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FIGURES

Figure 1 Impoundment Design Cross Section
Figure 2 Closure Schedule

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REVISION SUMMARY

On behalf of Northern Indiana Public Service Company (NIPSCO), Golder Associates Inc. (Golder) prepared the Bailly Generating Station (BGS) Primary 2 Closure Plan consistent with the requirements of 40 CFR, Part 102 (Revision 1 [REV. 1] posted 10/17/2016). Revision 2 (REV. 2) includes updates to the closure schedule as referenced in Sections 4.0 and 5.0 with an amended Statement of Certification included in Exhibit A.

1.0 BACKGROUND

The Northern Indiana Public Service Company (NIPSCO) Bailly Generating Station (BGS or Site) is an operating coal-fired electric generating plant located at 246 Bailly Station Road in Chesterton, Porter County, Indiana. BGS occupies approximately 350 acres in an industrial area adjacent to the ArcelorMittal Steel manufacturing complex along the southern shoreline of Lake Michigan. The Site includes four National Pollutant Discharge Elimination System (NPDES) permitted surface impoundments that have been used to manage wastewaters and coal combustion residuals (CCR) including fly ash, boiler slag, and other CCR waste streams, all regulated under the April 17, 2015 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 (hereinafter CCR Final Rule).

Historically, BGS generated and managed on-Site coal combustion residuals (CCR) waste streams and non-CCR wastewaters in Primary Settling Basin #2 (Primary 2). Prior to October 19, 2015, NIPSCO discontinued the addition of most wastes regulated under the CCR Final Rule to the surface impoundment. The unit remains open, currently receiving non-CCR materials as well as precipitation run-on. In the future, NIPSCO plans to closure Primary 2 by removal of CCR and decontamination consistent with the requirements of 40 CFR, Part 102 (c). This document represents the closure plan, including contents as specified in 40 CFR, Part 257.102 (b) (1) (i, ii, iv, v, and vi), as well as the necessary engineering certification (refer to Exhibit A) pursuant to 40 CFR, Part 257.102 (b) (4).

1.1 Impoundment Description

Primary 2 is located between and shares an impoundment berm with Primary Settling Pond #1 (Primary 1) to the west and Secondary Settling Pond #2 (Secondary 2) to the east. Primary 2 is an approximately 7.2 acre, 760 by 410 foot (ft), incised impoundment structure with a maximum theoretical capacity of approximately 172,000 cubic yards (cu yd). The interior sideslopes were constructed at 3H:1V and vary in height as referenced from the bottom of the impoundment from approximately 15 feet to 25 feet. The floor of the impoundment slopes downward from west to east at a grade of approximately 0.2%. About 1980, material contained in a predecessor impoundment to Primary 2 was excavated and off-Site disposed, and the former impoundment location was lined with one foot of compacted clay (serving as a secondary liner), a membrane primary liner, and steel blast furnace slag/sand buffer protective layers (refer to Figure 1, Impoundment Design Cross-Section) for the liner system detail). The compacted clay and membrane liners extend to approximately elevation (El.) mean sea level (msl) 619.5 on the impoundment berms, which are also covered by protective layers of sand buffer and steel slag.

Prior to BGS’ conversion to a dry fly ash management system, Primary 2 received wet fly ash and wastewaters sluiced directly from the generating station. Currently, Primary 2 contains both CCR and liquids. Liquid levels within Primary 2 were and continue to be manually controlled by BGS operations personnel.
1.2 Closure Narrative

Pursuant to the requirements of 40 CFR, Part 257.102 (b) (2), development of the Primary 2 closure plan was completed by October 17, 2016. Consistent with the applicable provision(s) of 40 CFR, Part 257.102 (e) (1) (i), or (e) (2) (i) or (ii), as applicable, NIPSCO will initiate closure activities in accordance with requisite notifications and consistent with the closure schedule discussed in Section 6.0 of the closure plan. Actual start date will be dependent upon regulatory agency review/approval of closure plan documents, contractor availability, disposal capacity, and weather conditions at the Site. Pursuant to 40 CFR Part 257.102 (c), closure will be through removal of CCR.

Key steps of the closure process may include, but are not necessarily limited to, pre-disposal waste characterization and permitting, impoundment dewatering, excavation and off-Site disposal of CCR contents and liner materials, establishment of closure standards for indicator parameters through collection of representative background samples, and post-excavation soil sampling to confirm closure-by-removal (i.e., clean closure) standards have been achieved. Subsequent to completion of all construction and verification activities, notification and engineering certification of successful closure by removal (i.e., clean closure) will be performed.

1.3 Notifications

The closure process requires notifications to be completed prior and subsequent to closure activities. Pursuant to 40 CFR, Part 257.102 (g), by no later than the date of initiation of closure, NIPSCO will prepare and place in the BGS facility’s operating record a notification of intent to close Primary 2. This notification will include the required engineering certification in accordance with 40 CFR, Part 257.102 (d) (3) (iii). Within 30 days of finishing construction and verification activities, notification of completion of closure of Primary 2 and the engineering certification of successful closure by removal (i.e., clean closure) consistent with the requirements of 40 CFR, Part 257.102 (f) (3) and (h) will be performed and placed in the BGS facility’s operating record.

2.0 MAXIMUM INVENTORY OF CCR AND OTHER MATERIALS TO BE REMOVED

To address the requirements of 40 CFR, Part 257.102 (b) (1) (iv) and estimate the quantities of materials to be removed during the closure process, multiple resources were reviewed and consulted including: Sargent & Lundy Engineers historical construction drawings¹, Marbach, Brady, & Weaver existing conditions topographic survey drawing², recent field investigation findings, and discussions with NIPSCO representatives.

According to BGS facility personnel, Primary 2 has never been dredged since its construction in 1980. Therefore, the amount of CCR in the pond at the time of closure represents the maximum inventory of CCR ever on-Site over the active life of the CCR impoundment, pursuant to 40 CFR, Part 257.102 (b) (1) (iv). During the summer of 2015, field investigations were performed within Primary 2 to estimate the as-built elevation (EL) of the top of steel blast furnace slag liner and the thickness of CCR sediments within the pond. The thickness of the CCR sediments and elevation of steel blast furnace slag were estimated by pushing a traditional stadia rod through the soft CCR sediments to the top of the steel blast furnace slag layer. CCR thicknesses were estimated at approximately 20 locations across the pond floor and ranged between approximately six inches and five feet thick with a total estimated volume of approximately 20,000 cu yd. The stadia rod survey also indicated that the top of

¹ Sargent & Lundy Engineers, “Ash Pond Lining Plan, Sections, & Details Sheet 1, Bailly Generating Station Units No. 7 & 8”, Revision G, May 8, 1981.
steel blast furnace slag elevation sloped from approximately El. 612 msl at the western end of the pond floor to approximately El. 610.5 msl at the eastern end of the pond floor.

Marbach, Brady, & Weaver, Inc. performed a topographic survey of Primary 2 in June 2015. The existing conditions survey drawing indicates that the water level in the pond at that time was at approximately El. 618 msl. Therefore at the time of the survey, there were approximately 10,000,000 gallons of free liquid (above steel blast furnace slag and CCR sediments) within Primary 2.

The Sargent & Lundy Engineers Primary 2 construction drawings indicate that the liner system includes (from top to bottom) one foot of coarse graded (3/4” to 1-1/2”) steel blast furnace slag, six inches of sand cushion/protection, primary membrane liner, six inches of sand cushion/protection, and one foot of compacted clay secondary liner. The drawings indicate that all layers of the liner system terminate at approximately EL 619.5 msl, extend laterally and are secured approximately five feet into the impoundment berms. Using the thicknesses noted on the construction drawings and an estimated as-built liner area of approximately 6.3 acres extrapolated from the Marbach existing conditions survey, the following liner material quantities were estimated.

<table>
<thead>
<tr>
<th>Material</th>
<th>Estimated Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel blast furnace slag</td>
<td>10,100 cu yd</td>
</tr>
<tr>
<td>Protective sand above membrane liner</td>
<td>5,050 cu yd</td>
</tr>
<tr>
<td>Membrane liner</td>
<td>6.3 ac</td>
</tr>
<tr>
<td>Protective sand below membrane liner</td>
<td>5,050 cu yd</td>
</tr>
<tr>
<td>Clay</td>
<td>10,100 cu yd</td>
</tr>
</tbody>
</table>

### 3.0 CLOSURE PROCESS AND PERFORMANCE STANDARD

Consistent with the requirements of 40 CFR, Part 257.102 (c), NIPSCO will close Primary 2 by removal and off-Site disposal of CCR and decontamination of areas affected by releases, if any, from the CCR unit. Subsequent to completion of construction activities and confirmatory soil sampling, groundwater monitoring will be performed in accordance with the applicable provisions of 40 CFR, Parts 257.94 or 95, as determined by sampling results.

### 3.1 Closure Plan and Approach

As discussed in greater detail in Sections 3.2 through 3.8 below, key elements of the closure process will include establishment of the closure performance standard, preparation work to protect shared berms and utilities, dewatering of the surface impoundment and wet CCR contents, excavation and off-Site disposal of CCR as well as liner materials, post-excavation sampling, and backfill/future management of the excavation. Subsequent to completion of construction activities and confirmatory soil sampling, groundwater monitoring will be performed.

### 3.2 Establishment of Closure Standard and Confirmatory Sampling

Consistent with the requirements of 40 CFR, Part 257.102 (c), NIPSCO will close Primary 2 through removal of CCR and decontamination of areas affected by releases, if any. No known releases were recorded by NIPSCO.
during the active operating life of the impoundment. The closure standard will be achievement of background values for CCR-representative COCs in soil.

The closure standard will be established by sampling representative areas of the Site (and potentially supplemental off-Site locations) unaffected by NIPSCO's CCR management operations to develop an overall background value. Following excavation and removal activities (see Sections 3.5, 3.6, and 3.7), individual samples will be collected from soils beneath the former floor and sidewalls of Primary 2. These results will be compared to the background value to verify that CCRs have been satisfactorily removed and underlying soils has been decontaminated, substantiating that closure by removal has been achieved.

### 3.3 Protection of Shared Impoundment Berm and Utilities

The western and eastern limits of Primary 2 terminate within impoundment berms that are shared with Primary 1 and Secondary 2, respectively. The top of the impoundment berms are approximately 100 ft wide and support tower structures for overhead electric lines. The Primary 2 membrane liner extends laterally approximately 5 ft onto the top of each of the impoundment berms; therefore, impacts to the shared berms will be minimal and should not affect the functionality of the berms with respect to containment of Primary 1 and Secondary 2. Construction activities associated with Primary 2 closure will be modified as required to maintain a safe distance from the overhead lines and to not impact the tower foundation support elements.

Additional utilities including a gas main, telephone line, recirculation line, water line, discharge line, overhead electric, and monitoring wells are located to the north and south of Primary 2. The contractor will be responsible to locate and protect these utilities prior to the start of construction.

### 3.4 Dewatering

As discussed above, BGS expects as much as approximately 10,000,000 gallons of free liquid will need to be removed from Primary 2 at the start of construction. Dewatering will be achieved using trailer mounted pumps located in the existing sump and/or at localized low points across the floor. Dewatering liquid will be discharged into Secondary 2/Forebay where it will be held and discharged under the current NPDES permit.

Following removal of the free liquid, the above-membrane liner materials (i.e., CCR sediments, steel blast furnace slag, sand protection) will be pushed into stockpiles or windrows within the limits of Primary 2. In general, the stockpiles will be managed from west to east so that as liquid is expelled from the solids, it can be directed to the low points of the floor and dewatered accordingly. Stockpiles will be worked and aerated as necessary until the material passes the Paint Filter Liquids Test (EPA Method 9095B) for transport and disposal.

### 3.5 Management of Solids

Steel blast furnace slag and sand protection layers located on the sideslopes and over the portion of the impoundment berm that is covered by liner, will be stripped and stockpiled within the limits of Primary 2. Stockpiles of this potentially drier material may be mixed with the wetter materials pushed up from the floor. Once the stockpiled materials are dry enough for transport, the materials will be loaded into trucks and hauled to the selected off-Site disposal facility or facilities. Access ramps will be built over the sideslopes and out onto the floor of Primary 2 so that truck loading can be performed within the limits of the Primary 2 liner and track out due to spillage during loading can be minimized.
3.6 Management of Membrane Primary Liner

After the materials located over the primary membrane liner are stripped and removed, the membrane will be cut into manageable-sized strips, loaded into trucks or roll-off containers, and transported to the selected commercial disposal facility. The Sargent & Lundy construction drawings indicate that the liner terminates in a 1.5 foot wide by nine inch deep anchor trench around the top of the impoundment berm. The anchor trench will also be excavated and the liner will be removed for disposal during this stage of the closure process.

Management of Compacted Clay Secondary Liner

Current status of the one-foot-thick secondary clay liner in regard to potential impacts by CCR releases is unknown. NIPSCO plans to excavate the entire one-foot-thick clay layer to complete closure activities, but the manner of excavation/material staging (i.e., number and location of stockpiles) and the final end use (i.e., off-Site disposal of impacted soil or on-Site backfill of clean soil in future construction projects) will be determined based on the results of in-situ testing. Any temporary on-Site stockpile(s) outside the current extent of Primary 2 will be placed on liner materials, encircled by silt fence or equivalent measures to prevent erosion and sedimentation of adjacent areas due to stormwater runoff, and managed to minimize wind erosion or dust issues.

3.7 Backfill/Future Management of Excavation

Following closure, erosion control measures will be implemented on the interior sideslopes and over the floor of the former impoundment as needed to prevent erosion from negatively impacting the shared impoundment berms or backfill around active utilities. At this time, NIPSCO has not yet determined future plans for the closed impoundment.

4.0 CLOSURE SCHEDULE

NIPSCO plans to commence closure of Primary 2 beginning in spring 2021, with final receipt of waste into the unit planned to occur no later than October 31, 2020. This schedule is subject to change and dependent upon approval of closure planning documents by regulatory agencies, the availability of labor and equipment at the time of construction, favorable weather conditions, and minimal unanticipated delays. Should delays arise, the schedule will be altered to allow for completion of construction and closure certification by the final regulatory deadline. The table below outlines the major milestones required for closure. Refer to Figure 2 Closure Schedule for a more detailed construction schedule.

<table>
<thead>
<tr>
<th>Construction Milestone</th>
<th>Anticipated Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin Dewatering</td>
<td>8 Months Prior to Final Closure Date</td>
</tr>
<tr>
<td>Begin Removal of CCR &amp; Impoundment Liners</td>
<td>5 Months Prior to Final Closure Date</td>
</tr>
<tr>
<td>End Closure Construction Activities</td>
<td>1 Month Prior to Final Closure Date</td>
</tr>
</tbody>
</table>

5.0 CLOSURE CERTIFICATION

As demonstrated throughout this plan, NIPSCO intends to close inactive Primary 2 through removal of CCR and decontamination with commencement of closure no later than 2021 and has developed the closure plan in conformance with the requirements of 40 CFR, Parts 257.102 (b) and (c). Upon completion of closure, NIPSCO
will obtain certification from a qualified registered professional engineer verifying that closure has been completed in accordance with the closure plan prepared according to 40 CFR, Part 257.102 (b) and has met the applicable requirements of 40 CFR, Part 257.102 (c). In compliance with 40 CFR, Part 257.102 (b) (4), a Statement of Certification is appended to this plan and located in Exhibit A. Pursuant to 40 CFR, Part 257.102 (f) (3), within 60 days of completion, a Notification of Completion of Closure including the appropriate engineering certification will be prepared and placed in the facility’s operating record.
FIGURES
12 INCHES 3/8" TO 1.5" STEEL BLAST FURNACE SLAG

6-INCH SAND LAYER

MEMBRANE LINER

6 INCH SAND LAYER

12-INCH CLAY LAYER

LEGEND

STEEL BLAST FURNACE SLAG

SAND

CLAY

MEMBRANE LAYER

CLIENT
NIPSCO

CONSULTANT
GOLDER

PROJECT
NORTHERN INDIANA PUBLIC SERVICE COMPANY
BAILLY GENERATING STATION
CHESTERTON, INDIANA

TITLE
BGS PRIMARY 2 IMPOUNDMENT DESIGN CROSS SECTION

PROJECT NO.
154-3703

SUBTITLE
A

REV.
0

FIGURE
1
# Closure Schedule

**Project:** Bailly Generating Station  
**Client:** Northern Indiana Public Service Company  
**Location:** Chesterton, Indiana

---

**Project Summary**  
- **Task:**  
  - **ID:**  
  - **Description:**  
  - **Duration:**

**Inactive Task**  
- **Project Summary**

**Inactive Milestone**

**Manual Summary**  
- **Task:**  
  - **ID:**

---

**Client:** Northern Indiana Public Service Company  
**Title:** Closure Schedule

---

**Prepared:**
**Reviewed:**
**Approved:**

---

**Path:** \manchester\cadd\Drawings\2015\NIPSCO\Bailly\  
**File Name:** 16.09.08 Figure 2 Closure Schedule.dwg
EXHIBIT A
CLOSURE PLAN CERTIFICATION
Northern Indiana Public Service Company (NIPSCO) Bailly Generating Station (BGS)
Chesterton, Porter County, Indiana
Primary Settling Pond #2 (Primary 2)

STATEMENT OF CERTIFICATION
NIPSCO BGS PRIMARY 2 CCR CLOSURE PLAN
40 Code of Federal Regulations (CFR), Part 257.102

Prior to October 19, 2015, NIPSCO discontinued the addition of most wastes regulated under the April 17, 2015 Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (CCR Final Rule), to one of the BGS surface impoundments, Primary Settling Pond #2 (Primary 2). NIPSCO intends to close Primary 2 by removal of CCR consistent with the requirements of 40 CFR, Part 102 (b) and (c).

I, Richard Wesenberg, certify that I have personally examined and am familiar with the information submitted in the NIPSCO BGS Primary 2 CCR Closure Plan, Golder Associates Inc., January 2019. Based on an inquiry of those individuals immediately responsible for providing the information, I believe that the information contained therein is true, accurate and complete and that the closure plan by removal of CCR and decontamination of Primary 2 is technically feasible and consistent with the requirements of 40 CFR, Part 102 (b) and (c).

Richard A. Wesenberg, PE
Principal and New England Group Leader
Registered Professional Engineer
State of Indiana No.: 11500584

1-30-2019