



TECHNICAL MEMORANDUM

DATE October 25, 2023 **Project No.** 31404789.011

TO Dan Sullivan, Jeff Loewe NIPSCO LLC

CC Jordan Williams, Jennifer Wunsch, Joe Kutch, Mark Haney, Thomas Haskins

FROM Danielle Sylvia Cofelice **EMAIL** Danielle.sylvia@wsp.com

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

On behalf of Northern Indiana Public Service Company LLC (NIPSCO), WSP USA Inc. (WSP), formerly Golder Associates USA Inc. (Golder), performed a statistical evaluation of groundwater analytical results from the eleventh (April 2023) groundwater Detection Monitoring event at the Rollin M. Schahfer Generating Station (RMSGGS) Landfill Phase V, Phase VI, and Phase VII (the 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 all 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) to demonstrate that a source other than the CCR unit or another condition caused the apparent SSI(s).

WSP identified similar SSIs after the first (October 2017) Detection Monitoring event at the RMSGGS 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.

WSP 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, the seventh (October 2020) Detection Monitoring Event, on March 31, 2021; the eighth (April 2021) Detection Monitoring Event, on October 26, 2021; the ninth (October 2021) Detection Monitoring Event, on March 25, 2022; the tenth (March/April 2022) Detection Monitoring Event on October 14, 2022; and the eleventh (September 2022) Detection Monitoring Event on April 12, 2023.

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, WSP 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. WSP collected groundwater samples from these original four well pairs from July 2016 to March 2018. To replace the decommissioned wells, WSP 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.

WSP first collected groundwater samples from existing and replacement monitoring wells during the September 2018 semi-annual monitoring event. Groundwater analytical data obtained from groundwater samples collected from the new downgradient wells in this and the subsequent events were consistent with historical analytical results.

As discussed in the ASD recertification dated September 6, 2019, WSP calculated new prediction limits in June 2019 using all background data collected through March 2019. In July 2021 and August 2023, WSP reviewed the analytical data collected to date again and chose the option to update the prediction limits to include data collected through March 2021 and April 2023, respectively. The Groundwater Monitoring Program Implementation Manual (GMPIM; Golder, 2017) and the Unified Guidance (EPA, 2009) 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 (north/northeast) 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, July 2021 and August 2023. WSP 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 WSP’s statistical analysis of the groundwater data from the eleventh Detection Monitoring event are summarized below. SSIs were detected in groundwater samples collected from monitoring wells downgradient of the RMSGS Landfill Phases V, VI, and VII (the CCR Unit) 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	6.353-7.820	1100
Prediction Level (2021)	3.8	230.1	50.21	2.3	670	6.184-8.163	1210
Prediction Level (2023)	3.8	249.0	47.24	2.3	670	6.236-8.172	1210
GAMW21*							
GAMW21B*	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
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Prediction Level (2023)	3.8	249.0	47.24	2.3	670	6.236-8.172	1210
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			11	1,3,5,6,7,8,10,11,12			2
GAMW26B		1,3,7	3,7		1,3,7	3	1,3,7
GAMW27	1,2,3,4,5,6,7,8,9,10	1,2,3,4,5,6,7,8,9,10,11			1,2,3,4,6,7,8,9,11		1,2,3,4,6,7,8,9
GAMW27B	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3,5,6,7,8,9,10,11,12	1,2,3,4,5,6,7,8,9,10,11,12		1,2,3,4,5,6,7,8,9,10,11,12	3	1,2,3,4,5,6,7,8,9,10,11,12
GAMW28*	1,2	1,2	1		1,2		1,2
GAMW28B*	1,2	1,2	1,2		1,2		1,2
GAMW38							
GAMW38B	3,4,5,6,7,8,9,10,11,12	3,4,5,6,7,8,9,10,11,12	3,4,11,12		3,4,5,6,7,8,9,10,11,12		3,4,5,6,7,8,9,10,11,12
GAMW39	3	3,4,5,6,7			3	5	3
GAMW39B	3,4,5,6,7,8,9,10,11,12	3,4,5,6,7,8,9,10,11,12	3,4,5,6,7,8,9,10,11,12		3,4,5,6,7,8,9,10,11,12	5	3,4,5,6,7,8,9,10,11,12

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	6.353-7.820	1100
Prediction Level (2021)	3.8	230.1	50.21	2.3	670	6.184-8.163	1210
Prediction Level (2023)	3.8	249.0	47.24	2.3	670	6.236-8.172	1210
GAMW40	3,4,6,9,12	3,4,5,6,7,8,9,11			3		3,4,5,6,7,8,9,10,11
GAMW40B	3,4,5,6,7,8,9,10,11,12	3,4,5,6,7	3,4,5,6,7,8,9,10,11,12		3,4,5,6,7,8,9,10,11,12	3,4,6,8,12	3,4,5,6,7,8,9,10,11,12
GAMW41	4,5,6,7,8,9,10,11,12	4,5,6,7	4,5,6,7,8		4,5,6,7,8,9,11		4,5,6,7,8,9,11
GAMW41B	4,5,6,7,8,9,10,11,12	4,6,7,9,10,11,12	4,5,6,7,8,9,10,11,12		4,5,6,7,8,9,10,11,12	6,7	4,5,6,7,8,9,10,11,12

- "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
- "9" Indicates a statistically significant increase detected in the ninth Detection Monitoring event
- "10" Indicates a statistically significant increase detected in the tenth Detection Monitoring event
- "11" Indicates a statistically significant increase detected in the eleventh Detection Monitoring event
- "12" Indicates a statistically significant increase detected in the twelfth 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 twelfth Detection Monitoring event are consistent with the previous Detection Monitoring events, and the rationale behind the ASD dated April 13, 2018 is still applicable. WSP prepared the ASD in accordance with 40 CFR 257.94(e)(2) and it supports the finding that the SSIs determined on August 2, 2023 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 Landfill Phases V, VI, and VII design indicate that a release from the unlined portions of the landfill (Phases 1 and II) that are not subject to the CCR Rule are 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

EPA. 2009. "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance". Office of Resource Conservation and Recovery – Program Implementation and Information Division. March 2009.

Golder Associates Inc., "CCR Groundwater Monitoring Program Implementation Manual- Northern Indiana Public Service Company Rollin M. Schahfer Generating Station", October 2017.

Golder Associates Inc., "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 Inc., "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 Inc., "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 Inc., "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 Inc., "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 Inc., "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 Inc., "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.

Golder Associates Inc., "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", October 26, 2021.

Golder Associates USA Inc., "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", March 25, 2022.

Golder Associates USA Inc., "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", October 14, 2022.

WSP USA Inc., "Northern Indiana Public Service Company LLC R.M. Schahfer Generating Station Wheatfield, Indiana- Schahfer Landfill Phase V and Phase VI - Alternative Source Demonstration", April 12, 2023.

[https://golderassociates.sharepoint.com/sites/nipscoccrgrwmonitoring/shared documents/rmsgsrpts/landfill asd recertifications/2023-october/draft landfill asd recertification 103123.docx](https://golderassociates.sharepoint.com/sites/nipscoccrgrwmonitoring/shared%20documents/rmsgsrpts/landfill%20asd%20recertifications/2023-october/draft%20landfill%20asd%20recertification%20103123.docx)

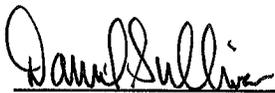
**Northern Indiana Public Service Company LLC
(NIPSCO LLC)**

**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 WSP, and dated October 2023. 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
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10.25.2023

Date