2018 Annual Groundwater Monitoring Report

DTE Electric Company
Monroe Power Plant Fly Ash Basin
Coal Combustion Residual Unit

7955 East Dunbar Road
Monroe, Michigan

January 2019

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Prepared For
DTE Electric Company

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Executive Summary

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended July 30, 2018. The CCR Rule, which became effective on October 19, 2015 (amendment effective August 29, 2018), applies to the DTE Electric Company (DTE Electric) Monroe Power Plant (MONPP) Coal Combustion Residual Fly Ash Basin (FAB) CCR unit. Pursuant to the CCR Rule, no later than January 31, 2018, and annually thereafter, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). On behalf of DTE Electric, TRC Engineers Michigan, Inc., the engineering entity of TRC Environmental Corporation (TRC), has prepared this Annual Groundwater Monitoring Report for calendar year 2018 activities at the MONPP FAB CCR unit.

In the January 31, 2018 *Annual Groundwater Monitoring Report for the Monroe Power Plant Fly Ash Basin CCR* Unit, covering calendar year 2017 activities, DTE Electric reported that the pH observed within groundwater at one or more downgradient wells was outside background limits. Resampling was performed in January 2018 in accordance with the TRC October 2017 *Groundwater Statistical Evaluation Plan – Monroe Power Plant Coal Combustion Residual Fly Ash Basin* (Stats Plan). Based on the results of the resampling, the pH was within the prediction limits and no statistically significant increase (SSI) or decrease exists for pH in accordance with the Stats Plan. Therefore, DTE Electric continued detection monitoring at the MONPP FAB CCR unit pursuant to §257.94 of the CCR Rule. The verification sampling and results are summarized in the *Alternate Source Demonstration: 2017 Initial Detection Monitoring Sampling Event Monroe Power Plant Coal Combustion Residual Fly Ash Basin, Monroe, Michigan*, dated April 12, 2018.

The semiannual detection monitoring events for 2018 were completed in April and October 2018 and included sampling and analyzing groundwater within the groundwater monitoring system for the indicator parameters listed in Appendix III to the CCR Rule. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify SSIs in detection monitoring parameters to determine if concentrations in detection monitoring well samples exceed background levels. Detection monitoring data that has been collected and evaluated in 2018 are presented in this report.

No SSIs were recorded for the 2018 monitoring period and detection monitoring will be continued at the MONPP FAB CCR unit in accordance with §257.94. In addition, based on the artesian conditions, the low permeability of the underlying natural soils, and the calculated time of travel for groundwater to flow vertically from the MONPP FAB to the uppermost aquifer, it is not possible for the uppermost aquifer to have been affected by CCR from FAB operations that began in 1975. Also, due to limitations on CCR Rule implementation timelines, the background data sets are of relatively short duration for capturing the occurrence of natural temporal changes in the aquifer.

Section 1
Introduction

1.1 Program Summary

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended July 30, 2018. The CCR Rule, which became effective on October 19, 2015 (amendment effective August 29, 2018), applies to the DTE Electric Company (DTE Electric) Monroe Power Plant (MONPP) Coal Combustion Residual Fly Ash Basin (FAB) CCR unit. Pursuant to the CCR Rule, no later than January 31, 2018, and annually thereafter, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). On behalf of DTE Electric, TRC Engineers Michigan, Inc., the engineering entity of TRC Environmental Corporation (TRC), has prepared this Annual Groundwater Monitoring Report for calendar year 2018 activities at the MONPP FAB CCR unit (2018 Annual Report).

In the January 31, 2018 *Annual Groundwater Monitoring Report for the Monroe Power Plant Fly Ash Basin CCR* Unit, covering calendar year 2017 activities (2017 Annual Report), DTE Electric reported that the pH observed within groundwater at one or more downgradient wells was outside background limits. Resampling was performed in January 2018 in accordance with the *Groundwater Statistical Evaluation Plan – Monroe Power Plant Coal Combustion Residual Fly Ash Basin* (Stats Plan) (TRC, October 2017). Based on the results of the resampling, the pH was within the prediction limits and no statistically significant increase (SSI) or decrease exists for pH in accordance with the Stats. Therefore, DTE Electric continued detection monitoring at the MONPP FAB CCR unit pursuant to §257.94 of the CCR Rule. The verification sampling and results are summarized in the *Alternate Source Demonstration: 2017 Initial Detection Monitoring Sampling Event Monroe Power Plant Coal Combustion Residual Fly Ash Basin, Monroe, Michigan*, dated April 12, 2018, (April 2018 ASD) included in Appendix A.

This 2018 Annual Report presents the monitoring results and the statistical evaluation of the detection monitoring parameters (Appendix III to Part 257 of the CCR Rule) for the April and October 2018 semiannual groundwater monitoring events for the MONPP FAB CCR unit. Detection monitoring for these events continued to be performed in accordance with the *CCR Groundwater Monitoring and Quality Assurance Project Plan – DTE Electric Company Monroe Power Plant Coal Combustion Residual Fly Ash Basin* (QAPP) (TRC, August 2016; revised March 2017) and statistically evaluated per the Stats Plan. As part of the statistical evaluation, the data

collected during detection monitoring events are evaluated to identify SSIs of detection monitoring parameters compared to background levels.

1.2 Site Overview

The MONPP is located in Section 16, Township 7 South, Range 9 East, at 7955 East Dunbar Road, Monroe in Monroe County, Michigan (Figure 1). The MONPP FAB is located about one mile southwest of the MONPP at latitude 41° 53' 03" North and longitude 83° 22' 31" West. The MONPP FAB is bounded by Dunbar Road and Plum Creek to the north and northeast, Interstate 75 to the northwest, a 200-acre peninsula into Lake Erie to the east and southeast, Lake Erie to the south and a large open field to the southwest (Figure 2).

The property has been used continuously for the operation of the MONPP FAB since approximately 1975 and is constructed over a natural clay-rich soil base. The MONPP FAB and landfill is a Type III solid waste disposal facility owned by DTE Electric, which currently accepts coal ash from DTE Electric's MONPP. The MONPP FAB is operated in accordance with Michigan Part 115 of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended, and the current operating license number 9393.

1.3 Geology/Hydrogeology

The MONPP FAB CCR unit is located within 200 feet southwest of Plum Creek and immediately north of Lake Erie. The MONPP FAB CCR unit uppermost aquifer consists of saturated limestone present beneath at least 37 feet and up to 53.5 feet of thick contiguous silty clay-rich soil that serves as a natural confining hydraulic barrier that isolates the underlying uppermost aquifer. The limestone bedrock aquifer is artesian in every location except MW-16-01, where the static water level was approximately 1 to 2 feet below ground surface (ft bgs).

Potentiometric groundwater elevation data from 2016 through 2018 suggest that there is horizontal groundwater flow potential within the upper aquifer unit generally to the northeast towards Plum Creek. The average hydraulic gradient to the northeast is on the order of 0.002 foot/foot along the eastern part of the MONPP FAB to 0.004 to 0.005 foot/foot in the center and northwestern part of the FAB, with an overall mean of 0.004 foot/foot.

The surface water elevation within the FAB raised surface impoundment is at least 5 to more than 30 feet above the potentiometric surface elevations in the uppermost aquifer limestone, and more than 60 feet above the base of the underlying clay-rich confining unit that isolates groundwater within the limestone aquifer. Therefore, flow potential from the CCR unit to the surrounding area would be radially outward from the FAB. However, there is no hydraulic communication between the uppermost aquifer and the FAB due to the continuous silty clay-rich confining unit beneath the MONPP FAB. Based on the artesian conditions, the low

permeability of the underlying natural soils, and the calculated time of travel for groundwater to flow vertically from the FAB to the uppermost aquifer, it is not possible for the uppermost aquifer to have been affected by CCR from FAB operations that began in 1975.

The MONPP FAB CCR unit uses intrawell statistical methods because the saturated unit being monitored is isolated by a laterally contiguous silty clay unit which significantly impedes vertical groundwater flow thus preventing the monitored saturated zone from potentially being affected by CCR. In addition, the flow potential of liquid within the FAB is radially outward relative to the uppermost aquifer due to the elevation water is maintained within the FAB CCR unit. Based on these hydrogeologic conditions, intrawell statistical approaches are likely a more appropriate method to evaluate groundwater data statistically. Consequently, intrawell statistical tests are being used during detection monitoring as outlined in the Stats Plan.

Section 2
Groundwater Monitoring

2.1 Monitoring Well Network

A groundwater monitoring system has been established for the MONPP FAB CCR unit as detailed in the *Groundwater Monitoring System Summary Report – Monroe Power Plant Coal Combustion Residual Fly Ash Basin* (GWMS Report) (TRC, October 2017). The detection monitoring well network for the MONPP FAB CCR unit currently consists of seven monitoring wells that are screened in the uppermost aquifer. The monitoring well locations are shown on Figure 2.

As discussed in the Stats Plan, intrawell statistical methods for MONPP FAB were selected based on the geology and hydrogeology at the Site (primarily the presence of clay/hydraulic barrier and the hydraulic separation between the CCR unit and underlying uppermost aquifer), in addition to other supporting lines of evidence that the aquifer is unaffected by the CCR unit (such as the consistency in concentrations of water quality data). An intrawell statistical approach requires that each of the downgradient wells doubles as a background and compliance well, where data from each individual well during a detection monitoring event is compared to a statistical limit developed using the background dataset from that same well. Monitoring wells MW-16-01 through MW-16-07 are located around the perimeter of the MONPP FAB and provide data on both background and downgradient groundwater quality that has not been affected by the CCR unit (total of seven background/downgradient monitoring wells).

2.2 Semiannual Groundwater Monitoring

The semiannual monitoring parameters for the detection groundwater monitoring program were selected per the CCR Rule's Appendix III to Part 257 – Constituents for Detection Monitoring. The Appendix III indicator parameters consist of boron, calcium, chloride, fluoride, pH (field reading), sulfate, and total dissolved solids (TDS) and were analyzed in accordance with the sampling and analysis plan included within the QAPP. In addition to pH, the collected field parameters included dissolved oxygen, oxidation reduction potential, specific conductivity, temperature, and turbidity.

2.2.1 Data Summary

The first semiannual groundwater detection monitoring event for 2018 was performed during April 2 to April 3, 2018 by TRC personnel and samples were analyzed by TestAmerica in accordance with the QAPP. Static water elevation data were collected at all seven monitoring well locations. Groundwater samples were collected from the seven detection monitoring wells for the Appendix III indicator parameters and field

parameters. A summary of the groundwater data collected during the April 2018 event is provided on Table 1 (static groundwater elevation data), Table 2 (field data), and Table 3 (analytical results).

The second semiannual groundwater detection monitoring event for 2018 was performed on October 8, 2018 by TRC personnel and samples were analyzed by TestAmerica in accordance with the QAPP. Static water elevation data were collected at all seven monitoring well locations. Groundwater samples were collected from the seven detection monitoring wells for the Appendix III indicator parameters and field parameters. A summary of the groundwater data collected during the October 2018 event is provided on Table 1 (static groundwater elevation data), Table 2 (field data), and Table 4 (analytical results).

2.2.2 Data Quality Review

Data from each round were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the CCR monitoring program. Data quality reviews are summarized in Appendix B.

2.2.3 Groundwater Flow Rate and Direction

Groundwater elevation data collected during the April 2018 sampling event show that groundwater within the uppermost aquifer generally flows to the northeast across the Site (Figure 2). Groundwater potentiometric surface elevations measured across the Site during the April and October 2018 sampling events are provided on Table 1 and were used to construct the groundwater potentiometric surface maps shown on Figure 3 and Figure 4, respectively. The groundwater flow rate and direction is consistent with previous monitoring events. The average groundwater hydraulic gradient throughout the Site during both 2018 monitoring events is approximately 0.004 ft/ft with an average seepage velocity of 0.2 ft/day (73 ft/year), using the average hydraulic conductivity of 5 ft/day (TRC, 2017) and an assumed effective porosity of 0.1.

The general flow rate and direction from both events are similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III parameters that could potentially migrate from the MONPP FAB CCR unit.

Section 3
Statistical Evaluation

3.1 Establishing Background Limits

Per the Stats Plan, background limits were established for the Appendix III indicator parameters following the collection of at least eight background monitoring events using data collected from each of the seven established detection monitoring wells (MW-16-01 through MW-16-07). The statistical evaluation of the background data is presented in the 2017 Annual Report. The Appendix III background limits for each monitoring well will be used throughout the detection monitoring period to determine whether groundwater has been impacted from the MONPP FAB CCR unit by comparing concentrations in the detection monitoring wells to their respective background limits for each Appendix III indicator parameter.

3.2 Data Comparison to Background Limits – First Semiannual Event (April 2018)

The concentrations of the indicator parameters in each of the detection monitoring wells (MW-16-01 through MW-16-07) were compared to their respective statistical background limits calculated from the background data collected from each individual well (i.e., monitoring data from MW-16-01 is compared to the background limit developed using the background dataset from MW-16-01, and so forth). The comparisons for the April 2018 detection monitoring event are presented on Table 3.

Based on the statistical evaluation of the April 2018 Appendix III indicator parameters the following resamples were collected in accordance with the Stats Plan:

- Calcium at MW-16-06 and MW-16-07; and
- TDS at MW-16-06.

Verification resampling is performed per the Stats Plan and the *USEPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (USEPA, 2009) (Unified Guidance) to achieve performance standards as specified by §257.93(g) in the CCR Rule. Per the Stats Plan, if there is an exceedance of a prediction limit for one or more of the parameters, the well(s) of concern will be resampled within 30 days of the completion of the initial statistical analysis. Only constituents that initially exceed their statistical limit (i.e., have no previously recorded SSIs) will be analyzed for verification purposes.

3.3 Verification Resampling for the First Semiannual Event

Verification resampling was conducted on May 23, 2018, by TRC personnel. Groundwater samples were collected for calcium at monitoring wells MW-16-06 and MW-16-07, and TDS at MW-16-06, in accordance with the QAPP. A summary of the groundwater data collected during the verification resampling event is provided on Table 3. The associated data quality review is included in Appendix B.

All of the verification results were within the prediction limits and no SSI exists from the April 2018 event for these parameters in accordance with the Stats Plan and the Unified Guidance. As such, detection monitoring was continued in accordance with §257.94 of the CCR Rule.

3.4 Data Comparison to Background Limits – Second Semiannual Event (October 2018)

The data comparisons for the October 2018 groundwater monitoring event are presented on Table 4. The statistical evaluation of the October 2018 Appendix III indicator parameters shows all of the results are below their respective background limits and, therefore, there are no SSIs over background.

Section 4
Conclusions and Recommendations

No SSIs were recorded for the 2018 monitoring period and detection monitoring will be continued at the MONPP FAB CCR unit in accordance with §257.94. In addition, as discussed above, and in the GWMS Report, based on the artesian conditions, the low permeability of the underlying natural soils, and the calculated time of travel for groundwater to flow vertically from the MONPP FAB to the uppermost aquifer, it is not possible for the uppermost aquifer to have been affected by CCR from FAB operations that began in 1975. Also, due to limitations on CCR Rule implementation timelines, the background data sets are of relatively short duration for capturing the occurrence of natural temporal changes in the aquifer.

No corrective actions were performed in 2018. The next semiannual monitoring event at the MONPP FAB CCR unit is scheduled for the second calendar quarter of 2019.

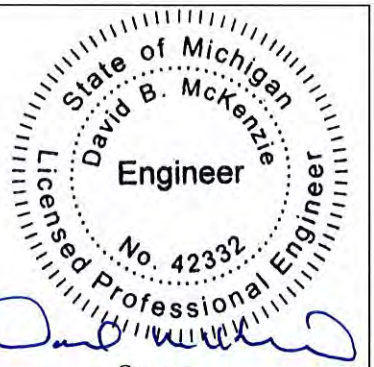
Section 5
Groundwater Monitoring Report Certification

The U.S. EPA's Disposal of Coal Combustion Residuals from Electric Utilities Final Rule Title 40 CFR Part 257 §257.90(e) requires that the owner or operator of an existing CCR unit prepare an annual groundwater monitoring and corrective action report.

Annual Groundwater Monitoring Report Certification
Monroe Power Plant Fly Ash Basin
Monroe, Michigan

CERTIFICATION

I hereby certify that the annual groundwater and corrective action report presented within this document for the MONPP FAB CCR unit has been prepared to meet the requirements of Title 40 CFR §257.90(e) of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.90(e).

Name: David B. McKenzie, P.E.	Expiration Date: October 31, 2019	 Stamp
Company: TRC Engineers Michigan, Inc.	Date: January 31, 2019	

Section 6
References

TRC Environmental Corporation. August 2016; Revised March 2017. CCR Groundwater Monitoring and Quality Assurance Project Plan – DTE Electric Company Monroe Power Plant Coal Combustion Residual Fly Ash Basin, 7955 East Dunbar Road, Monroe, Michigan. Prepared for DTE Electric Company.

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USEPA. April 2018. Barnes Johnson (Office of Resource Conservation and Recovery) to James Roewer (c/o Edison Electric Institute) and Douglas Green, Margaret Fawal (Venable LLP). Re: Coal Combustion Residuals Rule Groundwater Monitoring Requirements. April 30, 2018. United States Environmental Protection Agency, Washington, D.C. 20460. Office of Solid Waste and Emergency Response, now the Office of Land and Emergency Management.

Tables

Table 1
Summary of Groundwater Elevation Data – April and October 2018
Monroe Power Plant Fly Ash Basin – RCRA CCR Monitoring Program
Monroe, Michigan

Well ID	MW-16-01		MW-16-02		MW-16-03		MW-16-04		MW-16-05		MW-16-06		MW-16-07	
Date Installed	2/17/2016		2/18/2016		2/16/2016		2/15/2016		4/13/2016		4/13/2016		4/14/2016	
TOC Elevation	581.74		581.81		579.95		585.54		583.25		581.94		578.40	
Geologic Unit of Screened Interval	Silt/Limestone Interface		Silt/Limestone Interface		Sand & Silty Clay Limestone Interface		Silty Sand and Gravel		Limestone		Gravel and Cobbles		Silt/Limestone Interface	
Screened Interval Elevation	530.9 to 525.9		526.4 to 521.4		540.3 to 535.3		541.6 to 536.6		540.5 to 535.5		534.2 to 529.2		540.4 to 535.4	
Unit	ft BTOC	ft	ft BTOC	ft	ft BTOC	ft	ft BTOC	ft	ft BTOC	ft	ft BTOC	ft	ft BTOC	ft
Measurement Date	Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation
4/2/2018	4.90	576.84	-2.90	584.71	-11.20	591.15	-15.80	601.34	-12.80	596.05	-0.50	582.44	-7.10	585.50
10/8/2018	4.90	576.84	-2.00	583.81	-8.30	588.25	-13.30	598.84	-10.75	594.00	0.27	581.67	-6.50	584.90

Notes:

Negative depth to water measurement indicates artesian conditions, actual measured water level is above the top of casing.

Elevations are reported in feet relative to the North American Vertical Datum of 1988.

ft BTOC - feet below top of casing

Table 2
Summary of Field Parameters – April and October 2018
Monroe Power Plant Fly Ash Basin – RCRA CCR Monitoring Program
Monroe, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (deg C)	Turbidity (NTU)
MW-16-01	4/2/2018	0.37	17.9	7.1	2,371	10.47	3.81
	10/8/2018	1.64	59.0	7.1	1,578	14.17	2.86
MW-16-02	4/3/2018	0.11	13.8	7.0	2,350	10.35	2.84
	10/8/2018	0.08	5.8	7.1	2,095	12.11	4.53
MW-16-03	4/3/2018	0.09	-3.8	7.0	2,374	11.28	14.8
	10/8/2018	0.11	-12.7	7.1	2,104	14.35	11.2
MW-16-04	4/3/2018	0.13	-105.2	7.0	2,176	11.00	2.59
	10/8/2018	0.11	-56.2	7.1	2,042	11.81	2.03
MW-16-05	4/3/2018	0.07	-41.3	7.0	2,234	11.53	9.95
	10/8/2018	0.05	-21.6	7.1	2,013	12.02	5.96
MW-16-06	4/2/2018	0.10	14.6	7.1	2,276	11.84	4.58
	10/8/2018	1.28	27.1	7.0	1,658	15.75	38.2
MW-16-07	4/2/2018	0.08	-10.8	7.0	2,177	11.74	3.15
	10/8/2018	0.06	-13.4	7.0	2,008	12.59	2.69

Notes:

mg/L - milligrams per liter.

mV - milliVolt.

SU - standard unit.

umhos/cm - micro-mhos per centimeter.

deg C - degrees celcius.

NTU - nephelometric turbidity units.

Table 3
Comparison of Appendix III Parameter Results to Background Limits – April 2018
Monroe Power Plant Fly Ash Basin – RCRA CCR Monitoring Program
Monroe, Michigan

Sample Location:		MW-16-01		MW-16-02		MW-16-03		MW-16-04		MW-16-05		MW-16-06			MW-16-07		
Sample Date:		4/2/2018	PL	4/3/2018	PL	4/3/2018	PL	4/3/2018	PL	4/3/2018	PL	4/2/2018	5/23/18[1]	PL	4/2/2018	5/23/18[1]	PL
Constituent	Unit	Data		Data		Data		Data		Data		Data			Data		
Appendix III																	
Boron	ug/L	280	310	400	470	460	510	180	210	240	280	340	--	400	220	--	280
Calcium	ug/L	420,000	450,000	410,000	430,000	280,000	490,000	300,000	610,000	440,000	440,000	**430,000**	380,000	420,000	**450,000**	410,000	440,000
Chloride	mg/L	11	14	14	15	19	20	35	39	11	12	12	--	12	8.1	--	13
Fluoride	mg/L	1.8	2.1	1.6	1.8	1.5	1.8	1.0	1.1	1.5	1.7	1.6	--	1.8	1.5	--	1.8
pH, Field	SU	7.1	6.3 - 9.0	7.0	6.9 - 7.3	7.0	6.7 - 7.3	7.0	7.0 - 7.5	7.0	6.6 - 7.7	7.1	--	7.0 - 7.3	7.0	--	6.9 - 7.4
Sulfate	mg/L	1,500	1,500	1,500	1,700	1,600	1,700	1,400	1,500	1,400	1,600	1,500	--	1,600	1,400	--	1,600
Total Dissolved Solids	mg/L	2,200	2,200	2,100	2,300	2,200	2,300	2,000	2,200	2,000	2,200	**2,500**	2,200	2,300	2,000	--	2,200

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

-- = not analyzed

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL).

RESULT Shading and bold font indicates a comfirmed exceedance of the Prediction Limit (PL).

(1) Results shown for verification sampling performed on 5/23/18.

Table 4
Comparison of Appendix III Parameter Results to Background Limits – October 2018
Monroe Power Plant Fly Ash Basin – RCRA CCR Monitoring Program
Monroe, Michigan

Sample Location:		MW-16-01		MW-16-02		MW-16-03		MW-16-04		MW-16-05		MW-16-06		MW-16-07	
Sample Date:		10/8/2018	PL	10/8/2018	PL	10/8/2018	PL	10/8/2018	PL	10/8/2018	PL	10/8/2018	PL	10/8/2018	PL
Constituent	Unit	Data		Data		Data		Data		Data		Data		Data	
Appendix III															
Boron	ug/L	280	310	410	470	480	510	200	210	240	280	360	400	220	280
Calcium	ug/L	350,000	450,000	340,000	430,000	400,000	490,000	500,000	610,000	350,000	440,000	360,000	420,000	360,000	440,000
Chloride	mg/L	11	14	14	15	19	20	35	39	11	12	12	12	8.1	13
Fluoride	mg/L	1.7	2.1	1.5	1.8	1.5	1.8	0.99	1.1	1.4	1.7	1.5	1.8	1.5	1.8
pH, Field	SU	7.1	6.3 - 9.0	7.1	6.9 - 7.3	7.1	6.7 - 7.3	7.1	7.0 - 7.5	7.1	6.6 - 7.7	7.0	7.0 - 7.3	7.0	6.9 - 7.4
Sulfate	mg/L	1,500	1,500	1,600	1,700	1,600	1,700	1,500	1,500	1,600	1,600	1,600	1,600	1,600	1,600
Total Dissolved Solids	mg/L	2,100	2,200	2,200	2,300	2,200	2,300	2,000	2,200	2,000	2,200	2,100	2,300	2,100	2,200

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

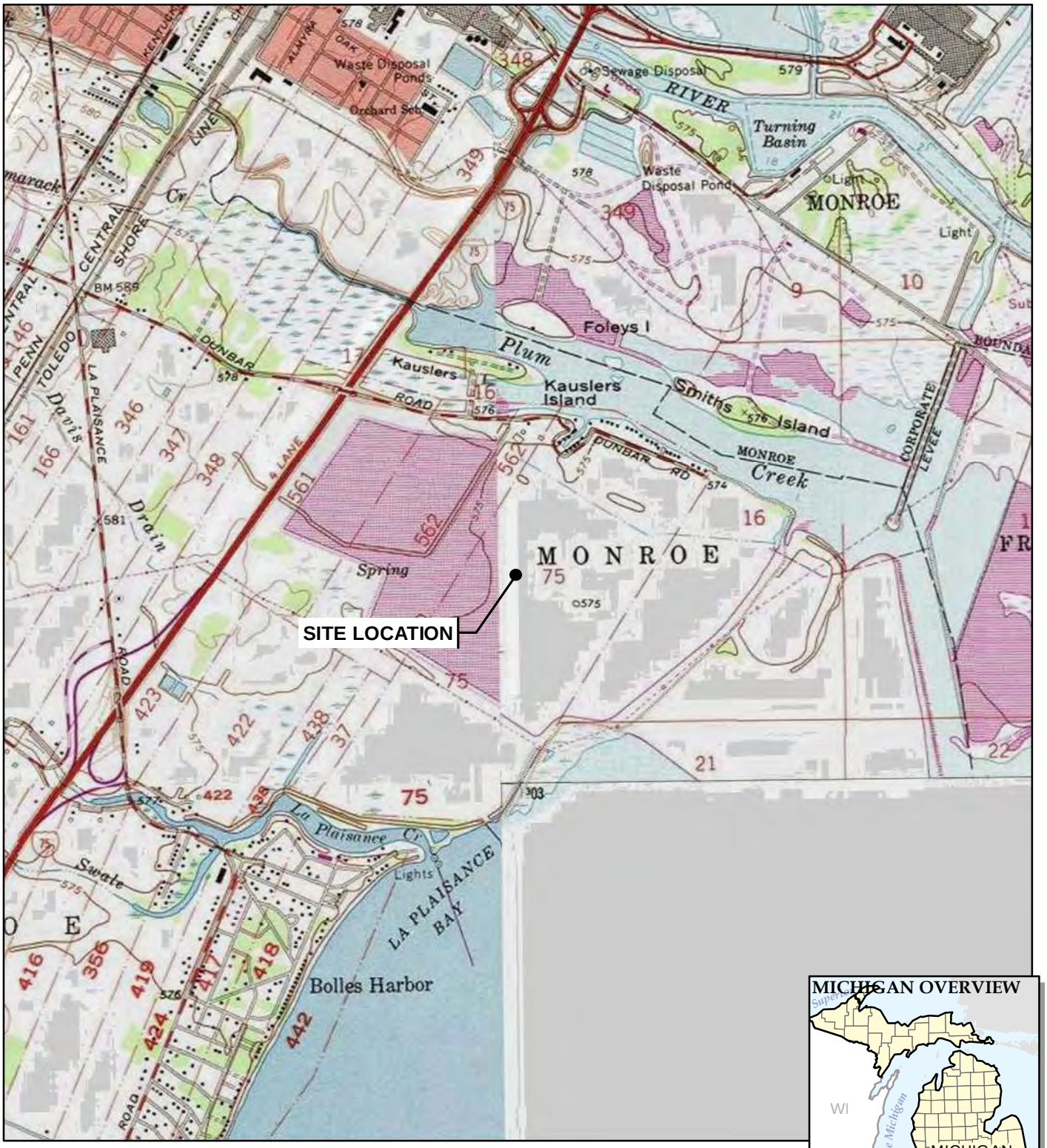
-- = not analyzed

All metals were analyzed as total unless otherwise specified.

Bold font indicates an exceedance of the Prediction Limit (PL).

RESULT Shading and bold font indicates a comfirmed exceedance of the Prediction Limit (PL).

Figures



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

N

1 " = 2,000 '
1:24,000

0 2,000 4,000
FEET

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108-3284
Phone: 734.971.7080
TRC - GIS

PROJECT:
DTE ELECTRIC COMPANY
MONROE POWER PLANT
7955 EAST DUNBAR ROAD
MONROE, MICHIGAN

TITLE:
SITE LOCATION MAP

DRAWN BY:	J. PAPEZ
CHECKED BY:	S HOLMSTROM
APPROVED BY:	V. BUENING
DATE:	OCTOBER 2017
PROJ. NO.:	265996.0001
FILE:	265996-SLMMB.mxd

FIGURE 1

E:\DTE\CCR_Sites\2017_265996\265996-SLMMB.mxd -- Saved By: BDEEGAN on 10/9/2017, 14:49:39 PM

LEGEND

- MONITORING WELLS
- APPROXIMATE BOUNDARY OF FLY ASH BASIN

NOTES

1. BASE MAP IMAGERY FROM ESRI/MICROSOFT, "WORLD IMAGERY", WEB BASEMAP SERVICE LAYER.
2. WELL LOCATIONS SURVEYED BY BMJ ENGINEERS AND SURVEYORS INC. IN MARCH AND MAY 2016.

0 600 1,200 Feet

1 " = 600 '

1:7,200

PROJECT:

DTE ELECTRIC COMPANY
MONROE POWER PLANT FLY ASH BASIN
7955 EAST DUNBAR ROAD
MONROE, MICHIGAN

TITLE:

MONITORING NETWORK AND SITE PLAN

DRAWN BY:	J. PAPEZ	PROJ NO.:	265996.0001
CHECKED BY:	S. HOLMSTROM		
APPROVED BY:	V. BUENING		**FIGURE 2**
DATE:	JANUARY 2018		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108-3284
Phone: 734.971.7080
www.trcsolutions.com

FILE NO.: 265996-0001-000.mxd

TRC - GIS
Coordinate System: NAD 1983 UTM Zone 17N (Meter)
Map Rotation: 0
Plot Date: 1/29/2018, 09:45:57 AM by SMAJOR – LAYOUT: ANSI B (11"x17")
Path: E:\DTE\CCR_Sites\2017_265996\265996-0001-000.mxd

LEGEND

- MONITORING WELL
- APPROXIMATE BOUNDARY OF FLY ASH BASIN
- INFERRED GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC SURFACE CONTOUR LINE (5-FT INTERVAL,DASHED WHERE INFERRED)
- (582.69) STATIC WATER ELEVATION IN FEET (NAVD, 1988)

NOTES

1. BASE MAP IMAGERY FROM ESRI/MICROSOFT, "WORLD IMAGERY", WEB BASEMAP SERVICE LAYER.
2. WELL LOCATIONS SURVEYED BY BMJ ENGINEERS AND SURVEYORS INC. IN MARCH AND MAY 2016.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988

N

0 600 1,200 Feet

1 " = 600 '

1:7,200

PROJECT:
DTE ELECTRIC COMPANY
MONROE POWER PLANT FLY ASH BASIN
7955 EAST DUNBAR ROAD
MONROE, MICHIGAN

TITLE:
POTENTIOMETRIC SURFACE MAP APRIL 2018

DRAWN BY:	S MAJOR	PROJ NO.:	265996.0001
CHECKED BY:	C. SCIESZKA		
APPROVED BY:	V. BUENING		**FIGURE 3**
DATE:	JANUARY 2019		

TRC
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FILE NO.: 265996-0001-013.mxd

TRC - GIS
Coordinate System: NAD 1983 UTM Zone 17N (Meter)
Map Rotation: 0
Plot Date: 1/2/2019, 09:48:54 AM by SMAJOR -- LAYOUT: ANSI B(11"x17")
Path: E:\DTE\CCR_Sites\2017_265996\265996-0001-013.mxd

LEGEND

- MONITORING WELL
- APPROXIMATE BOUNDARY OF FLY ASH BASIN
- INFERRED GROUNDWATER FLOW DIRECTION
- POTENTIOMETRIC SURFACE CONTOUR LINE (5-FT INTERVAL,DASHED WHERE INFERRED)
- (582.69) STATIC WATER ELEVATION IN FEET (NAVD, 1988)

NOTES

1. BASE MAP IMAGERY FROM ESRI/MICROSOFT, "WORLD IMAGERY", WEB BASEMAP SERVICE LAYER.
2. WELL LOCATIONS SURVEYED BY BMJ ENGINEERS AND SURVEYORS INC. IN MARCH AND MAY 2016.
3. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988

N

0 600 1,200 Feet

1 " = 600 '

1:7,200

PROJECT:
DTE ELECTRIC COMPANY
MONROE POWER PLANT FLY ASH BASIN
7955 EAST DUNBAR ROAD
MONROE, MICHIGAN

TITLE:
POTENTIOMETRIC SURFACE MAP OCTOBER 2018

DRAWN BY:	S MAJOR	PROJ NO.:	265996.0001
CHECKED BY:	C. SCIESZKA		
APPROVED BY:	V. BUENING		**FIGURE 4**
DATE:	JANUARY 2019		

TRC
1540 Eisenhower Place
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FILE NO.: 265996-0001-015.mxd

TRC - GIS
Coordinate System: NAD 1983 UTM Zone 17N (Meter)
Map Rotation: 0
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Path: E:\DTE\CCR_Sites\2017_265996\265996-0001-015.mxd

Appendix A
Alternate Source Demonstration

Technical Memorandum

Date: April 12, 2018

To: Robert J. Lee, DTE Electric Company

From: Sarah Holmstrom, TRC
Graham Crockford, TRC

Project No.: 265996.0001.0000 Phase 002, Task 001

Subject: Alternate Source Demonstration: 2017 Initial Detection Monitoring Sampling Event
Monroe Power Plant Coal Combustion Residual Fly Ash Basin, Monroe, Michigan

Introduction

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule). The CCR Rule, which became effective on October 19, 2015, applies to the DTE Electric Company (DTE Electric) Monroe Power Plant (MONPP) Coal Combustion Residual Fly Ash Basin (FAB) CCR unit.

TRC Engineers Michigan, Inc. (TRC) prepared the 2017 Annual Groundwater Monitoring Report (Annual Report) for the MONPP FAB CCR unit on behalf of DTE Electric in accordance with the requirements of §257.90(e) (TRC, 2018). The Annual Report included the results of the September 2017 semiannual groundwater monitoring event for the MONPP FAB CCR unit and the statistical evaluation of the detection monitoring parameters (Appendix III to Part 257 of the CCR Rule) for the MONPP FAB CCR unit. This event was the initial detection monitoring event performed to comply with §257.94. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify statistically significant increases (SSIs) in detection monitoring parameters to determine if concentrations in detection monitoring well samples exceed background levels. The statistical analysis was performed pursuant to §257.93(f) and (g), and in accordance with the Groundwater Statistical Evaluation Plan (Stats Plan) (TRC, 2017).

The statistical evaluation of the September 2017 Appendix III indicator parameters showed potential SSIs over background for:

- pH at MW-16-06 and MW-16-07

All other Appendix III constituents were within the statistical background limits.

Technical Memorandum

In accordance with §257.94(3)(2), DTE Electric may demonstrate that a source other than the CCR unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This Alternate Source Demonstration (ASD) has been prepared to address the potential SSIs identified in the September 2017 detection monitoring event.

Background

The MONPP is located in Monroe in Monroe County, Michigan. The MONPP FAB is bounded by Dunbar Road and Plum Creek to the north and northeast, Interstate 75 to the northwest, a 200-acre peninsula into Lake Erie to the east and southeast, Lake Erie to the south and a large open field to the southwest. The property has been used continuously for the operation of the MONPP FAB since approximately 1975 and is constructed over a natural clay-rich soil base. The MONPP FAB and landfill is a Type III solid waste disposal facility owned by DTE Electric, which currently accepts coal ash from DTE Electric's MONPP. The MONPP FAB is operated in accordance with Michigan Part 115 of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended, and the current operating license number 9393.

The MONPP FAB CCR unit uppermost aquifer consists of saturated limestone present beneath at least 37 feet and up to 53.5 feet of thick contiguous silty clay-rich soil that serves as a natural confining hydraulic barrier that isolates the underlying uppermost aquifer. The limestone bedrock aquifer is artesian in every location except MW-16-01, where the static water level was approximately 1 to 2 feet below ground surface (bgs).

The detection monitoring well network for the MONPP FAB CCR unit currently consists of seven monitoring wells that are screened in the uppermost aquifer. The MONPP FAB CCR unit uses intrawell statistical methods because the saturated unit being monitored is isolated by a laterally contiguous silty clay unit which significantly impedes vertical groundwater flow thus preventing the monitored saturated zone from potentially being affected by CCR. In addition, the flow potential of liquid within the FAB is radially outward relative to the uppermost aquifer due to the elevation water is maintained within the FAB CCR unit. Based on these hydrogeologic conditions, intrawell statistical tests are used during detection monitoring as outlined in the Stats Plan.

Alternate Source Demonstration

Verification resampling was performed as recommended per the Stats Plan and the USEPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (Unified Guidance, USEPA, 2009) to achieve performance standards as specified by §257.93(g) in the CCR rules. Per the Stats Plan, if there is an exceedance of a prediction limit for one or more of the parameters, the well(s) of concern will be resampled within 30 days of the completion of the initial statistical analysis. Only constituents that initially exceed their statistical limit (i.e., have no previously recorded SSIs) will be analyzed for verification purposes. As such, verification resampling

was conducted on January 8, 2018, by TRC personnel. Groundwater samples were collected for pH (field reading) at monitoring wells MW-16-06 and MW-16-07 in accordance with the Quality Assurance Project Plan (TRC, August 2016; Revised March 2017). A summary of the groundwater data collected during the verification resampling event is provided on Table 1. The associated data quality review is included in Attachment A.

All of the pH verification results are within the prediction limits; consequently, the initial SSIs from the September 2017 event are not confirmed. Therefore, in accordance with the Stats Plan and the Unified Guidance, the initial exceedances are not statistically significant and no SSIs will be recorded for the September 2017 monitoring event.

Conclusions and Recommendations

Based on the results of the verification resampling, the initial exceedances for pH at monitoring wells MW-16-06 and MW-16-07 are not statistically significant; therefore, no SSIs are recorded for the initial detection monitoring event.

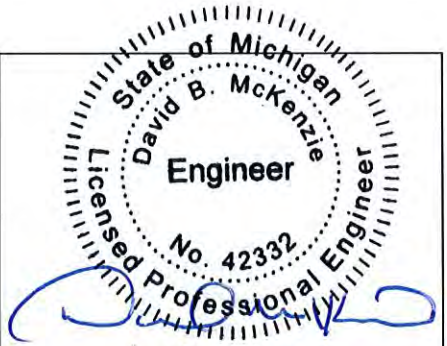
In addition, as discussed in the Annual Report, based on the artesian conditions, the low permeability of the underlying natural soils, and the calculated time of travel for groundwater to flow vertically from the MONPP FAB to the uppermost aquifer, it is not possible for the uppermost aquifer to have been affected by CCR from FAB operations that began in 1975. Due to limitations on CCR Rule implementation timelines, the background data sets are of relatively short duration for capturing the occurrence of natural temporal changes in the aquifer.

Since no confirmed SSIs over background limits were identified for any of the Appendix III parameters during the September 2017 monitoring event, DTE Electric will continue with the detection monitoring program at MONPP FAB. The next semiannual monitoring event is scheduled for the second calendar quarter of 2018.

Technical Memorandum

Certification Statement

I hereby certify that the alternative source demonstration presented within this document for the MONPP FAB CCR unit has been prepared to meet the requirements of Title 40 CFR §257.94(e) 2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e) 2.

Name: David B. McKenzie, P.E.	Expiration Date: October 31, 2019	 Stamp
Company: TRC Engineers Michigan, Inc.	Date: April 12, 2018	

References

TRC Environmental Corporation. August 2016; Revised March 2017. CCR Groundwater Monitoring and Quality Assurance Project Plan – DTE Electric Company Monroe Power Plant Coal Combustion Residual Fly Ash Basin, 7955 East Dunbar Road, Monroe, Michigan. Prepared for DTE Electric Company.

TRC Environmental Corporation. October 2017. Groundwater Statistical Evaluation Plan – Monroe Power Plant Coal Combustion Residual Fly Ash Basin, 7955 East Dunbar Road, Monroe, Michigan. Prepared for DTE Electric Company.

TRC Environmental Corporation. January 2018. Annual Groundwater Monitoring Report – Monroe Power Plant Coal Combustion Residual Fly Ash Basin, 7955 East Dunbar Road, Monroe, Michigan. Prepared for DTE Electric Company.

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.

Attachments

Table 1. Comparison of Verification Sampling Results to Background Limits

Attachment A. Data Quality Review

Table 1

Table 1
Comparison of Verification Sampling Results to Background Limits
Monroe Power Plant Fly Ash Basin – RCRA CCR Monitoring Program
Monroe, Michigan

	Sample Location:	MW-16-06		MW-16-07	
	Sample Date:	1/8/2018		1/8/2018	
Constituent	Unit	Data	PL	Data	PL
Appendix III					
pH, Field	SU	7.0	7.0 - 7.3	7.0	6.9 - 7.4

Notes:

SU - standard units; pH is a field parameter.

RESULT Shading and bold font indicates a confirmed exceedance of the Prediction Limit (PL).

Attachment A

Field Parameter Data Quality Review
Groundwater Monitoring Event January 2018 (Verification Resampling)
DTE Electric Company Monroe Fly Ash Basin (DTE MFAB)

On January 8, 2018, TRC Environmental Corporation (TRC) collected groundwater samples at monitoring wells MW-16-06 and MW-16-07 to verify initial pH (field measured) results that were outside of the prediction limits during the September 2017 detection monitoring event. Prior to sample collection, groundwater was purged and stabilized using the low flow sampling methods followed during the September 2017 monitoring event in accordance with the *CCR Groundwater Monitoring and Quality Assurance Project Plan* (TRC, March 2017).

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Quality Review Procedure

The following items were included in the evaluation of the data:

- Review of sonde calibration data;
- Confirm field parameter stabilization criteria were met;
- Compare field parameters to historical data; and
- Overall usability of the data based on these items.

Review Summary

The data quality objectives and completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation are noted below.

QA/QC Sample Summary:

- Sonde calibration readings were within calibration range for all field parameters.
- Field parameters met stabilization criteria for 3 successive readings.
- Field parameters readings were comparable to historical data.
- Data are usable for purposes of verification resampling.

Appendix B
Data Quality Reviews

Laboratory Data Quality Review
Groundwater Monitoring Event April 2018 (Detection Monitoring)
DTE Electric Company Monroe Fly Ash Basin (DTE MFAB)

Groundwater samples were collected by TRC for the April 2018 sampling event. Samples were analyzed for anions, total metals, and total dissolved solids by Test America Laboratories, Inc. (Test America), located in Canton, Ohio. The laboratory analytical results are reported in laboratory report J93633-1.

During the April 2018 sampling event, a groundwater sample was collected from each of the following wells:

- MW-16-01
- MW-16-02
- MW-16-03
- MW-16-04
- MW-16-05
- MW-16-06
- MW-16-07

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	EPA 300.0
Total Metals	EPA 6010B
Total Dissolved Solids	SM 2540C

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Quality Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Data for method blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD). Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Reporting limits (RLs) compared to project-required RLs;

- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes;
- Data for laboratory control samples (LCSs). The LCSs are used to assess the accuracy of the analytical method using a clean matrix;
- Overall usability of the data.

This data usability report addresses the following items:

  - Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
  - Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation are noted below.

- Appendix III constituents will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.

QA/QC Sample Summary:

- Target analytes were not detected in the method blank.
- LCS recoveries were within laboratory control limits.
- Dup-01 corresponds with MW-16-05; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits.
- MS/MSD analyses were performed on sample MW-16-07 for anions (chloride and fluoride). Percent recoveries and RPDs were within the QC limits.

Laboratory Data Quality Review
Groundwater Monitoring Event May 2018 (Verification Resampling)
DTE Electric Company Monroe Fly Ash Basin (DTE MFAB)

Groundwater samples were collected by TRC for the May 2018 verification resampling event. Samples were analyzed for total metals (calcium) and total dissolved solids by Test America Laboratories, Inc. (Test America), located in Canton, Ohio. The laboratory analytical results are reported in laboratory report J96216-1.

During the May 2018 sampling event, a groundwater sample was collected from each of the following wells:

- MW-16-01
- MW-16-02
- MW-16-03
- MW-16-04
- MW-16-05
- MW-16-06
- MW-16-07

Each sample was analyzed for the following constituents:

Analyte Group	Method
Total Metals (Calcium)	EPA 6020
Total Dissolved Solids	SM 2540C

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Quality Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures;
- Data for laboratory control samples (LCSs). The LCSs are used to assess the accuracy of the analytical method using a clean matrix;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes;

- Overall usability of the data.

This data usability report addresses the following items:

  - Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
  - Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation are noted below.

- Appendix III constituents will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.

QA/QC Sample Summary:

- Target analytes were not detected in the associated method blanks.
- LCS recoveries were within laboratory control limits.
- The field duplicate pair was sample Dup-01 with MW-16-06; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits.

Laboratory Data Quality Review
Groundwater Monitoring Event October 2018 (Detection Monitoring)
DTE Electric Company Monroe Fly Ash Basin (DTE MFAB)

Groundwater samples were collected by TRC for the October 2018 sampling event. Samples were analyzed for anions, total metals, and total dissolved solids by Test America Laboratories, Inc. (Test America), located in North Canton, Ohio. The laboratory analytical results are reported in laboratory report 240-102555-1.

During the October 2018 sampling event, a groundwater sample was collected from each of the following wells:

- MW-16-01
- MW-16-02
- MW-16-03
- MW-16-04
- MW-16-05
- MW-16-06
- MW-16-07

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Chloride, Fluoride, Sulfate)	SW846 9056A
Total Boron	SW846 3005A/6010B
Total Calcium	SW846 3005A/6020
Total Dissolved Solids	SM 2540C

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Quality Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2017). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks and equipment blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs). The LCSs are used to assess the accuracy of the analytical method using a clean matrix;

- Data for matrix spike and matrix spike duplicate samples (MS.MSDs). The MS/MSDs are used to assess the accuracy and precision of the analytical method using a sample from the dataset;
- Data for laboratory duplicates. The laboratory duplicates are used to assess the precision of the analytical method using a sample from the dataset;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation are noted below.

- Appendix III constituents will be utilized for the purposes of a detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.

QA/QC Sample Summary:

- Target analytes were not detected in the method blank.

- LCS recoveries for all target analytes were within laboratory control limits.

- Dup-01 corresponds with MW-16-01; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits.