



2021 Annual Groundwater Monitoring and Corrective Action Report

Landfill Phase V, Phase VI, and Phase VII

NIPSCO LLC R. M. Schahfer Generating Station

Prepared Pursuant to 40 CFR §257.90(e) and Corresponding Regulations under 329 Indiana
Administrative Code 10-9-1

Submitted to:

Northern Indiana Public Service Company LLC

R.M. Schahfer Generating Station
Wheatfield, Indiana

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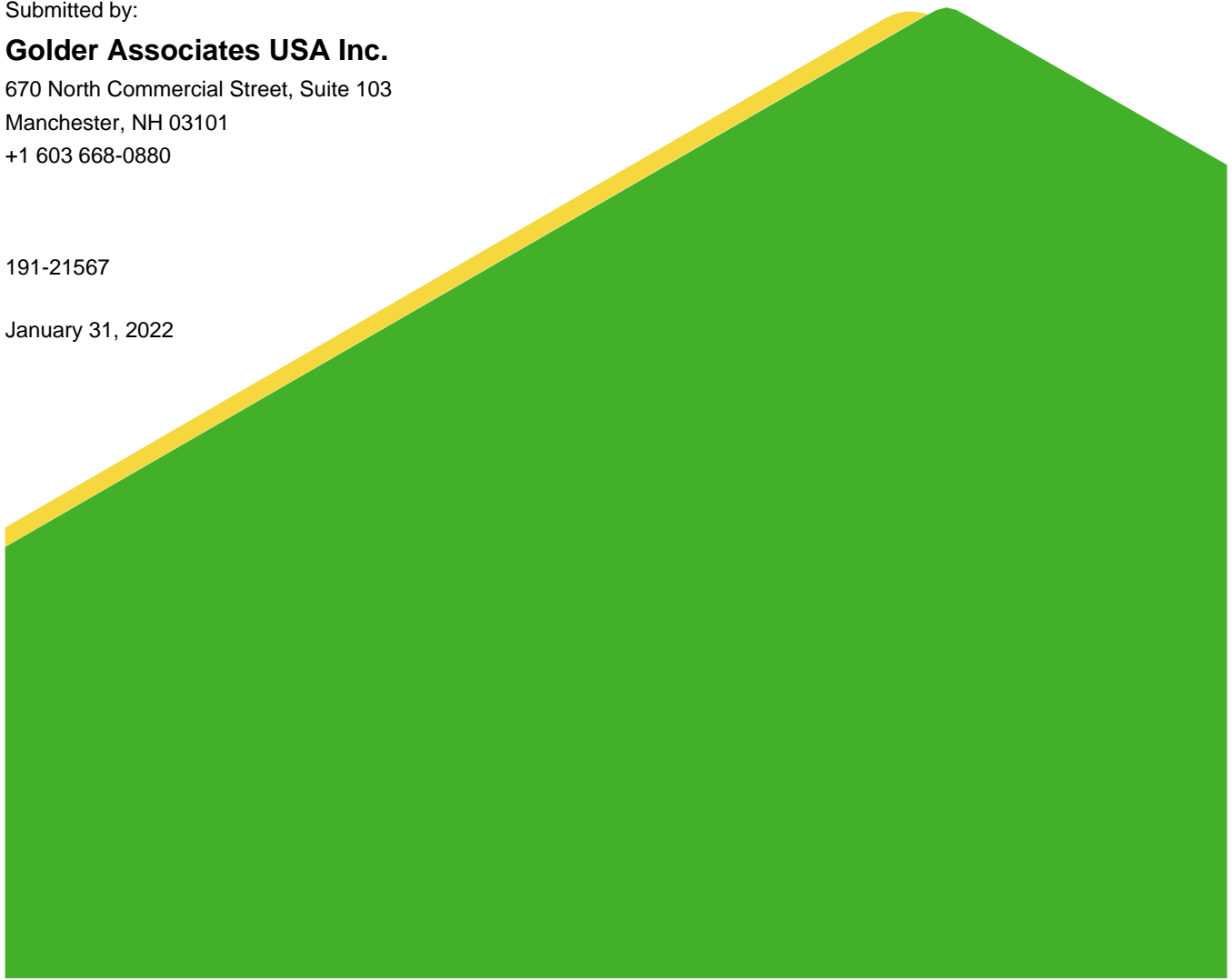


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1.0 INTRODUCTION

On behalf of Northern Indiana Public Service Company LLC (NIPSCO), Golder Associates USA Inc., a member of WSP (Golder), prepared this 2021 Annual Groundwater Monitoring and Corrective Action Report (2021 Annual Report) for the Rollin M. Schahfer Generating Station (RMSGGS, Schahfer) Landfill Phases V, VI, and VII (together, the CCR Unit) located at 2723 E 1500 N in Wheatfield, Jasper County, Indiana (Latitude 41° 12' 36" N and Longitude 87° 01' 48" W, see Figure 1). The three landfill phases include:

- Phase V is an approximately 18-acre cell that stopped receiving CCR on April 1, 2017
- Phase VI is an approximately 15-acre cell located due north of Phase V, which began receiving CCR on August 1, 2016 and stopped receiving CCR on June 25, 2021
- Phase VII is an approximately 14-acre lined cell located immediately north of Phase VI, which began receiving waste on June 24, 2021. NIPSCO designed Phase VII to meet the CCR Rule liner requirements.

Closed, non-regulated (under the CCR Rule) Schahfer Landfill Phases I through IV are primarily located east of the CCR Rule-regulated landfill cells as shown in Figure 2. Golder prepared the 2021 Annual Report in accordance with 40 Code of Federal Regulations (CFR) Parts 257 and 261, "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule" (CCR Rule), as amended, and corresponding regulations under 329 Indiana Administrative Code (IAC) 10-9-1.

To comply with the CCR Rule, NIPSCO and Golder decided to monitor Phases V, VI, and VII as one CCR Unit due to the design, construction, and proximity of historical non-regulated landfill cells (i.e., Phases II and III) and because there is no practical means of monitoring groundwater between the three CCR landfill cells (i.e., Phases V, VI, and VII). NIPSCO updated the monitoring well network in 2018 concurrent with construction of Phase VII. The CCR Unit is currently in Detection Monitoring pursuant to 40 CFR §257.94. Routine monitoring activities performed during the reporting period include inspection of wells for integrity and security, measurement of groundwater levels prior to sample collection to assess groundwater flow direction, and collection of samples for laboratory analysis.

In conformance with the applicable requirements of 40 CFR §257.90(e)(1) through (5) and corresponding State of Indiana requirements, the 2021 Annual Report:

- Documents the status of the groundwater monitoring and corrective action program
- Provides figures showing the CCR Unit and monitoring well locations
- Summarizes key CCR Rule groundwater activities completed during calendar year 2021
- Includes CCR Rule groundwater monitoring data obtained in calendar year 2021
- Describes any problems encountered during monitoring activities
- Discusses actions taken to resolve the problems, if applicable
- Projects key activities for the upcoming year

2.0 GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM OVERVIEW OF CURRENT STATUS

Starting in 2016 following the installation of a groundwater monitoring system (Table 1) and throughout calendar years 2017 and 2018, Golder collected background groundwater samples and performed Detection Monitoring at the CCR Unit pursuant to the requirements of 40 CFR §257.94. Following the identification of statistically significant increases (SSIs) in January 2018, Golder prepared an alternative source demonstration (ASD) in April 2018, consequently, the CCR Unit remained in Detection Monitoring. Golder performed the fourth and fifth Detection Monitoring sampling events in 2019, the sixth and seventh Detection Monitoring sampling events in 2020, and the eighth and ninth Detection Monitoring events in 2021. The sampling dates, number of groundwater samples collected from each background and downgradient well, and the purpose of sampling associated with the eighth and ninth Detection Monitoring events are provided in Table 2. The 2021 analytical results are presented in Table 3. The SSIs identified in 2021 are summarized in the embedded table below.

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH ¹	TDS
GAMW26				X			
GAMW27	X	X			X		X
GAMW27B	X	X	X		X		X
GAMW38B	X	X			X		X
GAMW39B	X	X	X		X		X
GAMW40	X	X					X
GAMW40B	X		X		X	X	X
GAMW41	X		X		X		X
GAMW41B	X	X	X		X		X

"X" represents an SSI

1 = pH value is based on field water quality meter reading

Pursuant to 40 CFR §257.94, a qualified Indiana-licensed professional engineer recertified the ASD in March and October 2021; thus, the CCR Unit began and ended the current annual reporting period in Detection Monitoring. Based upon groundwater monitoring results collected pursuant to the CCR Rule to date, no corrective measures program requirements as outlined in 40 CFR §257.96-98 have either been triggered or implemented at the CCR Unit.

2.1 Key Actions Completed - 2021

NIPSCO completed the following key actions relative to CCR Rule groundwater monitoring at the CCR Unit during calendar year 2021:

- Preparation of the of 2020 Groundwater Monitoring and Corrective Action Annual Report in January 2021 (2020 Annual Report, 40 CFR §257.90(e))

- Recertification of the RMSGS Landfill Phases V, VI, and VII Alternative Source Demonstration (ASD) in March 2021 (40 CFR §257.94(e))
- Performance of the eighth Detection Monitoring event in April 2021 (40 CFR §257.94)
- Evaluation of the results of the eighth Detection Monitoring event in July 2021 (40 CFR §257.95(d))
- Performance of the ninth Detection Monitoring event in September 2021 (40 CFR §257.94)
- Recertification of the RMSGS Landfill Phases V, VI, and VII ASD in October 2021 (40 CFR §257.94(e))
- Evaluation of the results of the ninth Detection Monitoring event in December 2021 (40 CFR §257.95(d))

2.2 Monitoring System Modifications

The groundwater monitoring system did not require any modifications in 2021 (see Figure 2). Table 1 provides a summary of the well rationale/purpose and date of installation. An overview of the groundwater monitoring network is provided below.

Background Monitoring Wells	Downgradient Monitoring Wells	Decommissioned Monitoring Wells
GAMW-20, GAMW-24, GAMW-24B, GAMW-25, GAMW-25B	GAMW-26, GAMW-26B, GAMW-27, GAMW-27B, GAMW-38, GAMW-38B, GAMW-39, GAMW-39B, GAMW-40, GAMW-40B, GAMW-41, GAMW-41B	GAMW-21, GAMW-21B, GAMW-22, GAMW-22B, GAMW-23, GAMW-23B, GAMW-28, GAMW-28B

2.3 Background Monitoring (2016 to 2017)

Per the requirements of 40 CFR §257.94, Golder collected eight independent background groundwater samples from each background and downgradient well between July 2016 and August 2017. Golder used the results of the background monitoring phase to develop appropriate, statistically valid background values for each constituent/monitoring well. Golder submitted the samples to a contract laboratory, in accordance with chain of custody and quality assurance/quality control procedures, for analysis of 40 CFR Part 257 Appendix III and Appendix IV constituents. In addition, Golder personnel measured field water quality parameters including specific conductance, temperature, dissolved oxygen, turbidity, oxidation-reduction potential, and pH. The background data set is included in the 2017 Annual Groundwater Monitoring and Corrective Action Report, dated January 31, 2018 (2017 Annual Report, Golder 2018).

Golder performed a periodic update of background datasets, which includes incorporation of additional background data, to improve statistical power and accuracy by providing a more conservative estimate of the true background populations. The CCR Rule Groundwater Monitoring Program Implementation Manual (GMPIM, Golder 2017) allows for the statistical limits to be updated after four to eight new measurements are available (i.e., every two to four years of semi-annual monitoring). Golder incorporated new data into the background dataset, updating the prediction limits, in June 2019 and July 2021.

2.4 Detection Monitoring

Golder performed the first Detection Monitoring event in October 2017, followed by a statistical evaluation and data analysis in January 2018. Golder collected groundwater samples from Landfill Phases V and VI background and downgradient monitoring wells for analysis of Appendix III constituents per 40 CFR §257.94 and included the results in the 2017 Annual Report. Following receipt and validation of laboratory results, Golder evaluated the results of the first Detection Monitoring sampling event to compare the concentration of 40 CFR Part 257 Appendix III constituents relative to facility background concentrations. Using Sanitas™ software, Golder pooled the background data to calculate prediction limits and compared the October 2017 results to the calculated prediction limits to identify SSIs.

Golder determined that SSIs existed for Phases V and VI in January 2018. Golder identified a potential alternative source that could explain the SSIs and prepared an ASD. A qualified Indiana-licensed professional engineer certified the ASD in April 2018. The ASD supports the findings that the SSIs determined in January 2018 do not result from a release from the CCR Unit. The key supporting lines of evidence described in the ASD indicate that the closed, non-regulated phases of the landfill (i.e., Phases I and II) are the source of the SSIs. Therefore, no further action (i.e., Assessment Monitoring) was warranted, and Phases V and VI appropriately remained in Detection Monitoring. The ASD is presented in Appendix A of the 2018 Annual Groundwater Monitoring and Corrective Action Report, dated January 31, 2019 (2018 Annual Report, Golder 2019).

Golder performed the second and third Detection Monitoring events in 2018, the fourth and fifth detection monitoring events in 2019, and the sixth and seventh Detection Monitoring events in 2020. After each Detection Monitoring event, Golder determined that SSIs existed. Consistent with the previous evaluation, Golder identified a potential alternative source that explained the SSIs and a qualified Indiana-licensed professional engineer recertified the ASD, confirming that Phases V, VI, and VII remain in Detection Monitoring.

Golder performed the seventh Detection Monitoring event in September 2020 followed by a statistical evaluation and data analysis in December 2020 that determined that SSIs existed for Phases V, VI, and VII. Consistent with previous evaluations, Golder identified a potential alternative source that explained the SSIs. A qualified Indiana-licensed professional engineer recertified the ASD in March 2021 (Appendix A), confirming Phases V, VI, and VII appropriately remain in Detection Monitoring. The results from the second to seventh Detection Monitoring events and the corresponding ASDs are included in the 2018, 2019, and 2020 Annual Groundwater Monitoring and Corrective Action Reports (Golder 2019, 2020, 2021).

Golder performed the eighth Detection Monitoring event in April 2021 followed by a statistical evaluation and data analysis in July 2021 that determined that SSIs existed for Phases V, VI, and VII. Consistent with previous evaluations, Golder identified a potential alternative source that explained the SSIs. A qualified Indiana-licensed professional engineer recertified the ASD in October 2021 (Appendix B), confirming Phases V, VI, and VII appropriately remain in Detection Monitoring. The SSIs from the eighth Detection Monitoring event are summarized in the table below by downgradient monitoring well and constituent.

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH ¹	Total Dissolved Solids
GAMW26				X			
GAMW27	X	X			X		X
GAMW27B	X	X	X		X		X
GAMW38B	X	X			X		X
GAMW39B	X	X	X		X		X
GAMW40		X					X
GAMW40B	X		X		X	X	X
GAMW41	X		X		X		X
GAMW41B	X		X		X		X

"X" represents an SSI

1 = pH value is based on field water quality meter reading

Golder performed the ninth Detection Monitoring event in September 2021 followed by a statistical evaluation and data analysis in December 2021 that determined that SSIs existed for Phases V, VI, and VII. The SSIs are summarized in the table below by downgradient monitoring well and constituent.

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH ¹	Total Dissolved Solids
GAMW-27	X	X			X		X
GAMW-27B	X	X	X		X		X
GAMW-38B	X	X			X		X
GAMW-39B	X	X	X		X		X
GAMW-40	X	X					X
GAMW-40B	X		X		X		X
GAMW-41	X				X		X
GAMW-41B	X	X	X		X		X

"X" represents an SSI

1 = pH value is based on field water quality meter reading

2.5 Statistical Evaluation

Subsequent to each monitoring event, Golder assessed the analytical data for outliers, anomalies, and trends that may be an indication of a sampling or analytical error. Outliers and anomalies are generally defined as inconsistently large or small values that can occur because of sampling, laboratory, transportation, or transcription errors, or even by chance alone. Significant trends may indicate natural geochemical variability, a source of systematic error, influence of an upgradient/off-site source, or an actual occurrence of CCR Unit influence upon groundwater quality. Appropriate statistical methods are used to remove outliers from the database and manage trends with detrending routines, prior to the calculation of statistical limits. To assess the data for outliers, anomalies, and trends, Golder assessed the data using time vs. concentration graphs, and statistical routines included in the Sanitas™ statistical analysis software package. Golder did not identify any new outliers since the 2020 Annual Report.

Golder will continue to monitor trends and, if the CCR Unit enters Assessment Monitoring, detrending routines will be performed before using these data to calculate groundwater protection standards (GWPS).

2.6 Problems Encountered and Follow-Up Corrective Actions

In the eighth Detection Monitoring event (April 2021), Golder collected a groundwater sample from GAMW-24B at a turbidity level of approximately 7.77 nephelometric turbidity units (NTUs) and from GAMW-38 at approximately 7.49 NTUs. In the ninth Detection Monitoring event (September 2021), Golder collected a groundwater sample from GAMW-20 at a turbidity of approximately 5.22 NTUs and from GAMW-24B at approximately 5.64 NTUs. According to the CCR Groundwater Monitoring Program Implementation Manual (Golder 2017), groundwater samples are to be collected once a well has achieved a turbidity level below 5 NTUs. Due to time constraints in the field, groundwater is purged for a minimum of two hours and sampled when turbidity appeared to stabilize (e.g., no downward or upward trend over three consecutive readings five minutes apart). Evaluation of the analytical results from these wells suggests that the slightly elevated turbidity levels had no significant effect on the representativeness of the samples of groundwater quality. During future monitoring events, Golder will purge groundwater for two hours or five well volumes, whichever is shorter. Golder will use professional judgement to assess when the purge water is representative of groundwater for sampling. If an acceptable turbidity level cannot be achieved within a reasonable timeframe (e.g., three hours), Golder will redevelop the affected monitoring wells prior to the next sampling event.

3.0 KEY ACTIVITIES PROJECTED FOR 2022

During calendar year 2022, NIPSCO anticipates conducting the following key CCR Rule groundwater monitoring activities for the RMSGS Landfill Phases V, VI, and VII:

- Prepare and submit the appropriate notifications according to the CCR Rule
- Continue semi-annual Detection Monitoring groundwater sampling per CCR Rule requirements
- Inspect and maintain the monitoring system including wells, pumps, and equipment.

4.0 REFERENCES

- Golder Associates, "2017 Annual Groundwater Monitoring and Corrective Action Report- Landfill Phase V and Phase VI NIPSCO R. M. Schahfer Generating Station", January 31, 2018.
- Golder Associates, "2018 Annual Groundwater Monitoring and Corrective Action Report- Landfill Phase V and Phase VI NIPSCO R. M. Schahfer Generating Station", January 31, 2019.
- Golder Associates, "2019 Annual Groundwater Monitoring and Corrective Action Report- Landfill Phase V and Phase VI NIPSCO LLC R. M. Schahfer Generating Station", January 31, 2020.
- Golder Associates, "2020 Annual Groundwater Monitoring and Corrective Action Report- Landfill Phase V, Phase VI, and Phase VII NIPSCO LLC R. M. Schahfer Generating Station", January 31, 2021.
- Golder Associates, "CCR Groundwater Monitoring Program Implementation Manual," October 2017.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", August 28, 2018.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", April 13, 2018.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", March 21, 2019.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", September 6, 2019.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI – Alternative Source Demonstration", May 7, 2020.
- Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI – Alternative Source Demonstration", September 29, 2020.

TABLES

Table 1: Monitoring Well Network
CCR Unit Schahfer Landfill Phases V, VI, and VII
NIPSCO LLC Rollin M. Schahfer Generating Station
Wheatfield, Indiana

CCR Unit	Well Purpose	Monitoring Well ID	Installation Date	Decommission Date (If Applicable)	Basis For Action
LANDFILL Phase V, Phase VI, and Phase VII	Background Monitoring Well	GAMW-20	5/27/2016	-	Installed for Groundwater Quality Monitoring ⁽¹⁾
		GAMW-24	9/26/2016	-	
		GAMW-24B	9/26/2016	-	
		GAMW-25	10/4/2016	-	
		GAMW-25B	10/5/2016	-	
	Downgradient Monitoring Well	GAMW-21	5/31/2016	4/5/2018	Abandoned due to Landfill Construction Activities ⁽²⁾
		GAMW-21B	5/31/2016	4/5/2018	
		GAMW-22	5/31/2016	4/5/2018	
		GAMW-22B	6/2/2016	4/5/2018	
		GAMW-23	6/2/2016	4/6/2018	
		GAMW-23B	6/2/2016	4/6/2018	
		GAMW-28	9/29/2016	4/6/2018	
		GAMW-28B	9/29/2016	4/6/2018	
		GAMW-26	10/4/2016	-	Installed for Groundwater Quality Monitoring ⁽¹⁾
		GAMW-26B	10/4/2016	-	
		GAMW-27	10/3/2016	-	
		GAMW-27B	10/4/2016	-	Installed to Replace Abandoned Well ⁽³⁾
		GAMW-38	4/4/2018	-	
		GAMW-38B	4/3/2018	-	
		GAMW-39	4/4/2018	-	
GAMW-39B	4/4/2018	-			
GAMW-40	4/5/2018	-			
GAMW-40B	4/4/2018	-			
GAMW-41	5/17/2018	-			
GAMW-41B	5/17/2018	-			

Notes:

- 1) Per the CCR Rule requirements, Golder collected eight rounds of background data prior to October 17, 2017.
- 2) Monitoring well was abandoned due to the construction of landfill Phase VII.
- 3) Monitoring well was installed to replace an abandoned monitoring well. Well was first sampled in September 2018.

Prepared by: KMC
Checked by: DFSC
Reviewed by: MAH

Table 2: Summary of Sampling Events
CCR Unit Schahfer Landfill Phases V, VI, and VII
NIPSCO LLC Rollin M. Schahfer Generating Station
Wheatfield, Indiana

Well Purpose	Monitoring Well ID	Sample Event #18	Sample Event #19	Total Number of Samples
Purpose of Sample		Detection Monitoring	Detection Monitoring	
Sample Parameters		Appendix III	Appendix III	
Background Monitoring Well	GAMW-20	4/12/2021	9/13/2021	2
	GAMW-24	4/12/2021	9/13/2021	2
	GAMW-24B	4/13/2021	9/13/2021	2
	GAMW-25	4/12/2021	9/10/2021	2
	GAMW-25B	4/12/2021	9/10/2021	2
	GAMW-26	4/12/2021	9/10/2021	2
	GAMW-26B	4/12/2021	9/10/2021	2
	GAMW-27	4/13/2021	9/10/2021	2
	GAMW-27B	4/13/2021	9/13/2021	2
	GAMW-38	4/13/2021	9/11/2021	2
	GAMW-38B	4/13/2021	9/11/2021	2
	GAMW-39	4/13/2021	9/11/2021	2
	GAMW-39B	4/13/2021	9/11/2021	2
	GAMW-40	4/14/2021	9/13/2021	2
	GAMW-40B	4/14/2021	9/13/2021	2
	GAMW-41	4/14/2021	9/13/2021	2
GAMW-41B	4/13/2021	9/13/2021	2	
Total Number of Samples		17	17	34

Notes:

Sample counts do not include QA/QC samples.

(1) Sample events #1-17 were completed prior to 2021. The purpose, sample parameters, and sample dates are included in the 2017, 2018, 2019, and 2020 Annual Reports.

(2) Sample events #18 and 19 correspond to the eighth and ninth Detection Monitoring events, respectively.

Prepared by: KMC
 Checked by: DFSC
 Reviewed by: JSP

Table 3: Analytical Data
CCR Unit R. M. Schahfer Landfill Phases V, VI, and VII
NIPSCO LLC R. M. Schahfer Schahfer Generating Station
Wheatfield, Indiana

Location		GAMW20		GAMW24			GAMW24B		GAMW25		GAMW25B			GAMW26		GAMW26B		GAMW27				
Sample Date		2021-04-12	2021-09-13	2021-04-12	2021-09-13	2021-04-13	2021-09-13	2021-04-12	2021-09-10	2021-04-12	2021-09-10	2021-04-12	2021-09-10	2021-04-12	2021-09-10	2021-04-12	2021-09-10	2021-04-13	2021-09-10			
Sample Type		N	N	N	FD	N	N	N	N	N	N	FD	N	N	N	N	N	N	N	FD	N	N
Chemical Name		Unit																				
CCR Appendix III																						
Boron	mg/L	2.8	3.7	0.1 U	0.12	0.1 U	0.1 U	0.1 U	0.17	0.15	0.13	0.13	0.13	0.18	0.22	0.21	0.21	4.2	4.1	4.1		
Calcium	mg/L	164	249	80.2	83.3	86.8	46.9	51.3	76.4	72.5	94	94.2	97.4	84.7	92.6	93.3	103	276	279	277		
Chloride	mg/L	11.4	11.2	18.5	21.6	22	3.3	4.1	4.3	2.7	8.7	8.6	7.2	11.5	4.2	14.6	23.1	20.9	20.4	14.2		
Fluoride	mg/L	0.19	0.22	0.083	0.067	0.15	0.12	0.19	1.1	1.2 J-	0.18	0.18	0.13 J-	2.9	2.8 J-	0.18	0.11 J-	0.66	0.63	0.56 J-		
pH	SU	7.17	7.2	7.68		7.34	7.58	7.91	7.27	7.4		7.16	7.36	7.51	7.54	7.79	7.8		7.55	7.65		
Sulfate	mg/L	500	529	70	70	69.6	26.7	24	44.9	48.5	67.2	67.2	88.9	55.2	80.2	86.6	189	693	701	756		
Total Dissolved Solids	mg/L	1050	1170	318	351	349	184	190	288	329	378	377	417	350	449	437	624	1250	1270	1400		
Field Parameters																						
Dissolved Oxygen	mg/L	0.87	0.12	0.14		0.14	0.65	0.24	3.81	1.65		0.49	0.27	0.66	0.33	1.31	3.45		0.45	0.21		
Oxidation-Reduction Potential	millivolts	-94	0.188	-14.8		0.129	-114.6	0.23	154.4	96.6		-127	0.185	59.2	-309.6	-0.1	-96.1		-118	0.18		
pH	SU	7.17	7.2	7.68		7.34	7.58	7.91	7.27	7.4		7.16	7.36	7.51	7.54	7.79	7.8		7.55	7.65		
Specific Conductance	uS/cm	1530	163.7	561		609	312.5	340	472.3	514		599	653	604	603	711	737		1558	170		
Temperature	deg c	10.6	17.1	9.95		16.8	10.9	13.5	8.8	16		11	12.1	10	18.74	11.53	13.63		11.5	16.8		
Turbidity	ntu	2.71	5.22	4.6		4.84	7.77	5.64	1.99	1.9		3	1.88	1.45	4.47	3.85	2.98		4.24	1.26		

Notes:
 mg/L = milligrams per liter
 uS/cm = micro Siemens per centimeter
 deg C = degrees Celsius
 NTU = Nephelometric Turbidity Units
 SU = Standard Units
 "U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
 "J-" = Indicates the result is estimated and may be biased low.

Table 3: Analytical Data
CCR Unit R. M. Schahfer Landfill Ph
NIPSCO LLC R. M. Schahfer Schahf
Wheatfield, Indiana

Location		GAMW27B		GAMW38		GAMW38B			GAMW39		GAMW39B		GAMW40		GAMW40B	
Sample Date		2021-04-13	2021-09-13	2021-04-13	2021-09-11	2021-04-13	2021-09-11	2021-04-13	2021-09-11	2021-04-13	2021-09-11	2021-04-14	2021-09-13	2021-04-14	2021-09-13	
Sample Type		N	N	N	N	N	FD	N	N	N	N	N	N	N	N	
Chemical Name	Unit															
CCR Appendix III																
Boron	mg/L	12.1	13.1	0.87	1	6.2	6.9	6.9	1.1	1.4	10.1	9.8	2.8	4.1	30	29.9
Calcium	mg/L	364	367	90.4	77.3	249	274	268	173	162	409	443	273	276	225	195
Chloride	mg/L	408	438	4.7	4.2	35.1	37.4	39.9	10.2	9.7	61.9	85.7	12.8	11.8	859	700
Fluoride	mg/L	0.05 U	0.05 U	0.15	0.15	0.05 U	0.05 U	0.05 U	0.14	0.12	0.05 U	0.5 U	0.067	0.072	0.79	0.05 U
pH	SU	7.41	7.36	7.44	7.03	7.11		6.68	7.12	6.83	7.16	6.68	7.19	6.62	8.5	7.87
Sulfate	mg/L	6190	6530	211	164	687	726	785	359	396	1140	1330	388	501	6420	6580
Total Dissolved Solids	mg/L	9980	10800	522	471	1400	1590	1550	816	865	2230	2690	1360	1550	9860	11500
Field Parameters																
Dissolved Oxygen	mg/L	1.27	1.19	0.15	0.53	0.21		0.33	0.14	0.43	0.16	0.48	0.3	0.46	0.23	0.3
Oxidation-Reduction Potential	millivolts	-95.5	-272.6	-82.5	-229.7	-65.2		-329.8	-42.6	-284	-47.6	310.6	-39.8	-304	-162.9	-288.3
pH	SU	7.41	7.36	7.44	7.03	7.11		6.68	7.12	6.83	7.16	6.68	7.19	6.62	8.5	7.87
Specific Conductance	uS/cm	12351	10440	816	716	1913		1747	1248	1109	2863	2813	1968	1933	13406	11500
Temperature	deg c	12.6	14.15	9.83	18.94	11.41		14.37	11.05	17.47	12.32		10	17.03	11.97	14.28
Turbidity	ntu	2.35	3.59	7.49	2.73	4.62		2.92	4.27	1.25	4.4	2.47	2.46	0.63	1.37	1.18

Notes:
 mg/L = milligrams per liter
 uS/cm = micro Siemens per centimeter
 deg C = degrees Celsius
 NTU = Nephelometric Turbidity Units
 SU = Standard Units
 "U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.
 "J-" = Indicates the result is estimated and may be biased low.

Table 3: Analytical Data
CCR Unit R. M. Schahfer Landfill Ph
NIPSCO LLC R. M. Schahfer Schahf
Wheatfield, Indiana

Location		GAMW41		GAMW41B	
Sample Date		2021-04-14	2021-09-13	2021-04-13	2021-09-13
Sample Type		N	N	N	N
Chemical Name	Unit				
CCR Appendix III					
Boron	mg/L	10	9.4	26.2	28.8
Calcium	mg/L	123	134	223	231
Chloride	mg/L	119	44.4	571	687
Fluoride	mg/L	0.2	0.33	0.79	0.05 U
pH	SU	8.08	7.48	8.05	7.94
Sulfate	mg/L	2220	1750	6320	6250
Total Dissolved Solids	mg/L	3250	2750	10500	10800
Field Parameters					
Dissolved Oxygen	mg/L	0.14	0.21	0.42	0.19
Oxidation-Reduction Potential	millivolts	-137.2	-247	-187.2	-291.7
pH	SU	8.08	7.48	8.05	7.94
Specific Conductance	uS/cm	4602	3312	13006	11430
Temperature	deg c	10.15	19.2	13	15.88
Turbidity	ntu	4.43	1.91	3.81	1.8

Notes:

mg/L = milligrams per liter

uS/cm = micro Siemens per centimeter

deg C = degrees Celsius

NTU = Nephelometric Turbidity Units

SU = Standard Units

"U" = Indicates the result was not detected above the method detection limit (MDL) for the sample; the quantitation limit (RL) is provided.

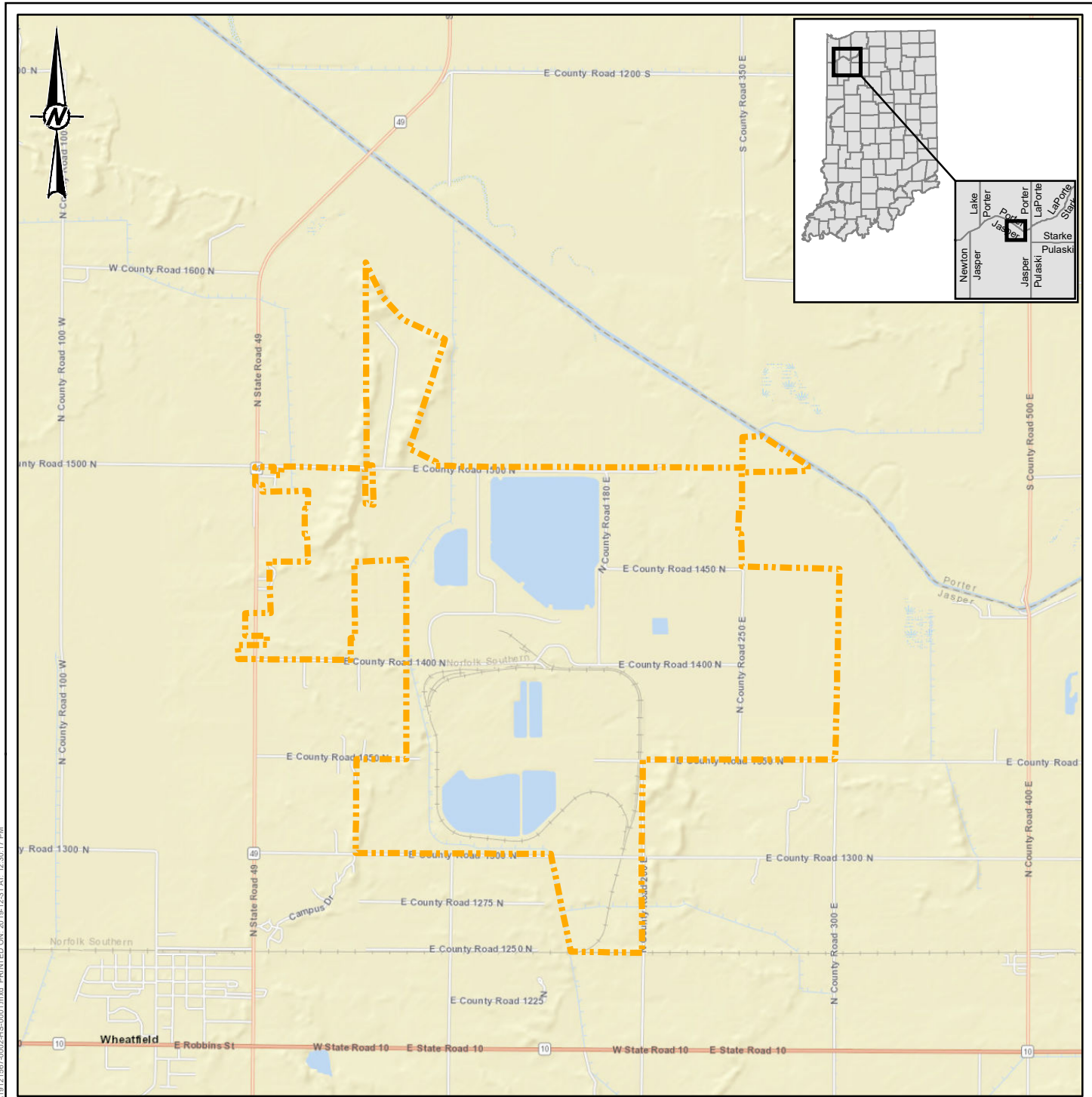
"J-" = Indicates the result is estimated and may be biased low.

Prepared by: SLG

Checked by: DFSC

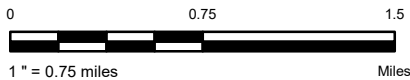
Reviewed by: JSP

FIGURES



LEGEND

 Approximate Property Line



REFERENCE(S)

SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

CLIENT

NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC

PROJECT

R.M. SCHAHFER GENERATING STATION
WHEATFIELD, INDIANA

TITLE

SITE LOCATION MAP

CONSULTANT



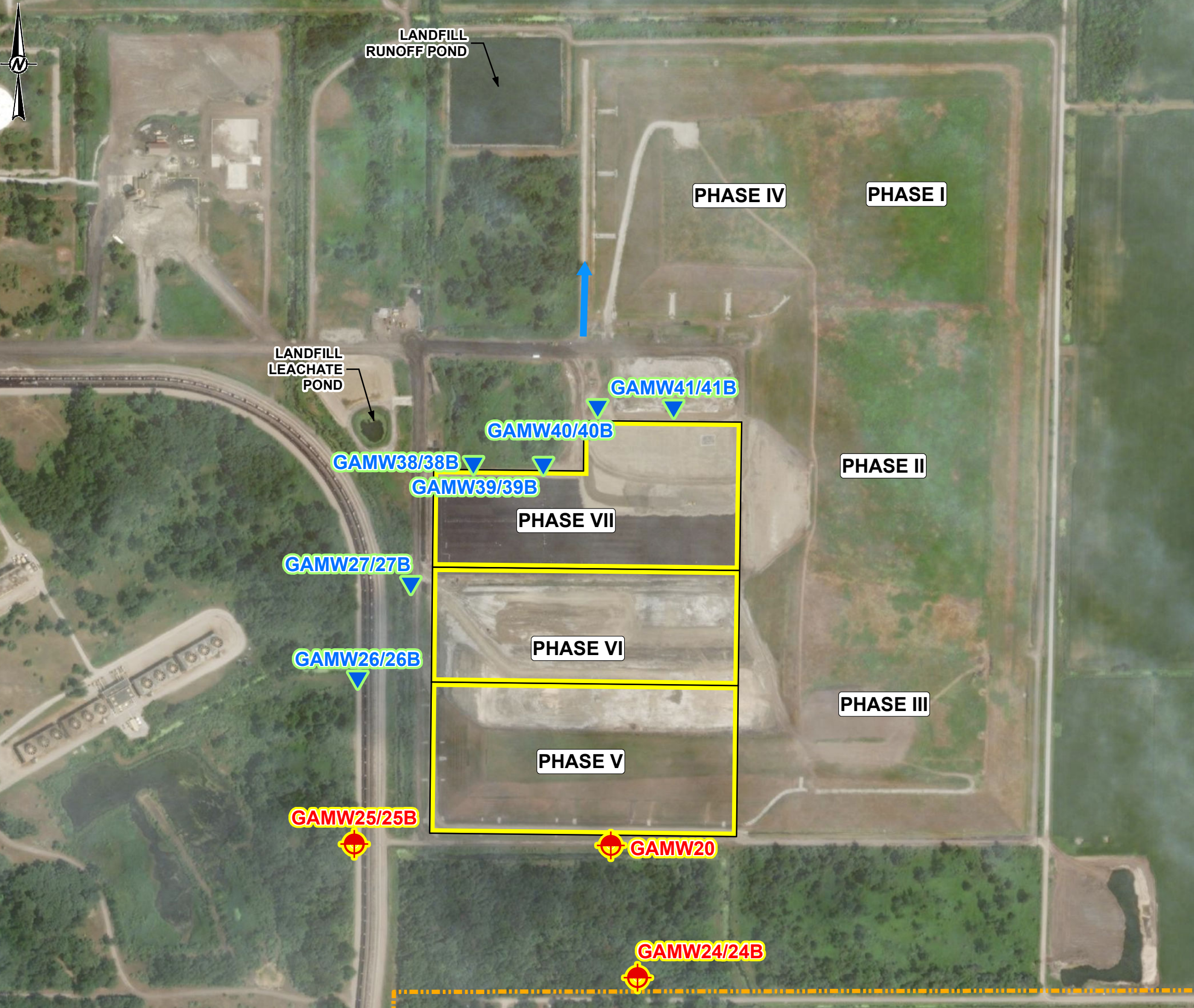
YYYY-MM-DD	1/04/2021
DESIGNED	DFS
PREPARED	SHL
REVIEWED	JSP
APPROVED	MAH

PROJECT NO.
19121567

CONTROL
A

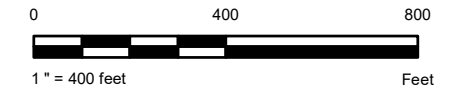
REV.
0

FIGURE
1



LEGEND

- Background Monitoring Well
- Downgradient Monitoring Well
- Generalized Groundwater Flow Direction
- CCR Units
- Approximate Property Line



NOTE(S)

REFERENCE(S)
 1. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

CLIENT
 NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC

PROJECT
 R.M. SCHAHFER GENERATING STATION
 WHEATFIELD, INDIANA

TITLE
WELL LOCATION MAP
SCHAHFER LANDFILL PHASES V, VI, AND VII

CONSULTANT	DATE	REVISION
	YYYY-MM-DD	1/8/2021
	DESIGNED	DFS
	PREPARED	TBH
	REVIEWED	DFS
	APPROVED	MAH

PROJECT NO. 19121567	CONTROL A	REV. 0	FIGURE 2
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PATH: V:\001_GIS\Projects\WSP\SCHAHFER\08_PRC\11121567_2018\Report\40_PRC\0002_Annual_Report\19121567-0002-HS-004.mxd PRINTED ON: 2021-01-08 AT: 8:38:10 AM

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APPENDIX A

**RMSGs Landfill Phases V, VI, and
VII Alternative Source
Demonstration March 2021**

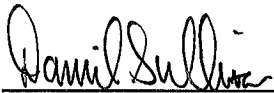
Northern Indiana Public Service Company LLC
(NIPSCO LLC)

R. M. Schahfer Generating Station
Wheatfield, Indiana

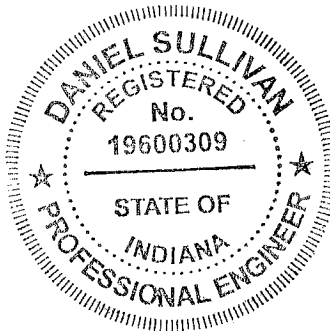
Schahfer Landfill Phase V, Phase VI, and Phase
VII

Certification of Alternative Source Demonstration

I, Daniel Sullivan, being a Professional Engineer in accordance with the laws of the State of Indiana, and having experience in the design, construction, and operation of restricted waste landfills and groundwater monitoring systems for them, do hereby state that I am qualified in the subject matter of CCR management, groundwater monitoring, data interpretation, and groundwater impacts. I have personally examined and am familiar with this alternative source demonstration (ASD) for the NIPSCO LLC R. M. Schahfer Generating Station, prepared by Golder, and dated March 2021. Based on an inquiry of those individuals immediately responsible, and on supporting data which I understand to be true, accurate and complete, I verify the information in this ASD is accurate and meets the applicable requirements of the CCR Rule. In consideration of the above, I certify to the best of my knowledge, information, and belief, that the ASD for the regulated CCR management unit referred to as Phase V, Phase VI, and Phase VII has been prepared and meets the applicable requirements of 40 CFR §257.94(e)(2).



Daniel Sullivan
Indiana Professional Engineer
License # 19600309



3-31-2021

Date



TECHNICAL MEMORANDUM

DATE March 31, 2021 **Project No.** 19121567

TO Dan Sullivan, Jeff Loewe NIPSCO LLC

CC Maggie Rice, Maureen Turman, Craig Myers, Joe Kutch, Mark Haney, Jim Peace, Danielle Sylvia Cofelice

FROM Krysta Cione **EMAIL** kcione@golder.com

RE: R.M. SCHAHFER LANDFILL PHASES V, VI, AND VII ALTERNATIVE SOURCE DEMONSTRATION

On behalf of Northern Indiana Public Service Company LLC (NIPSCO LLC), Golder Associates Inc. (Golder) performed a statistical evaluation of groundwater analytical results from the seventh (September 2020) groundwater Detection Monitoring event at the Rollin M. Schahfer Generating Station (RMSGs) Landfill Phase V, Phase VI, and Phase VII (CCR Unit) in accordance with 40 Code of Federal Regulations (CFR) Parts 257 and 261, "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule" (CCR Rule), as amended, and corresponding regulations under 329 Indiana Administrative Code (IAC) 10-9-1.

Statistical analyses of Appendix III groundwater Detection Monitoring results indicated statistically significant increases (SSIs) for seven analytes detected in groundwater samples collected from downgradient wells compared to background levels. Although determination of an SSI generally indicates that the groundwater monitoring program should transition from Detection Monitoring to Assessment Monitoring, 40 CFR §257.94(e)(2) allows the owner or operator (i.e., NIPSCO LLC) to demonstrate that a source other than the CCR unit or another condition caused the apparent SSI(s). Golder identified similar SSIs after the first (October 2017) Detection Monitoring event at the RMSGs Landfill Phase V and Phase VI and submitted an Alternative Source Demonstration (ASD) on April 13, 2018. As described in that ASD, the conceptual site model, historical groundwater data, and Phase V and Phase VI landfill design indicate the source of the identified SSIs is the unlined portion of the landfill, Phases I and II, which is not regulated by the CCR Rule. Golder recertified the ASD based on the second (February/March 2018) Detection Monitoring Event, on August 28, 2018; the third (September 2018) Detection Monitoring Event, on March 21, 2019; the fourth (March 2019) Detection Monitoring Event, on September 6, 2019; the fifth (October 2019) Detection Monitoring Event, on May 7, 2020; and the sixth (March 2020) Detection Monitoring Event, on September 29, 2020.

NIPSCO constructed a new landfill cell (Phase VII) immediately north of Phase VI in 2018. Due to the proximity of Phase VII to Phase VI and landfill construction activities, Golder decommissioned monitoring wells GAMW-21/21B, GAMW-22/22B, GAMW-23/23B, and GAMW-28/28B, which were part of the original CCR Rule-required landfill monitoring network. Golder collected groundwater samples from these original four well pairs from July 2016 to March 2018. To replace the decommissioned wells, Golder installed monitoring wells GAMW-38/38B, GAMW-39/39B, GAMW-40/40B, and GAMW-41/41B downgradient and along the waste boundary of Phase VII in April and May 2018.

Golder collected groundwater samples from existing and replacement monitoring wells during the September 2020 semi-annual monitoring event. Groundwater analytical data obtained from groundwater samples collected from the downgradient wells in these subsequent events were consistent with historical analytical results. As discussed in the ASD recertification dated September 6, 2019, Golder calculated new prediction limits in June 2019 using all background data collected through March 2019. The table below provides the original prediction limits calculated in January 2018 and the revised prediction limits calculated in June 2019. Golder will re-evaluate the background dataset following collection of an additional four rounds of groundwater data from the background wells.

1.0 SUMMARY OF RESULTS

The results of the seventh Detection Monitoring event are included in the 2020 Annual Report and the results of the statistical analysis are summarized below. SSIs were detected in groundwater samples collected from monitoring wells downgradient of the RMSGS Landfill Phase V, Phase VI, and Phase VI, for all Appendix III parameters. Overall, results are consistent with those collected previously and indicate few differences from the SSIs detected during the previous Detection Monitoring events. The differences are likely due to normal or temporal fluctuations in groundwater quality. The SSI results are summarized in the table below by well location and timeframe of the SSI exceedance.

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH	TDS
Prediction Level (2018)	1.7	116.1	34.91	2.3	300	6.465-7.739	653.4
Prediction Level (2019)	3.2	130.9	39.93	2.3	470	6.353-7.82	1100
GAMW21*							
GAMW21B*	1,2	1,2	1		1,2		1,2
GAMW22*		2					
GAMW22B*	1,2	1,2	1,2		1,2		1,2
GAMW23*	1,2	1,2			1,2	1,2	1,2
GAMW23B*	1,2	1,2	1,2		1,2	1,2	1,2
GAMW26				1,3,5,6,7			2
GAMW26B		1,3,7	3,7		1,3,7	3	1,3,7
GAMW27	1,2,3,4,5,6,7	1,2,3,4,5,6,7			1,2,3,4,6,7		1,2,3,4,6,7
GAMW27B	1,2,3,4,5,6,7	1,2,3,5,6,7	1,2,3,4,5,6,7		1,2,3,4,5,6,7	3	1,2,3,4,5,6,7
GAMW28*	1,2	1,2	1		1,2		1,2

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH	TDS
Prediction Level (2018)	1.7	116.1	34.91	2.3	300	6.465-7.739	653.4
Prediction Level (2019)	3.2	130.9	39.93	2.3	470	6.353-7.82	1100
GAMW28B*	1,2	1,2	1,2		1,2		1,2
GAMW38							
GAMW38B	3,4,5,6,7	3,4,5,6,7	3,4		3,4,5,6,7		3,4,5,6,7
GAMW39	3	3,4,5,6,7			3	5	3
GAMW39B	3,4,5,6,7	3,4,5,6,7	3,4,5,6,7		3,4,5,6,7	5	3,4,5,6,7
GAMW40	3,4,6	3,4,5,6,7			3		3,4,5,6,7
GAMW40B	3,4,5,6,7	3,4,5,6,7	3,4,5,6,7		3,4,5,6,7	3,4,6	3,4,5,6,7
GAMW41	4,5,6,7	4,5,6,7	4,5,6,7		4,5,6,7		4,5,6,7
GAMW41B	4,5,6,7	4,6,7	4,5,6,7		4,5,6,7	6,7	4,5,6,7

- "1" Indicates a statistically significant increase detected in the first Detection Monitoring event
- "2" Indicates a statistically significant increase detected in the second Detection Monitoring event
- "3" Indicates a statistically significant increase detected in the third Detection Monitoring event
- "4" Indicates a statistically significant increase detected in the fourth Detection Monitoring event
- "5" Indicates a statistically significant increase detected in the fifth Detection Monitoring event
- "6" Indicates a statistically significant increase detected in the sixth Detection Monitoring event
- "7" Indicates a statistically significant increase detected in the seventh Detection Monitoring event
- **" Indicates monitoring well was decommissioned prior to the third Detection Monitoring event

2.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSION

The preceding information indicates the results of the seventh Detection Monitoring event are consistent with the previous Detection Monitoring events, and the rationale behind the ASD dated April 13, 2018 is still applicable. Golder prepared the ASD in accordance with 40 CFR 257.94(e)(2) and it supports the finding that the SSIs determined on December 18, 2020 are not due to a release from the CCR Unit. As described in that 2018 ASD, the conceptual site model, historical groundwater data, and the Phase V, Phase VI, and Phase VII landfill design indicate that a release from the unlined portion of the landfill not subject to the CCR Rule, Phases I and II, is the source of the identified SSIs. Therefore, no further action (i.e., Assessment Monitoring) is warranted, and the Schahfer Landfill Phases V, VI, and VII will remain in Detection Monitoring.

3.0 REFERENCES

Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", April 13, 2018.

Golder Associates, “Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration”, August 28, 2018.

Golder Associates, “Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration”, March 31, 2019.

Golder Associates, “Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration”, September 6, 2019.

Golder Associates, “Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration”, May 7, 2020.

Golder Associates, “Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration”, September 29, 2020.

[https://golderassociates.sharepoint.com/sites/nipsocccrgwmonitoring/shared documents/rmsgsrports/landfill asd recertifications/2021-march/draft/draft landfill asd recertification.docx](https://golderassociates.sharepoint.com/sites/nipsocccrgwmonitoring/shared%20documents/rmsgsrports/landfill%20asd%20recertifications/2021-march/draft/draft%20landfill%20asd%20recertification.docx)

APPENDIX B

**RMSGs Landfill Phases V, VI, and
VII Alternative Source
Demonstration October 2021**


**Northern Indiana Public Service Company LLC
(NIPSCO LLC)**

**R. M. Schahfer Generating Station
Wheatfield, Indiana**

**Schahfer Landfill Phase V, Phase VI, and Phase
VII**

Certification of Alternative Source Demonstration

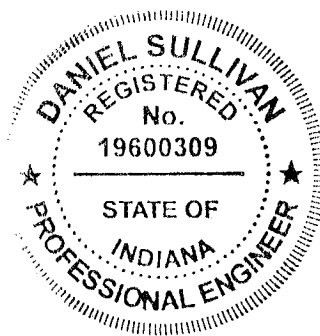
I, Daniel Sullivan, being a Professional Engineer in accordance with the laws of the State of Indiana, and having experience in the design, construction, and operation of restricted waste landfills and groundwater monitoring systems for them, do hereby state that I am qualified in the subject matter of CCR management, groundwater monitoring, data interpretation, and groundwater impacts. I have personally examined and am familiar with this alternative source demonstration (ASD) for the NIPSCO LLC R. M. Schahfer Generating Station, prepared by Golder, and dated October 2021. Based on an inquiry of those individuals immediately responsible, and on supporting data which I understand to be true, accurate and complete, I verify the information in this ASD is accurate and meets the applicable requirements of the CCR Rule. In consideration of the above, I certify to the best of my knowledge, information, and belief, that the ASD for the regulated CCR management unit referred to as Phase V, Phase VI, and Phase VII has been prepared and meets the applicable requirements of 40 CFR §257.94(e)(2).



**Daniel Sullivan
Indiana Professional Engineer
License # 19600309**

10.26.2021

Date



TECHNICAL MEMORANDUM**DATE** October 26, 2021**Project No.** 19121567**TO** Dan Sullivan, Jeff Loewe NIPSCO LLC**CC** Maggie Rice, Maureen Turman, Joe Kutch, Mark Haney, Jim Peace**FROM** Danielle Sylvia Cofelice**EMAIL** dsylvia@golder.com**RE: R.M. SCHAFER LANDFILL PHASES V, VI, AND VII ALTERNATIVE SOURCE DEMONSTRATION**

On behalf of Northern Indiana Public Service Company LLC (NIPSCO), Golder Associates Inc. (Golder) performed a statistical evaluation of groundwater analytical results from the eighth (April 2021) groundwater Detection Monitoring event at the Rollin M. Schahfer Generating Station (RMSGs) Landfill Phase V, Phase VI, and Phase VII (CCR Unit) in accordance with 40 Code of Federal Regulations (CFR) Parts 257 and 261, "Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule" (CCR Rule), as amended, and corresponding regulations under 329 Indiana Administrative Code (IAC) 10-9-1.

Statistical analyses of Appendix III groundwater Detection Monitoring results indicated statistically significant increases (SSIs) for seven analytes detected in groundwater samples collected from downgradient wells compared to background levels. Although determination of an SSI generally indicates that the groundwater monitoring program should transition from Detection Monitoring to Assessment Monitoring, 40 CFR §257.94(e)(2) allows the owner or operator (i.e., NIPSCO LLC) to demonstrate that a source other than the CCR unit or another condition caused the apparent SSI(s). Golder identified similar SSIs after the first (October 2017) Detection Monitoring event at the RMSGs Landfill Phase V and Phase VI and submitted an Alternative Source Demonstration (ASD) on April 13, 2018. As described in that ASD, the conceptual site model, historical groundwater data, and Phase V and Phase VI landfill design indicate the source of the identified SSIs is the unlined portion of the landfill, Phases I and II, which is not regulated by the CCR Rule. Golder recertified the ASD based on the second (February/March 2018) Detection Monitoring Event, on August 28, 2018; the third (September 2018) Detection Monitoring Event, on March 21, 2019; the fourth (March 2019) Detection Monitoring Event, on September 6, 2019; the fifth (October 2019) Detection Monitoring Event, on May 7, 2020; the sixth (March 2020) Detection Monitoring Event, on September 29, 2020, and the seventh (October 2020) Detection Monitoring Event, on March 31, 2021.

NIPSCO constructed a new landfill cell (Phase VII) immediately north of Phase VI in 2018. Phase VII is constructed in a similar manner to Phase V and Phase VI. Due to the proximity of Phase VII to Phase VI and landfill construction activities, Golder decommissioned monitoring wells GAMW-21/21B, GAMW-22/22B, GAMW-23/23B, and GAMW-28/28B, which were part of the original CCR Rule-required landfill monitoring network. Golder collected groundwater samples from these original four well pairs from July 2016 to March 2018. To replace the decommissioned wells, Golder installed monitoring wells GAMW-38/38B, GAMW-39/39B, GAMW-40/40B, and GAMW-41/41B downgradient and along the waste boundary of Phase VII in April and May 2018.

Golder collected groundwater samples from existing and replacement monitoring wells during the September 2020 semi-annual monitoring event. Groundwater analytical data obtained from groundwater samples collected from the downgradient wells in these subsequent events were consistent with historical analytical results.

As discussed in the ASD recertification dated September 6, 2019, Golder calculated new prediction limits in June 2019 using all background data collected through March 2019. Again, in July 2021, Golder reviewed the analytical data collected to date and considered the option to update the prediction limits. The Groundwater Monitoring Program Implementation Manual (GMPIM, 2017) and the Unified Guidance allow for updating the statistical limits after a minimum of four “new measurements” are available. The periodic update of background datasets improves statistical power and accuracy by providing a more complete approximation of the true background population. The analytical data collected, and groundwater flow directions observed to date, indicate the chosen background wells are still representative of background conditions. The table below provides the original prediction limits calculated in January 2018, the revised prediction limits calculated in June 2019, and the revised prediction limits calculated in July 2021. Golder will re-evaluate the background dataset following collection of an additional four rounds of groundwater data from the background wells.

1.0 SUMMARY OF RESULTS

The results of the eighth Detection Monitoring event will be included in the 2021 Annual Report and the results of the statistical analysis are summarized below. SSIs were detected in groundwater samples collected from monitoring wells downgradient of the RMSGS Landfill Phase V, Phase VI, and Phase VI, for all Appendix III parameters. Overall, results are consistent with those collected previously and indicate few differences from the SSIs detected during the previous Detection Monitoring events. The differences are likely due to normal or temporal fluctuations in groundwater quality. The SSI results are summarized in the table below by well location and timeframe of the SSI exceedance.

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH	TDS
Prediction Level (2018)	1.7	116.1	34.91	2.3	300	6.465-7.739	653.4
Prediction Level (2019)	3.2	130.9	39.93	2.3	470	6.353-7.82	1100
Prediction Level (2021)	3.8	230	50.21	2.3	670	6.184-8.163	1210
GAMW21*							
GAMW21B*	1,2	1,2	1		1,2		1,2
GAMW22*		2					
GAMW22B*	1,2	1,2	1,2		1,2		1,2
GAMW23*	1,2	1,2			1,2	1,2	1,2
GAMW23B*	1,2	1,2	1,2		1,2	1,2	1,2
GAMW26				1,3,5,6,7,8			2

Monitoring Well ID	Boron	Calcium	Chloride	Fluoride	Sulfate	pH	TDS
Prediction Level (2018)	1.7	116.1	34.91	2.3	300	6.465-7.739	653.4
Prediction Level (2019)	3.2	130.9	39.93	2.3	470	6.353-7.82	1100
Prediction Level (2021)	3.8	230	50.21	2.3	670	6.184-8.163	1210
GAMW26B		1,3,7	3,7		1,3,7	3	1,3,7
GAMW27	1,2,3,4,5,6,7,8	1,2,3,4,5,6,7,8			1,2,3,4,6,7,8		1,2,3,4,6,7,8
GAMW27B	1,2,3,4,5,6,7,8	1,2,3,5,6,7,8	1,2,3,4,5,6,7,8		1,2,3,4,5,6,7,8	3	1,2,3,4,5,6,7,8
GAMW28*	1,2	1,2	1		1,2		1,2
GAMW28B*	1,2	1,2	1,2		1,2		1,2
GAMW38							
GAMW38B	3,4,5,6,7,8	3,4,5,6,7,8	3,4		3,4,5,6,7,8		3,4,5,6,7,8
GAMW39	3	3,4,5,6,7			3	5	3
GAMW39B	3,4,5,6,7,8	3,4,5,6,7,8	3,4,5,6,7,8		3,4,5,6,7,8	5	3,4,5,6,7,8
GAMW40	3,4,6	3,4,5,6,7,8			3		3,4,5,6,7,8
GAMW40B	3,4,5,6,7,8	3,4,5,6,7	3,4,5,6,7,8		3,4,5,6,7,8	3,4,6,8	3,4,5,6,7,8
GAMW41	4,5,6,7,8	4,5,6,7	4,5,6,7,8		4,5,6,7,8		4,5,6,7,8
GAMW41B	4,5,6,7,8	4,6,7	4,5,6,7,8		4,5,6,7,8	6,7	4,5,6,7,8

"1" Indicates a statistically significant increase detected in the first Detection Monitoring event
 "2" Indicates a statistically significant increase detected in the second Detection Monitoring event
 "3" Indicates a statistically significant increase detected in the third Detection Monitoring event
 "4" Indicates a statistically significant increase detected in the fourth Detection Monitoring event
 "5" Indicates a statistically significant increase detected in the fifth Detection Monitoring event
 "6" Indicates a statistically significant increase detected in the sixth Detection Monitoring event
 "7" Indicates a statistically significant increase detected in the seventh Detection Monitoring event
 "8" Indicates a statistically significant increase detected in the eighth Detection Monitoring event
 "**" Indicates monitoring well was decommissioned prior to the third Detection Monitoring event

2.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSION

The preceding information indicates the results of the eighth Detection Monitoring event are consistent with the previous Detection Monitoring events, and the rationale behind the ASD dated April 13, 2018 is still applicable. Golder prepared the ASD in accordance with 40 CFR 257.94(e)(2) and it supports the finding that the SSIs determined on July 28, 2021 are not due to a release from the CCR Unit. As described in that 2018 ASD, the conceptual site model, historical groundwater data, and the Phase V, Phase VI, and Phase VII landfill design indicate that a release from the unlined portion of the landfill not subject to the CCR Rule, Phases I and II, is the source of the identified SSIs. Therefore, no further action (i.e., Assessment Monitoring) is warranted, and the Schahfer Landfill Phases V, VI, and VII will remain in Detection Monitoring.

3.0 REFERENCES

Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", April 13, 2018.

Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", August 28, 2018.

Golder Associates, "Northern Indiana Public Service Company R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", March 31, 2019.

Golder Associates, "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", September 6, 2019.

Golder Associates, "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", May 7, 2020.

Golder Associates, "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", September 29, 2020.

Golder Associates, "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", March 31, 2021.

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