OFFICE OF RIVER PROTECTION
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

JUN 25 2019

19-ECD-0045

Ms. Alexandra K. Smith, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Ms. Smith:

SUBMITTAL OF THE STATE WASTE DISCHARGE PERMIT ST0004500 RENEWAL APPLICATION FOR THE STATE-APPROVED LAND DISPOSAL SITE

Reference: ORP letter from K.W. Smith to A.K. Smith, Ecology, "Modification and Update of State Waste Discharge Permit ST0004500," 16-ECD-0042, dated November 1, 2016.

This letter submits to Washington State Department of Ecology the application for renewal (Attachments 1 through 3) State Waste Discharge Permit ST0004500 for the State-Approved Land Disposal Site. Condition S6 "Application for Permit Renewal or Modification for Facility Changes," requires the Permittee to submit an application for renewal of this permit by June 30, 2019. This letter also submits proposed permit modifications, many of which were previously proposed by U.S. Department of Energy, Office of River Protection in letter 16-ECD-0042 (Reference). Some of the proposed permit modifications were not previously proposed, and as such, this application for permit renewal identifies possible constituents from activities in support of the Low-Activity Waste Facility operations. These operations include the Field Lysimeter Test Facility, which is expected to begin sending wastewater to the Effluent Treatment Facility in March 2020. To avoid an impact to the commissioning of the Low-Activity Waste Facility, it is critical that the permit renewal application is approved no later than February 2020. The Office of River Protection requests that Washington State Department of Ecology either approves the renewal application or extends the existing permit before the existing permit expiration date which is December 31, 2019.

This application for renewal includes: the current permit with redlined proposed modifications (Attachment 4), a clean copy of the proposed modified permit (Attachment 5), and a crosswalk table that explains the proposed modifications, for your convenience. Certification for the permit renewal application is in Attachment 7.

If you have any questions, please contact Joe Sondag, Acting Director, Environmental Compliance Division, (509) 373-9179.

Brian T. Vance
Manager

ECD:RLE

Attachments: (7)

cc w/attachs:
S.N. Schleif, Ecology (hardcopy and CD)
K. Wilson, Ecology
J. Atwood, YN
D. Rowland, YN
Administrative Record (S-2-8, T-2-8)
Environmental Portal
WRPS Correspondence

cc w/o attachs:
M. Johnson, CTUIR
M. Pakula, Ecology
D.R. Einan, EPA
J. Bell, NPT
K. Niles, Oregon Energy
R. Buck, Wanapum
J.A. Joyner, WRPS
B.G. Turner, WRPS

Attachment 1
19-ECD-0045
(44 Pages Excluding Cover Sheet)

ECY-040-179 (rev. 08/2012), *Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application.* Including State Waste Discharge Permit Number ST0004500.

Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application

This application is for a state waste discharge permit as required by Chapter 90.48 RCW and Chapter 173-216 WAC. Permit applications provide Ecology with information on pollutants in the waste stream, materials that may enter the waste stream, the flow characteristics of the discharge, and the site characteristics at the point of discharge.

Ecology may request additional information to clarify the conditions of this discharge. The applicant should reference information previously submitted to Ecology that applies to this application in the appropriate section.

SECTION A. GENERAL INFORMATION

1. Applicant name: U.S. Department of Energy, Office of River Protection

2. Facility name: Hanford Site
(if different from applicant)

3. Applicant mail address: PO Box 450
Street

Richland, Washington 99352
City/State Zip

4. Facility location address: 200 East and West Areas - Hanford Site
(if different from above)
Street

City/State Zip

5. UBI No. N/A

Sometimes called a registration, tax, "C," or resale number, the Unified Business Identifier (UBI) number is a nine-digit number used to identify persons engaging in business activities. The number is assigned when a person completes a Master Business Application to register with or obtain a license from state agencies. The Departments of Revenue, Licensing, Employment Security, Labor and Industries, and the Corporations Division of the Secretary of State are among the state agencies participating in the UBI program.

6. Latitude/longitude of the processing facility as decimal degrees (NAD83/WGS84):

46.5725 N / -119.6333 W

FOR ECOLOGY USE ONLY	Check One	New/Renewal ☐ Modification ☐
Date application received		Application/Permit no.
Date application accepted		Date fee paid

7. Person to contact who is familiar with the information contained in this application:

Chris J. Kemp	Environmental Compliance Division, Office of River Protection
Name	Title
(509) 373-0649	
Telephone number	Fax number

8. Check One:

☒ **Permit renewal** (including renewal of temporary permits authorized by RCW 90.48.200)

Does this application request a greater amount of wastewater discharge, a greater amount of pollutant discharge, or a discharge of different pollutants than specified in the last permit application for this facility? ☒ YES ☐ NO

For permit renewals, the current permit is an attachment, by reference, to this application.

☐ **Permit modification** ☐ **Existing unpermitted discharge** ☐ **Proposed discharge**

Anticipated date of discharge: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and/or imprisonment for knowing violations.

	6/25/2019	Manager
Signature*	Date	Title
Brian T. Vance		
Printed name		

*Applications must be signed as follows: Corporations, by a principal executive officer of at least the level of vice-president; partnership, by a general partner; sole proprietorship, by the proprietor. If these titles do not apply to your organization, the person who makes budget decisions for this facility must sign the application.

The application signatory may delegate signature authority for submittals required by the permit, such as monthly reports, to a suitable employee. You can delegate this authority to a qualified individual or to a position, which you expect to fill with a qualified individual. If you wish to delegate signature authority, please complete the following:

Signature of delegated employee	Date	Title or function at the facility
Printed name		

SECTION B. PRODUCT INFORMATION

1. Briefly describe all manufacturing processes and products, and/or commercial activities at this facility. Provide the applicable Standard Industrial Category (SIC) and the North American Industry Classification System (NAICS) Code(s) for each activity (see *North American Industrial Classification System*, 2007 ed.). You can find the 1997 NAICS codes and the corresponding 1987 Standard Industry Category (SIC) codes at (http://www.census.gov/epcd/naics/frames3.htm).

Description:

The State-Approved Land Disposal Site (SALDS) and the SALDS tranfer line are permitted by State Waste Discharge Permit ST0004500 (ST4500). SALDS and SALDS transfer line do not have manufacturing processes and products, or commercial activities. The North American Industry Classification System code for the SALDS and SALDS transfer line is 924110 – Administration of Air and Water Resource and Solid Waste Management Programs. The Standard Industrial Classification code for SALDS and the SALDS transfer line is 9511 – Air and Water Resource and Solid Waste Management.

2. List raw materials and products:

Type	RAW MATERIALS	Quantity
Potatoes (Example)		*20 million tons per year*
There are no raw materials or products associated with SALDS and the SALDS transfer line.		

Type	PRODUCTS	Quantity
French fries (Example)		*10 million pounds per year*

SECTION C. PLANT OPERATIONAL CHARACTERISTICS

1. For each process listed in B.1that generates wastewater, list the process, assign the waste stream a name and ID #, and describe whether it is a batch or continuous flow.

Process	Waste Stream Name	Waste Stream ID#	Batch (B) or Continuous (C) Process
Receiving raw potatoes (Example)	*Mud Water*	*1*	*C*
See Section C and Attachment C2 of RPP-ENV-61571 for information supporting ECY-040-179 Section C.			

2. On a separate sheet, produce a schematic drawing showing production processes and water flow through the facility and wastewater treatment devices *(label as attachment C2).* The drawing should indicate the source of intake water and the operations contributing wastewater to the effluent and should label the treatment units. Construct the water balance by showing average flows between intakes, operations, treatment units, and points of discharge to land. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a description of the nature and amount of any sources of water and any collection or treatment measures.

3. What is the highest daily discharge flow from the processing facility: _____ gallons per _____
(Specify the time period for the value given)

What is the highest daily discharge flow to the sprayfields/infiltration basin: inches/acre/month OR
(Specify the time period for the value given) gallons per day

What is the highest average monthly discharge flow (daily flows averaged over a month) from the processing facility: _____ gallons/day?
(Specify the time period for the value given)

What is the highest average monthly discharge flow to the sprayfields: inches/acre/month OR
(Specify the time period for the value given) gallons per day

4. Describe any planned wastewater treatment or sprayfield/infiltration improvements and the schedule for the improvements or changes. *(Use additional sheets, if necessary and label as attachment C4.)*

5. If production processes are subject to seasonal variations, provide the following information. List discharge for each wastestream in gallons or million gallons per month. The combined value for each month should equal the estimated total monthly flow. Please indicate the proper unit by checking one of the following boxes:

☐ gallons per day ☐ gallons per month ☐ million gallons per month

Waste Stream ID#	MONTHS											
	J	F	M	A	M	J	J	A	S	O	N	D
#1 (Example)	*1000*	*1000*	*1000*	*1000*	*6000*	*2000*	*2000*	*2000*	*1000*	*1000*	*5000*	*4000*
Estimated total gallons												

6. If this is a discharge from the processing facility to a storage or evaporative lagoon, what is the size of the lagoon (give square footage for the bottom of the lagoon and the total volume of the lagoon at full operating depth). *10,000 square feet; 10 million gallons (Example)*

_____

7. Check the applicable box. Is this is a discharge to a sprayfield ☐ or an infiltration bed ☐? Provide the average gallons per acre per day proposed for each month in the following table.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept.	Oct	Nov	Dec
Estimated gallons per acre per day												

8. How many hours a day does this facility typically operate? _____

How many days a week does this facility typically operate? _____

How many weeks per year does this facility typically operate? _____

9. List all incidental materials such as oil, paint, grease, solvents, and cleaners that are used or stored on site (list only those with quantities greater than 10 gallons for liquids and 50 pound quantities for solids). For solvents and solvent-based cleaners, include a copy of the material safety data sheet for each material and estimate the quantity used. *Use additional sheets, if necessary and label as attachment C.7.)*

Materials/Quantity Stored:

			Yes	No
10.	Some types of facilities are required to have spill or waste control plans. Does this facility have:			
	a.	A spill prevention, control, and countermeasure plan (40 CFR 112)?	☐	☐
	b.	An Oil Spill Contingency Plan (chapter 173-182 WAC)?	☐	☐
	c.	An emergency response plan (per WAC 173-303-350)?	☐	☐
	d.	A runoff, spillage, or leak control plan (per WAC 173-216-110(f))?	☐	☐
	e.	Any spill or pollution prevention plan required by local, state or federal authorities? If yes specify: _____	☐	☐
	f.	A solid waste control plan?	☐	☐

SECTION D. WATER CONSUMPTION AND WATER LOSS

1. Potable water source(s):

☐ Public system (Specify name)

Not applicable. There is no potable water use within SALDS and the SALDS transfer line.

☐ Private well ☐ Surface water (Specify name of water body) _____

a. Water right permit number: _____

b. Legal description of water source:

_____ ¼S, _____ ¼S, _____, Section, _____ TWN, _____ R

2. Potable water use

a. Indicate total water use: Gallons per day (average)

Not applicable. There is no potable water use within SALDS and the SALDS transfer line.

Gallons per day (maximum) _____

b. Is water metered? ☐ YES ☐ NO

3. Supplemental Irrigation water source(s):

☐ Public system or Irrigation District (Specify name)

Not applicable. There are no supplemental irrigation water sources within SALDS and the SALDS transfer line.

☐ Private well ☐ Surface water (Specify name of water body) _____

a. Water right permit number: _____

b. Legal description of water source:

_____ ¼S, _____ ¼S, _____, Section, _____ TWN, _____ R

This page purposely left blank

SECTION E. WASTEWATER INFORMATION

1. How are the water intake and effluent flows measured?

   Intake: See Section E of RPP-ENV-61571 for information supporting ECY-040-179 Section E.

   Effluent _____

2. Describe the collection method for the samples analyzed below. (*i.e.*, grab, 24-hour composite). Applicants must collect grab samples (not composites) for analysis of pH, temperature, cyanide, total phenols, residual chlorine, oil and grease, fecal coliform (including E. coli), and Enterococci (previously known as fecal streptococcus at § 122.26 (d)(2)(iii)(A)(3)),or volatile organics.

3. Has the effluent been analyzed for any other parameters than those identified in question E.4.? ☐ YES ☐ NO
   If yes, attach results and label as attachment E.4. This data must clearly show the date, method and location of sampling. *(Note: Ecology may require additional testing.)*

4. Provide measurements or range of measurements for treated wastewater prior to discharge to the POTW for the parameters with an "X" in the left column. If you obtain the application from the internet, contact Ecology's regional office to see if testing for a subset of these parameters is permissible. All analyses (except pH) must be conducted by a laboratory registered or accredited by Ecology (WAC 173-216-125). If this is an application for permit renewal, provide data for the last year for those parameters that are routinely measured. For parameters measured only for this application, place the values under "Maximum." Report the values with units as specified in the parameter name or in the detection level.

   The Permittee must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table unless Ecology approves an alternate method or the method used produces measurable results in the sample and EPA has listed it as an EPA approved method in 40 CFR Part 136. If the Permittee uses an alternative method as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19th,20th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
	BOD (5 day)					SM 5210 B	/2 mg/l
	COD					SM 5220 D	/10 mg/l
	Total suspended solids					SM 2540 D	/5 mg/l
	Fixed Dissolved Solids					SM 2540 E	
	Total dissolved solids					SM 2540 C	
	Conductivity (micromhos/cm)					SM 2510 B	
	Ammonia-N as N					SM 4500-NH_3 C	/0.3 mg/L
	pH					SM 4500-H	0.1 standard units
	Fecal coliform (organisms/100 mL)					SM 9221 E or 9222 D	
	Total coliform (organisms/100 mL)					SM 9221 B or 9222 B	
	Dissolved oxygen					SM 4500-O C/G	
	Nitrate + nitrite-N as N					SM 4500-NO_3 E	100 µg/L
	Total kjeldahl N as N					SM 4500-N_{org} C/E/FG	300 µg/l
	Ortho-phosphate-P as P					SM 4500-P E/F	10 µg/l
	Total-phosphorous-P as P					SM 4500-P E/P/F	10 µg/l
	Total Oil & grease					EPA 1664A	1.4/5 mg/l
	NWTPH - Dx					Ecology NWTPH Dx	250/250 µg/l
	NWTPH - Gx					Ecology NWTPH Gx	250/250 µg/l
	Calcium					EPA 200.7	10 µg/l
	Chloride					SM 4500-Cl C	0.15 µg/l
	Fluoride					SM 4500-F E	.025/0.1 mg/l
	Magnesium					EPA 200.7	10/50 µg/l
	Potassium					EPA 200.7	700/ µg/l

X	Parameter	Measurement Values			Number of Analyses	Analytical Method Std. Methods 19th,20th edition or EPA	Detection Limit/Quantitation Level
		Minimum	Maximum	Average			
	Sodium					EPA 200.7	29/ µg/l
	Sulfate					SM 4500-SO_4 C/D	/200 µg/l
	Alkalinity as $CaCO_3$					SM 2320 B	/5 mg/L as $CaCO_3$
	Arsenic(total)					EPA 200.8	0.1/0.5 µg/l
	Barium (total)					EPA 200.8	0.5/2 µg/l
	Cadmium (total)					EPA 200.8	.05/.25 µg/l
	Chromium (total)					EPA 200.8	0.2/1 µg/l
	Copper (total)					EPA 200.8	0.4/2 µg/l
	Iron (total)					EPA 200.7	12.5/50 µg/l
	Lead (total)					EPA 200.8	0.1/.5 µg/l
	Manganese (total)					EPA 200.8	0.1/0.5 µg/l
	Mercury (total) pg/L					EPA 1631E	0.2/0.5 pg/l
	Molybdenum(total)					EPA 200.8	0.1/0.5 µg/l
	Nickel(total)					EPA 200.8	0.1/0.5 µg/l
	Selenium (total)					EPA 200.8	1/1 µg/l
	Silver (total)					EPA 200.8	.04/.2 µg/l
	Zinc (total)					EPA 200.8	0.5/2.5 µg/l

Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

Quantitation Level (QL) also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer. (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

This page purposely left blank

5. Does this facility use any of the following chemicals as raw materials in production, produce them as part of the manufacturing process, or are they present in the wastewater? (*The number following the chemical name is the Chemical Abstract Service (CAS) reference number to aid in identifying the compound.*) ☐ YES ☐ NO

If yes, specify how the chemical is used and the quantity used or produced *(Use additional sheets, if necessary and label as attachment E5.)*:

Acrylamide/79-06-1
Acrylonitrile/107-13-1
Aldrin/309-00-2
Aniline/62-53-3
Aramite/140-57-8
Arsenic/7440-38-2
Azobenzene/103-33-3
Benzene/71-43-2
Benzidine/92-87-5
Benzo(a)pyrene/50-32-8
Benzotrichloride/98-07-7
Benzyl chloride/100-44-7
Bis(chloroethyl)ether/111-44-4
Bis(chloromethyl)ether/542-88-1
Bis(2-ethylhexyl) phthalate/ 117-81-7
Bromodichloromethane/75-27-4
Bromoform/75-25-2
Carbazole/86-74-8
Carbon tetrachloride/56-23-5
Chlordane/57-74-9
Chlorodibromomethane/124-48-1
Chloroform/67-66-3
Chlorthalonil/1897-45-6
2,4-D/94-75-7
DDT/50-29-3
Diallate/2303-16-4
1,2 Dibromoethane/106-93-4
1,4 Dichlorobenzene/106-46-7
3,3' Dichlorobenzidine/91-94-1
1,1 Dichloroethane/75-34-3
1,2 Dichloroethane/107-06-2
Nitrofurazone/59-87-0
N-nitrosodiethanolamine/ 1116-54-7
N-nitrosodiethylamine/55-18-5
N-nitrosodimethylamine/62-75-9
N-nitrosodiphenylamine/86-30-6
N-nitroso-di-n-propylamine/ 621-64-7
N-nitrosopyrrolidine/930-55-2
N-nitroso-di-n-butylamine/ 924-16-3
N-nitroso-n-methylethylamine/ 10595-95-6
PAH/NA
PBBs/NA
PCBs/1336-36-3
1,2 Dichloropropane/78-87-5
1,3 Dichloropropene/542-75-6
Dichlorvos/62-73-7
Dieldrin/60-57-1
3,3' Dimethoxybenzidine/119-90-4
3,3 Dimethylbenzidine/119-93-7
1,2 Dimethylhydrazine/540-73-8
2,4 Dinitrotoluene/121-14-2
2,6 Dinitrotoluene/606-20-2
1,4 Dioxane/123-91-1
1,2 Diphenylhydrazine/122-66-7
Endrin/72-20-8
Epichlorohydrin/106-89-8
Ethyl acrylate/140-88-5
Ethylene dibromide/106-93-4
Ethylene thioureae/96-45-7
Folpet/133-07-3
Furmecyclox/60568-05-0
Heptachlor/76-44-8
Heptachlor epoxide/1024-57-3
Hexachlorobenzene/118-74-1
Hexachlorocyclohexane (alpha)/ 319-84-6
Hexachlorocyclohexane (tech.)/ 608-73-1
Hexachlorodibenzo-p-dioxin, mix/19408-74-3
Hydrazine/hydrazine sulfate/ 302-01-2
Lindane/58-89-9
2 Methylaniline/100-61-8
2 Methylaniline hydrochloride/ 636-21-5
4,4' Methylene bis(N,N- dimethyl)aniline/101-61-1
Methylene chloride (dichloromethane)/75-09-2
Mirex/2385-85-5
O-phenylenediamine/106-50-3
Propylene oxide/75-56-9
2,3,7,8-Tetrachlorodibenzo-p-dioxin/ 1746-01-6
Tetrachloroethylene/127-18-4
2,4 Toluenediamine/95-80-7
o-Toluidine/95-53-4
Toxaphene/8001-35-2
Trichloroethylene/79-01-6
2,4,6-Trichlorophenol/88-06-2
Trimethyl phosphate/512-56-1
Vinyl chloride/75-01-4

6. Are any other pesticides, herbicides, or fungicides used at this facility? ☐ YES ☐ NO

If yes, specify the material and quantity used.

7. Are there other pollutants that you know of or believe to be present? ☐ YES ☐ NO

If yes, specify the pollutants and their concentration if known (attach laboratory analyses if available). ☐ DON'T KNOW

SECTION F. GROUND WATER INFORMATION

Provide available data measurements or range of measurements from monitoring wells or supply wells in the area of discharge. Provide the analytical method and detection limit, if known. Provide the location of each well on the map required in G.3 below. Attach well logs when available. Copy this page as necessary for each well. Provide the latitude and longitude in decimal format.

Ecology Well Tag ID #

(exampleAAB123)

Well ID #

See Section F of RPP-ENV-61571 for information supporting ECY-040-179 Section F.

(example MW-1)

Latitude: _____

Longitude: _____

Well Elevation (to the nearest 0.01 feet) _____ Check the appropriate box; the elevation measurement is relative to: the NAVD88 standard ☐ mean sea level ☐

Parameter	Units	Range of Measurements	Number of Analyses	Analytical Method	Detection Limit
BOD (5 day)	mg/L				
COD	mg/L				
Total organic carbon	mg/L				
Total dissolved solids	mg/L				
Dissolved Fixed Solids	mg/L				
pH	Standard units				
Conductivity	(micromhos/cm)				
Alkalinity	mg/L as $CaCO_3$				
Total hardness	mg/L				
Fecal coliform	organisms/100mL				
Total coliform	organisms/100mL				
Dissolved oxygen	mg/L				
Ammonia-N	mg/L				
Nitrate + nitrite-N, nitrate as N	mg/L				
Total kjeldahl N as N	mg/L				
Ortho-phosphate-P as P	mg/L				
Total-phosphate-P as P	mg/L				
Total Oil and Grease	mg/L				
Total petroleum hydrocarbon	☐mg/L ☐ µg/l				
Calcium	☐mg/L ☐ µg/l				
Chloride	☐mg/L ☐ µg/l				
Fluoride	☐mg/L ☐ µg/l				
Magnesium	☐mg/L ☐ µg/l				
Potassium	☐mg/L ☐ µg/l				
Sodium	☐mg/L ☐ µg/l				
Sulfate	☐mg/L ☐ µg/l				
Barium	☐mg/L ☐ µg/l				
Cadmium	☐mg/L ☐ µg/l				
Chromium	☐mg/L ☐ µg/l				

Parameter	Units	Range of Measurements	Number of Analyses	Analytical Method	Detection Limit
Copper	☐mg/L ☐ µg/l				
Iron	☐mg/L ☐ µg/l				
Lead	☐mg/L ☐ µg/l				
Manganese	☐mg/L ☐ µg/l				
Mercury	☐mg/L ☐ µg/l				
Selenium	☐mg/L ☐ µg/l				
Silver	☐mg/L ☐ µg/l				
Zinc	☐mg/L ☐ µg/l				
Depth to water level (to the nearest .01 feet)					

SECTION G. SITE ASSESSMENT

The local library and local city or county planning offices may be helpful in providing the information required in this section. You may consult the Department of Ecology Water Resources Program to help identify wells within one mile of your site.

1. Land Application Sites: Provide the information below for each land application site. Provide the latitude/longitude (approximate center of the site; NAD83/WGS84 reference datum.) Attach a copy of the contract(s) authorizing use of any private land(s) used for each treatment site. Add table rows as necessary.

Legal Description (section/township/range) See Section G and applicable attachments of RPP-ENV-61571 for information supporting ECY-040-179 Section G.			
Latitude	Longitude	Acreage	Owner
Legal Description (section/township/range)			
Latitude	Longitude	Acreage	Owner
Legal Description (section/township/range)			
Latitude	Longitude	Acreage	Owner
Legal Description (section/township/range)			
Latitude	Longitude	Acreage	Owner

2. If this is a new discharge, list all environmental control permits or approvals needed for this project; for example, SEPA review, engineering reports, hydrogeologic reports, , , or air emissions permits.

3. Attach an original United States Geological Survey (USGS) 7.5 minute topographic map and aerial photograph(s) from an internet mapping site that shows the processing facility and sprayfield site(s). **USGS topographical maps are available from the Department of Natural Resources (360 902-1234), Metsker Maps (206 588-5222), some local bookstores, and internet sites.** Show the following on this map:

   a. Location and name of internal and adjacent streets.
   b. Surface water drainage systems within ¼ mile of the site.
   c. All wells within 1 mile of the site.
   d. Wastewater discharge points.
   e. Land uses and zoning adjacent to the wastewater application site.
   f. Groundwater gradient.

4. Describe the soils on the site using information from local soil survey reports. **Soils information is available from your local County Conservation District or from information contained in the sites hydrogeologic report**. *(Submit on separate sheet and label as attachment G.4.)*

5. Describe the local geology and hydrogeology within one mile of the site. Include any groundwater quality data. **The local library or local Soil Conservation Service may have this information**. *(Submit on separate sheet and label as attachment G.5.)*

6. List the names and addresses of contractors or consultants who provided information and cite sources of information by title and author.

SECTION H. STORMWATER

1. Do you have coverage under the Washington State Industrial Stormwater NPDES General permit? ☐ YES ☒ NO
   If yes, please list the permit number here. Not applicable. There is no industrial stormwater associated with SALDS and SALDS transfer line.

   If no, have you applied for coverage under the Washington State Industrial Stormwater NPDES general permit? ☐ YES ☐ NO

Note: If you answered "no" to both questions above, complete the following questions 2 through 8.

2. Describe the size of the stormwater collection area.
   a. Unpaved area _____ sq.ft.
   b. Paved area _____ sq.ft.
   c. Other collection areas (roofs) _____ sq.ft.

3. Does your facility's stormwater discharge to: *(Check all that apply)*
   - ☐ Storm sewer system; name of storm sewer system *(operator):*
   - ☐ Sanitary sewer
   - ☐ Directly to surface waters of Washington State *(e.g., river, lake, creek, estuary, ocean).*
     Specify waterbody name _____
   - ☐ Indirectly to surface waters of Washington State *(i.e., flows over adjacent properties first).*
   - ☐ Directly to ground waters of Washington State via:
     - ☐ Dry well
     - ☐ Drainfield
     - ☐ Other

4. Areas with industrial activities at facility: *(check all that apply)*
   - ☐ Manufacturing building
   - ☐ Material handling
   - ☐ Material storage
   - ☐ Hazardous waste treatment, storage, or disposal *(refers to RCRA, Subtitle C facilities only)*
   - ☐ Waste treatment, storage, or disposal
   - ☐ Application or disposal of wastewaters
   - ☐ Storage and maintenance of material handling equipment
   - ☐ Vehicle maintenance
   - ☐ Areas where significant materials remain
   - ☐ Access roads and rail lines for shipping and receiving

☐ Other _____

5. Material handling/management practices

   a. Types of materials handled and/or stored outdoors: *(check all that apply)*

   ☐ Solvents
   ☐ Scrap metal
   ☐ Petroleum or petrochemical products
   ☐ Plating products
   ☐ Pesticides
   ☐ Hazardous wastes
   ☐ Acids or alkalies
   ☐ Paints/coatings
   ☐ Woodtreating products
   ☐ Other *(please list)*: _____

   b. Identify existing management practices employed to reduce pollutants in industrial storm water discharges: *(check all that apply)*

   ☐ Oil/water separator
   ☐ Containment
   ☐ Spill prevention
   ☐ Surface leachate collection
   ☐ Overhead coverage
   ☐ Detention facilities
   ☐ Infiltration basins
   ☐ Operational BMPs
   ☐ Vegetation management
   ☐ Other *(please list)*: _____

6. Attach a map showing stormwater drainage/collection areas, disposal areas and discharge points. This may be a hand drawn map if no other site map is available. Label this as attachment H.8.

SECTION I. OTHER INFORMATION

1. Describe liquid or solid wastes generated that are not disposed of in the waste stream(s) and describe the method of disposal. For each type of waste, provide type of waste, name, address, and phone number of hauler.

   SALDS and the SALDS transfer line do not generate waste. Wastewater that enters into the SALDS transfer line is discharged to the ground at SALDS, which is an underground discharge field.

2. Describe any storage areas used for raw materials, products, and wastes.

   Chemicals are not stored at SALDS or the SALDS transfer line. Chemicals are used infrequently for maintenance and are included in the chemical inventory for Effluent Treatment Building (2025E Building) (RPP-ENV-59397).

Summary of attachments that may be required for this application:
(Please check those attachments that are included)

- ☒ C.2. Production schematic flow diagram and water balance
- ☐ C.4. Wastewater treatment improvements
- ☐ C.7. Additional incidental materials
- ☒ E.4. Additional results of effluent testing
- ☐ G.1. Copies of land use contracts
- ☒ G.3. USGS topographical map
- ☒ G.4. Soils description
- ☒ G.5. Local geology and hydrology
- ☐ H.8. Stormwater drainage map

If you need this document in a format for the visually impaired, call the Water Quality Program at 360-407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

Issuance Date: 12/15/2014
Effective Date: 01/01/2015
Expiration Date: 12/31/2019

State Waste Discharge Permit Number ST0004500

State of Washington
DEPARTMENT OF ECOLOGY
3100 Port of Benton Boulevard
Richland, Washington 99354

In compliance with the provisions of the
State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington, as amended,

United States Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

is authorized to discharge wastewater in accordance with the special and general conditions which follow.

Facility Location: 200 Area Effluent Treatment Facility (ETF), located in the 200 East Area of the Hanford Site	Discharge Location: State-Approved Land Disposal Site (SALDS), located north of the 200 West Area
Treatment Type: Industrial Wastewater Industry Type: Clean-up Site	NAICS Code: 562211

Jane A. Hedges
Program Manager
Nuclear Waste Program
Washington State Department of Ecology

Table of Contents

Summary of Permit Report Submittals *4*

Special Conditions *5*

S1. Discharge limits **5**
- S1.A. Effluent limits 5
- S1.B. Best management practices/pollution prevention 6

S2. Monitoring requirements **6**
- S2.A. Process wastewater monitoring 6
- S2.B. Flow measurement and continuous monitoring devices 9
- S2.C. Laboratory accreditation 9

S3. Reporting and recording requirements **9**
- S3.A. Reporting 9
- S3.B. Records retention 11
- S3.C. Recording of results 11
- S3.D. Additional monitoring by the Permittee 11
- S3.E. Reporting permit violations 11
- S3.F. Other reporting 13
- S3.G. Maintaining a copy of this permit 13

S4. Operation and maintenance **13**
- S4.A. Operations and maintenance (O&M) manual 14
- S4.B. Bypass procedures 14
- S4.D. Best management practices\pollution prevention program 16

S5. Solid Wastes **17**

S6. Application for permit renewal or modification for facility changes **17**

S7. Facility loading **17**
- S7.A. Design criteria 17

S8. Non-routine and unanticipated discharges **17**

S9. Spill plan **18**
- S9.A. Spill control plan submittals and requirements 18
- S9.B. Spill control plan components 18

S10. Tritium Tracking and Groundwater Monitoring **19**

General Conditions *20*

G1. Signatory requirements **20**

G2. Right of entry **20**

G3. Permit actions **21**

G4. Reporting a cause for modification **21**

G5. Plan review required **21**
G6. Compliance with other laws and statutes **22**
G7. Transfer of this permit **22**
G8. Payment of fees **22**
G9. Penalties for violating permit conditions **22**
G10. Duty to provide information **22**
G11. Duty to comply **23**

Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	First Submittal Date
S3.A	Discharge Monitoring Report	Quarterly	February 15, 2015
S3.E	Reporting Permit Violations	As necessary	
S3.F	Other Reporting	As necessary	
S4.A	Operations and Maintenance Manual Update or Review Confirmation Letter	Annually	July 1, 2015
S4.B	Reporting Bypasses	As necessary	
S4.D	Notification of New or Altered Sources	As necessary	
S4.D	Best Management Practices/Pollution Prevention Plan	1/permit cycle	By December 31, 2019
S6	Application for Permit renewal	1/permit cycle	June 30, 2019
S8	Non-Routine Discharge Report	As necessary	
S9.A	Spill Control Plan Changes	As necessary	
S10	Tritium Sampling Results	Annually	November 30
G1	Notice of Change in Authorization	As necessary	
G4	Permit Application for Substantive Changes to the Discharge	As necessary	
G5	Engineering Report for Construction or Modification Activities	As necessary	
G7	Notice of Permit Transfer	As necessary	
G8	Payment of Fees	As assessed	
G10	Duty to Provide Information	As necessary	

Special Conditions

S1. Discharge Limits

S1.A. Effluent limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a concentration in excess of, that authorized by this permit violates the terms and conditions of this permit. Wastewater flows and loadings must not exceed the Design Criteria specified in Section S7.

Beginning on the effective date, the Permittee is authorized to discharge process wastewater from the Effluent Treatment Facility (ETF) verification tanks to the State-Approved Land Disposal Site (SALDS) at the permitted location subject to the following limits:

Effluent Limits: Outfall # 001 **Latitude 46.5725 Longitude 119.6333**		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Acetophenone (ethanone, 1-phenyl-)	10 µg/l	
Carbon Tetrachloride	5 µg/l	10 µg/l
N-Nitrosodimethylamine	20 µg/l	
Tetrachloroethylene	5 µg/l	10 µg/l
Total Organic Carbon	1,100 µg/l	
Arsenic (total)	15 µg/l	30 µg/l
Beryllium (total)	40 µg/l	
Chromium (total)	20 µg/l	
Ammonia (as N)	830 µg/l	
Chloride	250,000 µg/l	
Nitrate (as N)	100 µg/l	
Nitrite (as N)	100 µg/l	
Sulfate	10,000 µg/l	
Total Suspended Solids	4,000 µg/l	
Acetone	160 µg/l	
Benzene	5 µg/l	
Chloroform	6.2 µg/l	
Tetrahydrofuran	100 µg/l	
Cadmium (total)	10 µg/l	

Effluent Limits: Outfall # 001 Latitude 46.5725 Longitude 119.6333		
Copper (total)	70 µg/l	
Lead (total)	50 µg/l	
Mercury (total)	2 µg/l	
Total Dissolved Solids	500,000 µg/l	500,000 µg/l
a	Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured.	
b	Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, calculate the daily discharge as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.	

S1.B. Best management practices/pollution prevention

The Permittee must comply with the following Best Management Practices to prevent pollution to waters of the State:

1. Do not commingle process wastewater streams with sanitary (domestic) sewage.
2. Do not discharge in excess of the hydraulic capacity of the drainfield.
3. Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.

S2. Monitoring Requirements

S2.A. Process wastewater monitoring

The Permittee must monitor the process wastewater in the verification tank prior to its discharge to the State-Approved Land Disposal Site.

The Permittee must monitor the wastewater according to the following schedule. The Permittee must use the specified analytical methods unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136.

If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a quantitation limit (QL) to Ecology with appropriate laboratory documentation.

Parameter &CAS Number	Units & Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) Final Wastewater Effluent				
Flow	Gallons per month	N/A	Once per defined event [a]	Metered/ Recorded
Specific Conductivity	µmhos/cm	120.1	Once per defined event	Grab
Acetone (67-64-1)	µg/l	624	Monthly [c]	Grab [d]
Acetophenone (98-86-2)	µg/l	625	Monthly	Grab
Benzene (71-43-2)	µg/l	624	Monthly	Grab
Carbon Tetrachloride (56-23-5)	µg/l	624	Monthly	Grab
Chloroform (67-66-3)	µg/l	624	Monthly	Grab
N-Nitrosodimethylamine (62-75-9)	µg/l	625	Monthly	Grab
Methylene Chloride (75-09-2)	µg/l	624	Monthly	Grab
Tetrachloroethylene (127-18-4)	µg/l	624	Monthly	Grab
Tetrahydrofuran (109-99-9)	µg/l	624	Monthly	Grab
Total Organic Carbon	µg/l	SM5310	Once per defined event	Grab
Gross Alpha (12587-46-1)	pCi/l	900	Once per defined event	Grab
Gross Beta (12587-47-2)	pCi/l	900	Once per defined event	Grab
Strontium-90 (10098-97-2)	pCi/l	905	Monthly	Grab
Technetium-99 (14133-76-7)	pCi/l	HASL-300 or Lab Specific	Monthly	Grab
Tritium (10028-17-8)	pCi/l	906	Monthly	Grab
Uranium (total) (7440-61-1)	µg/l	200.8	Monthly	Grab
Arsenic (total) (7440-38-2)	µg/l	200.8	Monthly	Grab
Beryllium (total) (7440-41-7)	µg/l	200.8	Monthly	Grab
Cadmium (total) (4770-43-9)	µg/l	200.8	Monthly	Grab

Parameter &CAS Number	Units & Speciation	Laboratory Method	Sampling Frequency	Sample Type
Chromium (total) (7440-47-3)	µg/l	200.8	Monthly	Grab
Copper (total) (7440-50-8)	µg/l	200.8	Monthly	Grab
Lead (total) (7439-92-1)	µg/l	200.8	Monthly	Grab
Mercury (total) (7439-97-6)	µg/l	245.1	Monthly	Grab
Ammonia (Nitrogen in ammonium))	µg/l	350.1	Monthly	Grab
Chloride (16887-00-6)	µg/l	300.0	Monthly	Grab
Nitrate (Nitrogen in nitrate)	µg/l	300.0	Once per defined event	Grab
Nitrite (Nitrogen in Nitrite)	µg/l	300.0	Monthly	Grab
Sulfate (14808-79-8)	µg/l	300.0	Monthly	Grab
Total Dissolved Solids	µg/l	SM2540C	Monthly	Grab
Total Suspended Solids	µg/l	SM2540D	Monthly	Grab
(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D [e]				
Parameter	**Units & Speciation**	**Laboratory Method**	**Sampling Frequency**	**Sample Type**
Tritium	pCi/l	906	Quarterly	Grab
pH	units	SM4500-H^+ B (In lab)	Quarterly	Grab/Field Measurement
Specific Conductivity	µmhos/cm	120.1/SM2510B (In lab)	Quarterly	Grab/Field Measurement
Measured Depth to Groundwater	Feet (report to 0.01 feet)	Field	Quarterly	Field Measurement
a	Once per defined event means one sample from each verification tank discharge.			
b	The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.			
c	Monthly means once per month.			
d	Grab means an individual sample collected over a fifteen (15) minute, or less, period.			
e	These groundwater monitoring wells must be sampled until they no longer produce representative data.			

S2.B. Flow measurement and continuous monitoring devices

The Permittee must:

1. Select and use appropriate flow measurement devices and methods consistent with accepted scientific practices.
2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.
3. Calibrate flow monitoring devices at a minimum frequency of at least one calibration every other year.
4. Maintain calibration records for at least three years.

S2.C. Laboratory accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.

S3. Reporting and Recording Requirements

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form.

   Report a value for each day sampling occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.

   To find more information and to sign up for WAWebDMR go to: http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.

3. Report single analytical values below detection as "less than the detection level (DL)" by entering < followed by the numeric value of the detection level (e.g. < 2.0, or B2.0) on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments.
4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A.
5. Calculate average values (unless otherwise specified in the permit) using:
   a. The reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
   b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample for the reporting period.
   c. Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.
6. Report single-sample grouped parameters (for example, priority pollutants, PAHs, pulp and paper chlorophenolics, TTOs) on the WAWebDMR form. Include sample date, detection limit (DL), laboratory quantitation level (QL), and concentration detected. The Permittee must submit an electronic PDF copy of the contract laboratory report using WAWebDMR to provide this information.
7. Ensure that DMRs are electronically submitted no later than the dates specified below, unless otherwise specified in this permit.
8. Submit DMRs for parameters with the monitoring frequencies specified in S2 (monthly, quarterly, annual, etc.) at the reporting schedule identified below.

   The Permittee must:

   Submit **quarterly DMRs** 45 days following a completed monitoring period. Quarterly sampling periods are January through March, April through June, July through September, and October through December.
9. Submit reports to Ecology online using Ecology's electronic WAWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:

   Water Quality Permit Coordinator
   Department of Ecology
   Nuclear Waste Program
   3100 Port of Benton Blvd.
   Richland, WA 99354

S3.B. Records retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include:

- All calibration and maintenance records and all original recordings for continuous monitoring instrumentation.
- Copies of all reports required by this permit.
- Records of all data used to complete the application for this permit.

The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

The Permittee must retain all records pertaining to the monitoring and sampling of process wastewater and groundwater described in Section S2 for a minimum of five (5) years.

S3.C. Recording of results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

S3.D. Additional monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR unless otherwise specified by Special Condition S2.

S3.E. Reporting permit violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

1. Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.

a. Twenty-four-hour reporting

The Permittee must report the following occurrences of noncompliance by telephone to Ecology, at 509-372-7950, within 24 hours from the time the Permittee becomes aware of any of the following circumstances.

The Permittee must report:

1. Any noncompliance that may endanger health or the environment.
2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (See Part S4.B., "Bypass Procedures").
3. Any upset that causes an exceedance of an effluent limit in the permit.

   Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee.

   An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
4. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.
5. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.
6. Any leak or failure of the wastewater transmission pipeline.

b. Report within five days

The Permittee must also submit a written or electronic report within five (5) days of the time that the Permittee becomes aware of any reportable event under subpart a, above. The report must contain:

1. A description of the noncompliance and its cause.
2. Maps, drawings, aerial photographs, or pictures to show the location and cause(s) of the non-compliance.
3. The period of noncompliance, including exact dates and times.
4. The estimated time the Permittee expects the noncompliance to continue if not yet corrected.
5. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
6. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

c. Waiver of written reports

Ecology may waive the written report required in subpart b, above, on a case-by-case basis upon request if the Permittee has submitted a timely oral report.

d. All other permit violation reporting

All permit violations that do not require immediate or 24 hour reporting must be reported when the Permittee submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in subpart b, above.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

e. Report submittal

The Permittee must submit reports to the address listed in S3A.

S3.F. Other reporting

a. Spills of Oil or Hazardous Materials

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

b. Failure to submit relevant or correct facts

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

S3.G. Maintaining a copy of this permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

S4.A. Operations and maintenance (O&M) manual

a. O&M manual submittal and requirements

The Permittee must:

1. Review the O&M Manual at least annually and confirm this review by letter to Ecology by July 1 of each year.
2. Submit to Ecology for review substantial changes or updates to the O&M Manual whenever it incorporates them into the manual. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).
3. Keep the approved O&M Manual at the permitted facility.
4. Follow the instructions and procedures of this manual.

b. O&M manual components

In addition to the requirements of WAC 173-240-150 (1) and (2), the O&M Manual must include:

1. Emergency procedures for plant shutdown and cleanup in the event of a wastewater system upset or failure including pipeline leaks.
2. Wastewater system maintenance procedures that contribute to the generation of wastewater.
3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system. (For example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)
4. Treatment plant process control monitoring schedule.
5. Wastewater sampling protocols and procedures for compliance with the sampling and reporting requirements in the wastewater discharge permit.
6. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.

S4.B. Bypass procedures

This permit prohibits a bypass, which is the intentional diversion of waste streams from any portion of a treatment facility.

Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

   This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

2. Bypass is unavoidable, unanticipated, and results in noncompliance of this permit.

   This permit authorizes such a bypass only if:

   a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

   b. No feasible alternatives to the bypass exist, such as:

      - The use of auxiliary treatment facilities.
      - Retention of untreated wastes.
      - Stopping production.
      - Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
      - Transport of untreated wastes to another treatment facility or preventative maintenance, or transport of untreated wastes to another treatment facility.

   c. The Permittee has properly notified Ecology of the bypass as required in Special Condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

   a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:

      - A description of the bypass and its cause.
      - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
      - A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
      - The minimum and maximum duration of bypass under each alternative.

- A recommendation as to the preferred alternative for conducting the bypass.
- The projected date of bypass initiation.
- A statement of compliance with SEPA.
- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible.

The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications, and must include these to the extent practical.

In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

S4.D. Best management practices\pollution prevention program

The Permittee must comply with the following Best Management Practices to prevent pollution to waters of the State:

1. Do not comingle process wastewater streams with sanitary (domestic) sewage.
2. Do not discharge in excess of the hydraulic capacity of the infiltration basin.

3. Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.
4. Wastewater from the infiltration basins must not run off into any surface waters of the state or to any land not owned by or under control of the Permittee.
5. The Permittee must use recognized good practices, and all available and reasonable procedures.
6. Do not apply wastewater to the infiltration basins in quantities that significantly reduce or destroy the long-term infiltration rate of the soil or that would alter groundwater quality in amounts that would affect current and future beneficial uses.

S5. Solid Wastes

Management of solid waste is managed through the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, WA7 89000 8967, Part III, Operating Unit Group 3, LERF and 200 Area ETF.

S6. Application for Permit Renewal or Modification for Facility Changes

The Permittee must submit an application for renewal of this permit by June 30, 2019. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

The Permittee must also submit a new application or supplement at least one hundred eighty (180) days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

S7. Facility loading

S7.A. Design criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

Maximum Daily Discharge Flow	670,000 gallons per day
Maximum Average Monthly Discharge Flow	250,000 gallons per day

S8. Non-routine and Unanticipated Discharges

1. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis, if approved by Ecology. Prior to any such discharge, the Permittee must contact Ecology and at a minimum provide the following information:

a. The proposed discharge location.

b. The nature of the activity that will generate the discharge.

c. Any alternatives to the discharge, such as reuse, storage, or recycling of the water.

d. The total volume of water it expects to discharge.

e. The results of the chemical analysis of the water.

f. The date of proposed discharge.

g. The expected rate of discharge discharged, in gallons per minute.

2. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by subpart 1.e above. The analysis must also include any parameter deemed necessary by Ecology.

   All discharges must comply with the effluent limits as established in Special Condition S1 of this permit, water quality standards, and any other limits imposed by Ecology.

3. The Permittee must limit the discharge rate, as referenced in subpart 1.g above, so it will not cause erosion of ditches or structural damage to culverts and their entrances or exits.

4. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order.

S9. Spill Plan

S9.A. Spill control plan submittals and requirements

The Permittee must:

1. Review the plan at least annually and update the spill plan as needed.
2. Send substantive changes to the plan to Ecology.
3. Follow the plan and any supplements throughout the term of the permit.

S9.B. Spill control plan components

The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or stored on-site, which when spilled or otherwise released into the environment, designate as Dangerous Waste (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on-site which may become pollutants or cause pollution upon reaching state's waters.

2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.
3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill.
4. A description of operator training to implement the plan.

The Permittee may submit plans and manuals required by 40 CFR Part 112, contingency plans required by Chapter 173-303 WAC, or other plans required by other agencies, which meet the intent of this section.

S10. Tritium Tracking and Groundwater Monitoring

The permittee has an approved Tritium Tracking and Groundwater Monitoring Plan on file with Ecology. In accordance with this plan:

1. The Permittee shall report tritium sampling results for each Fiscal Year to Ecology at least annually, by November 30th of the following Fiscal Year.

2. The Permittee shall update and maintain computer model(s) that predict the travel time of the tritium plume created by this discharge and also predict the concentration of the tritium plume at the area of the plume's discharge to the Columbia River.

   Model update(s) and reports to Ecology should occur at least once per permit cycle and within six (6) months of detection of the tritium plume from SALDS in a new monitoring well. The plan should include the proposed reporting format, e.g., maps, tables, etc.

3. The Permittee shall sample Wells 699-48-77C and 699-48-77D at least once per calendar quarter for the constituents listed in Section S2.B of this permit. These sample results shall be reported in the quarterly Discharge Monitoring Reports (DMRs) per the requirement of Section S3.

4. Other reports and submissions that are required by the Ecology approved Tritium Tracking and Groundwater Monitoring Plan shall be submitted to Ecology per the schedule included in the plan.

The Permittee must submit proposed revisions or modifications to the Tritium Tracking and Groundwater Monitoring Plan to Ecology for review and approval at least thirty (30) days prior to implementation. Once approved, the Permittee must comply with any plan modifications.

General Conditions

G1. Signatory Requirements

All applications, reports, or information submitted to Ecology must be signed as follows:

1. All permit applications must be signed by either a principal executive officer or ranking elected official.
2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person.

   A person is a duly authorized representative only if:

   a. The authorization is made in writing by the person described above and is submitted to Ecology at the time of authorization, and

   b. The authorization specifies either a named individual or any individual occupying a named position.
3. Changes to authorization. If an authorization under paragraph G1.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section must make the following certification:

   "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G2. Right of Entry

Representatives of Ecology have the right to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state. Reasonable times include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection.

Representatives of Ecology must be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit; to inspect any monitoring equipment or method required in the permit; and to sample the discharge, waste treatment processes, or internal waste streams.

G3. Permit Actions

This permit is subject to modification, suspension, or termination, in whole or in part by Ecology for any of the following causes:

1. Violation of any permit term or condition
2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts
3. A material change in quantity or type of waste disposal
4. A material change in the condition of the waters of the state; or
5. Nonpayment of fees assessed pursuant to RCW 90.48.465.

Ecology may also modify this permit, including the schedule of compliance or other conditions, if it determines good and valid cause exists, including promulgation or revisions of regulations or new information.

G4. Reporting a Cause for Modification

The Permittee must submit a new application at least sixty (60) days before it wants to discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time.

Required plans include an Engineering Report, Plans and Specifications, and an Operations and Maintenance manual, (see Chapter 173-240 WAC). Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary.

The Permittee must continue to comply with the existing permit until it is modified or reissued. Submitting a notice of dangerous waste discharge (to comply with Pretreatment or Dangerous Waste rules) also triggers this requirement.

G5. Plan Review Required

Prior to constructing or modifying any wastewater control facilities, the Permittee must submit an engineering report and detailed plans and specifications to Ecology for approval in accordance with Chapter 173-240 WAC.

Engineering reports, plans, and specifications should be submitted at least 180 days prior to the planned start of construction. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with Other Laws and Statutes

Nothing in the permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this Permit

This permit is automatically transferred to a new owner or operator if:

1. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology.
2. A copy of the permit is provided to the new owner.
3. Ecology does not notify the Permittee of the need to modify the permit.

Unless this permit is automatically transferred according to Section G7.1 above, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G8. Payment of Fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under Chapter 173-224 WAC are not paid.

G9. Penalties for Violating Permit Conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars and costs of prosecution, or by imprisonment at the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is a separate and distinct violation.

G10. Duty to Provide Information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 90.48 RCW and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

Attachment 2
19-ECD-0045
(38 Pages Excluding Cover Sheet)

WRPS-1901762 Enclosure 2, RPP-ENV-61571 Revision 00,
Information Supporting the Renewal Application for State Waste Discharge Permit ST0004500

WRPS-1901762
Enclosure 2
RPP-ENV-61571
Revision 00

Information Supporting the Renewal Application for State Waste Discharge Permit ST0004500

Prepared by
Washington River Protection Solutions LLC

Date Published
May 2019

Prepared for the U.S. Department of Energy
Office of River Protection

Contract No. DE-AC27-08RV14800

Approved for Public Release;
Further Dissemination Unlimited

TABLE OF CONTENTS

A INTRODUCTION 1
C PLANT OPERATIONAL CHARACTERISTICS 1
C.1 Waste Stream Process, Name, ID Number, and Flow 1
C.2 Direction of Water Flow in Facility 1
C.3 Discharge Flows 2
C.4 Describe Any Planned Improvements or Changes 2
C.5 Seasonal Variation to Discharge Flows 2
C.6 Lagoon Size 2
C.7 Average Discharge per Acre per Day to Sprayfield or Infiltration Bed 2
C.8 Operation Times 2
C.9 Incidental Materials Used or Stored On Site 3
C.10 Spill or Waste Control Plans 3
E WASTEWATER INFORMATION 3
E.1 Measurement of Intake and Effluent Water Flows 3
E.2 Effluent Collection Method for Samples 4
E.3 Has the Effluent Been Analyzed for Any Other Constituents than Those Identified in Question E.4? 4
E.4 Processed Wastewater Measurements 4
E.5 Are the Following Constituents Present in Wastewater? 4
E.6 Are Any Other Pesticides, Herbicides, or Fungicides Used at this Facility? 5
E.7 Are There Other Constituents that You Know or Believe To Be Present? 6
F GROUNDWATER INFORMATION 6
G SITE ASSESSMENT 15
G.1 Land Application Sites 15
G.2 Environmental Permits, Approvals, and Reports 15
G.3 Topographical Maps 16
G.4 Soils 16
G.5 Geology and Hydrology 16
G.6 Information Sources 17
J ADDITIONAL INFORMATION 17
J.1 ST4500 Permit Boundary 17

J.2 Description of SALDS and the SALDS Transfer Line 18
J.3 A New Constituent for ST4500 General Condition G4 18
K REFERENCES 18
ATTACHMENT C2 – FLOW DIAGRAMS C2-1
ATTACHMENT E4 – ETF PROCESSED WASTEWATER CONSTITUENTS AND MEASUREMENTS E4-1
ATTACHMENT E7 – A LIST OF CONSTITUENTS WITH THE POTENTIAL TO BE PRESENT IN THE ETF PROCESSED WASTEWATER E7-1
ATTACHMENT G3 – TOPOGRAPHICAL MAPS G3-1
ATTACHMENT G4 – SOILS DESCRIPTION G4-1

LIST OF TABLES

Table C-1. Waste Stream Information 1
Table C-2. Spill and Waste Control Plans for SALDS and the SALDS Transfer Line 3
Table E-1. Cooling Water Additives and Rates 5
Table E-2. Potential Herbicides Applied Near SALDS 6
Table F-1. Groundwater Constituents and Measurements for Well 699-48-77C 7
Table F-2. Groundwater Constituents and Measurements for Well 699-48-77D 11
Table G-1. SALDS Legal Description, Location, Acreage, and Owner Information 15
Table G-2. The Names and Addresses of Agencies and Contractors Who Provided Information to Support the ST4500 Permit Renewal Application 17

LIST OF TERMS

Abbreviations and Acronyms

CFR	*Code of Federal Regulations*
Ecology	State of Washington Department of Ecology
ECY-040-179	Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application
EMF	Effluent Management Facility
ETF	Effluent Treatment Facility
MDL	method detection limit
PVC	polyvinyl chloride
PQL	practical quantitation level
SALDS	State-Approved Land Disposal Site
ST4500	State Waste Discharge Permit ST0004500
WAC	*Washington Administrative Code*
WTP	Waste Treatment Plant

A INTRODUCTION

The State of Washington Department of Ecology (Ecology) form ECY-040-179, *Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application*, has nine sections (i.e., Section A – Section I). ECY-040-179 requires information, attachments, and maps be entered into the form, but space limitations within ECY-040-179 are restrictive to the information required to complete the renewal application for *State Waste Discharge Permit ST0004500* (ST4500). The purpose of the document is to provide information supporting the ST4500 renewal application that could not be entered into ECY-040-179. This document provides supporting information and clarifying responses to ECY-040-179 Sections C, E, F, and G and provides attachments as appropriate. The section headings herein of C, E, F, and G align with ECY-040-179 Sections C, E, F, and G. Information supporting ECY-040-179 Sections A, B, D, H, and I is provided on ECY-040-179.

C PLANT OPERATIONAL CHARACTERISTICS

Sections C.1 – C.10 are formatted to align with questions C.1 – C.10 of ECY-040-179 Section C. The flow diagrams of the State-Approved Land Disposal Site (SALDS) and the SALDS transfer line are provided in Attachment C2 – Flow Diagrams.

C.1 WASTE STREAM PROCESS, NAME, ID NUMBER, AND FLOW

The ETF wastewater is composed of the cooling water blowdown and the processed wastewater. The waste steam information is listed in Table C-1.

Table C-1. Waste Stream Information

Process	Waste Stream Name	Waste Stream ID #	Batch (B) or Continuous Process (C)
ETF Wastewater	ETF	1	C

C.2 DIRECTION OF WATER FLOW IN FACILITY

See Attachment C2 – Flow Diagrams.

C.3 DISCHARGE FLOWS

There are no requested permit changes to ST4500 Special Condition S7.A, Design Criteria. The highest daily discharge flow to SALDS is 670,000 gallons per day[1]. The highest average monthly discharge flow to SALDS is 250,000 gallons per day[1].

C.4 DESCRIBE ANY PLANNED IMPROVEMENTS OR CHANGES

There are no planned improvements to SALDS and the SALDS transfer line.

C.5 SEASONAL VARIATION TO DISCHARGE FLOWS

There are no seasonal variations to discharge flows. There are operational discharge variations because the ETF wastewater is composed of the cooling water blowdown with processed wastewater releases from the ETF verification tanks.

C.6 LAGOON SIZE

Not applicable. SALDS is an underground discharge field.

C.7 AVERAGE DISCHARGE PER ACRE PER DAY TO SPRAYFIELD OR INFILTRATION BED

Not applicable. SALDS is an underground discharge field.

C.8 OPERATION TIMES

SALDS operates 24 hours per day.

SALDS operates 7 days per week.

SALDS operates 52 weeks per year.

[1] ST0004500, *State Waste Discharge Permit Number ST0004500*

C.9 INCIDENTAL MATERIALS USED OR STORED ON SITE

There are no chemicals stored at SALDS or along the SALDS transfer line. Chemicals are used infrequently for maintenance and are included in the chemical inventory for Effluent Treatment Building (2025E Building).[2]

C.10 SPILL OR WASTE CONTROL PLANS

Table C-2 lists information for spill and waste control plans.

Table C-2. Spill and Waste Control Plans for SALDS and the SALDS Transfer Line

Some types of facilities are required to have spill or waste control plans.	**Yes**	**No**
Does this facility have:		
a. A spill prevention, control, and countermeasure plan (40 CFR 112)		X[3]
b. An Oil Spill Contingency Plan (WAC 173-182)		X[4]
c. An emergency response plan (WAC 173-303-350)		X[5]
d. A runoff, spillage, or leak control plan (WAC 173-216-110(1)(f))	X[6]	
e. Any spill or pollution prevention plan required by local, state, or federal authorities	X[7]	
f. A solid waste plan		X[8]

E WASTEWATER INFORMATION

Please refer to Section E.1 – E.7 for information related to questions E.1 – E.7 of ECY-040-179 Section E.

E.1 MEASUREMENT OF INTAKE AND EFFLUENT WATER FLOWS

The water volume measurement into the SALDS transfer line is generated by ETF verification tank level measurements at the start and end of a single verification tank discharge. The level measurements report volume. Flow is not reported, because there is no volumetric flow meter.

[2] RPP-ENV-59397, "*Operations and Maintenance Manual/Spill Plan for the 200 Area Effluent Treatment Facility*"
[3] SALDS and the SALDS transfer line are not a non-transportation onshore or offshore facility in navigable waters of the United States or adjoining shorelines as applicable to Title 40, *Code of Federal Regulations*, Part 112, "Oil Pollution Prevention" (40 CFR 112)
[4] SALDS and the SALDS transfer line are not an onshore facility, offshore facility, covered vessel, or a combination thereof as applicable to *Washington Administrative Code* (WAC) 173-182, "Oil Spill Contingency Plan"
[5] SALDS and the SALDS transfer line do not contain dangerous waste as defined in WAC 173-303-040, "Dangerous Waste Regulations"
[6] WAC 173-216, "State Waste Discharge Permit Program" requirement fulfilled by RPP-ENV-59397
[7] Requirement fulfilled by RPP-ENV-59397
[8] A solid waste plan does not apply per WAC 173-350-020(2)(k), "Solid Waste Handling Standards, Applicability"

E.2 EFFLUENT COLLECTION METHOD FOR SAMPLES

ETF processed wastewater samples are collected with grab samples at ETF Valve 60H-224.[9]

E.3 HAS THE EFFLUENT BEEN ANALYZED FOR ANY OTHER CONSTITUENTS THAN THOSE IDENTIFIED IN QUESTION E.4?

Yes, the ETF processed wastewater is sampled for constituents other than those identified in Question E.4 of ECY-040-179. All parameters and constituents analyzed are listed in Attachment E4, and the column "X" identifies a constituent or parameter as analyzed.

E.4 PROCESSED WASTEWATER MEASUREMENTS

The ETF processed wastewater measurements are composed of data collected from May 2016 to September 2018.[10] The ETF processed wastewater measurements are listed in Attachment E4. The rows of data within Attachment E4 are separated into two sections. The first section is labeled "Constituents Listed in ECY-040-179 Question E.4" and lists parameters and constituents listed in Question E.4 of ECY-040-179. The second section is labeled "Results of Additional Waste Analyses" and provides additional waste analyses. Column "X" is used to identify analyzed constituents within the ETF processed wastewater. Additional columns are added to identify if the constituent was detected in influent to the ETF treatment train within the last 5 years and to identify if the constituent is forecasted in the Waste Treatment Plant (WTP) Effluent Management Facility (EMF) wastewater. The column "Seen in Current Wastes" is added to identify constituents detected in one or more waste streams that composed influent to the ETF treatment train between January 1, 2014 and December 31, 2018. The column "Forecasted in WTP EMF Wastewater" is added to identify constituents forecasted in the WTP EMF wastewater.

E.5 ARE THE FOLLOWING CONSTITUENTS PRESENT IN WASTEWATER?

The constituent list in Question E.5 of ECY-040-179 relates to chemicals used as raw materials in production, produced as part of a manufacturing process, or present in the wastewater. There is no production or manufacturing process that produces chemicals in the SALDS transfer line or SALDS.

A review of Attachment E4 identifies constituents listed in Question E.5 of ECY-040-179. There were no chemicals detected in the ETF processed wastewater that are listed in Question E.5 of ECY-040-179.

---

[9] RPP-PLAN-60723, "*Sampling and Analysis Plan for the Effluent Treatment Facility, Liquid Effluent Retention Facility, and Treated Effluent Disposal Facility*"
[10] RPP-CALC-63043, "*Effluent Treatment Facility and State-Approved Land Disposal Facility Sample Results 2016 to 2018 with Calculated Averages*"

A review of Attachment E7 identifies constituents listed in Question E.5 of ECY-040-179. Chemicals detected in one or more waste streams that composed influent to the ETF treatment train between January 1, 2014 and December 31, 2018 and chemicals forecasted in the WTP EMF wastewater include:

- Bis(2-ethylhexyl) phthalate
- 1,4-Dichlorobenzene
- 1,4-Dioxane.

Attachment E7 also contains the following chemicals listed in Question E.5 of ECY-040-179 because of their historic presence within influent to the ETF treatment train that predates January 1, 2014:

- Aldrin
- Benzo(a)pyrene
- Bromodichloromethane
- 4,4-DDT
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- Dieldrin
- Endrin
- Heptachlor
- Heptachlor epoxide
- Vinyl chloride.

E.6 ARE ANY OTHER PESTICIDES, HERBICIDES, OR FUNGICIDES USED AT THIS FACILITY?

Table E-1 lists the cooling water additives and application rates, and Table E-2 lists the potential herbicides applied near SALDS.

Table E-1. Cooling Water Additives and Rates

Chemical Name	Hanford GHS-MSDS Number	Rate
GENGARD* GN8220	072013A	1 gallon/24 hours
SPECTRUS* NX1106	056490A	0.021 gallons/week

Table E-2. Potential Herbicides Applied Near SALDS

Product Name	EPA Registration Number	Hanford GHS-MSDS Number	Rate
Velossa	5905-579	072012	2 quarts/acre
Portfolio 4F	379-3295-2935	066429	12 ounces/acre
Payload® Herbicide	59639-120	064400	10 ounces/acre
GROUNDED	N/A	067154A	1 quart/acre
METHOD® 240SL HERBICDE	432-1565	076561	13 ounces/acre
Roundup PRO® Concentrate Herbicide	524-529	061006A	2 quarts/acre
FINALE VU HERBICIDE	432-1228	077638	2 quarts/acre
HEL-FIRE	N/A	068675A	1 quart/acre

E.7 ARE THERE OTHER CONSTITUENTS THAT YOU KNOW OR BELIEVE TO BE PRESENT?

Attachment E7 identifies additional constituents with the "potential to be present" in the ETF processed wastewater. The term "potential to be present" includes the following:

- constituents detected in one or more waste streams that composed influent to the ETF treatment train and not listed in Attachment E4
- constituents forecasted in one or more future waste streams to compose influent to the ETF treatment train.

Within Attachment E7, constituents forecasted to be present in the WTP EMF wastewater are identified. The column "Seen in Current Wastes" identifies constituents detected in one or more waste streams that composed influent to the ETF treatment train between January 1, 2014 and December 31, 2018.

F GROUNDWATER INFORMATION

Well information and groundwater constituents and measurements are provided for wells 699-48-77C (Table F-1) and 699-48-77D (Table F-2). Table F-1 and Table F-2 are composed of groundwater measurements collected between January 2018 and December 2018.[11]

[11] RPP-CALC-63043

Well ID # 699-48-77C
Latitude: 46.57240°N
Longitude: -119.63297°W
Well Elevation: 206.58 m

Table F-1. Groundwater Constituents and Measurements for Well 699-48-77C

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
BOD (5 day)	mg/L						
COD	mg/L						
Total suspended solids	mg/L						
Fixed dissolved solids	mg/L						
Total dissolved solids	µg/L	150,000 - 170,000		4	4	SM 2540C	3,400
pH	Standard units	7.9 - 8.1		5	5	Field Reading	± 0.1
Conductivity	µS/cm	206 - 229		5	5	Field Reading	± 1
Alkalinity	µg/L	96,400 - 101,000		4	4	EPA 310.1	1,450
Total hardness	mg/L						
Fecal coliform	organisms/100 ml						
Total coliform	organisms/100 ml						
Dissolved oxygen	mg/L	9.32 - 9.74		5	5	Field Reading	± 0.01
Nitrate + Nitrite-N as N	mg/L						
Total kjeldahl N as N	mg/L						
Ortho-phosphate-P as P	mg/L						
Total-phosphate-P as P	mg/L						
Total oil and grease	mg/L						
Total petroleum hydrocarbon	☐mg/L ☐µg/L						
Calcium	µg/L	22,100 - 23,600		4	4	SW 6010	50
Chloride	µg/L	2,100 - 3,200		4	4	EPA 300.0	100
Fluoride	µg/L	340 - 390		4	4	EPA 300.0	33

Table F-1. Groundwater Constituents and Measurements for Well 699-48-77C

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
Magnesium	µg/L	7,360 - 8,360		4	4	SW 6010	110
Potassium	µg/L	2990 - 3250		4	4	SW 6010	50
Sodium	µg/L	6,720 - 7,260		4	4	SW 6010	100
Sulfate	µg/L	7,300 - 9,400		4	4	EPA 300.0	133
Barium	µg/L	16.9 - 20.2		4	4	SW 6010	1.0
Cadmium	µg/L	< 0.30	U	4	0	SW 6020	0.30
Chromium	µg/L	10.2 - 18.5		4	4	SW 6020	3.0
Copper	µg/L	0.36 - 1.05		4	4	SW 6020	0.30
Iron	µg/L	32.7 - 99.8		4	4	SW 6010	30
Lead	µg/L	< 0.50	U	4	0	SW 6020	0.50
Manganese	µg/L	< 2.0 - 2.41		4	2	SW 6010	2.0
Mercury	µg/L	< 0.067	U	4	0	EPA 245.1	0.067
Selenium	µg/L	< 2.0	U	4	0	SW 6020	2.0
Silver	µg/L	< 1.0	U	4	0	SW 6010	5.0
Zinc	µg/L	< 3.3 - 6		4	3	SW 6010	3.3
Depth to water level (to the nearest 0.01 feet)	feet	234.48 - 235.61		17	17	Field Reading	± 0.01
Temperature	°C	18.7 - 22.8		5	5	Field Reading	± 0.1
Turbidity	NTU	0.8 - 4.4		5	5	Field Reading	± 0.01
Bromide	µg/L	< 63 - 82		4	1	EPA 300.0	67
Nitrate (as N) (Nitrogen in nitrate)	µg/L	490 - 970		4	4	EPA 300.0	33
Nitrite (as N) (Nitrogen in nitrite)	µg/L	< 19 - 27		4	2	EPA 300.0	33
Phosphate	µg/L	< 130	U	4	0	EPA 300.0	130
Bi-carbonate alkalinity	µg/L	96,400 - 101,000		4	4	EPA 310.1	1,450
Carbonate alkalinity	µg/L	< 1450	U	4	0	EPA 310.1	1,450

Table F-1. Groundwater Constituents and Measurements for Well 699-48-77C

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
Hydroxide (hydroxyl ion)	µg/L	< 1450	U	4	0	EPA 310.1	1,450
Aluminum	µg/L	< 68	U	3	0	SW 6010	68
Antimony	µg/L	< 1.0	U	3	0	SW 6020	1.0
Arsenic	µg/L	3.36 - 6.53		4	4	SW 6020	2.0
Beryllium	µg/L	< 0.2 - < 1.0	U	7	0	SW 6020	0.20
Cobalt	µg/L	< 1.0	U	4	0	SW 6010	1.0
Nickel	µg/L	4.66 - 11.2		4	4	SW 6010	1.5
Silicon	µg/L	18,100 - 20,400		4	4	SW 6010	25
Thallium	µg/L	< 5.0	U	4	0	SW 6010	5.0
Titanium	µg/L	< 1.0	U	3	0	SW 6010	1.0
Uranium	µg/L	0.39 - 0.428		4	4	SW 6020	0.067
Vanadium	µg/L	34.3 - 40.4		4	4	SW 6010	1.0
1,1,1-Trichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1,2-Trichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1-Dichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1-Dichloroethene	µg/L	< 0.30	U	3	0	SW 8260	0.30
1,2-Dichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,2-Dichloroethene (Total)	µg/L	< 0.30	U	3	0	SW 8260	0.30
1,4-Dichlorobenzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
1-Butanol	µg/L	< 83.3	U	4	0	SW 8260	83.3
2-Butanone (Methyl ethyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
2-Hexanone (Methyl n-butyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
2-Pentanone (Methyl n-propyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0

Table F-1. Groundwater Constituents and Measurements for Well 699-48-77C

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
Acetone	µg/L	< 3.0	U	4	0	SW 8260	3.0
Acetonitrile	µg/L	< 16.7	U	4	0	SW 8260	16.7
Benzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Bromodichloromethane	µg/L	< 0.30	U	3	0	SW 8260	0.30
Carbon disulfide	µg/L	< 1.6	U	4	0	SW 8260	1.6
Carbon tetrachloride	µg/L	< 0.30	U	4	0	SW 8260	0.30
Chlorobenzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Chloroform (Trichloromethane)	µg/L	< 0.30 - 0.47		4	1	SW 8260	0.30
Ethyl cyanide (Propionitrile)	µg/L	< 3.0	U	3	0	SW 8260	3.0
Dichloromethane (Methylene Chloride)	µg/L	< 1.6 - 11.3		4	1	SW 8260	1.6
Tetrachloroethene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Tetrahydrofuran	µg/L	< 1.5 - 2.96		4	1	SW 8260	1.5
Toluene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Trichloroethene (Trichloroethylene)	µg/L	< 0.30	U	4	0	SW 8260	0.30
Vinyl chloride	µg/L	< 0.30	U	4	0	SW 8260	0.30
Xylenes (total)	µg/L	< 0.30	U	3	0	SW 8260	0.30
Gross alpha	pCi/L	< 2.57 - < 2.90	U	4	0	EPA 900.0/SW 9310	2.90
Gross beta	pCi/L	2.44 - 4.38		4	4	EPA 900.0/SW 9310	2.74
Strontium-90	pCi/L	< 1.08 - < 1.96	U	4	0	EPA 905.0 Mod	1.97
Tritium	pCi/L	42,600 - 56,000		5	5	EPA 906.0 Mod	554

Well ID # 699-48-77D
Latitude: 46.57270°N
Longitude: -119.63333°W
Well Elevation: 206.46 m

Table F-2. Groundwater Constituents and Measurements for Well 699-48-77D

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
BOD (5 day)	mg/L						
COD	mg/L						
Total suspended solids	mg/L						
Fixed dissolved solids	mg/L						
Total dissolved solids	µg/L	176,000 - 183,000		4	4	SM 2540C	3,400
pH	Standard units	8.0 - 8.2		4	4	Field Reading	± 0.1
Conductivity	µS/cm	255 - 257		4	4	Field Reading	± 1
Alkalinity	µg/L	108,000 - 112,000		4	4	EPA 310.1	1,450
Total hardness	mg/L						
Fecal coliform	organisms/100 ml						
Total coliform	organisms/100 ml						
Dissolved oxygen	mg/L	9.71 - 12.97		4	4	Field Reading	± 0.01
Nitrate + Nitrite-N as N	mg/L						
Total kjeldahl N as N	mg/L						
Ortho-phosphate-P as P	mg/L						
Total-phosphate-P as P	mg/L						
Total oil and grease	mg/L						
Total petroleum hydrocarbon	☐mg/L ☐µg/L						
Calcium	µg/L	24,000 - 27,800		4	4	SW 6010	50
Chloride	µg/L	3,700 - 4,900		4	4	EPA 300.0	100
Fluoride	µg/L	320 - 360		4	4	EPA 300.0	33

Table F-2. Groundwater Constituents and Measurements for Well 699-48-77D

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
Magnesium	µg/L	9,350 - 11,200		4	4	SW 6010	110
Potassium	µg/L	2,730 - 3,170		4	4	SW 6010	50
Sodium	µg/L	7,770 - 9,020		4	4	SW 6010	100
Sulfate	µg/L	14,000 - 16,000		4	4	EPA 300.0	133
Barium	µg/L	13.6 - 16.4		4	4	SW 6010	1.0
Cadmium	µg/L	< 0.30	U	4	0	SW 6020	0.30
Chromium	µg/L	13.6 - 26.5		4	4	SW 6020	3.0
Copper	µg/L	0.518 - 1.56		4	4	SW 6020	0.30
Iron	µg/L	76 - 350		4	4	SW 6010	30
Lead	µg/L	< 0.50	U	4	0	SW 6020	0.50
Manganese	µg/L	< 2.0 - 4.96		4	3	SW 6010	2.0
Mercury	µg/L	< 0.067	U	4	0	EPA 245.1	0.067
Selenium	µg/L	< 2.0	U	4	0	SW 6020	2.0
Silver	µg/L	< 1.0 - < 5.0	U	4	0	SW 6010	5.0
Zinc	µg/L	7.97 - 22.8		4	4	SW 6010	3.3
Depth to water level (to the nearest 0.01 feet)	feet	233.50 - 236.91		16	16	Field Reading	± 0.01
Temperature	°C	15.1 - 32.2		4	4	Field Reading	± 0.1
Turbidity	NTU	4.31 - 5.9		4	4	Field Reading	± 0.01
Bromide	µg/L	< 63 - 160		4	3	EPA 300.0	67
Nitrate (as N) (Nitrogen in nitrate)	µg/L	510 - 580		4	4	EPA 300.0	33
Nitrite (as N) (Nitrogen in nitrite)	µg/L	< 19 - 53		4	2	EPA 300.0	33
Phosphate	µg/L	< 130 - 130		4	1	EPA 300.0	130
Bi-carbonate alkalinity	µg/L	108,000 - 112,000		4	4	EPA 310.1	1,450
Carbonate alkalinity	µg/L	< 1,450	U	4	0	EPA 310.1	1,450

Table F-2. Groundwater Constituents and Measurements for Well 699-48-77D

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
Hydroxide (hydroxyl ion)	µg/L	< 1,450	U	4	0	EPA 310.1	1,450
Aluminum	µg/L	< 68 - 1720		4	2	SW 6010	68
Antimony	µg/L	< 1.0	U	3	0	SW 6020	1.0
Arsenic	µg/L	4.13 - 7.82		4	4	SW 6020	2.0
Beryllium	µg/L	< 0.20 - < 1.0	U	7	0	SW 6020	0.200
Cobalt	µg/L	< 1.0	U	4	0	SW 6010	1.0
Nickel	µg/L	8.69 - 17.7		4	4	SW 6010	1.5
Silicon	µg/L	18,300 - 21,900		4	4	SW 6010	25
Thallium	µg/L	< 5.0	U	4	0	SW 6010	5.0
Titanium	µg/L	1.74 - 9.64		3	3	SW 6010	1.0
Uranium	µg/L	0.844 - 0.959		4	4	SW 6020	0.067
Vanadium	µg/L	35.4 - 42.1		4	4	SW 6010	1.0
1,1,1-Trichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1,2-Trichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1-Dichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,1-Dichloroethene	µg/L	< 0.30	U	3	0	SW 8260	0.30
1,2-Dichloroethane	µg/L	< 0.30	U	4	0	SW 8260	0.30
1,2-Dichloroethene (Total)	µg/L	< 0.30	U	3	0	SW 8260	0.30
1,4-Dichlorobenzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
1-Butanol	µg/L	< 83.3	U	4	0	SW 8260	83.3
2-Butanone (Methyl ethyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
2-Hexanone (Methyl n-butyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
2-Pentanone (Methyl n-propyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0

Table F-2. Groundwater Constituents and Measurements for Well 699-48-77D

Parameter/Constituent	Units	Range of Measurements	U = Undetected	Number of Analyses	Number of Detected Results	Analytical Method	Detection Limit
4-Methyl-2-pentanone (Methyl isobutyl ketone)	µg/L	< 3.0	U	4	0	SW 8260	3.0
Acetone	µg/L	< 3.0	U	4	0	SW 8260	3.0
Acetonitrile	µg/L	< 16.7	U	4	0	SW 8260	16.7
Benzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Bromodichloromethane	µg/L	< 0.30	U	3	0	SW 8260	0.30
Carbon disulfide	µg/L	< 1.6	U	4	0	SW 8260	1.6
Carbon tetrachloride	µg/L	< 0.30	U	4	0	SW 8260	0.30
Chlorobenzene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Chloroform (Trichloromethane)	µg/L	< 0.30 - 0.39		4	1	SW 8260	0.30
Ethyl cyanide	µg/L	< 3.0	U	3	0	SW 8260	3.0
Dichloromethane (Methylene Chloride)	µg/L	< 1.6	U	4	0	SW 8260	1.6
Tetrachloroethene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Tetrahydrofuran	µg/L	< 1.5 - 2.73		4	1	SW 8260	1.5
Toluene	µg/L	< 0.30	U	4	0	SW 8260	0.30
Trichloroethene (Trichloroethylene)	µg/L	< 0.30	U	4	0	SW 8260	0.30
Vinyl chloride	µg/L	< 0.30	U	4	0	SW 8260	0.30
Xylenes (total)	µg/L	< 0.30	U	3	0	SW 8260	0.30
Gross alpha	pCi/L	< 2.29 - < 2.82	U	4	0	EPA 900.0/SW 9310	2.90
Gross beta	pCi/L	< 2.06 - 3.91		4	3	EPA 900.0/SW 9310	2.74
Strontium-90	pCi/L	< 1.47 - < 1.97	U	4	0	EPA 905.0 Mod	1.97
Tritium	pCi/L	44,300 - 56,000		4	4	EPA 906.0 Mod	554

G SITE ASSESSMENT

Please refer to Section G.1 – G.6 for information related to questions G.1 – G.6 of ECY-040-179 Section G.

G.1 LAND APPLICATION SITES

Table G-1 contains the site information for SALDS.

Table G-1. SALDS Legal Description, Location, Acreage, and Owner Information

Legal Description (Township, Range, Section)			
T13N, R25E, S36, NW 1/4, SE 1/4			
Latitude	**Longitude**	**Acreage**	**Owner**
46.5825 N	-119.6333 W	~0.53 acres	U.S. Department of Energy

The acreage of SALDS is based on the surface dimensions of the underground discharge field (e.g., 200-foot by 116-foot).

G.2 ENVIRONMENTAL PERMITS, APPROVALS, AND REPORTS

The ETF wastewater discharge to SALDS is not a new discharge. A State Environmental Policy Act determination was made when the original permit was issued.[12]

Environmental approvals for the wastewater discharge to SALDS include the following:

- DOE/EIS-0391, 2012, *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*.

Hydrogeologic reports[13, 14] were submitted to Ecology by letter[15] and are available at the Water Quality Permitting and Reporting Information System.[16]

[12] ST0004500, *Fact Sheet for State Waste Discharge Permit ST0004500*
[13] RPP-RPT-61178, "*Results of the Tritium Tracking and Groundwater Monitoring at the Hanford Site 200 Area State Approved Land Disposal Site, Fiscal Year 2018*"
[14] RPP-CALC-61950, "*Fate and Transport Analyses of Historical and Future Tritium Releases from the State Approved Land Disposal Site, FY2018*"
[15] External letter WRPS-1802180, "Washington River Protection Solutions LLC Submittal of State Waste Discharge Permit ST0004500 Fiscal Year 2018 Tritium Tracking and Goundwater Monitoring Report for the State Approved Land Disposal Site and Submittal of the Permit Cycle Model Review, Update, and Report for Tritium Tracking and Groundwater Monitoring" (Eschenberg 2018).
[16] Water Quality Permitting and Reporting Information System (PARIS), Queried 04/11/2019, [ST0004500], https://apps.ecology.wa.gov/paris/PermitLookup.aspx

The 13 vacuum air relief valves in the SALDS transfer line are Diffuse and Fugitive Emission Units identified in Enclosure 2, Table 2-1 of FF-01, *Radioactive Air Emissions License for the Department of Energy Richland Office Hanford site.*

G.3 TOPOGRAPHICAL MAPS

See Attachment G3 for the following:

- Location and name of internal and adjacent streets
- Topographic maps of SALDS
- Aerial imagery of SALDS
- Wells within 1 mile of the site
- Groundwater gradient.

There are no surface water drainage systems within ¼ mile of the SALDS.

G.4 SOILS

The soil data provided herein are not contained in the current ST4500 Fact Sheet.[17] See Attachment G4 for a map of soil types within 1 mile of the SALDS. Soil types include the following:

- Burbank loamy sand
- Ephrata sandy loam
- Quincy sand.

G.5 GEOLOGY AND HYDROLOGY

The description of the geology and hydrology underneath SALDS is provided in Section B, "Description of the Groundwater" of the current ST4500 Fact Sheet.[17] The following information is provided to generally describe the geology and hydrology underneath the SALDS transfer line.

The stratigraphic units beneath the Central Plateau consist of (in ascending sequence) bedrock of the Saddle Mountains Basalt, semiconsolidated sand and gravel of Ringold unit A, silt and clay of the Ringold lower mud unit, semiconsolidated sand and gravel of Ringold unit E, fine-grain to coarse-grained Cold Creek unit, and unconsolidated sand and gravel of the Hanford formation.[18]

The unconfined aquifer is mostly within the Hanford formation and Ringold unit E. The low-permeability lower mud unit forms the base of the unconfined aquifer in most areas. The thickness of the unconfined aquifer varies substantially within the Central Plateau, from over 200 m (656 ft) southeast of the 200 East Area to zero where the aquifer pinches out against mud

[17] ST0004500, *Fact Sheet for State Waste Discharge Permit ST0004500*
[18] DOE/RL-2017-66, *Hanford Site Groundwater Monitoring Report for 2017*

units and basalt above the water table. The water table is up to 106 m (348 ft) below ground surface beneath the Central Plateau. [19]

Groundwater beneath the Central Plateau flows generally from west to east, although local conditions may vary. Natural recharge to the unconfined aquifer comes from the Cold Creek Valley, Dry Creek Valley, Rattlesnake Hills, and infiltrating precipitation.[19]

G.6 INFORMATION SOURCES

Table G-2 lists the names and address of agencies and contractors who provided information for the ST4500 permit renewal application.

Table G-2. The Names and Addresses of Agencies and Contractors Who Provided Information to Support the ST4500 Permit Renewal Application

Agency/Contractor	Address
U.S. Department of Energy Office of River Protection	PO Box 450 Richland, Washington 99352
U.S. Department of Energy Richland Operations Office	PO Box 550 Richland, Washington 99352
Washington River Protection Solutions LLC	PO Box 850 MSIN H3-01 Richland, Washington 99352
Mission Support Alliance, LLC	PO Box 650 Richland, Washington 99352
CH2M Hill Plateau Remediation Company	PO Box 1600 Richland, Washington 99352

J ADDITIONAL INFORMATION

Additional information is provided to define the ST4500 permit boundary, describe SALDS and the SALDS transfer line, and define a new constituent for compliance with ST4500 General Condition G4.

J.1 ST4500 PERMIT BOUNDARY

Isolation valves 60H-103 and 60H-104 are the permit boundary between ST4500 and WA7890008967.[20] The SALDS transfer line connects to isolation valves 60H-103 and 60H-104 to transfer ETF wastewater to SALDS.

[19] DOE/RL-2017-66
[20] WA7890008967, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*

J.2 DESCRIPTION OF SALDS AND THE SALDS TRANSFER LINE

The SALDS transfer line is an 8-inch diameter, polyvinyl chloride (PVC) underground pipeline running about 6.5 miles from ETF to 0.25 miles north of the 200 West Area. The SALDS transfer line includes 13 vacuum air relief valves to allow the line to properly fill and drain. The vacuum air relief valves are located in risers with covers to allow access for repair or replacement.

SALDS consists of a 200-foot by 116-foot by 6-foot deep underground discharge field filled with natural gravel. The discharge distribution system consists of PVC piping one foot below the top of the gravel layer. An 8-inch pipe runs north the length of the field to distribute the discharge through 66 4-inch perforated pipes branching east and west. The discharge field is covered with a PVC membrane to prevent upflow of liquid and vapors. The entire field is covered with one foot of natural cover material.

J.3 A NEW CONSTITUENT FOR ST4500 GENERAL CONDITION G4

ST4500 General Condition G4 requires the Permittee to submit a new application at least 60 days before it wants to discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. A constituent, or pollutant, will be categorized as "a new pollutant" if it was not identified in Attachment E4 or Attachment E7.

K REFERENCES

40 CFR 60, "Oil Pollution Prevention," *Code of Federal Regulations*, as amended.

Corl, E., R. Owens, A. Pollack, S. Brauning, and M. Holdren, 2002, "Laboratory Detection and Reporting Limit Issues Related to Risk Assessments," *Detection/Reporting Limit Issues*, Naval Facilities Engineering Command, Norfolk, Virginia.

DOE/EIS-0391, 2012, *Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*, U.S. Department of Energy

DOE/RL-2017-66, 2017, *Hanford Site Groundwater Monitoring Report for 2017*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

ECY-040-179, 2012, *Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application*, State of Washington Department of Ecology, Lacey, Washington.

Eschenberg, J.R., 2018, "Washington River Protection Solutions LLC Submittal of State Waste Discharge Permit ST0004500 Fiscal Year 2018 Tritium Tracking and Groundwater Monitoring Report for the State Approved Land Disposal Site and Submittal of the Permit Cycle Model Review, Update, and Report for Tritium Tracking and Groundwater Monitoring," (external letter WRPS-1802180 to A.K. Smith, State of Washington Department of Ecology, November 26), Washington River Protection Solutions LLC, Richland, Washington.

FF-01, 2018, *Radioactive Air Emissions License for the Department of Energy Richland Office Hanford Site*, State of Washington Department of Health, Office of Radiation Protection Radioactive Air Emissions, Richland, Washington.

RPP-CALC-61950, "*Fate and Transport Analyses of Historical and Future Tritium Releases from the State Approved Land Disposal Site, FY 2018*," Washington River Protection Solutions LLC, Richland, Washington.

RPP-CALC-63043, "*Effluent Treatment Facility and State-Approved Land Disposal Facility Sample Results 2016 to 2018 with Calculated Averages,*" Washington River Protection Solutions LLC, Richland, Washington.

RPP-ENV-59397, "*Operations and Maintenance Manual/Spill Plan for the 200 Area Effluent Treatment Facility*," Washington River Protection Solutions LLC, Richland, Washington.

RPP-PLAN-60723, "*Sampling and Analysis Plan for the Effluent Treatment Facility, Liquid Effluent Retention Facility, and Treated Effluent Disposal Facility*," Washington River Protection Solutions LLC, Richland, Washington.

RPP-RPT-61178, "*Results of Tritium Tracking and Groundwater Monitoring at the Hanford Site 200 Area State Approved Land Disposal Site, Fiscal Year 2018*," Washington River Protection Solutions LLC, Richland, Washington.

ST0004500, 2014, *Fact Sheet for State Waste Discharge Permit ST0004500*, State of Washington Department of Ecology, Richland, Washington.

ST0004500, 2014, *State Waste Discharge Permit Number ST0004500*, State of Washington Department of Ecology, Richland, Washington.

WA7890008967, 2019, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, State of Washington Department of Ecology, Richland, Washington.

WAC 173-182, "Oil Spill Contingency Plan," *Washington Administrative Code*, as amended.

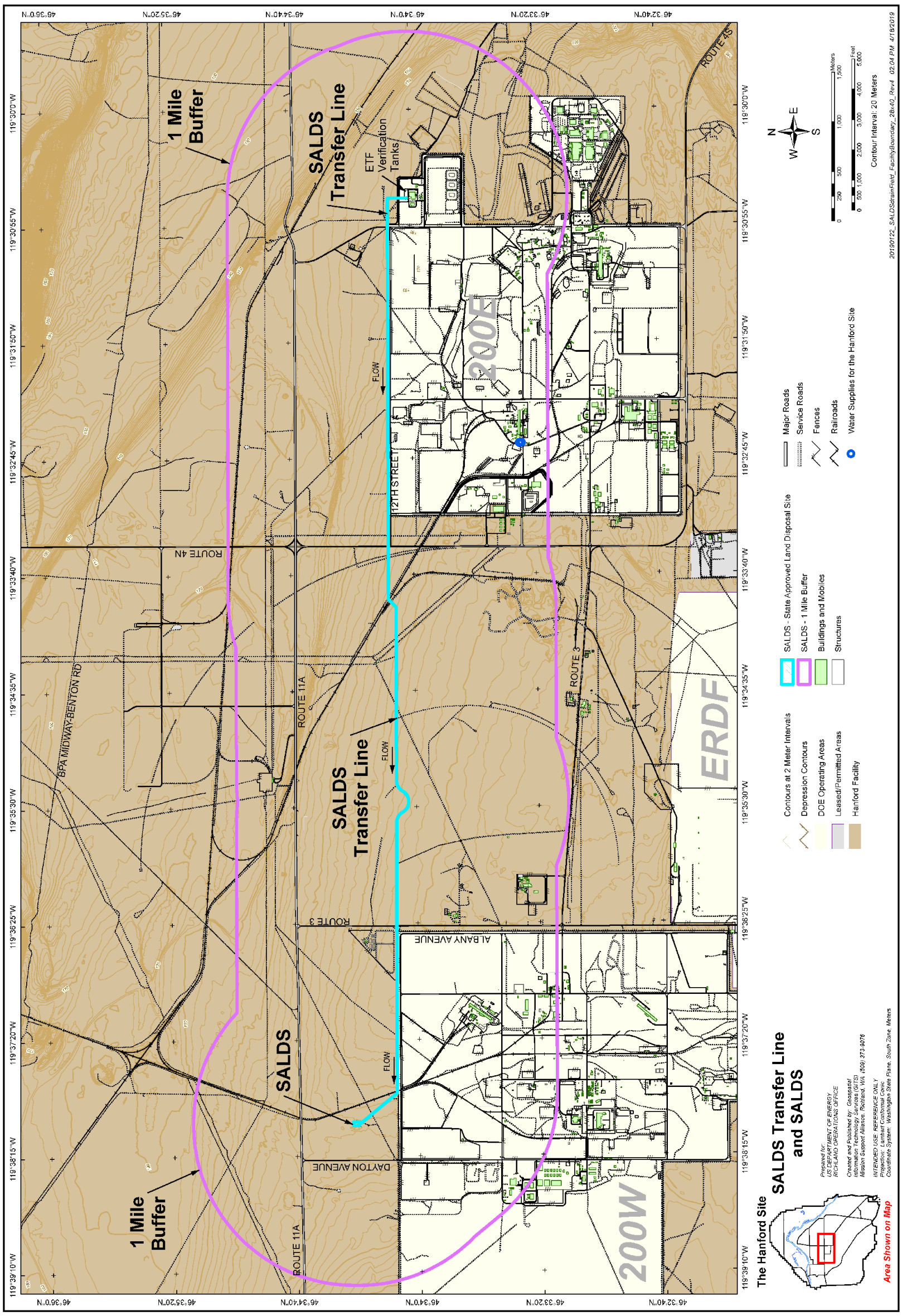
WAC 173-216, "State Waste Discharge Permit Program," *Washington Administrative Code*, as amended.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

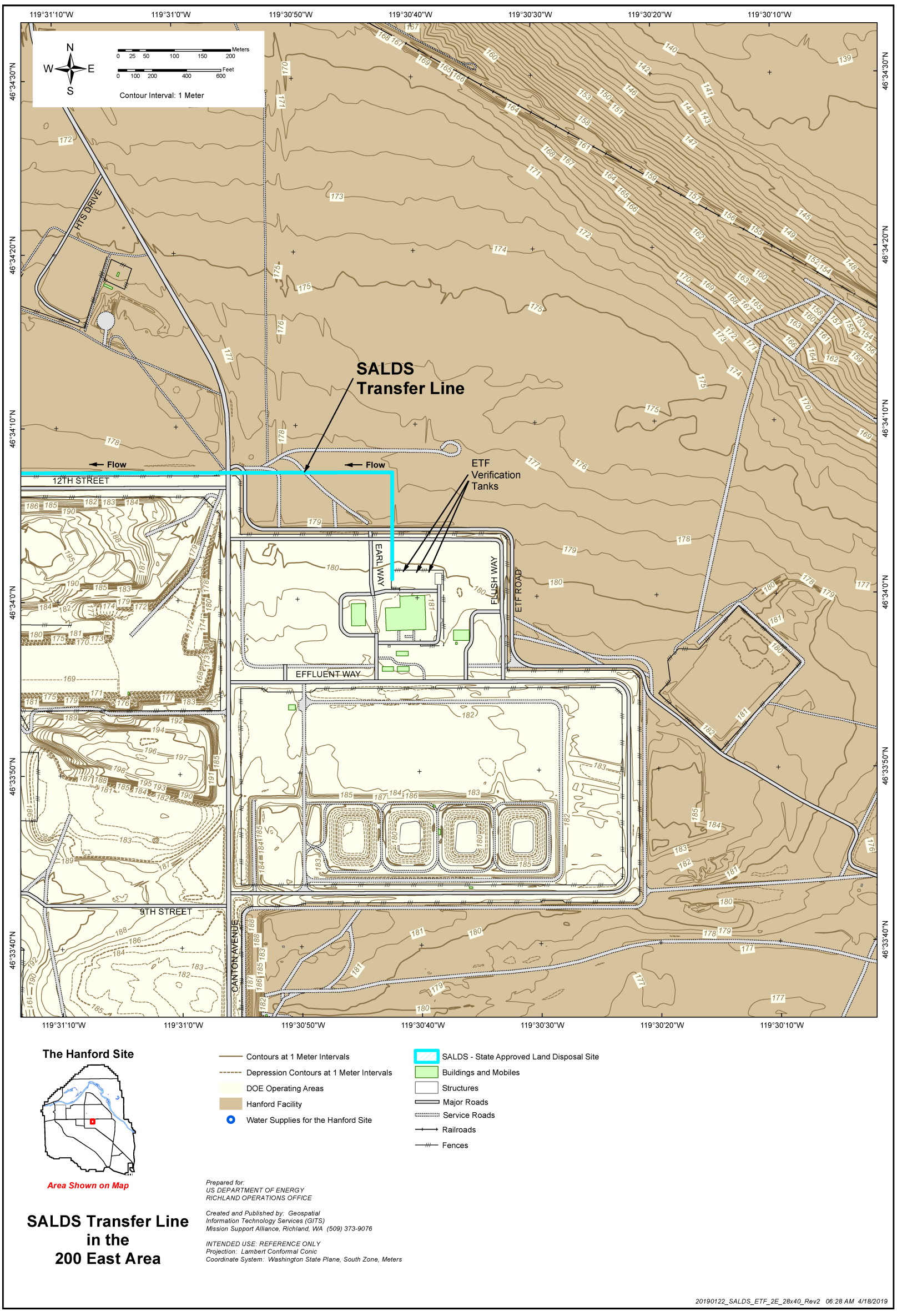
WAC 173-350, "Solid Waste Handling Standards," *Washington Administrative Code*, as amended.

Water Quality Permitting and Reporting Information System (PARIS), Queried 04/11/2019, [ST0004500], https://apps.ecology.wa.gov/paris/PermitLookup.aspx

ATTACHMENT C2 – FLOW DIAGRAMS



WRPS-1901762
Enclosure 2



The Hanford Site

Area Shown on Map

SALDS Transfer Line in the 200 East Area

- Contours at 1 Meter Intervals
- Depression Contours at 1 Meter Intervals
- DOE Operating Areas
- Hanford Facility
- Water Supplies for the Hanford Site
- SALDS - State Approved Land Disposal Site
- Buildings and Mobiles
- Structures
- Major Roads
- Service Roads
- Railroads
- Fences

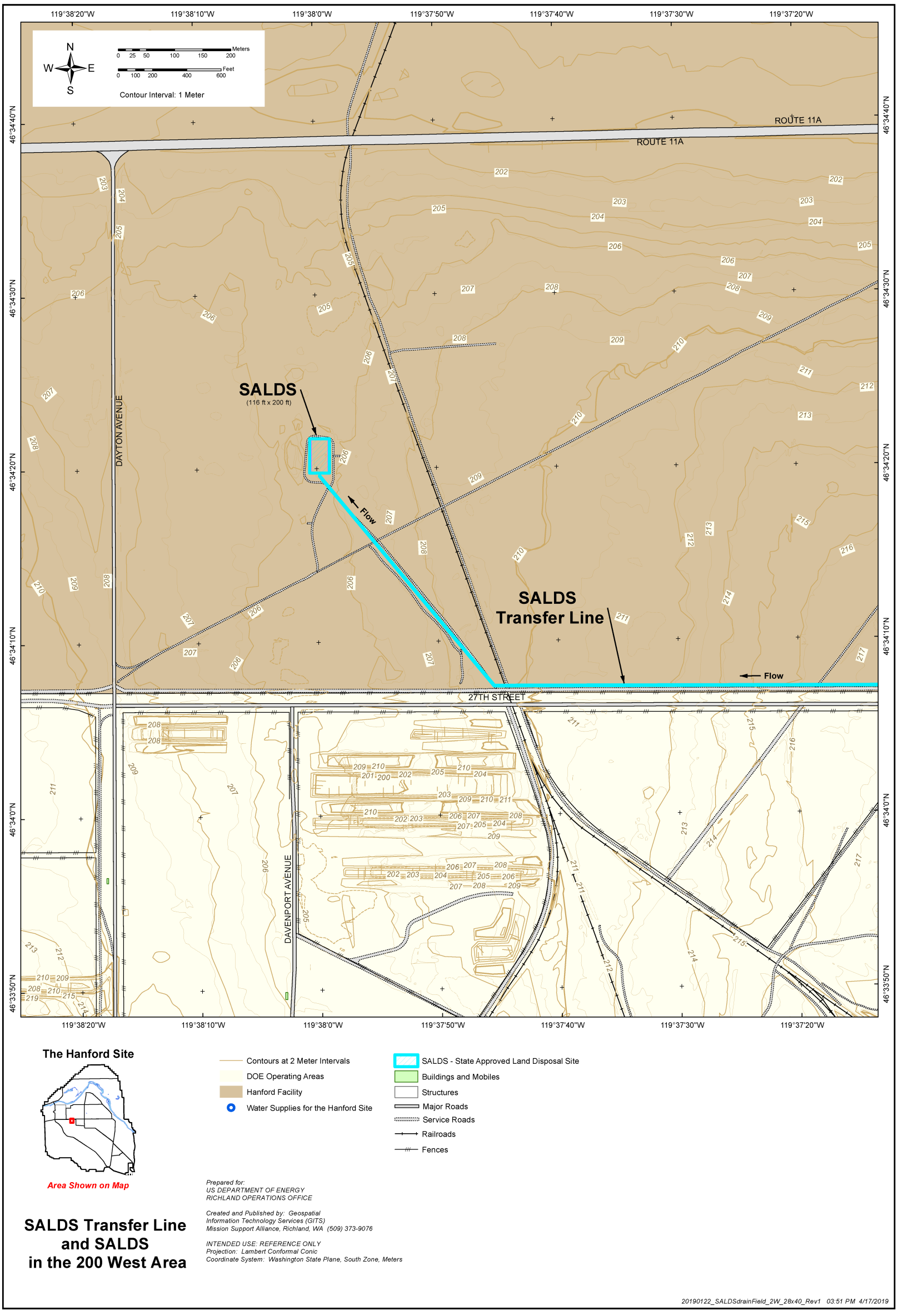
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

Created and Published by: Geospatial
Information Technology Services (GITS)
Mission Support Alliance, Richland, WA (509) 373-9076

INTENDED USE: REFERENCE ONLY
Projection: Lambert Conformal Conic
Coordinate System: Washington State Plane, South Zone, Meters

20190122_SALDS_ETF_2E_28x40_Rev2 06:28 AM 4/18/2019

WRPS-1901762
Enclosure 2



ATTACHMENT E4 – ETF PROCESSED WASTEWATER CONSTITUENTS AND MEASUREMENTS

X	Parameter/Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Measurement Value			U = Undetected	Number of Analyses	Number of Results above MDL	Analytical Method Std. Methods 19th, 20th Edition or EPA	Method Detection Limit (MDL)/ Practical Quantitative Level (PQL)
				Minimum	Maximum	Average					
Constituents Listed ECY-040-179 Question E.4											
	BOD (5 day)									SM 5210 B	/ 2 mg/L
	COD									SM 5220 D	/ 10 mg/L
X	Total suspended solids			< 570 µg/L	< 1580 µg/L	< 921 µg/L	U	16	0	SM 2540 D	1360 µg/L / 5950 µg/L
	Fixed dissolved solids									SM 2540 E	/
X	Total dissolved solids	X	X	< 3400 µg/L	25700 µg/L	6660 µg/L		16	4	SM 2540 C	3400 µg/L / 14300 µg/L
X	Conductivity (Specific Conductance)	X	X	< 1.70 µS/cm	13.5 µS/cm	3.88 µS/cm		18	13	EPA 120.1	1.70 µS/cm /
X	Ammonia	X	X	< 17 µg/L	310 µg/L	87.7 µg/L		16	15	EPA 350.1	17 µg/L / 85 µg/L*
	pH									SW 9040	±0.01 / ±0.1
	Fecal coliform (organisms/100 ml)									SM 9221 E or 9222 D	/
	Total coliform (organisms/100 ml)									SM 9221 B or 9222 B	/
	Dissolved oxygen									SM 4500-O C/G	/
	Nitrate + Nitrite-N as N									EPA 300.0	/
	Total kjeldahl N as N									SM 4500-Norg C/E/FG	300 µg/L /
X	Phosphate	X	X	< 130 µg/L	< 630 µg/L	< 185 µg/L	U	18	0	EPA 300.0	130 µg/L / 650 µg/L*
	Total-phosphorous-P as P									EPA 200.7	/
	Total oil and grease									EPA 1664A	1.4 mg/L / 5.0 mg/L
	NWTPH - Dx									WDOE NWTPH Dx	250 µg/L / 250 µg/L
	NWTPH - Gx									WDOE NWTPH Gx	250 µg/L / 250 µg/L
X	Calcium	X	X	< 50 µg/L	108 µg/L	55.1 µg/L		16	2	SW 6010	50 µg/L / 250 µg/L*
X	Chloride	X	X	82.5 µg/L	< 500 µg/L	122 µg/L		18	6	EPA 300.0	100 µg/L / 500 µg/L*
X	Fluoride	X	X	< 25 µg/L	< 130 µg/L	< 33 µg/L	U	18	0	EPA 300.0	33 µg/L / 165 µg/L*
X	Magnesium	X	X	< 110 µg/L	< 110 µg/L	< 110 µg/L	U	16	0	SW 6010	110 µg/L / 550 µg/L*
X	Potassium	X	X	< 50 µg/L	108 µg/L	55.5 µg/L		16	3	SW 6010	50 µg/L / 250 µg/L*
X	Sodium	X	X	< 100 µg/L	< 100 µg/L	< 100 µg/L	U	16	0	SW 6010	100 µg/L / 500 µg/L*
X	Sulfate	X	X	< 130 µg/L	< 630 µg/L	160 µg/L		18	2	EPA 300.0	133 µg/L / 665 µg/L*
	Alkalinity as $CaCO_3$									SM 2320 B	/ 5 mg/L as CaCO3
X	Arsenic	X	X	< 1.7 µg/L	< 2.0 µg/L	< 1.9 µg/L	U	16	0	EPA 200.8	2.0 µg/L / 10 µg/L*
X	Barium	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	SW 6010	1.0 µg/L / 5.0 µg/L*
X	Cadmium	X	X	< 0.11 µg/L	< 0.30 µg/L	< 0.25 µg/L	U	16	0	EPA 200.8	0.30 µg/L / 1.5 µg/L*
X	Chromium	X	X	< 1.0 µg/L	1.6 µg/L	1.04 µg/L		16	1	EPA 200.8 / SW 6010	1.0 µg/L / 5.0 µg/L*
X	Copper	X	X	< 0.30 µg/L	1.64 µg/L	0.452 µg/L		16	2	EPA 200.8	0.3 µg/L / 1.5 µg/L*
X	Iron	X	X	< 30 µg/L	< 30 µg/L	< 30 µg/L	U	16	0	SW 6010	30 µg/L / 150 µg/L*
X	Lead	X	X	< 0.50 µg/L	< 0.50 µg/L	< 0.50 µg/L	U	16	0	EPA 200.8	0.50 µg/L / 2.5 µg/L*

X	Parameter/Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Measurement Value			U = Undetected	Number of Analyses	Number of Results above MDL	Analytical Method Std. Methods 19th, 20th Edition or EPA	Method Detection Limit (MDL)/ Practical Quantitative Level (PQL)
				Minimum	Maximum	Average					
X	Manganese	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	EPA 200.8	1.0 µg/L / 5.0 µg/L*
X	Mercury	X	X	< 0.067 µg/L	< 0.067 µg/L	< 0.067 µg/L	U	16	0	EPA 245.1	0.067 µg/L / 0.335 µg/L*
	Molybdenum		X							EPA 200.8	0.40 µg/L / 2.0 µg/L*
X	Nickel	X	X	< 1.5 µg/L	1.84 µg/L	1.53 µg/L		16	2	SW 6010	1.5 µg/L / 7.5 µg/L*
X	Selenium	X	X	< 1.5 µg/L	2.12 µg/L	1.91 µg/L		16	1	EPA 200.8	2.0 µg/L / 10 µg/L*
X	Silver	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	SW 6010	1.0 µg/L / 5.0 µg/L*
X	Zinc	X	X	< 3.3 µg/L	8.98 µg/L	4.06 µg/L		16	3	SW6010	3.3 µg/L / 16.5 µg/L*
Results of Additional Waste Analyses											
X	Antimony	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	EPA 200.8	1.0 µg/L / 5.0 µg/L*
X	Beryllium		X	< 0.20 µg/L	< 0.20 µg/L	< 0.20 µg/L	U	16	0	EPA 200.8	0.20 µg/L / 1.0 µg/L*
X	Uranium	X	X	< 0.067 µg/L	0.383 µg/L	0.122 µg/L		16	9	EPA 200.8	0.067 µg/L / 0.335 µg/L*
X	Bromide			< 63 µg/L	< 67 µg/L	< 66 µg/L	U	7	0	EPA 300.0	67 µg/L / 335 µg/L*
X	Nitrate (as N)	X	X	< 14 µg/L	< 70 µg/L	< 23 µg/L	U	18	0	EPA 300.0	33 µg/L / 165 µg/L*
X	Nitrite (as N)	X	X	< 19 µg/L	< 95 µg/L	< 28 µg/L	U	18	0	EPA 300.0	33 µg/L / 165 µg/L*
X	Aluminum	X	X	< 68 µg/L	< 68 µg/L	< 68 µg/L	U	16	0	SW 6010	68 µg/L / 340 µg/L*
X	Cobalt	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	SW 6010	1.0 µg/L / 5.0 µg/L*
X	Silicon	X	X	< 25 µg/L	< 25 µg/L	< 25 µg/L	U	16	0	SW 6010	25 µg/L / 125 µg/L*
X	Thallium		X	< 5.0 µg/L	< 5.0 µg/L	< 5.0 µg/L	U	16	0	SW 6010	5.0 µg/L / 25 µg/L*
X	Titanium		X	< 1.0 µg/L	1.02 µg/L	1.00 µg/L		16	1	SW 6010	1.0 µg/L / 5.0 µg/L*
X	Vanadium	X	X	< 1.0 µg/L	< 1.0 µg/L	< 1.0 µg/L	U	16	0	SW 6010	1.0 µg/L / 5.0 µg/L*
X	Hexachlorobenzene		X^0	< 0.00625 µg/L	< 0.00651 µg/L	< 0.00638 µg/L	U	2	0	SW 8081	0.00651 µg/L / 0.0651 µg/L*
X	Lindane (gamma-BHC)		X^0	< 0.00665 µg/L	< 0.00693 µg/L	< 0.00679 µg/L	U	2	0	SW 8081	0.00693 µg/L / 0.0693 µg/L*
X	PCB Aroclor-1016		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1221		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1232		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1242		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1248		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1254		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	PCB Aroclor-1260		X	< 0.0333 µg/L	< 0.0358 µg/L	< 0.0345 µg/L	U	7	0	SW 8082	0.0358 µg/L / 0.358 µg/L*
X	1,1,1-Trichloroethane		X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	1,1,2-Trichloroethane			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	1,1-Dichloroethane			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	1,2-Dibromoethane (Ethylene dibromide)			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	1,2-Dichlorobenzene			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	1-Butanol	X	X	< 83.3 µg/L	< 83.3 µg/L	< 83.3 µg/L	U	16	0	SW 8260	83.3 µg/L / 833 µg/L*
X	2-Butanone (Methyl ethyl ketone)	X	X	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	16	0	SW 8260	3.0 µg/L / 30 µg/L*

X	Parameter/Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Measurement Value			U = Undetected	Number of Analyses	Number of Results above MDL	Analytical Method Std. Methods 19th, 20th Edition or EPA	Method Detection Limit (MDL)/ Practical Quantitative Level (PQL)
				Minimum	Maximum	Average					
X	2-Hexanone (Methyl n-butyl ketone)	X	X	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	16	0	SW 8260	3.0 µg/L / 30 µg/L*
X	2-Pentanone (Methyl n-propyl ketone)	X		< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	16	0	SW 8260	3.0 µg/L / 30 µg/L*
X	4-Methyl-2-pentanone (Methyl isobutyl ketone)	X	X^0	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	16	0	SW 8260	3.0 µg/L / 30 µg/L*
X	Acetone	X	X	< 3.0 µg/L	27.2 µg/L	7.06 µg/L		16	11	SW 8260	3.0 µg/L / 30 µg/L*
X	Acetonitrile	X	X	< 16.7 µg/L	30.0 µg/L	18.4 µg/L		13	2	SW 8260	16.7 µg/L / 167 µg/L*
X	Acrylonitrile		X	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	3	0	SW 8260	3.0 µg/L / 30 µg/L*
X	Benzene		X	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Carbon disulfide	X	X^0	< 1.6 µg/L	< 1.6 µg/L	< 1.6 µg/L	U	16	0	SW 8260	1.6 µg/L / 16 µg/L*
X	Carbon tetrachloride		X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Chlorobenzene			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Chloroform (Trichloromethane)	X	X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Dichloromethane (Methylene Chloride)	X	X	< 1.6 µg/L	< 1.6 µg/L	< 1.6 µg/L	U	16	0	SW 8260	1.6 µg/L / 16 µg/L*
X	Tetrachloroethene (Tetrachloroethylene)		X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Tetrahydrofuran	X	X^0	< 1.5 µg/L	3.55 µg/L	1.63 µg/L		16	1	SW 8260	1.5 µg/L / 15 µg/L*
X	Toluene	X		< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Trichloroethene (Trichloroethylene)			< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 3.0 µg/L*
X	Xylenes (total)	X		< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	16	0	SW 8260	0.30 µg/L / 6.0 µg/L
X	2,4,6-Trichlorophenol		X^0	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	2	0	SW 8270	3.0 µg/L / 30 µg/L*
X	2-Butoxyethanol	X	X	< 5.4 µg/L	< 5.4 µg/L	< 5.4 µg/L	U	12	0	SW 8270	5.4 µg/L / 54 µg/L*
X	4-Chloroaniline (p-Chloroaniline)		X^0	< 3.3 µg/L	< 3.3 µg/L	< 3.3 µg/L	U	2	0	SW 8270	3.3 µg/L / 33 µg/L*
X	Acetophenone		X	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Benzyl Alcohol	X		< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Carbazole		X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	2	0	SW 8270	0.30 µg/L / 3.0 µg/L*
X	Chrysene		X^0	< 0.30 µg/L	< 0.30 µg/L	< 0.30 µg/L	U	2	0	SW 8270	0.30 µg/L / 3.0 µg/L*
X	Dichloroisopropyl ether (Bis[2-Chloroisopropyl] either)		X^0	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	2	0	SW 8270	3.0 µg/L / 30 µg/L*
X	Di-n-octylphthalate		X	< 0.30 µg/L	< 4.17 µg/L	< 2.4 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Diphenylamine		X^0	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	2	0	SW 8270	3.0 µg/L / 30 µg/L*
X	Hexachlorocyclopentadiene		X^0	< 3.0 µg/L	< 3.0 µg/L	< 3.0 µg/L	U	2	0	SW 8270	3.0 µg/L / 30 µg/L*
X	Hexachloroethane			< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Isophorone		X^0	< 3.5 µg/L	< 3.5 µg/L	< 3.5 µg/L	U	2	0	SW 8270	3.5 µg/L / 35 µg/L*
X	Naphthalene		X	< 0.30 µg/L	< 0.417 µg/L	< 0.31 µg/L	U	16	0	SW 8270	0.417 µg/L / 4.17 µg/L*
X	N-Nitrosodimethylamine	X	X	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Phenol		X	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Pyridine		X^0	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Total Cresols		X	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Tributyl phosphate	X	X	< 3.0 µg/L	< 4.17 µg/L	< 3.1 µg/L	U	16	0	SW 8270	4.17 µg/L / 41.7 µg/L*
X	Cyanides		X	< 1.67 µg/L	< 1.67 µg/L	< 1.67 µg/L	U	16	0	SW 9012	1.67 µg/L / 8.35 µg/L*
X	Total Organic Carbon	X	X	< 330 µg/L	411 µg/L	342 µg/L		18	3	SW 9060	330 µg/L / 1000 µg/L
X	Gross Alpha	X	X	< 1.79 pCi/L	3.03 pCi/L	2.46 pCi/L		18	2	EPA 900.0 / SW 9310	2.92 pCi/L /
X	Gross Beta	X	X	< 2.07 pCi/L	46.1 pCi/L	5.08 pCi/L		18	1	EPA 900.0 / SW 9310	3.55 pCi/L /

X	Parameter/Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Measurement Value			U = Undetected	Number of Analyses	Number of Results above MDL	Analytical Method Std. Methods 19th, 20th Edition or EPA	Method Detection Limit (MDL)/ Practical Quantitative Level (PQL)
				Minimum	Maximum	Average					
X	Tritium	X	X	81700 pCi/L	848000 pCi/L	313000 pCi/L		16	16	EPA 906.0 Mod	1070 pCi/L /
X	Cobalt-60		X	< 4.95 pCi/L	< 17.4 pCi/L	< 10.0 pCi/L	U	16	0	EPA 901.1	17.4 pCi/L /
X	Zinc-65			< 9.36 pCi/L	< 44.4 pCi/L	< 20.6 pCi/L	U	16	0	EPA 901.1	44.4 pCi/L /
X	Strontium-90	X	X	< 1.50 pCi/L	< 7.42 pCi/L	3.71 pCi/L		16	1	EPA 905.0 Mod	7.42 pCi/L /
X	Niobium-94		X	< 4.20 pCi/L	< 16.5 pCi/L	< 9.33 pCi/L	U	16	0	EPA 901.1	16.5 pCi/L /
X	Technetium-99	X	X	< 5.80 pCi/L	60.1 pCi/L	14.7 pCi/L		16	1	Lab Specific	13.3 pCi/L /
X	Ruthenium-103			< 4.54 µg/L	< 17.6 µg/L	< 9.37 µg/L	U	16	0	EPA 901.1	17.6 pCi/L /
X	Ruthenium-106		X	< 36.6 µg/L	< 134 µg/L	< 74.9 µg/L	U	16	0	EPA 901.1	134 pCi/L /
X	Tin-113			< 5.37 pCi/L	< 17.3 pCi/L	< 10.8 pCi/L	U	16	0	EPA 901.1	17.3 pCi/L /
X	Antimony-125			< 10.2 pCi/L	< 46.5 pCi/L	< 23.8 pCi/L	U	16	0	EPA 901.1	46.5 pCi/L /
X	Iodine-129	X	X	< 1.59 pCi/L	< 4.70 pCi/L	< 3.53 pCi/L	U	16	0	Lab Specific	4.70 pCi/L /
X	Cesium-134		X	< 4.32 pCi/L	< 19.5 pCi/L	< 10.2 pCi/L	U	16	0	EPA 901.1	19.5 pCi/L /
X	Cesium-137	X	X	< 4.48 pCi/L	< 15.3 pCi/L	< 9.15pCi/L	U	16	0	EPA 901.1	15.3 pCi/L /
X	Cerium-144		X	< 28.1 pCi/L	< 65.6 pCi/L	< 45.5 pCi/L	U	16	0	EPA 901.1	65.6 pCi/L /
X	Praseodymium-144			< 382 pCi/L	< 1220 pCi/L	< 703 pCi/L	U	16	0	EPA 901.1	1220 pCi/L /
X	Europium-152			< 11.8 pCi/L	< 40.2 pCi/L	< 25.1 pCi/L	U	16	0	EPA 901.1	40.2 pCi/L /
X	Europium-154		X	< 13.9 pCi/L	< 45.8 pCi/L	< 28.1 pCi/L	U	16	0	EPA 901.1	45.8 pCi/L /
X	Europium-155		X	< 14.6 pCi/L	< 39.2 pCi/L	< 25.6 pCi/L	U	16	0	EPA 901.1	39.2 pCi/L /
X	Radium-226	X	X	< 0.247 pCi/L	1.99 pCi/L	0.739 pCi/L		16	4	EPA 903.1	1.41 pCi/L /
X	Neptunium-237	X	X	< 0.156 pCi/L	< 0.838 pCi/L	< 0.502 pCi/L	U	16	0	Lab Specific	0.838 pCi/L /
X	Plutonium-238	X	X	< 0.232 pCi/L	< 0.920 pCi/L	< 0.522 pCi/L	U	16	0	Lab Specific	0.920 pCi/L /
X	Plutonium-239/240	X	X	< 0.351 pCi/L	< 0.899 pCi/L	< 0.619 pCi/L	U	16	0	Lab Specific	0.899 pCi/L /
X	Americium-241	X	X	< 0.207 pCi/L	< 0.723 pCi/L	< 0.404 pCi/L	U	16	0	Lab Specific	0.723 pCi/L /
X	Curium-243/244	X	X	< 0.174 pCi/L	< 0.693 pCi/L	< 0.383 pCi/L	U	16	0	Lab Specific	0.693 pCi/L /

X identifies a parameter or constituent as one that was analyzed or as present within the subject column.
X^0 identifies constituent as present in forecasted WTP EMF wastewater with the forecasted constituent concentration estimated at 0.00E+00 mg/L within the influent to the ETF treatment train.
* identifies PQL estimated for inorganics at 5 times the MDL and PQL estimated for organics at 10 times the MDL.[21]

[21] "Laboratory Detection and Reporting Limit Issues Related to Risk Assessments" (Corl et al. 2002)

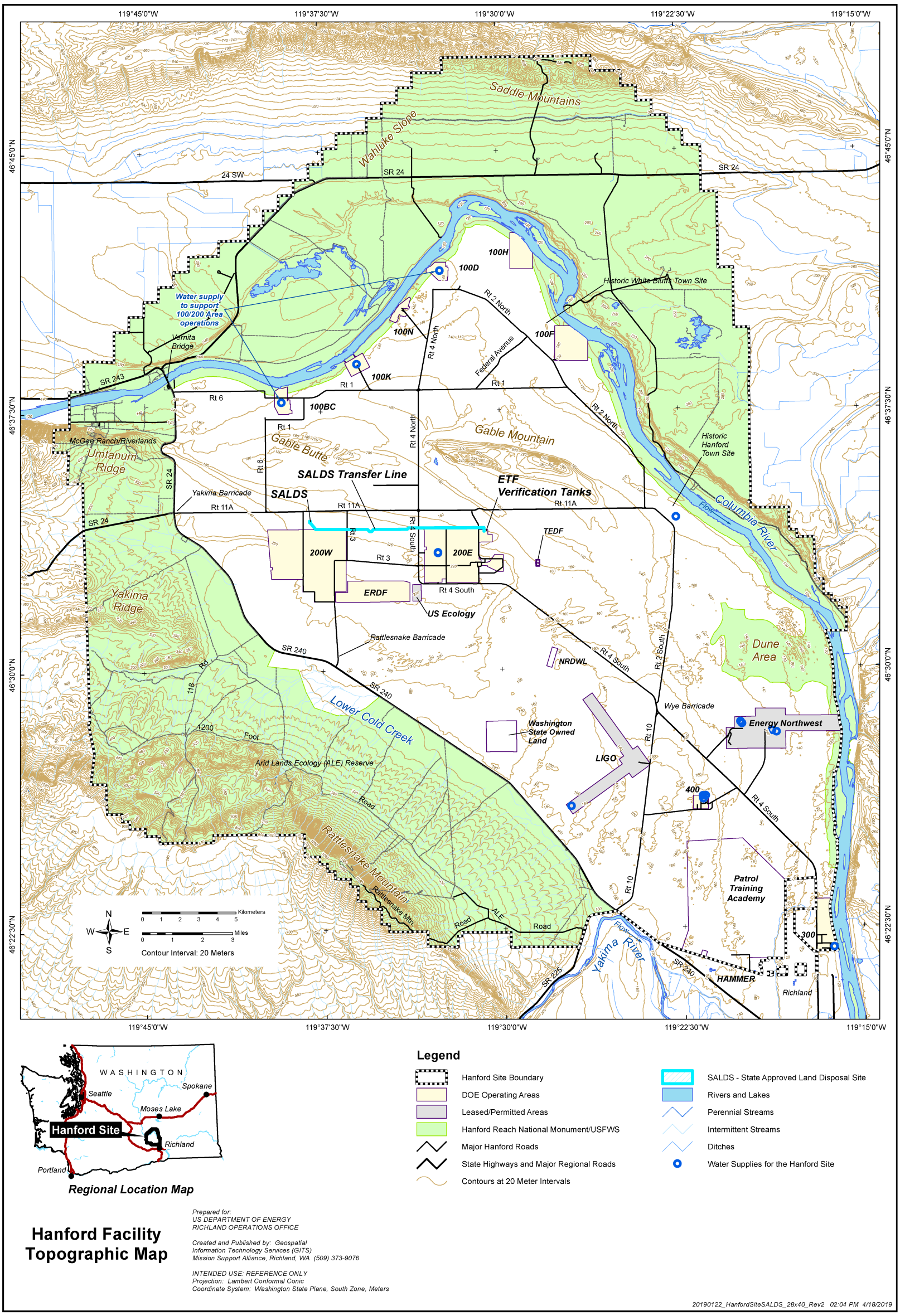
ATTACHMENT E7 – A LIST OF CONSTITUENTS WITH THE POTENTIAL TO BE PRESENT IN THE ETF PROCESSED WASTEWATER

Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Analytical Method Std. Methods 19th, 20th Edition or EPA
1,2-Dichloroethane			SW 8260
1,2-Dichloropropane			SW 8260
1,4-Dichlorobenzene	X		SW 8260
1,4-Dioxane	X	X	SW 8260
2,4,5-T			SW 8151A
2,4,5-Tricholophenol		X[0]	SW 8270
2,4-Dichlorophenol			SW 8270
2,4-Dimethylphenol			SW 8270
2,6-Dichlorophenol			SW 8270
2-Chlorophenol			SW 8270
2-Methylnonane			N/A
2-Nitrophenol		X	SW 8270
2-Propanol (Isopropanol)			SW 8015D
3,5-Dimethylpyridine (3,5-Lutidine)			N/A
4,4'-DDD			SW 8081
4,4'-DDT			SW 8081
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)		X	SW 8270
4-Chloro-3-Methylphenol			SW 8270
4-Nitrophenol (p-Nitrophenol)		X	SW 8270
Acetate		X	N/A
Aldrin			SW 8081
Benzaldehyde			SW 8270
Benzo(a)pyrene			SW 8270
Benzoic Acid			SW 8270
Benzothiazole			N/A
Beta-BHC			SW 8081
Bis(2-ethylhexyl) phthalate	X	X	SW 8270
Bromodichloromethane			SW 8260
Butoxydiglycol (Diethylene glycol monobutyl ether)			N/A
Butoxyglycol			N/A
Butoxytriethyleneglycol (Triethylene glycol monobutyl ether)			N/A
Butyraldehyde (butanal)		X	N/A
Caproic Acid (Hexanoic Acid)			N/A
Dibromochloromethane			N/A
Dieldrin			SW 8081
Diethyl Phthalate		X	SW 8270
Dimethyl Phthalate			SW 8270
Di-n-Butylphthalate			SW 8270
Dodecane			N/A
Endrin			SW 8081
Endrin Aldehyde			SW 8081
Ethoxytriethylene Glycol (Triethylene glycol monoethyl ether)			N/A
Ethyl Alcohol (Ethanol)			SW 8015D
Ethyl cyanide (propionitrile)		X	SW 8260
Ethylbenzene	X		SW 8260
Formate		X	N/A
Glycolate		X	N/A
Heptachlor			SW 8081
Heptachlor Epoxide			SW 8081
Heptadecane			N/A
Hexachlorobutadiene			SW 8260
Hexadecane			N/A
m-Cresol		X	Measured as Total Cresols with SW 8270
Methanol			SW 8015D
Methoxydiglycol (Diethylene glycol monomethyl ether)			N/A
Methoxytriglycol (Triethylene glycol monomethyl ether)			N/A
Nitrobenzene		X	SW 8270
N-Nitrosomorpholine		X	SW 8270
o-Cresol		X	SW 8270
Oxalate		X	N/A

Constituent	Seen in Current Wastes	Forecasted in WTP EMF Wastewater	Analytical Method Std. Methods 19th, 20th Edition or EPA
Pentachlorophenol			SW 8270
Pentadecane			N/A
Tetradecane			N/A
Total Organic Halogen (Total Organic Halides)	X		SW 9020
Tridecane			N/A
Triglyme (Triethylene glycol dimethyl ether)			N/A
Vinyl Chloride			SW 8260
Oil and Grease			SW 1664
Sorbitan Compounds			N/A
Ammonium		X	Measured as Ammonia with EPA 350.1
Bismuth		X	EPA 200.8
Borate		X	Measured as Boron with EPA 200.7
Boron		X	EPA 200.7
Carbonate		X	SM 2340 C
Cerium		X	N/A
Cesium		X^0	N/A
Dihydrogen orthosilicate		X	Measured as Silicon with EPA 200.7
Dihydrogen phosphate		X^0	Measured as Phosphate with EPA 300.0
Europium		X^0	N/A
Hydrogen phosphate		X^0	Measured as Phosphate with EPA 300.0
Hydrogen sulfate (bisulfate)		X^0	Measured as Sulfate with EPA 300.0
Hydrogen sulfite		X^0	Measured with Sulfite – SM 4500-SO3-B
Hydroxide (hydroxyl ion)	X	X	Measured as pH with SW 9040
Iodine			N/A
Lanthanum		X	N/A
Lithium		X	SW 6020
Neodymium		X	N/A
Oxide		X	N/A
Palladium		X	N/A
Phosphorus pentoxide			Measured as Phosphate with EPA 300.0
Praseodymium		X^0	N/A
Rhenium			N/A
Rhodium		X	N/A
Rubidium		X	N/A
Ruthenium		X	N/A
Strontium	X	X	EPA 200.7
Sulfite		X	Sulfite – SM 4500-SO3-B
Superoxide		X^0	N/A
Tantalum		X	N/A
Tellurium		X	N/A
Thorium	X	X	EPA 200.7
Tin	X		EPA 200.8
Trihydrogen orthosilicate		X^0	Measured as Silicon with EPA 200.7
Tungsten		X	N/A
Yttrium		X	N/A
Zirconium		X	N/A
Carbon-14		X	Lab Specific
Plutonium-241		X	Lab Specific
Selenium-79		X	Lab Specific
X identifies constituent as present within subject column.			
X^0 identifies constituent as present in forecasted WTP EMF wastewater with the forecasted constituent concentration estimated at 0.00E+00 mg/L within the influent to the ETF treatment train.			

WRPS-1901762
Enclosure 2

ATTACHMENT G3 – TOPOGRAPHICAL MAPS



Regional Location Map

Legend

- Hanford Site Boundary
- DOE Operating Areas
- Leased/Permitted Areas
- Hanford Reach National Monument/USFWS
- Major Hanford Roads
- State Highways and Major Regional Roads
- Contours at 20 Meter Intervals
- SALDS - State Approved Land Disposal Site
- Rivers and Lakes
- Perennial Streams
- Intermittent Streams
- Ditches
- Water Supplies for the Hanford Site

Hanford Facility Topographic Map

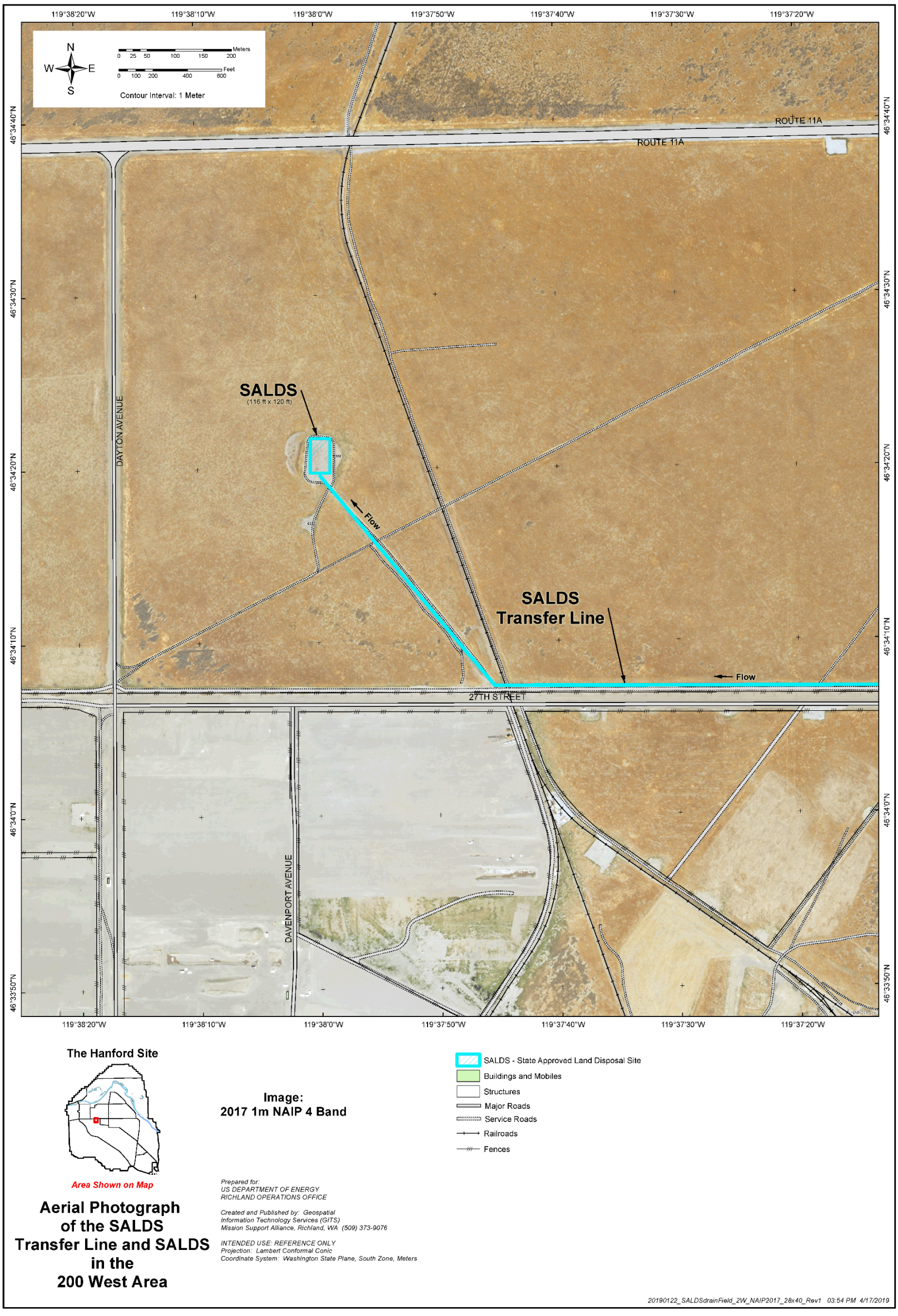
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

Created and Published by: Geospatial
Information Technology Services (GITS)
Mission Support Alliance, Richland, WA (509) 373-9076

INTENDED USE: REFERENCE ONLY
Projection: Lambert Conformal Conic
Coordinate System: Washington State Plane, South Zone, Meters

20190122_HanfordSiteSALDS_28x40_Rev2 02:04 PM 4/18/2019

WRPS-1901762
Enclosure 2



The Hanford Site

Area Shown on Map

Aerial Photograph of the SALDS Transfer Line and SALDS in the 200 West Area

Image:
2017 1m NAIP 4 Band

Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

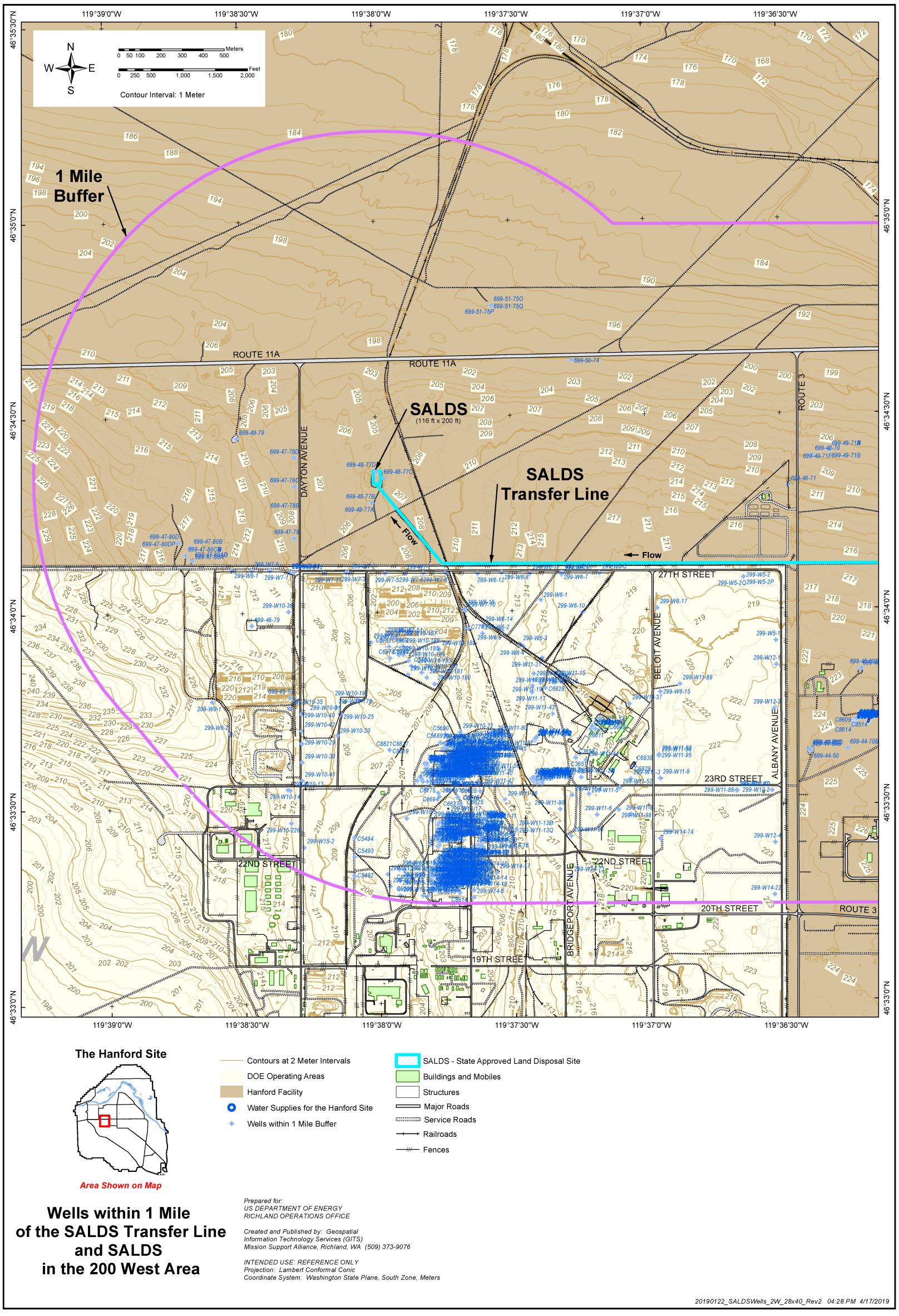
Created and Published by: Geospatial
Information Technology Services (GITS)
Mission Support Alliance, Richland, WA (509) 373-9076

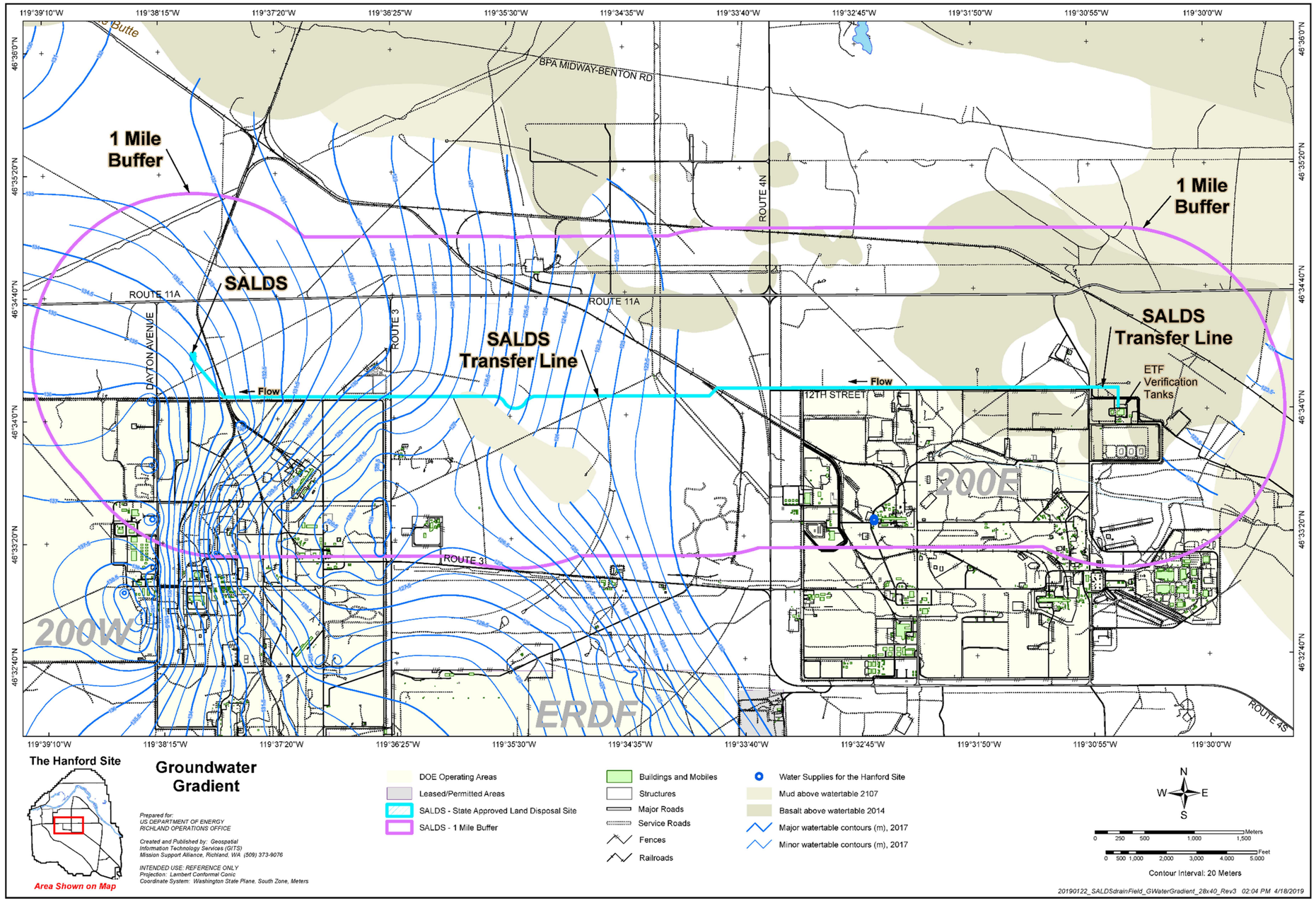
INTENDED USE: REFERENCE ONLY
Projection: Lambert Conformal Conic
Coordinate System: Washington State Plane, South Zone, Meters

- SALDS - State Approved Land Disposal Site
- Buildings and Mobiles
- Structures
- Major Roads
- Service Roads
- Railroads
- Fences

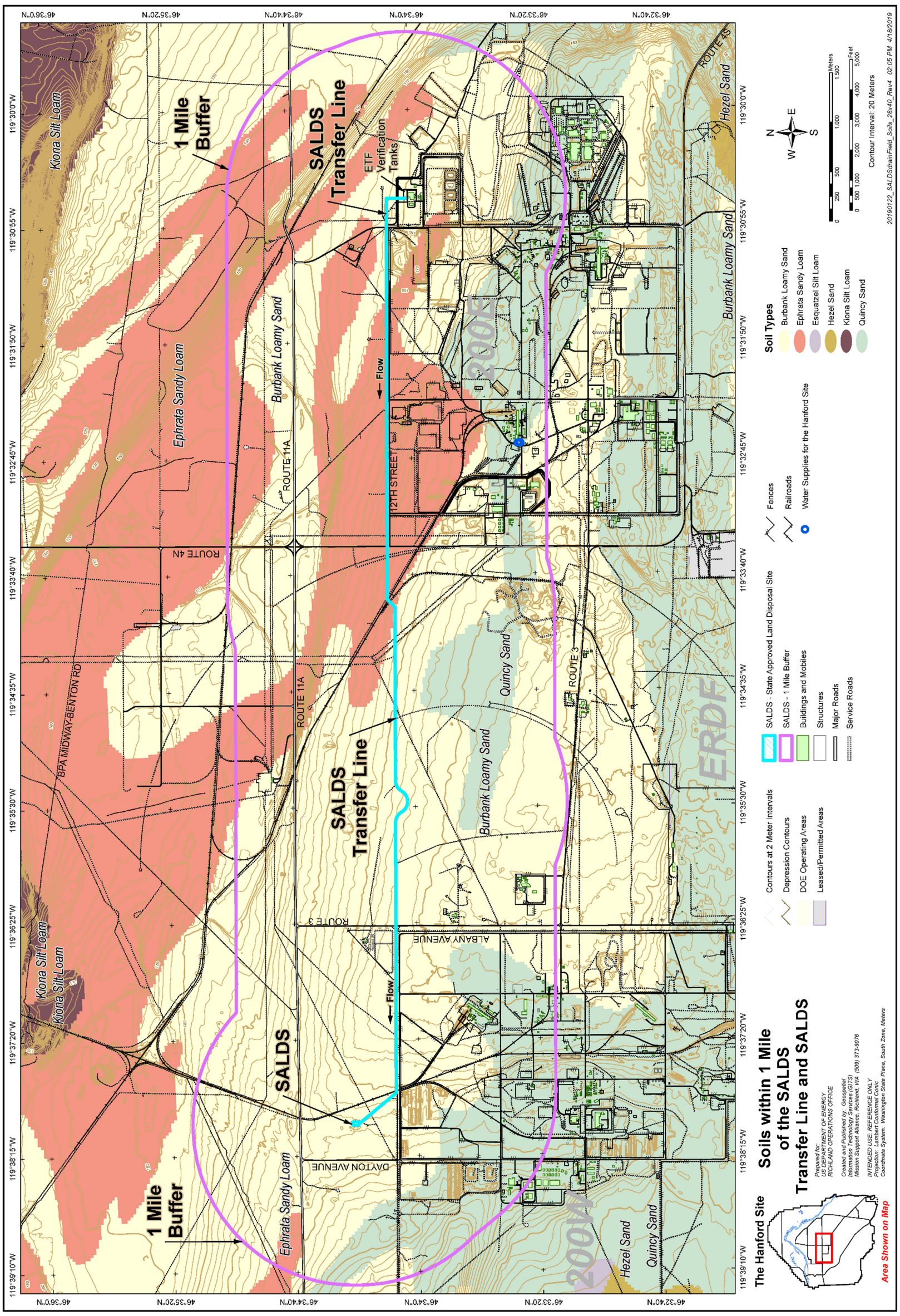
20190122_SALDSdrainField_2W_NAIP2017_28x40_Rev1 03:54 PM 4/17/2019

WRPS-1901762
Enclosure 2




1 Mile Buffer
SALDS
SALDS Transfer Line
1 Mile Buffer
SALDS Transfer Line
ETF Verification Tanks
Flow
Flow
BPA MIDWAY-BENTON RD
ROUTE 4N
ROUTE 11A
ROUTE 11A
DAYTON AVENUE
ROUTE 3
12TH STREET
ROUTE 3
ROUTE 4S
200W
200E
ERDF
119°39'10"W
119°38'15"W
119°37'20"W
119°36'25"W
119°35'30"W
119°34'35"W
119°33'40"W
119°32'45"W
119°31'50"W
119°30'55"W
119°30'0"W
46°36'0"N
46°35'20"N
46°34'40"N
46°33'20"N
46°32'40"N
The Hanford Site
Area Shown on Map
Groundwater Gradient
Prepared for:
US DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
Created and Published by: Geospatial
Information Technology Services (GITS)
Mission Support Alliance, Richland, WA (509) 373-9076
INTENDED USE: REFERENCE ONLY
Projection: Lambert Conformal Conic
Coordinate System: Washington State Plane, South Zone, Meters
DOE Operating Areas
Leased/Permitted Areas
SALDS - State Approved Land Disposal Site
SALDS - 1 Mile Buffer
Buildings and Mobiles
Structures
Major Roads
Service Roads
Fences
Railroads
Water Supplies for the Hanford Site
Mud above watertable 2107
Basalt above watertable 2014
Major watertable contours (m), 2017
Minor watertable contours (m), 2017
N
W
E
S
Meters
0 250 500 1,000 1,500
Feet
0 500 1,000 2,000 3,000 4,000 5,000
Contour Interval: 20 Meters
20190122_SALDSdrainField_GWaterGradient_28x40_Rev3 02:04 PM 4/18/2019

ATTACHMENT G4 – SOILS DESCRIPTION



Attachment 3
19-ECD-0045
(88 Pages Excluding Cover Sheet)

WRPS-1901762 Enclosure 3, RPP-CALC-63043 Revision 00,
Effluent Treatment Facility and State-Approved Land Disposal Facility Sample Results 2016 to 2018 with Calculated Averages

WRPS-1901762
Enclosure 3
RPP-CALC-63043
Revision 00

Effluent Treatment Facility and State-Approved Land Disposal Facility Sample Results 2016 to 2018 with Calculated Averages

Prepared by

Mark W. Bowman
Washington River Protection Solutions LLC

Date Published
April 2019

Prepared for the U.S. Department of Energy
Office of River Protection

Contract No. DE-AC27-08RV14800

Approved for Public Release;
Further Dissemination Unlimited

TABLE OF CONTENTS

1.0 OBJECTIVE/PURPOSE....1
2.0 INPUT....1
3.0 ASSUMPTIONS....2
4.0 METHOD OF ANALYSES....2
4.1 DATA RETRIEVAL....2
4.2 DATA CONVERSION....2
4.3 DATA REVIEW....2
4.4 DATA CALCULATIONS....3
5.0 SOFTWARE USED....3
6.0 RESULTS....4
7.0 CONCLUSION....4
8.0 REFERENCES....4
APPENDIX A VERIFICATION TANK AND SALDS SAMPLE RESULTS....A-1
APPENDIX B CALCULATION CHECKLIST....B-1

LIST OF TABLES

Table 1 – Sample Results for the Verification Tank Discharge....6
Table 2 – Sample Results for the SALD Groundwater....10

1.0 OBJECTIVE/PURPOSE

The purpose of these calculations is to document sample data from the Effluent Treatment Facility (ETF) for submittal to the State of Washington, Department of Ecology (Ecology) as part of a renewal of the ETF discharge permit. Sample data from the effluent in the Verification Tanks and groundwater from wells at the State-Approved Land Disposal Site (SALDS) are included. Minimum, average, and maximum results for each constituent are calculated.

The ETF receives radioactive and mixed waste solutions from many sources on the Hanford Site. The waste is stored in the Liquid Effluent Retention Facility (LERF) prior to treatment at the ETF. The waste is treated by pH adjustment, filtration, ultraviolet oxidation, air stripping, reverse osmosis and ion exchange. The treated effluent is stored in three Verification Tanks where it is sampled prior to disposal at the SALDS. Two groundwater wells near the SALDS are also sampled for compliance.

Ecology issued the U.S. Department of Energy a State Waste Discharge Permit for ETF, ST0004500, which includes specific requirements for Verification Tank and SALDS sampling. The current permit was issued in 2015 and a permit renewal application is required in 2019. As part of renewal, sample results are submitted. The permit requires at least one year of data; however, due to the intermittent operation of ETF in 2018, three years of Verification Tank sample data are included.

2.0 INPUT

The primary input for these calculations is sample results downloaded from the Hanford Environmental Information System (HEIS), a database for environmental samples, including results of samples taken at ETF and SALDS. The HEIS database is an Oracle database (Hanford Information Systems Inventory (HISI) #139) managed by CH2M HILL Plateau Remediation Company (CHPRC).

The Verification Tanks are sampled at valve 60H-224 on the verification tank recirculation line. This sample location is referred to as Outfall #1 in permit ST0004500. The data chosen for this report is all tanks generated and discharged since ETF restarted in May 2016 after a long outage. The data ends with the last tank discharged in September 2018 just before another outage. Eighteen tanks were sampled during this time period. A list of tanks, sample dates, discharge dates, and sample anomalies are given in Appendix A, Table A-1. In some cases, tanks were sampled multiple times due to problems which rendered the samples invalid. Problems include improper preservation and missed hold times by the receiving laboratory. The complete list of Verification Tank sample results are provided in Appendix A, Table A-2.

Discharge volumes for the Verification Tanks are obtained from changes in tank level monitoring instruments. The Verification Tanks are discharged in batches that take about 2½ days to complete. The discharge start times, discharge stop times, and discharge volumes are recorded on data sheets by operating personnel during the transfers. The data from the data sheets are loaded into a utility calculation software spreadsheets (HISI #1818) where daily discharge volumes are calculated. The data is provided to Ecology in the quarterly discharge monitoring reports. The daily and monthly discharge volumes are given in Appendix A, Table A-4

The two groundwater wells at SALDS are 699-48-77C and 699-48-77D. These wells are sampled quarterly. All of the unfiltered results for 2018 are included in Appendix A, Table A-5. Some samples are filtered and analyzed for metals. These samples are taken to determine whether the contaminants are particulate or soluble. They are taken for information only and are not included in the discharge monitoring reports or in Table 2. pH, conductivity, and other data are obtained using field instruments

during each groundwater sampling event. This data is included in the discharge monitoring report. This data is provided in Table A-7.

3.0 ASSUMPTIONS

No assumptions were made in performing these calculations.

4.0 METHOD OF ANALYSES

4.1 DATA RETRIEVAL

The sample data was retrieved from HEIS using a Microsoft® Access®[1] query and downloaded into Microsoft® Excel®[2]. The query retrieves data on sample location or well number, sample number, constituent, sample result, units, sample date, and analytical method.

The quarterly discharge monitoring reports were retrieved and the field data was manually entered into the tables in Appendix A. All pH results were rounded to $\pm$ 0.1, as specified in the discharge permit.

4.2 DATA CONVERSION

Before performing the calculations, the data was reviewed for consistency. A column titled, "Converted Value," was inserted into the retrieved data in Appendix A. The values in this column are converted as discussed below.

The laboratory reported total suspended solids in unit of milligram per liter (mg/L). These results were converted to micrograms per liter (µg/L) by multiplying by 1000. This matches the units in the permit.

One laboratory reported phosphate as, "phosphorous in phosphate," and another laboratory reported "phosphate," (also called orthophosphate). It is necessary to convert them for consistent results. Since most of the data was reported as phosphate, the following conversion factor was applied to results:

To convert "P in PO4" to "PO4", multiply by: $$\frac{\text{Atomic Weight of PO4}}{\text{Atomic Weight of P}} = \frac{31.0 + (4 * 16.0)}{31.0} = 3.065$$

Where the atomic weight of phosphorous (P) and oxygen (O) are 31.0 and 16.0, respectively.

4.3 DATA REVIEW

Some constituents from four samples were rejected because the constituents were not handled per the quality requirement in 40 CFR 136. Three samples (B37RH3, B38J09, and B38JN7) had nitrate, nitrite, and phosphate rejected because their analyses was not completed within the 48-hour holding time specified in 40 CFR 136. The Verification Tank was resampled for these constituents. Note that the chloride, fluoride, and sulfate results from these samples are acceptable because their holding time is 28 days.

A review of the laboratory results for a fourth sample, B3CVC3, showed that the sample bottles had not been preserved on ice before shipment as required by 40 CFR 136. The laboratory is supposed to notify ETF when such a discrepancy occurs but failed to do so in this case. All the constituents that required preserving at temperature less than 6°C were rejected and the tank was resampled.

---

[1] Microsoft and Access are registered trademarks of Microsoft Corporation., Redmond, Washington.
[2] Excel is a registered trademark of Microsoft Corporation, Redmond, Washington.

Two data points were rejected because re-analysis confirmed the results were invalid. One Verification Tank sample had a specific conductance result of 47.8 µS/cm. The specific conductance is typically below 10 µS/cm. A rerun of the analysis gave a result of 5.38 µS/cm. The first result was not included in the reported data.

An analysis for one polychlorinated biphenyl (PCB), Aroclor-1254, had a detected result of 0.0536 µg/L. This was a surprise because only trace PCBs have been received into LERF/ETF. The Aroclor result had a laboratory qualifier of "P" which means the sample was split and run through two extract columns (a standard practice) and the results from the two columns did not match. A rerun of the analysis gave a result of < 0.0333 µg/L. This shows the first result was a false positive. The first result was not included in the reported data.

The ETF quality assurance plan requires field duplicates be performed at least every 20th sample set. At SALDS, a field duplicate is performed on one well each year. Field duplicates were performed on a Verification Tank sample on July 21, 2016 and on SALDS groundwater sample on October 30, 2018. In addition, some duplicate anion, ammonia, and PCB analyses were performed as discussed above. The results of the sample and field duplicate were compared, and the smaller value of the two was excluded from the calculations. Rejected and duplicate samples are flagged in a column in the, "Converted Value," column in Appendix A.

4.4 DATA CALCULATIONS

After the data was reviewed and adjusted as described above, the minimum, average, and maximum results were calculated and are presented in Table 1 and Table 2 below. The averaging was performed as follows:

- All results were used for averaging, including non-detected results (those having a "U" qualifier in Appendix A, Table A-2 and Table A-5).
- For non-detected results ("U" qualifier), the minimum detection limit is reported in Appendix A, Tables A-2 and A-5, and is used for calculating averages in Table 1 and Table 2. This differs from permit ST0004500, which says for calculating monthly averages, use one-half the detection level when averaging non-detected results with detected results.
- If all results were non-detected, a "U" qualifier was included in Tables 1 and 2. The average of the non-detected values is reported. This also differs from permit ST0004500, which says to report a zero value if all results in a reporting period were undetected.

The reason the techniques for calculating averages in permit ST0004500 were not used is because they produce odd results when used on many data points. For example, using one-half the detection level on two years of data may result in a calculated average that is lower than the minimum result. Also, when all results are undetected, reporting a zero value does not provide useful information.

The calculations were performed in Microsoft® Excel® using a pivot table, which automatically generates the minimum, average, and maximum values. The pivot table results are presented in Appendix A, Table A-3 and Table A-6.

5.0 SOFTWARE USED

Microsoft® Excel® 2016 was used for single-use spreadsheet calculations and to receive output from the HEIS database. The single-use spreadsheet file names are *Permit Revision-ETF Results 2016 to 2018.xlsx* and *Permit Revision-SALDS Wells 2018.xlsx*.

The HEIS database of environmental samples is registered in HISI with ID# 139. It is managed by CHPRC with *Environmental Data Integration - Software Management Plan*, HNF-28242, Revision 2.

6.0 RESULTS

The minimum, average, and maximum results for the Verification Tanks are given in Table 1. The minimum, average, and maximum results for the SALDS groundwater are given in Table 2. The data was copied from the pivot tables (Appendix A, Table A-3 and Table A-6).

7.0 CONCLUSION

A review of the results shows the primary constituents in the Verification Tank discharge to SALDS are ammonia, acetone, uranium, and tritium. All results were below the limits in permit ST0004500. The uranium concentrations are very low (all results are below 0.383 ug/L). Tritium is addressed in the SALDS groundwater monitoring program.

The SALDS groundwater contains many constituents which are present due to the leaching of constituents from the soil.

8.0 REFERENCES

Ecology, ST0004500 (ETF) Discharge Monitoring Reports, *Discharge Monitoring Reports Viewer*, *Permit and Reporting Information System*, State of Washington, Department of Ecology, Olympia, Washington. The specific links are:

June 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1588409
July 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1592697
August 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1598065
September 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1601441
October 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1605046
November 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1610638
December 2016: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1614053
January 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1617527
February 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1623352
March 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1626746
April 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1630269
May 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1635874
June 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1639541
July 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1643164
August 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1648940
September 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1652752
October 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1656504
November 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1662365
December 2017: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1666018
January to March 3018 (SALDS):
https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1671714
January 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1669792
February 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1675761
March 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1679429

April 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1683291

April to June 2018 (SALDS): https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1685082

May 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1689098

June 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1692890

July 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1696594

July to September 2018 (SALDS): https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1698485

August 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1702424

September 2018: https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1706139

October to December 2018 (SALDS): https://apps.ecology.wa.gov/webdmrview/ViewSubmittedDMR.aspx?id=1711709

HNF-28242, 2015, *Environmental Data Integration - Software Management Plan*, CH2M HILL Plateau Remediation Company, Richland, Washington.

ST0004500, 2014, *State Waste Discharge Permit Number ST0004500* (for ETF), State of Washington, Department of Ecology, Richland, Washington.

Table 1 – Sample Results for the Verification Tank Discharge

Constituent/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Discharge Flow			0	12,100	418,000	gal/day		9,604,000 gallons discharged over 28 months (794 days)
			0	343,000	1,640,000	gal/mo		
Bromide	7	0	< 63	< 66	< 67	ug/L	U	
Chloride	18	6	82.5	122	< 500	ug/L		Highest detected result is 100 ug/L
Fluoride	18	0	< 25	< 33	< 130	ug/L	U	
Nitrate (as N) (Nitrogen in nitrate)	18	0	< 14	< 23	< 70	ug/L	U	
Nitrite (as N) (Nitrogen in nitrite)	18	0	< 19	< 28	< 95	ug/L	U	
Phosphate	18	0	< 130	< 185	< 630	ug/L	U	
Sulfate	18	2	< 130	160	< 630	ug/L		Highest detected result is 165 ug/L
Cyanide	16	0	< 1.67	< 1.67	< 1.67	ug/L	U	
Ammonia (as N) (Nitrogen in ammonia)	16	15	< 17	87.7	310	ug/L		
Specific conductance	18	13	< 1.7	3.88	13.5	uS/cm		
Total dissolved solids	16	4	< 3400	6.66E+03	2.57E+04	ug/L		
Total suspended solids	16	0	< 570	< 921	< 1580	ug/L	U	
Aluminum	16	0	< 68	< 68	< 68	ug/L	U	
Antimony	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Arsenic	16	0	< 1.7	< 1.9	< 2.0	ug/L	U	
Barium	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Beryllium	16	0	< 0.20	< 0.20	< 0.20	ug/L	U	
Cadmium	16	0	< 0.11	< 0.25	< 0.30	ug/L	U	
Calcium	16	2	< 50	55.1	108	ug/L		
Chromium	16	1	< 1.0	1.04	1.60	ug/L		
Cobalt	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Copper	16	2	< 0.30	0.452	1.64	ug/L		
Iron	16	0	< 30	< 30	< 30	ug/L	U	
Lead	16	0	< 0.50	< 0.50	< 0.50	ug/L	U	
Magnesium	16	0	< 110	< 110	< 110	ug/L	U	
Manganese	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Mercury	16	0	< 0.067	< 0.067	< 0.067	ug/L	U	
Nickel	16	2	< 1.5	1.53	1.84	ug/L		
Potassium	16	3	< 50	55.5	108	ug/L		
Selenium	16	1	< 1.5	1.91	2.12	ug/L		
Silicon	16	0	< 25	< 25	< 25	ug/L	U	
Silver	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	

Table 1 – Sample Results for the Verification Tank Discharge

Constituent/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Sodium	16	0	< 100	< 100	< 100	ug/L	U	
Thallium	16	0	< 5.0	< 5.0	< 5.0	ug/L	U	
Titanium	16	1	< 1.0	1.00	1.02	ug/L		
Uranium	16	9	< 0.067	0.122	0.383	ug/L		
Vanadium	16	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Zinc	16	3	< 3.3	4.06	8.98	ug/L		
Total organic carbon	18	3	< 330	342	411	ug/L		
1,1,1-Trichloroethane	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1,2-Trichloroethane	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1-Dichloroethene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,2-Dichloroethane	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,4-Dichlorobenzene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1-Butanol	16	0	< 83.3	< 83.3	< 83.3	ug/L	U	
2-Butanone (Methyl ethyl ketone)	16	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Hexanone (Methyl n-butyl ketone)	16	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Pentanone (Methyl n-propyl ketone)	16	0	< 3.0	< 3.0	< 3.0	ug/L	U	
4-Methyl-2-pentanone (Methyl isobutyl ketone)	16	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Acetone	16	11	< 3.0	7.06	27.2	ug/L		
Acetonitrile	13	2	< 16.7	18.4	30.0	ug/L		
Acrylonitrile	3	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Benzene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Carbon disulfide	16	0	< 1.6	< 1.6	< 1.6	ug/L	U	
Carbon tetrachloride	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chlorobenzene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chloroform	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Methylene chloride	16	0	< 1.6	< 1.6	< 1.6	ug/L	U	
Tetrachloroethene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Tetrahydrofuran	16	1	< 1.5	1.63	3.55	ug/L		
Toluene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Trichloroethene	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Xylenes (total)	16	0	< 0.30	< 0.30	< 0.30	ug/L	U	
2,4,6-Trichlorophenol	2	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Butoxyethanol	12	0	< 5.4	< 5.4	< 5.4	ug/L	U	
4-Chloroaniline	2	0	< 3.3	< 3.3	< 3.3	ug/L	U	
Acetophenone	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Benzyl alcohol	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	

Table 1 – Sample Results for the Verification Tank Discharge

Constituent/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Bis(2-chloro-1-methylethyl)ether (Dichloroisopropyl ether)	2	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Carbazole	2	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chrysene	2	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Di-n-octylphthalate	16	0	< 0.30	< 2.4	< 4.17	ug/L	U	
Diphenylamine	2	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Hexachlorocyclopentadiene	2	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Hexachloroethane	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Isophorone	2	0	< 3.5	< 3.5	< 3.5	ug/L	U	
Naphthalene	16	0	< 0.30	< 0.31	< 0.417	ug/L	U	
n-Nitrosodimethylamine	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Phenol	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Pyridine	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Total cresols	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Tributyl phosphate	16	0	< 3.0	< 3.1	< 4.17	ug/L	U	
Gamma-BHC (Lindane)	2	0	< 0.00665	< 0.00679	< 0.00693	ug/L	U	
Hexachlorobenzene	2	0	< 0.00625	< 0.00638	< 0.00651	ug/L	U	
PCB Aroclor-1016	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1221	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1232	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1242	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1248	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1254	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
PCB Aroclor-1260	7	0	< 0.0333	< 0.0345	< 0.0358	ug/L	U	
Gross alpha	18	2	< 1.79	2.46	3.03	pCi/L		
Gross beta	18	1	< 2.07	5.08	46.1	pCi/L		
Tritium	16	16	8.17E+04	3.13E+05	8.48E+05	pCi/L		
Americium-241	16	0	< 0.207	< 0.404	< 0.723	pCi/L	U	
Antimony-125	16	0	< 10.2	< 23.8	< 46.5	pCi/L	U	
Cerium-144	16	0	< 28.1	< 45.5	< 65.6	pCi/L	U	
Cesium-134	16	0	< 4.32	< 10.2	< 19.5	pCi/L	U	
Cesium-137	16	0	< 4.48	< 9.15	< 15.3	pCi/L	U	
Cobalt-60	16	0	< 4.95	< 10.0	< 17.4	pCi/L	U	
Curium-243/244	16	0	< 0.174	< 0.383	< 0.693	pCi/L	U	
Europium-152	16	0	< 11.8	< 25.1	< 40.2	pCi/L	U	
Europium-154	16	0	< 13.9	< 28.1	< 45.8	pCi/L	U	
Europium-155	16	0	< 14.6	< 25.6	< 39.2	pCi/L	U	

Table 1 – Sample Results for the Verification Tank Discharge

Constituent/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Iodine-129	16	0	< 1.59	< 3.53	< 4.70	pCi/L	U	
Neptunium-237	16	0	< 0.156	< 0.502	< 0.838	pCi/L	U	
Niobium-94	16	0	< 4.20	< 9.33	< 16.5	pCi/L	U	
Plutonium-238	16	0	< 0.232	< 0.522	< 0.920	pCi/L	U	
Plutonium-239/240	16	0	< 0.351	< 0.619	< 0.899	pCi/L	U	
Praseodymium-144	16	0	< 382	< 703	< 1220	pCi/L	U	
Radium-226	16	4	< 0.247	0.739	1.99	pCi/L		
Ruthenium-103	16	0	< 4.54	< 9.37	< 17.6	pCi/L	U	
Ruthenium-106	16	0	< 36.6	< 74.9	< 134	pCi/L	U	
Strontium-90	16	1	< 1.50	3.71	< 7.42	pCi/L		Highest detected result is 3.77 pCi/L
Technetium-99	16	1	< 5.80	14.7	60.1	pCi/L		
Tin-113	16	0	< 5.37	< 10.8	< 17.3	pCi/L	U	
Zinc-65	16	0	< 9.36	< 20.6	< 44.4	pCi/L	U	

gal/day: gallons per day
gal/mo: gallons per month
pCi/L: picocuries per liter
ug/L: microgram per liter
uS/cm: micro Siemens per centimeter

Table 2 – Sample Results for the SALD Groundwater

Constituents/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Groundwater Well 699-48-77C								
pH	5	5	7.9	NA	8.1			Field readings
Specific conductance	5	5	206	215	229	uS/cm		Field readings
Temperature	5	5	18.7	19.7	22.8	oC		Field readings
Dissolved oxygen	5	5	9.32	9.56	9.74	mg/L		Field readings
Turbidity	5	5	0.80	2.64	4.40	NTU		Field readings
Depth to Groundwater	17	17	234.48	235.03	235.61	feet		Field readings
Bromide	4	1	< 63	67.8	82	ug/L		
Chloride	4	4	2100	2.68E+03	3.20E+03	ug/L		
Fluoride	4	4	340	358	390	ug/L		
Nitrate (as N) (Nitrogen in nitrate)	4	4	490	738	970	ug/L		
Nitrite (as N) (Nitrogen in nitrite)	4	2	< 19	22.3	27.0	ug/L		
Phosphate	4	0	< 130	< 130	< 130	ug/L	U	
Sulfate	4	4	7300	8.48E+03	9.40E+03	ug/L		
Alkalinity	4	4	9.64E+04	9.86E+04	1.01E+05	ug/L		
Bi-carbonate alkalinity	4	4	9.64E+04	9.86E+04	1.01E+05	ug/L		
Carbonate alkalinity	4	0	< 1450	< 1450	< 1450	ug/L	U	
Hydroxylion	4	0	< 1450	< 1450	< 1450	ug/L	U	
Total dissolved solids	4	4	1.50E+05	1.60E+05	1.70E+05	ug/L		
Aluminum	3	0	< 68	< 68	< 68	ug/L	U	
Antimony	3	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Arsenic	4	4	3.36	4.62	6.53	ug/L		
Barium	4	4	16.9	18.2	20.2	ug/L		
Beryllium	7	0	< 0.20	< 0.54	< 1.0	ug/L	U	
Cadmium	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Calcium	4	4	2.21E+04	2.27E+04	2.36E+04	ug/L		
Chromium	4	4	10.2	12.7	18.5	ug/L		
Cobalt	4	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Copper	4	4	0.360	0.591	1.05	ug/L		
Iron	4	4	32.7	76.0	99.8	ug/L		
Lead	4	0	< 0.50	< 0.50	< 0.50	ug/L	U	
Magnesium	4	4	7.36E+03	7.73E+03	8.36E+03	ug/L		
Manganese	4	2	< 2.0	2.18	2.41	ug/L		
Mercury	4	0	< 0.067	< 0.067	< 0.067	ug/L	U	
Nickel	4	4	4.66	8.43	11.2	ug/L		

Table 2 – Sample Results for the SALD Groundwater

Constituents/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Potassium	4	4	2.99E+03	3.12E+03	3.25E+03	ug/L		
Selenium	4	0	< 2.0	< 2.0	< 2.0	ug/L	U	
Silicon	4	4	1.81E+04	1.95E+04	2.04E+04	ug/L		
Silver	4	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Sodium	4	4	6.72E+03	6.95E+03	7.26E+03	ug/L		
Thallium	4	0	< 5.0	< 5.0	< 5.0	ug/L	U	
Titanium	3	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Uranium	4	4	0.390	0.406	0.428	ug/L		
Vanadium	4	4	34.3	37.2	40.4	ug/L		
Zinc	4	3	< 3.3	5.08	6.00	ug/L		
1,1,1-Trichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1,2-Trichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1-Dichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1-Dichloroethene	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,2-Dichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,2-Dichloroethene (Total)	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,4-Dichlorobenzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1-Butanol	4	0	< 83.3	< 83.3	< 83.3	ug/L	U	
2-Butanone (Methyl ethyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Hexanone (Methyl n-butyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Pentanone (Methyl n-propyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
4-Methyl-2-pentanone (Methyl isobutyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Acetone	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Acetonitrile	4	0	< 16.7	< 16.7	< 16.7	ug/L	U	
Benzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Bromodichloromethane	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Carbon disulfide	4	0	< 1.6	< 1.6	< 1.6	ug/L	U	
Carbon tetrachloride	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chlorobenzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chloroform	4	1	< 0.30	0.343	0.470	ug/L		
Ethyl cyanide (Propionitrile)	3	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Methylene chloride	4	1	< 1.6	4.03	11.3	ug/L		
Tetrachloroethene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Tetrahydrofuran	4	1	< 1.5	1.87	2.96	ug/L		
Toluene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	

Table 2 – Sample Results for the SALD Groundwater

Constituents/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Trichloroethene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Vinyl chloride	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Xylenes (total)	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Gross alpha	4	0	< 2.57	< 2.75	< 2.90	pCi/L	U	
Gross beta	4	4	2.44	3.46	4.38	pCi/L		
Strontium-90	4	0	< 1.08	< 1.50	< 1.96	pCi/L	U	
Tritium	5	5	4.26E+04	4.96E+04	5.60E+04	pCi/L		One additional sample was performed by another program
Groundwater Well 699-48-77D								
pH	4	4	8.0	NA	8.2			Field readings
Specific conductance	4	4	255	256	257	uS/cm		Field readings
Temperature	4	4	15.1	21.7	32.2	oC		Field readings
Dissolved oxygen	4	4	9.71	11.08	12.97	mg/L		Field readings
Turbidity	4	4	4.31	5.19	5.90	NTU		Field readings
Depth to Groundwater	16	16	233.50	234.14	236.91	feet		Field readings
Bromide	4	3	< 63	109	160	ug/L		
Chloride	4	4	3.70E+03	4.55E+03	4.90E+03	ug/L		
Fluoride	4	4	320	335	360	ug/L		
Nitrate (as N) (Nitrogen in nitrate)	4	4	510	548	580	ug/L		
Nitrite (as N) (Nitrogen in nitrite)	4	2	< 19	29	53	ug/L		
Phosphate	4	1	< 130	130	130	ug/L		
Sulfate	4	4	1.40E+04	1.53E+04	1.60E+04	ug/L		
Alkalinity	4	4	1.08E+05	1.10E+05	1.12E+05	ug/L		
Bi-carbonate alkalinity	4	4	1.08E+05	1.10E+05	1.12E+05	ug/L		
Carbonate alkalinity	4	0	< 1450	< 1450	< 1450	ug/L	U	
Hydroxylion	4	0	< 1450	< 1450	< 1450	ug/L	U	
Total dissolved solids	4	4	1.76E+05	1.78E+05	1.83E+05	ug/L		
Aluminum	4	2	< 68	494	1720	ug/L		
Antimony	3	0	< 1.0	< 1.0	< 1.0	ug/L	U	
Arsenic	4	4	4.13	5.61	7.82	ug/L		
Barium	4	4	13.6	15.1	16.4	ug/L		
Beryllium	7	0	< 0.20	< 0.54	< 1.0	ug/L	U	
Cadmium	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Calcium	4	4	2.40E+04	2.61E+04	2.78E+04	ug/L		
Chromium	4	4	13.6	19.3	26.5	ug/L		
Cobalt	4	0	< 1.0	< 1.0	< 1.0	ug/L	U	

Table 2 – Sample Results for the SALD Groundwater

Constituents/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Copper	4	4	0.518	0.941	1.56	ug/L		
Iron	4	4	76.0	199	350	ug/L		
Lead	4	0	< 0.50	< 0.50	< 0.50	ug/L	U	
Magnesium	4	4	9.35E+03	1.02E+04	1.12E+04	ug/L		
Manganese	4	3	< 2.0	3.13	4.96	ug/L		
Mercury	4	0	< 0.067	< 0.067	< 0.067	ug/L	U	
Nickel	4	4	8.69	13.7	17.7	ug/L		
Potassium	4	4	2.73E+03	2.97E+03	3.17E+03	ug/L		
Selenium	4	0	< 2.0	< 2.0	< 2.0	ug/L	U	
Silicon	4	4	1.83E+04	2.00E+04	2.19E+04	ug/L		
Silver	4	0	< 1.0	< 2.0	< 5.0	ug/L	U	
Sodium	4	4	7.77E+03	8.36E+03	9.02E+03	ug/L		
Thallium	4	0	< 5.0	< 5.0	< 5.0	ug/L	U	
Titanium	3	3	1.74	6.32	9.64	ug/L		
Uranium	4	4	0.844	0.873	0.959	ug/L		
Vanadium	4	4	35.4	39.3	42.1	ug/L		
Zinc	4	4	7.97	14.3	22.8	ug/L		
1,1,1-Trichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1,2-Trichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1-Dichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,1-Dichloroethene	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,2-Dichloroethane	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,2-Dichloroethene (Total)	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1,4-Dichlorobenzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
1-Butanol	4	0	< 83.3	< 83.3	< 83.3	ug/L	U	
2-Butanone (Methyl ethyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Hexanone (Methyl n-butyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
2-Pentanone (Methyl n-propyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
4-Methyl-2-pentanone (Methyl isobutyl ketone)	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Acetone	4	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Acetonitrile	4	0	< 16.7	< 16.7	1< 6.7	ug/L	U	
Benzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Bromodichloromethane	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Carbon disulfide	4	0	< 1.6	< 1.6	< 1.6	ug/L	U	
Carbon tetrachloride	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	

Table 2 – Sample Results for the SALD Groundwater

Constituents/ Measurement	Number of samples	Number of detected results	Minimum	Average	Maximum	Units	Undetected	Comments
Chlorobenzene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Chloroform	4	1	< 0.30	0.323	0.390	ug/L		
Ethyl cyanide (Propionitrile)	3	0	< 3.0	< 3.0	< 3.0	ug/L	U	
Methylene chloride	4	0	< 1.6	< 1.6	< 1.6	ug/L	U	
Tetrachloroethene	4	0	< 0.3	< 0.3	< 0.3	ug/L	U	
Tetrahydrofuran	4	1	< 1.5	1.81	2.73	ug/L		
Toluene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Trichloroethene	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Vinyl chloride	4	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Xylenes (total)	3	0	< 0.30	< 0.30	< 0.30	ug/L	U	
Gross alpha	4	0	< 2.29	< 2.67	< 2.82	pCi/L	U	
Gross beta	4	3	< 2.06	3.21	3.91	pCi/L		
Strontium-90	4	0	< 1.47	< 1.74	< 1.97	pCi/L	U	
Tritium	4	4	4.43E+04	5.14E+04	5.60E+04	pCi/L		

mg/L: milligram per liter
NTU: nephelometric turbidity units
pCi/L: picocuries per liter
ug/L: micrograms per liter
uS/cm: micro Siemens/centimeter
oC: degrees Celsius

APPENDIX A

VERIFICATION TANK AND SALDS SAMPLE RESULTS

Table A-1 List of Verification Tank Sampling Events

TANK	SAMPLE DATE(S)	DISCHARGE START DATE	ANALYSES SET	SAMPLE NUMBERS	COMMENTS
C	05/31/16	06/30/16	Per tank & Monthly & Delisting	B35KV2 B35KV3	
A	06/26/16	07/12/16	Per tank & Monthly	B36202 B36203 B36204 B35NB6 B35NB7	Inadvertantly pulled two "Per tank" sample sets. Samples B35NB6 and B36202 are duplicates (anions). Samples B35NB7 and B36203 are duplicates (cond, TOC, gross alpha/gross beta).
B	07/11/16	07/21/16	Per tank	B365T7 B365T8	
C	07/21/16	08/09/16	Per tank & Monthly	B367P3 B367P3DUP B367P4 B367P4DUP B367P5 B367P5DUP	Includes QC field duplicates (B367P3DUP, B367P4DUP, B367P5DUP are duplicates).
A	08/09/16	08/27/16	Per tank	B367P7 B367P8	
B	08/24/16	09/09/16	Per tank & Monthly	B36HK8 B36HK9 B36HKL0	
C	11/30/16, 12/20/16, 01/25/17, 02/14/17	02/16/17	Per tank & Monthly	B37RH3 B37RH4 B37RH5 B38757 B38J09 B38X68	B37RH3: Missed hold time for anions (nitrate/nitrite/ phosphate only). B37RH5: Canceled VOA because of headspace in bottles. B38757: Resampled on 12/20/16 for VOA. B38J09: Resampled on 1/25/17 for anions. Missed hold time for anions (nitrate/nitrite/phosphate only) B38JX8: Resampled on 2/14/17 for anions. Nitrate/nitrite/phosphate for B37RH3 and B38J09 were rejected for missed hold times. Chloride, flouride and sulfate for B37RH3, B38J09, and B39JX8 are duplicates (3 samples from one tank.)
A	12/28/16, 01/09/17	01/24/17	Per tank & Monthly	B38870 B38871 B38872 B38J10	B38872: Canceled ammonia and cyanide analyses because bottles did not have proper preservatives. B38J10: Resampled on 1/9/17 for ammonia and cyanide.
B	02/01/17, 03/06/17	03/29/17	Per tank & Monthly	B38JN7 B38JN8 B38JN9 B395B8	B39JN7: Missed hold time for anions (nitrate/nitrite/ phosphate only). B395B8: Resampled on 3/6/17 for anions. Nitrate/nitrite/phosphate for B38JN7 were rejected for missed hold times. Chloride, flouride and sulfate for B38JN7 and B395B8 are duplicates (2 samples from one tank). There was also a duplicate conductivity on these samples.

Table A-1 List of Verification Tank Sampling Events

TANK	SAMPLE DATE(S)	DISCHARGE START DATE	ANALYSES SET	SAMPLE NUMBERS	COMMENTS
A	02/22/17, 03/06/17	03/20/17	Per tank & Monthly	B38JP1 B38JP2 B38JP3 B395B9 B395C0 B395C1	B38JP1 and B38JP2: Canceled because bottles were not shipped at T < 6°C. B38JP3: Some bottles were not shipped at T < 6°C and were canceled: VOA, TDS, TSS, ammonia and cyanide. B395B9 and B395C0: Resampled on 3/6/17 replacing B38JP1 and B39JP2. B395C1: Resampled on 3/6/17 for VOA, TDS, TSS, ammonia and cyanide. Note that two different Verification Tanks were sampled on 3/6/17.
C	04/06/17	04/24/17	Per tank & Monthly	B39HT9 B39HV0 B39HV1	
A	7/26/17, 8/02/17	08/15/17	Per tank & Monthly	B3B7V1 B3B7V2 B3C1M8	B3B7V2: Canceled metals analysis because bottle did not have proper preservatives. B3C1M8: Resampled on 8/2/17 for metals.
B	08/15/17	09/29/17	Per tank & Monthly	B3C1F7 B3C1F8 B3C1F9	
A	9/20/17, 11/07/17	04/13/18	Per tank & Monthly & Delisting	B3CVC2 B3CVC3 B3FLK3	B3CVC3: Canceled analyses requiring T < 6°C because sample was not shipped at T < 6°C: TOC, TDS, TSS, CN, VOA, SVOA, PEST, PCBs. This wasn't discovered until results were posted. Bad samples were relabeled B3CVC3-RJCT. B3FLK3: Resampled analytes that required refrigeration.
C	04/17/18	07/14/18	Per tank & Monthly	B3JF31 B3JF32 B3JF33	B3JF32: Lab ran an ammonia on this sample though it was not requested. Ammonia on B3JF32 and B3JF33 are duplicates.
B	05/15/18	06/08/18	Per tank & Monthly	B3JKP8 B3JKP9 B3JKR0	
A	06/28/18	07/26/18	Per tank & Monthly	B3K434 B3K435 B3K436	
B	07/30/18	08/31/18	Per tank & Monthly	B3KHV4 B3KHV5 B3KHV6	B3KHV5: There was a detected result for a PCB Aroclor-1254 in the sample, with a "P" qualifier, indicating a sample error. B3KHV5-RR: A rerun was performed and no PCBs were detected. The first results was a false positive. B3KHV5 and B3KHV5-RR are duplicates for all other PCBs.

Tank: Verification tank numbers: 60H-TK-1A, -1B, and -1C. Tanks are alternately filled, sampled, and emptied.
Sample sets:
' Per tank: anions, conductivity, TOC, gross alpha, gross beta
' Monthly: VOA, SVOA, ammonia, TDS, TSS, cyanide, metals, and radionuclides
' Delisting: Same as per tank and monthly plus pesticides and PCBs.

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B35KV2	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Bromide	63	ug/L	
B367P3	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Bromide	63	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B38X68	24959-67-9	Bromide	67	ug/L	U	300.0_ANIONS_IC	14-Feb-17			ANIONS	Bromide	67	ug/L	
B395B9	24959-67-9	Bromide	67	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Bromide	67	ug/L	
B395B8	24959-67-9	Bromide	67	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Bromide	67	ug/L	
B39HT9	24959-67-9	Bromide	67	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Bromide	67	ug/L	
B3B7V1	24959-67-9	Bromide	67	ug/L	U	300.0_ANIONS_IC	26-Jul-17			ANIONS	Bromide	67	ug/L	
B35KV2	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Chloride	100	ug/L	
B36202	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Chloride	100	ug/L	B35NB6 and B36202 are duplicates
B35NB6	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Chloride	100	ug/L	
B367P3	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Chloride	100	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Chloride	100	ug/L	
B36HK8	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Chloride	100	ug/L	
B37RH3	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	30-Nov-16		X	ANIONS	Chloride	100	ug/L	B37RH3, B38J09, B39X68 are duplicates
B38870	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	28-Dec-16			ANIONS	Chloride	100	ug/L	
B38J09	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	25-Jan-17		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X68 are duplicates
B38JN7	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	01-Feb-17		X	ANIONS	Chloride	100	ug/L	B38JN7 and B395B8 are duplicates
B38X68	16887-00-6	Chloride	83.7	ug/L	B	300.0_ANIONS_IC	14-Feb-17		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X68 are duplicates
B395B9	16887-00-6	Chloride	100	ug/L	B	300.0_ANIONS_IC	06-Mar-17			ANIONS	Chloride	100	ug/L	
B395B8	16887-00-6	Chloride	80.1	ug/L	B	300.0_ANIONS_IC	06-Mar-17		X	ANIONS	(duplicate)	(duplicate)		B38JN7 and B395B8 are duplicates
B39HT9	16887-00-6	Chloride	82.5	ug/L	B	300.0_ANIONS_IC	06-Apr-17			ANIONS	Chloride	82.5	ug/L	
B3B7V1	16887-00-6	Chloride	107	ug/L	B	300.0_ANIONS_IC	26-Jul-17			ANIONS	Chloride	107	ug/L	
B3C1F7	16887-00-6	Chloride	500	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Chloride	500	ug/L	
B3CVC2	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Chloride	100	ug/L	
B3JF31	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Chloride	100	ug/L	
B3JKP8	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Chloride	100	ug/L	
B3K434	16887-00-6	Chloride	100	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Chloride	100	ug/L	
B3KHV4	16887-00-6	Chloride	100	ug/L	B	300.0_ANIONS_IC	30-Jul-18			ANIONS	Chloride	100	ug/L	
B35KV2	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Fluoride	25	ug/L	
B36202	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Fluoride	25	ug/L	B35NB6 and B36202 are duplicates
B35NB6	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Fluoride	25	ug/L	
B367P3	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Fluoride	25	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Fluoride	25	ug/L	
B36HK8	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Fluoride	25	ug/L	
B37RH3	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	30-Nov-16		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X69 are duplicates
B38870	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	28-Dec-16			ANIONS	Fluoride	25	ug/L	
B38J09	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	25-Jan-17		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X69 are duplicates
B38JN7	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	01-Feb-17		X	ANIONS	(duplicate)	(duplicate)		B38JN7 and B395B8 are duplicates
B38X68	16984-48-8	Fluoride	33	ug/L	U	300.0_ANIONS_IC	14-Feb-17		X	ANIONS	Fluoride	33	ug/L	B37RH3, B38J09, B39X69 are duplicates
B395B9	16984-48-8	Fluoride	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Fluoride	33	ug/L	
B395B8	16984-48-8	Fluoride	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17		X	ANIONS	Fluoride	33	ug/L	B38JN7 and B395B8 are duplicates
B39HT9	16984-48-8	Fluoride	33	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Fluoride	33	ug/L	
B3B7V1	16984-48-8	Fluoride	33	ug/L	U	300.0_ANIONS_IC	26-Jul-17			ANIONS	Fluoride	33	ug/L	
B3C1F7	16984-48-8	Fluoride	130	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Fluoride	130	ug/L	
B3CVC2	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Fluoride	25	ug/L	
B3JF31	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Fluoride	25	ug/L	
B3JKP8	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Fluoride	25	ug/L	
B3K434	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Fluoride	25	ug/L	
B3KHV4	16984-48-8	Fluoride	25	ug/L	U	300.0_ANIONS_IC	30-Jul-18			ANIONS	Fluoride	25	ug/L	
B35KV2	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Nitrogen in Nitrate	14	ug/L	
B36202	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Nitrogen in Nitrate	14	ug/L	B35NB6 and B36202 are duplicates

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B35NB6	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Nitrogen in Nitrate	14	ug/L	
B367P3	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Nitrogen in Nitrate	14	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Nitrogen in Nitrate	14	ug/L	
B36HK8	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Nitrogen in Nitrate	14	ug/L	
B37RH3	NO3-N	Nitrogen in Nitrate	16	ug/L	BZ	300.0_ANIONS_IC	30-Nov-16		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38870	NO3-N	Nitrogen in Nitrate	28	ug/L	UD	300.0_ANIONS_IC	28-Dec-16			ANIONS	Nitrogen in Nitrate	28	ug/L	
B38J09	NO3-N	Nitrogen in Nitrate	14	ug/L	UZ	300.0_ANIONS_IC	25-Jan-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38JN7	NO3-N	Nitrogen in Nitrate	14	ug/L	UZ	300.0_ANIONS_IC	01-Feb-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38X68	NO3-N	Nitrogen in Nitrate	33	ug/L	U	300.0_ANIONS_IC	14-Feb-17			ANIONS	Nitrogen in Nitrate	33	ug/L	
B395B9	NO3-N	Nitrogen in Nitrate	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Nitrogen in Nitrate	33	ug/L	
B395B8	NO3-N	Nitrogen in Nitrate	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Nitrogen in Nitrate	33	ug/L	B38JN7 and B395B8 are duplicates
B39HT9	NO3-N	Nitrogen in Nitrate	33	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Nitrogen in Nitrate	33	ug/L	
B3B7V1	NO3-N	Nitrogen in Nitrate	33	ug/L	U	300.0_ANIONS_IC	26-Jul-17			ANIONS	Nitrogen in Nitrate	33	ug/L	
B3C1F7	NO3-N	Nitrogen in Nitrate	70	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Nitrogen in Nitrate	70	ug/L	
B3CVC2	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Nitrogen in Nitrate	14	ug/L	
B3JF31	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Nitrogen in Nitrate	14	ug/L	
B3JKP8	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Nitrogen in Nitrate	14	ug/L	
B3K434	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Nitrogen in Nitrate	14	ug/L	
B3KHV4	NO3-N	Nitrogen in Nitrate	14	ug/L	U	300.0_ANIONS_IC	30-Jul-18			ANIONS	Nitrogen in Nitrate	14	ug/L	
B35KV2	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Nitrogen in Nitrite	19	ug/L	
B36202	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Nitrogen in Nitrite	19	ug/L	B35NB6 and B36202 are duplicates
B35NB6	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Nitrogen in Nitrite	19	ug/L	
B367P3	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Nitrogen in Nitrite	19	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Nitrogen in Nitrite	19	ug/L	
B36HK8	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Nitrogen in Nitrite	19	ug/L	
B37RH3	NO2-N	Nitrogen in Nitrite	19	ug/L	UZ	300.0_ANIONS_IC	30-Nov-16		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38870	NO2-N	Nitrogen in Nitrite	38	ug/L	UD	300.0_ANIONS_IC	28-Dec-16			ANIONS	Nitrogen in Nitrite	38	ug/L	
B38J09	NO2-N	Nitrogen in Nitrite	19	ug/L	UZ	300.0_ANIONS_IC	25-Jan-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38JN7	NO2-N	Nitrogen in Nitrite	19	ug/L	UZ	300.0_ANIONS_IC	01-Feb-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38X68	NO2-N	Nitrogen in Nitrite	33	ug/L	U	300.0_ANIONS_IC	14-Feb-17			ANIONS	Nitrogen in Nitrite	33	ug/L	
B395B9	NO2-N	Nitrogen in Nitrite	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Nitrogen in Nitrite	33	ug/L	
B395B8	NO2-N	Nitrogen in Nitrite	33	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Nitrogen in Nitrite	33	ug/L	B38JN7 and B395B8 are duplicates
B39HT9	NO2-N	Nitrogen in Nitrite	33	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Nitrogen in Nitrite	33	ug/L	
B3B7V1	NO2-N	Nitrogen in Nitrite	33	ug/L	U	300.0_ANIONS_IC	26-Jul-17			ANIONS	Nitrogen in Nitrite	33	ug/L	
B3C1F7	NO2-N	Nitrogen in Nitrite	95	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Nitrogen in Nitrite	95	ug/L	
B3CVC2	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Nitrogen in Nitrite	19	ug/L	
B3JF31	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Nitrogen in Nitrite	19	ug/L	
B3JKP8	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Nitrogen in Nitrite	19	ug/L	
B3K434	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Nitrogen in Nitrite	19	ug/L	
B3KHV4	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Jul-18			ANIONS	Nitrogen in Nitrite	19	ug/L	
B35KV2	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Phosphate	130	ug/L	
B36202	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Phosphate	130	ug/L	B35NB6 and B36202 are duplicates
B35NB6	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Phosphate	130	ug/L	
B367P3	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Phosphate	130	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Phosphate	130	ug/L	
B36HK8	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Phosphate	130	ug/L	
B37RH3	14265-44-2	Phosphate	130	ug/L	UZ	300.0_ANIONS_IC	30-Nov-16		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38870	14265-44-2	Phosphate	250	ug/L	UD	300.0_ANIONS_IC	28-Dec-16			ANIONS	Phosphate	250	ug/L	
B38J09	14265-44-2	Phosphate	130	ug/L	UZ	300.0_ANIONS_IC	25-Jan-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time
B38JN7	14265-44-2	Phosphate	130	ug/L	UZ	300.0_ANIONS_IC	01-Feb-17		R	ANIONS	(rejected)	(rejected)		Rejected - missed hold time

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3C1F7	14265-44-2	Phosphate	630	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Phosphate	630	ug/L	
B3CVC2	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Phosphate	130	ug/L	
B3JF31	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Phosphate	130	ug/L	
B3JKP8	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Phosphate	130	ug/L	
B3K434	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Phosphate	130	ug/L	
B3KHV4	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	30-Jul-18			ANIONS	Phosphate	130	ug/L	
B38X68	PO4-P	Phosphorus in phosphate	67	ug/L	U	300.0_ANIONS_IC	14-Feb-17			ANIONS	Phosphate	205	ug/L	
B395B9	PO4-P	Phosphorus in phosphate	67	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Phosphate	205	ug/L	
B395B8	PO4-P	Phosphorus in phosphate	67	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Phosphate	205	ug/L	B38JN7 and B395B8 are duplicates
B39HT9	PO4-P	Phosphorus in phosphate	67	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Phosphate	205	ug/L	
B3B7V1	PO4-P	Phosphorus in phosphate	67	ug/L	U	300.0_ANIONS_IC	26-Jul-17			ANIONS	Phosphate	205	ug/L	
B35KV2	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	31-May-16			ANIONS	Sulfate	130	ug/L	
B36202	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	Sulfate	130	ug/L	B35NB6 and B36202 are duplicates
B35NB6	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	26-Jun-16		X	ANIONS	(duplicate)	(duplicate)		B35NB6 and B36202 are duplicates
B365T7	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	11-Jul-16			ANIONS	Sulfate	130	ug/L	
B367P3	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	Sulfate	130	ug/L	B367P3 and B367P3DUP are duplicates
B367P3DUP	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	21-Jul-16		X	ANIONS	(duplicate)	(duplicate)		B367P3 and B367P3DUP are duplicates
B367P7	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	09-Aug-16			ANIONS	Sulfate	130	ug/L	
B36HK8	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	24-Aug-16			ANIONS	Sulfate	130	ug/L	
B37RH3	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	30-Nov-16		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X69 are duplicates
B38870	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	28-Dec-16			ANIONS	Sulfate	130	ug/L	
B38J09	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	25-Jan-17		X	ANIONS	(duplicate)	(duplicate)		B37RH3, B38J09, B39X69 are duplicates
B38JN7	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	01-Feb-17		X	ANIONS	(duplicate)	(duplicate)		B38JN7 and B395B8 are duplicates
B38X68	14808-79-8	Sulfate	133	ug/L	U	300.0_ANIONS_IC	14-Feb-17		X	ANIONS	Sulfate	133	ug/L	B37RH3, B38J09, B39X69 are duplicates
B395B9	14808-79-8	Sulfate	133	ug/L	U	300.0_ANIONS_IC	06-Mar-17			ANIONS	Sulfate	133	ug/L	
B395B8	14808-79-8	Sulfate	133	ug/L	U	300.0_ANIONS_IC	06-Mar-17		X	ANIONS	Sulfate	133	ug/L	B38JN7 and B395B8 are duplicates
B39HT9	14808-79-8	Sulfate	133	ug/L	U	300.0_ANIONS_IC	06-Apr-17			ANIONS	Sulfate	133	ug/L	
B3B7V1	14808-79-8	Sulfate	165	ug/L	B	300.0_ANIONS_IC	26-Jul-17			ANIONS	Sulfate	165	ug/L	
B3C1F7	14808-79-8	Sulfate	630	ug/L	UD	300.0_ANIONS_IC	15-Aug-17			ANIONS	Sulfate	630	ug/L	
B3CVC2	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	20-Sep-17			ANIONS	Sulfate	130	ug/L	
B3JF31	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	17-Apr-18			ANIONS	Sulfate	130	ug/L	
B3JKP8	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	15-May-18			ANIONS	Sulfate	130	ug/L	
B3K434	14808-79-8	Sulfate	130	ug/L	U	300.0_ANIONS_IC	28-Jun-18			ANIONS	Sulfate	130	ug/L	
B3KHV4	14808-79-8	Sulfate	130	ug/L	B	300.0_ANIONS_IC	30-Jul-18			ANIONS	Sulfate	130	ug/L	
B35KV3	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	31-May-16			INORG	Specific Conductance	3.63	uS/cm	
B36203	CONDUCT	Specific Conductance	3.31	uS/cm		120.1_CONDUCT	26-Jun-16		X	INORG	Specific Conductance	3.31	uS/cm	B35NB7 and B36203 are duplicates
B35NB7	CONDUCT	Specific Conductance	2.60	uS/cm		120.1_CONDUCT	26-Jun-16		X	INORG	(duplicate)	(duplicate)		B35NB7 and B36203 are duplicates
B365T8	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	11-Jul-16			INORG	Specific Conductance	3.63	uS/cm	
B367P4	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	21-Jul-16		X	INORG	Specific Conductance	3.63	uS/cm	B367P4 and B367P4DUP are duplicates
B367P4DUP	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	21-Jul-16		X	INORG	(duplicate)	(duplicate)		B367P4 and B367P4DUP are duplicates
B367P8	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	09-Aug-16			INORG	Specific Conductance	3.63	uS/cm	
B36HK9	CONDUCT	Specific Conductance	3.63	uS/cm	U	120.1_CONDUCT	24-Aug-16			INORG	Specific Conductance	3.63	uS/cm	
B37RH4	CONDUCT	Specific Conductance	7.30	uS/cm		120.1_CONDUCT	30-Nov-16			INORG	Specific Conductance	7.30	uS/cm	
B38871	CONDUCT	Specific Conductance	3.15	uS/cm		120.1_CONDUCT	28-Dec-16			INORG	Specific Conductance	3.15	uS/cm	
B38JN8	CONDUCT	Specific Conductance	13.5	uS/cm		120.1_CONDUCT	01-Feb-17			INORG	Specific Conductance	13.5	uS/cm	B38JN8 and B395B8 are duplicates (conductivity only)
B395C0	CONDUCT	Specific Conductance	1.70	uS/cm		120.1_CONDUCT	06-Mar-17			INORG	Specific Conductance	1.70	uS/cm	
B395B8	CONDUCT	Specific Conductance	47.8	uS/cm		120.1_CONDUCT	06-Mar-17		R	INORG	(rejected)	(rejected)		Rejected for cause
B395B8-RERUN	CONDUCT	Specific Conductance	5.37	uS/cm		120.1_CONDUCT	06-Mar-17			INORG	(duplicate)	(duplicate)		B38JN8 and B395B8 are duplicates (conductivity only)
B39HT9	CONDUCT	Specific Conductance	2.74	uS/cm		120.1_CONDUCT	06-Apr-17			INORG	Specific Conductance	2.74	uS/cm	
B3B7V1	CONDUCT	Specific Conductance	3.58	uS/cm		120.1_CONDUCT	26-Jul-17			INORG	Specific Conductance	3.58	uS/cm	
B3C1F8	CONDUCT	Specific Conductance	3.69	uS/cm		120.1_CONDUCT	15-Aug-17			INORG	Specific Conductance	3.69	uS/cm	
B3CVC3-RJCT	CONDUCT	Specific Conductance	5.3	uS/cm		120.1_CONDUCT	20-Sep-17		R	INORG	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	CONDUCT	Specific Conductance	3.52	uS/cm		120.1_CONDUCT	07-Nov-17			INORG	Specific Conductance	3.52	uS/cm	
B3JF32	CONDUCT	Specific Conductance	2.66	uS/cm		120.1_CONDUCT	17-Apr-18			INORG	Specific Conductance	2.66	uS/cm	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3JKP9	CONDUCT	Specific Conductance	2.44	uS/cm		120.1_CONDUCT	15-May-18			INORG	Specific Conductance	2.44	uS/cm	
B3K435	CONDUCT	Specific Conductance	2.28	uS/cm		120.1_CONDUCT	28-Jun-18			INORG	Specific Conductance	2.28	uS/cm	
B3KHV5	CONDUCT	Specific Conductance	1.79	uS/cm		120.1_CONDUCT	30-Jul-18			INORG	Specific Conductance	1.79	uS/cm	
B35KV3	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	31-May-16			INORG	Total dissolved solids	3400	ug/L	
B36204	TDS	Total dissolved solids	25700	ug/L		2540C_TDS	26-Jun-16			INORG	Total dissolved solids	25700	ug/L	
B367P5	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	21-Jul-16		X	INORG	Total dissolved solids	3400	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	21-Jul-16		X	INORG	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	TDS	Total dissolved solids	5710	ug/L	B	2540C_TDS	24-Aug-16			INORG	Total dissolved solids	5710	ug/L	
B37RH5	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	30-Nov-16			INORG	Total dissolved solids	3400	ug/L	
B38872	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	28-Dec-16			INORG	Total dissolved solids	3400	ug/L	
B38JN9	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	01-Feb-17			INORG	Total dissolved solids	3400	ug/L	
B395C1	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	06-Mar-17			INORG	Total dissolved solids	3400	ug/L	
B39HV0	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	06-Apr-17			INORG	Total dissolved solids	3400	ug/L	
B3B7V2	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	26-Jul-17			INORG	Total dissolved solids	3400	ug/L	
B3C1F9	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	15-Aug-17			INORG	Total dissolved solids	3400	ug/L	
B3CVC3-RJCT	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	20-Sep-17		R	INORG	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	07-Nov-17			INORG	Total dissolved solids	3400	ug/L	
B3JF33	TDS	Total dissolved solids	25700	ug/L	C	2540C_TDS	17-Apr-18			INORG	Total dissolved solids	25700	ug/L	
B3JKR0	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	15-May-18			INORG	Total dissolved solids	3400	ug/L	
B3K436	TDS	Total dissolved solids	3400	ug/L	U	2540C_TDS	28-Jun-18			INORG	Total dissolved solids	3400	ug/L	
B3KHV6	TDS	Total dissolved solids	8570	ug/L	B	2540C_TDS	30-Jul-18			INORG	Total dissolved solids	8570	ug/L	
B35KV3	TSS	Total suspended solids	1.14	mg/L	U	2540D_TSS	31-May-16			INORG	Total suspended solids	1140	ug/L	
B36204	TSS	Total suspended solids	0.76	mg/L	U	2540D_TSS	26-Jun-16			INORG	Total suspended solids	760	ug/L	
B367P5	TSS	Total suspended solids	1.58	mg/L	U	2540D_TSS	21-Jul-16		X	INORG	Total suspended solids	1580	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	TSS	Total suspended solids	0.655	mg/L	U	2540D_TSS	21-Jul-16		X	INORG	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	TSS	Total suspended solids	1.43	mg/L	U	2540D_TSS	24-Aug-16			INORG	Total suspended solids	1430	ug/L	
B37RH5	TSS	Total suspended solids	1.14	mg/L	U	2540D_TSS	30-Nov-16			INORG	Total suspended solids	1140	ug/L	
B38872	TSS	Total suspended solids	0.57	mg/L	U	2540D_TSS	28-Dec-16			INORG	Total suspended solids	570	ug/L	
B38JN9	TSS	Total suspended solids	1.27	mg/L	U	2540D_TSS	01-Feb-17			INORG	Total suspended solids	1270	ug/L	
B395C1	TSS	Total suspended solids	0.57	mg/L	U	2540D_TSS	06-Mar-17			INORG	Total suspended solids	570	ug/L	
B39HV0	TSS	Total suspended solids	0.57	mg/L	U	2540D_TSS	06-Apr-17			INORG	Total suspended solids	570	ug/L	
B3B7V2	TSS	Total suspended solids	0.57	mg/L	U	2540D_TSS	26-Jul-17			INORG	Total suspended solids	570	ug/L	
B3C1F9	TSS	Total suspended solids	0.57	mg/L	U	2540D_TSS	15-Aug-17			INORG	Total suspended solids	570	ug/L	
B3CVC3-RJCT	TSS	Total suspended solids	613	ug/L	U	2540D_TSS	20-Sep-17		R	INORG	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	TSS	Total suspended solids	570	ug/L	U	2540D_TSS	07-Nov-17			INORG	Total suspended solids	570	ug/L	
B3JF33	TSS	Total suspended solids	0.633	mg/L	U	2540D_TSS	17-Apr-18			INORG	Total suspended solids	633	ug/L	
B3JKR0	TSS	Total suspended solids	1.36	mg/L	U	2540D_TSS	15-May-18			INORG	Total suspended solids	1360	ug/L	
B3K436	TSS	Total suspended solids	0.671	mg/L	U	2540D_TSS	28-Jun-18			INORG	Total suspended solids	671	ug/L	
B3KHV6	TSS	Total suspended solids	1.33	mg/L	U	2540D_TSS	30-Jul-18			INORG	Total suspended solids	1330	ug/L	
B35KV3	NH3-N	Nitrogen in ammonia	154	ug/L		350.1_AMMONIA	31-May-16			INORG	Nitrogen in ammonia	154	ug/L	
B36204	NH3-N	Nitrogen in ammonia	26.1	ug/L	B	350.1_AMMONIA	26-Jun-16			INORG	Nitrogen in ammonia	26.1	ug/L	
B367P5	NH3-N	Nitrogen in ammonia	80.8	ug/L	CN	350.1_AMMONIA	21-Jul-16		X	INORG	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	NH3-N	Nitrogen in ammonia	94.4	ug/L	CN	350.1_AMMONIA	21-Jul-16		X	INORG	Nitrogen in ammonia	94.4	ug/L	B367P5 and B367P5DUP are duplicates
B36HL0	NH3-N	Nitrogen in ammonia	40.2	ug/L	BCN	350.1_AMMONIA	24-Aug-16			INORG	Nitrogen in ammonia	40.2	ug/L	
B37RH5	NH3-N	Nitrogen in ammonia	198	ug/L		350.1_AMMONIA	30-Nov-16			INORG	Nitrogen in ammonia	198	ug/L	
B38J10	NH3-N	Nitrogen in ammonia	64.2	ug/L	C	350.1_AMMONIA	09-Jan-17			INORG	Nitrogen in ammonia	64.2	ug/L	
B38JN9	NH3-N	Nitrogen in ammonia	40.9	ug/L	BN	350.1_AMMONIA	01-Feb-17			INORG	Nitrogen in ammonia	40.9	ug/L	
B395C1	NH3-N	Nitrogen in ammonia	47.4	ug/L	BCN	350.1_AMMONIA	06-Mar-17			INORG	Nitrogen in ammonia	47.4	ug/L	
B39HV0	NH3-N	Nitrogen in ammonia	66.3	ug/L		350.1_AMMONIA	06-Apr-17			INORG	Nitrogen in ammonia	66.3	ug/L	
B3B7V2	NH3-N	Nitrogen in ammonia	63.4	ug/L		350.1_AMMONIA	26-Jul-17			INORG	Nitrogen in ammonia	63.4	ug/L	
B3C1F9	NH3-N	Nitrogen in ammonia	102	ug/L		350.1_AMMONIA	15-Aug-17			INORG	Nitrogen in ammonia	102	ug/L	
B3CVC3-RJCT	NH3-N	Nitrogen in ammonia	22.5	ug/L	B	350.1_AMMONIA	20-Sep-17		R	INORG	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	NH3-N	Nitrogen in ammonia	53.0	ug/L		350.1_AMMONIA	07-Nov-17			INORG	Nitrogen in ammonia	53.0	ug/L	
B3JF32	NH3-N	Nitrogen in ammonia	310	ug/L		350.1_AMMONIA	17-Apr-18		X	INORG	Nitrogen in ammonia	310	ug/L	B3JF32 and B3JF33 are duplicates (ammonia only)

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3JF33	NH3-N	Nitrogen in ammonia	49.9	ug/L	B	350.1_AMMONIA	17-Apr-18		X	INORG	(duplicate)	(duplicate)		B3JF32 and B3JF33 are duplicates (ammonia only)
B3JKR0	NH3-N	Nitrogen in ammonia	17	ug/L	U	350.1_AMMONIA	15-May-18			INORG	Nitrogen in ammonia	17	ug/L	
B3K436	NH3-N	Nitrogen in ammonia	65.0	ug/L	C	350.1_AMMONIA	28-Jun-18			INORG	Nitrogen in ammonia	65.0	ug/L	
B3KHV6	NH3-N	Nitrogen in ammonia	62.0	ug/L	C	350.1_AMMONIA	30-Jul-18			INORG	Nitrogen in ammonia	62.0	ug/L	
B35KV3	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	31-May-16			INORG	Cyanide	1.67	ug/L	
B36204	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	26-Jun-16			INORG	Cyanide	1.67	ug/L	
B367P5	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	21-Jul-16		X	INORG	Cyanide	1.67	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	21-Jul-16		X	INORG	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	24-Aug-16			INORG	Cyanide	1.67	ug/L	
B37RH5	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	30-Nov-16			INORG	Cyanide	1.67	ug/L	
B38J10	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	09-Jan-17			INORG	Cyanide	1.67	ug/L	
B38JN9	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	01-Feb-17			INORG	Cyanide	1.67	ug/L	
B395C1	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	06-Mar-17			INORG	Cyanide	1.67	ug/L	
B39HV0	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	06-Apr-17			INORG	Cyanide	1.67	ug/L	
B3B7V2	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	26-Jul-17			INORG	Cyanide	1.67	ug/L	
B3C1F9	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	15-Aug-17			INORG	Cyanide	1.67	ug/L	
B3CVC3-RJCT	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	20-Sep-17		R	INORG	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	07-Nov-17			INORG	Cyanide	1.67	ug/L	
B3JF33	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	17-Apr-18			INORG	Cyanide	1.67	ug/L	
B3JKR0	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	15-May-18			INORG	Cyanide	1.67	ug/L	
B3K436	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	28-Jun-18			INORG	Cyanide	1.67	ug/L	
B3KHV6	57-12-5	Cyanide	1.67	ug/L	U	9012_CYANIDE	30-Jul-18			INORG	Cyanide	1.67	ug/L	
B35KV3	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Antimony	1	ug/L	
B36204	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Antimony	1	ug/L	
B367P5	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Antimony	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Antimony	1	ug/L	
B37RH5	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Antimony	1	ug/L	
B38872	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Antimony	1	ug/L	
B38JN9	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Antimony	1	ug/L	
B38JP3	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Antimony	1	ug/L	
B39HV0	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Antimony	1	ug/L	
B3C1M8	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Antimony	1	ug/L	
B3C1F9	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Antimony	1	ug/L	
B3CVC3	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Antimony	1.0	ug/L	
B3JF33	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Antimony	1	ug/L	
B3JKR0	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Antimony	1	ug/L	
B3K436	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Antimony	1	ug/L	
B3KHV6	7440-36-0	Antimony	1.0	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Antimony	1	ug/L	
B35KV3	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Arsenic	1.7	ug/L	
B36204	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Arsenic	1.7	ug/L	
B367P5	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Arsenic	1.7	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Arsenic	1.7	ug/L	
B37RH5	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Arsenic	1.7	ug/L	
B38872	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Arsenic	1.7	ug/L	
B38JN9	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Arsenic	1.7	ug/L	
B38JP3	7440-38-2	Arsenic	1.7	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Arsenic	1.7	ug/L	
B39HV0	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Arsenic	2	ug/L	
B3C1M8	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Arsenic	2	ug/L	
B3C1F9	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Arsenic	2	ug/L	
B3CVC3	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Arsenic	2.0	ug/L	
B3JF33	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Arsenic	2	ug/L	
B3JKR0	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Arsenic	2	ug/L	
B3K436	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Arsenic	2	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3KHV6	7440-38-2	Arsenic	2.0	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Arsenic	2	ug/L	
B35KV3	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Beryllium	0.2	ug/L	
B36204	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Beryllium	0.2	ug/L	
B367P5	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Beryllium	0.2	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Beryllium	0.2	ug/L	
B37RH5	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Beryllium	0.2	ug/L	
B38872	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Beryllium	0.2	ug/L	
B38JN9	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Beryllium	0.2	ug/L	
B38JP3	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Beryllium	0.2	ug/L	
B39HV0	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Beryllium	0.2	ug/L	
B3C1M8	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Beryllium	0.2	ug/L	
B3C1F9	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Beryllium	0.2	ug/L	
B3CVC3	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Beryllium	0.20	ug/L	
B3JF33	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Beryllium	0.2	ug/L	
B3JKR0	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Beryllium	0.2	ug/L	
B3K436	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Beryllium	0.2	ug/L	
B3KHV6	7440-41-7	Beryllium	0.20	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Beryllium	0.2	ug/L	
B35KV3	7440-43-9	Cadmium	0.11	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Cadmium	0.11	ug/L	
B36204	7440-43-9	Cadmium	0.11	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Cadmium	0.11	ug/L	
B367P5	7440-43-9	Cadmium	0.11	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Cadmium	0.11	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-43-9	Cadmium	0.11	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-43-9	Cadmium	0.11	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Cadmium	0.11	ug/L	
B37RH5	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Cadmium	0.3	ug/L	
B38872	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Cadmium	0.3	ug/L	
B38JN9	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Cadmium	0.3	ug/L	
B38JP3	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Cadmium	0.3	ug/L	
B39HV0	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Cadmium	0.3	ug/L	
B3C1M8	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Cadmium	0.3	ug/L	
B3C1F9	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Cadmium	0.3	ug/L	
B3CVC3	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Cadmium	0.30	ug/L	
B3JF33	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Cadmium	0.3	ug/L	
B3JKR0	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Cadmium	0.3	ug/L	
B3K436	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Cadmium	0.3	ug/L	
B3KHV6	7440-43-9	Cadmium	0.30	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Cadmium	0.3	ug/L	
B35KV3	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Copper	0.35	ug/L	
B36204	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Copper	0.35	ug/L	
B367P5	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Copper	0.35	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Copper	0.35	ug/L	
B37RH5	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Copper	0.35	ug/L	
B38872	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Copper	0.35	ug/L	
B38JN9	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Copper	0.35	ug/L	
B38JP3	7440-50-8	Copper	0.35	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Copper	0.35	ug/L	
B39HV0	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Copper	0.3	ug/L	
B3C1M8	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Copper	0.3	ug/L	
B3C1F9	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Copper	0.3	ug/L	
B3CVC3	7440-50-8	Copper	1.64	ug/L		200.8_METALS_ICPMS	20-Sep-17			METALS	Copper	1.64	ug/L	
B3JF33	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Copper	0.3	ug/L	
B3JKR0	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Copper	0.3	ug/L	
B3K436	7440-50-8	Copper	0.99	ug/L	B	200.8_METALS_ICPMS	28-Jun-18			METALS	Copper	0.99	ug/L	
B3KHV6	7440-50-8	Copper	0.30	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Copper	0.3	ug/L	
B35KV3	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Lead	0.5	ug/L	
B36204	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Lead	0.5	ug/L	
B367P5	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Lead	0.5	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B36HL0	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Lead	0.5	ug/L	
B37RH5	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Lead	0.5	ug/L	
B38872	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Lead	0.5	ug/L	
B38JN9	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Lead	0.5	ug/L	
B38JP3	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Lead	0.5	ug/L	
B39HV0	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Lead	0.5	ug/L	
B3C1M8	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Lead	0.5	ug/L	
B3C1F9	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Lead	0.5	ug/L	
B3CVC3	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Lead	0.5	ug/L	
B3JF33	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Lead	0.5	ug/L	
B3JKR0	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Lead	0.5	ug/L	
B3K436	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Lead	0.5	ug/L	
B3KHV6	7439-92-1	Lead	0.50	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Lead	0.5	ug/L	
B35KV3	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Manganese	1	ug/L	
B36204	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Manganese	1	ug/L	
B367P5	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Manganese	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Manganese	1	ug/L	
B37RH5	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Manganese	1	ug/L	
B38872	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Manganese	1	ug/L	
B38JN9	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Manganese	1	ug/L	
B38JP3	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Manganese	1	ug/L	
B39HV0	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Manganese	1	ug/L	
B3C1M8	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Manganese	1	ug/L	
B3C1F9	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Manganese	1	ug/L	
B3CVC3	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Manganese	1.0	ug/L	
B3JF33	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Manganese	1	ug/L	
B3JKR0	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Manganese	1	ug/L	
B3K436	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Manganese	1	ug/L	
B3KHV6	7439-96-5	Manganese	1.0	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Manganese	1	ug/L	
B35KV3	7782-49-2	Selenium	1.5	ug/L	U	200.8_METALS_ICPMS	31-May-16			METALS	Selenium	1.5	ug/L	
B36204	7782-49-2	Selenium	1.5	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Selenium	1.5	ug/L	
B367P5	7782-49-2	Selenium	1.5	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	Selenium	1.5	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7782-49-2	Selenium	1.5	ug/L	U	200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7782-49-2	Selenium	2.12	ug/L	B	200.8_METALS_ICPMS	24-Aug-16			METALS	Selenium	2.12	ug/L	
B37RH5	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	30-Nov-16			METALS	Selenium	2	ug/L	
B38872	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Selenium	2	ug/L	
B38JN9	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	01-Feb-17			METALS	Selenium	2	ug/L	
B38JP3	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	22-Feb-17			METALS	Selenium	2	ug/L	
B39HV0	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	06-Apr-17			METALS	Selenium	2	ug/L	
B3C1M8	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	02-Aug-17			METALS	Selenium	2	ug/L	
B3C1F9	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	15-Aug-17			METALS	Selenium	2	ug/L	
B3CVC3	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	20-Sep-17			METALS	Selenium	2.0	ug/L	
B3JF33	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Selenium	2	ug/L	
B3JKR0	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Selenium	2	ug/L	
B3K436	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Selenium	2	ug/L	
B3KHV6	7782-49-2	Selenium	2.0	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Selenium	2	ug/L	
B35KV3	7440-61-1	Uranium	0.072	ug/L	B	200.8_METALS_ICPMS	31-May-16			METALS	Uranium	0.072	ug/L	
B36204	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	26-Jun-16			METALS	Uranium	0.067	ug/L	
B367P5	7440-61-1	Uranium	0.304	ug/L		200.8_METALS_ICPMS	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-61-1	Uranium	0.330	ug/L		200.8_METALS_ICPMS	21-Jul-16		X	METALS	Uranium	0.330	ug/L	B367P5 and B367P5DUP are duplicates
B36HL0	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	24-Aug-16			METALS	Uranium	0.067	ug/L	
B37RH5	7440-61-1	Uranium	0.139	ug/L	B	200.8_METALS_ICPMS	30-Nov-16			METALS	Uranium	0.139	ug/L	
B38872	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	28-Dec-16			METALS	Uranium	0.067	ug/L	
B38JN9	7440-61-1	Uranium	0.383	ug/L		200.8_METALS_ICPMS	01-Feb-17			METALS	Uranium	0.383	ug/L	
B38JP3	7440-61-1	Uranium	0.154	ug/L	B	200.8_METALS_ICPMS	22-Feb-17			METALS	Uranium	0.154	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B39HV0	7440-61-1	Uranium	0.128	ug/L	B	200.8_METALS_ICPMS	06-Apr-17			METALS	Uranium	0.128	ug/L	
B3C1M8	7440-61-1	Uranium	0.132	ug/L	B	200.8_METALS_ICPMS	02-Aug-17			METALS	Uranium	0.132	ug/L	
B3C1F9	7440-61-1	Uranium	0.080	ug/L	B	200.8_METALS_ICPMS	15-Aug-17			METALS	Uranium	0.080	ug/L	
B3CVC3	7440-61-1	Uranium	0.070	ug/L	B	200.8_METALS_ICPMS	20-Sep-17			METALS	Uranium	0.070	ug/L	
B3JF33	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	17-Apr-18			METALS	Uranium	0.067	ug/L	
B3JKR0	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	15-May-18			METALS	Uranium	0.067	ug/L	
B3K436	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	28-Jun-18			METALS	Uranium	0.067	ug/L	
B3KHV6	7440-61-1	Uranium	0.067	ug/L	U	200.8_METALS_ICPMS	30-Jul-18			METALS	Uranium	0.067	ug/L	
B35KV3	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	31-May-16			METALS	Mercury	0.067	ug/L	
B36204	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	26-Jun-16			METALS	Mercury	0.067	ug/L	
B367P5	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	21-Jul-16		X	METALS	Mercury	0.067	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	24-Aug-16			METALS	Mercury	0.067	ug/L	
B37RH5	7439-97-6	Mercury	0.067	ug/L	U*	245.1_HG_CVAA	30-Nov-16			METALS	Mercury	0.067	ug/L	
B38872	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	28-Dec-16			METALS	Mercury	0.067	ug/L	
B38JN9	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	01-Feb-17			METALS	Mercury	0.067	ug/L	
B38JP3	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	22-Feb-17			METALS	Mercury	0.067	ug/L	
B39HV0	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	06-Apr-17			METALS	Mercury	0.067	ug/L	
B3C1M8	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	02-Aug-17			METALS	Mercury	0.067	ug/L	
B3C1F9	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	15-Aug-17			METALS	Mercury	0.067	ug/L	
B3CVC3	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	20-Sep-17			METALS	Mercury	0.067	ug/L	
B3JF33	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	17-Apr-18			METALS	Mercury	0.067	ug/L	
B3JKR0	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	15-May-18			METALS	Mercury	0.067	ug/L	
B3K436	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	28-Jun-18			METALS	Mercury	0.067	ug/L	
B3KHV6	7439-97-6	Mercury	0.067	ug/L	U	245.1_HG_CVAA	30-Jul-18			METALS	Mercury	0.067	ug/L	
B35KV3	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Aluminum	68	ug/L	
B36204	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Aluminum	68	ug/L	
B367P5	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Aluminum	68	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Aluminum	68	ug/L	
B37RH5	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Aluminum	68	ug/L	
B38872	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Aluminum	68	ug/L	
B38JN9	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Aluminum	68	ug/L	
B38JP3	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Aluminum	68	ug/L	
B39HV0	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Aluminum	68	ug/L	
B3C1M8	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Aluminum	68	ug/L	
B3C1F9	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Aluminum	68	ug/L	
B3CVC3	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Aluminum	68	ug/L	
B3JF33	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Aluminum	68	ug/L	
B3JKR0	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Aluminum	68	ug/L	
B3K436	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Aluminum	68	ug/L	
B3KHV6	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Aluminum	68	ug/L	
B35KV3	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Barium	1	ug/L	
B36204	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Barium	1	ug/L	
B367P5	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Barium	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Barium	1	ug/L	
B37RH5	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Barium	1	ug/L	
B38872	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Barium	1	ug/L	
B38JN9	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Barium	1	ug/L	
B38JP3	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Barium	1	ug/L	
B39HV0	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Barium	1	ug/L	
B3C1M8	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Barium	1	ug/L	
B3C1F9	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Barium	1	ug/L	
B3CVC3	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Barium	1.0	ug/L	
B3JF33	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Barium	1	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3JKR0	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Barium	1	ug/L	
B3K436	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Barium	1	ug/L	
B3KHV6	7440-39-3	Barium	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Barium	1	ug/L	
B35KV3	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Calcium	50	ug/L	
B36204	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Calcium	50	ug/L	
B367P5	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Calcium	50	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Calcium	50	ug/L	
B37RH5	7440-70-2	Calcium	108	ug/L	CB	6010_METALS_ICP	30-Nov-16			METALS	Calcium	108	ug/L	
B38872	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Calcium	50	ug/L	
B38JN9	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Calcium	50	ug/L	
B38JP3	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Calcium	50	ug/L	
B39HV0	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Calcium	50	ug/L	
B3C1M8	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Calcium	50	ug/L	
B3C1F9	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Calcium	50	ug/L	
B3CVC3	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Calcium	50	ug/L	
B3JF33	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Calcium	50	ug/L	
B3JKR0	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Calcium	50	ug/L	
B3K436	7440-70-2	Calcium	50	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Calcium	50	ug/L	
B3KHV6	7440-70-2	Calcium	73.7	ug/L	B	6010_METALS_ICP	30-Jul-18			METALS	Calcium	73.7	ug/L	
B35KV3	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Chromium	1	ug/L	
B36204	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Chromium	1	ug/L	
B367P5	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Chromium	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Chromium	1	ug/L	
B37RH5	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Chromium	1	ug/L	
B38872	7440-47-3	Chromium	1.60	ug/L	B	6010_METALS_ICP	28-Dec-16			METALS	Chromium	1.6	ug/L	
B38JN9	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Chromium	1	ug/L	
B38JP3	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Chromium	1	ug/L	
B39HV0	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Chromium	1	ug/L	
B3C1M8	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Chromium	1	ug/L	
B3C1F9	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Chromium	1	ug/L	
B3CVC3	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Chromium	1.0	ug/L	
B3JF33	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Chromium	1	ug/L	
B3JKR0	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Chromium	1	ug/L	
B3K436	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Chromium	1	ug/L	
B3KHV6	7440-47-3	Chromium	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Chromium	1	ug/L	
B35KV3	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Cobalt	1	ug/L	
B36204	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Cobalt	1	ug/L	
B367P5	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Cobalt	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Cobalt	1	ug/L	
B37RH5	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Cobalt	1	ug/L	
B38872	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Cobalt	1	ug/L	
B38JN9	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Cobalt	1	ug/L	
B38JP3	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Cobalt	1	ug/L	
B39HV0	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Cobalt	1	ug/L	
B3C1M8	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Cobalt	1	ug/L	
B3C1F9	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Cobalt	1	ug/L	
B3CVC3	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Cobalt	1.0	ug/L	
B3JF33	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Cobalt	1	ug/L	
B3JKR0	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Cobalt	1	ug/L	
B3K436	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Cobalt	1	ug/L	
B3KHV6	7440-48-4	Cobalt	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Cobalt	1	ug/L	
B35KV3	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Iron	30	ug/L	
B36204	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Iron	30	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B367P5	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Iron	30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Iron	30	ug/L	
B37RH5	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Iron	30	ug/L	
B38872	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Iron	30	ug/L	
B38JN9	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Iron	30	ug/L	
B38JP3	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Iron	30	ug/L	
B39HV0	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Iron	30	ug/L	
B3C1M8	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Iron	30	ug/L	
B3C1F9	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Iron	30	ug/L	
B3CVC3	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Iron	30	ug/L	
B3JF33	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Iron	30	ug/L	
B3JKR0	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Iron	30	ug/L	
B3K436	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Iron	30	ug/L	
B3KHV6	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Iron	30	ug/L	
B35KV3	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Magnesium	110	ug/L	
B36204	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Magnesium	110	ug/L	
B367P5	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Magnesium	110	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Magnesium	110	ug/L	
B37RH5	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Magnesium	110	ug/L	
B38872	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Magnesium	110	ug/L	
B38JN9	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Magnesium	110	ug/L	
B38JP3	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Magnesium	110	ug/L	
B39HV0	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Magnesium	110	ug/L	
B3C1M8	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Magnesium	110	ug/L	
B3C1F9	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Magnesium	110	ug/L	
B3CVC3	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Magnesium	110	ug/L	
B3JF33	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Magnesium	110	ug/L	
B3JKR0	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Magnesium	110	ug/L	
B3K436	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Magnesium	110	ug/L	
B3KHV6	7439-95-4	Magnesium	110	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Magnesium	110	ug/L	
B35KV3	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Nickel	1.5	ug/L	
B36204	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Nickel	1.5	ug/L	
B367P5	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Nickel	1.5	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Nickel	1.5	ug/L	
B37RH5	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Nickel	1.5	ug/L	
B38872	7440-02-0	Nickel	1.60	ug/L	B	6010_METALS_ICP	28-Dec-16			METALS	Nickel	1.6	ug/L	
B38JN9	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Nickel	1.5	ug/L	
B38JP3	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Nickel	1.5	ug/L	
B39HV0	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Nickel	1.5	ug/L	
B3C1M8	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Nickel	1.5	ug/L	
B3C1F9	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Nickel	1.5	ug/L	
B3CVC3	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Nickel	1.5	ug/L	
B3JF33	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Nickel	1.5	ug/L	
B3JKR0	7440-02-0	Nickel	1.84	ug/L	CB	6010_METALS_ICP	15-May-18			METALS	Nickel	1.84	ug/L	
B3K436	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Nickel	1.5	ug/L	
B3KHV6	7440-02-0	Nickel	1.5	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Nickel	1.5	ug/L	
B35KV3	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Potassium	50	ug/L	
B36204	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Potassium	50	ug/L	
B367P5	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-09-7	Potassium	108	ug/L	B	6010_METALS_ICP	21-Jul-16		X	METALS	Potassium	108	ug/L	B367P5 and B367P5DUP are duplicates
B36HL0	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Potassium	50	ug/L	
B37RH5	7440-09-7	Potassium	67.8	ug/L	CB	6010_METALS_ICP	30-Nov-16			METALS	Potassium	67.8	ug/L	
B38872	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Potassium	50	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B38JN9	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Potassium	50	ug/L	
B38JP3	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Potassium	50	ug/L	
B39HV0	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Potassium	50	ug/L	
B3C1M8	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Potassium	50	ug/L	
B3C1F9	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Potassium	50	ug/L	
B3CVC3	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Potassium	50	ug/L	
B3JF33	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Potassium	50	ug/L	
B3JKR0	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Potassium	50	ug/L	
B3K436	7440-09-7	Potassium	50	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Potassium	50	ug/L	
B3KHV6	7440-09-7	Potassium	62.2	ug/L	B	6010_METALS_ICP	30-Jul-18			METALS	Potassium	62.2	ug/L	
B35KV3	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Silicon	25	ug/L	
B36204	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Silicon	25	ug/L	
B367P5	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Silicon	25	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Silicon	25	ug/L	
B37RH5	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Silicon	25	ug/L	
B38872	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Silicon	25	ug/L	
B38JN9	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Silicon	25	ug/L	
B38JP3	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Silicon	25	ug/L	
B39HV0	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Silicon	25	ug/L	
B3C1M8	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Silicon	25	ug/L	
B3C1F9	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Silicon	25	ug/L	
B3CVC3	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Silicon	25	ug/L	
B3JF33	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Silicon	25	ug/L	
B3JKR0	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Silicon	25	ug/L	
B3K436	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Silicon	25	ug/L	
B3KHV6	7440-21-3	Silicon	25	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Silicon	25	ug/L	
B35KV3	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Silver	1	ug/L	
B36204	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Silver	1	ug/L	
B367P5	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Silver	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Silver	1	ug/L	
B37RH5	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Silver	1	ug/L	
B38872	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Silver	1	ug/L	
B38JN9	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Silver	1	ug/L	
B38JP3	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Silver	1	ug/L	
B39HV0	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Silver	1	ug/L	
B3C1M8	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Silver	1	ug/L	
B3C1F9	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Silver	1	ug/L	
B3CVC3	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Silver	1.0	ug/L	
B3JF33	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Silver	1	ug/L	
B3JKR0	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Silver	1	ug/L	
B3K436	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Silver	1	ug/L	
B3KHV6	7440-22-4	Silver	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Silver	1	ug/L	
B35KV3	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Sodium	100	ug/L	
B36204	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Sodium	100	ug/L	
B367P5	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Sodium	100	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Sodium	100	ug/L	
B37RH5	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Sodium	100	ug/L	
B38872	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Sodium	100	ug/L	
B38JN9	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Sodium	100	ug/L	
B38JP3	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Sodium	100	ug/L	
B39HV0	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Sodium	100	ug/L	
B3C1M8	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Sodium	100	ug/L	
B3C1F9	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Sodium	100	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3CVC3	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Sodium	100	ug/L	
B3JF33	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Sodium	100	ug/L	
B3JKR0	7440-23-5	Sodium	100	ug/L	U*N	6010_METALS_ICP	15-May-18			METALS	Sodium	100	ug/L	
B3K436	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Sodium	100	ug/L	
B3KHV6	7440-23-5	Sodium	100	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Sodium	100	ug/L	
B35KV3	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Thallium	5	ug/L	
B36204	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Thallium	5	ug/L	
B367P5	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Thallium	5	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Thallium	5	ug/L	
B37RH5	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Thallium	5	ug/L	
B38872	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Thallium	5	ug/L	
B38JN9	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Thallium	5	ug/L	
B38JP3	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Thallium	5	ug/L	
B39HV0	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Thallium	5	ug/L	
B3C1M8	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Thallium	5	ug/L	
B3C1F9	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Thallium	5	ug/L	
B3CVC3	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Thallium	5.0	ug/L	
B3JF33	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Thallium	5	ug/L	
B3JKR0	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Thallium	5	ug/L	
B3K436	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Thallium	5	ug/L	
B3KHV6	7440-28-0	Thallium	5.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Thallium	5	ug/L	
B35KV3	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Titanium	1	ug/L	
B36204	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Titanium	1	ug/L	
B367P5	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-32-6	Titanium	1.02	ug/L	B	6010_METALS_ICP	21-Jul-16		X	METALS	Titanium	1.02	ug/L	B367P5 and B367P5DUP are duplicates
B36HL0	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Titanium	1	ug/L	
B37RH5	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Titanium	1	ug/L	
B38872	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Titanium	1	ug/L	
B38JN9	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Titanium	1	ug/L	
B38JP3	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Titanium	1	ug/L	
B39HV0	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Titanium	1	ug/L	
B3C1M8	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Titanium	1	ug/L	
B3C1F9	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Titanium	1	ug/L	
B3CVC3	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Titanium	1.0	ug/L	
B3JF33	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Titanium	1	ug/L	
B3JKR0	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Titanium	1	ug/L	
B3K436	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Titanium	1	ug/L	
B3KHV6	7440-32-6	Titanium	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Titanium	1	ug/L	
B35KV3	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Vanadium	1	ug/L	
B36204	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Vanadium	1	ug/L	
B367P5	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Vanadium	1	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Vanadium	1	ug/L	
B37RH5	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Vanadium	1	ug/L	
B38872	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Vanadium	1	ug/L	
B38JN9	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Vanadium	1	ug/L	
B38JP3	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	22-Feb-17			METALS	Vanadium	1	ug/L	
B39HV0	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Vanadium	1	ug/L	
B3C1M8	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Vanadium	1	ug/L	
B3C1F9	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Vanadium	1	ug/L	
B3CVC3	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Vanadium	1.0	ug/L	
B3JF33	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Vanadium	1	ug/L	
B3JKR0	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	15-May-18			METALS	Vanadium	1	ug/L	
B3K436	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Vanadium	1	ug/L	
B3KHV6	7440-62-2	Vanadium	1.0	ug/L	U	6010_METALS_ICP	30-Jul-18			METALS	Vanadium	1	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B35KV3	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	31-May-16			METALS	Zinc	3.3	ug/L	
B36204	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	26-Jun-16			METALS	Zinc	3.3	ug/L	
B367P5	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	Zinc	3.3	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	21-Jul-16		X	METALS	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	24-Aug-16			METALS	Zinc	3.3	ug/L	
B37RH5	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	30-Nov-16			METALS	Zinc	3.3	ug/L	
B38872	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	28-Dec-16			METALS	Zinc	3.3	ug/L	
B38JN9	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	01-Feb-17			METALS	Zinc	3.3	ug/L	
B38JP3	7440-66-6	Zinc	8.98	ug/L	B	6010_METALS_ICP	22-Feb-17			METALS	Zinc	8.98	ug/L	
B39HV0	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	06-Apr-17			METALS	Zinc	3.3	ug/L	
B3C1M8	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	02-Aug-17			METALS	Zinc	3.3	ug/L	
B3C1F9	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	15-Aug-17			METALS	Zinc	3.3	ug/L	
B3CVC3	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	20-Sep-17			METALS	Zinc	3.3	ug/L	
B3JF33	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	17-Apr-18			METALS	Zinc	3.3	ug/L	
B3JKR0	7440-66-6	Zinc	7.15	ug/L	CB	6010_METALS_ICP	15-May-18			METALS	Zinc	7.15	ug/L	
B3K436	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	28-Jun-18			METALS	Zinc	3.3	ug/L	
B3KHV6	7440-66-6	Zinc	5.87	ug/L	CB	6010_METALS_ICP	30-Jul-18			METALS	Zinc	5.87	ug/L	
B35KV3	12674-11-2	Aroclor-1016	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1016	0.0340	ug/L	
B38JP3	12674-11-2	Aroclor-1016	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1016	0.0347	ug/L	
B3CVC3-RJCT	12674-11-2	Aroclor-1016	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	12674-11-2	Aroclor-1016	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1016	0.0333	ug/L	
B3JF33	12674-11-2	Aroclor-1016	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1016	0.0351	ug/L	
B3JKR0	12674-11-2	Aroclor-1016	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1016	0.0358	ug/L	
B3K436	12674-11-2	Aroclor-1016	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1016	0.0351	ug/L	
B3KHV6	12674-11-2	Aroclor-1016	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1016	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	12674-11-2	Aroclor-1016	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	11104-28-2	Aroclor-1221	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1221	0.0340	ug/L	
B38JP3	11104-28-2	Aroclor-1221	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1221	0.0347	ug/L	
B3CVC3-RJCT	11104-28-2	Aroclor-1221	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	11104-28-2	Aroclor-1221	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1221	0.0333	ug/L	
B3JF33	11104-28-2	Aroclor-1221	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1221	0.0351	ug/L	
B3JKR0	11104-28-2	Aroclor-1221	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1221	0.0358	ug/L	
B3K436	11104-28-2	Aroclor-1221	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1221	0.0351	ug/L	
B3KHV6	11104-28-2	Aroclor-1221	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1221	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	11104-28-2	Aroclor-1221	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	11141-16-5	Aroclor-1232	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1232	0.0340	ug/L	
B38JP3	11141-16-5	Aroclor-1232	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1232	0.0347	ug/L	
B3CVC3-RJCT	11141-16-5	Aroclor-1232	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	11141-16-5	Aroclor-1232	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1232	0.0333	ug/L	
B3JF33	11141-16-5	Aroclor-1232	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1232	0.0351	ug/L	
B3JKR0	11141-16-5	Aroclor-1232	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1232	0.0358	ug/L	
B3K436	11141-16-5	Aroclor-1232	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1232	0.0351	ug/L	
B3KHV6	11141-16-5	Aroclor-1232	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1232	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	11141-16-5	Aroclor-1232	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	53469-21-9	Aroclor-1242	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1242	0.0340	ug/L	
B38JP3	53469-21-9	Aroclor-1242	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1242	0.0347	ug/L	
B3CVC3-RJCT	53469-21-9	Aroclor-1242	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	53469-21-9	Aroclor-1242	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1242	0.0333	ug/L	
B3JF33	53469-21-9	Aroclor-1242	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1242	0.0351	ug/L	
B3JKR0	53469-21-9	Aroclor-1242	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1242	0.0358	ug/L	
B3K436	53469-21-9	Aroclor-1242	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1242	0.0351	ug/L	
B3KHV6	53469-21-9	Aroclor-1242	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1242	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	53469-21-9	Aroclor-1242	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	12672-29-6	Aroclor-1248	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1248	0.0340	ug/L	
B38JP3	12672-29-6	Aroclor-1248	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1248	0.0347	ug/L	
B3CVC3-RJCT	12672-29-6	Aroclor-1248	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3FLK3	12672-29-6	Aroclor-1248	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1248	0.0333	ug/L	
B3JF33	12672-29-6	Aroclor-1248	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1248	0.0351	ug/L	
B3JKR0	12672-29-6	Aroclor-1248	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1248	0.0358	ug/L	
B3K436	12672-29-6	Aroclor-1248	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1248	0.0351	ug/L	
B3KHV6	12672-29-6	Aroclor-1248	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1248	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	12672-29-6	Aroclor-1248	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	11097-69-1	Aroclor-1254	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1254	0.0340	ug/L	
B38JP3	11097-69-1	Aroclor-1254	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1254	0.0347	ug/L	
B3CVC3-RJCT	11097-69-1	Aroclor-1254	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	11097-69-1	Aroclor-1254	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1254	0.0333	ug/L	
B3JF33	11097-69-1	Aroclor-1254	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1254	0.0351	ug/L	
B3JKR0	11097-69-1	Aroclor-1254	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1254	0.0358	ug/L	
B3K436	11097-69-1	Aroclor-1254	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1254	0.0351	ug/L	
B3KHV6	11097-69-1	Aroclor-1254	0.0536	ug/L	JP	8082_PCB_GC	30-Jul-18		R	PCBS	(rejected)	(rejected)		Rejected for cause
B3KHV6-RR	11097-69-1	Aroclor-1254	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1254	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B35KV3	11096-82-5	Aroclor-1260	0.0340	ug/L	U	8082_PCB_GC	31-May-16			PCBS	Aroclor-1260	0.0340	ug/L	
B38JP3	11096-82-5	Aroclor-1260	0.0347	ug/L	U	8082_PCB_GC	22-Feb-17			PCBS	Aroclor-1260	0.0347	ug/L	
B3CVC3-RJCT	11096-82-5	Aroclor-1260	0.0336	ug/L	U	8082_PCB_GC	20-Sep-17		R	PCBS	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	11096-82-5	Aroclor-1260	0.0333	ug/L	U	8082_PCB_GC	07-Nov-17			PCBS	Aroclor-1260	0.0333	ug/L	
B3JF33	11096-82-5	Aroclor-1260	0.0351	ug/L	U	8082_PCB_GC	17-Apr-18			PCBS	Aroclor-1260	0.0351	ug/L	
B3JKR0	11096-82-5	Aroclor-1260	0.0358	ug/L	U	8082_PCB_GC	15-May-18			PCBS	Aroclor-1260	0.0358	ug/L	
B3K436	11096-82-5	Aroclor-1260	0.0351	ug/L	U	8082_PCB_GC	28-Jun-18			PCBS	Aroclor-1260	0.0351	ug/L	
B3KHV6	11096-82-5	Aroclor-1260	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	Aroclor-1260	0.0333	ug/L	B3KHV6 and B3KHV6-RR are duplicates
B3KHV6-RR	11096-82-5	Aroclor-1260	0.0333	ug/L	U	8082_PCB_GC	30-Jul-18		X	PCBS	(duplicate)	(duplicate)		B3KHV6 and B3KHV6-RR are duplicates
B35KV3	58-89-9	Gamma-BHC (Lindane)	0.00693	ug/L	U	8081_PEST_GC	31-May-16			PEST	Gamma-BHC (Lindane)	0.00693	ug/L	
B3CVC3-RJCT	58-89-9	Gamma-BHC (Lindane)	0.00686	ug/L	U	8081_PEST_GC	20-Sep-17		R	PEST	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	58-89-9	Gamma-BHC (Lindane)	0.00665	ug/L	U	8081_PEST_GC	07-Nov-17			PEST	Gamma-BHC (Lindane)	0.00665	ug/L	
B35KV3	118-74-1	Hexachlorobenzene	0.00651	ug/L	U	8081_PEST_GC	31-May-16			PEST	Hexachlorobenzene	0.00651	ug/L	
B3CVC3-RJCT	118-74-1	Hexachlorobenzene	0.00644	ug/L	U	8081_PEST_GC	20-Sep-17		R	PEST	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	118-74-1	Hexachlorobenzene	0.00625	ug/L	U	8081_PEST_GC	07-Nov-17			PEST	Hexachlorobenzene	0.00625	ug/L	
B35KV3	14234-35-6	Antimony-125	15.6	pCi/L	U	901.1_GAMMA_GS	31-May-16	46.5		RAD	Antimony-125	46.5	pCi/L	
B36204	14234-35-6	Antimony-125	0.0377	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	15.6		RAD	Antimony-125	15.6	pCi/L	
B367P5	14234-35-6	Antimony-125	-2.75	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	21	X	RAD	Antimony-125	21.0	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14234-35-6	Antimony-125	-2.00	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	15.2	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14234-35-6	Antimony-125	-12.5	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	32.1		RAD	Antimony-125	32.1	pCi/L	
B37RH5	14234-35-6	Antimony-125	-0.0197	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	10.2		RAD	Antimony-125	10.2	pCi/L	
B38872	14234-35-6	Antimony-125	-0.658	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	17.8		RAD	Antimony-125	17.8	pCi/L	
B38JN9	14234-35-6	Antimony-125	8.32	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	23.8		RAD	Antimony-125	23.8	pCi/L	
B38JP3	14234-35-6	Antimony-125	9.79	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	14.2		RAD	Antimony-125	14.2	pCi/L	
B39HV0	14234-35-6	Antimony-125	1.91	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	20.4		RAD	Antimony-125	20.4	pCi/L	
B3B7V2	14234-35-6	Antimony-125	2.41	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	31.1		RAD	Antimony-125	31.1	pCi/L	
B3C1F9	14234-35-6	Antimony-125	8.43	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	24		RAD	Antimony-125	24	pCi/L	
B3CVC3	14234-35-6	Antimony-125	5.49	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	26.3		RAD	Antimony-125	26.3	pCi/L	
B3JF33	14234-35-6	Antimony-125	0.916	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	25.3		RAD	Antimony-125	25.3	pCi/L	
B3JKR0	14234-35-6	Antimony-125	-4.77	pCi/L	U	901.1_GAMMA_GS	15-May-18	23		RAD	Antimony-125	23	pCi/L	
B3K436	14234-35-6	Antimony-125	0.859	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	21.9		RAD	Antimony-125	21.9	pCi/L	
B3KHV6	14234-35-6	Antimony-125	0.514	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	27.9		RAD	Antimony-125	27.9	pCi/L	
B35KV3	14762-78-8	Cerium-144	-20.4	pCi/L	U	901.1_GAMMA_GS	31-May-16	65.6		RAD	Cerium-144	65.6	pCi/L	
B36204	14762-78-8	Cerium-144	-12.9	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	34.7		RAD	Cerium-144	34.7	pCi/L	
B367P5	14762-78-8	Cerium-144	-3.98	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	46.9	X	RAD	Cerium-144	46.9	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14762-78-8	Cerium-144	4.01	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	42.6	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14762-78-8	Cerium-144	-17.6	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	62.6		RAD	Cerium-144	62.6	pCi/L	
B37RH5	14762-78-8	Cerium-144	9.00	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	28.1		RAD	Cerium-144	28.1	pCi/L	
B38872	14762-78-8	Cerium-144	-19.4	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	30.1		RAD	Cerium-144	30.1	pCi/L	
B38JN9	14762-78-8	Cerium-144	13.3	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	39.2		RAD	Cerium-144	39.2	pCi/L	
B38JP3	14762-78-8	Cerium-144	-3.31	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	29.2		RAD	Cerium-144	29.2	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B39HV0	14762-78-8	Cerium-144	3.78	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	37.8		RAD	Cerium-144	37.8	pCi/L	
B3B7V2	14762-78-8	Cerium-144	6.47	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	56.6		RAD	Cerium-144	56.6	pCi/L	
B3C1F9	14762-78-8	Cerium-144	-33.4	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	39.9		RAD	Cerium-144	39.9	pCi/L	
B3CVC3	14762-78-8	Cerium-144	-30.1	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	56.9		RAD	Cerium-144	56.9	pCi/L	
B3JF33	14762-78-8	Cerium-144	-17.3	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	49.4		RAD	Cerium-144	49.4	pCi/L	
B3JKR0	14762-78-8	Cerium-144	-9.1	pCi/L	U	901.1_GAMMA_GS	15-May-18	49.5		RAD	Cerium-144	49.5	pCi/L	
B3K436	14762-78-8	Cerium-144	-2.14	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	43.9		RAD	Cerium-144	43.9	pCi/L	
B3KHV6	14762-78-8	Cerium-144	-13.3	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	57.9		RAD	Cerium-144	57.9	pCi/L	
B35KV3	13967-70-9	Cesium-134	5.29	pCi/L	U	901.1_GAMMA_GS	31-May-16	19.5		RAD	Cesium-134	19.5	pCi/L	
B36204	13967-70-9	Cesium-134	-0.493	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	6.54		RAD	Cesium-134	6.54	pCi/L	
B367P5	13967-70-9	Cesium-134	-0.322	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.83	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	13967-70-9	Cesium-134	2.27	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	8.34	X	RAD	Cesium-134	8.34	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	13967-70-9	Cesium-134	-6.38	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	10.5		RAD	Cesium-134	10.5	pCi/L	
B37RH5	13967-70-9	Cesium-134	1.36	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	4.32		RAD	Cesium-134	4.32	pCi/L	
B38872	13967-70-9	Cesium-134	1.19	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	7.48		RAD	Cesium-134	7.48	pCi/L	
B38JN9	13967-70-9	Cesium-134	1.02	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	8.04		RAD	Cesium-134	8.04	pCi/L	
B38JP3	13967-70-9	Cesium-134	-1.69	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	5.1		RAD	Cesium-134	5.1	pCi/L	
B39HV0	13967-70-9	Cesium-134	-0.377	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	9.05		RAD	Cesium-134	9.05	pCi/L	
B3B7V2	13967-70-9	Cesium-134	7.13	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	18.7		RAD	Cesium-134	18.7	pCi/L	
B3C1F9	13967-70-9	Cesium-134	0.234	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	10.3		RAD	Cesium-134	10.3	pCi/L	
B3CVC3	13967-70-9	Cesium-134	0.875	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	11.1		RAD	Cesium-134	11.1	pCi/L	
B3JF33	13967-70-9	Cesium-134	1.56	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	9.38		RAD	Cesium-134	9.38	pCi/L	
B3JKR0	13967-70-9	Cesium-134	5.77	pCi/L	U	901.1_GAMMA_GS	15-May-18	11		RAD	Cesium-134	11	pCi/L	
B3K436	13967-70-9	Cesium-134	-2.13	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	9.58		RAD	Cesium-134	9.58	pCi/L	
B3KHV6	13967-70-9	Cesium-134	1.31	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	13.7		RAD	Cesium-134	13.7	pCi/L	
B35KV3	10045-97-3	Cesium-137	4.86	pCi/L	U	901.1_GAMMA_GS	31-May-16	14.4		RAD	Cesium-137	14.4	pCi/L	
B36204	10045-97-3	Cesium-137	0.522	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	6.35		RAD	Cesium-137	6.35	pCi/L	
B367P5	10045-97-3	Cesium-137	1.38	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	8.18	X	RAD	Cesium-137	8.18	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	10045-97-3	Cesium-137	0.342	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.27	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	10045-97-3	Cesium-137	-2.92	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	15.3		RAD	Cesium-137	15.3	pCi/L	
B37RH5	10045-97-3	Cesium-137	-1.05	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	4.48		RAD	Cesium-137	4.48	pCi/L	
B38872	10045-97-3	Cesium-137	0.700	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	8.16		RAD	Cesium-137	8.16	pCi/L	
B38JN9	10045-97-3	Cesium-137	-0.832	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	8.07		RAD	Cesium-137	8.07	pCi/L	
B38JP3	10045-97-3	Cesium-137	0.342	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	5.56		RAD	Cesium-137	5.56	pCi/L	
B39HV0	10045-97-3	Cesium-137	0.319	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	7.81		RAD	Cesium-137	7.81	pCi/L	
B3B7V2	10045-97-3	Cesium-137	-2.88	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	12.2		RAD	Cesium-137	12.2	pCi/L	
B3C1F9	10045-97-3	Cesium-137	7.79	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	8.26		RAD	Cesium-137	8.26	pCi/L	
B3CVC3	10045-97-3	Cesium-137	2.25	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	9.59		RAD	Cesium-137	9.59	pCi/L	
B3JF33	10045-97-3	Cesium-137	-1.52	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	8.01		RAD	Cesium-137	8.01	pCi/L	
B3JKR0	10045-97-3	Cesium-137	-3.53	pCi/L	U	901.1_GAMMA_GS	15-May-18	7.99		RAD	Cesium-137	7.99	pCi/L	
B3K436	10045-97-3	Cesium-137	-4.06	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	8.71		RAD	Cesium-137	8.71	pCi/L	
B3KHV6	10045-97-3	Cesium-137	0.391	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	13.3		RAD	Cesium-137	13.3	pCi/L	
B35KV3	10198-40-0	Cobalt-60	-5.18	pCi/L	U	901.1_GAMMA_GS	31-May-16	14.3		RAD	Cobalt-60	14.3	pCi/L	
B36204	10198-40-0	Cobalt-60	2.51	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	6.92		RAD	Cobalt-60	6.92	pCi/L	
B367P5	10198-40-0	Cobalt-60	-0.91	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.5	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	10198-40-0	Cobalt-60	2.65	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	9.54	X	RAD	Cobalt-60	9.54	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	10198-40-0	Cobalt-60	-5.16	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	11		RAD	Cobalt-60	11	pCi/L	
B37RH5	10198-40-0	Cobalt-60	-0.0125	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	4.95		RAD	Cobalt-60	4.95	pCi/L	
B38872	10198-40-0	Cobalt-60	-2.72	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	6.08		RAD	Cobalt-60	6.08	pCi/L	
B38JN9	10198-40-0	Cobalt-60	1.23	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	11.3		RAD	Cobalt-60	11.3	pCi/L	
B38JP3	10198-40-0	Cobalt-60	0.503	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	6		RAD	Cobalt-60	6	pCi/L	
B39HV0	10198-40-0	Cobalt-60	0.603	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	8.49		RAD	Cobalt-60	8.49	pCi/L	
B3B7V2	10198-40-0	Cobalt-60	-0.562	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	17.4		RAD	Cobalt-60	17.4	pCi/L	
B3C1F9	10198-40-0	Cobalt-60	1.09	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	7.92		RAD	Cobalt-60	7.92	pCi/L	
B3CVC3	10198-40-0	Cobalt-60	-3.70	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	11.3		RAD	Cobalt-60	11.3	pCi/L	
B3JF33	10198-40-0	Cobalt-60	1.13	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	10.7		RAD	Cobalt-60	10.7	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3JKR0	10198-40-0	Cobalt-60	5.06	pCi/L	U	901.1_GAMMA_GS	15-May-18	13.8		RAD	Cobalt-60	13.8	pCi/L	
B3K436	10198-40-0	Cobalt-60	-2.10	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	9.22		RAD	Cobalt-60	9.22	pCi/L	
B3KHV6	10198-40-0	Cobalt-60	-1.38	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	11.3		RAD	Cobalt-60	11.3	pCi/L	
B35KV3	14683-23-9	Europium-152	-4.89	pCi/L	U	901.1_GAMMA_GS	31-May-16	40.2		RAD	Europium-152	40.2	pCi/L	
B36204	14683-23-9	Europium-152	6.78	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	17.8		RAD	Europium-152	17.8	pCi/L	
B367P5	14683-23-9	Europium-152	7.47	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	22.5	X	RAD	Europium-152	22.5	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14683-23-9	Europium-152	1.44	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	19.1	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14683-23-9	Europium-152	-12.5	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	35.5		RAD	Europium-152	35.5	pCi/L	
B37RH5	14683-23-9	Europium-152	-0.353	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	11.8		RAD	Europium-152	11.8	pCi/L	
B38872	14683-23-9	Europium-152	-0.666	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	18.7		RAD	Europium-152	18.7	pCi/L	
B38JN9	14683-23-9	Europium-152	1.91	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	21.6		RAD	Europium-152	21.6	pCi/L	
B38JP3	14683-23-9	Europium-152	4.41	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	15.2		RAD	Europium-152	15.2	pCi/L	
B39HV0	14683-23-9	Europium-152	9.79	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	25.4		RAD	Europium-152	25.4	pCi/L	
B3B7V2	14683-23-9	Europium-152	3.61	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	36.6		RAD	Europium-152	36.6	pCi/L	
B3C1F9	14683-23-9	Europium-152	5.99	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	26.6		RAD	Europium-152	26.6	pCi/L	
B3CVC3	14683-23-9	Europium-152	-4.47	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	24.9		RAD	Europium-152	24.9	pCi/L	
B3JF33	14683-23-9	Europium-152	-2.87	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	25.4		RAD	Europium-152	25.4	pCi/L	
B3JKR0	14683-23-9	Europium-152	-0.957	pCi/L	U	901.1_GAMMA_GS	15-May-18	24.4		RAD	Europium-152	24.4	pCi/L	
B3K436	14683-23-9	Europium-152	-6.61	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	22.5		RAD	Europium-152	22.5	pCi/L	
B3KHV6	14683-23-9	Europium-152	-3.55	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	32.2		RAD	Europium-152	32.2	pCi/L	
B35KV3	15585-10-1	Europium-154	-3.11	pCi/L	U	901.1_GAMMA_GS	31-May-16	43.8		RAD	Europium-154	43.8	pCi/L	
B36204	15585-10-1	Europium-154	12.4	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	20.2		RAD	Europium-154	20.2	pCi/L	
B367P5	15585-10-1	Europium-154	-6.90	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	17.1	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	15585-10-1	Europium-154	1.29	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	20.2	X	RAD	Europium-154	20.2	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	15585-10-1	Europium-154	-2.27	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	26.7		RAD	Europium-154	26.7	pCi/L	
B37RH5	15585-10-1	Europium-154	2.26	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	13.9		RAD	Europium-154	13.9	pCi/L	
B38872	15585-10-1	Europium-154	2.01	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	19.4		RAD	Europium-154	19.4	pCi/L	
B38JN9	15585-10-1	Europium-154	2.47	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	29.1		RAD	Europium-154	29.1	pCi/L	
B38JP3	15585-10-1	Europium-154	-1.41	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	16.7		RAD	Europium-154	16.7	pCi/L	
B39HV0	15585-10-1	Europium-154	5.20	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	23.7		RAD	Europium-154	23.7	pCi/L	
B3B7V2	15585-10-1	Europium-154	1.42	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	36.7		RAD	Europium-154	36.7	pCi/L	
B3C1F9	15585-10-1	Europium-154	-0.71	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	24.9		RAD	Europium-154	24.9	pCi/L	
B3CVC3	15585-10-1	Europium-154	-10.2	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	28.8		RAD	Europium-154	28.8	pCi/L	
B3JF33	15585-10-1	Europium-154	-4.02	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	29.5		RAD	Europium-154	29.5	pCi/L	
B3JKR0	15585-10-1	Europium-154	8.35	pCi/L	U	901.1_GAMMA_GS	15-May-18	32.2		RAD	Europium-154	32.2	pCi/L	
B3K436	15585-10-1	Europium-154	11.1	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	37.8		RAD	Europium-154	37.8	pCi/L	
B3KHV6	15585-10-1	Europium-154	12.8	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	45.8		RAD	Europium-154	45.8	pCi/L	
B35KV3	14391-16-3	Europium-155	-11.6	pCi/L	U	901.1_GAMMA_GS	31-May-16	31.3		RAD	Europium-155	31.3	pCi/L	
B36204	14391-16-3	Europium-155	-4.59	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	18.6		RAD	Europium-155	18.6	pCi/L	
B367P5	14391-16-3	Europium-155	-8.17	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	25.7	X	RAD	Europium-155	25.7	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14391-16-3	Europium-155	-17.3	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	20.7	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14391-16-3	Europium-155	6.77	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	39.2		RAD	Europium-155	39.2	pCi/L	
B37RH5	14391-16-3	Europium-155	2.66	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	14.6		RAD	Europium-155	14.6	pCi/L	
B38872	14391-16-3	Europium-155	-8.61	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	19.9		RAD	Europium-155	19.9	pCi/L	
B38JN9	14391-16-3	Europium-155	4.31	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	23.4		RAD	Europium-155	23.4	pCi/L	
B38JP3	14391-16-3	Europium-155	-2.97	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	14.9		RAD	Europium-155	14.9	pCi/L	
B39HV0	14391-16-3	Europium-155	4.81	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	22.4		RAD	Europium-155	22.4	pCi/L	
B3B7V2	14391-16-3	Europium-155	0.296	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	27.4		RAD	Europium-155	27.4	pCi/L	
B3C1F9	14391-16-3	Europium-155	9.31	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	27.5		RAD	Europium-155	27.5	pCi/L	
B3CVC3	14391-16-3	Europium-155	2.62	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	32.8		RAD	Europium-155	32.8	pCi/L	
B3JF33	14391-16-3	Europium-155	-15.0	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	26.8		RAD	Europium-155	26.8	pCi/L	
B3JKR0	14391-16-3	Europium-155	-16.8	pCi/L	U	901.1_GAMMA_GS	15-May-18	27.1		RAD	Europium-155	27.1	pCi/L	
B3K436	14391-16-3	Europium-155	0.234	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	19.2		RAD	Europium-155	19.2	pCi/L	
B3KHV6	14391-16-3	Europium-155	-1.98	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	39		RAD	Europium-155	39	pCi/L	
B35KV3	14681-63-1	Niobium-94	-2.97	pCi/L	U	901.1_GAMMA_GS	31-May-16	16.5		RAD	Niobium-94	16.5	pCi/L	
B36204	14681-63-1	Niobium-94	0.176	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	5.96		RAD	Niobium-94	5.96	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B367P5	14681-63-1	Niobium-94	-2.45	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.15	X	RAD	Niobium-94	7.15	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14681-63-1	Niobium-94	-1.67	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	6.29	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14681-63-1	Niobium-94	3.85	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	16.5		RAD	Niobium-94	16.5	pCi/L	
B37RH5	14681-63-1	Niobium-94	-0.678	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	4.2		RAD	Niobium-94	4.2	pCi/L	
B38872	14681-63-1	Niobium-94	2.76	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	8.05		RAD	Niobium-94	8.05	pCi/L	
B38JN9	14681-63-1	Niobium-94	3.21	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	8.83		RAD	Niobium-94	8.83	pCi/L	
B38JP3	14681-63-1	Niobium-94	-0.36	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	4.97		RAD	Niobium-94	4.97	pCi/L	
B39HV0	14681-63-1	Niobium-94	6.11	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	7.27		RAD	Niobium-94	7.27	pCi/L	
B3B7V2	14681-63-1	Niobium-94	-2.07	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	10.8		RAD	Niobium-94	10.8	pCi/L	
B3C1F9	14681-63-1	Niobium-94	1.30	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	9.08		RAD	Niobium-94	9.08	pCi/L	
B3CVC3	14681-63-1	Niobium-94	0.162	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	9.41		RAD	Niobium-94	9.41	pCi/L	
B3JF33	14681-63-1	Niobium-94	-1.17	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	8.01		RAD	Niobium-94	8.01	pCi/L	
B3JKR0	14681-63-1	Niobium-94	-2.30	pCi/L	U	901.1_GAMMA_GS	15-May-18	8.72		RAD	Niobium-94	8.72	pCi/L	
B3K436	14681-63-1	Niobium-94	1.72	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	8.96		RAD	Niobium-94	8.96	pCi/L	
B3KHV6	14681-63-1	Niobium-94	3.74	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	14.9		RAD	Niobium-94	14.9	pCi/L	
B35KV3	14119-05-2	Praseodymium-144	205	pCi/L	U	901.1_GAMMA_GS	31-May-16	1220		RAD	Praseodymium-144	1220	pCi/L	
B36204	14119-05-2	Praseodymium-144	224	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	474		RAD	Praseodymium-144	474	pCi/L	
B367P5	14119-05-2	Praseodymium-144	117	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	532	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	14119-05-2	Praseodymium-144	173	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	596	X	RAD	Praseodymium-144	596	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	14119-05-2	Praseodymium-144	-68.4	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	1060		RAD	Praseodymium-144	1060	pCi/L	
B37RH5	14119-05-2	Praseodymium-144	14.9	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	382		RAD	Praseodymium-144	382	pCi/L	
B38872	14119-05-2	Praseodymium-144	-124	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	570		RAD	Praseodymium-144	570	pCi/L	
B38JN9	14119-05-2	Praseodymium-144	83.2	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	597		RAD	Praseodymium-144	597	pCi/L	
B38JP3	14119-05-2	Praseodymium-144	74.0	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	430		RAD	Praseodymium-144	430	pCi/L	
B39HV0	14119-05-2	Praseodymium-144	-150	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	586		RAD	Praseodymium-144	586	pCi/L	
B3B7V2	14119-05-2	Praseodymium-144	302	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	1140		RAD	Praseodymium-144	1140	pCi/L	
B3C1F9	14119-05-2	Praseodymium-144	42.3	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	682		RAD	Praseodymium-144	682	pCi/L	
B3CVC3	14119-05-2	Praseodymium-144	-142	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	679		RAD	Praseodymium-144	679	pCi/L	
B3JF33	14119-05-2	Praseodymium-144	-87.3	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	638		RAD	Praseodymium-144	638	pCi/L	
B3JKR0	14119-05-2	Praseodymium-144	-59.4	pCi/L	U	901.1_GAMMA_GS	15-May-18	602		RAD	Praseodymium-144	602	pCi/L	
B3K436	14119-05-2	Praseodymium-144	-765	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	678		RAD	Praseodymium-144	678	pCi/L	
B3KHV6	14119-05-2	Praseodymium-144	23.2	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	906		RAD	Praseodymium-144	906	pCi/L	
B35KV3	13968-53-1	Ruthenium-103	2.85	pCi/L	U	901.1_GAMMA_GS	31-May-16	17.6		RAD	Ruthenium-103	17.6	pCi/L	
B36204	13968-53-1	Ruthenium-103	-1.02	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	5.97		RAD	Ruthenium-103	5.97	pCi/L	
B367P5	13968-53-1	Ruthenium-103	-2.32	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.11	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	13968-53-1	Ruthenium-103	-1.49	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	7.66	X	RAD	Ruthenium-103	7.66	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	13968-53-1	Ruthenium-103	-0.793	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	14.3		RAD	Ruthenium-103	14.3	pCi/L	
B37RH5	13968-53-1	Ruthenium-103	-1.54	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	4.54		RAD	Ruthenium-103	4.54	pCi/L	
B38872	13968-53-1	Ruthenium-103	-0.479	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	6.97		RAD	Ruthenium-103	6.97	pCi/L	
B38JN9	13968-53-1	Ruthenium-103	1.94	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	8.44		RAD	Ruthenium-103	8.44	pCi/L	
B38JP3	13968-53-1	Ruthenium-103	1.21	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	6.1		RAD	Ruthenium-103	6.1	pCi/L	
B39HV0	13968-53-1	Ruthenium-103	-0.718	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	8.07		RAD	Ruthenium-103	8.07	pCi/L	
B3B7V2	13968-53-1	Ruthenium-103	3.00	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	14.1		RAD	Ruthenium-103	14.1	pCi/L	
B3C1F9	13968-53-1	Ruthenium-103	-2.84	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	9.47		RAD	Ruthenium-103	9.47	pCi/L	
B3CVC3	13968-53-1	Ruthenium-103	0.717	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	9.06		RAD	Ruthenium-103	9.06	pCi/L	
B3JF33	13968-53-1	Ruthenium-103	-3.17	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	8.21		RAD	Ruthenium-103	8.21	pCi/L	
B3JKR0	13968-53-1	Ruthenium-103	0.543	pCi/L	U	901.1_GAMMA_GS	15-May-18	7.87		RAD	Ruthenium-103	7.87	pCi/L	
B3K436	13968-53-1	Ruthenium-103	-0.157	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	8.58		RAD	Ruthenium-103	8.58	pCi/L	
B3KHV6	13968-53-1	Ruthenium-103	0.576	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	13		RAD	Ruthenium-103	13	pCi/L	
B35KV3	13967-48-1	Ruthenium-106	-3.96	pCi/L	U	901.1_GAMMA_GS	31-May-16	134		RAD	Ruthenium-106	134	pCi/L	
B36204	13967-48-1	Ruthenium-106	-4.64	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	56.1		RAD	Ruthenium-106	56.1	pCi/L	
B367P5	13967-48-1	Ruthenium-106	3.29	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	62.3	X	RAD	Ruthenium-106	62.3	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	13967-48-1	Ruthenium-106	0.0156	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	47.4	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	13967-48-1	Ruthenium-106	1.54	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	114		RAD	Ruthenium-106	114	pCi/L	
B37RH5	13967-48-1	Ruthenium-106	5.09	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	36.6		RAD	Ruthenium-106	36.6	pCi/L	
B38872	13967-48-1	Ruthenium-106	-2.94	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	53.8		RAD	Ruthenium-106	53.8	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B38JN9	13967-48-1	Ruthenium-106	15.0	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	79.4		RAD	Ruthenium-106	79.4	pCi/L	
B38JP3	13967-48-1	Ruthenium-106	-7.87	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	45.6		RAD	Ruthenium-106	45.6	pCi/L	
B39HV0	13967-48-1	Ruthenium-106	-8.47	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	67.8		RAD	Ruthenium-106	67.8	pCi/L	
B3B7V2	13967-48-1	Ruthenium-106	-37.4	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	70.4		RAD	Ruthenium-106	70.4	pCi/L	
B3C1F9	13967-48-1	Ruthenium-106	1.98	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	74.3		RAD	Ruthenium-106	74.3	pCi/L	
B3CVC3	13967-48-1	Ruthenium-106	-0.515	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	84.4		RAD	Ruthenium-106	84.4	pCi/L	
B3JF33	13967-48-1	Ruthenium-106	-39.1	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	56.1		RAD	Ruthenium-106	56.1	pCi/L	
B3JKR0	13967-48-1	Ruthenium-106	13.6	pCi/L	U	901.1_GAMMA_GS	15-May-18	79.8		RAD	Ruthenium-106	79.8	pCi/L	
B3K436	13967-48-1	Ruthenium-106	-2.29	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	87		RAD	Ruthenium-106	87.0	pCi/L	
B3KHV6	13967-48-1	Ruthenium-106	-12.4	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	97.3		RAD	Ruthenium-106	97.3	pCi/L	
B35KV3	13966-06-8	Tin-113	-2.15	pCi/L	U	901.1_GAMMA_GS	31-May-16	17.3		RAD	Tin-113	17.3	pCi/L	
B36204	13966-06-8	Tin-113	1.09	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	7.33		RAD	Tin-113	7.33	pCi/L	
B367P5	13966-06-8	Tin-113	-2.1	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	9.2	X	RAD	Tin-113	9.20	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	13966-06-8	Tin-113	0.182	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	8.46	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	13966-06-8	Tin-113	-0.587	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	15.2		RAD	Tin-113	15.2	pCi/L	
B37RH5	13966-06-8	Tin-113	1.38	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	5.37		RAD	Tin-113	5.37	pCi/L	
B38872	13966-06-8	Tin-113	-5.10	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	7.4		RAD	Tin-113	7.40	pCi/L	
B38JN9	13966-06-8	Tin-113	2.52	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	9.9		RAD	Tin-113	9.90	pCi/L	
B38JP3	13966-06-8	Tin-113	-3.09	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	5.69		RAD	Tin-113	5.69	pCi/L	
B39HV0	13966-06-8	Tin-113	-2.68	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	8.2		RAD	Tin-113	8.20	pCi/L	
B3B7V2	13966-06-8	Tin-113	-3.22	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	16		RAD	Tin-113	16.0	pCi/L	
B3C1F9	13966-06-8	Tin-113	0.0625	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	12.2		RAD	Tin-113	12.2	pCi/L	
B3CVC3	13966-06-8	Tin-113	0.145	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	13		RAD	Tin-113	13.0	pCi/L	
B3JF33	13966-06-8	Tin-113	-5.6	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	8.38		RAD	Tin-113	8.38	pCi/L	
B3JKR0	13966-06-8	Tin-113	3.07	pCi/L	U	901.1_GAMMA_GS	15-May-18	11.4		RAD	Tin-113	11.4	pCi/L	
B3K436	13966-06-8	Tin-113	-2.91	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	9.96		RAD	Tin-113	9.96	pCi/L	
B3KHV6	13966-06-8	Tin-113	5.47	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	15.9		RAD	Tin-113	15.9	pCi/L	
B35KV3	13982-39-3	Zinc-65	-10.6	pCi/L	U	901.1_GAMMA_GS	31-May-16	44.4		RAD	Zinc-65	44.4	pCi/L	
B36204	13982-39-3	Zinc-65	-1.26	pCi/L	U	901.1_GAMMA_GS	26-Jun-16	12		RAD	Zinc-65	12.0	pCi/L	
B367P5	13982-39-3	Zinc-65	2.09	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	12	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	13982-39-3	Zinc-65	-2.85	pCi/L	U	901.1_GAMMA_GS	21-Jul-16	13.3	X	RAD	Zinc-65	13.3	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	13982-39-3	Zinc-65	1.73	pCi/L	U	901.1_GAMMA_GS	24-Aug-16	27.3		RAD	Zinc-65	27.3	pCi/L	
B37RH5	13982-39-3	Zinc-65	-0.763	pCi/L	U	901.1_GAMMA_GS	30-Nov-16	9.36		RAD	Zinc-65	9.36	pCi/L	
B38872	13982-39-3	Zinc-65	-1.21	pCi/L	U	901.1_GAMMA_GS	28-Dec-16	15.9		RAD	Zinc-65	15.9	pCi/L	
B38JN9	13982-39-3	Zinc-65	-0.944	pCi/L	U	901.1_GAMMA_GS	01-Feb-17	18.3		RAD	Zinc-65	18.3	pCi/L	
B38JP3	13982-39-3	Zinc-65	-2.60	pCi/L	U	901.1_GAMMA_GS	22-Feb-17	11.3		RAD	Zinc-65	11.3	pCi/L	
B39HV0	13982-39-3	Zinc-65	2.58	pCi/L	U	901.1_GAMMA_GS	06-Apr-17	17		RAD	Zinc-65	17.0	pCi/L	
B3B7V2	13982-39-3	Zinc-65	-3.41	pCi/L	U	901.1_GAMMA_GS	26-Jul-17	26.4		RAD	Zinc-65	26.4	pCi/L	
B3C1F9	13982-39-3	Zinc-65	11.9	pCi/L	U	901.1_GAMMA_GS	15-Aug-17	23.3		RAD	Zinc-65	23.3	pCi/L	
B3CVC3	13982-39-3	Zinc-65	-1.78	pCi/L	U	901.1_GAMMA_GS	20-Sep-17	18.5		RAD	Zinc-65	18.5	pCi/L	
B3JF33	13982-39-3	Zinc-65	-0.686	pCi/L	U	901.1_GAMMA_GS	17-Apr-18	17.1		RAD	Zinc-65	17.1	pCi/L	
B3JKR0	13982-39-3	Zinc-65	17.3	pCi/L	U	901.1_GAMMA_GS	15-May-18	19.2		RAD	Zinc-65	19.2	pCi/L	
B3K436	13982-39-3	Zinc-65	1.03	pCi/L	U	901.1_GAMMA_GS	28-Jun-18	24.3		RAD	Zinc-65	24.3	pCi/L	
B3KHV6	13982-39-3	Zinc-65	-9.80	pCi/L	U	901.1_GAMMA_GS	30-Jul-18	31.8		RAD	Zinc-65	31.8	pCi/L	
B35KV3	13982-63-3	Radium-226	0.260	pCi/L	U	903.1_RA226_LUC	31-May-16	0.382		RAD	Radium-226	0.382	pCi/L	
B36204	13982-63-3	Radium-226	0.0822	pCi/L	U	903.1_RA226_LUC	26-Jun-16	0.332		RAD	Radium-226	0.332	pCi/L	
B367P5	13982-63-3	Radium-226	1.99	pCi/L		903.1_RA226_LUC	21-Jul-16	0.747	X	RAD	Radium-226	1.99	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	13982-63-3	Radium-226	1.35	pCi/L		903.1_RA226_LUC	21-Jul-16	0.948	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	13982-63-3	Radium-226	0.995	pCi/L	U	903.1_RA226_LUC	24-Aug-16	1		RAD	Radium-226	1.00	pCi/L	
B37RH5	13982-63-3	Radium-226	0.332	pCi/L	U	903.1_RA226_LUC	30-Nov-16	0.487		RAD	Radium-226	0.487	pCi/L	
B38872	13982-63-3	Radium-226	0.884	pCi/L		903.1_RA226_LUC	28-Dec-16	0.624		RAD	Radium-226	0.884	pCi/L	
B38JN9	13982-63-3	Radium-226	0.735	pCi/L		903.1_RA226_LUC	01-Feb-17	0.704		RAD	Radium-226	0.735	pCi/L	
B38JP3	13982-63-3	Radium-226	0.393	pCi/L		903.1_RA226_LUC	22-Feb-17	0.254		RAD	Radium-226	0.393	pCi/L	
B39HV0	13982-63-3	Radium-226	0.0218	pCi/L	U	903.1_RA226_LUC	06-Apr-17	0.353		RAD	Radium-226	0.353	pCi/L	
B3B7V2	13982-63-3	Radium-226	-0.0410	pCi/L	U	903.1_RA226_LUC	26-Jul-17	0.453		RAD	Radium-226	0.453	pCi/L	
B3C1F9	13982-63-3	Radium-226	0.0372	pCi/L	U	903.1_RA226_LUC	15-Aug-17	0.57		RAD	Radium-226	0.570	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3CVC3	13982-63-3	Radium-226	0.149	pCi/L	U	903.1_RA226_LUC	20-Sep-17	0.412		RAD	Radium-226	0.412	pCi/L	
B3JF33	13982-63-3	Radium-226	0.132	pCi/L	U	903.1_RA226_LUC	17-Apr-18	1.06		RAD	Radium-226	1.06	pCi/L	
B3JKR0	13982-63-3	Radium-226	0.0871	pCi/L	U	903.1_RA226_LUC	15-May-18	1.41		RAD	Radium-226	1.41	pCi/L	
B3K436	13982-63-3	Radium-226	-0.0694	pCi/L	U	903.1_RA226_LUC	28-Jun-18	1.12		RAD	Radium-226	1.12	pCi/L	
B3KHV6	13982-63-3	Radium-226	0.0646	pCi/L	U	903.1_RA226_LUC	30-Jul-18	0.247		RAD	Radium-226	0.247	pCi/L	
B35KV3	12587-46-1	Gross alpha	0.998	pCi/L	U	9310_ALPHABETA_GPC	31-May-16	2.05		RAD	Gross alpha	2.05	pCi/L	
B36203	12587-46-1	Gross alpha	0.814	pCi/L	U	9310_ALPHABETA_GPC	26-Jun-16	1.96	X	RAD	(duplicate)	(duplicate)		B35NB7 and B36203 are duplicates
B35NB7	12587-46-1	Gross alpha	0.143	pCi/L	U	9310_ALPHABETA_GPC	26-Jun-16	2.57	X	RAD	Gross alpha	2.57	pCi/L	B35NB7 and B36203 are duplicates
B365T8	12587-46-1	Gross alpha	3.01	pCi/L		9310_ALPHABETA_GPC	11-Jul-16	1.39		RAD	Gross alpha	3.01	pCi/L	
B367P4	12587-46-1	Gross alpha	-0.744	pCi/L	U	9310_ALPHABETA_GPC	21-Jul-16	2.82	X	RAD	Gross alpha	2.82	pCi/L	B367P4 and B367P4DUP are duplicates
B367P4DUP	12587-46-1	Gross alpha	-0.297	pCi/L	U	9310_ALPHABETA_GPC	21-Jul-16	2.13	X	RAD	(duplicate)	(duplicate)		B367P4 and B367P4DUP are duplicates
B367P8	12587-46-1	Gross alpha	0.196	pCi/L	U	9310_ALPHABETA_GPC	09-Aug-16	2.92		RAD	Gross alpha	2.92	pCi/L	
B36HK9	12587-46-1	Gross alpha	2.15	pCi/L	U	9310_ALPHABETA_GPC	24-Aug-16	2.32		RAD	Gross alpha	2.32	pCi/L	
B37RH4	12587-46-1	Gross alpha	-0.415	pCi/L	U	9310_ALPHABETA_GPC	30-Nov-16	2.28		RAD	Gross alpha	2.28	pCi/L	
B38871	12587-46-1	Gross alpha	-0.458	pCi/L	U	9310_ALPHABETA_GPC	28-Dec-16	2.01		RAD	Gross alpha	2.01	pCi/L	
B38JN8	12587-46-1	Gross alpha	-0.151	pCi/L	U	9310_ALPHABETA_GPC	01-Feb-17	2.55		RAD	Gross alpha	2.55	pCi/L	
B395C0	12587-46-1	Gross alpha	0.644	pCi/L	U	9310_ALPHABETA_GPC	06-Mar-17	2.5		RAD	Gross alpha	2.5	pCi/L	
B39HT9	12587-46-1	Gross alpha	-1.47	pCi/L	U	9310_ALPHABETA_GPC	06-Apr-17	2.86		RAD	Gross alpha	2.86	pCi/L	
B3B7V1	12587-46-1	Gross alpha	0.566	pCi/L	U	9310_ALPHABETA_GPC	26-Jul-17	1.79		RAD	Gross alpha	1.79	pCi/L	
B3C1F8	12587-46-1	Gross alpha	3.03	pCi/L	N	9310_ALPHABETA_GPC	15-Aug-17	2.81		RAD	Gross alpha	3.03	pCi/L	
B3CVC3	12587-46-1	Gross alpha	0.621	pCi/L	NU	9310_ALPHABETA_GPC	20-Sep-17	1.83		RAD	Gross alpha	1.83	pCi/L	
B3JF32	12587-46-1	Gross alpha	0.720	pCi/L	U	9310_ALPHABETA_GPC	17-Apr-18	2.71		RAD	Gross alpha	2.71	pCi/L	
B3JKP9	12587-46-1	Gross alpha	-0.461	pCi/L	U	9310_ALPHABETA_GPC	15-May-18	2.34		RAD	Gross alpha	2.34	pCi/L	
B3K435	12587-46-1	Gross alpha	0.746	pCi/L	U	9310_ALPHABETA_GPC	28-Jun-18	2.49		RAD	Gross alpha	2.49	pCi/L	
B3KHV5	12587-46-1	Gross alpha	1.19	pCi/L	U	9310_ALPHABETA_GPC	30-Jul-18	2.19		RAD	Gross alpha	2.19	pCi/L	
B35KV3	12587-47-2	Gross beta	1.73	pCi/L	U	9310_ALPHABETA_GPC	31-May-16	2.73		RAD	Gross beta	2.73	pCi/L	
B36203	12587-47-2	Gross beta	2.42	pCi/L	U	9310_ALPHABETA_GPC	26-Jun-16	2.89	X	RAD	(duplicate)	(duplicate)		B35NB7 and B36203 are duplicates
B35NB7	12587-47-2	Gross beta	0.215	pCi/L	U	9310_ALPHABETA_GPC	26-Jun-16	2.93	X	RAD	Gross beta	2.93	pCi/L	B35NB7 and B36203 are duplicates
B365T8	12587-47-2	Gross beta	1.44	pCi/L	U	9310_ALPHABETA_GPC	11-Jul-16	2.28		RAD	Gross beta	2.28	pCi/L	
B367P4	12587-47-2	Gross beta	0.77	pCi/L	U	9310_ALPHABETA_GPC	21-Jul-16	3.2	X	RAD	Gross beta	3.20	pCi/L	B367P4 and B367P4DUP are duplicates
B367P4DUP	12587-47-2	Gross beta	1.03	pCi/L	U	9310_ALPHABETA_GPC	21-Jul-16	2.24	X	RAD	(duplicate)	(duplicate)		B367P4 and B367P4DUP are duplicates
B367P8	12587-47-2	Gross beta	1.15	pCi/L	U	9310_ALPHABETA_GPC	09-Aug-16	2.24		RAD	Gross beta	2.24	pCi/L	
B36HK9	12587-47-2	Gross beta	-0.354	pCi/L	U	9310_ALPHABETA_GPC	24-Aug-16	3.2		RAD	Gross beta	3.20	pCi/L	
B37RH4	12587-47-2	Gross beta	-0.648	pCi/L	U	9310_ALPHABETA_GPC	30-Nov-16	3.19		RAD	Gross beta	3.19	pCi/L	
B38871	12587-47-2	Gross beta	0.113	pCi/L	U	9310_ALPHABETA_GPC	28-Dec-16	2.48		RAD	Gross beta	2.48	pCi/L	
B38JN8	12587-47-2	Gross beta	1.71	pCi/L	U	9310_ALPHABETA_GPC	01-Feb-17	3.55		RAD	Gross beta	3.55	pCi/L	
B395C0	12587-47-2	Gross beta	-0.00911	pCi/L	U	9310_ALPHABETA_GPC	06-Mar-17	2.07		RAD	Gross beta	2.07	pCi/L	
B39HT9	12587-47-2	Gross beta	-0.584	pCi/L	U	9310_ALPHABETA_GPC	06-Apr-17	2.6		RAD	Gross beta	2.60	pCi/L	
B3B7V1	12587-47-2	Gross beta	-0.583	pCi/L	U	9310_ALPHABETA_GPC	26-Jul-17	2.17		RAD	Gross beta	2.17	pCi/L	
B3C1F8	12587-47-2	Gross beta	2.35	pCi/L	U	9310_ALPHABETA_GPC	15-Aug-17	2.43		RAD	Gross beta	2.43	pCi/L	
B3CVC3	12587-47-2	Gross beta	46.1	pCi/L		9310_ALPHABETA_GPC	20-Sep-17	2.59		RAD	Gross beta	46.1	pCi/L	
B3JF32	12587-47-2	Gross beta	0.480	pCi/L	U	9310_ALPHABETA_GPC	17-Apr-18	2.32		RAD	Gross beta	2.32	pCi/L	
B3JKP9	12587-47-2	Gross beta	0.385	pCi/L	U	9310_ALPHABETA_GPC	15-May-18	2.5		RAD	Gross beta	2.50	pCi/L	
B3K435	12587-47-2	Gross beta	2.49	pCi/L	U	9310_ALPHABETA_GPC	28-Jun-18	2.92		RAD	Gross beta	2.92	pCi/L	
B3KHV5	12587-47-2	Gross beta	0.483	pCi/L	U	9310_ALPHABETA_GPC	30-Jul-18	2.52		RAD	Gross beta	2.52	pCi/L	
B35KV3	14596-10-2	Americium-241	-0.0425	pCi/L	U	AMCMISO_EIE_PREC_AEA	31-May-16	0.36		RAD	Americium-241	0.360	pCi/L	
B36204	14596-10-2	Americium-241	0	pCi/L	U	AMCMISO_EIE_PREC_AEA	26-Jun-16	0.213		RAD	Americium-241	0.213	pCi/L	
B367P5	14596-10-2	Americium-241	0.0691	pCi/L	U	AMCMISO_EIE_PREC_AEA	21-Jul-16	0.207	X	RAD	Americium-241	0.207	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14596-10-2	Americium-241	0.120	pCi/L	U	AMCMISO_EIE_PREC_AEA	21-Jul-16	0.18	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	14596-10-2	Americium-241	0.0331	pCi/L	U	AMCMISO_EIE_PREC_AEA	24-Aug-16	0.723		RAD	Americium-241	0.723	pCi/L	
B37RH5	14596-10-2	Americium-241	0.0871	pCi/L	U	AMCMISO_EIE_PREC_AEA	30-Nov-16	0.416		RAD	Americium-241	0.416	pCi/L	
B38872	14596-10-2	Americium-241	-0.0172	pCi/L	U	AMCMISO_EIE_PREC_AEA	28-Dec-16	0.604		RAD	Americium-241	0.604	pCi/L	
B38JN9	14596-10-2	Americium-241	0.00251	pCi/L	U	AMCMISO_EIE_PREC_AEA	01-Feb-17	0.414		RAD	Americium-241	0.414	pCi/L	
B38JP3	14596-10-2	Americium-241	0.0229	pCi/L	U	AMCMISO_EIE_PREC_AEA	22-Feb-17	0.499		RAD	Americium-241	0.499	pCi/L	
B39HV0	14596-10-2	Americium-241	0.0896	pCi/L	U	AMCMISO_EIE_PREC_AEA	06-Apr-17	0.327		RAD	Americium-241	0.327	pCi/L	
B3B7V2	14596-10-2	Americium-241	0.134	pCi/L	U	AMCMISO_EIE_PREC_AEA	26-Jul-17	0.486		RAD	Americium-241	0.486	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3C1F9	14596-10-2	Americium-241	0.106	pCi/L	U	AMCMISO_EIE_PREC_AEA	15-Aug-17	0.387		RAD	Americium-241	0.387	pCi/L	
B3CVC3	14596-10-2	Americium-241	0.169	pCi/L	U	AMCMISO_EIE_PREC_AEA	20-Sep-17	0.294		RAD	Americium-241	0.294	pCi/L	
B3JF33	14596-10-2	Americium-241	0.0339	pCi/L	U	AMCMISO_EIE_PREC_AEA	17-Apr-18	0.361		RAD	Americium-241	0.361	pCi/L	
B3JKR0	14596-10-2	Americium-241	0.064	pCi/L	U	AMCMISO_EIE_PREC_AEA	15-May-18	0.405		RAD	Americium-241	0.405	pCi/L	
B3K436	14596-10-2	Americium-241	0.160	pCi/L	U	AMCMISO_EIE_PREC_AEA	28-Jun-18	0.259		RAD	Americium-241	0.259	pCi/L	
B3KHV6	14596-10-2	Americium-241	0.0783	pCi/L	U	AMCMISO_EIE_PREC_AEA	30-Jul-18	0.516		RAD	Americium-241	0.516	pCi/L	
B35KV3	CM-243/244	Curium-243/244	0.0582	pCi/L	U	AMCMISO_EIE_PREC_AEA	31-May-16	0.174		RAD	Curium-243/244	0.174	pCi/L	
B36204	CM-243/244	Curium-243/244	-0.0168	pCi/L	U	AMCMISO_EIE_PREC_AEA	26-Jun-16	0.335		RAD	Curium-243/244	0.335	pCi/L	
B367P5	CM-243/244	Curium-243/244	-0.0327	pCi/L	U	AMCMISO_EIE_PREC_AEA	21-Jul-16	0.377	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	CM-243/244	Curium-243/244	-0.0708	pCi/L	U	AMCMISO_EIE_PREC_AEA	21-Jul-16	0.414	X	RAD	Curium-243/244	0.414	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	CM-243/244	Curium-243/244	-0.028	pCi/L	U	AMCMISO_EIE_PREC_AEA	24-Aug-16	0.56		RAD	Curium-243/244	0.56	pCi/L	
B37RH5	CM-243/244	Curium-243/244	-0.0161	pCi/L	U	AMCMISO_EIE_PREC_AEA	30-Nov-16	0.322		RAD	Curium-243/244	0.322	pCi/L	
B38872	CM-243/244	Curium-243/244	0.0645	pCi/L	U	AMCMISO_EIE_PREC_AEA	28-Dec-16	0.407		RAD	Curium-243/244	0.407	pCi/L	
B38JN9	CM-243/244	Curium-243/244	0	pCi/L	U	AMCMISO_EIE_PREC_AEA	01-Feb-17	0.186		RAD	Curium-243/244	0.186	pCi/L	
B38JP3	CM-243/244	Curium-243/244	-0.0161	pCi/L	U	AMCMISO_EIE_PREC_AEA	22-Feb-17	0.565		RAD	Curium-243/244	0.565	pCi/L	
B39HV0	CM-243/244	Curium-243/244	0.00233	pCi/L	U	AMCMISO_EIE_PREC_AEA	06-Apr-17	0.383		RAD	Curium-243/244	0.383	pCi/L	
B3B7V2	CM-243/244	Curium-243/244	-0.0208	pCi/L	U	AMCMISO_EIE_PREC_AEA	26-Jul-17	0.415		RAD	Curium-243/244	0.415	pCi/L	
B3C1F9	CM-243/244	Curium-243/244	-0.0496	pCi/L	U	AMCMISO_EIE_PREC_AEA	15-Aug-17	0.421		RAD	Curium-243/244	0.421	pCi/L	
B3CVC3	CM-243/244	Curium-243/244	0.0169	pCi/L	U	AMCMISO_EIE_PREC_AEA	20-Sep-17	0.37		RAD	Curium-243/244	0.37	pCi/L	
B3JF33	CM-243/244	Curium-243/244	0.0977	pCi/L	U	AMCMISO_EIE_PREC_AEA	17-Apr-18	0.356		RAD	Curium-243/244	0.356	pCi/L	
B3JKR0	CM-243/244	Curium-243/244	0.0437	pCi/L	U	AMCMISO_EIE_PREC_AEA	15-May-18	0.693		RAD	Curium-243/244	0.693	pCi/L	
B3K436	CM-243/244	Curium-243/244	-0.0316	pCi/L	U	AMCMISO_EIE_PREC_AEA	28-Jun-18	0.175		RAD	Curium-243/244	0.175	pCi/L	
B3KHV6	CM-243/244	Curium-243/244	0.0159	pCi/L	U	AMCMISO_EIE_PREC_AEA	30-Jul-18	0.347		RAD	Curium-243/244	0.347	pCi/L	
B35KV3	15046-84-1	Iodine-129	0.917	pCi/L	U	I129LL_SEP_LEPS_GS	31-May-16	3.46		RAD	Iodine-129	3.46	pCi/L	
B36204	15046-84-1	Iodine-129	0.779	pCi/L	U	I129LL_SEP_LEPS_GS	26-Jun-16	4.7		RAD	Iodine-129	4.70	pCi/L	
B367P5	15046-84-1	Iodine-129	-0.186	pCi/L	U	I129LL_SEP_LEPS_GS	21-Jul-16	3.14	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	15046-84-1	Iodine-129	-1.29	pCi/L	U	I129LL_SEP_LEPS_GS	21-Jul-16	3.35	X	RAD	Iodine-129	3.35	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	15046-84-1	Iodine-129	1.08	pCi/L	U	I129LL_SEP_LEPS_GS	24-Aug-16	2.44		RAD	Iodine-129	2.44	pCi/L	
B37RH5	15046-84-1	Iodine-129	-0.464	pCi/L	U	I129LL_SEP_LEPS_GS	30-Nov-16	4.38		RAD	Iodine-129	4.38	pCi/L	
B38872	15046-84-1	Iodine-129	0.322	pCi/L	U	I129LL_SEP_LEPS_GS	28-Dec-16	3.85		RAD	Iodine-129	3.85	pCi/L	
B38JN9	15046-84-1	Iodine-129	-0.0242	pCi/L	U	I129LL_SEP_LEPS_GS	01-Feb-17	3.02		RAD	Iodine-129	3.02	pCi/L	
B38JP3	15046-84-1	Iodine-129	0.486	pCi/L	U	I129LL_SEP_LEPS_GS	22-Feb-17	3.25		RAD	Iodine-129	3.25	pCi/L	
B39HV0	15046-84-1	Iodine-129	0.512	pCi/L	U	I129LL_SEP_LEPS_GS	06-Apr-17	4.5		RAD	Iodine-129	4.5	pCi/L	
B3B7V2	15046-84-1	Iodine-129	-0.600	pCi/L	U	I129LL_SEP_LEPS_GS	26-Jul-17	3.54		RAD	Iodine-129	3.54	pCi/L	
B3C1F9	15046-84-1	Iodine-129	-1.28	pCi/L	U	I129LL_SEP_LEPS_GS	15-Aug-17	3.72		RAD	Iodine-129	3.72	pCi/L	
B3CVC3	15046-84-1	Iodine-129	-0.997	pCi/L	U	I129LL_SEP_LEPS_GS	20-Sep-17	1.59		RAD	Iodine-129	1.59	pCi/L	
B3JF33	15046-84-1	Iodine-129	0.799	pCi/L	U	I129LL_SEP_LEPS_GS	17-Apr-18	3.89		RAD	Iodine-129	3.89	pCi/L	
B3JKR0	15046-84-1	Iodine-129	-0.279	pCi/L	U	I129LL_SEP_LEPS_GS	15-May-18	3.89		RAD	Iodine-129	3.89	pCi/L	
B3K436	15046-84-1	Iodine-129	-1.64	pCi/L	U	I129LL_SEP_LEPS_GS	28-Jun-18	4.05		RAD	Iodine-129	4.05	pCi/L	
B3KHV6	15046-84-1	Iodine-129	0.0877	pCi/L	U	I129LL_SEP_LEPS_GS	30-Jul-18	2.79		RAD	Iodine-129	2.79	pCi/L	
B35KV3	13994-20-2	Neptunium-237	0.00472	pCi/L	U	NP237_IE_PRECIP_AEA	31-May-16	0.778		RAD	Neptunium-237	0.778	pCi/L	
B36204	13994-20-2	Neptunium-237	-0.0143	pCi/L	U	NP237_IE_PRECIP_AEA	26-Jun-16	0.503		RAD	Neptunium-237	0.503	pCi/L	
B367P5	13994-20-2	Neptunium-237	0.0228	pCi/L	U	NP237_IE_PRECIP_AEA	21-Jul-16	0.497	X	RAD	Neptunium-237	0.497	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	13994-20-2	Neptunium-237	-0.0722	pCi/L	U	NP237_IE_PRECIP_AEA	21-Jul-16	0.496	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	13994-20-2	Neptunium-237	-0.101	pCi/L	U	NP237_IE_PRECIP_AEA	24-Aug-16	0.517		RAD	Neptunium-237	0.517	pCi/L	
B37RH5	13994-20-2	Neptunium-237	0.0639	pCi/L	U	NP237_IE_PRECIP_AEA	30-Nov-16	0.688		RAD	Neptunium-237	0.688	pCi/L	
B38872	13994-20-2	Neptunium-237	0.0383	pCi/L	U	NP237_IE_PRECIP_AEA	28-Dec-16	0.408		RAD	Neptunium-237	0.408	pCi/L	
B38JN9	13994-20-2	Neptunium-237	-0.0278	pCi/L	U	NP237_IE_PRECIP_AEA	01-Feb-17	0.321		RAD	Neptunium-237	0.321	pCi/L	
B38JP3	13994-20-2	Neptunium-237	0.0201	pCi/L	U	NP237_IE_PRECIP_AEA	22-Feb-17	0.239		RAD	Neptunium-237	0.239	pCi/L	
B39HV0	13994-20-2	Neptunium-237	0.183	pCi/L	U	NP237_IE_PRECIP_AEA	06-Apr-17	0.838		RAD	Neptunium-237	0.838	pCi/L	
B3B7V2	13994-20-2	Neptunium-237	0.0242	pCi/L	U	NP237_IE_PRECIP_AEA	26-Jul-17	0.527		RAD	Neptunium-237	0.527	pCi/L	
B3C1F9	13994-20-2	Neptunium-237	-0.0545	pCi/L	U	NP237_IE_PRECIP_AEA	15-Aug-17	0.463		RAD	Neptunium-237	0.463	pCi/L	
B3CVC3	13994-20-2	Neptunium-237	0.0379	pCi/L	U	NP237_IE_PRECIP_AEA	20-Sep-17	0.501		RAD	Neptunium-237	0.501	pCi/L	
B3JF33	13994-20-2	Neptunium-237	-0.034	pCi/L	U	NP237_IE_PRECIP_AEA	17-Apr-18	0.673		RAD	Neptunium-237	0.673	pCi/L	
B3JKR0	13994-20-2	Neptunium-237	0.0552	pCi/L	U	NP237_IE_PRECIP_AEA	15-May-18	0.551		RAD	Neptunium-237	0.551	pCi/L	
B3K436	13994-20-2	Neptunium-237	7.04E-09	pCi/L	U	NP237_IE_PRECIP_AEA	28-Jun-18	0.156		RAD	Neptunium-237	0.156	pCi/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3KHV6	13994-20-2	Neptunium-237	-0.0319	pCi/L	U	NP237_IE_PRECIP_AEA	30-Jul-18	0.368		RAD	Neptunium-237	0.368	pCi/L	
B35KV3	13981-16-3	Plutonium-238	0.0329	pCi/L	U	PUISO_PLATE_AEA	31-May-16	0.351		RAD	Plutonium-238	0.351	pCi/L	
B36204	13981-16-3	Plutonium-238	0	pCi/L	U	PUISO_PLATE_AEA	26-Jun-16	0.232		RAD	Plutonium-238	0.232	pCi/L	
B367P5	13981-16-3	Plutonium-238	0.0527	pCi/L	U	PUISO_PLATE_AEA	21-Jul-16	0.562	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	13981-16-3	Plutonium-238	0.233	pCi/L	U	PUISO_PLATE_AEA	21-Jul-16	0.624	X	RAD	Plutonium-238	0.624	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	13981-16-3	Plutonium-238	0.00687	pCi/L	U	PUISO_PLATE_AEA	24-Aug-16	0.615		RAD	Plutonium-238	0.615	pCi/L	
B37RH5	13981-16-3	Plutonium-238	-0.0802	pCi/L	U	PUISO_PLATE_AEA	30-Nov-16	0.469		RAD	Plutonium-238	0.469	pCi/L	
B38872	13981-16-3	Plutonium-238	0.00286	pCi/L	U	PUISO_PLATE_AEA	28-Dec-16	0.471		RAD	Plutonium-238	0.471	pCi/L	
B38JN9	13981-16-3	Plutonium-238	0.313	pCi/L	U	PUISO_PLATE_AEA	01-Feb-17	0.619		RAD	Plutonium-238	0.619	pCi/L	
B38JP3	13981-16-3	Plutonium-238	0	pCi/L	U	PUISO_PLATE_AEA	22-Feb-17	0.487		RAD	Plutonium-238	0.487	pCi/L	
B39HV0	13981-16-3	Plutonium-238	-0.0202	pCi/L	U	PUISO_PLATE_AEA	06-Apr-17	0.404		RAD	Plutonium-238	0.404	pCi/L	
B3B7V2	13981-16-3	Plutonium-238	0.170	pCi/L	U	PUISO_PLATE_AEA	26-Jul-17	0.92		RAD	Plutonium-238	0.920	pCi/L	
B3C1F9	13981-16-3	Plutonium-238	0.024	pCi/L	U	PUISO_PLATE_AEA	15-Aug-17	0.524		RAD	Plutonium-238	0.524	pCi/L	
B3CVC3	13981-16-3	Plutonium-238	0.121	pCi/L	U	PUISO_PLATE_AEA	20-Sep-17	0.442		RAD	Plutonium-238	0.442	pCi/L	
B3JF33	13981-16-3	Plutonium-238	0	pCi/L	U	PUISO_PLATE_AEA	17-Apr-18	0.278		RAD	Plutonium-238	0.278	pCi/L	
B3JKR0	13981-16-3	Plutonium-238	-0.020	pCi/L	U	PUISO_PLATE_AEA	15-May-18	0.4		RAD	Plutonium-238	0.400	pCi/L	
B3K436	13981-16-3	Plutonium-238	-0.0652	pCi/L	U	PUISO_PLATE_AEA	28-Jun-18	0.743		RAD	Plutonium-238	0.743	pCi/L	
B3KHV6	13981-16-3	Plutonium-238	0.513	pCi/L	U	PUISO_PLATE_AEA	30-Jul-18	0.772		RAD	Plutonium-238	0.772	pCi/L	
B35KV3	PU-239/240	Plutonium-239/240	0.0963	pCi/L	U	PUISO_PLATE_AEA	31-May-16	0.351		RAD	Plutonium-239/240	0.351	pCi/L	
B36204	PU-239/240	Plutonium-239/240	-0.0526	pCi/L	U	PUISO_PLATE_AEA	26-Jun-16	0.6		RAD	Plutonium-239/240	0.600	pCi/L	
B367P5	PU-239/240	Plutonium-239/240	0.134	pCi/L	U	PUISO_PLATE_AEA	21-Jul-16	0.786	X	RAD	Plutonium-239/240	0.786	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	PU-239/240	Plutonium-239/240	-0.098	pCi/L	U	PUISO_PLATE_AEA	21-Jul-16	0.673	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	PU-239/240	Plutonium-239/240	-0.00805	pCi/L	U	PUISO_PLATE_AEA	24-Aug-16	0.893		RAD	Plutonium-239/240	0.893	pCi/L	
B37RH5	PU-239/240	Plutonium-239/240	0.0348	pCi/L	U	PUISO_PLATE_AEA	30-Nov-16	0.37		RAD	Plutonium-239/240	0.370	pCi/L	
B38872	PU-239/240	Plutonium-239/240	-0.0515	pCi/L	U	PUISO_PLATE_AEA	28-Dec-16	0.437		RAD	Plutonium-239/240	0.437	pCi/L	
B38JN9	PU-239/240	Plutonium-239/240	-0.126	pCi/L	U	PUISO_PLATE_AEA	01-Feb-17	0.686		RAD	Plutonium-239/240	0.686	pCi/L	
B38JP3	PU-239/240	Plutonium-239/240	0.0844	pCi/L	U	PUISO_PLATE_AEA	22-Feb-17	0.899		RAD	Plutonium-239/240	0.899	pCi/L	
B39HV0	PU-239/240	Plutonium-239/240	0.0674	pCi/L	U	PUISO_PLATE_AEA	06-Apr-17	0.591		RAD	Plutonium-239/240	0.591	pCi/L	
B3B7V2	PU-239/240	Plutonium-239/240	-0.17	pCi/L	U	PUISO_PLATE_AEA	26-Jul-17	0.714		RAD	Plutonium-239/240	0.714	pCi/L	
B3C1F9	PU-239/240	Plutonium-239/240	-0.103	pCi/L	U	PUISO_PLATE_AEA	15-Aug-17	0.602		RAD	Plutonium-239/240	0.602	pCi/L	
B3CVC3	PU-239/240	Plutonium-239/240	-0.0128	pCi/L	U	PUISO_PLATE_AEA	20-Sep-17	0.668		RAD	Plutonium-239/240	0.668	pCi/L	
B3JF33	PU-239/240	Plutonium-239/240	0.141	pCi/L	U	PUISO_PLATE_AEA	17-Apr-18	0.514		RAD	Plutonium-239/240	0.514	pCi/L	
B3JKR0	PU-239/240	Plutonium-239/240	0.19	pCi/L	U	PUISO_PLATE_AEA	15-May-18	0.509		RAD	Plutonium-239/240	0.509	pCi/L	
B3K436	PU-239/240	Plutonium-239/240	0.00384	pCi/L	U	PUISO_PLATE_AEA	28-Jun-18	0.632		RAD	Plutonium-239/240	0.632	pCi/L	
B3KHV6	PU-239/240	Plutonium-239/240	0.0268	pCi/L	U	PUISO_PLATE_AEA	30-Jul-18	0.649		RAD	Plutonium-239/240	0.649	pCi/L	
B35KV3	10098-97-2	Strontium-90	-0.161	pCi/L	U	SRISO_SEP_PRECIP_GPC	31-May-16	1.5		RAD	Strontium-90	1.50	pCi/L	
B36204	10098-97-2	Strontium-90	0.219	pCi/L	U	SRISO_SEP_PRECIP_GPC	26-Jun-16	1.63		RAD	Strontium-90	1.63	pCi/L	
B3CVC3	10098-97-2	Strontium-90	1.51	pCi/L	U	SRISO_SEP_PRECIP_GPC	20-Sep-17	3.7		RAD	Strontium-90	3.70	pCi/L	
B3JF33	10098-97-2	Strontium-90	0.954	pCi/L	U	SRISO_SEP_PRECIP_GPC	17-Apr-18	1.9		RAD	Strontium-90	1.90	pCi/L	
B3JKR0	10098-97-2	Strontium-90	-0.317	pCi/L	U	SRISO_SEP_PRECIP_GPC	15-May-18	1.62		RAD	Strontium-90	1.62	pCi/L	
B367P5	SR-RAD	Total beta radiostrontium	-1.37	pCi/L	U	SRISO_SEP_PRECIP_GPC	21-Jul-16	3.28	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B367P5DUP	SR-RAD	Total beta radiostrontium	-0.0428	pCi/L	U	SRISO_SEP_PRECIP_GPC	21-Jul-16	3.58	X	RAD	Strontium-90	3.58	pCi/L	B367P5 and B367P5DUP are duplicates
B36HL0	SR-RAD	Total beta radiostrontium	-0.216	pCi/L	U	SRISO_SEP_PRECIP_GPC	24-Aug-16	5.27		RAD	Strontium-90	5.27	pCi/L	
B37RH5	SR-RAD	Total beta radiostrontium	3.77	pCi/L		SRISO_SEP_PRECIP_GPC	30-Nov-16	3.72		RAD	Strontium-90	3.77	pCi/L	
B38872	SR-RAD	Total beta radiostrontium	5.01	pCi/L	U	SRISO_SEP_PRECIP_GPC	28-Dec-16	5.9		RAD	Strontium-90	5.90	pCi/L	
B38JN9	SR-RAD	Total beta radiostrontium	-1.5	pCi/L	U	SRISO_SEP_PRECIP_GPC	01-Feb-17	3.51		RAD	Strontium-90	3.51	pCi/L	
B38JP3	SR-RAD	Total beta radiostrontium	0.065	pCi/L	U	SRISO_SEP_PRECIP_GPC	22-Feb-17	3.98		RAD	Strontium-90	3.98	pCi/L	
B39HV0	SR-RAD	Total beta radiostrontium	2.48	pCi/L	U	SRISO_SEP_PRECIP_GPC	06-Apr-17	7.42		RAD	Strontium-90	7.42	pCi/L	
B3B7V2	SR-RAD	Total beta radiostrontium	-2.32	pCi/L	U	SRISO_SEP_PRECIP_GPC	26-Jul-17	4.25		RAD	Strontium-90	4.25	pCi/L	
B3C1F9	SR-RAD	Total beta radiostrontium	-2.84	pCi/L	U	SRISO_SEP_PRECIP_GPC	15-Aug-17	4.57		RAD	Strontium-90	4.57	pCi/L	
B3K436	SR-RAD	Total beta radiostrontium	-0.613	pCi/L	U	SRISO_SEP_PRECIP_GPC	28-Jun-18	3.6		RAD	Strontium-90	3.60	pCi/L	
B3KHV6	SR-RAD	Total beta radiostrontium	-1.08	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Jul-18	3.17		RAD	Strontium-90	3.17	pCi/L	
B35KV3	14133-76-7	Technetium-99	2.73	pCi/L	U	TC99_EIE_LSC	31-May-16	11		RAD	Technetium-99	11.0	pCi/L	
B36204	14133-76-7	Technetium-99	-1.66	pCi/L	U	TC99_EIE_LSC	26-Jun-16	5.8		RAD	Technetium-99	5.80	pCi/L	
B367P5	14133-76-7	Technetium-99	-6.66	pCi/L	U	TC99_EIE_LSC	21-Jul-16	12.7	X	RAD	Technetium-99	12.7	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	14133-76-7	Technetium-99	2.48	pCi/L	U	TC99_EIE_LSC	21-Jul-16	12.4	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B36HL0	14133-76-7	Technetium-99	60.1	pCi/L		TC99_EIE_LSC	24-Aug-16	12.2		RAD	Technetium-99	60.1	pCi/L	
B37RH5	14133-76-7	Technetium-99	-1.28	pCi/L	U	TC99_EIE_LSC	30-Nov-16	11.9		RAD	Technetium-99	11.9	pCi/L	
B38872	14133-76-7	Technetium-99	-5.34	pCi/L	U	TC99_EIE_LSC	28-Dec-16	11.7		RAD	Technetium-99	11.7	pCi/L	
B38JN9	14133-76-7	Technetium-99	-1.97	pCi/L	U	TC99_EIE_LSC	01-Feb-17	12.2		RAD	Technetium-99	12.2	pCi/L	
B38JP3	14133-76-7	Technetium-99	1.02	pCi/L	U	TC99_EIE_LSC	22-Feb-17	12.2		RAD	Technetium-99	12.2	pCi/L	
B39HV0	14133-76-7	Technetium-99	-0.837	pCi/L	U	TC99_EIE_LSC	06-Apr-17	11.4		RAD	Technetium-99	11.4	pCi/L	
B3B7V2	14133-76-7	Technetium-99	-6.49	pCi/L	U	TC99_EIE_LSC	26-Jul-17	13.3		RAD	Technetium-99	13.3	pCi/L	
B3C1F9	14133-76-7	Technetium-99	1.7	pCi/L	U	TC99_EIE_LSC	15-Aug-17	11.7		RAD	Technetium-99	11.7	pCi/L	
B3CVC3	14133-76-7	Technetium-99	1.89	pCi/L	U	TC99_EIE_LSC	20-Sep-17	12.9		RAD	Technetium-99	12.9	pCi/L	
B3JF33	14133-76-7	Technetium-99	-3.18	pCi/L	U	TC99_EIE_LSC	17-Apr-18	13.1		RAD	Technetium-99	13.1	pCi/L	
B3JKR0	14133-76-7	Technetium-99	-7.76	pCi/L	U	TC99_EIE_LSC	15-May-18	11.5		RAD	Technetium-99	11.5	pCi/L	
B3K436	14133-76-7	Technetium-99	-2.31	pCi/L	U	TC99_EIE_LSC	28-Jun-18	12.6		RAD	Technetium-99	12.6	pCi/L	
B3KHV6	14133-76-7	Technetium-99	-4.73	pCi/L	U	TC99_EIE_LSC	30-Jul-18	11.1		RAD	Technetium-99	11.1	pCi/L	
B35KV3	10028-17-8	Tritium	166000	pCi/L		TRITIUM_DIST_LSC	31-May-16	670		RAD	Tritium	1.66E+05	pCi/L	
B36204	10028-17-8	Tritium	105000	pCi/L		TRITIUM_DIST_LSC	26-Jun-16	446		RAD	Tritium	1.05E+05	pCi/L	
B367P5	10028-17-8	Tritium	99900	pCi/L		TRITIUM_DIST_LSC	21-Jul-16	708	X	RAD	Tritium	9.99E+04	pCi/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	10028-17-8	Tritium	96700	pCi/L		TRITIUM_DIST_LSC	21-Jul-16	706	X	RAD	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	10028-17-8	Tritium	102000	pCi/L		TRITIUM_DIST_LSC	24-Aug-16	627		RAD	Tritium	1.02E+05	pCi/L	
B37RH5	10028-17-8	Tritium	94700	pCi/L		TRITIUM_DIST_LSC	30-Nov-16	627		RAD	Tritium	9.47E+04	pCi/L	
B38872	10028-17-8	Tritium	96100	pCi/L		TRITIUM_DIST_LSC	28-Dec-16	568		RAD	Tritium	9.61E+04	pCi/L	
B38JN9	10028-17-8	Tritium	95200	pCi/L		TRITIUM_DIST_LSC	01-Feb-17	591		RAD	Tritium	9.52E+04	pCi/L	
B38JP3	10028-17-8	Tritium	89400	pCi/L		TRITIUM_DIST_LSC	22-Feb-17	254		RAD	Tritium	8.94E+04	pCi/L	
B39HV0	10028-17-8	Tritium	81700	pCi/L		TRITIUM_DIST_LSC	06-Apr-17	465		RAD	Tritium	8.17E+04	pCi/L	
B3B7V2	10028-17-8	Tritium	90500	pCi/L		TRITIUM_DIST_LSC	26-Jul-17	836		RAD	Tritium	9.05E+04	pCi/L	
B3C1F9	10028-17-8	Tritium	84100	pCi/L		TRITIUM_DIST_LSC	15-Aug-17	640		RAD	Tritium	8.41E+04	pCi/L	
B3CVC3	10028-17-8	Tritium	759000	pCi/L		TRITIUM_DIST_LSC	20-Sep-17	1070		RAD	Tritium	7.59E+05	pCi/L	
B3JF33	10028-17-8	Tritium	761000	pCi/L		TRITIUM_DIST_LSC	17-Apr-18	524		RAD	Tritium	7.61E+05	pCi/L	
B3JKR0	10028-17-8	Tritium	745000	pCi/L		TRITIUM_DIST_LSC	15-May-18	1050		RAD	Tritium	7.45E+05	pCi/L	
B3K436	10028-17-8	Tritium	796000	pCi/L		TRITIUM_DIST_LSC	28-Jun-18	716		RAD	Tritium	7.96E+05	pCi/L	
B3KHV6	10028-17-8	Tritium	848000	pCi/L		TRITIUM_DIST_LSC	30-Jul-18	835		RAD	Tritium	8.48E+05	pCi/L	
B35KV3	88-06-2	2,4,6-Trichlorophenol	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	2,4,6-Trichlorophenol	3.0	ug/L	
B3CVC3-RJCT	88-06-2	2,4,6-Trichlorophenol	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	88-06-2	2,4,6-Trichlorophenol	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	2,4,6-Trichlorophenol	3.0	ug/L	
B37RH5	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	2-Butoxyethanol	5.4	ug/L	
B38872	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	2-Butoxyethanol	5.4	ug/L	
B38JN9	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B38JP3	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B39HV0	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B3B7V2	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B3C1F9	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B3CVC3-RJCT	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	2-Butoxyethanol	5.4	ug/L	
B3JF33	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	2-Butoxyethanol	5.4	ug/L	
B3JKR0	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	2-Butoxyethanol	5.4	ug/L	
B3K436	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	2-Butoxyethanol	5.4	ug/L	
B3KHV6	111-76-2	2-Butoxyethanol	5.4	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	2-Butoxyethanol	5.40	ug/L	
B35KV3	106-47-8	4-Chloroaniline	3.3	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	4-Chloroaniline	3.3	ug/L	
B3CVC3-RJCT	106-47-8	4-Chloroaniline	3.3	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	106-47-8	4-Chloroaniline	3.3	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	4-Chloroaniline	3.3	ug/L	
B35KV3	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Acetophenone	3.0	ug/L	
B36204	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Acetophenone	3.0	ug/L	
B367P5	98-86-2	Acetophenone	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Acetophenone	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	98-86-2	Acetophenone	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Acetophenone	3.0	ug/L	
B37RH5	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Acetophenone	3.0	ug/L	
B38872	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Acetophenone	3.0	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B38JN9	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Acetophenone	3.0	ug/L	
B38JP3	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Acetophenone	3.0	ug/L	
B39HV0	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Acetophenone	3.0	ug/L	
B3B7V2	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Acetophenone	3.0	ug/L	
B3C1F9	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Acetophenone	3.0	ug/L	
B3CVC3-RJCT	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Acetophenone	3.0	ug/L	
B3JF33	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Acetophenone	3.0	ug/L	
B3JKR0	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Acetophenone	3.0	ug/L	
B3K436	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Acetophenone	3.0	ug/L	
B3KHV6	98-86-2	Acetophenone	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Acetophenone	3.0	ug/L	
B35KV3	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Benzyl alcohol	3.0	ug/L	
B36204	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Benzyl alcohol	3.0	ug/L	
B367P5	100-51-6	Benzyl alcohol	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Benzyl alcohol	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	100-51-6	Benzyl alcohol	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Benzyl alcohol	3.0	ug/L	
B37RH5	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Benzyl alcohol	3.0	ug/L	
B38872	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Benzyl alcohol	3.0	ug/L	
B38JN9	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Benzyl alcohol	3.0	ug/L	
B38JP3	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Benzyl alcohol	3.0	ug/L	
B39HV0	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Benzyl alcohol	3.0	ug/L	
B3B7V2	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Benzyl alcohol	3.0	ug/L	
B3C1F9	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Benzyl alcohol	3.0	ug/L	
B3CVC3-RJCT	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Benzyl alcohol	3.0	ug/L	
B3JF33	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Benzyl alcohol	3.0	ug/L	
B3JKR0	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Benzyl alcohol	3.0	ug/L	
B3K436	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Benzyl alcohol	3.0	ug/L	
B3KHV6	100-51-6	Benzyl alcohol	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Benzyl alcohol	3.00	ug/L	
B35KV3	108-60-1	Bis(2-chloro-1-methylethyl)ether	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Bis(2-chloro-1-methylethyl)ether	3.0	ug/L	
B3CVC3-RJCT	108-60-1	Bis(2-chloro-1-methylethyl)ether	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	108-60-1	Bis(2-chloro-1-methylethyl)ether	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Bis(2-chloro-1-methylethyl)ether	3.0	ug/L	
B35KV3	86-74-8	Carbazole	0.30	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Carbazole	0.30	ug/L	
B3CVC3-RJCT	86-74-8	Carbazole	0.30	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	86-74-8	Carbazole	0.30	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Carbazole	0.30	ug/L	
B35KV3	218-01-9	Chrysene	0.30	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Chrysene	0.30	ug/L	
B3CVC3-RJCT	218-01-9	Chrysene	0.30	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	218-01-9	Chrysene	0.30	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Chrysene	0.30	ug/L	
B35KV3	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Di-n-octylphthalate	3.0	ug/L	
B36204	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Di-n-octylphthalate	3.0	ug/L	
B367P5	117-84-0	Di-n-octylphthalate	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Di-n-octylphthalate	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	117-84-0	Di-n-octylphthalate	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Di-n-octylphthalate	3.0	ug/L	
B37RH5	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Di-n-octylphthalate	3.0	ug/L	
B38872	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Di-n-octylphthalate	3.0	ug/L	
B38JN9	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B38JP3	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B39HV0	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B3B7V2	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B3C1F9	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B3CVC3-RJCT	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	117-84-0	Di-n-octylphthalate	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Di-n-octylphthalate	3.0	ug/L	
B3JF33	117-84-0	Di-n-octylphthalate	0.30	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Di-n-octylphthalate	0.30	ug/L	
B3JKR0	117-84-0	Di-n-octylphthalate	0.30	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Di-n-octylphthalate	0.30	ug/L	
B3K436	117-84-0	Di-n-octylphthalate	0.30	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Di-n-octylphthalate	0.30	ug/L	
B3KHV6	117-84-0	Di-n-octylphthalate	0.30	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Di-n-octylphthalate	0.30	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B35KV3	122-39-4	Diphenylamine	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Diphenylamine	3.0	ug/L	
B3CVC3-RJCT	122-39-4	Diphenylamine	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	122-39-4	Diphenylamine	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Diphenylamine	3.0	ug/L	
B35KV3	77-47-4	Hexachlorocyclopentadiene	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Hexachlorocyclopentadiene	3.0	ug/L	
B3CVC3-RJCT	77-47-4	Hexachlorocyclopentadiene	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	77-47-4	Hexachlorocyclopentadiene	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Hexachlorocyclopentadiene	3.0	ug/L	
B35KV3	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Hexachloroethane	3.0	ug/L	
B36204	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Hexachloroethane	3.0	ug/L	
B367P5	67-72-1	Hexachloroethane	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Hexachloroethane	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	67-72-1	Hexachloroethane	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Hexachloroethane	3.0	ug/L	
B37RH5	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Hexachloroethane	3.0	ug/L	
B38872	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Hexachloroethane	3.0	ug/L	
B38JN9	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Hexachloroethane	3.0	ug/L	
B38JP3	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Hexachloroethane	3.0	ug/L	
B39HV0	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Hexachloroethane	3.0	ug/L	
B3B7V2	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Hexachloroethane	3.0	ug/L	
B3C1F9	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Hexachloroethane	3.0	ug/L	
B3CVC3-RJCT	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Hexachloroethane	3.0	ug/L	
B3JF33	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Hexachloroethane	3.0	ug/L	
B3JKR0	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Hexachloroethane	3.0	ug/L	
B3K436	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Hexachloroethane	3.0	ug/L	
B3KHV6	67-72-1	Hexachloroethane	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Hexachloroethane	3.0	ug/L	
B35KV3	78-59-1	Isophorone	3.5	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Isophorone	3.5	ug/L	
B3CVC3-RJCT	78-59-1	Isophorone	3.5	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	78-59-1	Isophorone	3.5	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Isophorone	3.5	ug/L	
B35KV3	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Naphthalene	0.3	ug/L	
B36204	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Naphthalene	0.3	ug/L	
B367P5	91-20-3	Naphthalene	0.417	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Naphthalene	0.417	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	91-20-3	Naphthalene	0.333	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Naphthalene	0.30	ug/L	
B37RH5	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Naphthalene	0.30	ug/L	
B38872	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Naphthalene	0.30	ug/L	
B38JN9	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Naphthalene	0.30	ug/L	
B38JP3	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Naphthalene	0.30	ug/L	
B39HV0	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Naphthalene	0.30	ug/L	
B3B7V2	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Naphthalene	0.30	ug/L	
B3C1F9	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Naphthalene	0.30	ug/L	
B3CVC3-RJCT	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Naphthalene	0.30	ug/L	
B3JF33	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Naphthalene	0.30	ug/L	
B3JKR0	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Naphthalene	0.30	ug/L	
B3K436	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Naphthalene	0.30	ug/L	
B3KHV6	91-20-3	Naphthalene	0.30	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Naphthalene	0.30	ug/L	
B35KV3	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B36204	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B367P5	62-75-9	n-Nitrosodimethylamine	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	n-Nitrosodimethylamine	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	62-75-9	n-Nitrosodimethylamine	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B37RH5	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B38872	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B38JN9	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B38JP3	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B39HV0	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3B7V2	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3C1F9	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3CVC3-RJCT	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3JF33	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3JKR0	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3K436	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B3KHV6	62-75-9	n-Nitrosodimethylamine	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	n-Nitrosodimethylamine	3.0	ug/L	
B35KV3	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Phenol	3.0	ug/L	
B36204	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Phenol	3.0	ug/L	
B367P5	108-95-2	Phenol	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Phenol	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	108-95-2	Phenol	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Phenol	3.0	ug/L	
B37RH5	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Phenol	3.0	ug/L	
B38872	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Phenol	3.0	ug/L	
B38JN9	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Phenol	3.0	ug/L	
B38JP3	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Phenol	3.0	ug/L	
B39HV0	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Phenol	3.0	ug/L	
B3B7V2	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Phenol	3.0	ug/L	
B3C1F9	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Phenol	3.0	ug/L	
B3CVC3-RJCT	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Phenol	3.0	ug/L	
B3JF33	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Phenol	3.0	ug/L	
B3JKR0	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Phenol	3.0	ug/L	
B3K436	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Phenol	3.0	ug/L	
B3KHV6	108-95-2	Phenol	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Phenol	3.00	ug/L	
B35KV3	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Pyridine	3.0	ug/L	
B36204	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Pyridine	3.0	ug/L	
B367P5	110-86-1	Pyridine	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Pyridine	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	110-86-1	Pyridine	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Pyridine	3.0	ug/L	
B37RH5	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Pyridine	3.0	ug/L	
B38872	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Pyridine	3.0	ug/L	
B38JN9	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Pyridine	3.0	ug/L	
B38JP3	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Pyridine	3.0	ug/L	
B39HV0	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Pyridine	3.0	ug/L	
B3B7V2	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Pyridine	3.0	ug/L	
B3C1F9	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Pyridine	3.0	ug/L	
B3CVC3-RJCT	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Pyridine	3.0	ug/L	
B3JF33	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Pyridine	3.0	ug/L	
B3JKR0	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Pyridine	3.0	ug/L	
B3K436	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Pyridine	3.0	ug/L	
B3KHV6	110-86-1	Pyridine	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Pyridine	3.00	ug/L	
B35KV3	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Total cresols	3.0	ug/L	
B36204	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Total cresols	3.0	ug/L	
B367P5	1319-77-3	Total cresols	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Total cresols	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	1319-77-3	Total cresols	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Total cresols	3.0	ug/L	
B37RH5	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Total cresols	3.0	ug/L	
B38872	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Total cresols	3.0	ug/L	
B38JN9	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Total cresols	3.0	ug/L	
B38JP3	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Total cresols	3.0	ug/L	
B39HV0	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Total cresols	3.0	ug/L	
B3B7V2	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Total cresols	3.0	ug/L	
B3C1F9	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Total cresols	3.0	ug/L	
B3CVC3-RJCT	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3FLK3	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Total cresols	3.0	ug/L	
B3JF33	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Total cresols	3.0	ug/L	
B3JKR0	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Total cresols	3.0	ug/L	
B3K436	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Total cresols	3.0	ug/L	
B3KHV6	1319-77-3	Total cresols	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Total cresols	3.00	ug/L	
B35KV3	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	31-May-16			SVOA	Tributyl phosphate	3.0	ug/L	
B36204	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	26-Jun-16			SVOA	Tributyl phosphate	3.0	ug/L	
B367P5	126-73-8	Tributyl phosphate	4.17	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	Tributyl phosphate	4.17	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	126-73-8	Tributyl phosphate	3.33	ug/L	U	8270_SVOA_GCMS	21-Jul-16		X	SVOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	24-Aug-16			SVOA	Tributyl phosphate	3.0	ug/L	
B37RH5	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	30-Nov-16			SVOA	Tributyl phosphate	3.0	ug/L	
B38872	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	28-Dec-16			SVOA	Tributyl phosphate	3.0	ug/L	
B38JN9	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	01-Feb-17			SVOA	Tributyl phosphate	3.0	ug/L	
B38JP3	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	22-Feb-17			SVOA	Tributyl phosphate	3.0	ug/L	
B39HV0	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	06-Apr-17			SVOA	Tributyl phosphate	3.0	ug/L	
B3B7V2	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	26-Jul-17			SVOA	Tributyl phosphate	3.0	ug/L	
B3C1F9	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	15-Aug-17			SVOA	Tributyl phosphate	3.0	ug/L	
B3CVC3-RJCT	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	20-Sep-17		R	SVOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	07-Nov-17			SVOA	Tributyl phosphate	3.0	ug/L	
B3JF33	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	17-Apr-18			SVOA	Tributyl phosphate	3.0	ug/L	
B3JKR0	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	15-May-18			SVOA	Tributyl phosphate	3.0	ug/L	
B3K436	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	28-Jun-18			SVOA	Tributyl phosphate	3.0	ug/L	
B3KHV6	126-73-8	Tributyl phosphate	3.0	ug/L	U	8270_SVOA_GCMS	30-Jul-18			SVOA	Tributyl phosphate	3.00	ug/L	
B35KV3	TOC	Total organic carbon	411	ug/L	B	9060_TOC	31-May-16			TOC	Total organic carbon	411	ug/L	
B36203	TOC	Total organic carbon	330	ug/L	U	9060_TOC	26-Jun-16		X	TOC	Total organic carbon	330	ug/L	B35NB7 and B36203 are duplicates
B35NB7	TOC	Total organic carbon	330	ug/L	U	9060_TOC	26-Jun-16		X	TOC	(duplicate)	(duplicate)		B35NB7 and B36203 are duplicates
B365T8	TOC	Total organic carbon	330	ug/L	U	9060_TOC	11-Jul-16			TOC	Total organic carbon	330	ug/L	
B367P4	TOC	Total organic carbon	330	ug/L	U	9060_TOC	21-Jul-16		X	TOC	Total organic carbon	330	ug/L	B367P4 and B367P4DUP are duplicates
B367P4DUP	TOC	Total organic carbon	330	ug/L	U	9060_TOC	21-Jul-16		X	TOC	(duplicate)	(duplicate)		B367P4 and B367P4DUP are duplicates
B367P8	TOC	Total organic carbon	330	ug/L	U	9060_TOC	09-Aug-16			TOC	Total organic carbon	330	ug/L	
B36HK9	TOC	Total organic carbon	330	ug/L	U	9060_TOC	24-Aug-16			TOC	Total organic carbon	330	ug/L	
B37RH4	TOC	Total organic carbon	330	ug/L	U	9060_TOC	30-Nov-16			TOC	Total organic carbon	330	ug/L	
B38871	TOC	Total organic carbon	330	ug/L	U	9060_TOC	28-Dec-16			TOC	Total organic carbon	330	ug/L	
B38JN8	TOC	Total organic carbon	330	ug/L	U	9060_TOC	01-Feb-17			TOC	Total organic carbon	330	ug/L	
B395C0	TOC	Total organic carbon	393	ug/L	B	9060_TOC	06-Mar-17			TOC	Total organic carbon	393	ug/L	
B39HT9	TOC	Total organic carbon	403	ug/L	B	9060_TOC	06-Apr-17			TOC	Total organic carbon	403	ug/L	
B3B7V1	TOC	Total organic carbon	330	ug/L	U	9060_TOC	26-Jul-17			TOC	Total organic carbon	330	ug/L	
B3C1F8	TOC	Total organic carbon	330	ug/L	U	9060_TOC	15-Aug-17			TOC	Total organic carbon	330	ug/L	
B3CVC3-RJCT	TOC	Total organic carbon	330	ug/L	U	9060_TOC	20-Sep-17		R	TOC	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	TOC	Total organic carbon	330	ug/L	U	9060_TOC	07-Nov-17			TOC	Total organic carbon	330	ug/L	
B3JF32	TOC	Total organic carbon	330	ug/L	U	9060_TOC	17-Apr-18			TOC	Total organic carbon	330	ug/L	
B3JKP9	TOC	Total organic carbon	330	ug/L	U	9060_TOC	15-May-18			TOC	Total organic carbon	330	ug/L	
B3K435	TOC	Total organic carbon	330	ug/L	U	9060_TOC	28-Jun-18			TOC	Total organic carbon	330	ug/L	
B3KHV5	TOC	Total organic carbon	330	ug/L	U	9060_TOC	30-Jul-18			TOC	Total organic carbon	330	ug/L	
B35KV3	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B36204	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B367P5	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1,1,1-Trichloroethane	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B38757	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B38872	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B38JN9	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B395C1	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B39HV0	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3B7V2	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3C1F9	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3CVC3-RJCT	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3JF33	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3JKR0	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3K436	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B3KHV6	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	1,1,1-Trichloroethane	0.30	ug/L	
B35KV3	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B36204	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B367P5	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1,1,2-Trichloroethane	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B38757	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B38872	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B38JN9	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B395C1	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B39HV0	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3B7V2	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3C1F9	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3CVC3-RJCT	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3JF33	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3JKR0	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3K436	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B3KHV6	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	1,1,2-Trichloroethane	0.30	ug/L	
B35KV3	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1,1-Dichloroethene	0.30	ug/L	
B36204	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1,1-Dichloroethene	0.30	ug/L	
B367P5	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1,1-Dichloroethene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1,1-Dichloroethene	0.30	ug/L	
B38757	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1,1-Dichloroethene	0.30	ug/L	
B38872	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1,1-Dichloroethene	0.30	ug/L	
B38JN9	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B395C1	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B39HV0	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B3B7V2	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B3C1F9	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B3CVC3-RJCT	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1,1-Dichloroethene	0.30	ug/L	
B3JF33	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1,1-Dichloroethene	0.30	ug/L	
B3JKR0	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1,1-Dichloroethene	0.30	ug/L	
B3K436	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1,1-Dichloroethene	0.30	ug/L	
B3KHV6	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	1,1-Dichloroethene	0.30	ug/L	
B35KV3	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1,2-Dichloroethane	0.30	ug/L	
B36204	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1,2-Dichloroethane	0.30	ug/L	
B367P5	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1,2-Dichloroethane	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1,2-Dichloroethane	0.30	ug/L	
B38757	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1,2-Dichloroethane	0.30	ug/L	
B38872	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1,2-Dichloroethane	0.30	ug/L	
B38JN9	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1,2-Dichloroethane	0.30	ug/L	
B395C1	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	1,2-Dichloroethane	0.30	ug/L	
B39HV0	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1,2-Dichloroethane	0.30	ug/L	
B3B7V2	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1,2-Dichloroethane	0.30	ug/L	
B3C1F9	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1,2-Dichloroethane	0.30	ug/L	
B3CVC3-RJCT	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1,2-Dichloroethane	0.30	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3JF33	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1,2-Dichloroethane	0.30	ug/L	
B3JKR0	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1,2-Dichloroethane	0.30	ug/L	
B3K436	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1,2-Dichloroethane	0.30	ug/L	
B3KHV6	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	1,2-Dichloroethane	0.30	ug/L	
B35KV3	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B36204	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B367P5	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1,4-Dichlorobenzene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B38757	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B38872	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B38JN9	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B395C1	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B39HV0	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3B7V2	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3C1F9	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3CVC3-RJCT	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3JF33	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3JKR0	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3K436	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B3KHV6	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	1,4-Dichlorobenzene	0.30	ug/L	
B35KV3	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	1-Butanol	83.3	ug/L	
B36204	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	1-Butanol	83.3	ug/L	
B367P5	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	1-Butanol	83.3	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	1-Butanol	83.3	ug/L	
B38757	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	1-Butanol	83.3	ug/L	
B38872	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	1-Butanol	83.3	ug/L	
B38JN9	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	1-Butanol	83.3	ug/L	
B395C1	71-36-3	1-Butanol	83.3	ug/L	TU	8260_VOA_GCMS	06-Mar-17			VOA	1-Butanol	83.3	ug/L	
B39HV0	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	1-Butanol	83.3	ug/L	
B3B7V2	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	1-Butanol	83.3	ug/L	
B3C1F9	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	1-Butanol	83.3	ug/L	
B3CVC3-RJCT	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	1-Butanol	83.3	ug/L	
B3JF33	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	1-Butanol	83.3	ug/L	
B3JKR0	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	1-Butanol	83.3	ug/L	
B3K436	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	1-Butanol	83.3	ug/L	
B3KHV6	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	1-Butanol	83.3	ug/L	
B35KV3	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	2-Butanone	3.0	ug/L	
B36204	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	2-Butanone	3.0	ug/L	
B367P5	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	2-Butanone	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	2-Butanone	3.0	ug/L	
B38757	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	20-Dec-16			VOA	2-Butanone	3.0	ug/L	
B38872	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	28-Dec-16			VOA	2-Butanone	3.0	ug/L	
B38JN9	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	01-Feb-17			VOA	2-Butanone	3.0	ug/L	
B395C1	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	2-Butanone	3.0	ug/L	
B39HV0	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	2-Butanone	3.0	ug/L	
B3B7V2	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	26-Jul-17			VOA	2-Butanone	3.0	ug/L	
B3C1F9	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	15-Aug-17			VOA	2-Butanone	3.0	ug/L	
B3CVC3-RJCT	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	2-Butanone	3.0	ug/L	
B3JF33	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	17-Apr-18			VOA	2-Butanone	3.0	ug/L	
B3JKR0	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	15-May-18			VOA	2-Butanone	3.0	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B3K436	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	28-Jun-18			VOA	2-Butanone	3.0	ug/L	
B3KHV6	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	2-Butanone	3.0	ug/L	
B35KV3	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	2-Hexanone	3.0	ug/L	
B36204	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	2-Hexanone	3.0	ug/L	
B367P5	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	2-Hexanone	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	24-Aug-16			VOA	2-Hexanone	3.0	ug/L	
B38757	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	20-Dec-16			VOA	2-Hexanone	3.0	ug/L	
B38872	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	28-Dec-16			VOA	2-Hexanone	3.0	ug/L	
B38JN9	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	2-Hexanone	3.0	ug/L	
B395C1	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	2-Hexanone	3.0	ug/L	
B39HV0	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	2-Hexanone	3.0	ug/L	
B3B7V2	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	26-Jul-17			VOA	2-Hexanone	3.0	ug/L	
B3C1F9	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	15-Aug-17			VOA	2-Hexanone	3.0	ug/L	
B3CVC3-RJCT	591-78-6	2-Hexanone	3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	07-Nov-17			VOA	2-Hexanone	3.0	ug/L	
B3JF33	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	17-Apr-18			VOA	2-Hexanone	3.0	ug/L	
B3JKR0	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	15-May-18			VOA	2-Hexanone	3.0	ug/L	
B3K436	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	28-Jun-18			VOA	2-Hexanone	3.0	ug/L	
B3KHV6	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	2-Hexanone	3.0	ug/L	
B35KV3	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	2-Pentanone	3.0	ug/L	
B36204	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	2-Pentanone	3.0	ug/L	
B367P5	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	2-Pentanone	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	2-Pentanone	3.0	ug/L	
B38757	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	2-Pentanone	3.0	ug/L	
B38872	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	2-Pentanone	3.0	ug/L	
B38JN9	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	2-Pentanone	3.0	ug/L	
B395C1	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	2-Pentanone	3.0	ug/L	
B39HV0	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	2-Pentanone	3.0	ug/L	
B3B7V2	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	2-Pentanone	3.0	ug/L	
B3C1F9	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	2-Pentanone	3.0	ug/L	
B3CVC3-RJCT	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	2-Pentanone	3.0	ug/L	
B3JF33	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	2-Pentanone	3.0	ug/L	
B3JKR0	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	2-Pentanone	3.0	ug/L	
B3K436	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	2-Pentanone	3.0	ug/L	
B3KHV6	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	2-Pentanone	3.00	ug/L	
B35KV3	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B36204	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B367P5	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	4-Methyl-2-pentanone	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B38757	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B38872	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B38JN9	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B395C1	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B39HV0	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3B7V2	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3C1F9	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3CVC3-RJCT	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3JF33	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3JKR0	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3K436	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	4-Methyl-2-pentanone	3.0	ug/L	
B3KHV6	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	4-Methyl-2-pentanone	3.00	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B35KV3	67-64-1	Acetone	27.2	ug/L	T	8260_VOA_GCMS	31-May-16			VOA	Acetone	27.2	ug/L	
B36204	67-64-1	Acetone	4.67	ug/L	JT	8260_VOA_GCMS	26-Jun-16			VOA	Acetone	4.67	ug/L	
B367P5	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	Acetone	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	67-64-1	Acetone	6.37	ug/L	JT	8260_VOA_GCMS	24-Aug-16			VOA	Acetone	6.37	ug/L	
B38757	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	20-Dec-16			VOA	Acetone	3.0	ug/L	
B38872	67-64-1	Acetone	7.98	ug/L	JT	8260_VOA_GCMS	28-Dec-16			VOA	Acetone	7.98	ug/L	
B38JN9	67-64-1	Acetone	5.29	ug/L	JT	8260_VOA_GCMS	01-Feb-17			VOA	Acetone	5.29	ug/L	
B395C1	67-64-1	Acetone	7.85	ug/L	JT	8260_VOA_GCMS	06-Mar-17			VOA	Acetone	7.85	ug/L	
B39HV0	67-64-1	Acetone	9.20	ug/L	J	8260_VOA_GCMS	06-Apr-17			VOA	Acetone	9.20	ug/L	
B3B7V2	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	26-Jul-17			VOA	Acetone	3.0	ug/L	
B3C1F9	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	15-Aug-17			VOA	Acetone	3.0	ug/L	
B3CVC3-RJCT	67-64-1	Acetone	11.7	ug/L	T	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	67-64-1	Acetone	8.82	ug/L	JT	8260_VOA_GCMS	07-Nov-17			VOA	Acetone	8.82	ug/L	
B3JF33	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	17-Apr-18			VOA	Acetone	3.0	ug/L	
B3JKR0	67-64-1	Acetone	6.81	ug/L	JT	8260_VOA_GCMS	15-May-18			VOA	Acetone	6.81	ug/L	
B3K436	67-64-1	Acetone	8.34	ug/L	JT	8260_VOA_GCMS	28-Jun-18			VOA	Acetone	8.34	ug/L	
B3KHV6	67-64-1	Acetone	5.49	ug/L	JT	8260_VOA_GCMS	30-Jul-18			VOA	Acetone	5.49	ug/L	
B36HL0	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Acetonitrile	16.7	ug/L	
B38757	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Acetonitrile	16.7	ug/L	
B38872	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Acetonitrile	16.7	ug/L	
B38JN9	75-05-8	Acetonitrile	16.7	ug/L	TU	8260_VOA_GCMS	01-Feb-17			VOA	Acetonitrile	16.7	ug/L	
B395C1	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Acetonitrile	16.7	ug/L	
B39HV0	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Acetonitrile	16.7	ug/L	
B3B7V2	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Acetonitrile	16.7	ug/L	
B3C1F9	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Acetonitrile	16.7	ug/L	
B3CVC3-RJCT	75-05-8	Acetonitrile	53.1	ug/L		8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Acetonitrile	16.7	ug/L	
B3JF33	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Acetonitrile	16.7	ug/L	
B3JKR0	75-05-8	Acetonitrile	30	ug/L	J	8260_VOA_GCMS	15-May-18			VOA	Acetonitrile	30	ug/L	
B3K436	75-05-8	Acetonitrile	26	ug/L	J	8260_VOA_GCMS	28-Jun-18			VOA	Acetonitrile	26	ug/L	
B3KHV6	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Acetonitrile	16.7	ug/L	
B35KV3	107-13-1	Acrylonitrile	3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Acrylonitrile	3.0	ug/L	
B36204	107-13-1	Acrylonitrile	3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Acrylonitrile	3.0	ug/L	
B367P5	107-13-1	Acrylonitrile	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Acrylonitrile	3.0	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	107-13-1	Acrylonitrile	3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B35KV3	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Benzene	0.30	ug/L	
B36204	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Benzene	0.30	ug/L	
B367P5	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Benzene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Benzene	0.30	ug/L	
B38757	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Benzene	0.30	ug/L	
B38872	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Benzene	0.30	ug/L	
B38JN9	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Benzene	0.30	ug/L	
B395C1	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Benzene	0.30	ug/L	
B39HV0	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Benzene	0.30	ug/L	
B3B7V2	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Benzene	0.30	ug/L	
B3C1F9	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Benzene	0.30	ug/L	
B3CVC3-RJCT	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Benzene	0.30	ug/L	
B3JF33	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Benzene	0.30	ug/L	
B3JKR0	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Benzene	0.30	ug/L	
B3K436	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Benzene	0.30	ug/L	
B3KHV6	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Benzene	0.30	ug/L	
B35KV3	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Carbon disulfide	1.6	ug/L	
B36204	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Carbon disulfide	1.6	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B367P5	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Carbon disulfide	1.6	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Carbon disulfide	1.6	ug/L	
B38757	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Carbon disulfide	1.6	ug/L	
B38872	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Carbon disulfide	1.6	ug/L	
B38JN9	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Carbon disulfide	1.6	ug/L	
B395C1	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Carbon disulfide	1.6	ug/L	
B39HV0	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Carbon disulfide	1.6	ug/L	
B3B7V2	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Carbon disulfide	1.6	ug/L	
B3C1F9	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Carbon disulfide	1.6	ug/L	
B3CVC3-RJCT	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Carbon disulfide	1.6	ug/L	
B3JF33	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Carbon disulfide	1.6	ug/L	
B3JKR0	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Carbon disulfide	1.6	ug/L	
B3K436	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Carbon disulfide	1.6	ug/L	
B3KHV6	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Carbon disulfide	1.6	ug/L	
B35KV3	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Carbon tetrachloride	0.30	ug/L	
B36204	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Carbon tetrachloride	0.30	ug/L	
B367P5	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Carbon tetrachloride	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Carbon tetrachloride	0.30	ug/L	
B38757	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Carbon tetrachloride	0.30	ug/L	
B38872	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Carbon tetrachloride	0.30	ug/L	
B38JN9	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Carbon tetrachloride	0.30	ug/L	
B395C1	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Carbon tetrachloride	0.30	ug/L	
B39HV0	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Carbon tetrachloride	0.30	ug/L	
B3B7V2	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Carbon tetrachloride	0.30	ug/L	
B3C1F9	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Carbon tetrachloride	0.30	ug/L	
B3CVC3-RJCT	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Carbon tetrachloride	0.30	ug/L	
B3JF33	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Carbon tetrachloride	0.30	ug/L	
B3JKR0	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Carbon tetrachloride	0.30	ug/L	
B3K436	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Carbon tetrachloride	0.30	ug/L	
B3KHV6	56-23-5	Carbon tetrachloride	0.30	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Carbon tetrachloride	0.30	ug/L	
B35KV3	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Chlorobenzene	0.30	ug/L	
B36204	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Chlorobenzene	0.30	ug/L	
B367P5	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Chlorobenzene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Chlorobenzene	0.30	ug/L	
B38757	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Chlorobenzene	0.30	ug/L	
B38872	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Chlorobenzene	0.30	ug/L	
B38JN9	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Chlorobenzene	0.30	ug/L	
B395C1	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Chlorobenzene	0.30	ug/L	
B39HV0	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Chlorobenzene	0.30	ug/L	
B3B7V2	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Chlorobenzene	0.30	ug/L	
B3C1F9	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Chlorobenzene	0.30	ug/L	
B3CVC3-RJCT	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Chlorobenzene	0.30	ug/L	
B3JF33	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Chlorobenzene	0.30	ug/L	
B3JKR0	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Chlorobenzene	0.30	ug/L	
B3K436	108-90-7	Chlorobenzene	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Chlorobenzene	0.30	ug/L	
B3KHV6	108-90-7	Chlorobenzene	0.30	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	Chlorobenzene	0.30	ug/L	
B35KV3	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Chloroform	0.30	ug/L	
B36204	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Chloroform	0.30	ug/L	
B367P5	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Chloroform	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B36HL0	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Chloroform	0.30	ug/L	
B38757	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Chloroform	0.30	ug/L	
B38872	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Chloroform	0.30	ug/L	
B38JN9	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Chloroform	0.30	ug/L	
B395C1	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Chloroform	0.30	ug/L	
B39HV0	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Chloroform	0.30	ug/L	
B3B7V2	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Chloroform	0.30	ug/L	
B3C1F9	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Chloroform	0.30	ug/L	
B3CVC3-RJCT	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Chloroform	0.30	ug/L	
B3JF33	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Chloroform	0.30	ug/L	
B3JKR0	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Chloroform	0.30	ug/L	
B3K436	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Chloroform	0.30	ug/L	
B3KHV6	67-66-3	Chloroform	0.30	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Chloroform	0.30	ug/L	
B35KV3	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Methylene chloride	1.6	ug/L	
B36204	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Methylene chloride	1.6	ug/L	
B367P5	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Methylene chloride	1.6	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Methylene chloride	1.6	ug/L	
B38757	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Methylene chloride	1.6	ug/L	
B38872	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Methylene chloride	1.6	ug/L	
B38JN9	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Methylene chloride	1.6	ug/L	
B395C1	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Methylene chloride	1.6	ug/L	
B39HV0	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Methylene chloride	1.6	ug/L	
B3B7V2	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Methylene chloride	1.6	ug/L	
B3C1F9	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Methylene chloride	1.6	ug/L	
B3CVC3-RJCT	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Methylene chloride	1.6	ug/L	
B3JF33	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Methylene chloride	1.6	ug/L	
B3JKR0	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Methylene chloride	1.6	ug/L	
B3K436	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Methylene chloride	1.6	ug/L	
B3KHV6	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Methylene chloride	1.6	ug/L	
B35KV3	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Tetrachloroethene	0.30	ug/L	
B36204	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Tetrachloroethene	0.30	ug/L	
B367P5	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Tetrachloroethene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Tetrachloroethene	0.30	ug/L	
B38757	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Tetrachloroethene	0.30	ug/L	
B38872	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Tetrachloroethene	0.30	ug/L	
B38JN9	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Tetrachloroethene	0.30	ug/L	
B395C1	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Tetrachloroethene	0.30	ug/L	
B39HV0	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Tetrachloroethene	0.30	ug/L	
B3B7V2	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Tetrachloroethene	0.30	ug/L	
B3C1F9	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Tetrachloroethene	0.30	ug/L	
B3CVC3-RJCT	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Tetrachloroethene	0.30	ug/L	
B3JF33	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Tetrachloroethene	0.30	ug/L	
B3JKR0	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Tetrachloroethene	0.30	ug/L	
B3K436	127-18-4	Tetrachloroethene	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Tetrachloroethene	0.30	ug/L	
B3KHV6	127-18-4	Tetrachloroethene	0.30	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	Tetrachloroethene	0.30	ug/L	
B35KV3	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Tetrahydrofuran	1.5	ug/L	
B36204	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Tetrahydrofuran	1.5	ug/L	
B367P5	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Tetrahydrofuran	1.5	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Tetrahydrofuran	1.5	ug/L	
B38757	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Tetrahydrofuran	1.5	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B38872	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Tetrahydrofuran	1.5	ug/L	
B38JN9	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Tetrahydrofuran	1.5	ug/L	
B395C1	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Tetrahydrofuran	1.5	ug/L	
B39HV0	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Tetrahydrofuran	1.5	ug/L	
B3B7V2	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Tetrahydrofuran	1.5	ug/L	
B3C1F9	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Tetrahydrofuran	1.5	ug/L	
B3CVC3-RJCT	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Tetrahydrofuran	1.5	ug/L	
B3JF33	109-99-9	Tetrahydrofuran	3.55	ug/L	BJ	8260_VOA_GCMS	17-Apr-18			VOA	Tetrahydrofuran	3.55	ug/L	
B3JKR0	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Tetrahydrofuran	1.5	ug/L	
B3K436	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Tetrahydrofuran	1.5	ug/L	
B3KHV6	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Tetrahydrofuran	1.50	ug/L	
B35KV3	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Toluene	0.30	ug/L	
B36204	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Toluene	0.30	ug/L	
B367P5	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Toluene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Toluene	0.30	ug/L	
B38757	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Toluene	0.30	ug/L	
B38872	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Toluene	0.30	ug/L	
B38JN9	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Toluene	0.30	ug/L	
B395C1	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Toluene	0.30	ug/L	
B39HV0	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Toluene	0.30	ug/L	
B3B7V2	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Toluene	0.30	ug/L	
B3C1F9	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Toluene	0.30	ug/L	
B3CVC3-RJCT	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Toluene	0.30	ug/L	
B3JF33	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Toluene	0.30	ug/L	
B3JKR0	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Toluene	0.30	ug/L	
B3K436	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Toluene	0.30	ug/L	
B3KHV6	108-88-3	Toluene	0.30	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Toluene	0.30	ug/L	
B35KV3	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Trichloroethene	0.30	ug/L	
B36204	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Trichloroethene	0.30	ug/L	
B367P5	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Trichloroethene	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Trichloroethene	0.30	ug/L	
B38757	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Trichloroethene	0.30	ug/L	
B38872	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Trichloroethene	0.30	ug/L	
B38JN9	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Trichloroethene	0.30	ug/L	
B395C1	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Trichloroethene	0.30	ug/L	
B39HV0	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Trichloroethene	0.30	ug/L	
B3B7V2	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Trichloroethene	0.30	ug/L	
B3C1F9	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Trichloroethene	0.30	ug/L	
B3CVC3-RJCT	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Trichloroethene	0.30	ug/L	
B3JF33	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Trichloroethene	0.30	ug/L	
B3JKR0	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Trichloroethene	0.30	ug/L	
B3K436	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Trichloroethene	0.30	ug/L	
B3KHV6	79-01-6	Trichloroethene	0.30	ug/L	U	8260_VOA_GCMS	30-Jul-18			VOA	Trichloroethene	0.30	ug/L	
B35KV3	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	31-May-16			VOA	Xylenes (total)	0.30	ug/L	
B36204	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	26-Jun-16			VOA	Xylenes (total)	0.30	ug/L	
B367P5	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	Xylenes (total)	0.30	ug/L	B367P5 and B367P5DUP are duplicates
B367P5DUP	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	21-Jul-16		X	VOA	(duplicate)	(duplicate)		B367P5 and B367P5DUP are duplicates
B36HL0	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	24-Aug-16			VOA	Xylenes (total)	0.30	ug/L	
B38757	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	20-Dec-16			VOA	Xylenes (total)	0.30	ug/L	
B38872	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	28-Dec-16			VOA	Xylenes (total)	0.30	ug/L	
B38JN9	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	01-Feb-17			VOA	Xylenes (total)	0.30	ug/L	

Table A-2 ETF Verification Tank Sample Results and Conversion to Standard Units

DOWNLOAD FROM HEIS DATABASE									CALCULATED RESULTS					
SAMPLE NUMBER	CONST. ID	CONSTITUENT NAME	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	DUP/ REJ	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS	COMMENTS
B395C1	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	06-Mar-17			VOA	Xylenes (total)	0.30	ug/L	
B39HV0	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	06-Apr-17			VOA	Xylenes (total)	0.30	ug/L	
B3B7V2	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	26-Jul-17			VOA	Xylenes (total)	0.30	ug/L	
B3C1F9	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	15-Aug-17			VOA	Xylenes (total)	0.30	ug/L	
B3CVC3-RJCT	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	20-Sep-17		R	VOA	(rejected)	(rejected)		Rejected - improperly preserved
B3FLK3	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	07-Nov-17			VOA	Xylenes (total)	0.30	ug/L	
B3JF33	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	17-Apr-18			VOA	Xylenes (total)	0.30	ug/L	
B3JKR0	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	15-May-18			VOA	Xylenes (total)	0.30	ug/L	
B3K436	1330-20-7	Xylenes (total)	0.30	ug/L	U	8260_VOA_GCMS	28-Jun-18			VOA	Xylenes (total)	0.30	ug/L	
B3KHV6	1330-20-7	Xylenes (total)	0.30	ug/L	TU	8260_VOA_GCMS	30-Jul-18			VOA	Xylenes (total)	0.30	ug/L	

= Detected result

= Rejected result (see comment)

CONV. RESULTS: TSS results in mg/L were converted to ug/L. Phosphorous in phosphate results were converted to phosphate. Total beta radiostrontium restults were renamed Strontium-90

Lab qualifiers:

B (inorganics), J (organics):	Value is between the method detection level and the required quantitation level and is therefore an estimate.
C (inorganic), B (organic):	Contamination was found in quality control method blank standard sample.
D (all):	Sample was diluted before analysis.
N (inorganic), T (organic):	Spiked sample was outside quality control levels.
P (PCBs)	Target analyte had greater than 25% difference between analyses by two columns.
U (all):	Analyzed but not detected in the sample.
Z (all):	Holding time exceeded before the sample was analyzed.
* (all):	Laboratory duplicate analysis not within control limits

Table A-3 Pivot Table of Verification Tank Sample Results

Constituent	Count of CONVERTED VALUE	Min of CONVERTED VALUE	Average of CONVERTED VALUE	Max of CONVERTED VALUE
ANIONS	115	14	90	630
Bromide	7	63	66	67
Chloride	18	82.5	122	500
Fluoride	18	25	33	130
Nitrogen in Nitrate	18	14	23	70
Nitrogen in Nitrite	18	19	28	95
Phosphate	18	130	185	630
Sulfate	18	130	160	630
INORG	82	1.67	1497	25700
Cyanide	16	1.67	1.67	1.67
Nitrogen in ammonia	16	17	87.7	310
Specific Conductance	18	1.7	3.88	13.5
Total dissolved solids	16	3400	6.66E+03	2.57E+04
Total suspended solids	16	570	921	1580
METALS	416	0.067	17.98408413	110
Aluminum	16	68	68	68
Antimony	16	1.0	1.0	1.0
Arsenic	16	1.7	1.9	2.0
Barium	16	1.0	1.0	1.0
Beryllium	16	0.20	0.20	0.20
Cadmium	16	0.11	0.25	0.30
Calcium	16	50	55.1	108
Chromium	16	1.0	1.04	1.60
Cobalt	16	1.0	1.0	1.0
Copper	16	0.30	0.452	1.64
Iron	16	30	30	30
Lead	16	0.50	0.50	0.50
Magnesium	16	110	110	110
Manganese	16	1.0	1.0	1.0
Mercury	16	0.067	0.067	0.067
Nickel	16	1.5	1.53	1.84
Potassium	16	50	55.5	108
Selenium	16	1.5	1.91	2.12
Silicon	16	25	25	25
Silver	16	1.0	1.0	1
Sodium	16	100	100	100
Thallium	16	5.0	5.0	5
Titanium	16	1.0	1.00	1.02
Uranium	16	0.067	0.122	0.383
Vanadium	16	1.0	1.0	1
Zinc	16	3.3	4.06	8.98
TOC	18	330	342	411
Total organic carbon	18	330	342	411

Table A-3 Pivot Table of Verification Tank Sample Results

Constituent	Count of CONVERTED VALUE	Min of CONVERTED VALUE	Average of CONVERTED VALUE	Max of CONVERTED VALUE
VOA	368	0.30	5.51	83.3
1,1,1-Trichloroethane	16	0.30	0.30	0.30
1,1,2-Trichloroethane	16	0.30	0.30	0.30
1,1-Dichloroethene	16	0.30	0.30	0.30
1,2-Dichloroethane	16	0.30	0.30	0.30
1,4-Dichlorobenzene	16	0.30	0.30	0.30
1-Butanol	16	83.3	83.3	83.3
2-Butanone	16	3.0	3.0	3.0
2-Hexanone	16	3.0	3.0	3.0
2-Pentanone	16	3.0	3.0	3.0
4-Methyl-2-pentanone	16	3.0	3.0	3.0
Acetone	16	3.0	7.06	27.2
Acetonitrile	13	16.7	18.4	30.0
Acrylonitrile	3	3.0	3.0	3.0
Benzene	16	0.30	0.30	0.30
Carbon disulfide	16	1.6	1.6	1.6
Carbon tetrachloride	16	0.30	0.30	0.30
Chlorobenzene	16	0.30	0.30	0.30
Chloroform	16	0.30	0.30	0.30
Methylene chloride	16	1.6	1.6	1.6
Tetrachloroethene	16	0.30	0.30	0.30
Tetrahydrofuran	16	1.5	1.63	3.55
Toluene	16	0.30	0.30	0.30
Trichloroethene	16	0.30	0.30	0.30
Xylenes (total)	16	0.30	0.30	0.30
SVOA	188	0.30	2.9	5.4
2,4,6-Trichlorophenol	2	3.0	3.0	3.0
2-Butoxyethanol	12	5.4	5.4	5.4
4-Chloroaniline	2	3.3	3.3	3.3
Acetophenone	16	3.0	3.1	4.17
Benzyl alcohol	16	3.0	3.1	4.17
Bis(2-chloro-1-methylethyl)ether	2	3.0	3.0	3.0
Carbazole	2	0.30	0.30	0.30
Chrysene	2	0.30	0.30	0.30
Di-n-octylphthalate	16	0.30	2.40	4.17
Diphenylamine	2	3.0	3.0	3.0
Hexachlorocyclopentadiene	2	3.0	3.0	3.0
Hexachloroethane	16	3.0	3.1	4.17
Isophorone	2	3.5	3.5	3.5
Naphthalene	16	0.3	0.31	0.417
n-Nitrosodimethylamine	16	3.0	3.1	4.17
Phenol	16	3.0	3.1	4.17
Pyridine	16	3.0	3.1	4.17

Table A-3 Pivot Table of Verification Tank Sample Results

Constituent	Count of CONVERTED VALUE	Min of CONVERTED VALUE	Average of CONVERTED VALUE	Max of CONVERTED VALUE
Total cresols	16	3.0	3.1	4.17
Tributyl phosphate	16	3.0	3.1	4.17
PEST	4	0.00625	0.00659	0.00693
Gamma-BHC (Lindane)	2	0.00665	0.00679	0.00693
Hexachlorobenzene	2	0.00625	0.00638	0.00651
PCBS	49	0.0333	0.0345	0.0358
Aroclor-1016	7	0.0333	0.0345	0.0358
Aroclor-1221	7	0.0333	0.0345	0.0358
Aroclor-1232	7	0.0333	0.0345	0.0358
Aroclor-1242	7	0.0333	0.0345	0.0358
Aroclor-1248	7	0.0333	0.0345	0.0358
Aroclor-1254	7	0.0333	0.0345	0.0358
Aroclor-1260	7	0.0333	0.0345	0.0358
RAD	420	0.156	11977	848000
Americium-241	16	0.207	0.404	0.723
Antimony-125	16	10.2	23.8	46.5
Cerium-144	16	28.1	45.5	65.6
Cesium-134	16	4.32	10.2	19.5
Cesium-137	16	4.48	9.15	15.3
Cobalt-60	16	4.95	10.0	17.4
Curium-243/244	16	0.174	0.383	0.693
Europium-152	16	11.8	25.1	40.2
Europium-154	16	13.9	28.1	45.8
Europium-155	16	14.6	25.6	39.2
Gross alpha	18	1.79	2.46	3.03
Gross beta	18	2.07	5.08	46.1
Iodine-129	16	1.59	3.53	4.70
Neptunium-237	16	0.156	0.502	0.838
Niobium-94	16	4.20	9.33	16.5
Plutonium-238	16	0.232	0.522	0.920
Plutonium-239/240	16	0.351	0.619	0.899
Praseodymium-144	16	382	703	1220
Radium-226	16	0.247	0.739	1.99
Ruthenium-103	16	4.54	9.37	17.6
Ruthenium-106	16	36.6	74.9	134
Strontium-90	16	1.50	3.71	7.42
Technetium-99	16	5.80	14.7	60.1
Tin-113	16	5.37	10.8	17.3
Tritium	16	8.17E+04	3.13E+05	8.48E+05
Zinc-65	16	9.36	20.6	44.4

Table A-4 Verification Tank Discharge Dates and Volumes

Verification Tank No.	Discharge Date(s)	Volume, gal/day)	Month Discharge	Volume, gal/mo
C	6/30/2016	200,000	6-2016	200,000
	7/1/2016	384,000	7-2016	1,640,000
A	7/12/2016	349,000	7-2016	
	7/13/2016	279,000	7-2016	
B	7/21/2016	105,000	7-2016	
	7/22/2016	380,000	7-2016	
	7/23/2016	143,000	7-2016	
C	8/9/2016	50,000	8-2016	1,208,000
	8/10/2016	371,000	8-2016	
	8/11/2016	156,000	8-2016	
A	8/27/2016	262,000	8-2016	
	8/28/2016	369,000	8-2016	
B	9/9/2016	179,000	9-2016	621,000
	9/10/2016	399,000	9-2016	
	9/11/2016	43,000	9-2016	
A	1/24/2017	139,000	1-2017	576,000
	1/25/2017	396,000	1-2017	
	1/26/2017	41,000	1-2017	
C	2/16/2017	31,000	2-2017	290,000
	2/17/2017	259,000	2-2017	
A	3/20/2017	30,000	3-2017	1,184,000
	3/21/2017	418,000	3-2017	
	3/22/2017	90,000	3-2017	
B	3/29/2017	29,000	3-2017	
	3/30/2017	398,000	3-2017	
	3/31/2017	219,000	3-2017	
C	4/24/2017	98,200	4-2017	568,600
	4/25/2017	362,600	4-2017	
	4/26/2017	107,800	4-2017	
A	8/15/2017	203,000	8-2017	584,000
	8/16/2017	280,000	8-2017	
	8/17/2017	101,000	8-2017	
B	9/29/2017	255,000	9-2017	504,000
	9/30/2017	249,000	9-2017	
A	4/13/2018	123,000	4-2018	350,000
	4/14/2018	227,000	4-2018	
B	6/8/2018	116,000	6-2018	607,000
	6/9/2018	347,000	6-2018	
	6/10/2018	144,000	6-2018	
C	7/14/2018	184,000	7-2018	860,000
	7/15/2018	90,000	7-2018	
A	7/26/2018	134,000	7-2018	
	7/27/2018	304,000	7-2018	
	7/28/2018	148,000	7-2018	

Table A-4 Verification Tank Discharge Dates and Volumes

Verification Tank No.	Discharge Date(s)	Volume, gal/day)	Month Discharge	Volume, gal/mo
B	8/31/2018	276,000	8-2018	276,000
	9/1/2018	135,000	9-2018	135,000

SUM =	9,603,600	gal	9,603,600	gal
MAX =	418,000	gal/day	1,640,000	gal/mo
MIN =	0	gal/day	0	gal/mo

Dates and volumes were obtained from quarterly Discharge Monitoring Reports.

AVERAGE, GAL/DY:

Days between 6/30/16 and 9/1/18 (inclusive) =	794	days
Gal/dy = 9,603,000 gal / 794 day =	12,100	gal/day

(Result rounded to three significant figures)

AVERAGE, GAL/MO:

Months between 6/30/16 and 9/1/18 (inclusive) =	28	months
Gal/mo = 9,603,000 gal / 28 mo =	343,000	gal/mo

(Result rounded to three significant figures)

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3H2P4	N	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	29-Jan-18		ANIONS	Bromide	63	ug/L
699-48-77C	B3HYB8	N	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	11-Apr-18		ANIONS	Bromide	63	ug/L
699-48-77C	B3K303	N	24959-67-9	Bromide	82	ug/L	B	300.0_ANIONS_IC	30-Jul-18		ANIONS	Bromide	82	ug/L
699-48-77C	B3M7C4	N	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	Bromide	63	ug/L
699-48-77C	B3M7C5	N	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	16887-00-6	Chloride	2100	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Chloride	2100	ug/L
699-48-77C	B3HYB8	N	16887-00-6	Chloride	2400	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Chloride	2400	ug/L
699-48-77C	B3K303	N	16887-00-6	Chloride	3000	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Chloride	3000	ug/L
699-48-77C	B3M7C4	N	16887-00-6	Chloride	3200	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Chloride	3200	ug/L
699-48-77C	B3M7C5	N	16887-00-6	Chloride	3200	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	16984-48-8	Fluoride	350	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Fluoride	350	ug/L
699-48-77C	B3HYB8	N	16984-48-8	Fluoride	350	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Fluoride	350	ug/L
699-48-77C	B3K303	N	16984-48-8	Fluoride	390	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Fluoride	390	ug/L
699-48-77C	B3M7C4	N	16984-48-8	Fluoride	340	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Fluoride	340	ug/L
699-48-77C	B3M7C5	N	16984-48-8	Fluoride	340	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	NO3-N	Nitrogen in Nitrate	490	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Nitrogen in Nitrate	490	ug/L
699-48-77C	B3HYB8	N	NO3-N	Nitrogen in Nitrate	640	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Nitrogen in Nitrate	640	ug/L
699-48-77C	B3K303	N	NO3-N	Nitrogen in Nitrate	850	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Nitrogen in Nitrate	850	ug/L
699-48-77C	B3M7C4	N	NO3-N	Nitrogen in Nitrate	970	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Nitrogen in Nitrate	970	ug/L
699-48-77C	B3M7C5	N	NO3-N	Nitrogen in Nitrate	970	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	NO2-N	Nitrogen in Nitrite	27	ug/L	B	300.0_ANIONS_IC	29-Jan-18		ANIONS	Nitrogen in Nitrite	27	ug/L
699-48-77C	B3HYB8	N	NO2-N	Nitrogen in Nitrite	24	ug/L	B	300.0_ANIONS_IC	11-Apr-18		ANIONS	Nitrogen in Nitrite	24	ug/L
699-48-77C	B3K303	N	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Jul-18		ANIONS	Nitrogen in Nitrite	19	ug/L
699-48-77C	B3M7C4	N	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	Nitrogen in Nitrite	19	ug/L
699-48-77C	B3M7C5	N	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	14265-44-2	Phosphate	130	ug/L	UN	300.0_ANIONS_IC	29-Jan-18		ANIONS	Phosphate	130	ug/L
699-48-77C	B3HYB8	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	11-Apr-18		ANIONS	Phosphate	130	ug/L
699-48-77C	B3K303	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	30-Jul-18		ANIONS	Phosphate	130	ug/L
699-48-77C	B3M7C4	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	Phosphate	130	ug/L
699-48-77C	B3M7C5	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P4	N	14808-79-8	Sulfate	7300	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Sulfate	7300	ug/L
699-48-77C	B3HYB8	N	14808-79-8	Sulfate	8200	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Sulfate	8200	ug/L
699-48-77C	B3K303	N	14808-79-8	Sulfate	9000	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Sulfate	9000	ug/L
699-48-77C	B3M7C4	N	14808-79-8	Sulfate	9400	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Sulfate	9400	ug/L
699-48-77C	B3M7C5	N	14808-79-8	Sulfate	9400	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	ALKALINITY	Alkalinity	97200	ug/L		310.1_ALKALINITY	29-Jan-18		INORG	Alkalinity	97200	ug/L
699-48-77C	B3HYB7	N	ALKALINITY	Alkalinity	96400	ug/L		310.1_ALKALINITY	11-Apr-18		INORG	Alkalinity	96400	ug/L
699-48-77C	B3K302	N	ALKALINITY	Alkalinity	99800	ug/L		310.1_ALKALINITY	30-Jul-18		INORG	Alkalinity	99800	ug/L
699-48-77C	B3M7C2	N	ALKALINITY	Alkalinity	101000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	Alkalinity	101000	ug/L
699-48-77C	B3M7C3	N	ALKALINITY	Alkalinity	98000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	HCO3ALKALINITY	Bi-carbonate alkalinity	97200	ug/L		310.1_ALKALINITY	29-Jan-18		INORG	Bi-carbonate alkalinity	97200	ug/L
699-48-77C	B3HYB7	N	HCO3ALKALINITY	Bi-carbonate alkalinity	96400	ug/L		310.1_ALKALINITY	11-Apr-18		INORG	Bi-carbonate alkalinity	96400	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3K302	N	HCO3ALKALINITY	Bi-carbonate alkalinity	99800	ug/L		310.1_ALKALINITY	30-Jul-18		INORG	Bi-carbonate alkalinity	99800	ug/L
699-48-77C	B3M7C2	N	HCO3ALKALINITY	Bi-carbonate alkalinity	101000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	Bi-carbonate alkalinity	101000	ug/L
699-48-77C	B3M7C3	N	HCO3ALKALINITY	Bi-carbonate alkalinity	98000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	29-Jan-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77C	B3HYB7	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	11-Apr-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77C	B3K302	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	30-Jul-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77C	B3M7C2	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77C	B3M7C3	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	29-Jan-18		INORG	Hydroxylion	1450	ug/L
699-48-77C	B3HYB7	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	11-Apr-18		INORG	Hydroxylion	1450	ug/L
699-48-77C	B3K302	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	30-Jul-18		INORG	Hydroxylion	1450	ug/L
699-48-77C	B3M7C2	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	Hydroxylion	1450	ug/L
699-48-77C	B3M7C3	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	TDS	Total dissolved solids	167000	ug/L		160.1_TDS	29-Jan-18		INORG	Total dissolved solids	167000	ug/L
699-48-77C	B3HYB7	N	TDS	Total dissolved solids	150000	ug/L		160.1_TDS	11-Apr-18		INORG	Total dissolved solids	150000	ug/L
699-48-77C	B3K302	N	TDS	Total dissolved solids	154000	ug/L		160.1_TDS	30-Jul-18		INORG	Total dissolved solids	154000	ug/L
699-48-77C	B3M7C2	N	TDS	Total dissolved solids	170000	ug/L		2540C_TDS	30-Oct-18		INORG	Total dissolved solids	170000	ug/L
699-48-77C	B3M7C3	N	TDS	Total dissolved solids	163000	ug/L		2540C_TDS	30-Oct-18		INORG	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Aluminum	68	ug/L
699-48-77C	B3HYB7	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Aluminum	68	ug/L
699-48-77C	B3M7C2	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Aluminum	68	ug/L
699-48-77C	B3M7C3	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Antimony	1	ug/L
699-48-77C	B3HYB7	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Antimony	1	ug/L
699-48-77C	B3K302	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Antimony	1	ug/L
699-48-77C	B3H2P3	N	7440-38-2	Arsenic	3.36	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Arsenic	3.36	ug/L
699-48-77C	B3HYB7	N	7440-38-2	Arsenic	3.62	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Arsenic	3.62	ug/L
699-48-77C	B3K302	N	7440-38-2	Arsenic	6.53	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Arsenic	6.53	ug/L
699-48-77C	B3M7C2	N	7440-38-2	Arsenic	3.69	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-38-2	Arsenic	4.95	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	Arsenic	4.95	ug/L
699-48-77C	B3H2P3	N	7440-39-3	Barium	20.2	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Barium	20.2	ug/L
699-48-77C	B3HYB7	N	7440-39-3	Barium	17.9	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Barium	17.9	ug/L
699-48-77C	B3K302	N	7440-39-3	Barium	16.9	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Barium	16.9	ug/L
699-48-77C	B3M7C2	N	7440-39-3	Barium	17	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-39-3	Barium	17.6	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Barium	17.6	ug/L
699-48-77C	B3H2P3	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3H2P3	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Beryllium	1	ug/L
699-48-77C	B3HYB7	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3HYB7	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Beryllium	1	ug/L
699-48-77C	B3K302	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3K302	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Beryllium	1	ug/L
699-48-77C	B3M7C2	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Beryllium	0.2	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3M7C3	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3HYB7	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3K302	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3M7C2	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3M7C3	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-70-2	Calcium	22800	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Calcium	22800	ug/L
699-48-77C	B3HYB7	N	7440-70-2	Calcium	23600	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Calcium	23600	ug/L
699-48-77C	B3K302	N	7440-70-2	Calcium	22100	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Calcium	22100	ug/L
699-48-77C	B3M7C2	N	7440-70-2	Calcium	22100	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-70-2	Calcium	22200	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Calcium	22200	ug/L
699-48-77C	B3H2P3	N	7440-47-3	Chromium	18.5	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Chromium	18.5	ug/L
699-48-77C	B3HYB7	N	7440-47-3	Chromium	10.2	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Chromium	10.2	ug/L
699-48-77C	B3K302	N	7440-47-3	Chromium	10.2	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Chromium	10.2	ug/L
699-48-77C	B3M7C2	N	7440-47-3	Chromium	10.9	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-47-3	Chromium	11.8	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Chromium	11.8	ug/L
699-48-77C	B3H2P3	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Cobalt	1	ug/L
699-48-77C	B3HYB7	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Cobalt	1	ug/L
699-48-77C	B3K302	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Cobalt	1	ug/L
699-48-77C	B3M7C2	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Cobalt	1	ug/L
699-48-77C	B3M7C3	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-50-8	Copper	1.05	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Copper	1.05	ug/L
699-48-77C	B3HYB7	N	7440-50-8	Copper	0.36	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Copper	0.36	ug/L
699-48-77C	B3K302	N	7440-50-8	Copper	0.543	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Copper	0.543	ug/L
699-48-77C	B3M7C2	N	7440-50-8	Copper	0.41	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	Copper	0.41	ug/L
699-48-77C	B3M7C3	N	7440-50-8	Copper	0.409	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7439-89-6	Iron	99.8	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Iron	99.8	ug/L
699-48-77C	B3HYB7	N	7439-89-6	Iron	32.7	ug/L	B	6010_METALS_ICP	11-Apr-18		METALS	Iron	32.7	ug/L
699-48-77C	B3K302	N	7439-89-6	Iron	77.4	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Iron	77.4	ug/L
699-48-77C	B3M7C2	N	7439-89-6	Iron	94.2	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Iron	94.2	ug/L
699-48-77C	B3M7C3	N	7439-89-6	Iron	54.3	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Lead	0.5	ug/L
699-48-77C	B3HYB7	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Lead	0.5	ug/L
699-48-77C	B3K302	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Lead	0.5	ug/L
699-48-77C	B3M7C2	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Lead	0.5	ug/L
699-48-77C	B3M7C3	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7439-95-4	Magnesium	7560	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Magnesium	7560	ug/L
699-48-77C	B3HYB7	N	7439-95-4	Magnesium	8360	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Magnesium	8360	ug/L
699-48-77C	B3K302	N	7439-95-4	Magnesium	7360	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Magnesium	7360	ug/L
699-48-77C	B3M7C2	N	7439-95-4	Magnesium	7340	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7439-95-4	Magnesium	7640	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Magnesium	7640	ug/L
699-48-77C	B3H2P3	N	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Manganese	2	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3HYB7	N	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Manganese	2	ug/L
699-48-77C	B3K302	N	7439-96-5	Manganese	2.32	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Manganese	2.32	ug/L
699-48-77C	B3M7C2	N	7439-96-5	Manganese	2.41	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Manganese	2.41	ug/L
699-48-77C	B3M7C3	N	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	29-Jan-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3HYB7	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	11-Apr-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3K302	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Jul-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3M7C2	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3M7C3	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-02-0	Nickel	11.2	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Nickel	11.2	ug/L
699-48-77C	B3HYB7	N	7440-02-0	Nickel	4.66	ug/L	B	6010_METALS_ICP	11-Apr-18		METALS	Nickel	4.66	ug/L
699-48-77C	B3K302	N	7440-02-0	Nickel	7.77	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Nickel	7.77	ug/L
699-48-77C	B3M7C2	N	7440-02-0	Nickel	10.1	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Nickel	10.1	ug/L
699-48-77C	B3M7C3	N	7440-02-0	Nickel	6.79	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-09-7	Potassium	3080	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Potassium	3080	ug/L
699-48-77C	B3HYB7	N	7440-09-7	Potassium	3170	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Potassium	3170	ug/L
699-48-77C	B3K302	N	7440-09-7	Potassium	2990	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Potassium	2990	ug/L
699-48-77C	B3M7C2	N	7440-09-7	Potassium	3250	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Potassium	3250	ug/L
699-48-77C	B3M7C3	N	7440-09-7	Potassium	3170	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Selenium	2	ug/L
699-48-77C	B3HYB7	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Selenium	2	ug/L
699-48-77C	B3K302	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Selenium	2	ug/L
699-48-77C	B3M7C2	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Selenium	2	ug/L
699-48-77C	B3M7C3	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-21-3	Silicon	20200	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Silicon	20200	ug/L
699-48-77C	B3HYB7	N	7440-21-3	Silicon	20400	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Silicon	20400	ug/L
699-48-77C	B3K302	N	7440-21-3	Silicon	19200	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Silicon	19200	ug/L
699-48-77C	B3M7C2	N	7440-21-3	Silicon	17800	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-21-3	Silicon	18100	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Silicon	18100	ug/L
699-48-77C	B3H2P3	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Silver	1	ug/L
699-48-77C	B3HYB7	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Silver	1	ug/L
699-48-77C	B3K302	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Silver	1	ug/L
699-48-77C	B3M7C2	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Silver	1	ug/L
699-48-77C	B3M7C3	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-23-5	Sodium	6900	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Sodium	6900	ug/L
699-48-77C	B3HYB7	N	7440-23-5	Sodium	7260	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Sodium	7260	ug/L
699-48-77C	B3K302	N	7440-23-5	Sodium	6900	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Sodium	6900	ug/L
699-48-77C	B3M7C2	N	7440-23-5	Sodium	6610	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	7440-23-5	Sodium	6720	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Sodium	6720	ug/L
699-48-77C	B3H2P3	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Thallium	5	ug/L
699-48-77C	B3HYB7	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Thallium	5	ug/L
699-48-77C	B3K302	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Thallium	5	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3M7C2	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Thallium	5	ug/L
699-48-77C	B3M7C3	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Titanium	1	ug/L
699-48-77C	B3HYB7	N	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Titanium	1	ug/L
699-48-77C	B3K302	N	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Titanium	1	ug/L
699-48-77C	B3H2P3	N	7440-61-1	Uranium	0.428	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Uranium	0.428	ug/L
699-48-77C	B3HYB7	N	7440-61-1	Uranium	0.39	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Uranium	0.39	ug/L
699-48-77C	B3K302	N	7440-61-1	Uranium	0.398	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Uranium	0.398	ug/L
699-48-77C	B3M7C2	N	7440-61-1	Uranium	0.406	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Uranium	0.406	ug/L
699-48-77C	B3M7C3	N	7440-61-1	Uranium	0.388	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-62-2	Vanadium	37.7	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Vanadium	37.7	ug/L
699-48-77C	B3HYB7	N	7440-62-2	Vanadium	40.4	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Vanadium	40.4	ug/L
699-48-77C	B3K302	N	7440-62-2	Vanadium	34.3	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Vanadium	34.3	ug/L
699-48-77C	B3M7C2	N	7440-62-2	Vanadium	36.5	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Vanadium	36.5	ug/L
699-48-77C	B3M7C3	N	7440-62-2	Vanadium	33.8	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	7440-66-6	Zinc	5.22	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Zinc	5.22	ug/L
699-48-77C	B3HYB7	N	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Zinc	3.3	ug/L
699-48-77C	B3K302	N	7440-66-6	Zinc	5.79	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Zinc	5.79	ug/L
699-48-77C	B3M7C2	N	7440-66-6	Zinc	6	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Zinc	6	ug/L
699-48-77C	B3M7C3	N	7440-66-6	Zinc	5.56	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	12587-46-1	Gross alpha	1.84	pCi/L	U	9310_ALPHABETA_GPC	29-Jan-18	2.57	RAD	Gross alpha	2.57	ug/L
699-48-77C	B3HYB7	N	12587-46-1	Gross alpha	1.34	pCi/L	U	9310_ALPHABETA_GPC	11-Apr-18	2.85	RAD	Gross alpha	2.85	ug/L
699-48-77C	B3K302	N	12587-46-1	Gross alpha	0.652	pCi/L	U	9310_ALPHABETA_GPC	30-Jul-18	2.67	RAD	Gross alpha	2.67	ug/L
699-48-77C	B3M7C2	N	12587-46-1	Gross alpha	1.69	pCi/L	U	9310_ALPHABETA_GPC	30-Oct-18	2.57	RAD	(duplicate)	(duplicate)	
699-48-77C	B3M7C3	N	12587-46-1	Gross alpha	1.53	pCi/L	U	9310_ALPHABETA_GPC	30-Oct-18	2.9	RAD	Gross alpha	2.9	ug/L
699-48-77C	B3H2P3	N	12587-47-2	Gross beta	2.44	pCi/L		9310_ALPHABETA_GPC	29-Jan-18	1.64	RAD	Gross beta	2.44	ug/L
699-48-77C	B3HYB7	N	12587-47-2	Gross beta	2.81	pCi/L		9310_ALPHABETA_GPC	11-Apr-18	2.03	RAD	Gross beta	2.81	ug/L
699-48-77C	B3K302	N	12587-47-2	Gross beta	4.38	pCi/L		9310_ALPHABETA_GPC	30-Jul-18	2.11	RAD	Gross beta	4.38	ug/L
699-48-77C	B3M7C2	N	12587-47-2	Gross beta	4.22	pCi/L		9310_ALPHABETA_GPC	30-Oct-18	2.65	RAD	Gross beta	4.22	ug/L
699-48-77C	B3M7C3	N	12587-47-2	Gross beta	3.81	pCi/L		9310_ALPHABETA_GPC	30-Oct-18	2.99	RAD	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	10098-97-2	Strontium-90	0.248	pCi/L	U	SRISO_SEP_PRECIP_GPC	29-Jan-18	1.08	RAD	Strontium-90	1.08	ug/L
699-48-77C	B3HYB7	N	10098-97-2	Strontium-90	1.13	pCi/L	U	SRISO_SEP_PRECIP_GPC	11-Apr-18	1.24	RAD	Strontium-90	1.24	ug/L
699-48-77C	B3K302	N	10098-97-2	Strontium-90	1.2	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Jul-18	1.7	RAD	Strontium-90	1.7	ug/L
699-48-77C	B3M7C2	N	10098-97-2	Strontium-90	0.743	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Oct-18	1.96	RAD	Strontium-90	1.96	ug/L
699-48-77C	B3M7C3	N	10098-97-2	Strontium-90	0.114	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Oct-18	1.94	RAD	(duplicate)	(duplicate)	
699-48-77C	B3FPV2	N	10028-17-8	Tritium	42600	pCi/L		TRITIUM_DIST_LSC	17-Jan-18	268	RAD	Tritium	42600	ug/L
699-48-77C	B3H2P3	N	10028-17-8	Tritium	47100	pCi/L		TRITIUM_DIST_LSC	29-Jan-18	554	RAD	Tritium	47100	ug/L
699-48-77C	B3HYB7	N	10028-17-8	Tritium	56000	pCi/L		TRITIUM_DIST_LSC	11-Apr-18	516	RAD	Tritium	56000	ug/L
699-48-77C	B3K302	N	10028-17-8	Tritium	52400	pCi/L		TRITIUM_DIST_LSC	30-Jul-18	539	RAD	Tritium	52400	ug/L
699-48-77C	B3M7C2	N	10028-17-8	Tritium	49700	pCi/L		TRITIUM_DIST_LSC	30-Oct-18	521	RAD	Tritium	49700	ug/L
699-48-77C	B3M7C3	N	10028-17-8	Tritium	48800	pCi/L		TRITIUM_DIST_LSC	30-Oct-18	530	RAD	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1,1-Trichloroethane	0.3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3HYB7	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77C	B3K302	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77C	B3M7C2	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77C	B3M7C3	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77C	B3HYB7	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77C	B3K302	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77C	B3M7C2	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77C	B3M7C3	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77C	B3HYB7	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77C	B3K302	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77C	B3M7C2	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77C	B3M7C3	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77C	B3HYB7	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77C	B3K302	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77C	B3H2P3	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77C	B3HYB7	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77C	B3K302	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77C	B3M7C2	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77C	B3M7C3	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77C	B3HYB7	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77C	B3K302	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77C	B3H2P3	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77C	B3HYB7	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77C	B3K302	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77C	B3M7C2	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77C	B3M7C3	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1-Butanol	83.3	ug/L
699-48-77C	B3HYB7	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1-Butanol	83.3	ug/L
699-48-77C	B3K302	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1-Butanol	83.3	ug/L
699-48-77C	B3M7C2	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1-Butanol	83.3	ug/L
699-48-77C	B3M7C3	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	2-Butanone	3	ug/L
699-48-77C	B3HYB7	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	2-Butanone	3	ug/L
699-48-77C	B3K302	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	2-Butanone	3	ug/L
699-48-77C	B3M7C2	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	2-Butanone	3	ug/L
699-48-77C	B3M7C3	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	29-Jan-18		VOA	2-Hexanone	3	ug/L
699-48-77C	B3HYB7	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	2-Hexanone	3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3K302	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	2-Hexanone	3	ug/L
699-48-77C	B3M7C2	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	2-Hexanone	3	ug/L
699-48-77C	B3M7C3	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	2-Pentanone	3	ug/L
699-48-77C	B3HYB7	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	2-Pentanone	3	ug/L
699-48-77C	B3K302	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	2-Pentanone	3	ug/L
699-48-77C	B3M7C2	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	2-Pentanone	3	ug/L
699-48-77C	B3M7C3	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77C	B3HYB7	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77C	B3K302	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77C	B3M7C2	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77C	B3M7C3	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	29-Jan-18		VOA	Acetone	3	ug/L
699-48-77C	B3HYB7	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	Acetone	3	ug/L
699-48-77C	B3K302	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Acetone	3	ug/L
699-48-77C	B3M7C2	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	Acetone	3	ug/L
699-48-77C	B3M7C3	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Acetonitrile	16.7	ug/L
699-48-77C	B3HYB7	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Acetonitrile	16.7	ug/L
699-48-77C	B3K302	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Acetonitrile	16.7	ug/L
699-48-77C	B3M7C2	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Acetonitrile	16.7	ug/L
699-48-77C	B3M7C3	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Benzene	0.3	ug/L
699-48-77C	B3HYB7	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Benzene	0.3	ug/L
699-48-77C	B3K302	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Benzene	0.3	ug/L
699-48-77C	B3M7C2	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Benzene	0.3	ug/L
699-48-77C	B3M7C3	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77C	B3HYB7	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77C	B3K302	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77C	B3H2P3	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77C	B3HYB7	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77C	B3K302	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77C	B3M7C2	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77C	B3M7C3	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77C	B3HYB7	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77C	B3K302	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77C	B3M7C2	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77C	B3M7C3	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Chlorobenzene	0.3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3HYB7	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77C	B3K302	N	108-90-7	Chlorobenzene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77C	B3M7C2	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77C	B3M7C3	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Chloroform	0.3	ug/L
699-48-77C	B3HYB7	N	67-66-3	Chloroform	0.47	ug/L	J	8260_VOA_GCMS	11-Apr-18		VOA	Chloroform	0.47	ug/L
699-48-77C	B3K302	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Chloroform	0.3	ug/L
699-48-77C	B3M7C2	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Chloroform	0.3	ug/L
699-48-77C	B3M7C3	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Ethyl cyanide	3	ug/L
699-48-77C	B3HYB7	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Ethyl cyanide	3	ug/L
699-48-77C	B3K302	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Ethyl cyanide	3	ug/L
699-48-77C	B3H2P3	N	75-09-2	Methylene chloride	11.3	ug/L		8260_VOA_GCMS	29-Jan-18		VOA	Methylene chloride	11.3	ug/L
699-48-77C	B3HYB7	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Methylene chloride	1.6	ug/L
699-48-77C	B3K302	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Methylene chloride	1.6	ug/L
699-48-77C	B3M7C2	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Methylene chloride	1.6	ug/L
699-48-77C	B3M7C3	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77C	B3HYB7	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77C	B3K302	N	127-18-4	Tetrachloroethene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77C	B3M7C2	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77C	B3M7C3	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77C	B3HYB7	N	109-99-9	Tetrahydrofuran	2.96	ug/L	BJ	8260_VOA_GCMS	11-Apr-18		VOA	Tetrahydrofuran	2.96	ug/L
699-48-77C	B3K302	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77C	B3M7C2	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77C	B3M7C3	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Toluene	0.3	ug/L
699-48-77C	B3HYB7	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Toluene	0.3	ug/L
699-48-77C	B3K302	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Toluene	0.3	ug/L
699-48-77C	B3M7C2	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Toluene	0.3	ug/L
699-48-77C	B3M7C3	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Trichloroethene	0.3	ug/L
699-48-77C	B3HYB7	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Trichloroethene	0.3	ug/L
699-48-77C	B3K302	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Trichloroethene	0.3	ug/L
699-48-77C	B3M7C2	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Trichloroethene	0.3	ug/L
699-48-77C	B3M7C3	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	
699-48-77C	B3H2P3	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77C	B3HYB7	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77C	B3K302	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77C	B3M7C2	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77C	B3M7C3	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	(duplicate)	(duplicate)	

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3H2P3	N	1330-20-7	Xylenes (total)	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77C	B3HYB7	N	1330-20-7	Xylenes (total)	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77C	B3K302	N	1330-20-7	Xylenes (total)	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77C	B3H2P2	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Aluminum	68	ug/L
699-48-77C	B3HYB6	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Aluminum	68	ug/L
699-48-77C	B3K301	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Aluminum	68	ug/L
699-48-77C	B3M7C0	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Aluminum	68	ug/L
699-48-77C	B3M7C1	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Antimony	1	ug/L
699-48-77C	B3HYB6	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Antimony	1	ug/L
699-48-77C	B3K301	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Antimony	1	ug/L
699-48-77C	B3H2P2	Y	7440-38-2	Arsenic	3.51	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Arsenic	3.51	ug/L
699-48-77C	B3HYB6	Y	7440-38-2	Arsenic	3.95	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Arsenic	3.95	ug/L
699-48-77C	B3K301	Y	7440-38-2	Arsenic	4.37	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Arsenic	4.37	ug/L
699-48-77C	B3M7C0	Y	7440-38-2	Arsenic	4.2	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C1	Y	7440-38-2	Arsenic	5.07	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Arsenic	5.07	ug/L
699-48-77C	B3H2P2	Y	7440-39-3	Barium	18	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Barium	18	ug/L
699-48-77C	B3HYB6	Y	7440-39-3	Barium	16.9	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Barium	16.9	ug/L
699-48-77C	B3K301	Y	7440-39-3	Barium	16.4	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Barium	16.4	ug/L
699-48-77C	B3M7C0	Y	7440-39-3	Barium	17.2	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Barium	17.2	ug/L
699-48-77C	B3M7C1	Y	7440-39-3	Barium	16.6	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3H2P2	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Beryllium	1	ug/L
699-48-77C	B3HYB6	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3HYB6	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Beryllium	1	ug/L
699-48-77C	B3K301	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3K301	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Beryllium	1	ug/L
699-48-77C	B3M7C0	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Beryllium	0.2	ug/L
699-48-77C	B3M7C1	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3HYB6	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3K301	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3M7C0	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Cadmium	0.3	ug/L
699-48-77C	B3M7C1	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-70-2	Calcium	24400	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Calcium	24400	ug/L
699-48-77C	B3HYB6	Y	7440-70-2	Calcium	22400	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Calcium	22400	ug/L
699-48-77C	B3K301	Y	7440-70-2	Calcium	21800	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Calcium	21800	ug/L
699-48-77C	B3M7C0	Y	7440-70-2	Calcium	23100	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Calcium	23100	ug/L
699-48-77C	B3M7C1	Y	7440-70-2	Calcium	22400	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-47-3	Chromium	4.11	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Chromium	4.11	ug/L
699-48-77C	B3HYB6	Y	7440-47-3	Chromium	3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Chromium	3	ug/L
699-48-77C	B3K301	Y	7440-47-3	Chromium	5.18	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Chromium	5.18	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3M7C0	Y	7440-47-3	Chromium	4.18	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	Chromium	4.18	ug/L
699-48-77C	B3M7C1	Y	7440-47-3	Chromium	3.51	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Cobalt	1	ug/L
699-48-77C	B3HYB6	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Cobalt	1	ug/L
699-48-77C	B3K301	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Cobalt	1	ug/L
699-48-77C	B3M7C0	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C1	Y	7440-48-4	Cobalt	1.04	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Cobalt	1.04	ug/L
699-48-77C	B3H2P2	Y	7440-50-8	Copper	0.3	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Copper	0.3	ug/L
699-48-77C	B3HYB6	Y	7440-50-8	Copper	0.751	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Copper	0.751	ug/L
699-48-77C	B3K301	Y	7440-50-8	Copper	0.3	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Copper	0.3	ug/L
699-48-77C	B3M7C0	Y	7440-50-8	Copper	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Copper	0.3	ug/L
699-48-77C	B3M7C1	Y	7440-50-8	Copper	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Iron	30	ug/L
699-48-77C	B3HYB6	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Iron	30	ug/L
699-48-77C	B3K301	Y	7439-89-6	Iron	38.8	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Iron	38.8	ug/L
699-48-77C	B3M7C0	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Iron	30	ug/L
699-48-77C	B3M7C1	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Lead	0.5	ug/L
699-48-77C	B3HYB6	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Lead	0.5	ug/L
699-48-77C	B3K301	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Lead	0.5	ug/L
699-48-77C	B3M7C0	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Lead	0.5	ug/L
699-48-77C	B3M7C1	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7439-95-4	Magnesium	7960	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Magnesium	7960	ug/L
699-48-77C	B3HYB6	Y	7439-95-4	Magnesium	7340	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Magnesium	7340	ug/L
699-48-77C	B3K301	Y	7439-95-4	Magnesium	7320	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Magnesium	7320	ug/L
699-48-77C	B3M7C0	Y	7439-95-4	Magnesium	7960	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Magnesium	7960	ug/L
699-48-77C	B3M7C1	Y	7439-95-4	Magnesium	7240	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Manganese	2	ug/L
699-48-77C	B3HYB6	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Manganese	2	ug/L
699-48-77C	B3K301	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Manganese	2	ug/L
699-48-77C	B3M7C0	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Manganese	2	ug/L
699-48-77C	B3M7C1	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	29-Jan-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3HYB6	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	11-Apr-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3K301	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Jul-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3M7C0	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	Mercury	0.067	ug/L
699-48-77C	B3M7C1	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-02-0	Nickel	3.17	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Nickel	3.17	ug/L
699-48-77C	B3HYB6	Y	7440-02-0	Nickel	2.81	ug/L	B	6010_METALS_ICP	11-Apr-18		METALS	Nickel	2.81	ug/L
699-48-77C	B3K301	Y	7440-02-0	Nickel	2.44	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Nickel	2.44	ug/L
699-48-77C	B3M7C0	Y	7440-02-0	Nickel	3.7	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Nickel	3.7	ug/L
699-48-77C	B3M7C1	Y	7440-02-0	Nickel	3.48	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3H2P2	Y	7440-09-7	Potassium	3300	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Potassium	3300	ug/L
699-48-77C	B3HYB6	Y	7440-09-7	Potassium	3000	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Potassium	3000	ug/L
699-48-77C	B3K301	Y	7440-09-7	Potassium	3010	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Potassium	3010	ug/L
699-48-77C	B3M7C0	Y	7440-09-7	Potassium	3300	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Potassium	3300	ug/L
699-48-77C	B3M7C1	Y	7440-09-7	Potassium	3280	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Selenium	2	ug/L
699-48-77C	B3HYB6	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Selenium	2	ug/L
699-48-77C	B3K301	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Selenium	2	ug/L
699-48-77C	B3M7C0	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Selenium	2	ug/L
699-48-77C	B3M7C1	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-21-3	Silicon	21100	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Silicon	21100	ug/L
699-48-77C	B3HYB6	Y	7440-21-3	Silicon	19500	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Silicon	19500	ug/L
699-48-77C	B3K301	Y	7440-21-3	Silicon	19100	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Silicon	19100	ug/L
699-48-77C	B3M7C0	Y	7440-21-3	Silicon	18500	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Silicon	18500	ug/L
699-48-77C	B3M7C1	Y	7440-21-3	Silicon	18100	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Silver	1	ug/L
699-48-77C	B3HYB6	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Silver	1	ug/L
699-48-77C	B3K301	Y	7440-22-4	Silver	5	ug/L	UD	6010_METALS_ICP	30-Jul-18		METALS	Silver	5	ug/L
699-48-77C	B3M7C0	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Silver	1	ug/L
699-48-77C	B3M7C1	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-23-5	Sodium	7330	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Sodium	7330	ug/L
699-48-77C	B3HYB6	Y	7440-23-5	Sodium	6850	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Sodium	6850	ug/L
699-48-77C	B3K301	Y	7440-23-5	Sodium	6870	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Sodium	6870	ug/L
699-48-77C	B3M7C0	Y	7440-23-5	Sodium	6930	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Sodium	6930	ug/L
699-48-77C	B3M7C1	Y	7440-23-5	Sodium	6720	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Thallium	5	ug/L
699-48-77C	B3HYB6	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Thallium	5	ug/L
699-48-77C	B3K301	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Thallium	5	ug/L
699-48-77C	B3M7C0	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Thallium	5	ug/L
699-48-77C	B3M7C1	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Titanium	1	ug/L
699-48-77C	B3HYB6	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Titanium	1	ug/L
699-48-77C	B3K301	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Titanium	1	ug/L
699-48-77C	B3H2P2	Y	7440-61-1	Uranium	0.399	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Uranium	0.399	ug/L
699-48-77C	B3HYB6	Y	7440-61-1	Uranium	0.359	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Uranium	0.359	ug/L
699-48-77C	B3K301	Y	7440-61-1	Uranium	0.376	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Uranium	0.376	ug/L
699-48-77C	B3M7C0	Y	7440-61-1	Uranium	0.403	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C1	Y	7440-61-1	Uranium	0.406	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Uranium	0.406	ug/L
699-48-77C	B3H2P2	Y	7440-62-2	Vanadium	40.8	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Vanadium	40.8	ug/L
699-48-77C	B3HYB6	Y	7440-62-2	Vanadium	38	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Vanadium	38	ug/L
699-48-77C	B3K301	Y	7440-62-2	Vanadium	33.1	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Vanadium	33.1	ug/L
699-48-77C	B3M7C0	Y	7440-62-2	Vanadium	37.2	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Vanadium	37.2	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77C	B3M7C1	Y	7440-62-2	Vanadium	35.1	ug/L		6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3H2P2	Y	7440-66-6	Zinc	7.94	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Zinc	7.94	ug/L
699-48-77C	B3HYB6	Y	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Zinc	3.3	ug/L
699-48-77C	B3K301	Y	7440-66-6	Zinc	3.89	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Zinc	3.89	ug/L
699-48-77C	B3M7C0	Y	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	(duplicate)	(duplicate)	
699-48-77C	B3M7C1	Y	7440-66-6	Zinc	3.67	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Zinc	3.67	ug/L
699-48-77D	B3H2R1	N	24959-67-9	Bromide	160	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Bromide	160	ug/L
699-48-77D	B3HYC5	N	24959-67-9	Bromide	84	ug/L	B	300.0_ANIONS_IC	11-Apr-18		ANIONS	Bromide	84	ug/L
699-48-77D	B3K310	N	24959-67-9	Bromide	130	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Bromide	130	ug/L
699-48-77D	B3M7D2	N	24959-67-9	Bromide	63	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	Bromide	63	ug/L
699-48-77D	B3H2R1	N	16887-00-6	Chloride	4800	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Chloride	4800	ug/L
699-48-77D	B3HYC5	N	16887-00-6	Chloride	4900	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Chloride	4900	ug/L
699-48-77D	B3K310	N	16887-00-6	Chloride	4800	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Chloride	4800	ug/L
699-48-77D	B3M7D2	N	16887-00-6	Chloride	3700	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Chloride	3700	ug/L
699-48-77D	B3H2R1	N	16984-48-8	Fluoride	330	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Fluoride	330	ug/L
699-48-77D	B3HYC5	N	16984-48-8	Fluoride	320	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Fluoride	320	ug/L
699-48-77D	B3K310	N	16984-48-8	Fluoride	360	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Fluoride	360	ug/L
699-48-77D	B3M7D2	N	16984-48-8	Fluoride	330	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Fluoride	330	ug/L
699-48-77D	B3H2R1	N	NO3-N	Nitrogen in Nitrate	510	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Nitrogen in Nitrate	510	ug/L
699-48-77D	B3HYC5	N	NO3-N	Nitrogen in Nitrate	550	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Nitrogen in Nitrate	550	ug/L
699-48-77D	B3K310	N	NO3-N	Nitrogen in Nitrate	580	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Nitrogen in Nitrate	580	ug/L
699-48-77D	B3M7D2	N	NO3-N	Nitrogen in Nitrate	550	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Nitrogen in Nitrate	550	ug/L
699-48-77D	B3H2R1	N	NO2-N	Nitrogen in Nitrite	53	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Nitrogen in Nitrite	53	ug/L
699-48-77D	B3HYC5	N	NO2-N	Nitrogen in Nitrite	25	ug/L	B	300.0_ANIONS_IC	11-Apr-18		ANIONS	Nitrogen in Nitrite	25	ug/L
699-48-77D	B3K310	N	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Jul-18		ANIONS	Nitrogen in Nitrite	19	ug/L
699-48-77D	B3M7D2	N	NO2-N	Nitrogen in Nitrite	19	ug/L	U	300.0_ANIONS_IC	30-Oct-18		ANIONS	Nitrogen in Nitrite	19	ug/L
699-48-77D	B3H2R1	N	14265-44-2	Phosphate	130	ug/L	UN	300.0_ANIONS_IC	29-Jan-18		ANIONS	Phosphate	130	ug/L
699-48-77D	B3HYC5	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	11-Apr-18		ANIONS	Phosphate	130	ug/L
699-48-77D	B3K310	N	14265-44-2	Phosphate	130	ug/L	U	300.0_ANIONS_IC	30-Jul-18		ANIONS	Phosphate	130	ug/L
699-48-77D	B3M7D2	N	14265-44-2	Phosphate	130	ug/L	B	300.0_ANIONS_IC	30-Oct-18		ANIONS	Phosphate	130	ug/L
699-48-77D	B3H2R1	N	14808-79-8	Sulfate	16000	ug/L		300.0_ANIONS_IC	29-Jan-18		ANIONS	Sulfate	16000	ug/L
699-48-77D	B3HYC5	N	14808-79-8	Sulfate	16000	ug/L		300.0_ANIONS_IC	11-Apr-18		ANIONS	Sulfate	16000	ug/L
699-48-77D	B3K310	N	14808-79-8	Sulfate	15000	ug/L		300.0_ANIONS_IC	30-Jul-18		ANIONS	Sulfate	15000	ug/L
699-48-77D	B3M7D2	N	14808-79-8	Sulfate	14000	ug/L		300.0_ANIONS_IC	30-Oct-18		ANIONS	Sulfate	14000	ug/L
699-48-77D	B3H2R0	N	ALKALINITY	Alkalinity	109000	ug/L		310.1_ALKALINITY	29-Jan-18		INORG	Alkalinity	109000	ug/L
699-48-77D	B3HYC4	N	ALKALINITY	Alkalinity	108000	ug/L		310.1_ALKALINITY	11-Apr-18		INORG	Alkalinity	108000	ug/L
699-48-77D	B3K309	N	ALKALINITY	Alkalinity	112000	ug/L		310.1_ALKALINITY	30-Jul-18		INORG	Alkalinity	112000	ug/L
699-48-77D	B3M7D1	N	ALKALINITY	Alkalinity	111000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	Alkalinity	111000	ug/L
699-48-77D	B3H2R0	N	HCO3ALKALINITY	Bi-carbonate alkalinity	109000	ug/L		310.1_ALKALINITY	29-Jan-18		INORG	Bi-carbonate alkalinity	109000	ug/L
699-48-77D	B3HYC4	N	HCO3ALKALINITY	Bi-carbonate alkalinity	108000	ug/L		310.1_ALKALINITY	11-Apr-18		INORG	Bi-carbonate alkalinity	108000	ug/L
699-48-77D	B3K309	N	HCO3ALKALINITY	Bi-carbonate alkalinity	112000	ug/L		310.1_ALKALINITY	30-Jul-18		INORG	Bi-carbonate alkalinity	112000	ug/L
699-48-77D	B3M7D1	N	HCO3ALKALINITY	Bi-carbonate alkalinity	111000	ug/L		310.1_ALKALINITY	30-Oct-18		INORG	Bi-carbonate alkalinity	111000	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3H2R0	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	29-Jan-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77D	B3HYC4	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	11-Apr-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77D	B3K309	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	30-Jul-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77D	B3M7D1	N	CO3ALKALINITY	Carbonate alkalinity	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	Carbonate alkalinity	1450	ug/L
699-48-77D	B3H2R0	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	29-Jan-18		INORG	Hydroxylion	1450	ug/L
699-48-77D	B3HYC4	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	11-Apr-18		INORG	Hydroxylion	1450	ug/L
699-48-77D	B3K309	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	30-Jul-18		INORG	Hydroxylion	1450	ug/L
699-48-77D	B3M7D1	N	84625-61-6	Hydroxylion	1450	ug/L	U	310.1_ALKALINITY	30-Oct-18		INORG	Hydroxylion	1450	ug/L
699-48-77D	B3H2R0	N	TDS	Total dissolved solids	183000	ug/L		160.1_TDS	29-Jan-18		INORG	Total dissolved solids	183000	ug/L
699-48-77D	B3HYC4	N	TDS	Total dissolved solids	177000	ug/L		160.1_TDS	11-Apr-18		INORG	Total dissolved solids	177000	ug/L
699-48-77D	B3K309	N	TDS	Total dissolved solids	176000	ug/L		160.1_TDS	30-Jul-18		INORG	Total dissolved solids	176000	ug/L
699-48-77D	B3M7D1	N	TDS	Total dissolved solids	177000	ug/L		2540C_TDS	30-Oct-18		INORG	Total dissolved solids	177000	ug/L
699-48-77D	B3H2R0	N	7429-90-5	Aluminum	1720	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Aluminum	1720	ug/L
699-48-77D	B3HYC4	N	7429-90-5	Aluminum	120	ug/L	B	6010_METALS_ICP	11-Apr-18		METALS	Aluminum	120	ug/L
699-48-77D	B3K309	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Aluminum	68	ug/L
699-48-77D	B3M7D1	N	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Aluminum	68	ug/L
699-48-77D	B3H2R0	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Antimony	1	ug/L
699-48-77D	B3HYC4	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Antimony	1	ug/L
699-48-77D	B3K309	N	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Antimony	1	ug/L
699-48-77D	B3H2R0	N	7440-38-2	Arsenic	4.13	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Arsenic	4.13	ug/L
699-48-77D	B3HYC4	N	7440-38-2	Arsenic	4.55	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Arsenic	4.55	ug/L
699-48-77D	B3K309	N	7440-38-2	Arsenic	7.82	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Arsenic	7.82	ug/L
699-48-77D	B3M7D1	N	7440-38-2	Arsenic	5.92	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Arsenic	5.92	ug/L
699-48-77D	B3H2R0	N	7440-39-3	Barium	16.3	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Barium	16.3	ug/L
699-48-77D	B3HYC4	N	7440-39-3	Barium	16.4	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Barium	16.4	ug/L
699-48-77D	B3K309	N	7440-39-3	Barium	14	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Barium	14	ug/L
699-48-77D	B3M7D1	N	7440-39-3	Barium	13.6	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Barium	13.6	ug/L
699-48-77D	B3H2R0	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3H2R0	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Beryllium	1	ug/L
699-48-77D	B3HYC4	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3HYC4	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Beryllium	1	ug/L
699-48-77D	B3K309	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3K309	N	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Beryllium	1	ug/L
699-48-77D	B3M7D1	N	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3H2R0	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3HYC4	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3K309	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3M7D1	N	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3H2R0	N	7440-70-2	Calcium	27800	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Calcium	27800	ug/L
699-48-77D	B3HYC4	N	7440-70-2	Calcium	27600	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Calcium	27600	ug/L
699-48-77D	B3K309	N	7440-70-2	Calcium	25000	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Calcium	25000	ug/L
699-48-77D	B3M7D1	N	7440-70-2	Calcium	24000	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Calcium	24000	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3H2R0	N	7440-47-3	Chromium	18.4	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Chromium	18.4	ug/L
699-48-77D	B3HYC4	N	7440-47-3	Chromium	26.5	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Chromium	26.5	ug/L
699-48-77D	B3K309	N	7440-47-3	Chromium	18.5	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Chromium	18.5	ug/L
699-48-77D	B3M7D1	N	7440-47-3	Chromium	13.6	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Chromium	13.6	ug/L
699-48-77D	B3H2R0	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Cobalt	1	ug/L
699-48-77D	B3HYC4	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Cobalt	1	ug/L
699-48-77D	B3K309	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Cobalt	1	ug/L
699-48-77D	B3M7D1	N	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Cobalt	1	ug/L
699-48-77D	B3H2R0	N	7440-50-8	Copper	0.926	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Copper	0.926	ug/L
699-48-77D	B3HYC4	N	7440-50-8	Copper	1.56	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Copper	1.56	ug/L
699-48-77D	B3K309	N	7440-50-8	Copper	0.759	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Copper	0.759	ug/L
699-48-77D	B3M7D1	N	7440-50-8	Copper	0.518	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	Copper	0.518	ug/L
699-48-77D	B3H2R0	N	7439-89-6	Iron	247	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Iron	247	ug/L
699-48-77D	B3HYC4	N	7439-89-6	Iron	350	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Iron	350	ug/L
699-48-77D	B3K309	N	7439-89-6	Iron	124	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Iron	124	ug/L
699-48-77D	B3M7D1	N	7439-89-6	Iron	76	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Iron	76	ug/L
699-48-77D	B3H2R0	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Lead	0.5	ug/L
699-48-77D	B3HYC4	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Lead	0.5	ug/L
699-48-77D	B3K309	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Lead	0.5	ug/L
699-48-77D	B3M7D1	N	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Lead	0.5	ug/L
699-48-77D	B3H2R0	N	7439-95-4	Magnesium	11200	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Magnesium	11200	ug/L
699-48-77D	B3HYC4	N	7439-95-4	Magnesium	10900	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Magnesium	10900	ug/L
699-48-77D	B3K309	N	7439-95-4	Magnesium	9350	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Magnesium	9350	ug/L
699-48-77D	B3M7D1	N	7439-95-4	Magnesium	9490	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Magnesium	9490	ug/L
699-48-77D	B3H2R0	N	7439-96-5	Manganese	2.57	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Manganese	2.57	ug/L
699-48-77D	B3HYC4	N	7439-96-5	Manganese	4.96	ug/L	B	6010_METALS_ICP	11-Apr-18		METALS	Manganese	4.96	ug/L
699-48-77D	B3K309	N	7439-96-5	Manganese	2.98	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Manganese	2.98	ug/L
699-48-77D	B3M7D1	N	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Manganese	2	ug/L
699-48-77D	B3H2R0	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	29-Jan-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3HYC4	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	11-Apr-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3K309	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Jul-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3M7D1	N	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3H2R0	N	7440-02-0	Nickel	15.7	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Nickel	15.7	ug/L
699-48-77D	B3HYC4	N	7440-02-0	Nickel	17.7	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Nickel	17.7	ug/L
699-48-77D	B3K309	N	7440-02-0	Nickel	12.6	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Nickel	12.6	ug/L
699-48-77D	B3M7D1	N	7440-02-0	Nickel	8.69	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Nickel	8.69	ug/L
699-48-77D	B3H2R0	N	7440-09-7	Potassium	3170	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Potassium	3170	ug/L
699-48-77D	B3HYC4	N	7440-09-7	Potassium	3120	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Potassium	3120	ug/L
699-48-77D	B3K309	N	7440-09-7	Potassium	2730	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Potassium	2730	ug/L
699-48-77D	B3M7D1	N	7440-09-7	Potassium	2860	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Potassium	2860	ug/L
699-48-77D	B3H2R0	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Selenium	2	ug/L
699-48-77D	B3HYC4	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Selenium	2	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3K309	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Selenium	2	ug/L
699-48-77D	B3M7D1	N	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Selenium	2	ug/L
699-48-77D	B3H2R0	N	7440-21-3	Silicon	21900	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Silicon	21900	ug/L
699-48-77D	B3HYC4	N	7440-21-3	Silicon	20400	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Silicon	20400	ug/L
699-48-77D	B3K309	N	7440-21-3	Silicon	19300	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Silicon	19300	ug/L
699-48-77D	B3M7D1	N	7440-21-3	Silicon	18300	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Silicon	18300	ug/L
699-48-77D	B3H2R0	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Silver	1	ug/L
699-48-77D	B3HYC4	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Silver	1	ug/L
699-48-77D	B3K309	N	7440-22-4	Silver	5	ug/L	UD	6010_METALS_ICP	30-Jul-18		METALS	Silver	5	ug/L
699-48-77D	B3M7D1	N	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Silver	1	ug/L
699-48-77D	B3H2R0	N	7440-23-5	Sodium	9020	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Sodium	9020	ug/L
699-48-77D	B3HYC4	N	7440-23-5	Sodium	8560	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Sodium	8560	ug/L
699-48-77D	B3K309	N	7440-23-5	Sodium	8080	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Sodium	8080	ug/L
699-48-77D	B3M7D1	N	7440-23-5	Sodium	7770	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Sodium	7770	ug/L
699-48-77D	B3H2R0	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Thallium	5	ug/L
699-48-77D	B3HYC4	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Thallium	5	ug/L
699-48-77D	B3K309	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Thallium	5	ug/L
699-48-77D	B3M7D1	N	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Thallium	5	ug/L
699-48-77D	B3H2R0	N	7440-32-6	Titanium	7.59	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Titanium	7.59	ug/L
699-48-77D	B3HYC4	N	7440-32-6	Titanium	9.64	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Titanium	9.64	ug/L
699-48-77D	B3K309	N	7440-32-6	Titanium	1.74	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Titanium	1.74	ug/L
699-48-77D	B3H2R0	N	7440-61-1	Uranium	0.959	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Uranium	0.959	ug/L
699-48-77D	B3HYC4	N	7440-61-1	Uranium	0.844	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Uranium	0.844	ug/L
699-48-77D	B3K309	N	7440-61-1	Uranium	0.846	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Uranium	0.846	ug/L
699-48-77D	B3M7D1	N	7440-61-1	Uranium	0.844	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Uranium	0.844	ug/L
699-48-77D	B3H2R0	N	7440-62-2	Vanadium	41.4	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Vanadium	41.4	ug/L
699-48-77D	B3HYC4	N	7440-62-2	Vanadium	42.1	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Vanadium	42.1	ug/L
699-48-77D	B3K309	N	7440-62-2	Vanadium	35.4	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Vanadium	35.4	ug/L
699-48-77D	B3M7D1	N	7440-62-2	Vanadium	38.4	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Vanadium	38.4	ug/L
699-48-77D	B3H2R0	N	7440-66-6	Zinc	15.5	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Zinc	15.5	ug/L
699-48-77D	B3HYC4	N	7440-66-6	Zinc	22.8	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Zinc	22.8	ug/L
699-48-77D	B3K309	N	7440-66-6	Zinc	11	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Zinc	11	ug/L
699-48-77D	B3M7D1	N	7440-66-6	Zinc	7.97	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Zinc	7.97	ug/L
699-48-77D	B3H2R0	N	12587-46-1	Gross alpha	0.247	pCi/L	U	9310_ALPHABETA_GPC	29-Jan-18	2.81	RAD	Gross alpha	2.81	ug/L
699-48-77D	B3HYC4	N	12587-46-1	Gross alpha	0.916	pCi/L	U	9310_ALPHABETA_GPC	11-Apr-18	2.29	RAD	Gross alpha	2.29	ug/L
699-48-77D	B3K309	N	12587-46-1	Gross alpha	1.74	pCi/L	U	9310_ALPHABETA_GPC	30-Jul-18	2.74	RAD	Gross alpha	2.74	ug/L
699-48-77D	B3M7D1	N	12587-46-1	Gross alpha	0.605	pCi/L	U	9310_ALPHABETA_GPC	30-Oct-18	2.82	RAD	Gross alpha	2.82	ug/L
699-48-77D	B3H2R0	N	12587-47-2	Gross beta	2.02	pCi/L	U	9310_ALPHABETA_GPC	29-Jan-18	2.06	RAD	Gross beta	2.06	ug/L
699-48-77D	B3HYC4	N	12587-47-2	Gross beta	3.91	pCi/L		9310_ALPHABETA_GPC	11-Apr-18	2.11	RAD	Gross beta	3.91	ug/L
699-48-77D	B3K309	N	12587-47-2	Gross beta	3	pCi/L		9310_ALPHABETA_GPC	30-Jul-18	2.09	RAD	Gross beta	3	ug/L
699-48-77D	B3M7D1	N	12587-47-2	Gross beta	3.85	pCi/L		9310_ALPHABETA_GPC	30-Oct-18	2.74	RAD	Gross beta	3.85	ug/L
699-48-77D	B3H2R0	N	10098-97-2	Strontium-90	-0.995	pCi/L	U	SRISO_SEP_PRECIP_GPC	29-Jan-18	1.84	RAD	Strontium-90	1.84	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3HYC4	N	10098-97-2	Strontium-90	0.0875	pCi/L	U	SRISO_SEP_PRECIP_GPC	11-Apr-18	1.47	RAD	Strontium-90	1.47	ug/L
699-48-77D	B3K309	N	10098-97-2	Strontium-90	1.2	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Jul-18	1.69	RAD	Strontium-90	1.69	ug/L
699-48-77D	B3M7D1	N	10098-97-2	Strontium-90	0.389	pCi/L	U	SRISO_SEP_PRECIP_GPC	30-Oct-18	1.97	RAD	Strontium-90	1.97	ug/L
699-48-77D	B3H2R0	N	10028-17-8	Tritium	55600	pCi/L		TRITIUM_DIST_LSC	29-Jan-18	538	RAD	Tritium	55600	ug/L
699-48-77D	B3HYC4	N	10028-17-8	Tritium	56000	pCi/L		TRITIUM_DIST_LSC	11-Apr-18	506	RAD	Tritium	56000	ug/L
699-48-77D	B3K309	N	10028-17-8	Tritium	49500	pCi/L		TRITIUM_DIST_LSC	30-Jul-18	537	RAD	Tritium	49500	ug/L
699-48-77D	B3M7D1	N	10028-17-8	Tritium	44300	pCi/L		TRITIUM_DIST_LSC	30-Oct-18	533	RAD	Tritium	44300	ug/L
699-48-77D	B3H2R0	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77D	B3HYC4	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77D	B3K309	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77D	B3M7D1	N	71-55-6	1,1,1-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1,1-Trichloroethane	0.3	ug/L
699-48-77D	B3H2R0	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77D	B3HYC4	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77D	B3K309	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77D	B3M7D1	N	79-00-5	1,1,2-Trichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1,2-Trichloroethane	0.3	ug/L
699-48-77D	B3H2R0	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77D	B3HYC4	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77D	B3K309	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77D	B3M7D1	N	75-34-3	1,1-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,1-Dichloroethane	0.3	ug/L
699-48-77D	B3H2R0	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77D	B3HYC4	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77D	B3K309	N	75-35-4	1,1-Dichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,1-Dichloroethene	0.3	ug/L
699-48-77D	B3H2R0	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77D	B3HYC4	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77D	B3K309	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77D	B3M7D1	N	107-06-2	1,2-Dichloroethane	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,2-Dichloroethane	0.3	ug/L
699-48-77D	B3H2R0	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77D	B3HYC4	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77D	B3K309	N	540-59-0	1,2-Dichloroethene (Total)	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1,2-Dichloroethene (Total)	0.3	ug/L
699-48-77D	B3H2R0	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77D	B3HYC4	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77D	B3K309	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77D	B3M7D1	N	106-46-7	1,4-Dichlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1,4-Dichlorobenzene	0.3	ug/L
699-48-77D	B3H2R0	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	1-Butanol	83.3	ug/L
699-48-77D	B3HYC4	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	1-Butanol	83.3	ug/L
699-48-77D	B3K309	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	1-Butanol	83.3	ug/L
699-48-77D	B3M7D1	N	71-36-3	1-Butanol	83.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	1-Butanol	83.3	ug/L
699-48-77D	B3H2R0	N	78-93-3	2-Butanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	2-Butanone	3	ug/L
699-48-77D	B3HYC4	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	2-Butanone	3	ug/L
699-48-77D	B3K309	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	2-Butanone	3	ug/L
699-48-77D	B3M7D1	N	78-93-3	2-Butanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	2-Butanone	3	ug/L
699-48-77D	B3H2R0	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	29-Jan-18		VOA	2-Hexanone	3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3HYC4	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	2-Hexanone	3	ug/L
699-48-77D	B3K309	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	2-Hexanone	3	ug/L
699-48-77D	B3M7D1	N	591-78-6	2-Hexanone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	2-Hexanone	3	ug/L
699-48-77D	B3H2R0	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	2-Pentanone	3	ug/L
699-48-77D	B3HYC4	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	2-Pentanone	3	ug/L
699-48-77D	B3K309	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	2-Pentanone	3	ug/L
699-48-77D	B3M7D1	N	107-87-9	2-Pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	2-Pentanone	3	ug/L
699-48-77D	B3H2R0	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77D	B3HYC4	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77D	B3K309	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77D	B3M7D1	N	108-10-1	4-Methyl-2-pentanone	3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	4-Methyl-2-pentanone	3	ug/L
699-48-77D	B3H2R0	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	29-Jan-18		VOA	Acetone	3	ug/L
699-48-77D	B3HYC4	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	11-Apr-18		VOA	Acetone	3	ug/L
699-48-77D	B3K309	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Acetone	3	ug/L
699-48-77D	B3M7D1	N	67-64-1	Acetone	3	ug/L	TU	8260_VOA_GCMS	30-Oct-18		VOA	Acetone	3	ug/L
699-48-77D	B3H2R0	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Acetonitrile	16.7	ug/L
699-48-77D	B3HYC4	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Acetonitrile	16.7	ug/L
699-48-77D	B3K309	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Acetonitrile	16.7	ug/L
699-48-77D	B3M7D1	N	75-05-8	Acetonitrile	16.7	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Acetonitrile	16.7	ug/L
699-48-77D	B3H2R0	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Benzene	0.3	ug/L
699-48-77D	B3HYC4	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Benzene	0.3	ug/L
699-48-77D	B3K309	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Benzene	0.3	ug/L
699-48-77D	B3M7D1	N	71-43-2	Benzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Benzene	0.3	ug/L
699-48-77D	B3H2R0	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77D	B3HYC4	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77D	B3K309	N	75-27-4	Bromodichloromethane	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Bromodichloromethane	0.3	ug/L
699-48-77D	B3H2R0	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77D	B3HYC4	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77D	B3K309	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77D	B3M7D1	N	75-15-0	Carbon disulfide	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Carbon disulfide	1.6	ug/L
699-48-77D	B3H2R0	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77D	B3HYC4	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77D	B3K309	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77D	B3M7D1	N	56-23-5	Carbon tetrachloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Carbon tetrachloride	0.3	ug/L
699-48-77D	B3H2R0	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77D	B3HYC4	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77D	B3K309	N	108-90-7	Chlorobenzene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77D	B3M7D1	N	108-90-7	Chlorobenzene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Chlorobenzene	0.3	ug/L
699-48-77D	B3H2R0	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Chloroform	0.3	ug/L
699-48-77D	B3HYC4	N	67-66-3	Chloroform	0.39	ug/L	J	8260_VOA_GCMS	11-Apr-18		VOA	Chloroform	0.39	ug/L
699-48-77D	B3K309	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Chloroform	0.3	ug/L
699-48-77D	B3M7D1	N	67-66-3	Chloroform	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Chloroform	0.3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3H2R0	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Ethyl cyanide	3	ug/L
699-48-77D	B3HYC4	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Ethyl cyanide	3	ug/L
699-48-77D	B3K309	N	107-12-0	Ethyl cyanide	3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Ethyl cyanide	3	ug/L
699-48-77D	B3H2R0	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Methylene chloride	1.6	ug/L
699-48-77D	B3HYC4	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Methylene chloride	1.6	ug/L
699-48-77D	B3K309	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Methylene chloride	1.6	ug/L
699-48-77D	B3M7D1	N	75-09-2	Methylene chloride	1.6	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Methylene chloride	1.6	ug/L
699-48-77D	B3H2R0	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77D	B3HYC4	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77D	B3K309	N	127-18-4	Tetrachloroethene	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77D	B3M7D1	N	127-18-4	Tetrachloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Tetrachloroethene	0.3	ug/L
699-48-77D	B3H2R0	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77D	B3HYC4	N	109-99-9	Tetrahydrofuran	2.73	ug/L	BJ	8260_VOA_GCMS	11-Apr-18		VOA	Tetrahydrofuran	2.73	ug/L
699-48-77D	B3K309	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77D	B3M7D1	N	109-99-9	Tetrahydrofuran	1.5	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Tetrahydrofuran	1.5	ug/L
699-48-77D	B3H2R0	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Toluene	0.3	ug/L
699-48-77D	B3HYC4	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Toluene	0.3	ug/L
699-48-77D	B3K309	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Toluene	0.3	ug/L
699-48-77D	B3M7D1	N	108-88-3	Toluene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Toluene	0.3	ug/L
699-48-77D	B3H2R0	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Trichloroethene	0.3	ug/L
699-48-77D	B3HYC4	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Trichloroethene	0.3	ug/L
699-48-77D	B3K309	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Trichloroethene	0.3	ug/L
699-48-77D	B3M7D1	N	79-01-6	Trichloroethene	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Trichloroethene	0.3	ug/L
699-48-77D	B3H2R0	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77D	B3HYC4	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77D	B3K309	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	30-Jul-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77D	B3M7D1	N	75-01-4	Vinyl chloride	0.3	ug/L	U	8260_VOA_GCMS	30-Oct-18		VOA	Vinyl chloride	0.3	ug/L
699-48-77D	B3H2R0	N	1330-20-7	Xylenes (total)	0.3	ug/L	U	8260_VOA_GCMS	29-Jan-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77D	B3HYC4	N	1330-20-7	Xylenes (total)	0.3	ug/L	U	8260_VOA_GCMS	11-Apr-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77D	B3K309	N	1330-20-7	Xylenes (total)	0.3	ug/L	TU	8260_VOA_GCMS	30-Jul-18		VOA	Xylenes (total)	0.3	ug/L
699-48-77D	B3H2P9	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Aluminum	68	ug/L
699-48-77D	B3HYC3	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Aluminum	68	ug/L
699-48-77D	B3K308	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Aluminum	68	ug/L
699-48-77D	B3M7D0	Y	7429-90-5	Aluminum	68	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Aluminum	68	ug/L
699-48-77D	B3H2P9	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Antimony	1	ug/L
699-48-77D	B3HYC3	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Antimony	1	ug/L
699-48-77D	B3K308	Y	7440-36-0	Antimony	1	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Antimony	1	ug/L
699-48-77D	B3H2P9	Y	7440-38-2	Arsenic	3.67	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Arsenic	3.67	ug/L
699-48-77D	B3HYC3	Y	7440-38-2	Arsenic	4.88	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Arsenic	4.88	ug/L
699-48-77D	B3K308	Y	7440-38-2	Arsenic	8.13	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Arsenic	8.13	ug/L
699-48-77D	B3M7D0	Y	7440-38-2	Arsenic	5.58	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Arsenic	5.58	ug/L
699-48-77D	B3H2P9	Y	7440-39-3	Barium	16.3	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Barium	16.3	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3HYC3	Y	7440-39-3	Barium	15.1	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Barium	15.1	ug/L
699-48-77D	B3K308	Y	7440-39-3	Barium	13.7	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Barium	13.7	ug/L
699-48-77D	B3M7D0	Y	7440-39-3	Barium	14.1	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Barium	14.1	ug/L
699-48-77D	B3H2P9	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3H2P9	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Beryllium	1	ug/L
699-48-77D	B3HYC3	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3HYC3	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Beryllium	1	ug/L
699-48-77D	B3K308	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3K308	Y	7440-41-7	Beryllium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Beryllium	1	ug/L
699-48-77D	B3M7D0	Y	7440-41-7	Beryllium	0.2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Beryllium	0.2	ug/L
699-48-77D	B3H2P9	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3HYC3	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3K308	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3M7D0	Y	7440-43-9	Cadmium	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Cadmium	0.3	ug/L
699-48-77D	B3H2P9	Y	7440-70-2	Calcium	29700	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Calcium	29700	ug/L
699-48-77D	B3HYC3	Y	7440-70-2	Calcium	26800	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Calcium	26800	ug/L
699-48-77D	B3K308	Y	7440-70-2	Calcium	24800	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Calcium	24800	ug/L
699-48-77D	B3M7D0	Y	7440-70-2	Calcium	25000	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Calcium	25000	ug/L
699-48-77D	B3H2P9	Y	7440-47-3	Chromium	4.52	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Chromium	4.52	ug/L
699-48-77D	B3HYC3	Y	7440-47-3	Chromium	3	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Chromium	3	ug/L
699-48-77D	B3K308	Y	7440-47-3	Chromium	3.87	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Chromium	3.87	ug/L
699-48-77D	B3M7D0	Y	7440-47-3	Chromium	3.85	ug/L	B	6020_METALS_ICPMS	30-Oct-18		METALS	Chromium	3.85	ug/L
699-48-77D	B3H2P9	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Cobalt	1	ug/L
699-48-77D	B3HYC3	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Cobalt	1	ug/L
699-48-77D	B3K308	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Cobalt	1	ug/L
699-48-77D	B3M7D0	Y	7440-48-4	Cobalt	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Cobalt	1	ug/L
699-48-77D	B3H2P9	Y	7440-50-8	Copper	0.795	ug/L	B	6020_METALS_ICPMS	29-Jan-18		METALS	Copper	0.795	ug/L
699-48-77D	B3HYC3	Y	7440-50-8	Copper	0.467	ug/L	B	6020_METALS_ICPMS	11-Apr-18		METALS	Copper	0.467	ug/L
699-48-77D	B3K308	Y	7440-50-8	Copper	0.794	ug/L	B	6020_METALS_ICPMS	30-Jul-18		METALS	Copper	0.794	ug/L
699-48-77D	B3M7D0	Y	7440-50-8	Copper	0.3	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Copper	0.3	ug/L
699-48-77D	B3H2P9	Y	7439-89-6	Iron	36.9	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Iron	36.9	ug/L
699-48-77D	B3HYC3	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Iron	30	ug/L
699-48-77D	B3K308	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Iron	30	ug/L
699-48-77D	B3M7D0	Y	7439-89-6	Iron	30	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Iron	30	ug/L
699-48-77D	B3H2P9	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Lead	0.5	ug/L
699-48-77D	B3HYC3	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Lead	0.5	ug/L
699-48-77D	B3K308	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Lead	0.5	ug/L
699-48-77D	B3M7D0	Y	7439-92-1	Lead	0.5	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Lead	0.5	ug/L
699-48-77D	B3H2P9	Y	7439-95-4	Magnesium	11000	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Magnesium	11000	ug/L
699-48-77D	B3HYC3	Y	7439-95-4	Magnesium	9940	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Magnesium	9940	ug/L
699-48-77D	B3K308	Y	7439-95-4	Magnesium	9420	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Magnesium	9420	ug/L
699-48-77D	B3M7D0	Y	7439-95-4	Magnesium	9800	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Magnesium	9800	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3H2P9	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Manganese	2	ug/L
699-48-77D	B3HYC3	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Manganese	2	ug/L
699-48-77D	B3K308	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Manganese	2	ug/L
699-48-77D	B3M7D0	Y	7439-96-5	Manganese	2	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Manganese	2	ug/L
699-48-77D	B3H2P9	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	29-Jan-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3HYC3	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	11-Apr-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3K308	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Jul-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3M7D0	Y	7439-97-6	Mercury	0.067	ug/L	U	7470_HG_CVAA	30-Oct-18		METALS	Mercury	0.067	ug/L
699-48-77D	B3H2P9	Y	7440-02-0	Nickel	7.92	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Nickel	7.92	ug/L
699-48-77D	B3HYC3	Y	7440-02-0	Nickel	6.25	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Nickel	6.25	ug/L
699-48-77D	B3K308	Y	7440-02-0	Nickel	5.01	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Nickel	5.01	ug/L
699-48-77D	B3M7D0	Y	7440-02-0	Nickel	5.87	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Nickel	5.87	ug/L
699-48-77D	B3H2P9	Y	7440-09-7	Potassium	3200	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Potassium	3200	ug/L
699-48-77D	B3HYC3	Y	7440-09-7	Potassium	2860	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Potassium	2860	ug/L
699-48-77D	B3K308	Y	7440-09-7	Potassium	2700	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Potassium	2700	ug/L
699-48-77D	B3M7D0	Y	7440-09-7	Potassium	2930	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Potassium	2930	ug/L
699-48-77D	B3H2P9	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	29-Jan-18		METALS	Selenium	2	ug/L
699-48-77D	B3HYC3	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	11-Apr-18		METALS	Selenium	2	ug/L
699-48-77D	B3K308	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Jul-18		METALS	Selenium	2	ug/L
699-48-77D	B3M7D0	Y	7782-49-2	Selenium	2	ug/L	U	6020_METALS_ICPMS	30-Oct-18		METALS	Selenium	2	ug/L
699-48-77D	B3H2P9	Y	7440-21-3	Silicon	21400	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Silicon	21400	ug/L
699-48-77D	B3HYC3	Y	7440-21-3	Silicon	20100	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Silicon	20100	ug/L
699-48-77D	B3K308	Y	7440-21-3	Silicon	19100	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Silicon	19100	ug/L
699-48-77D	B3M7D0	Y	7440-21-3	Silicon	18700	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Silicon	18700	ug/L
699-48-77D	B3H2P9	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Silver	1	ug/L
699-48-77D	B3HYC3	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Silver	1	ug/L
699-48-77D	B3K308	Y	7440-22-4	Silver	5	ug/L	UD	6010_METALS_ICP	30-Jul-18		METALS	Silver	5	ug/L
699-48-77D	B3M7D0	Y	7440-22-4	Silver	1	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Silver	1	ug/L
699-48-77D	B3H2P9	Y	7440-23-5	Sodium	9090	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Sodium	9090	ug/L
699-48-77D	B3HYC3	Y	7440-23-5	Sodium	8370	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Sodium	8370	ug/L
699-48-77D	B3K308	Y	7440-23-5	Sodium	8010	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Sodium	8010	ug/L
699-48-77D	B3M7D0	Y	7440-23-5	Sodium	8040	ug/L	C	6010_METALS_ICP	30-Oct-18		METALS	Sodium	8040	ug/L
699-48-77D	B3H2P9	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Thallium	5	ug/L
699-48-77D	B3HYC3	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Thallium	5	ug/L
699-48-77D	B3K308	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Thallium	5	ug/L
699-48-77D	B3M7D0	Y	7440-28-0	Thallium	5	ug/L	U	6010_METALS_ICP	30-Oct-18		METALS	Thallium	5	ug/L
699-48-77D	B3H2P9	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	29-Jan-18		METALS	Titanium	1	ug/L
699-48-77D	B3HYC3	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Titanium	1	ug/L
699-48-77D	B3K308	Y	7440-32-6	Titanium	1	ug/L	U	6010_METALS_ICP	30-Jul-18		METALS	Titanium	1	ug/L
699-48-77D	B3H2P9	Y	7440-61-1	Uranium	0.973	ug/L		6020_METALS_ICPMS	29-Jan-18		METALS	Uranium	0.973	ug/L
699-48-77D	B3HYC3	Y	7440-61-1	Uranium	0.852	ug/L		6020_METALS_ICPMS	11-Apr-18		METALS	Uranium	0.852	ug/L
699-48-77D	B3K308	Y	7440-61-1	Uranium	0.833	ug/L		6020_METALS_ICPMS	30-Jul-18		METALS	Uranium	0.833	ug/L

Table A-5 SALDS Groundwater Sample Results and Conversion to Standard Units

DOWLOADED FROM HEIS DATABASE											CALCULATED RESULTS			
WELL NAME	SAMPLE NUMBER	FILTERED?	CONST. ID	CONSTITUENT	VALUE	UNITS	QUAL	METHOD_NAME	SAMPLE DATE	RAD MDL	TYPE	CONSTITUENT	CONVERTED VALUE	UNITS
699-48-77D	B3M7D0	Y	7440-61-1	Uranium	0.824	ug/L		6020_METALS_ICPMS	30-Oct-18		METALS	Uranium	0.824	ug/L
699-48-77D	B3H2P9	Y	7440-62-2	Vanadium	41.6	ug/L		6010_METALS_ICP	29-Jan-18		METALS	Vanadium	41.6	ug/L
699-48-77D	B3HYC3	Y	7440-62-2	Vanadium	40.6	ug/L		6010_METALS_ICP	11-Apr-18		METALS	Vanadium	40.6	ug/L
699-48-77D	B3K308	Y	7440-62-2	Vanadium	35.1	ug/L		6010_METALS_ICP	30-Jul-18		METALS	Vanadium	35.1	ug/L
699-48-77D	B3M7D0	Y	7440-62-2	Vanadium	38.3	ug/L		6010_METALS_ICP	30-Oct-18		METALS	Vanadium	38.3	ug/L
699-48-77D	B3H2P9	Y	7440-66-6	Zinc	4.95	ug/L	B	6010_METALS_ICP	29-Jan-18		METALS	Zinc	4.95	ug/L
699-48-77D	B3HYC3	Y	7440-66-6	Zinc	3.3	ug/L	U	6010_METALS_ICP	11-Apr-18		METALS	Zinc	3.3	ug/L
699-48-77D	B3K308	Y	7440-66-6	Zinc	5.1	ug/L	B	6010_METALS_ICP	30-Jul-18		METALS	Zinc	5.1	ug/L
699-48-77D	B3M7D0	Y	7440-66-6	Zinc	4.14	ug/L	B	6010_METALS_ICP	30-Oct-18		METALS	Zinc	4.14	ug/L

= Detected result

Filtered results are for information only and are not included in the Discharge Monitoring Reports

Lab qualifiers:

B (inorganics), J (organics):	Value is between the method detection level and the required quantitation level and is therefore an estimate.
C (inorganic), B (organic):	Contamination was found in quality control method blank standard sample.
D (all):	Sample was diluted before analysis.
N (inorganic), T (organic):	Spiked sample was outside quality control levels.
U (all):	Analyzed but not detected in the sample.

Table A-6 Pivot Table of SALDS Groundwater Sample Results

Consituent	Count of CONVERTED RESULTS	Min of CONVERTED RESULTS2	Average of CONVERTED RESULTS2	Max of CONVERTED RESULTS2
N	552	0.067	7515	1.83E+05
699-48-77C	276	0.067	7.18E+03	1.70E+05
ANIONS	28	19	1.78E+03	9.40E+03
Bromide	4	63	67.8	82
Chloride	4	2100	2.68E+03	3.20E+03
Fluoride	4	340	358	390
Nitrogen in Nitrate	4	490	738	970
Nitrogen in Nitrite	4	19	22.3	27
Phosphate	4	130	130	130
Sulfate	4	7300	8.48E+03	9.40E+03
INORG	20	1450	7.21E+04	1.70E+05
Alkalinity	4	9.64E+04	9.86E+04	1.01E+05
Bi-carbonate alkalinity	4	9.64E+04	9.86E+04	1.01E+05
Carbonate alkalinity	4	1450	1450	1450
Hydroxylion	4	1450	1450	1450
Total dissolved solids	4	1.50E+05	1.60E+05	1.70E+05
METALS	104	0.067	2.31E+03	2.36E+04
Aluminum	3	68	68	68
Antimony	3	1.0	1.0	1.0
Arsenic	4	3.36	4.62	6.53
Barium	4	16.9	18.2	20.2
Beryllium	7	0.20	0.54	1.0
Cadmium	4	0.30	0.30	0.30
Calcium	4	2.21E+04	2.27E+04	2.36E+04
Chromium	4	10.2	12.7	18.5
Cobalt	4	1.0	1.0	1.0
Copper	4	0.360	0.591	1.05
Iron	4	32.7	76.0	99.8
Lead	4	0.50	0.50	0.50
Magnesium	4	7.36E+03	7.73E+03	8.36E+03
Manganese	4	2.0	2.18	2.41
Mercury	4	0.067	0.067	0.067
Nickel	4	4.66	8.43	11.2
Potassium	4	2.99E+03	3.12E+03	3.25E+03
Selenium	4	2.0	2.0	2.0
Silicon	4	1.81E+04	1.95E+04	2.04E+04
Silver	4	1.0	1.0	1.0
Sodium	4	6.72E+03	6.95E+03	7.26E+03
Thallium	4	5.0	5.0	5.0
Titanium	3	1.0	1.0	1.0
Uranium	4	0.39	0.406	0.428
Vanadium	4	34.3	37.2	40.4
Zinc	4	3.3	5.08	6.0

Table A-6 Pivot Table of SALDS Groundwater Sample Results

Consituent	Count of CONVERTED RESULTS	Min of CONVERTED RESULTS2	Average of CONVERTED RESULTS2	Max of CONVERTED RESULTS2
VOA	107	0.3	4.8	83.3
1,1,1-Trichloroethane	4	0.30	0.30	0.30
1,1,2-Trichloroethane	4	0.30	0.30	0.30
1,1-Dichloroethane	4	0.30	0.30	0.30
1,1-Dichloroethene	3	0.30	0.30	0.30
1,2-Dichloroethane	4	0.30	0.30	0.30
1,2-Dichloroethene (Total)	3	0.30	0.30	0.30
1,4-Dichlorobenzene	4	0.30	0.30	0.30
1-Butanol	4	83.3	83.3	83.3
2-Butanone	4	3.0	3.0	3.0
2-Hexanone	4	3.0	3.0	3.0
2-Pentanone	4	3.0	3.0	3.0
4-Methyl-2-pentanone	4	3.0	3.0	3.0
Acetone	4	3.0	3.0	3.0
Acetonitrile	4	16.7	16.7	16.7
Benzene	4	0.30	0.30	0.30
Bromodichloromethane	3	0.30	0.30	0.30
Carbon disulfide	4	1.6	1.6	1.6
Carbon tetrachloride	4	0.30	0.30	0.30
Chlorobenzene	4	0.30	0.30	0.30
Chloroform	4	0.30	0.343	0.47
Ethyl cyanide	3	3.0	3.0	3.0
Methylene chloride	4	1.6	4.03	11.3
Tetrachloroethene	4	0.30	0.30	0.30
Tetrahydrofuran	4	1.5	1.87	2.96
Toluene	4	0.30	0.30	0.30
Trichloroethene	4	0.30	0.30	0.30
Vinyl chloride	4	0.30	0.30	0.30
Xylenes (total)	3	0.30	0.30	0.30
RAD	17	1.08	1.46E+04	5.60E+04
Gross alpha	4	2.57	2.75	2.90
Gross beta	4	2.44	3.46	4.38
Strontium-90	4	1.08	1.50	1.96
Tritium	5	4.26E+04	4.96E+04	5.60E+04
699-48-77D	276	0.067	7.86E+03	1.83E+05
ANIONS	28	19	2.99E+03	1.60E+04
Bromide	4	63	109	160
Chloride	4	3.70E+03	4.55E+03	4.90E+03
Fluoride	4	320	335	360
Nitrogen in Nitrate	4	510	548	580
Nitrogen in Nitrite	4	19	29	53
Phosphate	4	130	130	130
Sulfate	4	1.40E+04	1.53E+04	1.60E+04

Table A-6 Pivot Table of SALDS Groundwater Sample Results

Consituent	Count of CONVERTED RESULTS	Min of CONVERTED RESULTS2	Average of CONVERTED RESULTS2	Max of CONVERTED RESULTS2
INORG	20	1.45E+03	8.02E+04	1.83E+05
Alkalinity	4	1.08E+05	1.10E+05	1.12E+05
Bi-carbonate alkalinity	4	1.08E+05	1.10E+05	1.12E+05
Carbonate alkalinity	4	1450	1450	1450
Hydroxylion	4	1450	1450	1450
Total dissolved solids	4	1.76E+05	1.78E+05	1.83E+05
METALS	105	0.067	2.61E+03	2.78E+04
Aluminum	4	68	494	1720
Antimony	3	1.0	1.0	1.0
Arsenic	4	4.13	5.61	7.82
Barium	4	13.6	15.1	16.4
Beryllium	7	0.20	0.54	1.0
Cadmium	4	0.30	0.30	0.30
Calcium	4	2.40E+04	2.61E+04	2.78E+04
Chromium	4	13.6	19.3	26.5
Cobalt	4	1.0	1.0	1.0
Copper	4	0.518	0.941	1.56
Iron	4	76.0	199	350
Lead	4	0.50	0.50	0.50
Magnesium	4	9.35E+03	1.02E+04	1.12E+04
Manganese	4	2.0	3.13	4.96
Mercury	4	0.067	0.067	0.067
Nickel	4	8.69	13.7	17.7
Potassium	4	2.73E+03	2.97E+03	3.17E+03
Selenium	4	2.0	2.0	2.0
Silicon	4	1.83E+04	2.00E+04	2.19E+04
Silver	4	1.0	2.0	5.0
Sodium	4	7.77E+03	8.36E+03	9.02E+03
Thallium	4	5.0	5.0	5.0
Titanium	3	1.74	6.32	9.64
Uranium	4	0.844	0.873	0.959
Vanadium	4	35.4	39.3	42.1
Zinc	4	7.97	14.3	22.8
VOA	107	0.30	4.75	83.3
1,1,1-Trichloroethane	4	0.30	0.30	0.30
1,1,2-Trichloroethane	4	0.30	0.30	0.30
1,1-Dichloroethane	4	0.30	0.30	0.30
1,1-Dichloroethene	3	0.30	0.30	0.30
1,2-Dichloroethane	4	0.30	0.30	0.30
1,2-Dichloroethene (Total)	3	0.30	0.30	0.30
1,4-Dichlorobenzene	4	0.30	0.30	0.30
1-Butanol	4	83.3	83.3	83.3
2-Butanone	4	3.0	3.0	3.0

Table A-6 Pivot Table of SALDS Groundwater Sample Results

Consituent	Count of CONVERTED RESULTS	Min of CONVERTED RESULTS2	Average of CONVERTED RESULTS2	Max of CONVERTED RESULTS2
2-Hexanone	4	3.0	3.0	3.0
2-Pentanone	4	3.0	3.0	3.0
4-Methyl-2-pentanone	4	3.0	3.0	3.0
Acetone	4	3.0	3.0	3.0
Acetonitrile	4	16.7	16.7	16.7
Benzene	4	0.30	0.30	0.30
Bromodichloromethane	3	0.30	0.30	0.30
Carbon disulfide	4	1.6	1.6	1.6
Carbon tetrachloride	4	0.30	0.30	0.30
Chlorobenzene	4	0.30	0.30	0.30
Chloroform	4	0.30	0.323	0.390
Ethyl cyanide	3	3.0	3.0	3.0
Methylene chloride	4	1.6	1.6	1.6
Tetrachloroethene	4	0.3	0.3	0.3
Tetrahydrofuran	4	1.5	1.81	2.73
Toluene	4	0.30	0.30	0.30
Trichloroethene	4	0.30	0.30	0.30
Vinyl chloride	4	0.30	0.30	0.30
Xylenes (total)	3	0.30	0.30	0.30
RAD	16	1.47	1.28E+04	5.60E+04
Gross alpha	4	2.29	2.67	2.82
Gross beta	4	2.06	3.205	3.91
Strontium-90	4	1.47	1.7425	1.97
Tritium	4	4.43E+04	5.14E+04	5.60E+04
Y	210	0.067	2445.419214	29700

Table A-7 SALDS Groundwater Field Sample Results

WELL	FIELD READING	RESULT	UNITS	DATE
699-48-77C	Specific Conductance	207	uS/cm	17-Jan-18
699-48-77C	Specific Conductance	206	uS/cm	29-Jan-18
699-48-77C	Specific Conductance	215	uS/cm	11-Apr-18
699-48-77C	Specific Conductance	220	uS/cm	30-Jul-18
699-48-77C	Specific Conductance	229	uS/cm	30-Oct-18
699-48-77C	Dissolved oxygen	9.32	mg/L	17-Jan-18
699-48-77C	Dissolved oxygen	9.54	mg/L	29-Jan-18
699-48-77C	Dissolved oxygen	9.54	mg/L	11-Apr-18
699-48-77C	Dissolved oxygen	9.67	mg/L	30-Jul-18
699-48-77C	Dissolved oxygen	9.74	mg/L	30-Oct-18
699-48-77C	pH Measurement	8.1	unitless	17-Jan-18
699-48-77C	pH Measurement	7.9	unitless	29-Jan-18
699-48-77C	pH Measurement	8.0	unitless	11-Apr-18
699-48-77C	pH Measurement	8.0	unitless	30-Jul-18
699-48-77C	pH Measurement	8.0	unitless	30-Oct-18
699-48-77C	Temperature	18.8	Deg C	17-Jan-18
699-48-77C	Temperature	18.7	Deg C	29-Jan-18
699-48-77C	Temperature	19.0	Deg C	11-Apr-18
699-48-77C	Temperature	22.8	Deg C	30-Jul-18
699-48-77C	Temperature	19.3	Deg C	30-Oct-18
699-48-77C	Turbidity	2.95	NTU	17-Jan-18
699-48-77C	Turbidity	4.40	NTU	29-Jan-18
699-48-77C	Turbidity	0.80	NTU	11-Apr-18
699-48-77C	Turbidity	3.68	NTU	30-Jul-18
699-48-77C	Turbidity	1.38	NTU	30-Oct-18
699-48-77C	Depth to Groundwater	234.60	feet	17-Jan-18
699-48-77C	Depth to Groundwater	234.48	feet	24-Jan-18
699-48-77C	Depth to Groundwater	234.57	feet	29-Jan-18
699-48-77C	Depth to Groundwater	234.78	feet	20-Feb-18
699-48-77C	Depth to Groundwater	234.87	feet	19-Mar-18
699-48-77C	Depth to Groundwater	234.77	feet	11-Apr-18
699-48-77C	Depth to Groundwater	234.91	feet	18-Apr-18
699-48-77C	Depth to Groundwater	234.93	feet	09-May-18
699-48-77C	Depth to Groundwater	235.10	feet	14-Jun-18
699-48-77C	Depth to Groundwater	235.14	feet	11-Jul-18
699-48-77C	Depth to Groundwater	235.17	feet	30-Jul-18
699-48-77C	Depth to Groundwater	235.15	feet	08-Aug-18
699-48-77C	Depth to Groundwater	235.30	feet	11-Sep-18
699-48-77C	Depth to Groundwater	235.29	feet	04-Oct-18
699-48-77C	Depth to Groundwater	235.61	feet	30-Oct-18
699-48-77C	Depth to Groundwater	235.44	feet	14-Nov-18
699-48-77C	Depth to Groundwater	235.40	feet	14-Dec-18
699-48-77D	Specific Conductance	255	uS/cm	29-Jan-18

Table A-7 SALDS Groundwater Field Sample Results

WELL	FIELD READING	RESULT	UNITS	DATE
699-48-77D	Specific Conductance	255	uS/cm	11-Apr-18
699-48-77D	Specific Conductance	257	uS/cm	30-Jul-18
699-48-77D	Specific Conductance	255	uS/cm	30-Oct-18
699-48-77D	Dissolved oxygen	12.97	mg/L	29-Jan-18
699-48-77D	Dissolved oxygen	10.07	mg/L	11-Apr-18
699-48-77D	Dissolved oxygen	9.71	mg/L	30-Jul-18
699-48-77D	Dissolved oxygen	11.57	mg/L	30-Oct-18
699-48-77D	pH Measurement	8.0	unitless	29-Jan-18
699-48-77D	pH Measurement	8.1	unitless	11-Apr-18
699-48-77D	pH Measurement	8.1	unitless	30-Jul-18
699-48-77D	pH Measurement	8.2	unitless	30-Oct-18
699-48-77D	Temperature	15.1	Deg C	29-Jan-18
699-48-77D	Temperature	21.1	Deg C	11-Apr-18
699-48-77D	Temperature	32.2	Deg C	30-Jul-18
699-48-77D	Temperature	18.4	Deg C	30-Oct-18
699-48-77D	Turbidity	5.61	NTU	29-Jan-18
699-48-77D	Turbidity	5.90	NTU	11-Apr-18
699-48-77D	Turbidity	4.93	NTU	30-Jul-18
699-48-77D	Turbidity	4.31	NTU	30-Oct-18
699-48-77D	Depth to Groundwater	233.50	feet	24-Jan-18
699-48-77D	Depth to Groundwater	236.91	feet	29-Jan-18
699-48-77D	Depth to Groundwater	233.74	feet	20-Feb-18
699-48-77D	Depth to Groundwater	233.81	feet	19-Mar-18
699-48-77D	Depth to Groundwater	233.69	feet	11-Apr-18
699-48-77D	Depth to Groundwater	233.80	feet	18-Apr-18
699-48-77D	Depth to Groundwater	233.88	feet	09-May-18
699-48-77D	Depth to Groundwater	233.98	feet	14-Jun-18
699-48-77D	Depth to Groundwater	234.02	feet	11-Jul-18
699-48-77D	Depth to Groundwater	234.08	feet	30-Jul-18
699-48-77D	Depth to Groundwater	234.10	feet	08-Aug-18
699-48-77D	Depth to Groundwater	234.06	feet	11-Sep-18
699-48-77D	Depth to Groundwater	234.00	feet	04-Oct-18
699-48-77D	Depth to Groundwater	234.22	feet	30-Oct-18
699-48-77D	Depth to Groundwater	234.26	feet	14-Nov-18
699-48-77D	Depth to Groundwater	234.22	feet	14-Dec-18

Field data was retrieved from the Discharge Monitoring Reports.

Table A-7 SALDS Groundwater Field Sample Results

CALCULATIONS

WELL	FIELD READING	MINIMUM	AVERAGE	MAXIMUM	UNITS
699-48-77C	Specific Conductance	206	215	229	uS/cm
	Dissolved oxygen	9.32	9.56	9.74	mg/L
	pH Measurement	7.9	8.0	8.1	
	Temperature	18.7	19.7	22.8	oC
	Turbidity	0.80	2.64	4.40	NTU
	Depth to Groundwater	234.48	235.03	235.61	feet
699-48-77D	Specific Conductance	255	256	257	uS/cm
	Dissolved oxygen	9.71	11.08	12.97	mg/L
	pH Measurement	8.0	8.1	8.2	
	Temperature	15.1	21.7	32.2	oC
	Turbidity	4.31	5.19	5.90	NTU
	Depth to Groundwater	233.50	234.14	236.91	feet

APPENDIX B

CALCULATION CHECKLIST

Calculation Checklist

Calculation Number/Revision/Title:	RPP-CALC-63043, 00-Effluent Treatment Facility Sample Results 2016 to 2018 with Calculated Averages
Scope of Review[1]:	All calculations
Engineer/Analyst:	Mark Bowman (See DRCF OR SmartPlant for approvals)
Organization Manager:	Wally Rutherford (See DRCF OR SmartPlant for approvals)

Yes	No[2]	NA		
☒	☐	☐	a.	The calculation was formatted in accordance with Attachment A of TFC-ENG-DESIGN-C-10.
☒	☐	☐	b.	The objective/purpose of the calculation is clearly stated and the problem is completely defined by the purpose statement.
☒	☐	☐	c.	Analytical and technical approaches and results are reasonable and appropriate.
☒	☐	☐	d.	Input data are adequately described, referenced to their source, and checked for consistency with original source information.
☒	☐	☐	e.	Necessary assumptions are reasonable, explicitly stated, and technically justifiable. Assumptions requiring verification prior to use are clearly stated and identified/tracked using TBD/HOLD numbers.
☒	☐	☐	f.	For both qualitative and quantitative data, uncertainties are recognized and discussed and the data is presented in a manner to minimize design interpretations.
☒	☐	☐	g.	Mathematical derivations were checked, including dimensional consistency of results.
☒	☐	☐	h.	Calculations are sufficiently detailed such that a technically qualified person can understand the analysis without requiring recourse to the originator.
☒	☐	☐	i.	Calculations were verified, including review that correct input data are used, equations are correctly applied to the problem being analyzed, correct units are used, and results are reasonable and appropriate.
☐	☐	☒	j.	Results produced by Mathcad® were replicated/verified by hand or alternate methods. If results could not be replicated/verified by hand, the utilized Mathcad® feature (e.g. advanced math function, equation, macro, etc.) is verified and registered in HISI.
☒	☐	☐	k.	Software[3] used is identified by the software name, version, HISI ID#, and if applicable the Software Management Plan (SMP).
☒	☐	☐	l.	Software is used in accordance the requirements prescribed by the Software Owner.[4] This includes adherence to limits of use, training requirements, software settings, specific software checklists, usage logs, error report checks, etc.
☒	☐	☐	m.	Software input reports and input files are attached.
☒	☐	☐	n.	The input was correctly entered/modeled in the Software, and consistent with the calculation document.
☒	☐	☐	o.	Software output is consistent with the input and with the results reported in the calculation document.
☒	☐	☐	p.	Multiple-Use spreadsheets are used in accordance with TFC-ENG-DESIGN-C-32, and identified by file name, version, HISI ID#, and as applicable; the SMP or Spreadsheet Verification Form.
☒	☐	☐	q.	Single-Use spreadsheets used in the calculation have adequate explanation of their method, are identified by file name, and checked/verified as part of the calculation.
☒	☐	☐	r.	Data or results presented in tables and graphs have been checked against original source.
☒	☐	☐	s.	The number of significant digits is appropriate and consistent.
☒	☐	☐	t.	Limits/criteria/guidelines applied to the analysis results are appropriate and referenced. Limits/criteria/guidelines were checked against references.
☒	☐	☐	u.	Conclusions are consistent with analytical results and applicable limits.
☒	☐	☐	v.	Results and conclusions address all points in the purpose.
☒	☐	☐	w.	Referenced documents are retrievable or otherwise available and the version or revision of each reference is cited.
☐	☐	☒	x.	Impacts on requirements have been assessed and change documentation initiated to incorporate revisions to affected documents, as appropriate.
☐	☐	☒	y.	The design media matches the calculations.

Checker: Dale Halgren (See DRCF OR SmartPlant for approvals)

Checkbox Justifications:

[1] If less than the entire calculation was checked, the scope of the check should be discussed.
[2] If any blocks are checked "No", a justification must be provided here or attached.
[3] Does not apply to non-computational software (e.g. Word®, Visio®).
[4] The Software Owner is responsible for managing software, including requirements, in accordance with TFC-BSM-IRM_HS-C-01.

Attachment 4
19-ECD-0045
(26 Pages Excluding Cover Sheet)

WRPS-1901762 Enclosure 4, *State Waste Discharge Permit Number ST0004500*, Proposed Changes – Redline Strikeout

Issuance Date: MM/DD/YYYY ~~12/15/2014~~
Effective Date: MM/DD/YYYY ~~01/01/2015~~
Expiration Date: MM/DD/YYYY ~~12/31/2019~~

State Waste Discharge Permit Number ST0004500

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504-7600

Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, Washington 99352

In compliance with the provisions of the
State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington, as amended,

United States Department of Energy
~~Richland Operations Office~~Office of River Protection
P.O. Box ~~550~~450
Richland, Washington 99352

is authorized to discharge wastewater in accordance with the special and general conditions which follow.

Facility Location: ~~200 Area Effluent Treatment~~ 200 Area Effluent Treatment Facility ~~(ETF)~~, ~~located in the 200 East Area of the Hanford~~	Discharge Location: State-Approv~~ed~~ ~~Land~~ed Land ~~Disposal Site~~Disposal Site ~~(SALDS)~~, located north of the 200 West
Treatmen~~t Typ~~et Type: Industrial Wastewater -Industr~~y Typ~~ey Type: Clean-up Site	SIC Code: 9511 NAICS Code: ~~562211~~924110

Alexandra K. Smith~~Jane Hedges~~, Program Manager
Nuclear Waste Program
Washington State Department of Ecology

Table of Contents

Summary of Permit Report Submittals 54
Special Conditions 65
S1. Discharge Limits 65
S1.A. Effluent limits 65
S2. Monitoring Requirements 76
S2.A. Wastewater monitoring 76
S2.B. Flow measurement devices 1098
S2.C. Laboratory accreditation 1099
S3. Reporting and Recordkeeping Requirements 1099
S3.A. Reporting 10109
S3.B. Records retention 121110
S3.C. Recording of results 121110
S3.D. Additional monitoring by the Permittee 131211
S3.E. Reporting permit violations 131211
S3.F. Other reporting 151412
S3.G. Maintaining a copy of this permit 151412
S4. Operation and Maintenance 151413
S4.A. Operations and maintenance (O&M) manual 151413
S4.B. Bypass procedures 161514
S4.C. Best management practices\pollution prevention program 181716
S5. Application for Permit Renewal 191816
S6. Facility Loading 191816
S6.A. Design criteria 191816
S7. Non-routine and Unanticipated Discharges 191916
S8. Spill Plan 201917
S8.A. Spill control plan submittals and requirements 201917
S8.B. Spill control plan components 201917
S9. Tritium Tracking and Groundwater Monitoring 212018
S10. Waste Treatment Plant Processed Wastewater Compliance 212118

General Conditions ..... 23~~22~~~~19~~
G1. Signatory Requirements ..... 23~~22~~~~19~~
G2. Right of Entry ..... 23~~23~~~~20~~
G3. Permit Actions ..... 24~~23~~~~20~~
G4. Reporting a Cause for Modification ..... 24~~23~~~~21~~
G5. Plan Review Required ..... 25~~24~~~~21~~
G6. Compliance with Other Laws and Statutes ..... 25~~24~~~~21~~
G7. Transfer of this Permit ..... 25~~24~~~~21~~
G8. Payment of Fees ..... 25~~24~~~~22~~
G9. Penalties for Violating Permit Conditions ..... 25~~25~~~~22~~
G10. Duty to Provide Information ..... 26~~25~~~~22~~
G11. Duty to Comply ..... 26~~25~~~~22~~
~~Summary of Permit Report Submittals ..... 4~~
~~Special Conditions ..... 5~~
~~S1.Discharge Limits ..... 5~~
~~S1.A. Effluent limits ..... 5~~
~~S2.Monitoring Requirements ..... 6~~
~~S2.A. Wastewater monitoring ..... 6~~
~~S2.B. Flow measurement continuous devices ..... 8~~
~~S2.C. Laboratory accreditation ..... 9~~
~~S3.Reporting and Recordkeeping Requirements ..... 9~~
~~S3.A. Reporting ..... 9~~
~~S3.B. Records retention ..... 10~~
~~S3.C. Recording of results ..... 10~~
~~S3.D. Additional monitoring by the Permittee ..... 11~~
~~S3.E. Reporting permit violations ..... 11~~
~~S3.F. Other reporting ..... 12~~
~~S3.G. Maintaining a copy of this permit ..... 13~~
~~S4.Operation and Maintenance ..... 13~~
~~S4.A. Operations and maintenance (O&M) manual ..... 13~~
~~S4.B. Bypass procedures ..... 14~~
~~S4.C. Best management practices\pollution prevention program ..... 16~~
~~S5.Application for Permit Renewal or Modification for Facility Changes ..... 16~~

~~S6.Facility Loading ..... 16~~
~~S6.A. Design criteria ..... 16~~
~~S7.Non-routine and Unanticipated Discharges ..... 16~~
~~S8.Spill Plan ..... 17~~
~~S8.A. Spill control plan submittals and requirements ..... 17~~
~~S8.B. Spill control plan components ..... 17~~
~~S9.Tritium Tracking and Groundwater Monitoring ..... 18~~
~~General Conditions ..... 18~~
~~G1. Signatory Requirements ..... 18~~
~~G2. Right of Entry ..... 19~~
~~G3. Permit Actions ..... 19~~
~~G4. Reporting a Cause for Modification ..... 19~~
~~G5. Plan Review Required ..... 20~~
~~G6. Compliance with Other Laws and Statutes ..... 20~~
~~G7. Transfer of this Permit ..... 20~~
~~G8. Payment of Fees ..... 20~~
~~G9. Penalties for Violating Permit Conditions ..... 20~~
~~G10. Duty to Provide Information ..... 21~~
~~G11. Duty to Comply ..... 21~~

Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	~~First~~ Submittal Date
S3.A	Discharge Monitoring Report	Quarterly	~~February 15, 2015~~
S3.E	Reporting Permit Violations	As necessary	
S3.F	Other Reporting	As necessary	
S4.A	Operations and Maintenance Manual Changes ~~Update or Review Confirmation Letter~~	~~Annually~~As necessary	~~July 1, 2015~~
S4.B	Reporting Bypasses	As necessary	
~~S4.D~~	~~Notification of New or Altered Sources~~	~~As necessary~~	
S4.~~D~~C	Best Management Practices/Pollution Prevention Plan Changes	~~1/permit cycle~~As necessary	~~By December 31, 2019~~
~~S6~~S5	Application for Permit renewal	1/permit cycle	~~June 30, 2019~~180 days prior to permit expiration date
~~S8~~S7	Non-Routine Discharge Report	As necessary	
S8~~9~~.A	Spill Control Plan Changes	As necessary	
~~S10~~S9	Tritium Sampling Results	Annually	November 30
S9	Tritium Tracking and Groundwater Monitoring Plan Changes	As necessary	
S9	Tritium Model Update(s) and Report	1/permit cycle and as necessary	Within six months of a new tritium detection in a SALDS monitoring well and permit expiration date
S10	Sampling and Analysis Plan to Evaluate Waste Treatment Plant Processed Wastewater Compliance	As necessary	Thirty (30) days prior to treatment of Waste Treatment Plant hot commissioning waste
S10	Summary Report of Waste Treatment Plant Processed Wastewater Compliance	As necessary	
G1	Notice of Change in Authorization	As necessary	
G4	Permit Application for Substantive Changes to the Discharge	As necessary	
G5	Engineering Report for Construction or Modification Activities	As necessary	
G7	Notice of Permit Transfer	As necessary	
~~G8~~	~~Payment of Fees~~	~~As assessed~~	
G10	Duty to Provide Information	As necessary	

Special Conditions

S1. Discharge Limits

S1.A. Effluent limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a concentration in excess of, that authorized by this permit violates the terms and conditions of this permit. Wastewater flows ~~and loadings~~and loadings must not exceed the Design Criteria specified in ~~Section~~Special Condition S~~7~~6.

Beginning on the effective date, the Permittee is authorized to discharge non-contact blowdown from the Effluent Treatment Facility (ETF) cooling tower to the State~~-~~-Approved Land Disposal Site (SALDS) at the permitted location.

Beginning on the effective date, the Permittee is authorized to discharge process wastewater from the ~~Effluent Treatment Facility (~~ETF~~)~~ verification tanks to the ~~State-Approved Land Disposal Site (~~SALDS~~)~~ at the permitted location subject to the following limits:

Effluent Limits: ~~Outfall # 001~~ Discharged to SALDS as Measured per Special Condition S2.A SALDS Location: Latitude 46.5725 Longitude 119.6333		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
~~Acetophenone (ethanone, 1-phenyl-)~~	~~10 µg/l~~	
Acetophenone	10 µg/l	
Carbon Tetrachloride	5 µg/l	10 µg/l
N-Nitrosodimethylamine	20 µg/l	
Tetrachloroethylene	5 µg/l	10 µg/l
Total Organic Carbon	1,100 µg/l	
Arsenic (total)	15 µg/l	30 µg/l
Beryllium (total)	40 µg/l	
Chromium (total)	20 µg/l	
Ammonia (as N)	830 µg/l	
Chloride	250,000 µg/l	
Nitrate (as N)	100 µg/l	
Nitrite (as N)	100 µg/l	
Sulfate	10,000 µg/l	
Total Suspended Solids	4,000 µg/l	
Acetone	160 µg/l	
Benzene	5 µg/l	
Chloroform	6.2 µg/l	
Tetrahydrofuran	100 µg/l	
Cadmium (total)	10 µg/l	
Copper (total)	70 µg/l	

Effluent Limits: Outfall # 001 Discharged to SALDS as Measured per Special Condition S2.A SALDS Location: Latitude 46.5725 Longitude 119.6333		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Lead (total)	50 µg/l	
Mercury (total)	2 µg/l	
Total Dissolved Solids	500,000 µg/l	500,000 µg/l

Aa

Average monthly effluent limit means the highest allowable average of daily discharges over a c calendar month. To calculate the discharge value to compare to the limit, add the value of each d daily discharge measured during a calendar month and divide this sum by the total number of d daily discharges measured.

Bb

Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits e expressed in units of mass, calculate the daily discharge as the total mass of the pollutant d discharged over the day. For other units of measurement, the daily discharge is the average m measurement of the pollutant over the day.

S1.B. Best management practices/pollution prevention

The Permittee must comply with the following Best Management Practices to prevent pollution to waters of the State:

Do not commingle process wastewater streams with sanitary (domestic) sewage.

Do not discharge in excess of the hydraulic capacity of the drainfield.

Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.

S2. Monitoring Requirements

S2.A. Process wWastewater monitoring

The Permittee must monitor the process wastewater in the verification tank prior to its discharge to the State-Approved Land Disposal Site.

The Permittee must samplemonitor the process wastewater according to the following schedule. The Permittee must use the specified analytical methods unless the method used p produces measurable results in the sample and EPA has listed it as an EPA approved method EPA-approved method in 40 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants, or SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.

If the Permittee uses an alternative method, not specified in the permit and as a allowed above, it must report the test method, minimum detection limit (MDL)DL, and QL practical quantitation level (PQL) on the discharge m monitoring report or in the required report.

If the Permittee is unable to obtain the required MDL and PQL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL)MDL aand a quantitation limit (QL)PQL to Ecology with appropriate laboratory documentation.

Parameter and~~&~~ CAS Number	Units and~~&~~ Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) ~~Final~~Process Wastewater Effluent at Valve 60H-224				
Flow	g~~G~~allons per ~~month~~day	N/A	~~Once p~~pPer defined event -[a]	~~Metered/~~ Recorded
Specific Conductivity	µmhos/cm	SM 2510 or EPA 120.1	Monthly [b] ~~Once per defined event~~	Grab [c]
Acetone (67-64-1)	µg/l	SW-846 8260 or EPA 624	Monthly [b] ~~Monthly [b]~~	Grab [c]
Acetophenone (98-86-2)	µg/l	SW-846 8270 or EPA 625	Monthly [b] ~~Monthly [b]~~	Grab [c]
Benzene (71-43-2)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
Carbon Tetrachloride (56-23-5)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
Chloroform (67-66-3)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
N-Nitrosodimethylamine (62-75-9)	µg/l	SW-846 8270 or EPA 625	Monthly -[b]	Grab [c]
Methylene Chloride (75-09-2)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
Tetrachloroethylene (127-18-4)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
Tetrahydrofuran (109-99-9)	µg/l	SW-846 8260 or EPA 624	Monthly -[b]	Grab [c]
Total Organic Carbon	µg/l	SW-846 9060 or SM 5310	Monthly -[b] ~~Once per defined event~~	Grab [c]
Gross Alpha (12587-46-1)	pCi/l	SW-846 9310 or EPA 900.0	Monthly -[b] ~~Once per defined event~~	Grab [c]
Gross Beta (12587-47-2)	pCi/l	SW-846 9310 or EPA -900.0	Monthly -[b] ~~Once per defined event~~	Grab [c]
Strontium-90 (10098-97-2)	pCi/l	EPA 905.0 or ~~Lab Specific~~laboratory specific	Monthly -[b]	Grab [c]
Technetium-99 (14133-76-7)	pCi/l	HASL-300 or ~~Lab Specific~~laboratory specific	Monthly -[b]	Grab [c]
Tritium (10028-17-8)	pCi/l	EPA 906.0 or ~~Lab Specific~~laboratory specific	Monthly -[b]	Grab [c]
Uranium (total) (7440-61-1)	µg/l	EPA 200.8	Monthly -[b]	Grab [c]
Arsenic (total) (7440-38-2)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]
Beryllium (total) (7440-41-7)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]

Parameter and& CAS Number	Units and& Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) FinalProcess Wastewater Effluent at Valve 60H-224				
Cadmium (total) (4770-43-9)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]
Chromium (total) (7440-47-3)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]
Copper (total) (7440-50-8)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]
Lead (total) (7439-92-1)	µg/l	SW-846 6010 or EPA 200.8	Monthly -[b]	Grab [c]
Mercury (total) (7439-97-6)	µg/l	EPA 245.1	Monthly -[b]	Grab [c]
Ammonia (1336-21-6) (Nitrogen in ammonium))	µg/l	EPA 350.1	Monthly -[b]	Grab [c]
Chloride (16887-00-6)	µg/l	EPA 300.0 or EPA 300.1	Monthly -[b]	Grab [c]
Nitrate (14797-55-8) (Nitrogen in nitrate)	µg/l	EPA 300.0 or EPA 300.1	Monthly -[b] Once per defined event	Grab [c]
Nitrite (14797-65-0) (Nitrogen in Nitrite)	µg/l	EPA 300.0 or EPA 300.1	Monthly -[b]	Grab [c]
Sulfate (14808-79-8)	µg/l	EPA 300.0 or EPA 300.1	Monthly -[b]	Grab [c]
Total Dissolved Solids	µg/l	SM 2540 C	Monthly -[b]	Grab [c]
Total Suspended Solids	µg/l	SM 2540 D	Monthly -[b]	Grab [c]
(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D -ed				
Parameter	**Units and& Speciation**	**Laboratory Method**	**Sampling Frequency**	**Sample Type**
Tritium	pCi/l	EPA 906.0 or- Lab Specificlaboratory	Quarterly	Grab [c]
pH [e]pH [e]	units	SW 9040 or SM 4500-H+ B (Calibrated device or (iIn laboratory)	Quarterly	Grab [c]/ Field Measurement
Specific Conductivity	µmhos/cm	120.1/SM2510B (In lab)SM 2510B or EPA 120.1 (Calibrated device or in	Quarterly	Grab [c]/ Field Measurement
Measured DDepth to Groundwater	fFeet- (report to 0.01 feet)	Field	Quarterly	Field Measurement
aA Once pPer defined event means one sample from each is a single verification tank d- dischargе.				
b	The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.			

Parameter and& CAS Number	Units and& Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) FinalProcess Wastewater Effluent at Valve 60H-224				
Cb Monthly monitoring of the process wastewater effluent means the parameter must be monitored in a minimum				
Dc Grab means an individual sample collected over a period of a fifteen (15) minutes, or less., period., or less, period.				
Ed These groundwater monitoring wells must be sampled until they no longer p produce representative data.				
e The Permittee must report the instantaneous maximum and minimum pH q quarterly. Do Do not average pH values.				

S2.B. Flow measurement and continuous monitoring devices

The Permittee must:

1. Select and use appropriate flow measurement devices and methods consistent with accepted scientific practicesin accordance with best engineering practices.
2. Install, calibrate, and maintain these devices in accordance with best engineering practices or manufacturer's recommendations as appropriate to ensure the accuracy of the measurements is consistent with the accepted industry standards and the manufacturer's recommendation for that type of device.
3. Calibrate flow monitoring measurement devices at a minimum frequency of at least one calibration every other year.
4. Maintain calibration records for at least three years.

S2.C. Laboratory accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter WAC 173-50 WAC, Accreditation of Environmental Laboratories. . Flow, depth, temperature, settleable solids, conductivity, pH, and internal process control p parameters are exempt from this requirement.

S3. Reporting and Recordkeeping Requirements

The Permittee must monitor and report in accordance with the following conditions. . Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Reporting

The first monitoring period begins on the effective date of the permit. . The Permittee

must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR~~.~~. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form~~.~~. Report a value for ~~each~~ the first day ~~sampling~~ a discharge occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.

   To find more information and to sign up for WAWebDMR go to: http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant from the verification tanks during a given monitoring period.

3. Report single analytical values below the MDL~~detection~~ ~~as "less than the detection level (DL)"~~ by entering < (or "B") followed by the numeric value of the detection level (e.g., < 2.0, or B2.0) on the DMR. If the method used did not meet the ~~minimum DL~~MDL and ~~quantitation level (QL)~~PQL identified in the permit, report the actual ~~QL~~ PQL and MDL in the comments.

4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified ~~in the permit and as allowed~~ in ~~Appendix A~~Special Condition S2.A.

5. Calculate average values (unless otherwise specified in the permit) using:

   a. The reported numeric value for all parameters measured that are equal to or greater than the PQL.

   b. The reported numeric value for all parameters ~~measured~~ as estimated between the ~~agency-required detection value~~MDL and the ~~agency-required quantitation value~~PQL.

   c. One-half the MDL (for values reported below detection) if the laboratory detected the parameter in another sample for the reporting period.

   ~~a.~~d. Zero (for values reported below detection) if the laboratory did not detect the parameter in another sample for the reporting period.

   ~~b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample for the reporting period.~~

   ~~Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.~~

6. Report single-sample grouped parameters (~~for example~~e.g., priority pollutants, polycyclic aromatic hydrocarbons ~~PAHs~~, pulp and paper chlorophenolics, total toxic organics~~TTOs~~) on the WAWebDMR form. Include sample date, ~~detection limit (DL)~~MDL, laboratory ~~quantitation level (QL)~~PQL, and concentration detected~~.~~. The

Permittee must submit an electronic PDF copy of the contract laboratory report using WAWebDMR to provide this information.

7. Ensure that DMRs are electronically submitted no later than the dates specified below, unless otherwise specified in this permit.
8. Submit DMRs for parameters with the monitoring frequencies specified in S2 (e.g., monthly, quarterly, annually~~, etc.~~) at the reporting schedule identified below~~.~~. The ~~-~~Permittee must:
   a. Submit quarterly DMRs ~~45~~ 30 days following a completed monitoring period~~.~~. Quarterly sampling periods are January through March, April through June, July through September, and October through December.
9. Submit reports to Ecology online using the Ecology~~'s~~ electronic WAWebDMR submittal forms (electronic DMRs) as required above~~.~~. Send paper reports to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd.

Richland, WA 99354

S3.B. Records retention

The Permittee must retain records of all monitoring information for a minimum of three ~~-~~(3) years. Such information must include:

- All calibration and maintenance records and all original recordings for ~~continuous~~ monitoring instrumentation~~.~~
- Copies of all reports required by this permit~~.~~
- Records of all data used to complete the application for this permit.

The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee ~~or when~~or when requested by Ecology.

The Permittee must retain all records pertaining to the monitoring and sampling of process wastewater and groundwater described in ~~Section~~Special Condition S2 for a minimum of five (5) years.

S3.C. Recording of results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement~~.~~
2. The individual who performed the sampling or measurement~~.~~
3. The dates the analyses were performed~~.~~

4. The individual who performed the analyses~~.~~
5. The analytical techniques or methods used~~.~~
6. The results of all analyses.

S3.D. Additional monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in ~~the Permittee's~~the ~~-~~ DMR unless otherwise specified by Special Condition S2.

S3.E. Reporting permit violations

The Permittee must take the following actions when it violates or is unable ~~to comply~~to comply with any permit condition:

1. Immediately take action to stop, contain, and clean up unauthorized discharges~~unauthorized discharges~~ or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results ~~of any~~of any repeat sampling ~~to Ecology within thirty (30) days of sampling~~within the next scheduled DMR.

   a. ~~Twenty four~~24-hour ~~reporting~~notification

   The Permittee must ~~report~~ notify Ecology of the following occurrences of noncompliance by telephone at ~~Ecology, at~~ 509-372-7950, within 24 hours from the time the Permittee becomes aware of any of the following circumstances.

   The Permittee must ~~report~~include the following information in the notification:

   1. Any noncompliance that may endanger health or the environment~~.~~
   2. Any unanticipated bypass that causes an exceedance of an effluent limit ~~in the~~ in the permit (~~See Part~~Special Condition S4.B ~~S4.B., "Bypass Procedures"~~)~~.~~
   3. Any upset that causes an exceedance of an effluent limit in the permit~~.~~
   4. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee~~.~~
   5. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate~~ treatment~~e treatment facilities, lack of preventive maintenance, or careless ~~or improper~~or improper operation~~.~~

6. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in ~~Section~~Special Condition S1.A of this permit~~.~~

7. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit~~.~~

8. Any break ~~leak~~ or failure of the wastewater transmission pipeline~~.~~

   a. Discharges from normal operation of the vacuum air relief valves are not considered to be a break or failure in the pipeline and are exempt from notification requirement.~~.~~

b. Report within thirty~~five~~ days

The Permittee must also submit a written or electronic report within thirty (30) ~~five (5)~~ days of the time that the Permittee becomes aware of any reportable event under Special Condition S3.E.2.a~~subpart a, above~~. The report must contain:

1. A description of the noncompliance and its cause~~.~~
2. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance~~.~~
3. Any other information deemed pertinent by Ecology.

~~2. Maps, drawings, aerial photographs, or pictures to show the location and cause(s) of the non-compliance.~~

~~The period of noncompliance, including exact dates and times.~~

~~The estimated time the Permittee expects the noncompliance to continue if not yet corrected.~~

~~If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.~~

c. Waiver of written reports

Ecology may waive the written report required in Special Condition S3.E.2.b~~subpart b, above~~, on ~~a case~~a case~~-~~-by~~-~~-case basis upon request if the Permittee has submitted a timely ~~oral report~~oral notification.

d. All other permit violation reporting

All permit violations that do not require ~~immediate or~~ 24~~-~~-hour ~~reporting~~ notification must be ~~t be~~ reported when the Permittee submits monitoring reports for Special Condition S3.A~~ ("Reporting").~~. The reports must contain the information listed in Special Condition S3.E.2.b~~subpart b, above~~.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

e. Report submittal

The Permittee must submit reports to the address listed in Special Condition -S3.A.

S3.F. Other reporting

~~a. Spills of Oil or Hazardous Materials~~

~~The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of RCW 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .~~

~~b. Failure to submit relevant or correct facts~~

Where the Permittee becomes aware that it failed to submit any relevant facts ~~in~~ in a permit application, or submitted incorrect information in a permit a ~~a~~pplication, or in any report to Ecology, it must submit such facts ~~or information~~or information promptly.

S3.G. Maintaining a copy of this permit

The Permittee must keep a copy of this permit at the facility and make ~~it a~~ it available upon request to Ecology inspectors.

S4. Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

S4.A. Operations and maintenance (O&M) manual

O&M manual requirements are in accordance with WAC 173-240, Submission of Plans and Reports for Construction of Wastewater Facilities, to meet the intent of this section.

a. O&M manual submittal and requirements

The Permittee must~~:~~ perform the following requirements.

1. Review the O&M m~~M~~anual ~~at least annually~~ biennially (ie.~~eg~~., every two years) in accordance with WAC 173-240-110(4).~~. and confirm this review by letter to Ecology by July 1 of each year.~~
2. Submit to Ecology ~~for review~~ substantial changes or updates to the O&M m~~M~~anual whenever it incorporates ~~them~~ them into the manual. The Permittee m~~-~~

~~m~~ust submit a paper copy and an electronic copy (preferably as a PDF).~~.~~

3. ~~Keep the approved O&M Manual at the permitted facility~~Maintain a copy of the O&M m~~Manual~~anual.~~.~~
4. Follow the instructions and procedures of the O&M manual~~this manual~~.

b. O&M manual components

In addition to the requirements of WAC 173-240-150-(1) and (2), the O&M m~~M~~anual must include:

1. Emergency procedures for plant shutdown and cleanup in the event of a wastewater system upset or failure including pipeline leaks~~.~~
2. Wastewater system maintenance procedures that contribute to the generation of wastewater~~.~~
3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect ~~the operation~~the operation of the wastewater system~~. (For example~~ (e.g., ~~,~~defining maximum a~~ a~~llowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).~~.)~~
4. Treatment plant process control monitoring schedule~~.~~
5. Wastewater sampling protocols and procedures for compliance with ~~the sampling~~the sampling and reporting requirements in the wastewater discharge permit~~.~~
6. Minimum staffing adequate to operate and maintain the ~~treatment processes~~treatment processes and carry out compliance monitoring required by the permit.

S4.B. Bypass procedures

a. Prohibited bypasses

This permit prohibits a bypass~~,~~ which is the intentional diversion of waste streams from any portion of a treatment facility.

Ecology may take enforcement action against a Permittee for a bypass unless one~~ of~~ of the following circumstances~~ (1 or, 2, or 3)~~ applies.

~~1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.~~

~~This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.~~

~~2.~~1.Bypass is unavoidable, unanticipated, and results in noncompliance of this permit~~.~~

This permit authorizes such a bypass only if:

a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

b. No feasible alternatives to the bypass exist, such as:

- The use of auxiliary treatment facilities.
- Retention of untreated wastes.
- Stopping production.
- Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
- Transport of untreated wastes to another treatment facility or
- pPreventative maintenance, or transport of untreated wastes to another treatment facility.

c. The Permittee has properly notified Ecology of the bypass as required in Special ConditionSpecial Condition S3.E of this permit.

3.2.If bypass is anticipated and has the potential to result in noncompliance of this permit, then:.

a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass.. The notice must contain:

- A description of the bypass and its cause.
- An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for the bypassing.
- A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
- The minimum and maximum duration of bypass under each alternative.
- A recommendation as to the preferred alternative for conducting the bypass.
- The projected date of bypass initiation.
- A statement of compliance with SEPAState Environmental Policy Act.
- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent

reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible.

The Permittee must consider the analysis required above during preparation of the engineering report, or facilityies plan, and plans and s-specifications, and must include these to the extent practical.

In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment..

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request.. Ecology willEcology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible.. Ecology will approve a request to bypass by issuingby issuing an administrative order under RCW 90.48.120.

b. Authorized bypasses

Bypass for essential maintenance without the potential to cause violation of permitof permit limits or conditions.

This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass.. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

S4.C. Best management practices\pollution prevention program

The Permittee must comply with the following bBest mManagement pPractices to po-prevent pollution to waters of the State.:

1. Do not comingle process wastewater streams with sanitary (domestic) sewage.
2. Do not discharge in excess of the hydraulic capacity of the infiltration basin.
3. Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.

4. Wastewater from the infiltration basins must not run off into any surface waters of the state or to any land not owned by or under control of the Permittee.
5. The Permittee must use recognized good practices, and all available and reasonable procedures.
6. Do not apply wastewater to the infiltration basins in quantities that significantly reduce or destroy the long-term infiltration rate of the soil or that would alter groundwater quality in amounts that would affect current and future beneficial uses.

~~S5. Solid Wastes~~

~~Management of solid waste is managed through the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, WA7 89000 8967, Part III, Operating Unit Group 3, LERF and 200 Area ETF.~~

S5~~6~~. Application for Permit Renewal ~~or Modification for Facility Changes~~

The Permittee must submit an application for renewal of this permit at least one hundred and eighty (180) days prior to the expiration date of the current permit~~by June 30, 2019.~~ . The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

~~The Permittee must also submit a new application or supplement at least one hundred eighty (180) days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.~~

S~~7~~6. Facility Loading

S~~7~~6.A. Design criteria

The flows or waste loads for the permitted facility must not exceed the following design criteria:

~~Maximum~~ Daily d~~D~~ischarge f~~F~~low	670,000 gallons per day
~~Maximum~~ Average m~~M~~onthly d~~D~~ischarge f~~F~~low	250,000 gallons per day

The average monthly flow is defined as the highest allowable average of the daily discharges over a calendar month, calculated as the total gallons discharged from the ETF verification tanks during a calendar month, divided by the number of days in that month.

S7~~8~~. Non-routine and Unanticipated Discharges

1. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis, if approved by Ecology~~.~~. Prior to any such discharge, the Permittee must contact Ecology and at a minimum, provide the following information:

a. The proposed discharge location~~.~~

b. The nature of the activity that will generate the discharge~~.~~

c. Any alternatives to the discharge, such as reuse, storage, or recycling of the water~~.~~

d. The total volume of water it expects to discharge~~.~~

e. The results of the chemical analysis of the water~~.~~

f. The date of proposed discharge~~.~~

g. The expected rate of discharge~~ discharged,~~ in gallons per minute.

2. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by ~~subpart 1.e above~~Special Condition S7.1.e~~.~~. The analysis must also include any parameter deemed necessary by Ecology.

   All discharges must comply with the effluent limits as established in Special Condition S1~~ .of this permit, water quality standards, and any other limits imposed by Ecology.~~

3. The Permittee must limit the discharge rate, as referenced in ~~subpart 1.g above~~Special Condition S7.1.g, so ~~it~~ the discharge will not~~will not~~ cause erosion of ditches or structural damage to culverts and their entrance~~s or exits~~s or exits.

4. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order.

S~~9~~8. Spill Plan

S~~9~~8.A. Spill control plan submittals and requirements

The Permittee must~~:~~ perform the following requirements.

1. Review the plan biennially (i.e., every two years) and update the spill plan as needed.
2. Provide Ecology an updated copy of the plan whenever substantial changes or updates are incorporated into the plan. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

~~1. Review the plan at least biennially~~~~annually~~ ~~and update the spill plan as needed.~~

~~2. Send substantive changes to the plan to Ecology.~~

3. Follow the plan and any supplements throughout the term of the permit.

S~~9~~8.B. Spill control plan components

The Permittee may submit plans and manuals required by WAC 173-216, State Waste Discharge Permit Program, and contingency plans required by WAC 173-303, Dangerous Waste Regulations, to meet the intent of this section, as applicable. The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or store~~d on-site,~~

d on site which when spilled or otherwise released into the environment, designate as Dangerous Waste (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC -173-303-070. Include other materials used s used and/or stored on siteon site which may become pollutants or cause pollution upon reaching waters of the statestate's waters.

2. A description of preventive measures and facilities (including an overall flfl facility plot showing drainage patterns) which prevent, contain, or treat spills of thesespills of these materials.

3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill.

4. A description of operator training to implement the plan..

The Permittee may submit plans and manuals required by 40 CFR Part 112, c2, contingency plans required by Chapter 173-303 WAC, or other plans required by other agencies, which meet the intent of this section.

S109. Tritium Tracking and Groundwater Monitoring

The permittee has an approvedshall maintain a current Tritium Tracking and Groundwater Monitoring Plan on file with Eh Ecology. In accordance with this plan:

1. The Permittee shall report tritium sampling results for each fFiscal yYear to Ecology at least annually, by November 30th of the following fFiscal yYear.

2. The Permittee shall update and maintain computer model(s) that predict the travel time of the tritium plume created by this discharge and also predict the concentration of the tritium plume at the area of the plume's it dischargeS to the Columbia River.

   Model update(s) and reports to Ecology should occur at least once per permit cycle and within six (6) months of detection of the tritium plume from SALDS in a new monitoring well. The plan should include the proposed reporting format, e.gat (e.g., maps, tables, etc.).

3. The Permittee shall sample wWells 699-48-77C and 699-48-77D at least once per calendar quarter for the constituents listed in SectionSpecial Condition S2.B A, Table, Section "(2), Groundwater Monitoring Wells 699-48-77C and 699-48-77D" of this permit.. These sample results shall be reported in the quarterly Discharge Monitoring Reports (DMRs) DMR per the r requirement of SectionSpecial Condition S3.

4. Other reports and submissions that are required by the Ecology approved Tritium Tracking and Groundwater Monitoring Plan shall be submitted to Ecology per the schedule included in the plan.

The Permittee must submit proposed revisions or modifications to the Tritium Tracking and Groundwater Monitoring Plan to Ecology for review and approval at least thirty (30) days prior to implementation. Once approved, the Permittee must comply with any plan modifications.

S10. Waste Treatment Plant Processed Wastewater Compliance

Thirty (30) days prior to treatment of Waste Treatment Plant (WTP) hot commissioning waste, the Permittee shall provide Ecology a copy of a sampling and analysis plan (SAP) to: (1) evaluate the constituents in the ETF processed wastewater from the WTP Effluent Management Facility (EMF) against compliance criteria and (2) analyze the treated wastewater for new constituents.

The SAP shall identify constituents with the potential to exceed compliance criteria. The compliance criteria is composed of the following:

- Constituents with Special Condition S1.A Effluent Limits
- Constituents with groundwater criteria within WAC 173-200-040, Water Quality Standards for Groundwaters of the State of Washington, Criteria, for constituents not listed in Special Condition S1.A (except pH and radionuclides)
- Constituents above historical background levels in SALDS groundwater wells 699-48-77C and 699-48-77D in accordance with WAC 173-200-050(3)(b)(i) and (3)(b)(ii)
- PQL in accordance with WAC 173-200-050(4) for constituents not listed in Special Condition S1.A, WAC 173-200-040, or with background levels at SALDS.

The SAP shall specify laboratory methods identified in Special Condition S2.A.

The first six verification tanks processing WTP EMF wastewater shall be sampled to evaluate compliance. The average concentration values from the verification tanks shall be used to evaluate compliance. The Permittee shall calculate the average constituent values as follows:

- Use the reported numeric value measured that is equal to or greater than the PQL
- Use the reported numeric value as estimated between the MDL and the PQL
- Use one-half the MDL on all tanks that reported non-detection levels if at least one verification tank detected the constituent
- Use zero if the constituent was not detected in any of the verification tanks.

The Permittee shall submit a summary report that compares the constituent average concentration(s) to compliance criteria and identifies new constituents not previously reported to Ecology.

If a constituent is found to exceed the compliance criteria at the verification tanks, groundwater monitoring wells 699-48-77C and 699-48-77D shall serve as the alternative point of compliance in accordance with WAC 173-200-060(2). The constituent(s) shall be sampled quarterly to align with the sampling frequency in Special Condition S2.A, Table Section "(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D." Groundwater monitoring shall employ laboratory methods identified in Special Condition S2.A. Groundwater monitoring shall conclude after four consecutive quarterly sampling events if constituent(s) that exceeded the compliance criteria at the verification tanks are: (1) less than the MDL, or (2) measured to be compliant with WAC 173-200. Sampling will occur for four nonconsecutive quarters if a well is dry during a quarterly sampling attempt. After three consecutive sampling attempts have failed, the well shall be declared

permanently dry. Well sampling shall cease at a well if it becomes permanently dry.

The Permittee shall include the sample results on the applicable quarterly DMR.

General Conditions

G1. Signatory Requirements

All applications, reports, or information submitted to Ecology must be signed as follows.:

1. All permit applications must be signed by either a principal executive officer or ranking elected official.
2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person.

   A person is a duly authorized representative only if:

   a. The authorization is made in writing by the person described above and is submitted to Ecology at the time of authorization, and

   b. The authorization specifies either a named individual or any individual occupyingindividual occupying a named position.
3. Changes to authorization. If an authorization under General Condition G1.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representativehanges to authorization. If an authorization under paragraph G1.2General Condition G1.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. . Any person signing a document under this section must make the following certification:

   "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted.

   Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. . I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G2. Right of Entry

Representatives of Ecology have the right to enter at all reasonable times in or upon any

property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state. Reasonable times include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection.

Representatives of Ecology must be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit; to inspect any monitoring equipment or method required in the permit; and to sample the discharge, waste treatment processes, or internal waste streams.

G3. Permit Actions

This permit is subject to modification, suspension, or termination, in whole or in part by Ecology for any of the following causes:

1. Violation of any permit term or condition
2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts
3. A material change in quantity or type of waste disposal
4. A material change in the condition of the waters of the state
5. Nonpayment of fees assessed pursuant to RCW 90.48.465.

Ecology may also modify this permit, including the schedule of compliance or other conditions, if it determines good and valid cause exists, including promulgation or revisions of regulations or new information.

G4. Reporting a Cause for Modification

The Permittee must submit a new application or supplemental information to a previous application at least sixty (60) days before the Permittee wants to modify the permitted facility or discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time.

Required plans include an engineering report, plans and specifications, and an O&M manual in accordance with WAC 173-240. Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary.

The Permittee must submit a new application or supplement at least sixty (60) days before it the Permittee wants to modify the permitted facility or discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time.

Required plans include an eEngineering rReport, pPlans and sSpecifications, and an Operations and Maintenanc O&M e manual, (see in accordance with Chapter 173-240 WAC). Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do notplans do not appear necessary.

The Permittee must continue to comply with the existing permit until it is modified or reissued~~.~~. Submitting a notice of dangerous waste discharge (to comply with p~~P~~retreatment or d~~D~~angerous w~~W~~aste rules) also triggers this requirement.

G5. Plan Review Required

Prior to constructing or modifying any wastewater control facilities, the Permittee must submit an engineering report and detailed plans and specifications to Ecology for approval in accordance with ~~Chapter~~ WAC 173-240 ~~WAC~~.

Engineering reports, plans, and specifications should be submitted at least 180 days prior to the planned start of construction~~.~~. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with Other Laws and Statutes

Nothing in the permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this Permit

This permit is automatically transferred to a new owner or operator if:

1. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology~~.~~
2. A copy of the permit is provided to the new owner~~.~~
3. Ecology does not notify the Permittee of the need to modify the permit.~~.~~

Unless this permit is automatically transferred according to ~~Section~~General Condition G7.1 ~~above~~, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G8. Payment of Fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under ~~Chapter~~ WAC -173-224, Water Quality Permit Fees, ~~WAC~~ are not paid.

G9. Penalties for Violating Permit Conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars and costs of prosecution, or by imprisonment at the discretion of the court~~.~~. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation~~.~~. Each and every such violation is a separate and distinct offense. ~~, and in~~In the case of a continuing violation, every ~~day's~~ day of ~~continuance~~ continued violation is a separate and distinct violation.

G10. Duty to Provide Information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit~~.~~. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of ~~Chapter~~ RCW 90.48~~ RCW~~ and is grounds for en~~for en~~forcement action; for permit termination, revocation and reissuance, or ~~modification; or~~modification; or denial of a permit renewal application.

Attachment 5
19-ECD-0045
(22 Pages Excluding Cover Sheet)

WRPS-1901762 Enclosure 5, *State Waste Discharge Permit Number ST0004500*, Proposed Changes – Clean Copy

Issuance Date: MM/DD/YYYY
Effective Date: MM/DD/YYYY
Expiration Date: MM/DD/YYYY

State Waste Discharge Permit Number ST0004500

State of Washington
DEPARTMENT OF ECOLOGY
Olympia, Washington 98504-7600

Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, Washington 99352

In compliance with the provisions of the
State of Washington Water Pollution Control Law
Chapter 90.48 Revised Code of Washington, as amended,

United States Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

is authorized to discharge wastewater in accordance with the special and general conditions which follow.

Facility Location: 200 Area Effluent Treatment Facility, located in the 200 East Area of the Hanford Site	Discharge Location: State-Approved Land Disposal Site, located north of the 200 West Area
Treatment Type: Industrial Wastewater Industry Type: Clean-up Site	SIC Code: 9511 NAICS Code: 924110

Alexandra K. Smith, Program Manager
Nuclear Waste Program
Washington State Department of Ecology

Table of Contents

Summary of Permit Report Submittals 4
Special Conditions 5
S1. Discharge Limits 5
S1.A. Effluent limits 5
S2. Monitoring Requirements 6
S2.A. Wastewater monitoring 6
S2.B. Flow measurement devices 8
S2.C. Laboratory accreditation 8
S3. Reporting and Recordkeeping Requirements 9
S3.A. Reporting 9
S3.B. Records retention 10
S3.C. Recording of results 10
S3.D. Additional monitoring by the Permittee 11
S3.E. Reporting permit violations 11
S3.F. Other reporting 12
S3.G. Maintaining a copy of this permit 12
S4. Operation and Maintenance 12
S4.A. Operations and maintenance (O&M) manual 13
S4.B. Bypass procedures 14
S4.C. Best management practices\pollution prevention program 15
S5. Application for Permit Renewal 16
S6. Facility Loading 16
S6.A. Design criteria 16
S7. Non-routine and Unanticipated Discharges 16
S8. Spill Plan 17
S8.A. Spill control plan submittals and requirements 17
S8.B. Spill control plan components 17
S9. Tritium Tracking and Groundwater Monitoring 18
S10. Waste Treatment Plant Processed Wastewater Compliance 18

General Conditions 19

G1. Signatory Requirements 19

G2. Right of Entry 20

G3. Permit Actions 20

G4. Reporting a Cause for Modification 21

G5. Plan Review Required 21

G6. Compliance with Other Laws and Statutes 21

G7. Transfer of this Permit 21

G8. Payment of Fees 22

G9. Penalties for Violating Permit Conditions 22

G10. Duty to Provide Information 22

G11. Duty to Comply 22

Summary of Permit Report Submittals

Refer to the Special and General Conditions of this permit for additional submittal requirements.

Permit Section	Submittal	Frequency	Submittal Date
S3.A	Discharge Monitoring Report	Quarterly	
S3.E	Reporting Permit Violations	As necessary	
S3.F	Other Reporting	As necessary	
S4.A	Operations and Maintenance Manual Changes	As necessary	
S4.B	Reporting Bypasses	As necessary	
S4.C	Best Management Practices/Pollution Prevention Plan Changes	As necessary	
S5	Application for Permit renewal	1/permit cycle	180 days prior to permit expiration date
S7	Non-Routine Discharge Report	As necessary	
S8.A	Spill Control Plan Changes	As necessary	
S9	Tritium Sampling Results	Annually	November 30
S9	Tritium Tracking and Groundwater Monitoring Plan Changes	As necessary	
S9	Tritium Model Update(s) and Report	1/permit cycle and as necessary	Within six months of a new tritium detection in a SALDS monitoring well and permit expiration date
S10	Sampling and Analysis Plan to Evaluate Waste Treatment Plant Processed Wastewater Compliance	As necessary	Thirty (30) days prior to treatment of Waste Treatment Plant hot commissioning waste
S10	Summary Report of Waste Treatment Plant Processed Wastewater Compliance	As necessary	
G1	Notice of Change in Authorization	As necessary	
G4	Permit Application for Substantive Changes to the Discharge	As necessary	
G5	Engineering Report for Construction or Modification Activities	As necessary	
G7	Notice of Permit Transfer	As necessary	
G10	Duty to Provide Information	As necessary	

Special Conditions

S1. Discharge Limits

S1.A. Effluent limits

All discharges and activities authorized by this permit must comply with the terms and conditions of this permit. The discharge of any of the following pollutants more frequently than, or at a concentration in excess of, that authorized by this permit violates the terms and conditions of this permit. Wastewater flows and loadings must not exceed the Design Criteria specified in Special Condition S6.

Beginning on the effective date, the Permittee is authorized to discharge non-contact blowdown from the Effluent Treatment Facility (ETF) cooling tower to the State-Approved Land Disposal Site (SALDS) at the permitted location.

Beginning on the effective date, the Permittee is authorized to discharge process wastewater from the ETF verification tanks to the SALDS at the permitted location subject to the following limits:

Effluent Limits: Discharged to SALDS as Measured per Special Condition S2.A SALDS Location: Latitude 46.5725 Longitude 119.6333		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Acetophenone	10 µg/l	
Carbon Tetrachloride	5 µg/l	10 µg/l
N-Nitrosodimethylamine	20 µg/l	
Tetrachloroethylene	5 µg/l	10 µg/l
Total Organic Carbon	1,100 µg/l	
Arsenic (total)	15 µg/l	30 µg/l
Beryllium (total)	40 µg/l	
Chromium (total)	20 µg/l	
Ammonia (as N)	830 µg/l	
Chloride	250,000 µg/l	
Nitrate (as N)	100 µg/l	
Nitrite (as N)	100 µg/l	
Sulfate	10,000 µg/l	
Total Suspended Solids	4,000 µg/l	
Acetone	160 µg/l	
Benzene	5 µg/l	
Chloroform	6.2 µg/l	
Tetrahydrofuran	100 µg/l	
Cadmium (total)	10 µg/l	
Copper (total)	70 µg/l	
Lead (total)	50 µg/l	
Mercury (total)	2 µg/l	

Effluent Limits: Discharged to SALDS as Measured per Special Condition S2.A SALDS Location: Latitude 46.5725 Longitude 119.6333		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Total Dissolved Solids	500,000 µg/l	500,000 µg/l
a Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured.		
b Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, calculate the daily discharge as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day.		

S2. Monitoring Requirements

S2.A. Wastewater monitoring

The Permittee must sample the process wastewater according to the following schedule. The Permittee must use the specified analytical methods unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants, or SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.

If the Permittee uses an alternative method not specified in the permit and as allowed above, it must report the test method, minimum detection limit (MDL), and practical quantification level (PQL) on the discharge monitoring report or in the required report.

If the Permittee is unable to obtain the required MDL and PQL in its effluent due to matrix effects, the Permittee must submit a matrix-specific MDL and PQL to Ecology with appropriate laboratory documentation.

Parameter and CAS Number	Units and Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) Process Wastewater Effluent at Valve 60H-224				
Flow	gallons per day	N/A	per defined event [a]	Recorded
Specific Conductivity	µmhos/cm	SM 2510 or EPA 120.1	Monthly [b]	Grab [c]
Acetone (67-64-1)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Acetophenone (98-86-2)	µg/l	SW-846 8270 or EPA 625	Monthly [b]	Grab [c]
Benzene (71-43-2)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Carbon Tetrachloride (56-23-5)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Chloroform (67-66-3)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]

Parameter and CAS Number	Units and Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) Process Wastewater Effluent at Valve 60H-224				
N-Nitrosodimethylamine (62-75-9)	µg/l	SW-846 8270 or EPA 625	Monthly [b]	Grab [c]
Methylene Chloride (75-09-2)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Tetrachloroethylene (127-18-4)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Tetrahydrofuran (109-99-9)	µg/l	SW-846 8260 or EPA 624	Monthly [b]	Grab [c]
Total Organic Carbon	µg/l	SW-846 9060 or SM 5310	Monthly [b]	Grab [c]
Gross Alpha (12587-46-1)	pCi/l	SW-846 9310 or EPA 900.0	Monthly [b]	Grab [c]
Gross Beta (12587-47-2)	pCi/l	SW-846 9310 or EPA 900.0	Monthly [b]	Grab [c]
Strontium-90 (10098-97-2)	pCi/l	EPA 905.0 or laboratory specific	Monthly [b]	Grab [c]
Technetium-99 (14133-76-7)	pCi/l	HASL-300 or laboratory specific	Monthly [b]	Grab [c]
Tritium (10028-17-8)	pCi/l	EPA 906.0 or laboratory specific	Monthly [b]	Grab [c]
Uranium (total) (7440-61-1)	µg/l	EPA 200.8	Monthly [b]	Grab [c]
Arsenic (total) (7440-38-2)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Beryllium (total) (7440-41-7)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Cadmium (total) (4770-43-9)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Chromium (total) (7440-47-3)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Copper (total) (7440-50-8)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Lead (total) (7439-92-1)	µg/l	SW-846 6010 or EPA 200.8	Monthly [b]	Grab [c]
Mercury (total) (7439-97-6)	µg/l	EPA 245.1	Monthly [b]	Grab [c]
Ammonia (1336-21-6) (Nitrogen in ammonium)	µg/l	EPA 350.1	Monthly [b]	Grab [c]
Chloride (16887-00-6)	µg/l	EPA 300.0 or EPA 300.1	Monthly [b]	Grab [c]
Nitrate (14797-55-8) (Nitrogen in nitrate)	µg/l	EPA 300.0 or EPA 300.1	Monthly [b]	Grab [c]
Nitrite (14797-65-0) (Nitrogen in Nitrite)	µg/l	EPA 300.0 or EPA 300.1	Monthly [b]	Grab [c]
Sulfate (14808-79-8)	µg/l	EPA 300.0 or EPA 300.1	Monthly [b]	Grab [c]
Total Dissolved Solids	µg/l	SM 2540 C	Monthly [b]	Grab [c]

Parameter and CAS Number	Units and Speciation	Laboratory Method	Sampling Frequency	Sample Type
(1) Process Wastewater Effluent at Valve 60H-224				
Total Suspended Solids	µg/l	SM 2540 D	Monthly [b]	Grab [c]
(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D [d]				
Parameter	**Units and Speciation**	**Laboratory Method**	**Sampling Frequency**	**Sample Type**
Tritium	pCi/l	EPA 906.0 or laboratory specific	Quarterly	Grab [c]
pH [e]	units	SW 9040 or SM 4500-H+ B (Calibrated device or in laboratory)	Quarterly	Grab [c]/ Field Measurement
Specific Conductivity	µmhos/cm	SM 2510B or EPA 120.1 (Calibrated device or in laboratory)	Quarterly	Grab [c]/ Field Measurement
Measured Depth to Groundwater	feet (report to 0.01 feet)	Field	Quarterly	Field Measurement
a	Per defined event is a single verification tank discharge.			
b	Monthly monitoring of the process wastewater effluent means the parameter must be monitored in a minimum of one verification tank whose first day of discharge occurred during the month.			
c	Grab means an individual sample collected over a period of fifteen (15) minutes or less.			
d	These groundwater monitoring wells must be sampled until they no longer produce representative data.			
e	The Permittee must report the instantaneous maximum and minimum pH quarterly. Do not average pH values.			

S2.B. Flow measurement devices

The Permittee must:

1. Select and use appropriate flow measurement devices and methods in accordance with best engineering practices.
2. Install, calibrate, and maintain these devices in accordance with best engineering practices or manufacturer recommendations as appropriate to ensure the accuracy of the measurements is consistent with accepted industry standards.
3. Calibrate flow measurement devices at a minimum frequency of at least one calibration every other year.
4. Maintain calibration records for at least three years.

S2.C. Laboratory accreditation

The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of WAC 173-50, Accreditation of Environmental Laboratories. Flow, depth, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.

S3. Reporting and Recordkeeping Requirements

The Permittee must monitor and report in accordance with the following conditions. Falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

S3.A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form. Report a value for the first day a discharge occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.

   To find more information and to sign up for WAWebDMR go to: http://www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html

2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant from the verification tanks during a given monitoring period.

3. Report single analytical values below the MDL by entering < (or "B") followed by the numeric value of the detection level (e.g., < 2.0, or B2.0) on the DMR. If the method used did not meet the MDL and PQL identified in the permit, report the actual PQL and MDL in the comments.

4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in Special Condition S2.A.

5. Calculate average values (unless otherwise specified in the permit) using:

   a. The reported numeric value for all parameters measured that are equal to or greater than the PQL.

   b. The reported numeric value for all parameters as estimated between the MDL and the PQL.

   c. One-half the MDL (for values reported below detection) if the laboratory detected the parameter in another sample for the reporting period.

   d. Zero (for values reported below detection) if the laboratory did not detect the parameter in another sample for the reporting period.

6. Report single-sample grouped parameters (e.g., priority pollutants, polycyclic aromatic hydrocarbons, pulp and paper chlorophenolics, total toxic organics) on the WAWebDMR form. Include sample date, MDL, laboratory PQL, and concentration detected. The Permittee must submit an electronic PDF copy of the contract laboratory report using WAWebDMR to provide this information.

7. Ensure that DMRs are electronically submitted no later than the dates specified below, unless otherwise specified in this permit.
8. Submit DMRs for parameters with the monitoring frequencies specified in Special Condition S2.A (e.g., monthly, quarterly) at the reporting schedule identified below. The Permittee must:
    a. Submit quarterly DMRs 30 days following a completed monitoring period. Quarterly sampling periods are January through March, April through June, July through September, and October through December.
9. Submit reports to Ecology online using the Ecology electronic WAWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd.
Richland, WA 99354

S3.B. Records retention

The Permittee must retain records of all monitoring information for a minimum of three (3) years. Such information must include:

- All calibration and maintenance records and all original recordings for monitoring instrumentation
- Copies of all reports required by this permit
- Records of all data used to complete the application for this permit.

The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

The Permittee must retain all records pertaining to the monitoring and sampling of process wastewater and groundwater described in Special Condition S2 for a minimum of five (5) years.

S3.C. Recording of results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement
2. The individual who performed the sampling or measurement
3. The dates the analyses were performed
4. The individual who performed the analyses
5. The analytical techniques or methods used

6. The results of all analyses.

S3.D. Additional monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the DMR unless otherwise specified by Special Condition S2.

S3.E. Reporting permit violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

1. Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the noncompliance and correct the problem.
2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling within the next scheduled DMR.

a. 24-hour notification

The Permittee must notify Ecology of the following occurrences of noncompliance by telephone at 509-372-7950, within 24 hours from the time the Permittee becomes aware of any of the following circumstances.

The Permittee must include the following information in the notification:

1. Any noncompliance that may endanger health or the environment
2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (Special Condition S4.B)
3. Any upset that causes an exceedance of an effluent limit in the permit
4. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee
5. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation
6. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Special Condition S1.A of this permit
7. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit

8. Any break or failure of the wastewater transmission pipeline
    a. Discharges from normal operation of the vacuum air relief valves are not considered to be a break or failure in the pipeline and are exempt from notification requirement.

b. Report within thirty days

The Permittee must also submit a written or electronic report within thirty (30) days of the time that the Permittee becomes aware of any reportable event under Special Condition S3.E.2.a. The report must contain:

1. A description of the noncompliance and its cause
2. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance
3. Any other information deemed pertinent by Ecology.

c. Waiver of written reports

Ecology may waive the written report required in Special Condition S3.E.2.b, on a case-by-case basis upon request if the Permittee has submitted a timely oral notification.

d. All other permit violation reporting

All permit violations that do not require 24-hour notification must be reported when the Permittee submits monitoring reports for Special Condition S3.A. The reports must contain the information listed in Special Condition S3.E.2.b.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

e. Report submittal

The Permittee must submit reports to the address listed in Special Condition S3.A.

S3.F. Other reporting

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

S3.G. Maintaining a copy of this permit

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. Operation and Maintenance

The Permittee must, at all times, properly operate and maintain all facilities or systems of

treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

S4.A. Operations and maintenance (O&M) manual

O&M manual requirements are in accordance with WAC 173-240, Submission of Plans and Reports for Construction of Wastewater Facilities, to meet the intent of this section.

a. O&M manual submittal and requirements

The Permittee must perform the following requirements.

1. Review the O&M manual biennially (i.e., every two years) in accordance with WAC 173-240-110(4).
2. Provide Ecology an updated copy of the O&M manual whenever substantial changes or updates are incorporated into the manual. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).
3. Maintain a copy of the O&M manual.
4. Follow the instructions and procedures of the O&M manual.

b. O&M manual components

In addition to the requirements of WAC 173-240-150(1) and (2), the O&M manual must include:

1. Emergency procedures for plant shutdown and cleanup in the event of a wastewater system upset or failure including pipeline leaks
2. Wastewater system maintenance procedures that contribute to the generation of wastewater
3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (e.g., defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).
4. Treatment plant process control monitoring schedule
5. Wastewater sampling protocols and procedures for compliance with the sampling and reporting requirements in the wastewater discharge permit
6. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit.

S4.B. Bypass procedures

a. Prohibited bypasses

This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility.

Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances applies.

1. Bypass is unavoidable, unanticipated, and results in noncompliance of this permit

   This permit authorizes such a bypass only if:

   a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass

   b. No feasible alternatives to the bypass exist, such as:

      - The use of auxiliary treatment facilities
      - Retention of untreated wastes
      - Stopping production
      - Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass
      - Transport of untreated wastes to another treatment facility
      - Preventative maintenance

   c. The Permittee has properly notified Ecology of the bypass as required in Special Condition S3.E of this permit.

2. If bypass is anticipated and has the potential to result in noncompliance of this permit, then:

   a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain:

      - A description of the bypass and its cause
      - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for the bypass
      - A cost-effectiveness analysis of alternatives including comparative resource damage assessment
      - The minimum and maximum duration of bypass under each alternative
      - A recommendation as to the preferred alternative for conducting the

bypass

- The projected date of bypass initiation
- A statement of compliance with State Environmental Policy Act
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible.

The Permittee must consider the analysis required above during preparation of the engineering report, facility plan, and specifications, and must include these to the extent practical.

In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

b. Authorized bypasses

Bypass for essential maintenance without the potential to cause violation of permit limits or conditions.

This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.

S4.C. Best management practices\pollution prevention program

The Permittee must comply with the following best management practices to prevent pollution to waters of the State.

1. Do not comingle process wastewater streams with sanitary (domestic) sewage.
2. Do not discharge in excess of the hydraulic capacity of the infiltration basin.
3. Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.
4. Wastewater from the infiltration basins must not run off into any surface waters of the state or to any land not owned by or under control of the Permittee.
5. The Permittee must use recognized good practices, and all available and reasonable procedures.
6. Do not apply wastewater to the infiltration basins in quantities that significantly reduce or destroy the long-term infiltration rate of the soil or that would alter groundwater quality in amounts that would affect current and future beneficial uses.

S5. Application for Permit Renewal

The Permittee must submit an application for renewal of this permit at least one hundred and eighty (180) days prior to the expiration date of the current permit. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).

S6. Facility Loading

S6.A. Design criteria

The flows or wasteloads for the permitted facility must not exceed the following design criteria:

Daily discharge flow	670,000 gallons per day
Average monthly discharge flow	250,000 gallons per day

The average monthly flow is defined as the highest allowable average of the daily discharges over a calendar month, calculated as the total gallons discharged from the ETF verification tanks during a calendar month, divided by the number of days in that month.

S7. Non-routine and Unanticipated Discharges

1. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis, if approved by Ecology. Prior to any such discharge, the Permittee must contact Ecology and at a minimum, provide the following information:
   a. The proposed discharge location
   b. The nature of the activity that will generate the discharge
   c. Any alternatives to the discharge, such as reuse, storage, or recycling of the water
   d. The total volume of water it expects to discharge
   e. The results of the chemical analysis of the water

f. The date of proposed discharge

g. The expected rate of discharge in gallons per minute.

2. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by Special Condition S7.1.e. The analysis must also include any parameter deemed necessary by Ecology.

   All discharges must comply with the effluent limits as established in Special Condition S1.

3. The Permittee must limit the discharge rate, as referenced in Special Condition S7.1.g, so the discharge will not cause erosion of ditches or structural damage to culverts and their entrances or exits.

4. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order.

S8. Spill Plan

S8.A. Spill control plan submittals and requirements

The Permittee must perform the following requirements.

1. Review the plan biennially (i.e., every two years) and update the spill plan as needed.
2. Provide Ecology an updated copy of the plan whenever substantial changes or updates are incorporated into the plan. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).
3. Follow the plan and any supplements throughout the term of the permit.

S8.B. Spill control plan components

The Permittee may submit plans and manuals required by WAC 173-216, State Waste Discharge Permit Program, and contingency plans required by WAC 173-303, Dangerous Waste Regulations, to meet the intent of this section, as applicable. The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or stored on site which when spilled or otherwise released into the environment, designate as Dangerous Waste or Extremely Hazardous Waste by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on site which may become pollutants or cause pollution upon reaching waters of the state
2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials
3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill
4. A description of operator training to implement the plan.

S9. Tritium Tracking and Groundwater Monitoring

The permittee shall maintain a current Tritium Tracking and Groundwater Monitoring Plan on file with Ecology. In accordance with this plan:

1. The Permittee shall report tritium sampling results for each fiscal year to Ecology at least annually, by November 30th of the following fiscal year.
2. The Permittee shall update and maintain computer model(s) that predict the travel time of the tritium plume created by this discharge and also predict the concentration of the tritium plume at the area it discharges to the Columbia River.

   Model update(s) and reports to Ecology should occur at least once per permit cycle and within six (6) months of detection of the tritium plume from SALDS in a new monitoring well. The plan should include the proposed reporting format (e.g., maps, tables).
3. The Permittee shall sample wells 699-48-77C and 699-48-77D at least once per calendar quarter for the constituents listed in Special Condition S2.A, Table Section "(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D" of this permit. These sample results shall be reported in the quarterly DMR per the requirement of Special Condition S3.
4. Other reports and submissions that are required by the Tritium Tracking and Groundwater Monitoring Plan shall be submitted to Ecology per the schedule included in the plan.

S10. Waste Treatment Plant Processed Wastewater Compliance

Thirty (30) days prior to treatment of Waste Treatment Plant (WTP) hot commissioning waste, the Permittee shall provide Ecology a copy of a sampling and analysis plan (SAP) to: (1) evaluate the constituents in the ETF processed wastewater from the WTP Effluent Management Facility (EMF) against compliance criteria and (2) analyze the treated wastewater for new constituents.

The SAP shall identify constituents with the potential to exceed compliance criteria. The compliance criteria is composed of the following:

- Constituents with Special Condition S1.A Effluent Limits
- Constituents with groundwater criteria within WAC 173-200-040, Water Quality Standards for Groundwaters of the State of Washington, Criteria, for constituents not listed in Special Condition S1.A (except pH and radionuclides)
- Constituents above historical background levels in SALDS groundwater wells 699-48-77C and 699-48-77D in accordance with WAC 173-200-050(3)(b)(i) and (3)(b)(ii)
- PQL in accordance with WAC 173-200-050(4) for constituents not listed in Special Condition S1.A, WAC 173-200-040, or with background levels at SALDS.

The SAP shall specify laboratory methods identified in Special Condition S2.A.

The first six verification tanks processing WTP EMF wastewater shall be sampled to evaluate compliance. The average concentration values from the verification tanks shall be used to evaluate compliance. The Permittee shall calculate the average constituent values as follows:

- Use the reported numeric value measured that is equal to or greater than the PQL
- Use the reported numeric value as estimated between the MDL and the PQL
- Use one-half the MDL on all tanks that reported non-detection levels if at least one verification tank detected the constituent
- Use zero if the constituent was not detected in any of the verification tanks.

The Permittee shall submit a summary report that compares the constituent average concentration(s) to compliance criteria and identifies new constituents not previously reported to Ecology.

If a constituent is found to exceed the compliance criteria at the verification tanks, groundwater monitoring wells 699-48-77C and 699-48-77D shall serve as the alternative point of compliance in accordance with WAC 173-200-060(2). The constituent(s) shall be sampled quarterly to align with the sampling frequency in Special Condition S2.A, Table Section "(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D." Groundwater monitoring shall employ laboratory methods identified in Special Condition S2.A. Groundwater monitoring shall conclude after four consecutive quarterly sampling events if constituent(s) that exceeded the compliance criteria at the verification tanks are: (1) less than the MDL, or (2) measured to be compliant with WAC 173-200. Sampling will occur for four nonconsecutive quarters if a well is dry during a quarterly sampling attempt. After three consecutive sampling attempts have failed, the well shall be declared permanently dry. Well sampling shall cease at a well if it becomes permanently dry.

The Permittee shall include the sample results on the applicable quarterly DMR.

General Conditions

G1. Signatory Requirements

All applications, reports, or information submitted to Ecology must be signed as follows.

1. All permit applications must be signed by either a principal executive officer or ranking elected official.
2. All reports required by this permit and other information requested by Ecology must be signed by a person described above or by a duly authorized representative of that person.

   A person is a duly authorized representative only if:

   a. The authorization is made in writing by the person described above and is submitted to Ecology at the time of authorization, and

b. The authorization specifies either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under General Condition G1.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section must make the following certification:

   "I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted.

   Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

G2. Right of Entry

Representatives of Ecology have the right to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting and investigating conditions relating to the pollution or the possible pollution of any waters of the state. Reasonable times include normal business hours; hours during which production, treatment, or discharge occurs; or times when Ecology suspects a violation requiring immediate inspection.

Representatives of Ecology must be allowed to have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit; to inspect any monitoring equipment or method required in the permit; and to sample the discharge, waste treatment processes, or internal waste streams.

G3. Permit Actions

This permit is subject to modification, suspension, or termination, in whole or in part by Ecology for any of the following causes:

1. Violation of any permit term or condition
2. Obtaining a permit by misrepresentation or failure to disclose all relevant facts
3. A material change in quantity or type of waste disposal
4. A material change in the condition of the waters of the state
5. Nonpayment of fees assessed pursuant to RCW 90.48.465.

Ecology may also modify this permit, including the schedule of compliance or other conditions, if it determines good and valid cause exists, including promulgation or revisions of regulations or new information.

G4. Reporting a Cause for Modification

The Permittee must submit a new application or supplemental information to a previous application at least sixty (60) days before the Permittee wants to modify the permitted facility or discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time.

Required plans include an engineering report, plans and specifications, and an O&M manual in accordance with WAC 173-240. Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary.

The Permittee must continue to comply with the existing permit until it is modified or reissued. Submitting a notice of dangerous waste discharge (to comply with pretreatment or dangerous waste rules) also triggers this requirement.

G5. Plan Review Required

Prior to constructing or modifying any wastewater control facilities, the Permittee must submit an engineering report and detailed plans and specifications to Ecology for approval in accordance with WAC 173-240.

Engineering reports, plans, and specifications should be submitted at least 180 days prior to the planned start of construction. Facilities must be constructed and operated in accordance with the approved plans.

G6. Compliance with Other Laws and Statutes

Nothing in the permit excuses the Permittee from compliance with any applicable federal, state, or local statutes, ordinances, or regulations.

G7. Transfer of this Permit

This permit is automatically transferred to a new owner or operator if:

1. A written agreement between the old and new owner or operator containing a specific date for transfer of permit responsibility, coverage, and liability is submitted to Ecology
2. A copy of the permit is provided to the new owner
3. Ecology does not notify the Permittee of the need to modify the permit.

Unless this permit is automatically transferred according to General Condition G7.1, this permit may be transferred only if it is modified to identify the new Permittee and to incorporate such other requirements as determined necessary by Ecology.

G8. Payment of Fees

The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under WAC 173-224, Water Quality Permit Fees, are not paid.

G9. Penalties for Violating Permit Conditions

Any person who is found guilty of willfully violating the terms and conditions of this permit is guilty of a crime, and upon conviction thereof shall be punished by a fine of up to ten thousand dollars and costs of prosecution, or by imprisonment at the discretion of the court. Each day upon which a willful violation occurs may be deemed a separate and additional violation.

Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation. Each and every such violation is a separate and distinct offense. In the case of a continuing violation, every day of continued violation is a separate and distinct violation.

G10. Duty to Provide Information

The Permittee must submit to Ecology, within a reasonable time, all information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The Permittee must also submit to Ecology upon request, copies of records required to be kept by this permit.

G11. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of RCW 90.48 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

Attachment 6
19-ECD-0045
(38 Pages Excluding Cover Sheet)

WRPS-1901762 Enclosure 6,
Crosswalk of Proposed Changes to S000T4500
Changes for the 2019 Renewal Application

Crosswalk of Proposed ST0004500 Changes for the 2019 Renewal Application

Current Permit Section	Original Text	Proposed Text	Basis for Change
Header	Page 1 of 20	Page 1 of 22	The total page number was revised to 22 pages. Formatting revisions are applied to the document to provide consistency and include: (1) margins changed to 1 inch, (2) justification set to left, (3) double spacing after periods, (4) double spacing after colons, (5) text was retyped when appropriate to remove formatting errors associated with spacing, and (6) applied appropriate use of acronyms.
Header	Issuance Date: **12/15/2014** Effective Date: **01/01/2015** Expiration Date: **12/31/2019**	Issuance Date: **MM/DD/YYYY** Effective Date: **MM/DD/YYYY** Expiration Date: **MM/DD/YYYY**	Placeholder text incorporated as a reminder to update the dates with the issuance of the new permit. Table feature resized for dates.
Owner/Operator	United States Department of Energy Richland Operations Office P.O. Box 550	United States Department of Energy Office of River Protection P.O. Box 450	Updating owner/operator to incorporate the facility transition change in 2015 from DOE-RL to DOE-ORP.
General Permitted Facility Informational Table	Facility Location: 200 Area Effluent Treatment Facility (ETF), located in the 200 East Area of the Hanford Site	Facility Location: 200 Area Effluent Treatment Facility, located in the 200 East Area of the Hanford Site	Deleted ETF acronym as it is introduced in Condition S1.A
General Permitted Facility Informational Table	Discharge Location: State-Approved Land Disposal Site (SALDS), located north of the 200 West Area	Discharge Location: State-Approved Land Disposal Site, located north of the 200 West Area	Deleted SALDS acronym as it is introduced in Condition S1.A
General Permitted Facility Informational Table	SIC Code: 4959 NAICS Code: 562910	SIC Code: 9511 NAICS Code: 924110	SIC and NAICS code updated for accuracy. Ecology applied the same SIC and NAICS codes within RCRA and Air permits issued to ORP for tank farms.
Ecology Signature Block	Jane Hedges, Program Manager	Alexandra K. Smith, Program Manager	Revised to identify the current Ecology Program Manager.
Table of Contents	See current permit	See proposed redline	Table of Contents was reformatted and updated.
Summary of Permit Report Submittals - Header	First Submittal Date	Submittal Date	Language revised for accuracy.

Current Permit Section	Original Text	Proposed Text	Basis for Change
Summary of Permit Report Submittals Row 1	S3.A; Discharge Monitoring Report; Quarterly; February 15, 2015	S3.A; Discharge Monitoring Report; Quarterly	Deleted the submittal date of "February 15, 2015" because it is irrelevant.
Summary of Permit Report Submittals Row 4	S4.A; Operations and Maintenance Manual Update or Review Confirmation Letter; Annually; July 1, 2015	Operations and Maintenance Manual Changes; As necessary	Language revised for clarity. Language revised to align with proposed changes to Special Condition 3.A. Substantial changes to the O&M manual require submittal to Ecology.
Summary of Permit Report Submittals Row 6	S4.D; Notification of New or Altered Sources; As necessary	**Deleted in its entirety**	Lacks foundation. There is no requirement associated with subject report submittal within Special Condition S4.D. Repetitious. Requirement within Condition G4.
Summary of Permit Report Submittals Row 7	S4.D Best Management Practices/Pollution Prevention Plan; 1/permit cycle; By December 31, 2019	S4.C Best Management Practices/Pollution Prevention Plan Changes; As necessary	Aligned with Special Condition 4.C Spill Control Plan Changes.
Summary of Permit Report Submittals Row 8	S6; July 30, 2019	S5; 180 days prior to permit expiration date	Aligned with Special Condition S5.
Summary of Permit Report Submittals Rows 9-11	S8; S9.A; S10	S7; S8.A; S9	Updated section references for these rows to align with revisions to section header numbering.
Summary of Permit Report Submittals Row 12		S9; Tritium Tracking and Groundwater Monitoring Plan Changes; As necessary	Revised for clarity. Report submittal added and aligned with Special Condition S9.
Summary of Permit Report Submittals Row 13		S9; Tritium Model Update(s) and Report; 1/permit cycle and as necessary; Within six months of a new tritium detection in a SALDS monitoring well and permit expiration date	Revised for clarity. Report submittal added and aligned with Special Condition S9.

Current Permit Section	Original Text	Proposed Text	Basis for Change
Summary of Permit Report Submittals Row 14		S10; Sampling and Analysis Plan to Evaluate Waste Treatment Plant Processed Wastewater Compliance; As necessary; Thirty (30) days prior to treatment of Waste Treatment Plant hot commissioning waste	Report submittal added and aligned with new Special Condition S10.
Summary of Permit Report Submittals Row 15		S10; Summary Report of Waste Treatment Plant Processed Wastewater Compliance; As necessary	Report submittal added and aligned with new Special Condition S10.
Summary of Permit Report Submittals Row 20	G8; Payment of Fees; As assessed	**Deleted in its entirety**	Payment of Fees is not a report submittal.
S1.A	Wastewater flows must not exceed the Design Criteria specified in Section S7.	Wastewater flows must not exceed the criteria specified in Special Condition S6.	Updated section references to align with changes in the special condition numbering.
S1.A		Beginning on the effective date, the Permittee is authorized to discharge non-contact blowdown from the Effluent Treatment Facility (ETF) cooling tower to the State-Approved Land Disposal Site (SALDS) at the permitted location.	Paragraph added to clarify that the non-contact blowdown is an authorization discharge.
S1.A	Beginning on the effective date, the Permittee is authorized to discharge process wastewater from the Effluent Treatment Facility (ETF) verification tanks to the State-Approved Land Disposal Site (SALDS) at the permitted location subject to the following limits:	Beginning on the effective date, the Permittee is authorized to discharge process wastewater from the ETF verification tanks to the SALDS at the permitted location subject to the following limits:	Revised acronym grammar.
S1.A – Table Header	Effluent Limits: Outfall #001 Latitude 46.5725 Longitude 119.6333	Effluent Limits: Discharged to SALDS as Measured per Special Condition S2.A SALDS Location: Latitude 46.5725 Longitude 119.6333	Language revised for clarity.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S1.A – Table Row 1	Acetophenone (ethanone, 1-phenyl)	Acetophenone	Revised for brevity, clarity, retyped to remove a formatting error. Repetitious. The CAS Number was presented in Special Condition S2.A, so alternative chemical names were unnecessary.
S1.A – Table Footnotes.			Table footnotes were reformatted and retyped as appropriate to remove formatting errors within the text.
S1.B	S1.B. Best management practices/pollution prevention The Permittee must comply with the following Best Management Practices to prevent pollution to waters of the State: 1. Do not commingle process wastewater streams with sanitary (domestic) sewage. 2. Do not discharge in excess of the hydraulic capacity of the drainfield. 3. Do not discharge priority pollutants, dangerous wastes, or toxics in toxic amounts.	**Deleted in its entirety**	Repetitious. Requirement presented in Special Condition S4.C.
S2.A – Header	Process wastewater monitoring	Wastewater monitoring	Nomenclature revised during a formal meeting with Ecology on March 26, 2015. Wastewater is composed of the cooling tower blowdown and the processed wastewater. The cooling tower blown cannot be directly sampled in the overall discharge.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.A	The Permittee must monitor the process wastewater in the verification tank prior to its discharge to the State-Approved Land Disposal Site.	**Deleted in its entirety**	Repetitious and Confusing. The sampling schedule is presented in the next paragraph and section table that describes sampling requirements, and the subject statement conflicts with the scheduled sampling frequencies.
S2.A	The Permittee must monitor the wastewater according to the following schedule. The Permittee must use the specified analytical methods unless the method used produces measurable results in the sample and EPA has listed it as an EPA approved method in 40 CFR Part 136.	The Permittee must sample the process wastewater according to the following schedule. The Permittee must use the specified analytical methods unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants, or SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.	Language modified for clarity and to include analytical methods listed in State of Washington Department of Ecology Certificates of Laboratory Accreditation and Scopes of Accreditation. Revised for consistent use of CFR.
S2.A	If the Permittee uses an alternative method, not specified in the permit and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report or in the required report. If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix-specific detection limit (MDL) and a quantitation limit (QL) to Ecology with appropriate laboratory documentation.	If the Permittee uses an alternative method not specified in the permit and as allowed above, it must report the test method, minimum detection limit (MDL), and practical quantification level (PQL) on the discharge monitoring report or in the required report. If the Permittee is unable to obtain the required MDL and PQL in its effluent due to matrix effects, the Permittee must submit a matrix-specific MDL and PQL to Ecology with appropriate laboratory documentation.	Language revised to align with industry. Practical quantification level is defined in WAC-173-200-020. Applied correct use and presentation of acronyms.
S2.A Table - Header	Parameter & CAS Number; Units & Speciation	Parameter and CAS Number; Units and Speciation	Language modified to use "and" instead of ampersand.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.A Table –Subheader	(1) Final Wastewater Effluent	(1) Process Wastewater Effluent at Valve 60H-224	Language modified for clarity.
S2.A Table – Row 1	Gallons per month; Once per defined event [a]; Metered/Recorded	Gallons per day; Per Defined Event; Recorded	Language modified for accuracy and clarity. Levels are recorded at the start and end of tank discharge. The level gauge reports volumes, not flow. There is no volumetric flow meter.
S2.A Table – Row 2	120.1; Once per defined event; Grab	EPA 120.1; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated. Previous results indicated monthly sampling is sufficient.
S2.A Table – Row 3	624; Monthly [c]; Grab [d]	SW-846 8260 or EPA 624; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 4	625; Monthly; Grab	SW-846 8270 or EPA 625; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Rows 5-7	624; Monthly; Grab	SW-846 8260 or EPA 624; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 8	625; Monthly; Grab	SW-846 8270 or EPA 625; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Rows 9-11	624; Monthly; Grab	SW-846 8260 or EPA 624; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 12	SM5310; Once per defined event; Grab	SW-846 9060 or SM 5310; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated. Previous results indicated monthly sampling is sufficient.
S2.A Table – Rows 13-14	900; Once per defined event; Grab	SW-846 9310 or EPA 900.0; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated. Previous results indicated monthly sampling is sufficient.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.A Table – Row 15	905; Monthly; Grab	EPA 905.0 or laboratory specific; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated. Previous results indicated monthly sampling is sufficient.
S2.A Table – Row 16	HASL-300 or Lab Specific Monthly; Grab	HASL-300or laboratory specific; Monthly [b]; Grab [c]	Footnotes updated.
S2.A Table – Row 17	906; Monthly; Grab	EPA 906.0 or laboratory specific; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated.
S2.A Table – Row 18	200.8; Monthly; Grab	EPA 200.8; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated.
S2.A Table – Rows 19-24	200.8; Monthly; Grab	SW-846 6010 or EPA 200.8; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 25	245.1; Monthly; Grab	EPA 245.1; Monthly [b]; Grab [c]	Language modified for clarity. CAS added. Typo corrected. Footnotes updated.
S2.A Table – Row 26	Ammonia (Nitrogen in ammonium)); 350.1; Monthly; Grab	Ammonia (1336-21-6) (Nitrogen in ammonium); EPA 350.1; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated.
S2.A Table – Row 27	300.0; Monthly; Grab	EPA 300.0 or EPA 300.1; Monthly [b]; Grab [c]	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 28	Nitrate (Nitrogen in nitrate); 300.0; Once per defined event; Grab	Nitrate (14797-55-8) (Nitrogen in nitrate); EPA 300.0 or EPA 300.1; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated. CAS added. Previous results indicated monthly sampling is sufficient.
S2.A Table – Rows 29	Nitrite (Nitrogen in Nitrite); 300.0; Monthly; Grab	Nitrite (14797-65-0) (Nitrogen in Nitrite); EPA 300.0 or EPA 300.1; Monthly b; Grab c	Language modified for clarity. CAS added. Footnotes updated.
S2.A Table – Row 30	300.0; Monthly; Grab	EPA 300.0 or EPA 300.1; Monthly b; Grab c	Language modified for clarity. Footnotes updated.
S2.A Table – Row 31	SM2540C; Monthly; Grab	SM 2540 C; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.A Table – Row 32	SM2540D; Monthly; Grab	SM 2540 D; Monthly [b]; Grab [c]	Language modified for clarity. Footnotes updated.
S2.A Table – Subheader Row 33	(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D [e]	(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D [d]	Footnote updated.
S2.A Table – Subheader Row 34	Units & Speciation	Units and Speciation	Language modified to use "and" instead of ampersand.
S2.A Table – Row 35	906; Grab	EPA 906.0 or laboratory specific; Grab [c]	Language modified for clarity. Footnotes updated.
S2.A Table – Row 36	pH; SM4500-H^+ B (In Lab); Grab/Field Measurement	pH [e]; SW 9040 or SM 4500-H^+ B (Calibrated device or in laboratory); Grab [c]/Field Measurement	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 37	120.1/SM2510B (In lab); Grab/Field Measurement	SM 2510B or EPA 120.1 (Calibrated device or in laboratory); Grab [c]/Field Measurement	Language modified for clarity. State-approved methods incorporated. Footnotes updated.
S2.A Table – Row 38			Retyped text to correct formatting error.
S2.A Table – Row 39	[a]; Once per defined event means one sample from each verification tank discharge.	Per defined event is a single verification tank discharge.	Language modified for clarity. Reformatted footnote.
S2.A Table – Row 40	[b]; The permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.	**Deleted in its entirety**	Footnotes reorganized and updated. Requirement reported in footnote [e].
S2.A Table – Row 41	c; Monthly means once per month.	b; Monthly monitoring of the process wastewater effluent means the parameter must be monitored in a minimum of one verification tank whose first day of discharge occurred during the month.	Footnotes reorganized and updated. Language modified to clarify that a parameter must be analyzed in one verification tank per month, not all tanks. Language modified to clarify that one verification tank cannot start discharge on the last day of one month and continue discharge into the first day of the following month to satisfy the monthly sampling requirements for two months.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.A Table – Row 42	d; Grab means an individual sample collected over a fifteen (15) minute, or less, period.	c; Grab means an individual sample collected over a period of fifteen (15) minutes or less.	Language revised for clarity. Footnotes reorganized and updated.
S2.A Table – Row 43	e; These groundwater monitoring wells must be sampled until they no longer produce representative data.	d; These groundwater monitoring wells must be sampled until they no longer produce representative data.	Footnotes reorganized and updated. Retyped text to correct formatting error.
S2.A Table – Row 44		e; The Permittee must report the instantaneous maximum and minimum pH quarterly. Do not average pH values.	Footnotes reorganized and updated.
S2.B – Header	Flow measurement and continuous monitoring devices	Flow measurement devices	Continuous monitoring devices are not applicable.
S2.B	1. Select and use appropriate flow measurement devices and methods consistent with accepted scientific practices.	1. Select and use appropriate flow measurement devices and methods in accordance with best engineering practices.	Language modified for clarity.
S2.B	2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standards and the manufacturer's recommendation for that type of device.	2. Install, calibrate, and maintain these devices in accordance with best engineering practices or manufacturer recommendations as appropriate to ensure the accuracy of the measurements is consistent with accepted industry standards.	Language modified for clarity and applicability.
S2.B	3. Calibrate flow monitoring devices at a minimum frequency of at least once calibration every other year.	3. Calibrate flow measurement devices at a minimum frequency of at least once calibration every other year.	Language modified for clarity and applicability.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S2.C	The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.	The Permittee must ensure that all monitoring data required by Ecology for permit specified parameters is prepared by a laboratory registered or accredited under the provisions of WAC 173-50, *Accreditation of Environmental Laboratories*. Flow, depth, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.	Language modified to for clarity and applicability. Depth was added as exempt from the laboratory accreditation.
S3 – Header	Reporting and Recording Requirements	Reporting and Recordkeeping Requirements	Aligned section header to match State Waste Discharge Permit ST0004502 as the term recordkeeping is more accurate.
S3.A	1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form. Report a value for each day sampling occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.	1. Summarize, report, and submit monitoring data obtained during each monitoring period on the electronic Discharge Monitoring Report (DMR) form provided by Ecology within WAWebDMR. Include data for each of the parameters tabulated in Special Condition S2 and as required by the form. Report a value for the first day a discharge occurred (unless specifically exempted in the permit) and for the summary values (when applicable) included on the electronic form.	Aligned to be congruent with Special Condition S2.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.A	2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant during a given monitoring period.	2. Enter the "no discharge" reporting code for an entire DMR, for a specific monitoring point, or for a specific parameter as appropriate, if the Permittee did not discharge wastewater or a specific pollutant from the verification tanks during a given monitoring period.	Language modified for clarity. Sampling can only occur for actual verification tank discharges. The non-contact cooling tower blowdown is discharged continuously and directly to SALDS. Refer to previous comment for Special Condition S1.A.
S3.A	3. Report single analytical values below detection as "less than the detection level (DL)" by entering < followed by the numeric value of the detection level (e.g. < 2.0, or B2.0) on the DMR. If the method used did not meet the minimum DL and quantitation level (QL) identified in the permit, report the actual QL and DL in the comments.	3. Report single analytical values below the MDL by entering < (or "B") followed by the numeric value of the detection level (e.g., < 2.0, or B2.0) on the DMR. If the method used did not meet the MDL and PQL identified in the permit, report the actual PQL and MDL in the comments.	Language modified to be congruent with Special Condition S2.A.
S3.A	4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in the permit and as allowed in Appendix A.	4. Report the test method used for analysis in the comments if the laboratory used an alternative method not specified in Special Condition S2.A	Language revised for clarity and consistency.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.A	5. Calculate average values (unless otherwise specified in the permit) using: a. The reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value. b. One-half the detection value (for values reported below detection) if the lab detected the parameter in another sample for the reporting period. c. Zero (for values reported below detection) if the lab did not detect the parameter in another sample for the reporting period.	5. Calculate average values (unless otherwise specified in the permit) using: a. The reported numeric value for all parameters measured that are equal to or greater than the PQL. b. The reported numeric value for all parameters as estimated between the MDL and the PQL. c. One-half the MDL (for values reported below detection) if the laboratory detected the parameter in another sample for the reporting period. d. Zero (for values reported below detection) if the laboratory did not detect the parameter in another sample for the reporting period.	Language revised for clarity and consistency.
S3.A	6. Report single-sample grouped parameters (for example, priority pollutants, PAHs, pulp and paper chlorophenolics, TTOs) on the WAWebDMR form. Include sample date, detection limit (DL), laboratory quantitation level (QL), and concentration detected. The Permittee must submit an electronic PDF copy of the contract laboratory report using WAWebDMR to provide this information.	6. Report single-sample grouped parameters (e.g., priority pollutants, polycyclic aromatic hydrocarbons, pulp and paper chlorophenolics, total toxic organics) on the WAWebDMR form. Include sample date, MDL, laboratory PQL, and concentration detected. The Permittee must submit an electronic PDF copy of the contract laboratory report using WAWebDMR to provide this information.	Language revised for clarity and consistency. PAH and TTO acronyms were spelled out for clarification.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.A	8. Submit DMRs for parameters with the monitoring frequencies specified in S2 (monthly, quarterly, annual, etc.) at the reporting schedule identified below. The Permittee must: a. Submit quarterly DMRs 45 days following a completed monitoring period. Quarterly sampling periods are January through March, April through June, July through September, and October through December.	8. Submit DMRs for parameters with the monitoring frequencies specified in Special Condition S2.A (e.g., monthly, quarterly) at the reporting schedule identified below. The Permittee must: a. Submit quarterly DMRs 30 days following a completed monitoring period. Quarterly sampling periods are January through March, April through June, July through September, and October through December.	Editorially reformatted. Removed "etc." Applied consistent referencing to special conditions. Additionally, 45 days was changed to 30 days to align with State Waste Discharge Permit ST0004502 and standard DMR reporting timeframes.
S3.A	9. Submit reports to Ecology online using Ecology's electronic WAWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:	9. Submit reports to Ecology online using the Ecology electronic WAWebDMR submittal forms (electronic DMRs) as required above. Send paper reports to Ecology at:	Revised to remove apostrophe.
S3.A	Water Quality Permit Coordinator Department of Ecology Nuclear Waste Program 3100 Port of Benton Blvd. Richland, WA 99354	Water Quality Permit Coordinator Department of Ecology Nuclear Waste Program 3100 Port of Benton Blvd. Richland, WA 99354	Justification changed to center.
S3.B	• All calibration and maintenance records and all original recordings for continuous monitoring instrumentation.	• All calibration and maintenance records and all original recordings for monitoring instrumentation.	Language modified for clarity and applicability to the sampling and monitoring performed.
S3.B	The Permittee must retain all records pertaining to the monitoring and sampling of process wastewater and groundwater described in Special Condition S2 for a minimum of five (5) years.	The Permittee must retain all records pertaining to the monitoring and sampling of process wastewater and groundwater described in Special Condition S2 for a minimum of five (5) years.	Applied consistent referencing to special conditions.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.D	If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR unless otherwise specified by Special Condition S2.	If the Permittee monitors any pollutant more frequently than required by Special Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the DMR unless otherwise specified by Special Condition S2.	Editorially revised.
S3.E	2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within thirty (30) days of sampling.	2. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling within the next scheduled DMR.	Language modified per Ecology's direction to include repeat sample data in the next DMR in accordance with Special Condition S3.D.
S3.E	a. Twenty-four-hour reporting The Permittee must report the following occurrences of noncompliance by telephone to Ecology at 509-372-7950, within 24 hours from the time the Permittee becomes aware of any of the following circumstances. The Permittee must report:	a. 24-four-hour notification The Permittee must notify Ecology of the following occurrences of noncompliance by telephone at 509-372-7950, within 24 hours from the time the Permittee becomes aware of any of the following circumstances. The Permittee must include the following information in the notification:	Language modified to improve clarity for notification and report requirements within the subject permit condition.
S3.E	2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (See Part S4.B., "Bypass Procedures").	2. Any unanticipated bypass that causes an exceedance of an effluent limit in the permit (Special Condition S4.B)	Applied consistent referencing to special conditions.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.E	5. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation	5. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation	No change. Retyped text to correct formatting error.
S3.E	6. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit	6. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Special Condition S1.A of this permit	Applied consistent referencing to special conditions.
S3.E	8. Any leak or failure of the wastewater transmission pipeline distribution system.	8. Any break or failure of the wastewater transmission pipeline distribution system. a. Discharges from the vacuum air relief valves are not considered to be a break or failure in the pipeline and are exempt from notification requirements.	Language modified for clarity and to incorporate the design and functionality of the SALDS transfer line vacuum air relief valves. During normal operations, a small volume of wastewater may drip from a valve as it opens to perform its intended function. These drips are within the design and operational parameters of the system and do not qualify as a line or system failure.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.E	b. Report within five days The Permittee must also provide a written submission within five (5) days of the time that the Permittee becomes aware of any event it must report under subpart a, above. The written submission must contain: 1. A description of the noncompliance and its cause. 2. Maps, drawings, aerial photographs, or pictures to show the location and cause(s) of the non-compliance. 3. The period of noncompliance, including exact dates and times. 4. The estimated time the Permittee expects the noncompliance to continue if not yet corrected. 5. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. 6. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.	b. Report within thirty days The Permittee must also provide a written submission within thirty (30) days of the time that the Permittee becomes aware of any event it must notify under Special Condition S3.E.2.a. The written submission must contain: 1. A description of the noncompliance and its cause. 2. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. 3. Any other information deemed pertinent by Ecology.	Report time frame was changed to 30 days, and original bullets 2, 3, and 4 were deleted. These changes align subject permit condition with WAC 173-216(6) in regards to schedule reporting and content of the 30-day report: WAC 173-216-110(6) reads: *In the event the permittee is unable to comply with any of the permit terms and conditions due to any cause, the permittee shall:* *(a) Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the violation, and correct the problem;* *(b) Immediately notify the department of the failure to comply; and* *(c) Submit a detailed written report to the department within thirty days, unless requested earlier by the department, describing the nature of the violation, corrective action taken and/or planned, steps to be taken to prevent a recurrence, and any other pertinent information.*

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.E	c. Waiver of written reports Ecology may waive the written report required in subpart b, above, on a case-by-case basis upon request if the Permittee has submitted a timely oral report.	c. Waiver of written reports Ecology may waive the written report required in Special Condition S3.E.2.b, on a case-by-case basis upon request if the Permittee has submitted a timely oral notification.	Language modified for clarity to discern notification and report requirements.
S3.E	d. All other permit violation reporting All permit violations that do not require immediate or 24 hour reporting must be reported when the Permittee submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in subpart b, above.	d. All other permit violation reporting All permit violations that do not require 24-hour notification must be reported when the Permittee submits monitoring reports for Special Condition S3.A. The reports must contain the information listed in Special Condition S3.E.2.b.	Language modified for clarity and to align with Special Condition S3.A. Applied consistent referencing to special conditions.
S3.E	e. Report submittal The Permittee must submit reports to the address listed in S3.A.	e. Report submittal The Permittee must submit reports to the address listed in Special Condition S3.A.	Applied consistent referencing to special conditions.
S3.F	a. The Permittee must report a spill of oil or hazardous materials in accordance with requirements of RCW 90.56.280. Further instructions can be obtained at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm b. Failure to submit relevant or correct facts	**Deleted in its entirety**	Repetitious. Subject matter required under General Condition G6. If Ecology requires this exact language in the permit, the appropriate location is General Condition G6.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S3.F	Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.	Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.	Retyped text to correct formatting error. No changes were made.
S4.A		O&M manual requirements are in accordance with WAC 173-240, Submission of Plans and Reports for Construction of Wastewater Facilities, to meet the intent of this section.	Language added to provide clarity and the regulatory basis.
S4.A Subpart a	a. O&M manual submittal and requirements The Permittee must: 1. Review the O&M Manual at least annually and confirm this review by letter to Ecology by July 1 of each year. 2. Submit to Ecology for review substantial changes or updates to the O&M Manual whenever it incorporates them into the manual. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF). 3. Keep the approved O&M Manual at the permitted facility. 4. Follow the instructions and procedures of this manual.	a. O&M manual submittal and requirements The Permittee must perform the following requirements. 1. Review the O&M manual biennially (i.e., every two years) in accordance with WAC 173-240-110(4). 2. Provide Ecology an updated copy of the O&M manual whenever substantial changes or updates are incorporated into the manual. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF). 3. Maintain a copy of the O&M manual. 4. Follow the instructions and procedures of the O&M manual.	Language revised for clarity, consistency herein, and consistency with State Waste Discharge Permit ST0004502. Revised to align the O&M manual review frequency to every other year in accordance with WAC 173-240-110(4) thereby redacting the requirement to submit a certified letter to Ecology confirming a review was performed. WAC 173-240-110(4) reads: *Where two or more years has elapsed since approval of the engineering report or plans and specifications, it may be necessary to update that document to reflect changed water quality conditions, regulatory requirements, or engineering technology.*
S4.A Subpart b	In addition to the requirements of WAC 173-240-150 (1) and (2), the O&M Manual must include:	In addition to the requirements of WAC 173-240-150(1) and (2), the O&M manual must include:	Language editorially revised for consistency.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.A Subpart b	3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system. (For example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)	3. Any directions to maintenance staff when cleaning or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (e.g., defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).	Language editorially corrected.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.B	This permit prohibits a bypass, which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies. 1. Bypass for essential maintenance without the potential to cause violation of permit limits or conditions. This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.	a. Prohibited bypasses This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances applies.	Subsections "a. Prohibited bypass" added for clarity. Circumstance 1 deleted from subsection "a. Prohibited bypass" and relocated to subsection "b" as it would be an authorized bypass. Circumstance numbering revised due to Circumstance 1 relocated to subsection "b". Language revised for clarity.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.B	2. Bypass is unavoidable, unanticipated, and results in noncompliance of this permit. This permit authorizes such a bypass only if: a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.	1. Bypass is unavoidable, unanticipated, and results in noncompliance of this permit This permit authorizes such a bypass only if: a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass	Numbering revised. Editorially revised.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.B	b. No feasible alternatives to the bypass exist, such as: • The use of auxiliary treatment facilities. • Retention of untreated wastes. • Stopping production. • Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass. • Transport of untreated wastes to another treatment facility or preventative maintenance, or transport of untreated wastes to another treatment facility. c. The Permittee has properly notified Ecology of the bypass as required in Special Condition S3.E of this permit.	b. No feasible alternatives to the bypass exist, such as: • The use of auxiliary treatment facilities • Retention of untreated wastes • Stopping production • Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass • Transport of untreated wastes to another treatment facility • Preventative maintenance c. The Permittee has properly notified Ecology of the bypass as required in Special Condition S3.E of this permit.	Language revised for clarity. Editorially revised. Applied consistent referencing to special conditions.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.B	3. If bypass is anticipated and has the potential to result in noncompliance of this permit. a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain: • A description of the bypass and its cause. • An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing. • A cost-effectiveness analysis of alternatives including comparative resource damage assessment. • The minimum and maximum duration of bypass under each alternative. • A recommendation as to the preferred alternative for conducting the bypass. • The projected date of bypass initiation. • A statement of compliance with SEPA. • A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.	2. If bypass is anticipated and has the potential to result in noncompliance of this permit, then: a. The Permittee must notify Ecology at least thirty (30) days before the planned date of bypass. The notice must contain: • A description of the bypass and its cause • An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for the bypass • A cost-effectiveness analysis of alternatives including comparative resource damage assessment • The minimum and maximum duration of bypass under each alternative • A recommendation as to the preferred alternative for conducting the bypass • The projected date of bypass initiation • A statement of compliance with State Environmental Policy Act	Language revised for clarity. Acronyms spelled out for clarity. Removed reference to WAC 173-201A-410 because the WAC 173-201A is irrelevant and not applicable to SALDS and the SALDS transfer line.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S4.B	The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications, and must include these to the extent practical.	The Permittee must consider the analysis required above during preparation of the engineering report, facility plan, and specifications, and must include these to the extent practical.	Language revised for clarity.
S4.B		b. Authorized bypasses Bypass for essential maintenance without the potential to cause violation of permit limits or conditions. This permit authorizes a bypass if it allows for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten (10) days before the date of the bypass.	Subsection "b. Authorized bypasses" added for clarity. The subject bypass would be an authorized discharge.
S4.C	S4.D. Best management practices\pollution prevention program The Permittee must comply with the following Best Management Practices to prevent pollution to waters of the State:	S4.C. Best management practices\pollution prevention program The Permittee must comply with the following best management practices to prevent pollution to waters of the State.	Language revised for clarity and editorial purposes. Special Condition S4.C was not within the permit. As a result, the special condition numbering is revised and updated.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S5	S5 Solid Wastes Management of solid waste is managed through the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, WA7 890008967, Part III, Operating Unit Group 3, LERF and 200 Area ETF.	**Deleted in its entirety**	Irrelevant and Repetitious. Subject condition applies to a separate project boundary and to a separate permit identified within original text of Special Condition S5. If deemed relevant and Ecology requires this exact language in the permit, the appropriate location is General Condition G6. Note: "Current Permit Section" numbers within this table are presented with the revised numbering from this point forward.
Special Condition Sections were Presented with Revised Numbering from this Point Forward		Special Condition S6 Application for Permit Renewal revised to S5. Special Condition S7 Facility Loading revised to S6. Special Condition S8 Non-routine and Unanticipated Discharges revised to S7. Special Condition S9 Spill Plan revised to S8. Special Condition S10 Tritium Tracking and Groundwater Monitoring revised to S9.	Note provided for clarity.
S5	S6. Application for Permit Renewal or Modification for Facility Changes The Permittee must submit an application for renewal of this permit by June 30, 2019. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).	S5. Application for Permit Renewal The Permittee must submit an application for renewal of this permit at least one hundred and eighty (180) days prior to the expiration date of the current permit. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF).	Current permit section presented with revised section number. Language revised and added for clarity.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S5	The Permittee must also submit a new application or supplement at least one hundred eighty (180) days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.	**Deleted in its entirety**	Repetitious. Requirement incorporated into General Condition G4 and aligned with WAC 173-216-110(5). WAC 173-216-110(5) reads: *A new application, or supplement to the previous application, shall be submitted, along with required engineering plans and reports, whenever a new or increased discharge or change in the nature of the discharge is anticipated which is not specifically authorized by the current permit. Such application shall be submitted at least sixty days prior to any proposed changes.*
S6	S7.A Design criteria The flow or waste loads for the permitted facility must not exceed the following design criteria: Maximum Daily Discharge Flow 670,000 gallons per day Maximum Average Monthly Discharge Flow 250,000 gallons per day	S6.A Design criteria The flow or waste loads for the permitted facility must not exceed the following design criteria: Daily discharge flow 670,000 gallons per day Average monthly discharge flow 250,000 gallons per day The average monthly flow is defined as the highest allowable average of the daily discharges over a calendar month, calculated as the total gallons discharged from the ETF verification tanks during a calendar month, divided by the number of days in that month.	Current permit section presented with revised section number. Language revised and added for clarity.
S7	g. The expected rate of discharge discharged, in gallons per minute	g. The expected rate of discharge in gallons per minute.	Language editorially revised for clarity.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S7	2. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by subpart 1.e above. The analysis must also include any parameter deemed necessary by Ecology. All discharges must comply with the effluent limits as established in Special Condition S1 of this permit, water quality standards, and any other limits imposed by Ecology. 3. The Permittee must limit the discharge rate, as referenced in subpart 1.g above, so it will not cause erosion of ditches or structural damage to culverts and their entrances or exits.	2. The Permittee must analyze the water for all constituents limited for the discharge and report them as required by Special Condition S7.1.e. The analysis must also include any parameter deemed necessary by Ecology. All discharges must comply with the effluent limits as established in Special Condition S1. 3. The Permittee must limit the discharge rate, as referenced in Special Condition S7.1.g, so the discharge will not cause erosion of ditches or structural damage to culverts and their entrances or exits.	Language revised for clarity.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S8.A	S9.A. Spill control plan submittals and requirements The Permittee must: 1. Review the plan at least annually and update the spill plan as needed. 2. Send substantive changes to the plan to Ecology. 3. Follow the plan and any supplements throughout the term of the permit.	S8.A. Spill control plan submittals and requirements The Permittee must perform the following requirements. 1. Review the plan biennially (i.e., every two years) and update the spill plan as needed. 2. Provide Ecology an updated copy of the plan whenever substantial changes or updates are incorporated into the plan. The Permittee must submit a paper copy and an electronic copy (preferably as a PDF). 3. Follow the plan and any supplements throughout the term of the permit.	Revised to align with Special Condition S4.A.a because the spill plan and the O&M manual are the same document. Language editorially revised.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S8.B	The spill control plan must include the following: 1. A list of all oil and petroleum products and other materials used and/or stored on-site, which when spilled or otherwise released into the environment, designate as Dangerous Waste (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on-site which may become pollutants or cause pollution upon reaching state's waters. 2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials. 3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill. 4. A description of operator training to implement the plan. The Permittee may submit plans and manuals required by 40 CFR Part 112, contingency plans required by Chapter 173-303 WAC, or other plans required by other agencies, which meet the intent of this section.	The Permittee may submit plans and manuals required by WAC 173-216, State Waste Discharge Permit Program, and contingency plans required by WAC 173-303, Dangerous Waste Regulations, to meet the intent of this section, as applicable. The spill control plan must include the following: The spill control plan must include the following: 1. A list of all oil and petroleum products and other materials used and/or stored on site which when spilled or otherwise released into the environment, designate as Dangerous Waste or Extremely Hazardous Waste by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on site which may become pollutants or cause pollution upon reaching waters of the state 2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials 3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill 4. A description of operator training to implement the plan.	Revised to present the applicable WAC requirements listed in Question C.10 of Ecology Form ECY-040-179, *Application for a State Waste Discharge Permit to Discharge Industrial Wastewater to Ground Water by Land Treatment or Application* Revised to communicate the regulatory basis of the requirement. The following CFR and WAC requirements not applicable to SALDS and the SALDS transfer line: • 40 CFR 112, Oil Pollution Prevention • WAC 173-182, Oil Spill Contingency Plan.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S9	The permittee has an approved Tritium Tracking and Groundwater Monitoring Plan on file with Ecology. In accordance with this plan: 1. The Permittee shall report tritium sampling results for each Fiscal Year to Ecology at least annually, by November 30th of the following Fiscal Year.	The permittee shall maintain a current Tritium Tracking and Groundwater Monitoring Plan on file with Ecology. In accordance with this plan: 1. The Permittee shall report tritium sampling results for each fiscal year to Ecology at least annually, by November 30th of the following fiscal year.	Revised for clarity. Language editorially revised.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S9	2. The Permittee shall update and maintain computer model(s) that predict the travel time of the tritium plume created by this discharge and also predict the concentration of the tritium plume at the area of the plume's discharge to the Columbia River. Model update(s) and reports to Ecology should occur at least once per permit cycle and within six (6) months of detection of the tritium plume from SALDS in a new monitoring well. The plan should include the proposed reporting format, e.g., maps, tables, etc. 3. The Permittee shall sample Wells 699-48-77C and 699-48-77D at least once per calendar quarter for the constituents listed in Section S2.B of this permit. These sample results shall be reported in the quarterly Discharge Monitoring Reports (DMRs) per the requirement of Section S3. 4. Other reports and submissions that are required by the Ecology approved Tritium Tracking and Groundwater Monitoring Plan shall be submitted to Ecology per the schedule included in the plan.	2. The Permittee shall update and maintain computer model(s) that predict the travel time of the tritium plume created by this discharge and also predict the concentration of the tritium plume at the area it discharges to the Columbia River. Model update(s) and reports to Ecology should occur at least once per permit cycle and within six (6) months of detection of the tritium plume from SALDS in a new monitoring well. The plan should include the proposed reporting format (e.g., maps, tables). 3. The Permittee shall sample wells 699-48-77C and 699-48-77D at least once per calendar quarter for the constituents listed in Special Condition S2.A, Table Section "(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D" of this permit. These sample results shall be reported in the quarterly DMR per the requirement of Special Condition S3. 4. Other reports and submissions that are required by the Tritium Tracking and Groundwater Monitoring Plan shall be submitted to Ecology per the schedule included in the plan.	Language revised for clarity. Editorially revised due to typos. Applied consistent referencing to special conditions. Applied consistent use of acronyms.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S9	The Permittee must submit proposed revisions or modifications to the Tritium Tracking and Groundwater Monitoring Plan to Ecology for review and approval at least thirty (30) days prior to implementation. Once approved, the Permittee must comply with any plan modifications.	**Deleted in its entirety**	Repetitious. Special Condition S9 revisions require the permittee to maintain a current Tritium Tracking and Groundwater Monitoring Plan on file with Ecology, and the submittal of changes to the Tritium Tracking and Groundwater Monitoring was added to "Summary of Permit Report Submittals".
S10		S10. Waste Treatment Plant Processed Wastewater Compliance Thirty (30) days prior to treatment of Waste Treatment Plant (WTP) hot commissioning waste, the Permittee shall provide Ecology a copy of a sampling and analysis plan (SAP) to: (1) evaluate the constituents in the ETF processed wastewater from the WTP Effluent Management Facility (EMF) against compliance criteria and (2) analyze the treated wastewater for new constituents.	To allow continued DFLAW operations, Special Condition 10 was added to State Waste Discharge Permit ST0004500 to proactively evaluate compliance of ETF processed wastewater from WTP EMF with General Condition G4 and to provide a compliant approach to change points of compliance and monitor groundwater in accordance with WAC 173-200, "Water Quality Standards for Groundwaters of the State of Washington," if necessary.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S10		The SAP shall identify constituents with the potential to exceed compliance criteria. The compliance criteria is composed of the following: • Constituents with Special Condition S1.A Effluent Limits • Constituents with groundwater criteria within WAC 173-200-040, Water Quality Standards for Groundwaters of the State of Washington, for constituents not listed in Special Condition S1.A (except pH and radionuclides) • Constituents above historical background levels in SALDS groundwater wells 699 48 77C and 699 48 77D in accordance with WAC 173-200-050(3)(b)(i) and (3)(b)(ii) • PQL in accordance with WAC 173-200-050(4) for constituents not listed in Special Condition S1.A, WAC 173 200 040, or with background levels at SALDS.	To allow continued DFLAW operations, Special Condition 10 was added to State Waste Discharge Permit ST0004500 to proactively evaluate compliance of ETF processed wastewater from WTP EMF with General Condition G4 and to provide a compliant approach to change points of compliance and monitor groundwater in accordance with WAC 173-200, "Water Quality Standards for Groundwaters of the State of Washington," if necessary.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S10		The SAP shall specify laboratory methods identified in Special Condition S2.A. The first six verification tanks processing WTP EMF wastewater shall be sampled to evaluate compliance. The average concentration values from the verification tanks shall be used to evaluate compliance. The Permittee shall calculate the average constituent values as follows: • Use the reported numeric value measured that is equal to or greater than the PQL • Use the reported numeric value as estimated between the MDL and the PQL • Use one-half the MDL on all tanks that reported non-detection levels if at least one verification tank detected the constituent • Use zero if the constituent was not detected in any of the verification tanks. The Permittee shall submit a summary report that compares the constituent average concentration(s) to compliance criteria and identifies new constituents not previously reported to Ecology.	To allow continued DFLAW operations, Special Condition 10 was added to State Waste Discharge Permit ST0004500 to proactively evaluate compliance of ETF processed wastewater from WTP EMF with General Condition G4 and to provide a compliant approach to change points of compliance and monitor groundwater in accordance with WAC 173-200, "Water Quality Standards for Groundwaters of the State of Washington," if necessary.

Current Permit Section	Original Text	Proposed Text	Basis for Change
S10		If a constituent is found to exceed the compliance criteria at the verification tanks, groundwater monitoring wells 699-48-77C and 699-48-77D shall serve as the alternative point of compliance in accordance with WAC 173-200-060(2). The constituent(s) shall be sampled quarterly to align with the sampling frequency in Special Condition S2.A, Table Section "(2) Groundwater Monitoring Wells 699-48-77C and 699-48-77D." Groundwater monitoring shall employ laboratory methods identified in Special Condition S2.A. Groundwater monitoring shall conclude after four consecutive quarterly sampling events if constituent(s) that exceeded the compliance criteria at the verification tanks are: (1) less than the MDL, or (2) measured to be compliant with WAC 173 200. Sampling will occur for four nonconsecutive quarters if a well is dry during a quarterly sampling attempt. After three consecutive sampling attempts have failed, the well shall be declared permanently dry. Well sampling shall cease at a well if it becomes permanently dry. The Permittee shall include the sample results on the applicable quarterly DMR.	To allow continued DFLAW operations, Special Condition 10 was added to State Waste Discharge Permit ST0004500 to proactively evaluate compliance of ETF processed wastewater from WTP EMF with General Condition G4 and to provide a compliant approach to change points of compliance and monitor groundwater in accordance with WAC 173-200, "Water Quality Standards for Groundwaters of the State of Washington," if necessary.

Current Permit Section	Original Text	Proposed Text	Basis for Change
G1	3. Changes to authorization. If an authorization under paragraph G1.2 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.	3. Changes to authorization. If an authorization under General Condition G1.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.	Applied consistent referencing to general conditions.
G4	The Permittee must submit a new application at least sixty (60) days before it wants discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application and submit required plans at the same time. Required plans include an Engineering Report, Plans and Specifications, and an Operations and Maintenance manual, (see Chapter 173-240 WAC). Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary.	The Permittee must submit a new application or supplemental information to a previous application at least sixty (60) days before the Permittee wants to modify the permitted facility or discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time. Required plans include an engineering report, plans and specifications, and an O&M manual in accordance with WAC 173-240. Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary.	Language revised for clarity, consistency, and to align with WAC 173-216-110(5). WAC 173-216-110(5) reads: *A new application, or supplement to the previous application, shall be submitted, along with required engineering plans and reports, whenever a new or increased discharge or change in the nature of the discharge is anticipated which is not specifically authorized by the current permit. Such application shall be submitted at least sixty days prior to any proposed changes.*

Current Permit Section	Original Text	Proposed Text	Basis for Change
G4	The Permittee must submit a new application at least sixty (60) days before it wants to discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time. Required plans include an Engineering Report, Plans and Specifications, and an Operations and Maintenance manual, (see Chapter 173-240 WAC). Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary. The Permittee must continue to comply with the existing permit until it is modified or reissued. Submitting a notice of dangerous waste discharge (to comply with Pretreatment or Dangerous Waste rules) also triggers this requirement	The Permittee must submit a new application or supplemental information to a previous application at least sixty (60) days before the Permittee wants to modify the permitted facility or discharge more of any pollutant, a new pollutant, or more flow than allowed under this permit. The Permittee should use the State Waste Discharge Permit application, and submit required plans at the same time. Required plans include an engineering report, plans and specifications, and an O&M manual in accordance with WAC 173-240. Ecology may waive these plan requirements for small changes. Permittee should contact Ecology if the plans do not appear necessary. The Permittee must continue to comply with the existing permit until it is modified or reissued. Submitting a notice of dangerous waste discharge (to comply with pretreatment or dangerous waste rules) also triggers this requirement..	Editorially revised and aligned with WAC 173-216-070.
G5	Prior to constructing or modifying any wastewater control facilities, the Permittee must submit an engineering report and detailed plans and specifications to Ecology for approval in accordance with Chapter 173-240 WAC.	Prior to constructing or modifying any wastewater control facilities, the Permittee must submit an engineering report and detailed plans and specifications to Ecology for approval in accordance with WAC 173-240.	Revised for consistent use of WAC.

Current Permit Section	Original Text	Proposed Text	Basis for Change
G7	3. Ecology does not notify the Permittee of the need to modify the permit	3. Ecology does not notify the Permittee of the need to modify the permit.	Editorially revised (i.e., period added).
G8	The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under Chapter 173-224 WAC are not paid.	The Permittee must submit payment of fees associated with this permit as assessed by Ecology. Ecology may revoke this permit if the permit fees established under WAC 173-224, Water Quality Permit Fees, are not paid.	Revised for consistent use of WAC.
G9	Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation. Each and every such violation is a separate and distinct offense, and in case of a continuing violation, every day's continuance is a separate and distinct violation.	Any person who violates the terms and conditions of a waste discharge permit incurs, in addition to any other penalty as provided by law, a civil penalty in the amount of up to ten thousand dollars for every such violation. Each and every such violation is a separate and distinct offense. In the case of a continuing violation, every day of continued violation is a separate and distinct violation.	Editorially revised to remove possessive apostrophe.
G11	The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Chapter 90.48 RCW and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.	The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of RCW 90.48 and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.	Revised for consistent use of RCW.

Attachment 7
19-ECD-0045
(1 Page Excluding Cover Sheet)

WRPS-1901762 Enclosure 7, Certification Statement (Area Manager)

CERTIFICATION FOR

Submittal of

"WRPS-1901762, *Contract Number DE-AC27-08RV14800 – Washington River Protection Solutions LLC Transmittal of the State Waste Discharge Permit ST0004500 Renewal Application for the State-Approved Land Disposal Site"*

"WRPS-1901762, Enclosure 1, *Completed Ecology Form ECY-040-179, Application for a State Waste Discharge Industrial Wastewater to Groundwater by Land Treatment Application"*

"WRPS-1901762, Enclosure 2, RPP-ENV-61571, *Information Supporting the Renewal Application for State Waste Discharge Permit ST0004500"*

"WRPS-1901762, Enclosure 3, RPP-CALC-63043, Effluent Treatment Facility and State-Approved Land Disposal Facility *Sample Results 2016 to 2018 with Calculated Averages"*

"I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

J. L. Foster, Area Manager
241-AW/242-A/ETF Area Manager
Washington River Protection Solutions LLC

6/10/19
Date