TECHNICAL MEMORANDUM

DATE January 12, 2024 **Project No.** 31404789.006

TO Jeff Loewe, Manager Environmental Remediation
Northern Indiana Public Service Company LLC (NIPSCO)

CC Marc Okin, Joe Kutch, Jennifer Wunsh

FROM Cody Johnson **EMAIL** cody.johnson@wsp.com

**RE: NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC
MICHIGAN CITY GENERATING STATION - BOILER SLAG POND
CORRECTIVE MEASURES SELECTION OF REMEDY
SEMI-ANNUAL PROGRESS REPORT #21-07**

On behalf of Northern Indiana Public Service Company LLC (NIPSCO) and in conformance with 40 Code of Federal Regulations (CFR) §257.97(a), WSP USA Inc. (WSP) has prepared this semi-annual progress report for the NIPSCO Michigan City Generating Station located at 101 Wabash Street in Michigan City, La Porte County, Indiana (MCGS or Site). The purpose of this report is to summarize progress towards selection of a corrective measures remedy for the Boiler Slag Pond (BSP). This semi-annual report covers the 6-month period since filing the Corrective Measures Selection of Remedy, Semi-Annual Progress Report #21-06 for the BSP[1] dated July 6, 2023.

The first Assessment Monitoring event at the BSP was conducted in October 2018 and verified in February 2019. In May 2019 it was determined that arsenic was detected in groundwater from downgradient well GAMW-10 at a statistically significant level (SSL) above its Groundwater Protection Standard (GWPS) based on the site-specific background concentration of 0.014 mg/L. As a result, NIPSCO initiated an assessment of corrective measures for the BSP in August 2019. The Assessment of Corrective Measures (ACM) Report[2] for the BSP was prepared to address arsenic, which was the only inorganic identified at an SSL above its GWPS. Wood Environment & Infrastructure Solutions, Inc. (now WSP) prepared the ACM in conformance with applicable requirements of 40 CFR §257.96, including certification by a qualified Indiana-licensed professional engineer. Subsequently, NIPSCO placed the ACM in the facility operating record, and it was posted to NIPSCO's publicly accessible CCR website. Since that time, the 2019, 2020, 2021 and 2022 Annual Groundwater Monitoring and Corrective Action

[1] WSP 2023. Memo - Northern Indiana Public Service Company LLC, Michigan City Generating Station – Boiler Slag Pond, Corrective Measures Selection of Remedy, Semi-annual Progress Report #21-05. WSP Environment & Infrastructure Inc. January 8, 2023.

[2] Assessment of Corrective Measures Boiler Slag Pond Michigan City Generating Station Michigan City, Indiana. Wood Environment and Infrastructure Solutions, Inc. January 8, 2020

Reports[3,4,5,6] were placed in the operating record and posted to the NIPSCO CCR website. Arsenic detections at wells located downgradient of the BSP in 2019, 2020, 2021 and 2022 were consistent with the arsenic data through 2018 that were considered in the ACM for the BSP, with a new maximum arsenic detection (0.027 mg/L) reported for groundwater collected from well GAMW-10 during the October 2019 event, above the prior maximum concentration of 0.023 mg/L, detected in the same well in November 2016. Data from the Spring and Fall 2023 groundwater monitoring events will be included in the next annual report for the BSP, which is due in July 2024.

Notifications for arsenic at SSLs downgradient of the BSP were issued in June and August 2019, and April 2020, for the sampling events of October 2018, April 2019, and October 2019, respectively. A revised arsenic background value of 0.017 mg/L was established in July 2020 based on data through the April 2020 event. There were no arsenic SSL notifications for any well downgradient of the BSP for the April and October 2020 events, the April and October 2021 events, and the March and September 2022 events. No other constituents were detected at SSLs above the GWPS through September 2022, which was the ninth Assessment Monitoring event.

In early 2021 NIPSCO installed and began sampling four new background monitoring wells identified as PC-MW-110, PC-MW-113, PC-MW-114, and PC-MW-115. As of December 2022, eight rounds of background data had been collected from each of the four new wells. Based on the eight rounds of data a new arsenic GWPS of 0.010 mg/L was established and was applied in the evaluation of the tenth Assessment Monitoring event. The four new monitoring wells have replaced the prior background monitoring wells (GAMW-05, GAMW-12, and GAMW-18) for future monitoring events. An SSL for arsenic was reported for the April 2023 sampling event (the tenth Assessment Monitoring event) based on the new GWPS.

Prior to filing the ACM for the BSP in January 2020, a Closure Application[7] was filed with the Indiana Department of Environmental Management (IDEM) that addressed all five former CCR surface impoundments using closure by removal, including the BSP. A supplemental addendum to the Closure Application[8] was subsequently filed with IDEM in February 2019. The addendum addressed the post-closure groundwater monitoring network for all five CCR surface impoundments, which includes 24 existing wells and 12 new wells. Two of the three BSP downgradient wells are included in the post-closure monitoring well network. The third BSP downgradient well (GAMW-11) was decommissioned during the impoundment closure but was replaced with well pair PC/MW-116A/B in 2023. As stated in the ACM Report[9], during development of the post-closure application and in discussions with IDEM a two-year, post-closure monitoring period was proposed to evaluate the effectiveness of source removal and attenuation before implementing a groundwater corrective action. A

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[3] Golder, 2020. 2019 Annual Groundwater Monitoring and Corrective Action Report – Boiler Slag Pond, NIPSCO LLC Michigan City Generating Station. Golder Associates, Inc. January 31, 2020.

[4] Golder, 2021. 2020 Annual Groundwater Monitoring and Corrective Action Report – Boiler Slag Pond, NIPSCO LLC Michigan City Generating Station. Golder Associates, Inc. January 31, 2021.

[5] Golder, 2022. 2021 Annual Groundwater Monitoring and Corrective Action Report – Boiler Slag Pond, NIPSCO LLC Michigan City Generating Station. Golder Associates, Inc. January 31, 2022

[6] WSP, 2023. 2022 Annual Groundwater Monitoring and Corrective Action Report – Boiler Slag Pond

[7] Wood, 2018. Surface Impoundment Closures (CCR Final Rule and RCRA Regulated) Closure Application, Volume 1 – Closure Plan and Drawings (Appendix A), Michigan City Generating Station, Northern Indiana Public Service Company, Merrillville, Indiana. December 20, 2018.

[8] Wood, 2019. Supplemental Addendum, Monitoring Well Network, Surface Impoundment Closures (CCR Final Rule and RCRA Regulated) Closure Application, Michigan City Generating Station, Northern Indiana Public Service Company, Merrillville, Indiana. February 28, 2019.

[9] Wood, 2020. Assessment of Corrective Measures, Primary Settling Pond No. 2, Michigan City Generating Station, Michigan City, Indiana. December 7, 2020.

virtual public hearing was conducted on April 16, 2020, to present the proposed approach for CCR unit closure at MCGS, after which NIPSCO received several comments from interested stakeholders. IDEM approved the Closure Application on March 10, 2021.

NIPSCO completed closure of all five impoundments in July 2023 by removing source materials pursuant to 40 CFR §257.102(c). Closure of the BSP included removal of approximately 47,000 cubic yards of CCR, blast furnace slag, and an additional foot of underlying material which was removed and replaced with native sand backfill. A 24-inch soil cover having a permeability of $1x10^{-5}$ centimeters per second, or less, was placed over the backfilled areas. A non-woven geotextile and 12-inch layer of crushed stone was placed above the cover soil. The cover system was contoured to promote surface drainage to catch basins that discharge to the Final Pond.

Installation of the post-closure monitoring well network for all five impoundments was completed in two phases in 2023 with the deep wells installed first and the shallow wells installed later to allow the shallow groundwater to recover following dewatering associated with impoundment closure activities. The deep monitoring wells (PC-MW-116B, PC-MW-117B, PC-MW-118B, and PC-MW-119) were installed in August 2023[10]. Installation of the shallow wells (PC-MW-103A, PC-MW-105A, PC-MW-116A, PC-MW-117A, and PC-MW-118A) was completed in November 2023. During the November mobilization, WSP also decommissioned shallow well PC-GAMW-14 and replaced it in-kind with PC-GAMW-14R.

Removal of source material is the first step in the corrective measure for the BSP. Therefore, the ACM focused on residual concentrations in groundwater upon closure of the BSP and identified five potential groundwater corrective measure alternatives for possible implementation. The five alternatives include monitored natural attenuation (MNA), groundwater extraction for treatment with three options for discharge (surface water, publicly owned treatment works, and groundwater reinjection), and a permeable reactive barrier (PRB). These five alternatives were also considered viable for the other impoundments slated for closure at the MCGS because arsenic is a site-wide contaminant and because of the proximity of impoundments to one another.

NIPSCO is performing additional studies of soil and groundwater that are considered imperative to assessing the groundwater following removal of the source of CCR constituents so that the most appropriate corrective measure technology can be selected based on post-closure conditions. The studies include a plume stability analysis based the results of groundwater samples collected in March 2023, and studies to assess the sorption/desorption of CCR constituents, particularly arsenic, based on the results of soil/water pair samples collected in November 2023 and column studies using EPA Method 1314 to assess the capacity of site soil to sorb dissolved inorganics and the permanence of that sorption. The flow and transport model will be updated with this additional information. An updated report will be prepared semi-annually, in conformance with applicable requirements of 40 CFR §257.97(a), that summarizes NIPSCO's progress towards selection of a remedy for groundwater Corrective Measures at the BSP.

[10] WSP, 2023. Post-Closure Monitoring Well Completion Report – Phase I Deep Wells Installation, NIPSCO LLC, Michigan City Generating Station, Michigan City, IN. October 31, 2023