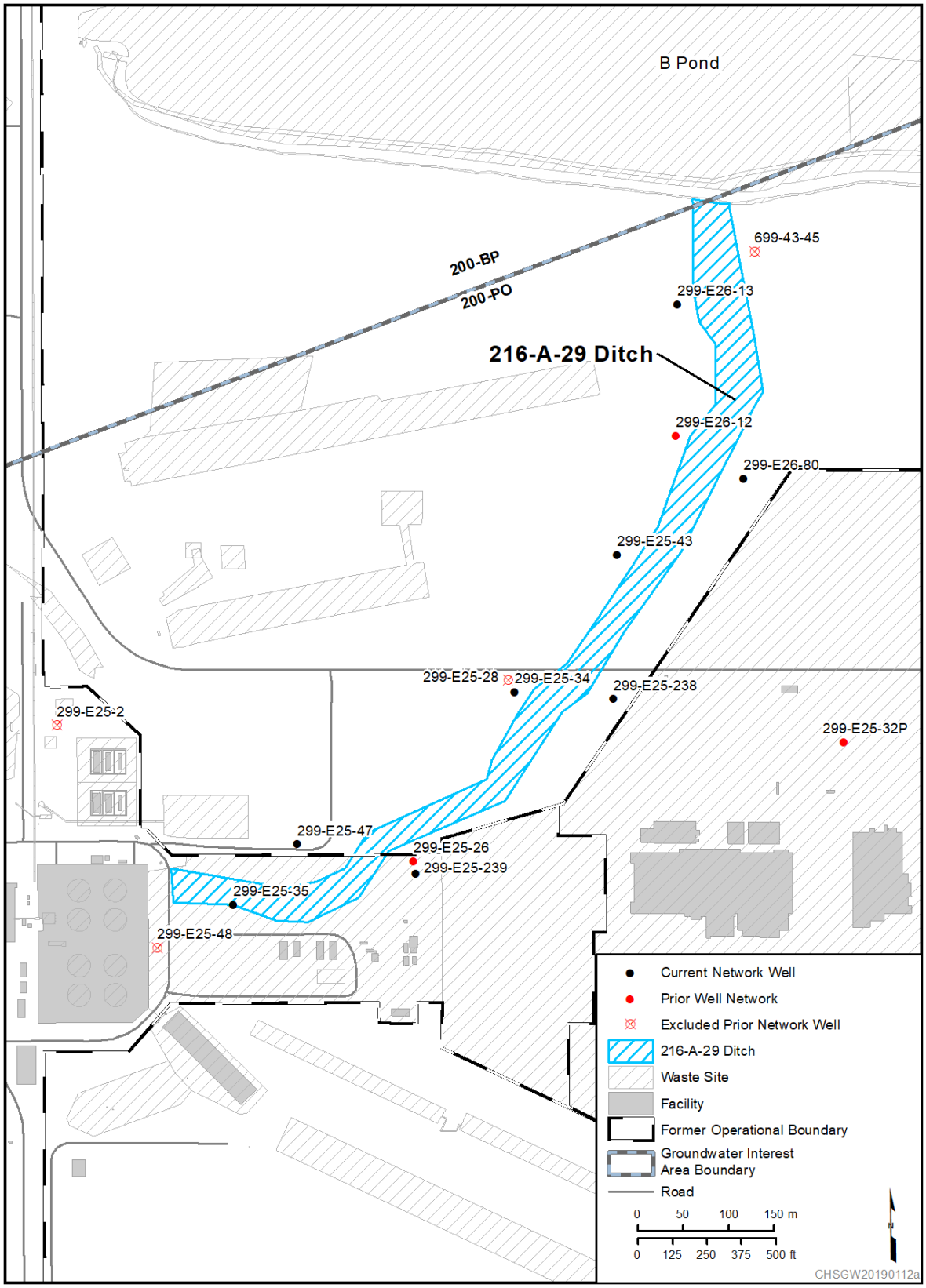

Figure 2. 216-A-29 Monitoring Well Network Location Map

With the exception of 299-E25-2, 299-E25-28, 299-E25-48, and 699-43-45 (Figure 2), data from wells in the original network (DOE/RL-2016-23, Rev. 0) in addition to those added later (DOE/RL-2016-23, Rev. 1 or Rev. 2) are included in this ECF to maximize statistical power by extending the historical record. Unlike the other three excluded wells, which are excluded because they fell out of the flowpath, 299-E25-28 is not included in this ECF because it is a deep well installed in a lower portion of the aquifer than the other network wells. Well 299-E25-32P is included in this ECF, but for informational purposes only, not for first determination.

The groundwater sampling constituent list and frequency requirements are outlined in DOE/RL-2016-23, Rev. 2. After the specific conductance exceedance in three wells was reported in 16-ESQ-0032, "Notification of the Ground Water Sampling Results Exceeding Specific Conductance for the 216-A-29 Ditch Monitoring Well Network in 2015 per 40 CFR 265.93(2)(d)(1)," nine quarterly assessment groundwater sampling events were completed in wells in the current network. A minimum of three quarterly samples were also taken in wells no longer in the network, during the period between the specific conductance exceedance reported in 16-ESQ-0032 and the wells' removal from the network. In addition to sample data collected after the site entered assessment, this ECF and the 216-A-29 first determination use data collected two quarters prior to the site entering into assessment to maximize statistical power, resulting in a minimum of four quarterly samples per well. Samples taken before when the site entered assessment can be included since hypothesis testing employed toward the 216-A-29 first determination (ECF-200PO1-19-0034) requires that data be stationary, but is otherwise time-independent. Further details on the wells and data from the wells used in this ECF and in the 216-A-29 first determination are provided in section 3 and in ECF-200PO1-19-0034. A dataset compiled from the nine quarterly sampling events from wells in the current network and four sampling events from wells in the prior network was used to support a robust statistical evaluation as part of the first determination. The objective of the first determination is to determine if any dangerous waste constituents from the facility have entered the groundwater.

3 Methodology

This section describes the screening process for dangerous waste constituents detected in the 216-A-29 monitoring well network that require further evaluation of their possible impact to groundwater (Figure 3). Dangerous waste constituents defined in Table 3-1 of DOE/RL-2016-23, Rev. 2, were acquired for the period from October 1, 2016, to October 30, 2018, by querying the Hanford Environmental Information System (HEIS) database for all of the wells in the current and past 216-A-29 network. Initial screening is based on eliminating data with associated laboratory or review qualifiers that indicate non-detection or quality control issues (Table 1).

All remaining inorganic data after the laboratory and review qualifier screening were compared to the sitewide background threshold values at the 95th percentile (DOE/RL-96-61, *Hanford Site Background: Part 3, Groundwater Background*).

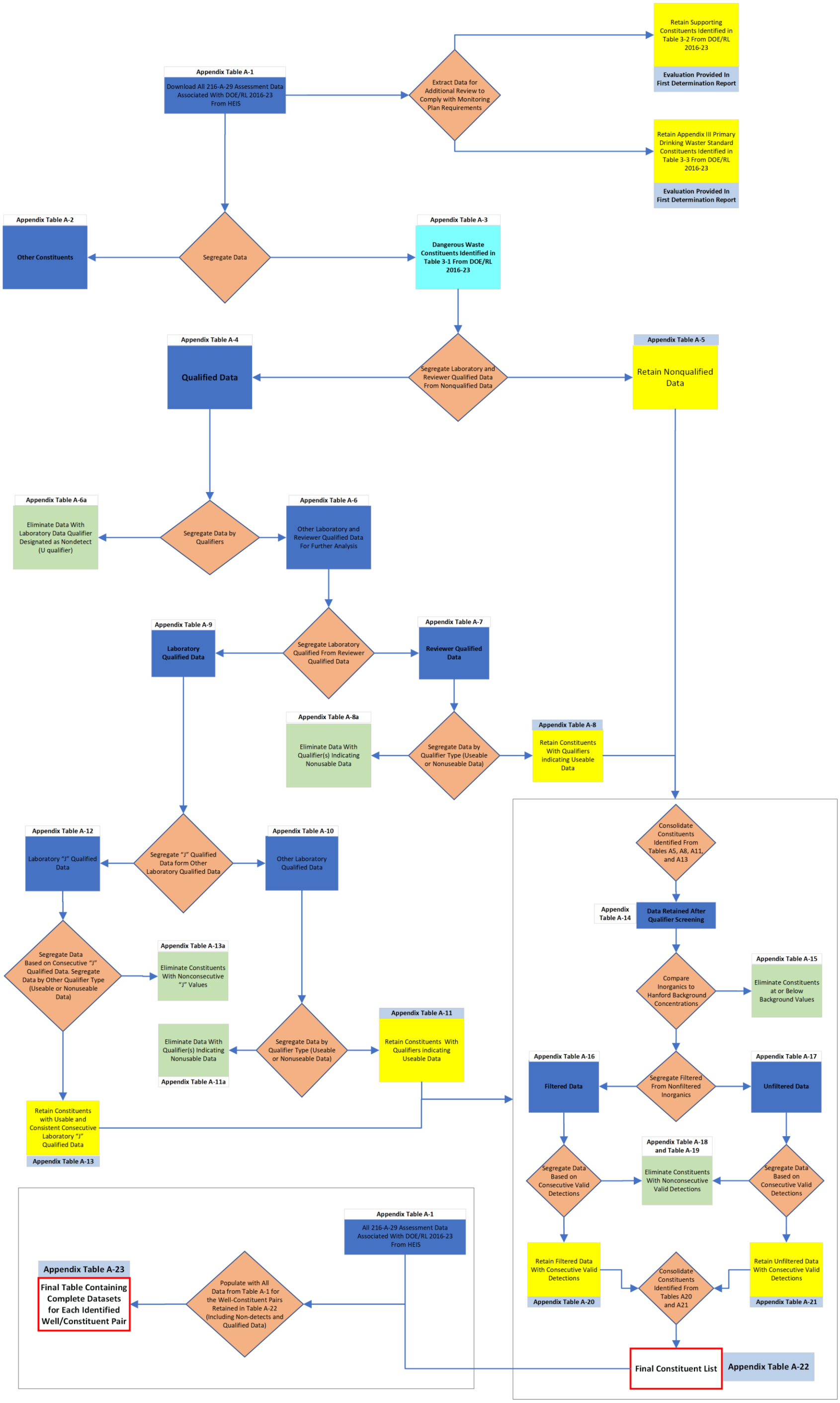

Figure 3. Data Screen Process Flow Diagram

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Table 1. Hanford Environmental Information System Data Qualifiers

Qualifier		Translation
Laboratory Qualifier	A	INORGANICS and WETCHEM - Valid for TIC only: The TIC is a suspected alcohol-condensation product.
	B	INORGANICS and WETCHEM - The analyte was detected at a value less than the contract RDL, but greater than or equal to the IDL/MIDL (as appropriate). ORGANICS - The analyte was detected in both the sample and the associated QC blank, and the blank concentration was > than the PQL but <= 5% of the sample concentration.
	C	INORGANICS/WETCHEM: The analyte was detected in both the sample and the associated QC blank, and the blank concentration was > than the PQL but <= 10% of the sample concentration. ORGANICS (PESTICIDE only) - The identification of a pesticide confirmed by GC/MS.
	D	All - Analyte was reported at a secondary dilution factor, typically DF >1 (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.
	E	INORGANICS - Reported value is estimated because of interference. See comment on cover page, hardcopy case narrative, or specific inorganic hardcopy datasheet. ORGANICS - Concentration exceeds the calibration range of the GC/MS.
	J	ORGANICS - Estimated value; (1) constituent detected at a level less than the RDL or PQL and greater than or equal to the MDL, (2) estimated concentration for TICs.
	N	ALL (except GC/MS based analysis) - Spike and/or spike duplicate sample recovery is outside control limits. ORGANICS (GC/MS only) - Presumptive evidence of compound based on mass spectral library search.
	O	ALL - The associated laboratory control sample recovery is outside control limits
	P	ORGANICS (PCB only) - Aroclor target analyte with greater than 25% difference between column analyses.
	Q	ORGANICS (Dioxins & PCB-congeners only) - Estimated maximum concentration. Used if one of the qualitative identification criteria is not met (e.g., Cl isotopic ratios outside theoretical range.)
	S	INORGANICS - Reported value determined by MSA.
	T	Organics (GC/MS only) - Spike and/or spike duplicate sample recovery is outside control limits.
	U	ALL - Analyzed for but not detected above limiting criteria. Limiting criteria may be any of the following: value reported < 0; value reported < counting error, value reported < total analytical error; value reported <= contract MDL/IDL/MDA/PQL.
	W	INORGANICS - Post-digestion spike recovery for GFAA out of control limit. Sample absorbency <50% of spike absorbency.
	X	ALL - The result-specific translation of this qualifier code is provided in the hardcopy data report and/or case narrative. Additional result-specific translation information may also be found in the RESULT_COMMENT field for this record.
	Y	Same as X if more than one flag is required.

Table 1. Hanford Environmental Information System Data Qualifiers

Qualifier		Translation
	Z	ALL - The result-specific translation of this qualifier code is provided in the hardcopy data report and/or case narrative.
	Y	Same as X and Y if more than two flags are required.
Review Qualifier	A	Chain of custody issues associated with sample.
	F	Result is undergoing further review.
	G	Record has been reviewed and determined to be correct, or the record has been corrected with laboratory confirmation or other supporting information.
	H	Laboratory holding time was exceeded before the sample was analyzed.
	P	Potential problem. Collection/analysis circumstances makes value questionable.
	Q	Associated quality control sample is out of limits.
	R	Do not use. Further review indicates the result is not valid.
	Y	Result suspect. Review - insufficient evidence to show result valid or invalid.
	Z	Miscellaneous circumstances exist. Additional information may be found in the RESULT_COMMENT field for this record and/or in the SAMP_COMMENT field of the parent sample record.

Laboratory Qualifier Source: CP-15383, *Common Requirements of the Format for Electronic Analytical Data (FEAD)*.

Review Qualifier Source: HNF-38155, *HEIS Sample, Result, and Sampling Site Data Dictionary*.

DF = dilution factor
GC/MS = gas chromatograph/mass spectrometer
GFAA = graphite furnace atomic absorption
HEIS = Hanford Environmental Information System
IDL = instrument detection limit
MDA = minimum detectable activity
MDL = method detection limit
MIDL = method instrument detection limit
MSA = Method of Standard Additions
PCB = polychlorinated biphenyl
PQL = practical quantitation limit
QC = quality control
RDL = required detection limit
TIC = tentatively identified compounds

All remaining organic data after the laboratory and review qualifier screening were screened for consecutive “J” qualifiers. These data are retained because they indicate the presence of low-level organic compound contamination that may be of interest to the site owner/operator. Specifically the “J” qualifier indicates that an analytical value is higher than the method detection limit (MDL) but lower than the practical quantitation limit. The laboratory practical quantitation limits (PQLs) are either established at the value of the lowest calibration standard obtained by a laboratory for the applicable analytical method or they are based on the MDL multiplied by a factor (usually 3 to 5 times) as determined by a laboratory. MDLs are determined in accordance with the most current version of 40 CFR 136, “Guidelines

Establishing Test Procedures for the Analysis of Pollutants," "Definition and Procedure for the Determination of the Method Detection Limit." The MDL and PQL values published by the laboratories are based on ideal samples and sample volumes and do not take into account issues (i.e., dilutions or reduced sample sizes) resulting from difficult matrices.

3.1 Laboratory and Review Qualifier Screening

1. Access HEIS using the Environmental Dashboard Application (EDA) and download all groundwater monitoring data for wells 299-E25-26, 299-E25-238, 299-E25-239, 299-E25-32P, 299-E25-34, 299-E25-35, 299-E25-43, 299-E25-47, 299-E26-12, 299-E26-13, and 299-E26-80, from samples collected between October 1, 2016, and October 31, 2019, for the entire 216-A-29 monitoring network (Figure 2 and Figure 3).

    a. Export the data into a Microsoft® Excel® spreadsheet. Load exported data into a Microsoft® Access® database.

    b. Extract all results categorized as supporting constituents in Table 3-2 of DOE/RL-2016-23, Rev. 2, and export to an Excel spreadsheet (Appendix A, "A-29_spprtn_consttnts.xlsx"). These data are discussed in DOE/RL-2019-27, *Groundwater Assessment First Determination Report for the 216-A-29 Ditch*.

    c. Extract all results sampled for 40 CFR 265 Appendix III, "EPA Interim Primary Drinking Water Standards," that are listed in Table 3-3 of DOE/RL-2016-23, Rev. 2, and export to an Excel spreadsheet (Appendix A). Appendix III parameter sampling for four quarters is required for wells newly added to the network. For 216-A-29, wells 299-E25-43, 299-E25-47, 299-E26-80 299-E25-238, and 299-E25-239 were sampled for Appendix III. These data are discussed in DOE/RL-2019-27.

2. Screen the data not excluded for designated dangerous waste status by comparing constituents with those listed in Table 3-1 of DOE/RL-2016-23, Rev. 2. Exclude all data for constituents not listed as dangerous waste in Table 3-1. Retain all constituents listed as dangerous waste for further evaluation (Figure 3).

3. Screen and exclude all data with laboratory qualifiers "A," "E," "N," "O," "P," "Q," "T," "U" and "W." Also, screen and exclude organic constituent data associated with "B" qualifiers and inorganic constituent data with "C" qualifiers (Figure 3).

    a. Retain all organic constituents associated with "J" qualifiers and save in a separate file.

4. Screen and determine adequacy of data associated with laboratory qualifiers "X," "Y," and "Z." For example, if the laboratory hardcopy indicates sample quality control issues (e.g. hold-time exceedance or sample contamination) then exclude the data point (Figure 3).

5. Screen and exclude all data points associated with review qualifiers "F," "H," "P," "Q," "R," or "Y" (Figure 3).

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3.2 Background Threshold Value

1. Screen all remaining inorganic data retained in step 5 in Section 3.1 against sitewide background threshold values (BTVs) at the 95th percentile (Table 2, DOE/RL-96-61). Retain those values that exceed the background threshold values (Figure 3).

3.3 Consecutive Valid Detections Screening

1. Screen all previously retained data for consecutive, valid detections. Retain all well constituent datasets with two or more consecutive valid dangerous waste detections. These data will be forwarded for further evaluation (Figure 3).
2. Screen all organic constituent data for consistent consecutive "J" qualifiers (Figure 3).
3. Retrieve all of the data for constituent/well pairs retained in Section 3.3, step 1 from the initial dataset (Table A-1 in Figure 3) obtained in Section 3.1, step 1. It is necessary to include all assessment data for the retained constituent/well pairs for further statistical evaluation (ECF-200PO1-19-0034).
4. Export final dataset (along with intermediate datasets derived in 3.1 through 3.3) from Access database to individual Excel spreadsheets (Appendix A).

Table 2. Hanford Site-wide 95th Percentile Background Values for 216-A-29 Dangerous Waste Constituents

Analyte	Filtered	Units	95 CI
Antimony	Y	µg/L	69.8
Arsenic	Y	µg/L	11.8
Barium	Y	µg/L	149
Beryllium	Y	µg/L	3.38
Cadmium	Y	µg/L	1.29
Chromium	Y	µg/L	3.17
Cobalt	Y	µg/L	1.29
Copper	Y	µg/L	1.04
Cyanide	N	µg/L	9.52
Lead	Y	µg/L	1.3
Mercury	Y	µg/L	0.006
Nickel	Y	µg/L	1.98
Selenium	Y	µg/L	20.7
Silver	Y	µg/L	5.98
Sulfide	Y	µg/L	2.35
Thallium	Y	µg/L	1.87

Table 2. Hanford Site-wide 95th Percentile Background Values for 216-A-29 Dangerous Waste Constituents

Analyte	Filtered	Units	95 CI
Tin	Y	µg/L	23.6
Vanadium	Y	µg/L	19.3
Zinc	Y	µg/L	48.9

Source: DOE/RL-96-61, *Hanford Site Background: Part 3, Groundwater Background*, Rev. 0.

CI = confidence interval

4 Assumptions and Inputs

Non-detected sample data results (data with a "U" qualifier) are assumed to not be present and were not further evaluated. Sample data results that could have been affected by sample or lab contamination (semi-volatile organic compound (SVOC), and volatile organic compound (VOC) sample data flagged by the laboratory with a "B" qualifier or inorganic constituent data flagged by the laboratory with a "C" qualifier) were not evaluated. Data were considered valid for organic constituents if datasets containing both detections and non-detects contained consecutive detections. Consecutive "J" qualifiers suggests that the organic constituent is detectable in groundwater at very low concentrations.

5 Software Applications

Microsoft Excel® and Microsoft Access® software are approved and appropriate applications for this effort and were used to perform sorting operations.

6 Calculation

Data were accessed through HEIS using the EDA, and processed by Excel and Access using conditional statements in accordance with the assumptions, inputs, and methodology presented in Section 3. Results are summarized in Section 7.

7 Results

Results of the screening process described in Section 3 and outlined in the process flow diagram in Figure 3 are presented in tables listed in Appendix A. After qualifier, BTV, and consecutive detection screening of the retained dangerous wastes constituent results, the following dangerous waste constituents were retained for further analysis:

- Chromium at wells 299-E25-32P, 299-E25-34, 299-E25-35, 299-E25-43, 299-E26-12, and 299-E26-13
- Copper at wells 299-E25-32P, 299-E25-34, 299-E26-13, and 299-E26-80
- Nickel at wells 299-E25-32P, 299-E25-34, 299-E25-35, 299-E25-43, 299-E26-13, and 299-E26-80
- Sulfide at wells 299-E25-32P and 299-E25-35

- Vanadium at wells 299-E25-239, 299-E25-26, 299-E25-34, 299-E25-35, 299-E25-43, 299-E25-47, 299-E26-12, 299-E26-13, and 299-E26-80

Organic constituents present at low concentrations as indicated by consistent consecutive "J" qualifiers were retained for further evaluation even though those constituents are not considered dangerous wastes attributable to 216-A-29. Further evaluation of organics present at low-level concentrations was deemed necessary for estimating possible future changes in concentrations and to determine their suitability as site-specific monitoring constituents. 216-A-29 organics carried forward for further evaluation included acetone at upgradient wells 299-E25-34 and 299-E26-13.

The final screened dataset consisting of the constituent/well combinations listed above was evaluated further in ECF-200PO1-19-0034. Based on the results provided in this ECF (ECF-200PO1-19-0033), and ECF-200PO1-19-0034, DOE/RL-2019-27 was prepared. A summary of the entire data evaluation process, results, and conclusions is provided in DOE/RL-2019-27.

8 References

16-ESQ-0032, 2016, "Notification of the Ground Water Sampling Results Exceeding Specific Conductance for the 216-A-29 Ditch Monitoring Well Network in 2015 per 40 CFR 265.93(2)(d)(1)," (letter to J.A. Hedges from S. Charboneau), U.S. Department of Energy, Richland Operations Office, Richland, WA. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=0078629H.

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*. Available at: http://www.gpo.gov/fdsys/pkg/CFR-2010-title40-vol25/xml/CFR-2010-title40-vol25-part265.xml.

265.93, "Preparation, Evaluation, and Response."

Subpart F, "Ground-Water Monitoring"

Appendix III, "EPA Interim Primary Drinking Water Standards"

CP-15383, 2007, *Common Requirements of the Format for Electronic Analytical Data (FEAD)*, Rev. 8, Fluor Hanford, Inc., Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=AR-02369.

DOE/RL-96-61, 1997, *Hanford Site Background: Part 3, Groundwater Background*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=D197226378.

DOE/RL-2016-23, 2016, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*, Rev. 0, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=0078183H.

DOE/RL-2016-23, 2017, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=0069681H.

DOE/RL-2016-23, 2017, *216-A-29 Ditch Interim Status Groundwater Quality Assessment Monitoring Plan*, Rev. 2, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=0066773H.

DOE/RL-2019-27, pending, *Groundwater Assessment First Determination Report for 216-A-29 Ditch*, Rev. 0, CH2M Hill Plateau Remediation Company, Richland, WA.

ECF-200PO1-19-0034, pending, *Statistical Evaluation of Assessment Sampling Results For 216-A-29 Trench*, Rev. 0, Department of Energy, Richland Operations Office, Richland, Washington.

HNF-38155, 2013, *HEIS Sample, Result, and Sampling Site Data Dictionary*, Rev. 1, CH2M HILL Plateau Remediation Company, Richland, Washington. Available at: https://pdw.hanford.gov/arpir/pdf.cfm?accession=0082589H.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq. Available at: https://elr.info/sites/default/files/docs/statutes/full/rcra.pdf.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, Olympia, Washington. Available at: http://apps.leg.wa.gov/WAC/default.aspx?cite=173-160.

WAC 173-303-400, "Dangerous Waste Regulations," "Interim Status Facility Standards," *Washington Administrative Code*, Olympia, Washington. Available at: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-400.

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Appendix A

216-A-29 Assessment Sampling Data and Data Screening Results

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Results of the steps of the data screening process described in Section 3 are listed in the spreadsheets in the table below. The spreadsheet "table_explanation_A29.xlsx" explains each of the spreadsheets. Figure 3 of this document outlines the process followed for which spreadsheet was derived.

Microsoft Excel Spreadsheet
table_explanation_A29.xlsx
Table A-1.xlsx
Table A-2.xlsx
Table A-3.xlsx
Table A-4.xlsx
Table A-5.xlsx
Table A-6.xlsx
Table A-6a.xlsx
Table A-7.xlsx
Table A-8.xlsx
Table A-8a.xlsx
Table A-9.xlsx
Table A-10.xlsx
Table A-11.xlsx
Table A-11a.xlsx
Table A-12.xlsx
Table A-13.xlsx
Table A-13a.xlsx
Table A-14.xlsx
Table A-15.xlsx
Table A-16.xlsx
Table A-17.xlsx
Table A-18.xlsx
Table A-19.xlsx
Table A-20.xlsx
Table A-21.xlsx
Table A-22.xlsx
Table A-23.xlsx
A29_spprtng_cnsttnts.xlsx

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Microsoft Excel Spreadsheet
A29_appndx_3_cnsttnts.xlsx