

2017 Annual CCR Rule Groundwater Monitoring Report – North Rail Loop Landfill

Gallatin Fossil Plant
Gallatin, Tennessee

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Introduction

This report documents groundwater compliance monitoring activities performed at the Tennessee Valley Authority (TVA) Gallatin Fossil Plant (GAF), North Rail Loop (NRL) Landfill as required under the United States Environmental Protection Agency (USEPA) coal combustion residuals (CCR) Rule (40 Code of Federal Regulations [CFR] 257.90 (e)). The groundwater monitoring system at the NRL Landfill is shown on **Figure 1**. This report covers the compliance activities performed at the NRL Landfill in 2017 and presents monitoring activities planned for 2018.

To comply with the CCR Rule, the following actions were taken in 2017:

- The NRL Landfill groundwater monitoring system was designed and installed prior to October 17, 2017 (40 CFR 257.90 (b)). A listing of wells in the monitoring system and well construction information is provided in **Table 1**; well locations are shown on **Figure 1**.
- The groundwater monitoring system was certified by a qualified Professional Engineer licensed in Tennessee (40 CFR 257.91 (f)).
- The groundwater monitoring system certification was posted on TVA's publically-accessible website as required by 40 CFR 257.107 (h).
- A sampling and analysis program was developed and implemented as required by 40 CFR 257.93.
- The required baseline monitoring of network wells was initiated, and independent baseline samples, as required by 40 CFR 257.94 (b), were collected with the exception of monitoring well NRL301B as noted below in "Problems encountered and resolution".
- Statistical analysis of baseline data was performed in accordance with the CCR Rule.
- The sampling and analysis for the first detection monitoring event (Appendix III constituents only) was completed in October 2017 in accordance with the CCR Rule [40 CFR 257.94 (a)].

Problems encountered and resolution:

- Monitoring well NRL301B has very poor yield and was dry or had insufficient water for sampling during the November 2016 and the July and August 2017 sampling events. As a result, there are seven independent baseline sampling events for this well instead of the minimum of eight independent sampling events required per 40 CFR 257.94 (b). This has no effect on the statistical analysis and reliability of the determinations provided in this report. The detection monitoring data from this well was compared to the statistical background; as a result, the baseline data from this well was not formally used in the statistical analysis.

The following activities are planned for 2018 to comply with CCR Rule groundwater monitoring requirements:

- An additional well, NRL230, was installed in January 2018 in order to increase downgradient coverage for the currently active portion of the landfill (Cell 1). Eight baseline sample events will be conducted for this new well. Future CCR Rule groundwater monitoring activities for the NRL Landfill will include this well.
- In January 2018, groundwater data was evaluated in accordance with 40 CFR 257.93(h) using the certified statistical method, as described in the Statistical Evaluation section below. Although not required to be included in this 2017 Annual Groundwater Monitoring Report, TVA has provided the January 15, 2018 determination of any statistically significant increases (SSIs) over background for the first detection monitoring event as shown in **Table 5**.
- For wells with fewer than 8 baseline samples (e.g., NRL301B, NRL230), the balance of the baseline samples will be collected in 2018.
- Verification sampling and error checking will be conducted to confirm the results of the October 2017 detection monitoring event to investigate whether the SSIs over background resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality as specified in 40 CFR 257.94 (e)(2).

- Alternate source(s), including natural variability, in accordance with 40 CFR 257.94 (e)(2), will be evaluated where applicable.
- Where applicable, semi-annual detection monitoring will be conducted in accordance with 40 CFR 257.94.
- Where applicable, assessment monitoring will be initiated in accordance with 40 CFR 257.94-95 if unable to establish that SSIs were the result of another source or an error.
- Further field and desktop Site-Characterization Investigations may be performed to improve the Conceptual Site Model (CSM).
- TVA's third-party Quality Assurance Program to evaluate groundwater analytical data will be continued and improved using best practices concerning field methods and validation techniques, as well as the application of the most appropriate statistical methods.
- The groundwater analytical data obtained in 2018 will be evaluated using appropriate statistical methods. Changes to the monitoring program will be implemented, as needed, to maintain compliance with 40 CFR 257.90 through 257.98.
- TVA will comply with recordkeeping requirements as specified in 40 CFR 257.105 (h), notification requirements specified in 40 CFR 257.106 (h), and internet requirements as specified in 40 CFR 257.107 (h).
- The next annual groundwater monitoring report, which will address groundwater monitoring activities undertaken in 2018, will be completed in January 2019.

Groundwater Monitoring System

The NRL Landfill groundwater monitoring system was certified, as required under 40 CFR 257.91(f), on October 16, 2017. The certification is included in the facility operating record and on the facility website <https://www.tva.gov/Environment/Environmental-Stewardship/Coal-Combustion-Residuals>. Since the initial certification, the monitoring system has been modified with the addition of one additional downgradient monitoring well (NRL230). The well was added to increase the number of wells downgradient of the currently active (Cell 1) portion of the landfill. Information about the well is included in the narrative below and the associated tables and figures.

The NRL Landfill groundwater monitoring system contains ten monitoring wells installed in the Lebanon Limestone aquifer, the uppermost aquifer in the area. The monitoring system includes four background monitoring wells, one upgradient monitoring well, and five downgradient monitoring wells. The monitoring well locations are shown on **Figure 1**, and monitoring well construction information is provided on **Table 1**.

The background monitoring wells (GAF-412L, GAF-414L, GAF-426L, and GAF-427L) are located in the northern portion of TVA property and represent conditions unaffected by CCR (40 CFR 257.91 (a)(1) and (c)(1)). Monitoring wells located upgradient (NRL221) and downgradient (NRL015, NRL220, NRL227, NRL230, and NRL301B) of active landfill Cell 1 and/or future Cells 2 and 3 monitor groundwater conditions near the waste boundary (40 CFR 257.91 (a)(2) and (c)(1)).

Groundwater Sampling and Laboratory Analytical Results

The data obtained during the CCR Rule compliance monitoring in 2016-2017 is presented in this section.

Groundwater Monitoring

As summarized on **Table 2**, a total of ten independent baseline monitoring events (Appendix III and IV constituents) were completed per 40 CFR 257.94 (b). Subsequently, the first detection monitoring event (Appendix III constituents only) was conducted in October 2017 (40 CFR 257.94). Low-flow groundwater sampling and analysis activities were conducted in accordance with the sampling and analysis program developed per 40 CFR 257.93.

Groundwater Flow

Groundwater levels were measured in each monitoring well prior to well purging/sampling as required by 40 CFR 257.93 (c). The water level gauging dates for each event are presented in **Table 2**, and tabulated water level data and calculated hydraulic heads are presented in **Table 3**. A map showing the generalized direction of the hydraulic gradient for the Lebanon formation, based on groundwater elevations measured in October 2017, is presented as **Figure 2**.

Based on available information, the hydraulic conductivity for the Lebanon Limestone fracture zone measured in the vicinity of the NRL Landfill ranges from 0.86 to 2.9 feet per day (ft/day), with a geometric mean of 1.6 ft/day. A range of average linear groundwater velocities was calculated using the geometric mean hydraulic conductivity, hydraulic gradients of 0.002 to 0.011 feet per foot (ft/ft), and an effective porosity of 5 percent. The calculated groundwater velocities beneath the NRL Landfill range from 0.078 to 0.36 ft/day.

Sampling Results

Groundwater samples were submitted to TestAmerica Laboratories for analysis. The field parameters measured and the laboratory analytical results are presented in **Tables 4 and 5**.

Statistical Evaluation

In January 2018, in accordance with the statistical method certification for the NRL Landfill, the calculation of background concentrations of Appendix III parameters for the Lebanon aquifer was completed using an intrawell Upper Prediction Limit (UPL) statistic. UPLs were calculated for each parameter in each of the downgradient wells, using data from samples collected from these wells prior to waste placement in the landfill. The background dataset was based on data collected from sampling conducted between April 2015 and May 2016, representing a minimum of eight pre-waste sampling events (**Table 6**). The calculated intrawell background concentrations for each parameter are provided on **Table 5**.

In January 2018, the calculated pre-waste background values (the UPL) were compared to the October 2017 detection monitoring sample results at each downgradient monitoring well as required by 40 CFR 257.93 (h). Although not required to be included in this annual report for 2017, the January 15, 2018 determination (based on the current dataset) of statistically significant increases (SSIs) over background for Appendix III parameters is provided on **Table 5**. SSIs over background were found in at least one downgradient monitoring well for at least one Appendix III parameter, as shown on **Table 5**.

Narrative Discussion of Transition between Monitoring Programs

Because the CCR unit is a new, lined landfill, SSIs are not likely to be associated with a release from the unit. Verification sampling will be performed to confirm SSIs and evaluate whether they may have resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality as specified in 40 CFR 257.94 (e)(2). In addition, evaluation of alternate sources will also be undertaken (257.94 (e)(2)). If SSIs over background are not confirmed, semi-annual detection monitoring will continue. If TVA is unable to demonstrate that SSIs were a result of error or another source (including natural variability), TVA will establish and initiate an Assessment Monitoring program as specified in 40 CFR 257.95.

Baseline data for both Appendix III and IV constituents were required to be collected prior to the establishment of upper prediction limits (UPLs) or Groundwater Protection Standards (GWPS). Under a CCR-Rule required assessment monitoring program, GWPS will be established in accordance with 40 CFR 257.95 (h), at which time maximum contaminant levels (MCLs) may or may not be considered the appropriate GWPS depending on background well concentrations for each Appendix IV constituent. The appropriate GWPS will establish the assessment groundwater monitoring program and any assessment of corrective measures.

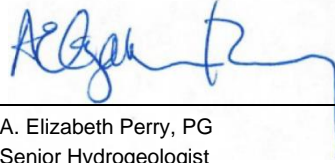
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Figures

Figure 1 North Rail Loop (NRL) Landfill Monitoring System Wells

Figure 2 Generalized Hydraulic Gradients – Lebanon Aquifer, October 2017

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Table 1 Well Construction Information – North Rail Loop Landfill

Table 2 Groundwater Sampling Summary – North Rail Loop Landfill, 2016-2017

Table 3 Groundwater Elevation Summary – North Rail Loop Landfill

Table 4 Baseline Sampling Groundwater Analytical Results – North Rail Loop Landfill

Table 5 Detection Monitoring Groundwater Analytical Results – North Rail Loop Landfill

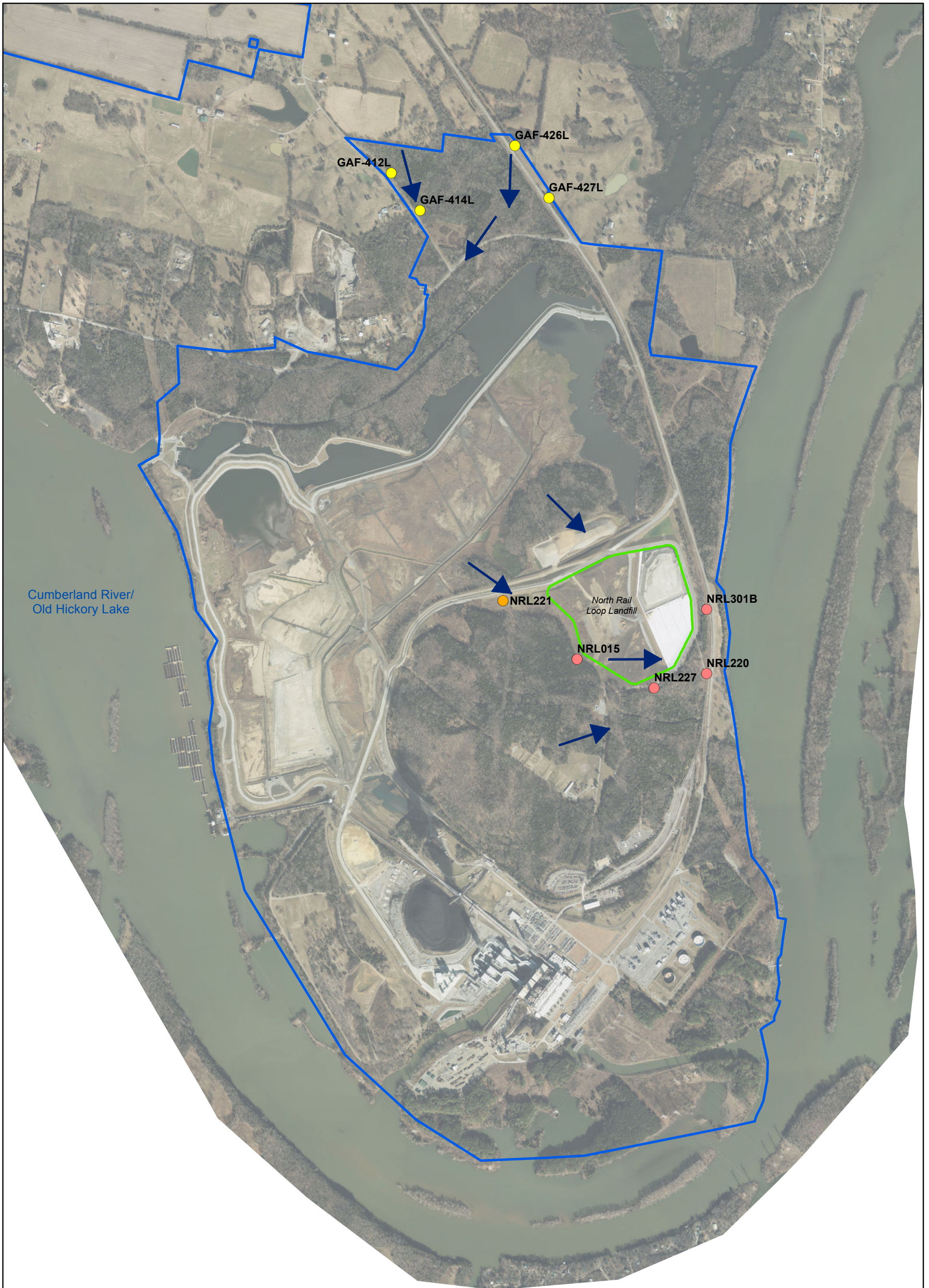
Table 6 Pre-Waste Groundwater Analytical Results – North Rail Loop Landfill, 2015-2016

Figures



LEGEND CCR Rule Monitoring System - Downgradient Well CCR Rule Monitoring System - Upgradient Well CCR Rule Monitoring System - Background Well TVA Gallatin Fossil Plant Property Boundary (Approximate)		North Rail Loop (NRL) Landfill	 		Figure 1
NORTH RAIL LOOP (NRL) LANDFILL MONITORING SYSTEM WELLS					
DRAWN BY: MARK.P.SMITH	REVIEWED BY: C.GARLINGTON	APPROVED BY:	REVISION NUMBER: REV. 0		
GALLATIN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY					
DATE: 1/4/2018	DEPT: FOSSIL AND HYDRO ENGINEERING				

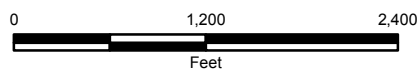
NOTE: Aerial image dated February 2017



LEGEND

- CCR Rule Monitoring System - Downgradient Well
- CCR Rule Monitoring System - Upgradient Well
- CCR Rule Monitoring System - Background Well
- ➔ Hydraulic Gradient

- TVA Gallatin Fossil Plant Property Boundary (Approximate)
- North Rail Loop (NRL) Landfill



NOTE: Aerial image dated February 2017

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Figure 2

**GENERALIZED HYDRAULIC GRADIENTS
LEBANON AQUIFER, OCTOBER 2017**

DRAWN BY: MARK.P.SMITH	REVIEWED BY: C.GARLINGTON	APPROVED BY:	REVISION NUMBER: REV. 0
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**GALLATIN FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY**

DATE: 1/5/2018	DEPT: FOSSIL AND HYDRO ENGINEERING
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Tables

Table 1
Well Construction Information - North Rail Loop Landfill
CCR Rule Groundwater Monitoring System
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Well ID	UNID #	Position Relative to CCR Unit	Top of Casing Elevation (ft)	Ground Elevation (ft)	Screened Interval (ft btoc)	Screened Formation	Total Well Depth (ft btoc)	Pump Intake Depth (ft btoc)	Well Diameter (in) / Material	Well Co-ordinates	
										TN State Plane NAD27 Northing (ft)	TN State Plane NAD27 Easting (ft)
GAF-412L	GAF-00-GW-43-019	Background	477.58	473.7	109.5 - 129.5	Lebanon Limestone	129.5	123	4-in PVC	710929.65	1880028.63
GAF-414L	GAF-00-GW-43-021	Background	481.45	478.6	93.2 - 103.2	Lebanon Limestone	103.2	98	4-in PVC	710438.90	1880406.55
GAF-426L	GAF-00-GW-43-030	Background	506.83	502.6	176.7 - 186.7	Lebanon Limestone	187.0	183	2-in PVC	711281.94	1881642.00
GAF-427L	GAF-00-GW-43-032	Background	488.41	484.2	144.4 - 159.4	Lebanon Limestone	159.9	152	4-in PVC	710606.97	1882087.73
NRL015	GAF-00-GW-43-042	Downgradient	546.65	543.7	179.3 - 189.3	Lebanon Limestone	189.6	183	2-in PVC	704590.08	1882451.92
NRL220	GAF-00-GW-43-044	Downgradient	502.54	500.0	164.1 - 184.1	Lebanon Limestone	184.5	175	2-in PVC	704404.76	1884141.74
NRL221	GAF-00-GW-43-045	Upgradient	478.90	476.0	114.4 - 134.4	Lebanon Limestone	134.6	124	2-in PVC	705358.12	1881484.59
NRL227	GAF-00-GW-43-046	Downgradient	560.33	557.2	184.7 - 194.7	Lebanon Limestone	195.2	188	2-in PVC	704219.32	1883458.71
NRL230 (a)	TBD	Downgradient	511.70	507.8	161.8 - 181.8	Lebanon Limestone	Approx. 182	TBD	4-in PVC	705842.44	1883858.33
NRL301B	GAF-00-GW-43-048	Downgradient	498.15	495.3	140.0 - 170.0	Lebanon Limestone	170.2	168	2-in PVC	705244.23	1884140.36

Notes:

Elevation information from DDS Survey; elevation in National Geodetic Vertical Datum 1929.

Well co-ordinates based on North America Datum of 1927

Well construction information based on data provided by TVA Well Inventory, January 29, 2018.

CCR - coal combustion residual

ft btoc - feet below top of casing

in - inches (inside diameter)

TBD - To be determined

(a) Well information may be updated based upon future updates to the TVA Well Inventory

Table 2
Groundwater Sampling Summary - North Rail Loop Landfill, 2016-2017
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Round Number	Sample Dates	Groundwater Gauging Date	Monitoring Program	Parameters Sampled	Number of Wells Sampled
1	November 15-18, 2016	November 14, 2016	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 3 (a)
2	December 13-19, 2016	December 12, 2016	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
3	January 10-17, 2017	January 9, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
4	February 14-22, 2017	February 13, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
5	March 20-23, 2017	March 13, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
6	April 24-27, 2017	April 18, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
7	May 22-26, 2017	May 15, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
8	June 14-21, 2017	June 12, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4
9	July 18-20, 2017	July 17, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 3 (a)
10	August 22-24, 2017	August 21, 2017	Baseline Monitoring (257.94(b))	Appendix III, Appendix IV, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 3 (a)
11	October 03-05, 2017	October 2, 2017	Detection Monitoring (257.94(a))	Appendix III, major ions and field parameters	Background: 4 Upgradient: 1 Downgradient: 4

Notes:

Appendix III Constituents: Boron, Calcium, Chloride, Fluoride, pH, Sulfate, Total Dissolved Solids (TDS)

Appendix IV Constituents: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Radium 226 + 228, Selenium, Thallium

(a) - Well NRL301B was dry or had insufficient water for sampling; not sampled

Table 3
Groundwater Elevation Summary - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Gauging Date	2016-11-14			2016-12-12			2017-01-09			2017-02-13		
Well ID	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)
GAF-412L	477.58	28.58	449	477.58	27.8	449.78	477.58	27.34	450.24	477.58	27.71	449.87
GAF-414L	481.45	34.88	446.57	481.45	34.39	447.06	481.45	33.89	447.56	481.45	34.28	447.17
GAF-426L	506.83	55.13	451.7	506.83	54.52	452.31	506.83	48.9	457.93	506.83	51.15	455.68
GAF-427L	488.41	42.7	445.71	488.41	41.81	446.6	488.41	37.5	450.91	488.41	39.34	449.07
NRL015	546.65	93.5	453.15	546.65	92.29	454.36	546.65	90.27	456.38	546.65	91.3	455.35
NRL220	502.54	56.01	446.53	502.54	55.99	446.55	502.54	54.71	447.83	502.54	55.44	447.1
NRL221	478.9	25.51	453.39	478.9	24.35	454.55	478.9	22.24	456.66	478.9	23.25	455.65
NRL227	560.33	112.41	447.92	560.33	112.09	448.24	560.33	111.2	449.13	560.33	111.81	448.52
NRL301B	498.15	159.25	338.9	498.15	156.32	341.83	498.15	157.9	340.25	498.15	157.76	340.39
Surface Water ID												
CUMBERLAND RIVER	NA	NA	444.47(a,b)	NA	NA	444.47(a)	NA	NA	444.90(a)	NA	NA	444.46(a)

Table 3
Groundwater Elevation Summary - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Gauging Date	2017-03-13			2017-04-18			2017-05-15			2017-06-12		
Well ID	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)
GAF-412L	477.58	27.06	450.52	477.58	27.44	450.14	477.58	26.76	450.82	477.58	27.33	450.25
GAF-414L	481.45	33.66	447.79	481.45	33.97	447.48	481.45	33.16	448.29	481.45	34	447.45
GAF-426L	506.83	48.65	458.18	506.83	50.96	455.87	506.83	47.54	459.29	506.83	48.5	458.33
GAF-427L	488.41	37.12	451.29	488.41	39.41	449	488.41	36.17	452.24	488.41	37.81	450.6
NRL015	546.65	90.74	455.91	546.65	91.22	455.43	546.65	89.33	457.32	546.65	90	456.65
NRL220	502.54	55.1	447.44	502.54	55.35	447.19	502.54	54.28	448.26	502.54	55.26	447.28
NRL221	478.9	22.7	456.2	478.9	23.18	455.72	478.9	21.26	457.64	478.9	22.51	456.39
NRL227	560.33	111.56	448.77	560.33	111.61	448.72	560.33	110.67	449.66	560.33	111.66	448.67
NRL301B	498.15	148.44	349.71	498.15	156.78	341.37	498.15	156.92	341.23	498.15	157.65	340.5
Surface Water ID												
CUMBERLAND RIVER	NA	NA	NA	NA	NA	444.95(a)	NA	NA	445.22(a)	NA	NA	444.34(a)

Table 3
Groundwater Elevation Summary - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Gauging Date	2017-07-17			2017-08-21			2017-10-02		
Well ID	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)	Reference Elevation (ft AMSL)	Water Level Measurement (ft)	Hydraulic Head (ft AMSL)
GAF-412L	477.58	27.83	449.75	477.58	28	449.58	477.58	27.97	449.61
GAF-414L	481.45	34.22	447.23	481.45	34.81	446.64	481.45	34.85	446.6
GAF-426L	506.83	51.85	454.98	506.83	53.88	452.95	506.83	47.5	459.33
GAF-427L	488.41	40.25	448.16	488.41	42.44	445.97	488.41	42.13	446.28
NRL015	546.65	90.62	456.03	546.65	91.68	454.97	546.65	91.5	455.15
NRL220	502.54	55.48	447.06	502.54	56.81	445.73	502.54	56.44	446.1
NRL221	478.9	22.66	456.24	478.9	23.73	455.17	478.9	23.57	455.33
NRL227	560.33	111.48	448.85	560.33	112.37	447.96	560.33	112.56	447.77
NRL301B	498.15	156.22	341.93	498.15	151.48	346.67	498.15	146.28	351.87
Surface Water ID									
CUMBERLAND RIVER	NA	NA	445.08(a)	NA	NA	444.56(a)	NA	NA	444.59(a)

Notes:
Well measurements taken from top of casing
AMSL - above mean sea level
ft - feet
NA - Data not available or no measurement taken due to site conditions (e.g., accessibility, well not installed, safety issues, gauge interference, etc.)
(a) Data collected via TVA Instrumentation Database
(b) Surface water elevations surveyed on 11/15/2016

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-412L	GAF-412L	GAF-412L	GAF-412L	GAF-412L	GAF-412L	GAF-412L
Sample Date			11/15/2016	12/13/2016	1/10/2017	2/22/2017	3/20/2017	4/26/2017	5/23/2017
Well Location Designation			Background	Background	Background	Background	Background	Background	Background
Sample ID			GAF-GW-412L-11152016	GAF-GW-412L-12132016	GAF-GW-412L-01102017	GAF-GW-412L-02222017	GAF-GW-412L-03202017	GAF-GW-412L-04262017	GAF-GW-412L-05232017
Sample Type			N	N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result	Result
Field Parameter									
Dissolved Oxygen	DO	MG/L	1.08	0.19	0.6	0.43	0.31	0.20	0.19
ORP	ORP	MV	-271.4	-322.4	-335	-324.2	-288.4	-320.0	-342.2
pH, Field	PHFLD	pH units	8.05	7.29	7.58	7.41	7.29	7.66	7.73
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1505	1380	990	1109	1109	913	794
Temperature	TEMP	deg C	15.81	14.69	13.79	15.78	19.3	16.3	15.7
Turbidity, field	TURB-FIELD	NTU	0.68	0.19	0.69	0.85	0.58	0.28	0.36
General Chemistry									
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	8.00
Alkalinity, Total as CaCO3	ALK	MG/L	430	388	432	354	444	464	426
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	430	388	432	354	444	464	418
Chloride	16887-00-6	MG/L	273	211 J	93.2	135	142	109	128
Fluoride	16984-48-8	MG/L	0.865	0.996	1.67	1.14 J	2.30	2.07	2.13
Sulfate	14808-79-8	MG/L	24.9	38.9	4.49	25.7 J	11.1	6.04	5.20
Total Dissolved Solids	TDS	MG/L	803	718	547	583	599 J		598
Metals, Total									
Antimony	7440-36-0	MG/L	0.000365 U*	0.000267 U*	0.000189 U*	0.000443 U	0.000443 UJ	0.000562 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.000208 U*	0.000147 U*	0.000118 U	0.000220 U	0.000220 U	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.491	0.433	0.241	0.330	0.246	0.217	0.227
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.282	0.340	0.382	0.316	0.425	0.413	0.415
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	72.0	61.7	33.5	46.4	25.1 J	30.7	24.2
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000218 U	0.0000218 U	0.0000218 U	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.164 J	0.151	0.162	0.158 J	0.187	0.169	0.189
Magnesium	7439-95-4	MG/L	40.2	35.2	19.9	27.0	17.6	17.7	16.1
Mercury	7439-97-6	MG/L	0.0000521 UJ	0.0000521 U	0.0000521 U	0.000200 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000873 U	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	7.12	6.92	7.42	10.5	7.25	6.51	6.65
Selenium	7782-49-2	MG/L	0.000443 J	0.000348 U	0.000348 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	164	146	160	146	164	158	176
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological									
Radium 226 + Radium 228	RA226/228	pCi/L	1.74	1.43	0.861 U	1.27 U*	1.38 U*	0.949 J	1.43 J
Radium 228	15262-20-1	pCi/L	0.939	0.754	0.355 U	0.724 U*	0.824 U*	0.235 U	1.01 J
Radium-226	13982-63-3	pCi/L	0.803	0.679	0.507 U	0.545 U	0.554 U	0.714	0.429 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-412L	GAF-412L	GAF-412L
Sample Date			6/20/2017	7/20/2017	8/23/2017
Well Location Designation			Background	Background	Background
Sample ID			GAF-GW-412L-06202017	GAF-GW-412L-07202017	GAF-GW-412L-08232017
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	0.35	0.51	0.46
ORP	ORP	MV	-327.9	-308.8	-245.0
pH, Field	PHFLD	pH units	7.39	7.32	7.36
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1072	1210	1527
Temperature	TEMP	deg C	18.5	17	16.1
Turbidity, field	TURB-FIELD	NTU	0.38	0.66	0.82
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	440	353	364
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	440	353	364
Chloride	16887-00-6	MG/L	153	216	330
Fluoride	16984-48-8	MG/L	2.13	0.941	0.833
Sulfate	14808-79-8	MG/L	12.4	18.6	40.3
Total Dissolved Solids	TDS	MG/L	625 J	667	864
Metals, Total					
Antimony	7440-36-0	MG/L	0.000654 U*	0.000443 U	0.000443 U
Arsenic	7440-38-2	MG/L	0.000251 U*	0.000359 U*	0.000263 U*
Barium	7440-39-3	MG/L	0.269	0.409	0.515
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.455	0.294	0.313
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	35.3	59.0	74.5
Chromium	7440-47-3	MG/L	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.186	0.159	0.162
Magnesium	7439-95-4	MG/L	21.6	35.5	43.0
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 UJ
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	8.79	9.57	7.19
Selenium	7782-49-2	MG/L	0.00127 U	0.00127 U	0.00127 UJ
Sodium	7440-23-5	MG/L	187	162	174
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000531 U
Radiological					
Radium 226 + Radium 228	RA226/228	pCi/L	1.28 U	2.07 J	1.43
Radium 228	15262-20-1	pCi/L	0.890 U	1.33	0.669
Radium-226	13982-63-3	pCi/L	0.392 U	0.731	0.766

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-414L	GAF-414L	GAF-414L	GAF-414L	GAF-414L	GAF-414L	GAF-414L
Sample Date			11/15/2016	12/14/2016	1/13/2017	2/22/2017	3/20/2017	4/26/2017	5/23/2017
Well Location Designation			Background	Background	Background	Background	Background	Background	Background
Sample ID			GAF-GW-414L-11152016	GAF-GW-414L-12142016	GAF-GW-414L-01132017	GAF-GW-414L-02222017	GAF-GW-414L-03202017	GAF-GW-414L-04262017	GAF-GW-414L-05232017
Sample Type			N	N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result	Result
Field Parameter									
Dissolved Oxygen	DO	MG/L	1.11	0.71	0.76	1.53	0.42	0.39	0.30
ORP	ORP	MV	-182.8	-105.2	-149.8	-114.4	-115.4	-94.6	-140.9
pH, Field	PHFLD	pH units	7.51	7.21	7.29	7.26	7.44	7.30	7.79
Specific Conductance, Field	CONDSPECFLD	umhos/cm	139	1377	1376	1346	1399	1226	1038
Temperature	TEMP	deg C	14.60	13.75	13.26	15.59	15.4	15.6	16.2
Turbidity, field	TURB-FIELD	NTU	0.16	0.28	0.1	0.28	0.52	0.59	2.42
General Chemistry									
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	374	313	374	339	354	391	350
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	374	313	374	339	354	391	350
Chloride	16887-00-6	MG/L	250	217	260	199	261	253	248
Fluoride	16984-48-8	MG/L	0.493	0.479	0.492	0.400 J	0.647	0.541	0.522
Sulfate	14808-79-8	MG/L	27.0	31.1	26.5	26.1 J	35.3	26.3	27.5
Total Dissolved Solids	TDS	MG/L	747	729	740	682	705 J	761	717
Metals, Total									
Antimony	7440-36-0	MG/L	0.000564 U*	0.000251 U*	0.000443 U	0.000443 U	0.000443 UJ	0.000644 U*	0.00154 U*
Arsenic	7440-38-2	MG/L	0.00123	0.00124	0.000975 J	0.000623 U*	0.000464 J	0.000427 J	0.000445 U*
Barium	7440-39-3	MG/L	0.463	0.461	0.518	0.450	0.482	0.414	0.425
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.178	0.211	0.208 J	0.200	0.208	0.196	0.182
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	93.5	92.6	105	96.9	90.7	97.3	86.6
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U	0.000378 UJ
Cobalt	7440-48-4	MG/L	0.0000218 U	0.0000290 U*	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0986 J	0.0979	0.107	0.103	0.102	0.0936	0.0974
Magnesium	7439-95-4	MG/L	40.1	40.9	44.6	41.0	40.4	37.9	38.4
Mercury	7439-97-6	MG/L	0.0000521 UJ	0.0000521 U	0.0000521 U	0.000200 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000593 U	0.000593 U	0.00121 J	0.000593 U	0.000627 J
Potassium	7440-09-7	MG/L	3.02	3.13	3.45	3.06	3.39	2.98	2.99
Selenium	7782-49-2	MG/L	0.000348 U	0.000422 U*	0.00127 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	115	114	121	117	115	108	111
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological									
Radium 226 + Radium 228	RA226/228	pCi/L	2.05	2.35	1.04 U	1.23 U*	2.08 J	1.18 J	1.82
Radium 228	15262-20-1	pCi/L	0.596	0.616	0.184 U	0.555 U*	0.979 U*	0.307 U	1.17
Radium-226	13982-63-3	pCi/L	1.45	1.73	0.861 U	0.671 U	1.10	0.876	0.651

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-414L	GAF-414L	GAF-414L
Sample Date			6/20/2017	7/18/2017	8/23/2017
Well Location Designation			Background	Background	Background
Sample ID			GAF-GW-414L-06202017	GAF-GW-414L-07182017	GAF-GW-414L-08232017
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	0.37	0.40	0.42
ORP	ORP	MV	-159.6	-115.3	-140.0
pH, Field	PHFLD	pH units	7.36	7.38	7.44
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1354	1247	1367
Temperature	TEMP	deg C	15.8	16.6	17.0
Turbidity, field	TURB-FIELD	NTU	0.32	0.42	2.75
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	360	374	362
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	360	374	362
Chloride	16887-00-6	MG/L	253	281	284
Fluoride	16984-48-8	MG/L	0.591	0.712	0.582
Sulfate	14808-79-8	MG/L	28.5	31.5	30.6
Total Dissolved Solids	TDS	MG/L	687	791	787
Metals, Total					
Antimony	7440-36-0	MG/L	0.000663 U*	0.00314 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.000510 U*	0.000864 U*	0.000966 U*
Barium	7440-39-3	MG/L	0.419	0.444	0.450
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.196	0.210	0.204
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	96.4	92.5	94.1
Chromium	7440-47-3	MG/L	0.000378 U	0.000378 U	0.00774
Cobalt	7440-48-4	MG/L	0.0000947 U	0.0000947 U	0.000115 U*
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000913 U*
Lithium	7439-93-2	MG/L	0.0936	0.0911	0.0972
Magnesium	7439-95-4	MG/L	41.0	40.4	40.6
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 UJ
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000609 J
Potassium	7440-09-7	MG/L	2.92	3.03	3.07
Selenium	7782-49-2	MG/L	0.00127 U	0.00127 U	0.00127 UJ
Sodium	7440-23-5	MG/L	120	121	126
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000531 U
Radiological					
Radium 226 + Radium 228	RA226/228	pCi/L	1.05 U	2.08 U*	1.62
Radium 228	15262-20-1	pCi/L	0.621 U	1.20 U*	0.543
Radium-226	13982-63-3	pCi/L	0.427 U	0.876	1.08

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-426L	GAF-426L	GAF-426L	GAF-426L	GAF-426L	GAF-426L	GAF-426L
Sample Date			11/16/2016	12/16/2016	1/12/2017	2/21/2017	3/21/2017	4/26/2017	5/24/2017
Well Location Designation			Background	Background	Background	Background	Background	Background	Background
Sample ID			GAF-GW-426L-11162016	GAF-GW-426L-12162016	GAF-GW-426L-01122017	GAF-GW-426L-02212017	GAF-GW-426L-03212017	GAF-GW-426L-04262017	GAF-GW-426L-05242017
Sample Type			N	N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result	Result
Field Parameter									
Dissolved Oxygen	DO	MG/L	1.62	1.05	2.55	0.33	0.43	0.60	0.71
ORP	ORP	MV	-106.5	29.9	27.2	40.8	4	-80.8	-27.1
pH, Field	PHFLD	pH units	7.28	6.9	6.63	6.81	6.83	6.92	6.89
Specific Conductance, Field	CONDSPECFLD	umhos/cm	742	804	820	882	925	782	717
Temperature	TEMP	deg C	14.27	12.02	14.59	15.69	16.3	16.9	15.5
Turbidity, field	TURB-FIELD	NTU	1.5	0.85	0.21	2.95	0.45	4.7	3.5
General Chemistry									
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	470	459	501	259	474	526	454
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	470	459	501	259	474	526	454
Chloride	16887-00-6	MG/L	5.89	18.6	7.20	12.2	18.6	14.4	26.5
Fluoride	16984-48-8	MG/L	0.338	0.382	0.242	0.203	0.372	0.350	0.339
Sulfate	14808-79-8	MG/L	45.4	61.1	71.5	275	103	65.5	88.0
Total Dissolved Solids	TDS	MG/L	410	477	504	513	555	499	581
Metals, Total									
Antimony	7440-36-0	MG/L	0.000458 U*	0.000957 U*	0.000443 U	0.000443 U	0.000443 U	0.00107 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.000518 U*	0.000332 J	0.000220 U	0.000320 J	0.000287 U*	0.000975 J	0.00137
Barium	7440-39-3	MG/L	0.164	0.156 J	0.0308	0.0393	0.0508	0.0409	0.0579
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.0349	0.0504	0.0326 J	0.0502 J	0.0507 J	0.0592 U*	0.0540 J
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	111	98.9	154	124	135	125	139
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.000661	0.000433 J	0.0000947 U	0.000168 U*	0.000165 U*	0.00142	0.00148
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.00805 U*	0.00948	0.00660 U*	0.0123 U*	0.00886 U*	0.00953 U*	0.0132
Magnesium	7439-95-4	MG/L	31.8	30.0	24.4	20.6	22.8	26.4	27.7
Mercury	7439-97-6	MG/L	0.0000691 U*	0.0000521 U	0.0000521 U	0.0000521 UJ	0.0000653 U	0.00281	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.00203 J	0.00441 J	0.000593 U	0.00117 J	0.00258 U*	0.00406 J	0.00624
Potassium	7440-09-7	MG/L	3.57	6.30	1.30	3.40	5.61	6.46	12.4
Selenium	7782-49-2	MG/L	0.000353 U*	0.000348 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	11.4	20.5	5.02	14.8	22.0	20.0	39.5
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological									
Radium 226 + Radium 228	RA226/228	pCi/L	0.410 U	0.486 UJ	0.334 U	0.745 U	0.646 UJ	0.518 U	0.204 UR
Radium 228	15262-20-1	pCi/L	0.306 U	0.203 UJ	0.290 U	0.128 U	0.574 UJ	0.240 U	0.172 UR
Radium-226	13982-63-3	pCi/L	0.105 U	0.284 U	0.0433 U	0.617 U	0.0722 U	0.278 U	0.0329 UJ

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-426L	GAF-426L	GAF-426L
Sample Date			6/21/2017	7/20/2017	8/24/2017
Well Location Designation			Background	Background	Background
Sample ID			GAF-GW-426L-06212017	GAF-GW-426L-07202017	GAF-GW-426L-08242017
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	0.67	0.42	0.42
ORP	ORP	MV	-72.6	-49.7	-67.1
pH, Field	PHFLD	pH units	6.91	6.82	6.82
Specific Conductance, Field	CONDSPECFLD	umhos/cm	994	960	1009
Temperature	TEMP	deg C	19.6	18.3	16.5
Turbidity, field	TURB-FIELD	NTU	2.84	0.92	0.52
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	436	502	456
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	436	502	456
Chloride	16887-00-6	MG/L	30.1	23.2	26.2
Fluoride	16984-48-8	MG/L	0.359	0.309	0.338
Sulfate	14808-79-8	MG/L	115	84.9	78.9
Total Dissolved Solids	TDS	MG/L	558	537	523
Metals, Total					
Antimony	7440-36-0	MG/L	0.000644 U*	0.000537 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.00113	0.00125 U*	0.00122 U*
Barium	7440-39-3	MG/L	0.0631	0.0716	0.0717
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.0524 J	0.0463 J	0.0479 U*
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	129	137	121 J
Chromium	7440-47-3	MG/L	0.000378 U	0.000378 U	0.000484 U*
Cobalt	7440-48-4	MG/L	0.00172	0.00212	0.00171
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0122 U*	0.0123 U*	0.0111 U*
Magnesium	7439-95-4	MG/L	26.4	28.0	25.3
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.00618	0.00749	0.00516
Potassium	7440-09-7	MG/L	13.4	15.2	11.3
Selenium	7782-49-2	MG/L	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	43.4	50.0	37.1
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000590 J
Radiological					
Radium 226 + Radium 228	RA226/228	pCi/L	0.0795 U	0.827 U*	0.609 U
Radium 228	15262-20-1	pCi/L	0.00275 U	0.547 U*	0.537 U
Radium-226	13982-63-3	pCi/L	0.0768 U	0.280 U	0.0723 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-427L	GAF-427L	GAF-427L	GAF-427L	GAF-427L	GAF-427L	GAF-427L
Sample Date			11/15/2016	12/15/2016	1/13/2017	2/20/2017	3/22/2017	4/25/2017	5/23/2017
Well Location Designation			Background	Background	Background	Background	Background	Background	Background
Sample ID			GAF-GW-427L-11152016	GAF-GW-427L-12152016	GAF-GW-427L-01132017	GAF-GW-427L-02202017	GAF-GW-427L-03222017	GAF-GW-427L-04252017	GAF-GW-427L-05232017
Sample Type			N	N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result	Result
Field Parameter									
Dissolved Oxygen	DO	MG/L	2.59	0.42	0.6	0.94	0.46	0.43	0.40
ORP	ORP	MV	-91.8	11.3	72	-76.9	62.9	4.2	11.4
pH, Field	PHFLD	pH units	7.12	7.12	7.03	7.11	7.1	7.15	7.03
Specific Conductance, Field	CONDSPECFLD	umhos/cm	659	664	678	669	553.3	617	595
Temperature	TEMP	deg C	15.51	12.44	14.09	16.18	14.4	15.9	16.7
Turbidity, field	TURB-FIELD	NTU	0.49	0.11	0.18	0.89	0.73	0.66	0.24
General Chemistry									
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	404	380	374	388	406	395	380
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	404	380	374	388	406	395	380
Chloride	16887-00-6	MG/L	12.2	16.2	14.8	15.5	14.1	13.8	14.8
Fluoride	16984-48-8	MG/L	0.285	0.328	0.290	0.238	0.325	0.335	0.312
Sulfate	14808-79-8	MG/L	41.4	46.6	42.6	46.8	45.2	40.8	44.5
Total Dissolved Solids	TDS	MG/L	377	394	374	354	373	386	403
Metals, Total									
Antimony	7440-36-0	MG/L	0.000272 U*	0.000273 U*	0.000929 J	0.000730 U*	0.000443 U	0.000443 U	0.000443 UJ
Arsenic	7440-38-2	MG/L	0.000256 U*	0.000235 U*	0.000220 U	0.000220 U	0.000291 J	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.0779	0.0777	0.0868	0.0746	0.0763	0.0738	0.0827
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.0627	0.0761	0.0733 J	0.0708 J	0.0616 J	0.0711 J	0.0782 J
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	91.4	84.5	94.8	84.0	84.9	84.8	83.8 J
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.000301 J	0.000335 U*	0.000532	0.000659 U*	0.000473 J	0.000374 J	0.000490 J
Lead	7439-92-1	MG/L	0.0000900 J	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.00875 J	0.00770	0.0100 U*	0.0128 U*	0.00955 U*	0.00894 U*	0.0100
Magnesium	7439-95-4	MG/L	27.2	25.5	28.8	24.6	24.6	26.9	25.6
Mercury	7439-97-6	MG/L	0.0000537 U*	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000966 U*	0.00130 U*	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	1.55	1.45	1.71	1.46	1.48	1.49	1.53
Selenium	7782-49-2	MG/L	0.000348 U	0.000517 U*	0.00127 U	0.00127 U	0.00127 U	0.00127 UJ	0.00127 U
Sodium	7440-23-5	MG/L	11.9	11.4	11.7	11.3	11.2	10.8	11.2 J
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000610 U*	0.0000531 U	0.0000531 U	0.0000531 U
Radiological									
Radium 226 + Radium 228	RA226/228	pCi/L	0.577 U	0.144 UJ	0.434 U	0.132 UJ	0.560 J	0.260 U	1.56 J
Radium 228	15262-20-1	pCi/L	0.362 U	0.144 U	0.295 U	-0.0633 UJ	-0.0398 U	0.254 U	1.56
Radium-226	13982-63-3	pCi/L	0.216 U	-0.1680 UJ	0.139 U	0.132 U	0.560	0.00553 U	-0.1660 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-427L	GAF-427L	GAF-427L
Sample Date			6/21/2017	7/19/2017	8/23/2017
Well Location Designation			Background	Background	Background
Sample ID			GAF-GW-427L-06212017	GAF-GW-427L-07192017	GAF-GW-427L-08232017
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	0.40	0.39	0.40
ORP	ORP	MV	5.4	7.3	-170.4
pH, Field	PHFLD	pH units	7.10	7.07	6.91
Specific Conductance, Field	CONDSPECFLD	umhos/cm	664	612	568
Temperature	TEMP	deg C	16.9	17.3	17.1
Turbidity, field	TURB-FIELD	NTU	0.53	0.33	0.33
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	368	419	380
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	368	419	380
Chloride	16887-00-6	MG/L	15.4	15.3	15.5
Fluoride	16984-48-8	MG/L	0.368	0.357	0.306
Sulfate	14808-79-8	MG/L	45.4	45.4	45.3
Total Dissolved Solids	TDS	MG/L	385	367	380
Metals, Total					
Antimony	7440-36-0	MG/L	0.00100 U*	0.000468 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.000300 J	0.000340 U*	0.000348 U*
Barium	7440-39-3	MG/L	0.0733	0.0833	0.0766
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.0849	0.0754 J	0.103
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	82.0	95.5	90.7
Chromium	7440-47-3	MG/L	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.000506	0.000482 J	0.000549
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0116 U*	0.00895	0.00867
Magnesium	7439-95-4	MG/L	25.1	29.0	26.9
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 UJ
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	1.45	1.69	1.55
Selenium	7782-49-2	MG/L	0.00127 U	0.00127 U	0.00127 UJ
Sodium	7440-23-5	MG/L	11.3	13.3	12.2
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000531 U
Radiological					
Radium 226 + Radium 228	RA226/228	pCi/L	0.511 U	0.573 U	0.0520 U
Radium 228	15262-20-1	pCi/L	0.351 U	0.427 U	-0.8040 U
Radium-226	13982-63-3	pCi/L	0.161 U	0.146 U	0.0520 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL015	NRL015	NRL015	NRL015	NRL015	NRL015
Sample Date			11/17/2016	12/14/2016	1/13/2017	2/20/2017	3/20/2017	4/24/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL015-11172016	GAF-GW-NRL015-12142016	GAF-GW-NRL015-01132017	GAF-GW-NRL015-02202017	GAF-GW-NRL015-03202017	GAF-GW-NRL015-04242017
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	7.56	0.93	0.57	0.41	0.46	0.44
ORP	ORP	MV	-238.3	-193.4	-223.4	-175.4	-211.3	-273.7
pH, Field	PHFLD	pH units	7.16	7.32	7	7.04	7.04	7.04
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1083	1069	1121	1094	1118	1355
Temperature	TEMP	deg C	15.12	13.56	13.98	15.11	15.2	15.1
Turbidity, field	TURB-FIELD	NTU	1.27	0.35	0.29	1.1	0.55	0.52
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	526	505	560	487	500	485
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	526	505	560	487	500	485
Chloride	16887-00-6	MG/L	3.76	2.97	5.45	4.96	5.42	4.78
Fluoride	16984-48-8	MG/L	0.811	0.810	0.805	0.731	0.962	0.938
Sulfate	14808-79-8	MG/L	216 U*	224	197	236	222	217
Total Dissolved Solids	TDS	MG/L	685	718	722	674	712 J	688
Metals, Total								
Antimony	7440-36-0	MG/L	0.000206 U*	0.000223 U*	0.000443 U	0.000443 U	0.000443 UJ	0.000443 U
Arsenic	7440-38-2	MG/L	0.000153 U*	0.000233 U*	0.000220 U	0.000220 U	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.0681	0.0646	0.0743	0.0649	0.0698	0.0674
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.242	0.288	0.290 J	0.270	0.297	0.290
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	127	116	134	116	110	115
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000218 U	0.0000218 U	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0581	0.0566	0.0618 U*	0.0560	0.0572	0.0598
Magnesium	7439-95-4	MG/L	62.1	59.4	66.9	57.9	62.7	65.2
Mercury	7439-97-6	MG/L	0.0000521 U	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	8.48	8.48	9.54	8.10	9.57	8.80
Selenium	7782-49-2	MG/L	0.000400 U*	0.000348 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	34.7	33.4	37.2	35.1	34.9	36.8
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	1.12 J	0.485 UJ	0.932 J	0.891 UJ	1.81 U*	2.46 J
Radium 228	15262-20-1	pCi/L	0.567 U*	0.109 U	0.611	0.145 UJ	1.23 U*	1.96 J
Radium-226	13982-63-3	pCi/L	0.549	0.376 UJ	0.321 U	0.746 U	0.587 U	0.495 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL015	NRL015	NRL015	NRL015
Sample Date			5/22/2017	6/19/2017	7/18/2017	8/22/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL015-05222017	GAF-GW-NRL015-06192017	GAF-GW-NRL015-07182017	GAF-GW-NRL015-08222017
Sample Type			N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result
Field Parameter						
Dissolved Oxygen	DO	MG/L	1.94	0.43	3.32	0.90
ORP	ORP	MV	-197.0	-193.6	-175.0	-168.3
pH, Field	PHFLD	pH units	6.93	6.90	6.75	6.81
Specific Conductance, Field	CONDSPECFLD	umhos/cm	970	893	1037	827
Temperature	TEMP	deg C	16.2	16.0	17.4	16.3
Turbidity, field	TURB-FIELD	NTU	0.69	0.58	0.64	0.27
General Chemistry						
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	520	538	496	525
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	520	538	496	525
Chloride	16887-00-6	MG/L	5.02	5.38	5.39	5.60
Fluoride	16984-48-8	MG/L	0.803	0.917	0.998	0.911
Sulfate	14808-79-8	MG/L	219	241	223	223
Total Dissolved Solids	TDS	MG/L	704	729	710	675
Metals, Total						
Antimony	7440-36-0	MG/L	0.00152 U*	0.000782 U*	0.00126 U*	0.000939 U*
Arsenic	7440-38-2	MG/L	0.000220 U	0.00280 U*	0.000254 U*	0.000430 U*
Barium	7440-39-3	MG/L	0.0684	0.0694	0.0690	0.0811
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.272	0.252	0.283	0.292
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	108	105	119	123
Chromium	7440-47-3	MG/L	0.000378 U	0.00261 U*	0.000378 U	0.000423 U*
Cobalt	7440-48-4	MG/L	0.0000947 U	0.000268 J	0.0000947 U	0.000270 J
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0576 J	0.0516	0.0510	0.0550
Magnesium	7439-95-4	MG/L	61.7 J	62.0	62.7	66.5
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000593 U	0.00173 J	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	8.98	8.91	9.52	9.20
Selenium	7782-49-2	MG/L	0.00127 UJ	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	36.9 J	36.8	41.0	39.9
Thallium	7440-28-0	MG/L	0.0000531 U	0.000129 J	0.0000531 U	0.0000531 U
Radiological						
Radium 226 + Radium 228	RA226/228	pCi/L	1.52 U*	1.90 J	1.91 U*	0.920 J
Radium 228	15262-20-1	pCi/L	1.05 U*	1.79	1.22 U*	0.513 J
Radium-226	13982-63-3	pCi/L	0.472 U	0.109 U	0.698	0.407 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220	NRL220	NRL220	NRL220	NRL220
Sample Date			11/16/2016	12/13/2016	1/12/2017	2/20/2017	3/20/2017	4/24/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL220-11162016	GAF-GW-NRL220-12132016	GAF-GW-NRL220-01122017	GAF-GW-NRL220-02202017	GAF-GW-NRL220-03202017	GAF-GW-NRL220-04242017
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	1.20	0.7	0.61	0.29	0.81	0.23
ORP	ORP	MV	-375.3	-215.8	-293.1	-239.7	-241.3	-339.5
pH, Field	PHFLD	pH units	8.76	8.8	8.24	7.91	8.19	8.27
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1197	1191	1229	1199	1257	1562
Temperature	TEMP	deg C	16.49	14.35	15.6	16.89	16.9	15.9
Turbidity, field	TURB-FIELD	NTU	3.94	2.95	3.97	3.99	3.13	4.74
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	556	493	441	448	476	493
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	556	493	441	448	476	493
Chloride	16887-00-6	MG/L	64.4	63.5 J	68.3	87.9	84.3	75.7
Fluoride	16984-48-8	MG/L	1.33	1.25	1.34	1.48	1.74	1.57
Sulfate	14808-79-8	MG/L	101	116	99.7	115	137	138
Total Dissolved Solids	TDS	MG/L	694	734	722	691	749 J	723
Metals, Total								
Antimony	7440-36-0	MG/L	0.000200 U*	0.000324 U*	0.000443 U	0.000449 U*	0.000443 UJ	0.000443 U
Arsenic	7440-38-2	MG/L	0.000249 U*	0.000189 U*	0.000220 U	0.000220 U	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.00509 J	0.00644 J	0.00484 J	0.00497 J	0.00495 J	0.00498 J
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.488	0.638	0.529 J	0.581	0.597	0.619
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	4.36	4.06	4.46	4.72	3.41 J	3.68
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000290 U*	0.0000980 U*	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000850 J	0.000123 U*	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.189	0.189	0.208	0.180	0.189	0.203
Magnesium	7439-95-4	MG/L	2.48	2.34	2.43	2.04	2.20	2.47
Mercury	7439-97-6	MG/L	0.0000691 U*	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	8.61	8.64	9.26	8.19	9.18	9.08
Selenium	7782-49-2	MG/L	0.000348 U	0.000348 U	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	267	258	272	255	249 J	273
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	0.0372 U	0.220 U	0.198 U	0.538 UJ	0.423 U	1.05 U*
Radium 228	15262-20-1	pCi/L	-0.0798 U	0.179 U	0.123 U	0.445 UJ	0.335 U	0.891 U*
Radium-226	13982-63-3	pCi/L	0.0372 U	0.0415 U	0.0752 U	0.0925 U	0.0877 U	0.161 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220	NRL220	NRL220
Sample Date			5/24/2017	6/21/2017	7/20/2017	8/24/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-220-05242017	GAF-GW-NRL220-06212017	GAF-GW-NRL220-07202017	GAF-GW-NRL220-08242017
Sample Type			N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result
Field Parameter						
Dissolved Oxygen	DO	MG/L	0.43	0.31	0.15	0.41
ORP	ORP	MV	-305.9	-266.0	-288.6	-314.2
pH, Field	PHFLD	pH units	8.47	8.43	7.99	7.26
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1099	1266	1285	1111
Temperature	TEMP	deg C	16.3	18.0	18.1	18.0
Turbidity, field	TURB-FIELD	NTU	10.1	3.82	3.53	1.10
General Chemistry						
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	40.0	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	448	498	545	559
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	408	498	545	559
Chloride	16887-00-6	MG/L	78.0	84.0	75.4	78.5
Fluoride	16984-48-8	MG/L	1.48	1.67	1.22	1.41
Sulfate	14808-79-8	MG/L	132	147	105	109
Total Dissolved Solids	TDS	MG/L	793	754	734	753
Metals, Total						
Antimony	7440-36-0	MG/L	0.000443 U	0.00282 U*	0.000443 U	0.000443 U
Arsenic	7440-38-2	MG/L	0.000266 J	0.000336 J	0.000294 U*	0.000372 U*
Barium	7440-39-3	MG/L	0.00688 J	0.00547 J	0.00675 J	0.00494 J
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	0.623	0.619	0.571	0.581
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	4.47	4.44	4.67	4.33 J
Chromium	7440-47-3	MG/L	0.000623 J	0.000378 U	0.000378 U	0.000459 U*
Cobalt	7440-48-4	MG/L	0.0000980 J	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U	0.000447 U*
Lithium	7439-93-2	MG/L	0.203	0.203	0.195	0.169
Magnesium	7439-95-4	MG/L	2.68	2.50	2.64	2.40
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	10.0	9.31	9.19	8.60
Selenium	7782-49-2	MG/L	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	315	290	290	275
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological						
Radium 226 + Radium 228	RA226/228	pCi/L	0.832 J	1.01 U	1.10 U*	0.916 U*
Radium 228	15262-20-1	pCi/L	0.832 J	0.737 U	0.864 U*	0.840 U*
Radium-226	13982-63-3	pCi/L	-0.0969 UJ	0.275 U	0.241 U	0.0756 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL221	NRL221	NRL221	NRL221	NRL221	NRL221
Sample Date			11/17/2016	12/15/2016	1/10/2017	2/20/2017	3/20/2017	4/24/2017
Well Location Designation			Upgradient	Upgradient	Upgradient	Upgradient	Upgradient	Upgradient
Sample ID			GAF-GW-NRL221-11172016	GAF-GW-NRL221-12152016	GAF-GW-NRL221-01102017	GAF-GW-NRL221-02202017	GAF-GW-NRL221-03202017	GAF-GW-NRL221-04242017
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.94	0.62	8	0.35	0.53	0.21
ORP	ORP	MV	-203.5	-87.9	-142.2	-53.6	-147.2	-101.5
pH, Field	PHFLD	pH units	6.84	7	6.85	6.81	6.93	6.86
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1187	1185	1146	1186	1209	1483
Temperature	TEMP	deg C	16.60	14.36	13.78	15.03	15	15.4
Turbidity, field	TURB-FIELD	NTU	2.08	1.3	0.24	0.56	0.51	4.42
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	500	542	495	471	442	480
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	500	542	495	471	442	480
Chloride	16887-00-6	MG/L	3.56	4.35	5.48	4.28	3.48	5.01
Fluoride	16984-48-8	MG/L	0.577	0.666	0.620	0.481	0.596	0.364
Sulfate	14808-79-8	MG/L	293 U*	308	300	339	355	192
Total Dissolved Solids	TDS	MG/L	820	873	862	815	832 J	810
Metals, Total								
Antimony	7440-36-0	MG/L	0.000147 U*	0.000349 U*	0.000278 U*	0.000443 U	0.000443 UJ	0.000647 U*
Arsenic	7440-38-2	MG/L	0.000128 U*	0.000250 U*	0.000178 U*	0.000220 U	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.0504	0.0507	0.0525	0.0464	0.0501	0.0542
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	1.54	1.98	1.77	1.63	1.89	1.83
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	179	163	179	155	157	174
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000384 J
Cobalt	7440-48-4	MG/L	0.0000218 U	0.0000920 U*	0.0000420 U*	0.000249 U*	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0306	0.0289	0.0359	0.0315 J	0.0300	0.0336
Magnesium	7439-95-4	MG/L	62.2	57.0	64.1	53.5	58.9	65.4
Mercury	7439-97-6	MG/L	0.0000521 U	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000873 U	0.00108 U*	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	6.18	5.89	6.61	5.60	6.86	6.58
Selenium	7782-49-2	MG/L	0.000348 U	0.000383 U*	0.000958 U*	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	16.5	15.4	16.8	15.0	15.7 J	17.4
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000360 U	0.0000760 U*	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	1.09 J	0.00000 UJ	0.635 U	1.57 J	0.828 U	0.991 J
Radium 228	15262-20-1	pCi/L	0.373 U	-0.0135 U	0.255 U	0.956 J	0.647 U	0.627 U*
Radium-226	13982-63-3	pCi/L	0.715	0.00000 UJ	0.380 U	0.615	0.181 U	0.364

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL221	NRL221	NRL221	NRL221	NRL221	NRL221
Sample Date			5/22/2017	5/22/2017	6/19/2017	6/19/2017	7/18/2017	8/22/2017
Well Location Designation			Upgradient	Upgradient	Upgradient	Upgradient	Upgradient	Upgradient
Sample ID			GAF-GW-NRL221-05222017	GAF-GW-903B-05222017	GAF-GW-NRL221-06192017	GAF-GW-903B-06192017	GAF-GW-NRL221-07182017	GAF-GW-NRL221-08222017
Sample Type			N	FD	N	FD	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.28	NA	0.35	NA	0.31	0.13
ORP	ORP	MV	-145.6	NA	-85.8	NA	-133.1	-207.6
pH, Field	PHFLD	pH units	6.89	NA	6.84	NA	6.88	6.77
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1036	NA	965	NA	1093	885
Temperature	TEMP	deg C	15.9	NA	16.3	NA	16.6	16.7
Turbidity, field	TURB-FIELD	NTU	1.57	NA	2.05	NA	2.81	0.92
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	524	524	528	514	494	492
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	524	524	528	514	494	492
Chloride	16887-00-6	MG/L	3.63	3.59	4.89	4.93	5.15	5.34
Fluoride	16984-48-8	MG/L	0.557	0.565	0.649	0.665	0.715	0.651
Sulfate	14808-79-8	MG/L	256	256	296	284	298	285
Total Dissolved Solids	TDS	MG/L	822	820	803	797	820	795
Metals, Total								
Antimony	7440-36-0	MG/L	0.000485 U*	0.000443 U	0.000443 U	0.000554 U*	0.000926 U*	0.000443 U
Arsenic	7440-38-2	MG/L	0.000220 U	0.000220 U	0.00315 U*	0.000449 U*	0.000356 U*	0.000220 U
Barium	7440-39-3	MG/L	0.0506	0.0497	0.0489	0.0469	0.0502	0.0491
Beryllium	7440-41-7	MG/L	0.000131 U	0.000131 U	0.000398 J	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	1.65	1.62	1.70	1.71	1.65	1.76
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	153	151	173	154	175	163
Chromium	7440-47-3	MG/L	0.000378 U	0.000378 U	0.00261 U*	0.000378 U	0.000411 J	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000947 U	0.0000947 U	0.000158 J	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0310	0.0308	0.0288	0.0286	0.0277	0.0304
Magnesium	7439-95-4	MG/L	57.1 J	57.4 J	56.4	55.8	63.3	57.6
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000877 J	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	6.15	6.03 J	6.17	6.19	6.57	6.26
Selenium	7782-49-2	MG/L	0.00127 UJ	0.00127 UJ	0.00127 U	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	16.1 J	16.0 J	16.9	17.6	17.6	16.2
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.000196 J	0.0000531 U	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	1.53 U*	1.50 U*	0.405 U	1.07 J	1.11 U*	0.369 U
Radium 228	15262-20-1	pCi/L	1.20 U*	1.23 U*	0.292 U	0.925	0.582 U*	0.0523 U
Radium-226	13982-63-3	pCi/L	0.328 U	0.264 U	0.113 U	0.149 U	0.524	0.317 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL227	NRL227	NRL227	NRL227	NRL227	NRL227
Sample Date			11/16/2016	12/14/2016	1/11/2017	2/20/2017	3/20/2017	4/25/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL227-11162016	GAF-GW-NRL227-12142016	GAF-GW-NRL227-01112017	GAF-GW-NRL227-02202017	GAF-GW-NRL227-03202017	GAF-GW-NRL227-04252017
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	1.17	1.47	0.53	0.61	0.75	0.50
ORP	ORP	MV	-218.6	-108.6	-156.9	-115.6	-176.8	-215.0
pH, Field	PHFLD	pH units	7.14	7.27	7	7.01	7.08	7.04
Specific Conductance, Field	CONDSPECFLD	umhos/cm	975	981	1013	1006	1036	1056
Temperature	TEMP	deg C	16.31	12.55	15.03	14.96	15	15.0
Turbidity, field	TURB-FIELD	NTU	1.17	0.38	0.31	0.4	0.48	0.74
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	478	471	536	505	502	526
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	478	471	536	505	502	526
Chloride	16887-00-6	MG/L	5.31	4.91	7.73	7.98	8.60	8.29
Fluoride	16984-48-8	MG/L	0.806	0.776	0.758 U*	0.704	0.948	0.891
Sulfate	14808-79-8	MG/L	144	173	156 J	168	164	163
Total Dissolved Solids	TDS	MG/L	583	632	634	589	620 J	609
Metals, Total								
Antimony	7440-36-0	MG/L	0.000398 U*	0.000392 U*	0.000462 U*	0.000443 U	0.000443 UJ	0.000443 U
Arsenic	7440-38-2	MG/L	0.000183 U*	0.000155 U*	0.000220 U	0.000220 U	0.000220 U	0.000220 U
Barium	7440-39-3	MG/L	0.0704	0.0666	0.0702	0.0667	0.0708	0.0666
Beryllium	7440-41-7	MG/L	0.000102 U	0.000102 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	1.17	1.46	1.35	1.14	1.20	1.07
Cadmium	7440-43-9	MG/L	0.000152 U	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	115	101	100	99.1	91.9	93.0
Chromium	7440-47-3	MG/L	0.000339 U	0.000339 U	0.000378 U	0.000378 U	0.000378 U	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000220 U*	0.0000230 U*	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.0000675 U	0.0000675 U	0.000318 U	0.000318 U	0.000318 U	0.000320 U*
Lithium	7439-93-2	MG/L	0.0616	0.0599	0.0761	0.0650	0.0633	0.0654
Magnesium	7439-95-4	MG/L	56.4	52.5	52.1	49.4	52.4	58.6
Mercury	7439-97-6	MG/L	0.0000679 U*	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.000873 U	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	10.5	10.3	9.70	9.46	11.0	9.73
Selenium	7782-49-2	MG/L	0.000348 U	0.000348 U	0.00127 U	0.00127 U	0.00127 U	0.00127 UJ
Sodium	7440-23-5	MG/L	47.4	44.1	42.2	42.6	43.3	44.8
Thallium	7440-28-0	MG/L	0.0000360 U	0.0000360 U	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	0.666 J	1.15 J	0.940 U	0.774 UJ	1.06 U	0.681 J
Radium 228	15262-20-1	pCi/L	0.427	0.519 U	0.342 U	0.436 UJ	0.514 U	0.319 U
Radium-226	13982-63-3	pCi/L	0.239 U	0.628	0.598 U	0.338 U	0.547 U	0.362

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL227	NRL227	NRL227	NRL227
Sample Date			5/22/2017	6/19/2017	7/18/2017	8/22/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL227-05222017	GAF-GW-NRL227-06192017	GAF-GW-NRL227-07182017	GAF-GW-NRL227-08222017
Sample Type			N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result
Field Parameter						
Dissolved Oxygen	DO	MG/L	0.54	5.78	3.65	0.93
ORP	ORP	MV	-212.5	-168.7	-163.2	-178.6
pH, Field	PHFLD	pH units	7.04	7.03	7.04	6.85
Specific Conductance, Field	CONDSPECFLD	umhos/cm	900	849	830	806
Temperature	TEMP	deg C	16.3	16.7	18.2	18.1
Turbidity, field	TURB-FIELD	NTU	0.85	0.26	0.28	0.30
General Chemistry						
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	480	536	529	521
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	480	536	529	521
Chloride	16887-00-6	MG/L	6.26	8.50	8.41	8.96
Fluoride	16984-48-8	MG/L	0.813	0.867	0.767	0.866
Sulfate	14808-79-8	MG/L	138	160	146	160
Total Dissolved Solids	TDS	MG/L	627	615	623	618
Metals, Total						
Antimony	7440-36-0	MG/L	0.000443 U	0.000443 U	0.000443 U	0.000886 U*
Arsenic	7440-38-2	MG/L	0.000220 U	0.00243 U*	0.000248 U*	0.000329 U*
Barium	7440-39-3	MG/L	0.0713	0.0694	0.0703	0.0811
Beryllium	7440-41-7	MG/L	0.000131 U	0.000261 J	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	1.00 J	0.974	0.970	0.991
Cadmium	7440-43-9	MG/L	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	89.6	91.3	101	107
Chromium	7440-47-3	MG/L	0.000378 U	0.00254 U*	0.000378 U	0.000456 U*
Cobalt	7440-48-4	MG/L	0.0000947 U	0.0000947 U	0.0000947 U	0.0000947 U
Lead	7439-92-1	MG/L	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	0.0672	0.0599	0.0632	0.0682
Magnesium	7439-95-4	MG/L	51.0 J	51.0 J	53.7	56.7
Mercury	7439-97-6	MG/L	0.0000653 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	9.95 J	10.5	10.8	11.4
Selenium	7782-49-2	MG/L	0.00127 UJ	0.00127 U	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	44.3 J	48.1	50.2	54.0
Thallium	7440-28-0	MG/L	0.0000531 U	0.0000531 U	0.0000531 U	0.0000531 U
Radiological						
Radium 226 + Radium 228	RA226/228	pCi/L	1.72 U*	0.695 U	0.870 U*	0.537 U
Radium 228	15262-20-1	pCi/L	1.72 U*	0.308 U	0.704 U*	0.394 U
Radium-226	13982-63-3	pCi/L	-0.0407 U	0.387 U	0.166 U	0.142 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301B	NRL301B	NRL301B	NRL301B	NRL301B	NRL301B
Sample Date			12/19/2016	1/17/2017	2/14/2017	3/23/2017	4/27/2017	5/26/2017
Well Location Designation			Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
Sample ID			GAF-GW-NRL301B-12192016	GAF-GW-NRL301B-01172017	GAF-GW-301B-02142017	GAF-GW-NRL301B-03232017	GAF-GW-NRL301B-04272017	GAF-GW-NRL301B-05262017
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	1.06	0.7	0.91	0.2	3.08	0.81
ORP	ORP	MV	-237	-263.4	-311.3	-297.2	-272.5	-323.4
pH, Field	PHFLD	pH units	7.6	7.04	7.01	7.14	7.09	7.35
Specific Conductance, Field	CONDSPECFLD	umhos/cm	15595	9400	9.266	9030	7637	7657
Temperature	TEMP	deg C	12.24	15.56	13.88	15.6	18.6	16.8
Turbidity, field	TURB-FIELD	NTU	2.41	0.17	2.54	1.64	34.8	3.50
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	32.5	5.00 U	NS	5.00 U	5.00 U	5.00 U
Alkalinity, Total as CaCO3	ALK	MG/L	497	695 J	NS	657	676	710
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	465	695 J	NS	657	676	710
Chloride	16887-00-6	MG/L	2700	2400	NS	2730	2580	2430
Fluoride	16984-48-8	MG/L	3.87	3.28	NS	4.21	4.14	2.75
Sulfate	14808-79-8	MG/L	239 J	196 J	NS	280	258	241
Total Dissolved Solids	TDS	MG/L	5390	5310	NS	4320	5360	5010 J
Metals, Total								
Antimony	7440-36-0	MG/L	0.000485 U*	0.000491 J	0.00118 U*	0.000572 U*	0.00150 J	0.000954 U*
Arsenic	7440-38-2	MG/L	0.000783 J	0.000573 J	0.000418 J	0.000799 J	0.000493 J	0.000306 J
Barium	7440-39-3	MG/L	0.122	0.121	0.107	0.107	0.101	0.102
Beryllium	7440-41-7	MG/L	0.000102 U	0.000131 UJ	0.000131 U	0.000131 UJ	0.000131 U	0.000131 U
Boron	7440-42-8	MG/L	4.58 J	1.44 J	3.34 J	2.62 J	3.50	2.73
Cadmium	7440-43-9	MG/L	0.000152 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U	0.0000781 U
Calcium	7440-70-2	MG/L	83.6	74.8 J	85.8	81.6	96.1	75.2
Chromium	7440-47-3	MG/L	0.00116 J	0.0122	0.000617 J	0.000378 U	0.00251	0.000969 J
Cobalt	7440-48-4	MG/L	0.000143 U*	0.000335 U*	0.0000947 U	0.0000947 U	0.000146 J	0.0000947 U
Lead	7439-92-1	MG/L	0.000112 J	0.000318 U	0.000318 U	0.000318 U	0.000318 U	0.000318 U
Lithium	7439-93-2	MG/L	1.30	1.39	1.39 J	1.36 J	1.34	1.26
Magnesium	7439-95-4	MG/L	35.1	41.4 J	35.5	33.1	34.0	34.8
Mercury	7439-97-6	MG/L	0.0000521 U	0.0000521 U	0.0000521 U	0.0000653 U	0.0000653 U	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000873 U	0.00166 J	0.000593 U	0.000593 U	0.000593 U	0.000593 U
Potassium	7440-09-7	MG/L	33.4	35.4 J	34.2	34.6	34.9	37.8
Selenium	7782-49-2	MG/L	0.000348 U	0.00127 UJ	0.00127 U	0.00127 UJ	0.00127 U	0.00127 U
Sodium	7440-23-5	MG/L	1860	1870 J	1640	1580	2030	1850
Thallium	7440-28-0	MG/L	0.0000860 U*	0.0000531 U	0.0000531 U	0.000257 U*	0.0000531 U	0.0000531 U
Radiological								
Radium 226 + Radium 228	RA226/228	pCi/L	0.652 U	1.82	2.06	2.53 J	1.97 U*	1.82 UR
Radium 228	15262-20-1	pCi/L	0.386 U	0.848	1.07	1.01	1.41 U*	1.52 UR
Radium-226	13982-63-3	pCi/L	0.266 U	0.977	0.987	1.51	0.563 U	0.302 U

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301B
Sample Date			6/14/2017
Well Location Designation			Downgradient
Sample ID			GAF-GW-NRL301B-06142017
Sample Type			N
Analyte	CASNO	Units	Result
Field Parameter			
Dissolved Oxygen	DO	MG/L	0.39
ORP	ORP	MV	-305.1
pH, Field	PHFLD	pH units	7.18
Specific Conductance, Field	CONDSPECFLD	umhos/cm	8624
Temperature	TEMP	deg C	18.6
Turbidity, field	TURB-FIELD	NTU	Not Taken
General Chemistry			
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS
Chloride	16887-00-6	MG/L	NS
Fluoride	16984-48-8	MG/L	NS
Sulfate	14808-79-8	MG/L	NS
Total Dissolved Solids	TDS	MG/L	NS
Metals, Total			
Antimony	7440-36-0	MG/L	0.000461 U*
Arsenic	7440-38-2	MG/L	0.000220 U
Barium	7440-39-3	MG/L	0.0984
Beryllium	7440-41-7	MG/L	0.000131 U
Boron	7440-42-8	MG/L	2.71
Cadmium	7440-43-9	MG/L	0.0000781 U
Calcium	7440-70-2	MG/L	64.5
Chromium	7440-47-3	MG/L	0.000378 U
Cobalt	7440-48-4	MG/L	0.0000947 U
Lead	7439-92-1	MG/L	0.000318 U
Lithium	7439-93-2	MG/L	2.30
Magnesium	7439-95-4	MG/L	34.4
Mercury	7439-97-6	MG/L	0.0000653 U
Molybdenum	7439-98-7	MG/L	0.000593 U
Potassium	7440-09-7	MG/L	35.8
Selenium	7782-49-2	MG/L	0.00127 U
Sodium	7440-23-5	MG/L	1850
Thallium	7440-28-0	MG/L	0.0000531 U
Radiological			
Radium 226 + Radium 228	RA226/228	pCi/L	1.68 U*
Radium 228	15262-20-1	pCi/L	0.323 U
Radium-226	13982-63-3	pCi/L	1.35

Table 4
Baseline Sampling Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Notes and Acronymns

- deg C - degrees Centigrade
- FD - field duplicate sample
- MG/L - milligrams per liter
- MV - millivolts
- N - primary sample
- NA - not applicable
- NS - not sampled for the specified analysis or insufficient sample volume for analysis
- NTU - nephelometric turbidity units
- pCi/L - picoCuries per liter
- umhos/cm - microMhos per centimeter

Qualifier Definitions

- U* This result should be considered “not detected” because it was detected in a rinsate blank or laboratory blank at a similar level.
- J Quantitation is approximate due to limitations identified during data validation.
- UJ This analyte was not detected, but the reporting or detection limit may or may not be higher due to a bias identified during data validation.

BASISELEMENT

Table 5
Detection Monitoring Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			GAF-412L	GAF-414L	GAF-426L	GAF-427L	NRL015	NRL015 Background UPL
Sample Date			10/3/2017	10/3/2017	10/4/2017	10/5/2017	10/3/2017	
Well Location Designation			Background	Background	Background	Background	Downgradient	
Sample ID			GAF-GW-412L-10032017	GAF-GW-414L-10032017	GAF-GW-426L-10042017	GAF-GW-427L-10052017	GAF-GW-NRL015-10032017	
Sample Type			N	N	N	N	N	
Analyte	CASNO	Units	Result	Result	Result	Result	Result	
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.10	0.43	0.39	0.38	0.46	
ORP	ORP	MV	-349.3	-137.6	-113.0	-35.3	-274.4	
pH, Field	PHFLD	pH units	7.94	8.09	7.67	7.40	6.97	7.72
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1315	1218	902	568	1049	
Temperature	TEMP	deg C	16.6	17.0	17.8	16.1	16.6	
Turbidity, field	TURB-FIELD	NTU	1.30	0.33	1.45	1.08	0.18	
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	
Alkalinity, Total as CaCO3	ALK	MG/L	356	377	447	391	542	
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	356	377	447	391	542	
Chloride	16887-00-6	MG/L	330 J	311 J	48.8	17.9	6.25 J	6.001
Fluoride	16984-48-8	MG/L	0.682 J	0.408 J	0.256 U*	0.253	0.677 J	1.035
Sulfate	14808-79-8	MG/L	23.7 J	28.5 J	93.4	41.3	212 J	285
Total Dissolved Solids	TDS	MG/L	754	793	574	378	709	837.8
Metals, Total								
Boron	7440-42-8	MG/L	0.365	0.221	0.0566 J	0.0740 J	0.304	0.349
Calcium	7440-70-2	MG/L	76.3	104	125	91.6	124	127.4
Magnesium	7439-95-4	MG/L	43.9	44.9	27.1	27.7	65.0	
Potassium	7440-09-7	MG/L	7.59	3.35	13.0	1.60	9.38	
Sodium	7440-23-5	MG/L	160	112	39.3	11.1	33.7	

Table 5
Detection Monitoring Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220 Background UPL	NRL221	NRL227	NRL227 Background UPL	NRL301B	NRL301B Background UPL
Sample Date			10/4/2017		10/3/2017	10/3/2017		10/4/2017	
Well Location Designation			Downgradient		Upgradient	Downgradient		Downgradient	
Sample ID			GAF-GW-NRL220-10042017		GAF-GW-NRL221-10032017	GAF-GW-NRL227-10032017		GAF-GW-NRL301B-10042017	
Sample Type			N		N	N		N	
Analyte	CASNO	Units	Result	Result	Result	Result			
Field Parameter									
Dissolved Oxygen	DO	MG/L	0.39		0.18	0.64		3.90	
ORP	ORP	MV	-287.7		-145.0	-205.2		-290.7	
pH, Field	PHFLD	pH units	7.58	9.469	6.80	6.98	7.739	6.98	7.722
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1115		1088	977		7793	
Temperature	TEMP	deg C	18.0		17.0	16.8		19.0	
Turbidity, field	TURB-FIELD	NTU	0.49		0.23	0.15		2.89	
General Chemistry									
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	5.00 U		5.00 U	5.00 U		5.00 U	
Alkalinity, Total as CaCO3	ALK	MG/L	527		536	548		725	
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	527		536	548		725	
Chloride	16887-00-6	MG/L	82.9	95.97	5.48	9.82 J	7.944	2780	3899
Fluoride	16984-48-8	MG/L	1.20	1.868	0.490	0.675 J	1.036	3.15 U*	5.186
Sulfate	14808-79-8	MG/L	112	244	258	141 J	205.9	142	1488
Total Dissolved Solids	TDS	MG/L	767	1021	806	620	683.8	4610	7062
Metals, Total									
Boron	7440-42-8	MG/L	0.660	0.617	2.22	1.04	1.697	3.28	1.68
Calcium	7440-70-2	MG/L	4.15 U*	5.762	171	103	115.7	73.6	445
Magnesium	7439-95-4	MG/L	2.45		60.8	54.9		33.4	
Potassium	7440-09-7	MG/L	9.00		6.72	11.1		33.7	
Sodium	7440-23-5	MG/L	252		16.9	43.8		1750	

Table 5
Detection Monitoring Groundwater Analytical Results - North Rail Loop Landfill
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Notes and Acronyms

Bold and **Underlined** concentrations indicate a Statistically Significant Increase (SSI) over the Background Upper Prediction Limit (UPL)

Gray-shaded wells are background/upgradient wells

- FD - field duplicate sample
- MG/L - milligrams per liter
- MV - millivolts
- N - primary sample
- NTU - nephelometric turbidity units
- pCi/L - picoCuries per liter
- umhos/cm - microMhos per centimeter

Qualifier Definitions

- U* This result should be considered "not detected" because it was detected in a rinsate blank or laboratory blank at a similar level.
- J Quantitation is approximate due to limitations identified during data validation.

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL015	NRL015	NRL015	NRL015	NRL015	NRL015
Sample Date			4/28/2015	6/17/2015	7/28/2015	9/18/2015	10/28/2015	12/16/2015
Sample ID			GAF-NRL015-20150428	GAF-NRL015-20150617	GAF-NRL015-20150728	GAF-NRL015-20150918	GAF-NRL-015-20151028	GAF-NRL015-20151216
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.46	0.95	0.49	NR	0.32	0.60
ORP	ORP	MV	-298	-203.0	-192.2	NR	-254.4	-165.9
pH, Field	PHFLD	pH SU	7.49	7.03	7.05	NR	7.03	6.92
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1290	882	858	NR	1078	1080
Temperature	TEMP	deg C	17.44	17.31	17.90	NR	15.11	13.19
Turbidity, field	TURB-FIELD	NTU	0.87	7.43	6.69	NR	0.66	0.04
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	NS	399	438	358	385
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	5.42	5.76	5.54	5.62	5.64	5.26
Fluoride	16984-48-8	MG/L	0.993	0.983	0.921	0.916	0.957	0.964
Sulfate	14808-79-8	MG/L	249	226	213	236	247	260
Total Dissolved Solids	TDS	MG/L	685	777	761	716	727	705
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.0700	0.0668	0.0712	0.0699	0.0734	0.0738
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	0.278	0.276	0.268	0.294	0.301	0.293
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	114	115	113	117	121	114
Chromium	7440-47-3	MG/L	0.0115	0.00202	0.00416	0.00200 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.0664	0.0651	0.0643	0.0640	0.0680	0.0676
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 UJ
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	0.0163	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00100 U	0.00200 U
Radiological								
Radium 228	15262-20-1	pCi/L	0.103	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	0.982	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL015	NRL015	NRL015
Sample Date			1/27/2016	3/23/2016	5/25/2016
Sample ID			GAF-NRL015-20160127	GAF-NRL015-20160323	GAF-NRL015-20160525
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	0.83	2.00	1.50
ORP	ORP	MV	-324.8	-140.1	-210.6
pH, Field	PHFLD	pH SU	6.83	7.19	7.04
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1084	817	890
Temperature	TEMP	deg C	13.00	14.52	15.14
Turbidity, field	TURB-FIELD	NTU	1.1	0.38	0.00
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	20
Alkalinity, Total as CaCO3	ALK	MG/L	380	363 J	372
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	372
Chloride	16887-00-6	MG/L	5.59	5.59	5.38
Fluoride	16984-48-8	MG/L	0.973	0.948	0.949
Sulfate	14808-79-8	MG/L	213	225	243
Total Dissolved Solids	TDS	MG/L	747	679	765
Metals, Total					
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	NS
Arsenic	7440-38-2	MG/L	0.00200 U	0.00400 U	NS
Barium	7440-39-3	MG/L	0.0736	0.0697	NS
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	NS
Boron	7440-42-8	MG/L	0.295	0.317	0.316
Cadmium	7440-43-9	MG/L	0.00100 U	0.00200 U	NS
Calcium	7440-70-2	MG/L	116	122	120
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	NS
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	NS
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	NS
Lithium	7439-93-2	MG/L	0.0636	0.0630	NS
Magnesium	7439-95-4	MG/L	NS	NS	63.4
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 UJ	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	NS
Potassium	7440-09-7	MG/L	NS	NS	8.5
Selenium	7782-49-2	MG/L	0.00200 U	0.00200 U	NS
Sodium	7440-23-5	MG/L	NS	NS	38.4
Thallium	7440-28-0	MG/L	0.00100 U	0.00200 U	NS
Radiological					
Radium 228	15262-20-1	pCi/L	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220	NRL220	NRL220	NRL220	NRL220
Sample Date			4/30/2015	6/17/2015	6/17/2015	7/27/2015	7/27/2015	9/17/2015
Sample ID			GAF-NRL220-20150430	NRL220-DUP1_L771832	GAF-NRL220-20150617	GAF-NRL220-20150727	GAF-NRL-220-DUP1_L779291	GAF-NRL220-20150917
Sample Type			N	FD	N	N	FD	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.50	NA	2.42	1.68	NA	NR
ORP	ORP	MV	-386	NA	-230.4	-299.0	NA	NR
pH, Field	PHFLD	pH SU	9.09	NA	8.58	8.58	NA	NR
Specific Conductance, Field	CONDSPECFLD	umhos/cm	772	NA	1007	1017	NA	NR
Temperature	TEMP	deg C	16.95	NA	19.27	19.29	NA	NR
Turbidity, field	TURB-FIELD	NTU	2.55	NA	7.01	7.51	NA	NR
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	NS	NS	411	364	422
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	84.6	85.3	84.6	85.8	86.0	88.5
Fluoride	16984-48-8	MG/L	1.49	1.50	1.47	1.60	1.60	1.62
Sulfate	14808-79-8	MG/L	147	99.8	96.4	120	118	144
Total Dissolved Solids	TDS	MG/L	787	779	925	772	801	757
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	0.0100 U	0.0100 U	0.0200 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.00618	0.00703	0.00563	0.00693	0.00586	0.00521
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	0.495	0.537	0.533	0.536	0.533	0.555
Cadmium	7440-43-9	MG/L	0.00100 U	0.0100 U	0.0100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	3.64	4.52	4.28	4.67	3.83	3.39
Chromium	7440-47-3	MG/L	0.00200 U	0.00425	0.00362	0.00262	0.00245	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.207	0.192	0.209	0.206	0.204	0.206
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	0.0633	0.0741	0.0383 J	0.00932 J	0.00200 U
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Radiological								
Radium 228	15262-20-1	pCi/L	1.81	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	0.183	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220	NRL220	NRL220	NRL220	NRL220
Sample Date			10/27/2015	12/15/2015	12/15/2015	1/26/2016	1/26/2016	3/22/2016
Sample ID			GAF-NRL220-20151027	GAF-NRL220-20151215	NRL-220-DUP-1_L807303	GAF-NRL220-20160126	NRL-220-DUP1_L814084	GAF-NRL220-20160322
Sample Type			N	N	FD	N	FD	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.23	0.26	NA	0.59	NA	0.37
ORP	ORP	MV	-320.4	-315.8	NA	-373.4	NA	-301.0
pH, Field	PHFLD	pH SU	8.53	8.44	NA	8.15	NA	8.67
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1154	1233	NA	980	NA	956
Temperature	TEMP	deg C	15.55	13.89	NA	13.77	NA	16.23
Turbidity, field	TURB-FIELD	NTU	3.25	0.62	NA	1.1	NA	1.46
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	384	383	358	353	361
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	87.0	88.7	88.5 J	90.6	90.2	91.5
Fluoride	16984-48-8	MG/L	1.68	1.70	1.62 J	1.66	1.70	1.58
Sulfate	14808-79-8	MG/L	112	160	119 J	86.3	97.8	94.5
Total Dissolved Solids	TDS	MG/L	729	699	690	692	712	704
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.00549	0.00526	0.00500 U	0.00508	0.00503	0.00500 U
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	0.569	0.550	0.559	0.532	0.547	0.512 U*
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	3.70	3.26	3.42	3.45	3.44	4.28
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.207	0.206	0.203	0.204	0.205	0.203
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 UJ	0.000200 UJ	0.000200 U	0.000200 U	0.000200
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	0.0439	0.00200 U	0.00200 U	0.00200 U	0.00200
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00100 U	0.00200 U	0.00200 U	0.00100 U	0.00100 U	0.00100 U
Radiological								
Radium 228	15262-20-1	pCi/L	NS	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL220	NRL220	NRL220
Sample Date			3/22/2016	5/26/2016	5/26/2016
Sample ID			NRL-220 DUP1_L824919	GAF-NRL220-20160525	GAF-NRL220-20160525-124D
Sample Type			FD	N	FD
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	NA	3.33	NA
ORP	ORP	MV	NA	-275.6	NA
pH, Field	PHFLD	pH SU	NA	8.28	NA
Specific Conductance, Field	CONDSPECFLD	umhos/cm	NA	1246	NA
Temperature	TEMP	deg C	NA	16.80	NA
Turbidity, field	TURB-FIELD	NTU	NA	0.95	NA
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	20	20
Alkalinity, Total as CaCO3	ALK	MG/L	357	NS	NS
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	354	350
Chloride	16887-00-6	MG/L	91.9	90.9	90.8
Fluoride	16984-48-8	MG/L	1.67	1.61	1.61
Sulfate	14808-79-8	MG/L	77.3	101	102
Total Dissolved Solids	TDS	MG/L	679	812	769
Metals, Total					
Antimony	7440-36-0	MG/L	0.00200 U	NS	NS
Arsenic	7440-38-2	MG/L	0.00200 U	NS	NS
Barium	7440-39-3	MG/L	0.00500 U	NS	NS
Beryllium	7440-41-7	MG/L	0.00200 U	NS	NS
Boron	7440-42-8	MG/L	0.561 J	0.562	0.563
Cadmium	7440-43-9	MG/L	0.00100 U	NS	NS
Calcium	7440-70-2	MG/L	4.21	3.29	3.32
Chromium	7440-47-3	MG/L	0.00200 U	NS	NS
Cobalt	7440-48-4	MG/L	0.00200 U	NS	NS
Lead	7439-92-1	MG/L	0.00200 U	NS	NS
Lithium	7439-93-2	MG/L	0.202	NS	NS
Magnesium	7439-95-4	MG/L	NS	2.28	2.32
Mercury	7439-97-6	MG/L	0.000200 U	NS	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	NS	NS
Potassium	7440-09-7	MG/L	NS	8.11	8.31
Selenium	7782-49-2	MG/L	0.00200 U	NS	NS
Sodium	7440-23-5	MG/L	NS	269	271
Thallium	7440-28-0	MG/L	0.00100 U	NS	NS
Radiological					
Radium 228	15262-20-1	pCi/L	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL221	NRL221	NRL221	NRL221	NRL221	NRL221
Sample Date			4/30/2015	6/17/2015	7/28/2015	9/18/2015	10/28/2015	12/16/2015
Sample ID			GAF-NRL221-20150430	GAF-NRL221-20150617	GAF-NRL221-20150728	GAF-NRL221_124FT_L789560	GAF-NRL-221-20151028	GAF-NRL221-20151216
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.00	1.55	0.50	NR	0.18	0.71
ORP	ORP	MV	-154	-130.8	-106.7	NR	-181.3	-56.0
pH, Field	PHFLD	pH SU	7.12	6.94	6.89	NR	6.88	6.79
Specific Conductance, Field	CONDSPECFLD	umhos/cm	735	931	951	NR	1150	1133
Temperature	TEMP	deg C	16.36	17.25	19.48	NR	16.98	13.78
Turbidity, field	TURB-FIELD	NTU	0.93	8.63	3.15	NR	0.96	0.52
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	NS	392	398	362	396
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	4.57	4.90	4.85	4.88	4.78	4.43 J
Fluoride	16984-48-8	MG/L	0.609	0.758	0.672	0.696	0.724	0.717 J
Sulfate	14808-79-8	MG/L	263	286	279	280	311	330 J
Total Dissolved Solids	TDS	MG/L	892	877	921	840	876	773
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.0469	0.0448	0.0470	0.0487	0.0497	0.0493
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	2.28	2.49	2.44	2.58	2.58	2.68
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	151	162	156	163	160	157
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	0.00292	0.00200 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00204	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.0387	0.0366	0.0357	0.0350	0.0397	0.0397
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 UJ
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	0.00320	0.00434	0.00200 U	0.00200 U	0.00200 U
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00100 U	0.00200 U
Radiological								
Radium 228	15262-20-1	pCi/L	0.437	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	0.809	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL221	NRL221	NRL221
Sample Date			1/27/2016	3/23/2016	5/25/2016
Sample ID			GAF-NRL221-20160127	GAF-NRL221-20160323	GAF-NRL221-20160525
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	1.55	1.01	9.13
ORP	ORP	MV	-87.3	-102.1	-121.5
pH, Field	PHFLD	pH SU	6.64	7.08	6.66
Specific Conductance, Field	CONDSPECFLD	umhos/cm	1135	892	993
Temperature	TEMP	deg C	13.42	16.22	16.86
Turbidity, field	TURB-FIELD	NTU	1.3	1.09	0.10
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	20
Alkalinity, Total as CaCO3	ALK	MG/L	382	354 J	NS
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	388
Chloride	16887-00-6	MG/L	4.50	4.37	4.37
Fluoride	16984-48-8	MG/L	0.720	0.716	0.712
Sulfate	14808-79-8	MG/L	272	32.6	286
Total Dissolved Solids	TDS	MG/L	807	781	1010
Metals, Total					
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	NS
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	NS
Barium	7440-39-3	MG/L	0.0488	0.0490	NS
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	NS
Boron	7440-42-8	MG/L	2.70	2.77	2.73
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	NS
Calcium	7440-70-2	MG/L	160	171	160
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	NS
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	NS
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	NS
Lithium	7439-93-2	MG/L	0.0342	0.0339	NS
Magnesium	7439-95-4	MG/L	NS	NS	58.2
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 UJ	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	NS
Potassium	7440-09-7	MG/L	NS	NS	6.43
Selenium	7782-49-2	MG/L	0.00200 U	0.00200 U	NS
Sodium	7440-23-5	MG/L	NS	NS	22.2
Thallium	7440-28-0	MG/L	0.00100 U	0.00200 U	NS
Radiological					
Radium 228	15262-20-1	pCi/L	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL227	NRL227	NRL227	NRL227	NRL227	NRL227
Sample Date			4/30/2015	6/17/2015	7/27/2015	9/17/2015	9/17/2015	10/28/2015
Sample ID			GAF-NRL227-20150430	GAF-NRL227-20150617	GAF-NRL227-20150727	GAF-NRL227 188FT_L789560	GAF-NRLDUP-1 188FT_L789560	GAF-NRL-227-20151028
Sample Type			N	N	N	N	FD	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.33	1.41	0.61	NR	NA	1.92
ORP	ORP	MV	-278	-185.7	-171.2	NR	NA	-213.9
pH, Field	PHFLD	pH SU	7.52	7.08	7.07	NR	NA	7.03
Specific Conductance, Field	CONDSPECFLD	umhos/cm	662	822	828	NR	NA	1003
Temperature	TEMP	deg C	18.31	17.55	19.00	NR	NA	15.77
Turbidity, field	TURB-FIELD	NTU	1.06	3.02	5.89	NR	NA	0.64
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	NS	400	427 J	284 J	373
Alkalinity,Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	7.23	7.63	7.58	7.58	7.48	7.50
Fluoride	16984-48-8	MG/L	0.767	0.939	0.851	0.872	0.874	0.893
Sulfate	14808-79-8	MG/L	164	162	167	170	168	186
Total Dissolved Solids	TDS	MG/L	631	658	642	621	625	643
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000210 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000250 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.0735	0.0706	0.0736	0.0744	0.0730	0.0751
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000120 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	1.10	1.14	1.16	1.20	1.21	1.27
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	0.00100 U	0.000160 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	96.6	104	99.3	102	101	106
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	0.00239	0.000540 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000260 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000240 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.0654	0.0673	0.0619	0.0634	0.0636	0.0660
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	0.000200 U	0.0000490 U	0.000200 U	0.000200 U
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.000140 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	0.0190	0.00354	0.000380 U	0.00200 U	0.00200 U
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.000190 U	0.00200 U	0.00100 U
Radiological								
Radium 228	15262-20-1	pCi/L	0.65	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	0.119	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL227	NRL227	NRL227	NRL227	NRL227
Sample Date			10/28/2015	12/16/2015	1/27/2016	3/22/2016	5/26/2016
Sample ID			GAF-NRL-DUP1_L797190	GAF-NRL227-20151216	GAF-NRL227-20160127	GAF-NRL227-20160322	GAF-NRL227-20160525
Sample Type			FD	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result
Field Parameter							
Dissolved Oxygen	DO	MG/L	NA	0.67	0.94	1.43	3.80
ORP	ORP	MV	NA	-114.3	-257.8	-156.3	-188.0
pH, Field	PHFLD	pH SU	NA	6.92	6.92	7.23	7.02
Specific Conductance, Field	CONDSPECFLD	umhos/cm	NA	999	1002	766	1023
Temperature	TEMP	deg C	NA	13.28	12.91	15.05	15.97
Turbidity, field	TURB-FIELD	NTU	NA	0.03	0.8	0.21	0.00
General Chemistry							
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	20
Alkalinity, Total as CaCO3	ALK	MG/L	415	394	381	385	380
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	380
Chloride	16887-00-6	MG/L	7.66	7.24 J	7.32	7.37	7.16
Fluoride	16984-48-8	MG/L	0.887	0.894 J	0.908	0.853	0.887
Sulfate	14808-79-8	MG/L	186	186 J	158	168	168
Total Dissolved Solids	TDS	MG/L	640	615	652	635	679
Metals, Total							
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Barium	7440-39-3	MG/L	0.0766	0.0744	0.0732	0.0721	NS
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Boron	7440-42-8	MG/L	1.27	1.33	1.35	1.46 J	1.51
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	0.00100 U	0.00100 U	NS
Calcium	7440-70-2	MG/L	105	99.2	101	109	104
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	NS
Lithium	7439-93-2	MG/L	0.0674	0.0660	0.0618	0.0625	NS
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	55.7
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 UJ	0.000200 U	0.000200 U	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	NS
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	9.86
Selenium	7782-49-2	MG/L	0.00200 U	0.00486	0.00200 U	0.00200 U	NS
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	44.1
Thallium	7440-28-0	MG/L	0.00100 U	0.00200 U	0.00100 U	0.00100 U	NS
Radiological							
Radium 228	15262-20-1	pCi/L	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301A	NRL301A	NRL301A	NRL301A	NRL301A	NRL301A
Sample Date			4/29/2015	6/16/2015	7/28/2015	9/17/2015	10/28/2015	12/16/2015
Sample ID			GAF-NRL301A-20150429	GAF-NRL301A-20150616	GAF-NRL301A-20150728	GAF-NRL301A 42FT_L789560	GAF-NRL-301A-20151028	GAF-NRL301A-20151216
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	0.73	0.91	2.73	NR	2.57	12.17
ORP	ORP	MV	-119	-45.8	193.5	NR	213.5	131.1
pH, Field	PHFLD	pH SU	7.49	7.41	7.60	NR	7.31	7.43
Specific Conductance, Field	CONDSPECFLD	umhos/cm	2690	2133	2500	NR	2641	2760
Temperature	TEMP	deg C	25.08	18.22	23.16	NR	16.34	11.10
Turbidity, field	TURB-FIELD	NTU	3.68	12.3	7.66	NR	1.79	3.12
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	NS	897	788	791	855
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	46.9	40.2	44.9	37.6	39.0	40.9 J
Fluoride	16984-48-8	MG/L	2.89	2.86	2.82	2.52	2.53	2.33 J
Sulfate	14808-79-8	MG/L	457	449	513	533	624	730 J
Total Dissolved Solids	TDS	MG/L	1600	723	2010	NS	1800	1800
Metals, Total								
Antimony	7440-36-0	MG/L	0.00200 U	NS	0.00200 U	0.000210 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.00200 U	NS	0.00200 U	0.000250 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.0356	NS	0.0259	0.0277	0.0166	0.0272
Beryllium	7440-41-7	MG/L	0.00200 U	NS	0.00200 U	0.000120 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	1.50	NS	1.37	1.43	1.36	1.40
Cadmium	7440-43-9	MG/L	0.00100 U	NS	0.00100 U	0.000160 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	15.9	NS	17.9	20.5	19.5	27.3
Chromium	7440-47-3	MG/L	0.0219	NS	0.00577	0.000540 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	NS	0.00200 U	0.000260 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00200 U	NS	0.00200 U	0.000240 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	0.476	NS	0.466	0.494	0.519	0.559
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	NS	0.000200 U	0.0000490 U	0.000200 U	0.000200 UJ
Molybdenum	7439-98-7	MG/L	0.00500 U	NS	0.00500 U	0.000140 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.00200 U	NS	0.00227	0.000380 U	0.00200 U	0.00267
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	NS	0.00200 U	0.000190 U	0.00100 U	0.00200 U
Radiological								
Radium 228	15262-20-1	pCi/L	NS	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301A	NRL301A	NRL301A
Sample Date			1/27/2016	3/22/2016	5/26/2016
Sample ID			GAF-NRL301A-20160127	GAF-NRL301A-20160322	GAF-NRL301A-20160525
Sample Type			N	N	N
Analyte	CASNO	Units	Result	Result	Result
Field Parameter					
Dissolved Oxygen	DO	MG/L	5.84	1.15	3.06
ORP	ORP	MV	157.6	21.8	152.9
pH, Field	PHFLD	pH SU	6.91	7.59	7.44
Specific Conductance, Field	CONDSPECFLD	umhos/cm	2748	2645	2765
Temperature	TEMP	deg C	9.21	15.18	16.48
Turbidity, field	TURB-FIELD	NTU	1.8	0.81	0.42
General Chemistry					
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	20
Alkalinity, Total as CaCO3	ALK	MG/L	765	707	NS
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	740
Chloride	16887-00-6	MG/L	35.9	34.7	33.2
Fluoride	16984-48-8	MG/L	2.30	2.24	2.24
Sulfate	14808-79-8	MG/L	653	718	694
Total Dissolved Solids	TDS	MG/L	2000	1480	1780
Metals, Total					
Antimony	7440-36-0	MG/L	0.00200 U	0.00200 U	NS
Arsenic	7440-38-2	MG/L	0.00200 U	0.00200 U	NS
Barium	7440-39-3	MG/L	0.0213	0.0203	NS
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	NS
Boron	7440-42-8	MG/L	1.32	1.33 J	1.32
Cadmium	7440-43-9	MG/L	0.00100 U	0.00100 U	NS
Calcium	7440-70-2	MG/L	25.7	26.3	24
Chromium	7440-47-3	MG/L	0.00200 U	0.00200 U	NS
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	NS
Lead	7439-92-1	MG/L	0.00200 U	0.00200 U	NS
Lithium	7439-93-2	MG/L	0.523	0.515	NS
Magnesium	7439-95-4	MG/L	NS	NS	7.62
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	NS
Potassium	7440-09-7	MG/L	NS	NS	11.8
Selenium	7782-49-2	MG/L	0.00200 U	0.00200 U	NS
Sodium	7440-23-5	MG/L	NS	NS	633
Thallium	7440-28-0	MG/L	0.00100 U	0.00100 U	NS
Radiological					
Radium 228	15262-20-1	pCi/L	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301B	NRL301B	NRL301B	NRL301B	NRL301B	NRL301B
Sample Date			6/17/2015	7/27/2015	9/17/2015	10/27/2015	12/15/2015	1/26/2016
Sample ID			GAF-NRL301B-20150617	GAF-NRL301B-20150727	GAF-NRL301B_168FT_L789560	GAF-NRL301B-20151027	GAF-NRL301B-20151215	GAF-NRL301B-20160126
Sample Type			N	N	N	N	N	N
Analyte	CASNO	Units	Result	Result	Result	Result	Result	Result
Field Parameter								
Dissolved Oxygen	DO	MG/L	3.57	0.30	NR	0.60	0.53	2.27
ORP	ORP	MV	-251.6	-288.1	NR	-297.4	-328.6	-343.4
pH, Field	PHFLD	pH SU	7.31	7.19	NR	7.20	7.29	7.19
Specific Conductance, Field	CONDSPECFLD	umhos/cm	8851	9586	NR	9284	9791	7500
Temperature	TEMP	deg C	21.68	25.06	NR	15.34	13.82	12.58
Turbidity, field	TURB-FIELD	NTU	52.3	27.60	NR	7.06	2.09	2.9
General Chemistry								
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	NS	NS	NS	NS	NS
Alkalinity, Total as CaCO3	ALK	MG/L	NS	630	637	NS	597	580
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	NS	NS	NS	NS	NS
Chloride	16887-00-6	MG/L	3320	3280	3130	3050	2860 J	2840
Fluoride	16984-48-8	MG/L	3.41	3.52	3.85	4.03	4.03 J	4.37
Sulfate	14808-79-8	MG/L	219	247	160	106	63.9 J	46.3
Total Dissolved Solids	TDS	MG/L	5920	5980	5240	5450	NS	5200
Metals, Total								
Antimony	7440-36-0	MG/L	0.00203	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Arsenic	7440-38-2	MG/L	0.0100 U	0.0100 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Barium	7440-39-3	MG/L	0.218	0.179	0.187	0.177	0.161	0.173
Beryllium	7440-41-7	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Boron	7440-42-8	MG/L	1.53	1.51	1.58	1.53	1.53	1.50
Cadmium	7440-43-9	MG/L	0.0100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U	0.00100 U
Calcium	7440-70-2	MG/L	241	98.5	104	79.2	67.1	63.3
Chromium	7440-47-3	MG/L	0.0325	0.0250	0.00449	0.00200 U	0.00200 U	0.00200 U
Cobalt	7440-48-4	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lead	7439-92-1	MG/L	0.00221	0.00200 U	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Lithium	7439-93-2	MG/L	2.15	1.91	1.78	1.81	1.81	1.70
Magnesium	7439-95-4	MG/L	NS	NS	NS	NS	NS	NS
Mercury	7439-97-6	MG/L	0.000200 U	0.000200 U	0.000200 U	0.000200 U	0.000200 UJ	0.000200 U
Molybdenum	7439-98-7	MG/L	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U	0.00500 U
Potassium	7440-09-7	MG/L	NS	NS	NS	NS	NS	NS
Selenium	7782-49-2	MG/L	0.171	0.0227	0.00200 U	0.00200 U	0.00200 U	0.00200 U
Sodium	7440-23-5	MG/L	NS	NS	NS	NS	NS	NS
Thallium	7440-28-0	MG/L	0.00200 U	0.00200 U	0.00200 U	0.00100 U	0.00200 U	0.00100 U
Radiological								
Radium 228	15262-20-1	pCi/L	NS	NS	NS	NS	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS	NS	NS	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Monitoring Well ID			NRL301B	NRL301B
Sample Date			3/22/2016	5/26/2016
Sample ID			GAF-NRL301B-20160322	GAF-NRL301B-20160525
Sample Type			N	N
Analyte	CASNO	Units	Result	Result
Field Parameter				
Dissolved Oxygen	DO	MG/L	0.86	3.46
ORP	ORP	MV	-308.6	-293.7
pH, Field	PHFLD	pH SU	7.51	7.41
Specific Conductance, Field	CONDSPECFLD	umhos/cm	7501	9272
Temperature	TEMP	deg C	16.33	16.58
Turbidity, field	TURB-FIELD	NTU	3.61	0.78
General Chemistry				
Alkalinity, Carbonate (CaCO3)	ALKC	MG/L	NS	20
Alkalinity, Total as CaCO3	ALK	MG/L	542	554
Alkalinity, Bicarbonate (CaCO3)	ALKB	MG/L	NS	554
Chloride	16887-00-6	MG/L	2580	2910
Fluoride	16984-48-8	MG/L	4.48	4.48
Sulfate	14808-79-8	MG/L	29.0	40.1
Total Dissolved Solids	TDS	MG/L	5050	4490
Metals, Total				
Antimony	7440-36-0	MG/L	0.00200 U	NS
Arsenic	7440-38-2	MG/L	0.00200 U	NS
Barium	7440-39-3	MG/L	0.147	NS
Beryllium	7440-41-7	MG/L	0.00200 U	NS
Boron	7440-42-8	MG/L	1.68 J	1.54
Cadmium	7440-43-9	MG/L	0.00100 U	NS
Calcium	7440-70-2	MG/L	65.1	52.8
Chromium	7440-47-3	MG/L	0.00200 U	NS
Cobalt	7440-48-4	MG/L	0.00200 U	NS
Lead	7439-92-1	MG/L	0.00200 U	NS
Lithium	7439-93-2	MG/L	1.70	NS
Magnesium	7439-95-4	MG/L	NS	35.1
Mercury	7439-97-6	MG/L	0.000200 U	NS
Molybdenum	7439-98-7	MG/L	0.00500 U	NS
Potassium	7440-09-7	MG/L	NS	34.6
Selenium	7782-49-2	MG/L	0.00200 U	NS
Sodium	7440-23-5	MG/L	NS	1870
Thallium	7440-28-0	MG/L	0.00100 U	NS
Radiological				
Radium 228	15262-20-1	pCi/L	NS	NS
Radium-226	13982-63-3	pCi/L	NS	NS

Table 6
Pre-Waste Groundwater Analytical Results - North Rail Loop Landfill, 2015-2016
CCR Rule Groundwater Monitoring
TVA Gallatin Fossil Plant
Gallatin, Tennessee

Notes and Acronymns

deg C - degrees Centigrade
FD - field duplicate sample
MG/L - milligrams per liter
MV - millivolts
N - primary sample
NA - not applicable
NR - not recorded or documentation no available
NS - not sampled for the specified analysis or insufficient sample volume for analysis
NTU - nephelometric turbidity units
pCi/L - picoCuries per liter
umhos/cm - microMhos per centimeter

Qualifier Definitions

U* This result should be considered "not detected" because it was detected in a rinsate blank or laboratory blank at a similar level.
J Quantitation is approximate due to limitations identified during data validation.
UJ This analyte was not detected, but the reporting or detection limit may or may not be higher due to a bias identified during data validation.

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