TECHNICAL MEMORANDUM

DATE October 20, 2021 **Project No.** 19121569

TO Joe Kutch, Team Leader, Environmental Compliance
Northern Indiana Public Service Company LLC (NIPSCO LLC)

CC Jeff Loewe (NIPSCO LLC), Joe Gormley, Mark Haney, Jim Peace

FROM Danielle Sylvia Cofelice **EMAIL dsylvia@golder.com**

**RE: NORTHERN INDIANA PUBLIC SERVICE COMPANY LLC
BAILLY GENERATING STATION, CCR UNITS PRIMARY 1, PRIMARY 2, AND SECONDARY 1
CORRECTIVE MEASURES SELECTION OF REMEDY, SEMI-ANNUAL PROGRESS REPORT #21-02**

On behalf of Northern Indiana Public Service Company LLC (NIPSCO) and in conformance with 40 Code of Federal Regulations (CFR) §257.97(a), Golder Associates Inc. (Golder) has prepared this semi-annual progress report for the NIPSCO Bailly Generating Station, 246 Bailly Station Road, Chesterton, Porter County, Indiana (BGS or Site). This report summarizes progress toward selection of a Corrective Measure(s) remedy for three Coal Combustion Residuals (CCR) impoundments (Primary 1, Primary 2, and Secondary 1) collectively referred to herein as the CCR Units. Specifically, this semi-annual progress report summarizes NIPSCO's/Golder's actions completed since the submittal of the fourth semi-annual progress report on April 20, 2021.

In May 2019, Golder prepared an Assessment of Corrective Measures (ACM) to address detections of Appendix IV parameters in groundwater downgradient of the CCR Units above the groundwater protection standards (GWPS). Specifically, the ACM addressed arsenic, cadmium, lithium, and thallium due to Statistically Significant Levels (SSLs) in groundwater or detections above the groundwater protection standards. The ACM was prepared in conformance with applicable requirements of 40 CFR §257.96 and was certified by a qualified Indiana-licensed professional engineer on May 1, 2019. Following certification, the ACM was placed in the facility operating record, and NIPSCO posted it to their publicly-accessible CCR website.

As discussed in the ACM, NIPSCO plans to close the CCR Units by removal in accordance with 40 CFR §257.102(c). NIPSCO submitted a Closure Application to Indiana Department of Environmental Management (IDEM) in February 2021, which is currently under review. Potential modifications or refinement to the closure approach and IDEM-required changes to the Closure Application will likely impact the current ACM and selection of a groundwater Corrective Measure(s).

The ACM initially identified five potential groundwater Corrective Measure alternatives to be considered for implementation following excavation and closure of the CCR Units. However, Golder determined that additional data and further evaluation were required to select a remedy from among these options.

Following submittal of the ACM, Golder identified changes in groundwater flow direction. These changes were identified during a review of 2019-2020 potentiometric surface data and appear to be related to the shutdown of coal-fired generating activities and consequent modifications in operation of the impoundments. As a result, the groundwater monitoring network was updated to appropriately monitor groundwater quality immediately

downgradient of the CCR Units and to allow for the collection and evaluation of additional information essential to evaluate the potential groundwater Corrective Measure alternatives.

Concurrent with NIPSCO's preparation of the Closure Application and development of the closure detailed design, Golder performed additional field investigations to collect Site-specific data and conducted analyses of recent and historical information. The following remedy selection-related activities have been performed in the past six months:

- During the spring 2021 timeframe, Golder continued to re-evaluate the groundwater flow direction based on water levels from the updated monitoring well network, collected groundwater samples from the updated monitoring well network, and evaluated the resulting analytical data. Specifically, Golder sampled groundwater monitoring wells for CCR and monitored natural attenuation (MNA) parameters between May 2, 2021 and May 19, 2021.
- Golder developed a steady state groundwater model to simulate groundwater flow conditions at the Site. The groundwater model was used to estimate particle transport time and to predict changes in groundwater flow conditions after closure and inform elements of the corrective measure alternatives. The modeling results were summarized in a technical memorandum[1].
- Golder completed a monitored natural attenuation (MNA) Tier I-III evaluation for the Site. The evaluation included a review of mechanisms, rates, and stability of MNA as a potential corrective measure for groundwater impacts at the Site. The results were summarized in an MNA Report[2].

Following final closure design for the CCR Units and IDEM acceptance of the Closure Application as complete (which currently is expected in December 2021), Golder will prepare an Addendum to the ACM to supplement the findings of the 2019 ACM, provide further details of Golder's evaluation of the potential Corrective Measures, and reevaluate the list of potential Corrective Measures identified in the ACM based on their compatibility with the final closure design.

Throughout the fall 2021-spring 2022 timeframe, Golder will continue to collect and evaluate additional information relative to the potential Corrective Measures. These evaluations will be consistent with timing and implications of the IDEM's review of the Closure Application, NIPSCO's closure-related public meeting, and IDEM approval processes. For these evaluations, Golder will place emphases on identifying critical data gaps, understanding and reacting to impacts of newly gathered information on previous assumptions and/or conclusions, identifying and researching applicability of emerging technologies, and monitoring changing conditions and future plans for the Site and their impacts on the remedy process. Golder will summarize these additional evaluations along with a summary of NIPSCO's progress toward selection of a Corrective Measures remedy(ies) for groundwater for the CCR Units in the next semi-annual progress report.

[1] Golder, October 2021. Groundwater Flow Model Technical Memorandum Bailly Generating Station

[2] Golder, October 2021. Monitored Natural Attenuation Evaluation Bailly Generating Station