# VERIFIED DIRECT TESTIMONY OF MAUREEN B. TURMAN

**Q1. Please state your name, business address, and title.**

A1. My name is Maureen B. Turman. My business address is 801 E. 86th Avenue, Merrillville, Indiana 46410. I am currently the Director of Environmental Policy & Sustainability for NiSource Corporate Services Company LLC ("NCSC").

**Q2. On whose behalf are you submitting this direct testimony?**

A2. I am submitting this testimony on behalf of Northern Indiana Public Service Company LLC ("NIPSCO").

**Q3. Please describe your educational and employment background.**

A3. I received a Bachelor of Science in Geology from Purdue University in 1988 and a Master of Business Administration from Purdue University in 2002. My professional experience includes various technical and management positions in the environmental field primarily for the petroleum, steel and utility industries. In 2012, I joined NCSC and have held several positions

with increasing levels of responsibility, focusing primarily on environmental policy, regulatory analysis and sustainability.

**Q4. What are your responsibilities as Director of Environmental Policy & Sustainability?**

A4. As Director of Environmental Policy & Sustainability, I have direct responsibility for tracking and analyzing the development of environmental regulations affecting the operating companies within the NiSource corporate organization, including NIPSCO. Additionally, I am responsible for environmental, health and safety auditing, and reporting of environmental metrics for NiSource affiliates, including NIPSCO.

**Q5. Have you previously submitted testimony before the Indiana Utility Regulatory Commission (the "Commission") this or any other regulatory commission?**

A5. No.

**Q6. Are you sponsoring any attachments to your testimony in this Cause?**

A6. Yes. I am sponsoring Attachment 2-A, a Corrective Action Agreed Order approved by the Indiana Department of Environmental Management

("IDEM") (Cause H-13872) on October 21, 2013), including all amendments thereto ("Agreed Order").[1]

**Q7. What is the purpose of your testimony?**

A7. The purpose of my testimony is to explain the federally mandated requirements and associated compliance deadline related to certain pond closure work at NIPSCO's Michigan City Generating Station ("Michigan City").[2] The details of the work to be completed, which NIPSCO has designated as the "Ash Pond Compliance Project," is further discussed by NIPSCO Witness Ridge. Specifically, I discuss (1) the federally mandated requirements; (2) how these federally mandated requirements are driving the pond closure activities related to the Ash Pond Compliance Project; and (3) the closure alternatives NIPSCO considered and ultimately rejected.

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[1] An "agreed order" with IDEM is similar to a "consent decree" with EPA, as both are used by the respective environmental regulator to reach agreement about how an entity will comply with the applicable rules and/or regulations.

[2] In NIPSCO's last electric rate case, Cause No. 45159, Kelly R. Carmichael offered verified direct testimony that explained the Environmental Protection Agency's ("EPA") Coal Combustion Residuals ("CCR") rule ("CCR Rule") and NIPSCO's compliance therewith. This included a discussion of additional compliance activities that, as of October 31, 2018, NIPSCO was required to undertake to ensure compliance with the CCR Rule and Resource Conservation and Recovery Act ("RCRA"). *See* Verified Direct Testimony of Kelly R. Carmichael (Pet. Exh. No. 8) offered in Cause No. 45159.

**RCRA and CCR Rule**

**Q8. What are the federal requirements that are applicable to Michigan City and relevant here?**

A8. The federally mandated requirements are the RCRA and the CCR Rule (which, as discussed below, was promulgated under RCRA). RCRA is explicitly listed as a "federally mandated requirement" in Ind. Code § 8-1-8.4-5(3). Additionally, in the Commission's December 13, 2017 Order in Cause No. 44872 (at pp. 32-33), the Commission specifically found that the CCR Rule was a "federally mandated requirement" under the FMCA Statute.[3]

**Q9. Please briefly describe the RCRA.**

A9. RCRA sets forth a framework for the management of both hazardous and non-hazardous wastes. RCRA, Subtitle C, established cradle-to-grave requirements for the generation, treatment, disposal, or management of hazardous waste. RCRA, Subtitle D, deals with the management of solid,

[3] Indiana Code ch. 8-1-8.4 (Federally Mandated Requirements for Energy Utilities) was enacted in 2011 as part of Senate Enrolled Act 251 (the "FMCA Statute").

non-hazardous waste. Under Subtitle D, EPA is responsible for creating federal standards for the management and disposal of solid waste.

**Q10. Are any regulations under the RCRA impacting NIPSCO's operations at Michigan City?**

A10. Yes. The most significant regulations impacting Michigan City are RCRA and the CCR Rule. The CCR Rule is federally mandated, but, because it was promulgated under Subtitle D of the RCRA, it was a self-implementing rule when originally promulgated.

The CCR Rule is a federal rule first promulgated by EPA under the federal RCRA on April 19, 2015, with an effective date of October 19, 2015. The CCR Rule regulates disposal of CCRs, which are the materials generated from the combustion of coal to produce steam to power a generator to produce electricity. CCRs consist of fly ash, bottom ash, boiler slag, and flue gas desulfurization materials. Under the CCR Rule, CCRs are regulated as solid waste under Subtitle D of RCRA. The CCR Rule sets out nationally-applicable minimum requirements for new and existing CCR landfills and surface impoundments (sometimes also called "ponds" or "basins" or "units").

However, in 2016 the Water Infrastructure Improvements for the Nation ("WIIN") Act was passed into law, which amended the CCR Rule and authorized states to submit to the EPA for approval, a permit program for regulating CCR units in lieu of the CCR Rule. The amendment allows states to adopt different technical standards from the CCR Rule so long as the standards are at least as protective as the federal rule. In circumstances where a state does not seek approval of a permit program or where EPA denies a state application, the amendments require EPA to adopt a permit program in lieu of the self-implementing rule, provided Congress provides funding for EPA to carry out a permit program. If no permit program is in effect in a state, the CCR Rule remains self-implementing.

On February 10, 2016, the Indiana Environmental Rules Board adopted an emergency rule incorporating the EPA CCR Rule requirements for CCR surface impoundments into the Indiana Code. The amendments in the emergency rule went through a full rule writing process and became permanent on December 10, 2016.

**Q11. Please explain the regulation of CCRs under RCRA and the CCR Rule that is most relevant to this proceeding.**

A11. The CCR Rule became effective October 19, 2015, with multiple compliance dates phased in over time. EPA identified potential risks associated with coal ash and established federal regulations to provide a comprehensive set of technical requirements for the beneficial use, management and disposal of CCRs, commonly known as coal ash, from coal-fired power plants. Compliance requirements include location restrictions, impoundment design criteria, operating criteria, groundwater monitoring and corrective action, closure and post-closure care and recordkeeping, notification and posting of information to the Internet.

**Q12. Which portions of Michigan City ponds are impacted by RCRA and the CCR Rule?**

A12. As applicable to this proceeding, all five ash ponds at Michigan City[4] are subject to RCRA, as well as the Agreed Order. Two of the ponds (Primary #2 and the Boiler Slag Pond) are also subject to the CCR Rule.

[4] These five ponds are generally referred to by NIPSCO and in related documents as West Primary Fly Ash Basin (Primary #1 Pond), Primary Fly Ash Basin East (Primary #2 Pond), West Secondary Fly Ash Basin East (Secondary #1 Pond), Secondary Fly Ash Basin (Secondary #2 Pond), and Bottom Ash Settling Pond and Storage Area (Boiler Slag Pond). All five ponds are regulated by RCRA, but only two of them (Primary #2 Pond and Boiler Slag Pond) are regulated by the CCR

**Q13. How and why is IDEM involved in the regulation of the CCR ash ponds (those subject to RCRA and the CCR Rule)?**

A13. IDEM has been authorized by EPA to implement RCRA corrective actions under Ind. Code 13-22 and 329 Ind. Admin. Code 3.1. This means that, while the underlying regulations and requirements with which NIPSCO must comply are federal in nature, IDEM (rather than EPA) is the regulator with whom NIPSCO has worked to ensure compliance with RCRA and the CCR Rule for these five ponds.

A RCRA Facility Assessment ("RFA") was conducted at the Michigan City property on October 12, 2011. The RFA Report dated July 16, 2012, identified the following Solid Waste Management Units ("SWMUs") and Areas of Concern ("AOCs"): SWMU 1 included Primary Pond #1, Secondary Pond #1, Primary Pond #2, and Secondary Pond #2. SWMU 2 included the Boiler Slag Pond.

The Agreed Order required certain steps be undertaken by NIPSCO to satisfy the Order: (1) to address the recommendations of the IDEM RFA

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Rule. In my testimony, I refer to these two ponds as "CCR ash ponds," and refer to the other three as "RCRA ash ponds."

with respect to SWMUs and AOCs identified at the Michigan City property; (2) to perform a RCRA Facility Investigation ("RFI") to define the nature and, if present, the extent of all releases of hazardous waste and/or hazardous constituents at or from the Michigan City property associated with SWMUs and AOCs identified by the July 16, 2012 RFA; (3) to perform a RCRA Corrective Measures Study ("CMS") to identify and evaluate alternatives for the corrective action necessary to prevent or mitigate any migration or releases of hazardous waste and/or hazardous constituents at or associated with said SWMUs and AOCs above background or appropriate risk-based levels; and (4) to implement the IDEM-approved corrective measure or measures demonstrated by the RFI to be necessary to address RCRA requirements. An amendment to the Agreed Order required the submittal of closure and post-closure plans for each of the following basins: the East and West Secondary Fly Ash Settling Basins (Secondary #1 Pond and Secondary #2 Pond), and the West Primary Fly Ash Settling Basin (Primary #1 Pond). The closure and post-closure plans had to be submitted by December 31, 2018, for IDEM's approval under 329 Ind. Admin. Code 10-3-1(9).

**Q14. What specific activities are required for these five surface impoundments and when must those activities be completed?**

A14. For the CCR ash ponds, in 2018, NIPSCO made operational changes that caused operations to cease receipt of CCR materials to those ponds. The requirements of the CCR Rule mandate closure within 5 years of closure being initiated, by ceasing receipts or otherwise.[5] The Michigan City CCR ash ponds ceased receipt of waste on October 11, 2018 and April 15, 2019, resulting in a compliance date for closure of the ash ponds of November 11, 2023 and May 15, 2024, respectively.

The RCRA ash ponds are not regulated under the CCR Rule because, as of the CCR Rule's effective date, they had been filled in with material and could not impound water.[6] Under the Agreed Order, NIPSCO was required to submit closure and post-closure plans to IDEM for the three RCRA ash ponds no later than December 31, 2018. IDEM agreed to closing the three RCRA ash ponds *in combination with the two CCR ash ponds* in a

[5] Once closure has been initiated, as it was for the two CCR ash ponds, the unit must commence closure no longer than 30 days after the date on which the unit receives the known final receipt of waste.

[6] By entering into the Agreed Order and keeping the RCRA ash ponds only subject to RCRA, NIPSCO was provided more flexibility in potential closure methods.

combined IDEM closure application, approved by IDEM and received by NIPSCO on March 10, 2021. The closure date for the RCRA ash ponds is not stipulated in the Agreed Order however, due to the configuration of the ponds on the Michigan City property, it was necessary to close the ash ponds as part of one project. Because the CCR ash ponds have a compliance based closure date, it necessitates that the entire project to be complete by November 11, 2023.

More specifically, under RCRA and the CCR Rule, NIPSCO is required to dewater the ash materials to allow excavation of all CCR materials at these five ponds. This CCR material will then primarily be transported to a permitted landfill at NIPSCO's R.M. Schahfer Generating Station ("Schahfer").[7]

As further discussed by NIPSCO Witness Ridge, completion of these closure activities by the compliance deadlines is driving the imminent closure activities at the Michigan City surface impoundments.

[7] The landfill at Schahfer where these CCRs will be transported is a CCR-compliant landfill cell designed specifically for CCRs.

**Q15. Please explain the allowable closure methods and the method NIPSCO will be using for the five surface impoundments at Michigan City.**

A15. There are two closure methods available to NIPSCO under the CCR Rule: (1) closure by removal ("CBR") and (2) closure in place ("CIP"). Closure by removal entails dewatering of the free liquids within/on top of the ash, followed by excavation of all ash within the pond limits, including the liner (if one is present). The excavated ash is then properly managed, and the pond can then be backfilled and graded.[8]

Closure in place entails the removal of the free liquids within and on top of the pond as well as free liquids in materials placed in the pond (to make a stable base for the engineered capping system). Once the pond is dewatered, the remaining CCRs must be graded, and, in most circumstances, have additional fill materials brought in to provide a suitable base for the cap. The CCRs are then capped with soil, clay, and/or

[8] After the CCR materials are removed, the five ponds must be "capped"—meaning the ponds must be backfilled with clean fill, a cover system and topsoil applied to allow vegetation to grow and future storm water to shed off the closed ponds. Under the CCR Rule, you must demonstrate that the underlying native materials are decontaminated (CCR Rule 257.100 (5)), which cannot be done if the underlying groundwater is impacted, as is the case at the Michigan City. This is considered leaving "CCR in place," thus necessitating a cap (257.100 (1)).

an engineered barrier, then mulched and seeded with a vegetative cover.[9]

**Q16. Please explain how NIPSCO evaluated both these two closure alternatives.**

A16. NIPSCO evaluated closing the five ponds via CIP, as this had the potential to be the most cost-effective option. However, IDEM indicated that a slurry wall and hydraulic controls would be necessary if CCRs remained in contact with the groundwater, which would have made the CIP method the most costly option.

NIPSCO also evaluated closing all five ponds via CBR. In addition to the potential cost savings (since no slurry wall or hydraulic controls will be required with CBR), the CBR method also provided more compliance and cost certainty. That is, by utilizing CBR, NIPSCO has reduced the risk that potential, future changes to the CCR Rule could require more pond closure work at Michigan City. It will also involve removal of the ash as a potential source of impact to groundwater quality, thereby potentially reducing the

[9] In addition to the cap, IDEM has indicated that a slurry wall or *in-situ* stabilization may be required, as well as hydraulic control, for surface impoundments that have ash in hydraulic connection to the groundwater and are closed in place.

cost of groundwater corrective measures and post-closure care. Therefore, all things considered, NIPSCO determined that CBR was the most appropriate closure method. NIPSCO Witness Ridge further discusses the estimated costs associated with the different closure alternatives.

**Q17. Is the Ash Pond Compliance Project the only compliance project at NIPSCO's generating stations driven by the CCR Rule?**

A17. No. The Ash Pond Compliance Project that NIPSCO is seeking approval for in this proceeding is limited to dewatering activities needed for the CCR removal and the actual pond closure activities (excavation and capping) at Michigan City. Similar work is required at Schahfer and NIPSCO's Bailly Generating Station ("Bailly"). Additionally, there is a separate scope of work at Michigan City, Schahfer, and Bailly related to post-closure "remediation measures" and groundwater monitoring, in addition to long term compliance monitoring of the surface impoundment caps that will be constructed as part of the pond closures. None of this work is included within the Ash Pond Compliance Project, but are "federally mandated requirements" and must be implemented by NIPSCO. NIPSCO expects to

seek recovery of these costs through a separate filing under the FMCA Statute.

**Q18. Does this conclude your prefiled direct testimony?**

A18. Yes.

**VERIFICATION**

I, Maureen B. Turman, Director Environmental Policy & Sustainability for NiSource Corporate Services Company, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

*Maureen B. Turman*
Maureen B. Turman

Date: May 2, 2022

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
*We Protect Hoosiers and Our Environment.*
100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

**Michael R. Pence**
*Governor*

**Thomas W. Easterly**
*Commissioner*

VIA CERTIFIED MAIL

October 21, 2013

Mr. Daniel Sullivan
Principle, Remediation, Environmental, Safety & Sustainability
NiSource Corporate Services Company
801 E. 86th Avenue
Merrillville, IN 46410

Dear Mr. Sullivan:

Re: Corrective Action Agreed Order
Cause No. H-13872
Michigan City Generating Station
U.S. EPA ID No. IND 000715375

This is to inform you that I have approved the Agreed Order negotiated between you or your representatives and members of my staff. A copy of the Agreed Order is enclosed.

You are, no doubt, familiar with the terms of the Agreed Order necessary to ensure future compliance. The time frames for compliance are effective upon your receipt of this correspondence.

Please direct any questions you may have, or any submittals required under the Order, to Chris L. Myer of the Hazardous Waste Permit Section at this address or contact him by telephone at 317/233-4625.

Sincerely,

Bruce H. Palin Deputy AC for:
Assistant Commissioner
Office of Land Quality

Enclosure

cc: La Porte County Health Department (with enclosure)
Mr. Daniel J. Deeb, Schiff Hardin LLP. (with enclosure)
Ms. Lisa McCoy, IDEM Office of Legal Counsel
Mr. Michael E. Sickels, IDEM (with original enclosure)

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IN THE MATTER OF: COMMISSIONER,

INDIANA DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT

Complainant

Vs

Cause No. H-13872

Northern Indiana Public Service Company
Michigan City Generating Station
Michigan City, Indiana
U. S. EPA ID No. IND 000715375

Respondent

# CORRECTIVE ACTION AGREED ORDER

## A. JURISDICTION

This Administrative Agreed Order is entered into pursuant to the authority vested in the Commissioner of the Indiana Department of Environmental Management (Commissioner) by Indiana Code (IC) 13-22-13-1 and IC 13-30-3-3 to accomplish corrective actions required by the Resource Conservation and Recovery Act (42 U.S.C 6901 *et seq.*) ("RCRA"). The Indiana Department of Environmental Management ("IDEM") has been authorized by EPA to implement RCRA corrective actions under IC 13-22 and 329 IAC 3.1. Northern Indiana Public Service Company hereby agrees to waive the issuance of a Notice of Violation as required by IC 13-30-3-3.

This Agreed Order is entered into between IDEM, and Northern Indiana Public Service Company (hereinafter referred to as "NIPSCO" or "Respondent"). Respondent is the owner/operator of Michigan City Generating Station, hereinafter referred to as "Facility". Respondent consents to and agrees not to contest IDEM's jurisdiction to enter into this Agreed Order and to enforce its terms. Further, Respondent will not contest jurisdiction to: compel compliance with this Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Agreed Order; or impose sanctions for violations of this Agreed Order.

## B. PARTIES BOUND

1. This Agreed Order shall apply to and be binding upon Respondent and its officers, directors, employees, agents, successors and assigns, and upon all persons, independent contractors, contractors and consultants acting under or for Respondent.

2. No change in ownership or corporate or partnership status relating to the facility will in any way alter Respondent's responsibility under this Agreed Order.

3. Respondent shall provide a copy of this Agreed Order to all contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Agreed Order within two (2) weeks of the effective date of this Agreed Order or date of such retention, and shall monitor contractor compliance with the applicable terms of this Agreed Order.

4. Respondent shall give notice of this Agreed Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify IDEM of the Respondent's intent to transfer ownership, within sixty (60) days prior to such transfer. Such notice shall be addressed to the Project Manager as established in paragraphs F.10 and F.11 below.

## C. STATEMENT OF PURPOSE

In entering into this Agreed Order, the mutual objectives of IDEM and NIPSCO are: (1) to address the recommendations of the IDEM RFA with respect to SWMUs and AOCs identified at the Facility; (2) to perform a RCRA Facility Investigation (RFI) to define the nature and, if present, the extent of all releases of hazardous waste and/or hazardous constituents at or from the Facility associated with SWMUs and AOCs identified by the July 16, 2012 RFA; (3) to perform a RCRA Corrective Measures Study (CMS) to identify and evaluate alternatives for the corrective action necessary to prevent or mitigate any migration or releases of hazardous waste and/or hazardous constituents at or associated with said SWMUs and AOCs above background or appropriate risk-based levels; and (4) to implement the IDEM-approved corrective measure or measures demonstrated by the RFI to be necessary to address RCRA requirements and exceedances of background or appropriate risk-based levels at the Facility.

## D. FINDINGS OF FACT

1. Respondent is a company doing business in the State of Indiana and is a person as defined in Indiana Administrative Code (IAC) 329 IAC 3.1-4-20, and Indiana Code (IC), 13-11-2-158.

2. Respondent is owner and operator of a RCRA regulated hazardous waste management facility located at 101 Wabash Street, Michigan City, Indiana. Figure 1 showing the location of the Facility, Solid Waste Management Units, and Areas of Concern is attached hereto and incorporated herein by reference as Exhibit A. Respondent engaged in storage of hazardous waste and the closure of a hazardous waste storage unit at the Facility subject to the interim status

requirements of 329 IAC 3.1.

3. Respondent owned and operated its facility as a hazardous waste management facility on and after November 19, 1980, the applicable date which renders facilities subject to said interim status requirements.

4. Pursuant to Section 3010 of RCRA, 42 United States Code (U.S.C.), 6930, Respondent notified the United States Environmental Protection Agency (EPA) of its hazardous waste activity, and was assigned the EPA I.D. No. IND000715375.

5. IDEM understands that in NIPSCO's Part A permit application dated November 18, 1980 and a revised Part A dated February 28, 1991, the Respondent identified itself as handling the following hazardous wastes at the Facility: F001, F002, F003, D007, D008, and D009.

6. A RCRA Facility Assessment ("RFA") was conducted at the Facility on October 12, 2011. The RFA Report dated July 16, 2012, identified the following Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs).

| | |
|---|---|
| SWMU 1 | Fly Ash Settling Basins |
| | West Primary Fly Ash Basin |
| | West Secondary Fly Ash Basin East |
| | Primary Fly Ash Basin East |
| | Secondary Fly Ash Basin |
| SWMU 2 | Bottom Ash Settling Pond and Storage Area |
| SWMU 3 | Final Ash Settling Pond |
| SWMU 4 | Former Interim Status Container Storage Area |
| SWMU 5 | Less-Than-90-Day Storage Area |
| SWMU 6 | Present and Former "Frac" Tank Temporary Storage Area |
| SWMU 7 | Waste Treatment Boilers (Boilers 4, 5, and 6) |
| SWMU 8 | Contact Services Water Oil/Water Separator units |
| SWMU 9 | Ash Sluice System (Fly Ash Collector, Bottom Ash Tank, Piping and Pumps) |
| SWMU 9 | Ash Sluice System (Fly Ash Collector, Bottom Ash Tank, Piping and Pumps) |

| | |
|---|---|
| SWMU 10 | Pipe Trenches |
| SWMU 11 | Parts Washer |
| SWMU 12 | Former Ash Settling Pond |
| SWMU 13 | Wash Down Water Holding Pond |
| SWMU 14 | Satellite Accumulation Areas |
| SWMU 15 | Former Underground Waste Oil Tank |
| SWMU 16 | Lube Cube Waste Oil Tank |
| SWMU 17 | Basement Trenches and sumps |
| SWMU 18 | Soil Pile from UST excavations |
| SWMU 19 | Stack 12 Oil/Water Separator and Sump unit |
| SWMU 20 | Conveyor System Wash Water Disposal system |
| SWMU 21 | Former 8,000-Gallon Diesel Fuel Tanks |
| AOC A | Present Underground Storage Tanks |
| AOC B | PCB Oil Release |

7. The Facility is located on fill classified as urban land-Oakville complex. Urban lands consist of a mixture of soils and fill. The type of soil is unidentifiable. Oakville soil typically consists of a surface layer of fine black sand and a subsurface layer of grayish brown fine sand. The substratum consists of light yellowish brown fine sand. These soils are usually strongly acidic. The ground water level beneath the facility is very close to the level of Lake Michigan. The ground water level fluctuates as the level of Lake Michigan changes. IDEM believes the ground water flows generally towards Lake Michigan.

## E. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set out above, and after consideration of documentation contained in the public file, IDEM has made the following conclusions of law and determinations.

1. Respondent is a "person" as defined in paragraph D.1 above.

2. Respondent is or was the owner and/or operator of a facility subject to IC 13-22-13 and 329 IAC 3.1.

3. The Facility was authorized to operate under interim status under RCRA Section 3005(e) (42 U.S.C. 6925(e)).

4. Certain wastes or constituents thereof found at the Facility are contaminants, hazardous wastes or hazardous constituents as defined by IC 13 and 329 IAC 3.1-6 (Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5)). These are also hazardous wastes or hazardous constituents within the meaning of Section 3001 of RCRA, 42 U.S.C. Section 6921 and Title 40 Code of Federal Regulations (40 C.F.R.).

5. Pursuant to IC 13-22-13-1,

   a. If, on the basis of any information, the Commissioner determines that there is or has been a release of a hazardous waste or a constituent of a hazardous waste into the environment from a facility authorized to operate under interim status under RCRA Section 3005(e) (42 U.S.C.6925(e)) or under this chapter, the Commissioner may:

      1) issue an order requiring corrective action or another response measure that the Commissioner considers necessary to protect human health or the environment; or

      2) commence a civil action to compel corrective action as described in subdivision (1).

   b. Under subsection (a), the Commissioner or a court may order the performance of corrective action beyond the boundaries of the facility from which the release occurs. However, corrective action may not be ordered by the Commissioner beyond the boundaries of the facility if the owner or operator of the facility demonstrates to the satisfaction of the Commissioner that, despite the best efforts of the owner or operator, the owner or operator is unable to obtain the necessary permission to undertake that corrective action.

   c. An order issued by the Commissioner under this section:

      1) may include a suspension or revocation of authorization for the facility to operate under interim status;

      2) must state with reasonable specificity the nature of corrective action or other response measure required by the order; and

      3) must specify a time for compliance.

6. Based on information gathered by IDEM, there is or has been a release of hazardous wastes and/or hazardous constituents into the environment from Respondent's Facility, which violates IC 13-30-2-1(4).

7. The actions required by this Agreed Order are authorized or required pursuant to RCRA, IC 13-22, IC 13-30 and IC 4-21.5.

## F. ORDER

Pursuant to IC 13-30, Respondent is hereby ordered to perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Order

shall be performed in a manner consistent with, at a minimum, the applicable portions of the Corrective Action Scope of Work attached hereto and incorporated herein by reference as Exhibit B. In the case of inconsistencies or conflicts between the Order and Exhibit B, the language in the Order shall take precedent. To best address IDEM expectations with respect to proposed corrective action activities at the Facility and promote consistency with the Corrective Action Scope of Work, NIPSCO shall submit a brief approach and outline of the anticipated scope of work including a conceptual schedule, within 15 days of the effective date of this Order. NIPSCO and IDEM shall discuss the project approach and work collaboratively to develop a consensus-based scope of work prior to Respondent's submission of work plans and supporting documents for formal IDEM review. Failure to reach consensus shall not be grounds for a delay in meeting schedule obligations as outlined in the order. In addition to the Corrective Action Scope of Work, relevant guidance may include, but is not limited to; IDEM's Remediation Closure Guide (RCG), the Remediation Program Guide (RPG), and "Test Methods for Evaluating Solid Waste" (SW - 846, 3rd edition, or most recent edition, and the most recent updates).

1. INTERIM MEASURES (IM)

   a. In the event the Respondent identifies a current or potential threat to human health or the environment, or wishes to implement proactive source control measures to mitigate or prevent releases, the Respondent shall immediately notify IDEM orally and in writing within seven (7) days, summarizing the immediacy and magnitude of the potential threat to human health or the environment, or if implementing a proactive source control, the basis for such action. Within thirty (30) days of notifying IDEM, the Respondent shall submit to IDEM an IM Workplan for approval that identifies Interim Measures that mitigate this threat or achieve source control, and are consistent with and integrated into any long-term solution at the Facility.

   b. The IM Workplan shall ensure that the Interim Measures are designed to mitigate current or potential threat(s) to human health or the environment and are consistent with and integrated into any long term solution at the facility. The IM Workplan shall document the procedures to be used by the Respondent for the implementation of Interim Measures and shall include, but not be limited to: the objectives of the Interim Measures; design, construction, operation, monitoring and maintenance requirements; and detailed schedules.

   c. In accordance with the Corrective Action Scope of Work herein, the IM Workplan shall also include: Interim Measures Objectives; a Health and Safety Plan; a Community Relations Plan; and Reporting Requirements. NIPSCO may modify similar existing support documents prepared for the RFI Workplan to satisfy this requirement.

   d. In the event the Respondent identifies that any water supply well has been contaminated, the following Interim Measures shall be initiated:

      1) Within five (5) days, the Respondent shall provide an alternate water supply to the affected parties.

2) Within seven (7) days, the Respondent shall submit a report to IDEM detailing the activity pursued and a plan for further Interim Measure activity.

3) Within seven (7) days following IDEM's transmission of comments, the Respondent shall revise the plan in accordance with IDEM's comments.

4) Within seven (7) days following IDEM's approval or modification of the plan, the Respondent shall implement the revised plan in accordance with the schedule therein.

2. RCRA FACILITY INVESTIGATION (RFI)

a. Within one hundred and twenty (120) days of the effective date of this Order, Respondent shall submit to IDEM an RFI Workplan. The RFI Workplan is subject to approval, disapproval or modification and approval by IDEM and shall conform to the RFI Tasks contained in the Corrective Action Scope of Work herein.

b. The RFI Workplan shall be designed to define the presence, magnitude, extent, direction, and rate of movement of any hazardous wastes or hazardous constituents within and beyond the facility boundary, and be specific to the release and migration of contaminants from the following units. The RFA recommends further investigation of the soils at SWMU 1, SWMU 2, SWMU 3, SWMU 5 (Gravel Storage Area of this SWMU), SWMU 6 (Present "Frac" Tank Temporary Storage Area portion of this SWMU), SWMU 10, SWMU 12, SWMU 13, SWMU 16, SWMU 19, and AOC B. The ground water should be investigated at SWMU 1, SWMU 2, SWMU 3, SWMU 6 (Present "Frac" tank Temporary Storage Area portion of this SWMU), SWMU 12, SWMU 13, and SWMU 19. Ground water samples may be required from SWMU 5, SWMU 10, and SWMU 16 if the soils are determined to be contaminated. A copy of the closure certification for SWMU 7 should be submitted to IDEM. The floors of SWMU 5 (storage shed) and SWMU 14 (Satellite Accumulation Area in the machine shop) should be cleaned, inspected for cracks and the rinsate from the cleaning should be collected and analyzed for volatile organic compounds. SWMU 8, SWMU 17, and SWMU 19 should be inspected for cracks or leaks. Additional investigation of the soil and ground water may be required if cracks or leaks are discovered. The RFI Workplan shall document the procedures the Respondent shall use to conduct those investigations necessary to: (1) characterize the potential pathways of contaminant migration; (2) characterize the source(s) of contamination; (3) define the degree and extent of contamination; (4) identify actual or potential receptors; and (5) support the development of alternatives from which a corrective measure will be selected. A specific schedule for implementation of all activities shall be included in the RFI Workplan, including a date for submission of the RFI Draft Report.

c. In accordance with the provisions of Exhibit B herein, the RFI Workplan shall include: (1) a Project Management Plan; (2) a Data Collection Quality Assurance Plan; (3) a Data Management Plan; (4) a Health and Safety Plan; and (5) a Public Involvement Plan.

d. Within thirty (30) days of Respondent's receipt of the notice of approval or modification and approval of the RFI Workplan, Respondent shall implement the

plan as approved or modified and approved, and shall comply with the time schedules therein.

e. Within thirty (30) days of discovery of any new SWMU or AOC identified at the Facility, Respondent shall notify IDEM of the following information:

1) The location of the unit or area on the site topographic map;

2) Designation or description of the type of unit or area of concern;

3) General dimensions and structural description;

4) When the unit was operated or the area discovered; and

5) Specifications of all waste(s) that have been managed at the unit, or the specifics (e.g. products or waste(s) involved, spill date, volume, etc.) of the area of concern.

Respondent must submit to IDEM, within thirty (30) days of discovery, all available information pertaining to any release of hazardous waste(s) or hazardous constituent(s) from any new SWMU or AOC.

IDEM will review the information provided under this condition and may as necessary require further information, investigations and/or corrective measures. Respondent shall submit a modification to the written RFI Workplan to IDEM within thirty (30) days of written notification by IDEM that further investigation is necessary.

3. CORRECTIVE MEASURES STUDY (CMS) AND CORRECTIVE MEASURES IMPLEMENTATION (CMI) PROGRAM PLAN

a. Upon completion of the RCRA Facility Investigation, and/or within forty-five (45) days of Respondent's receipt of notification by IDEM that a CMS is required, the Respondent shall submit a Corrective Measure Study Workplan, which is subject to approval, disapproval or modification and approval, and in accordance with the CMS Tasks in the Corrective Action Scope of Work herein. A specific schedule for implementation of all activities shall be included in the CMS Workplan, including a date for submission of the CMS Draft Report.

b. Within thirty (30) days of Respondent's receipt of the notice of approval or modification and approval of the CMS Workplan, Respondent shall implement the plan as approved or modified and approved, and shall comply with the time schedules therein.

c. Within sixty (60) days of Respondent's receipt of notification of IDEM's approval of the corrective measure in the Response to Comments and Final Decision, Respondent shall submit a Corrective Measure Implementation Program Plan (CMI Program Plan). The CMI Program Plan is subject to approval, disapproval or modification and approval by IDEM, and shall conform to the CMI program Tasks in the Corrective Action Scope of Work herein. A specific schedule for all activities shall be included in the CMI Program Plan,

including a date for submission of the Draft CMI Report.

d. The CMI Program Plan shall be designed to facilitate the design, construction, operation, maintenance and monitoring of the corrective measure at the Facility. In accordance with the Corrective Action Scope of Work herein, the CMI Program Plan shall also include: (1) a Program Management Plan; (2) a Community Relations Plan; 3) Design Plans and Specifications; (4) an Operation and Maintenance Plan; (5) a Cost Estimate with a Financial Assurance Instrument in that amount which meets the requirement of 329 IAC 3.1-15-4 (40 CFR 264.143); (6) a Project Schedule; (7) a Health and Safety Plan; and (8) a Construction Quality Assurance Plan.

e. Within thirty (30) days of Respondent's receipt of notice of approval or modification and approval of the CMI Program Plan, Respondent shall implement the plan as approved or modified and approved, and shall comply with the time schedules therein.

4. AGENCY APPROVAL AND ADDITIONAL WORK

a. After three (3) submissions of any workplan(s), program plan(s) or report(s) by the Respondent, IDEM may modify and approve any such plan(s) or report(s).

b. Unless specified otherwise, within thirty (30) days of notice of approval or modification and approval by IDEM of any workplan(s) or program plan(s), Respondent shall commence work and implement the tasks required by the workplan(s) or program plan(s) submitted pursuant to the Corrective Action Scope of Work contained herein, in accordance with the standards, specifications and schedule stated in the workplan(s) or program plan(s) as approved or modified and approved by IDEM.

c. Beginning with the first quarter following the effective date of the Order, Respondent shall provide IDEM with progress reports for each quarter on the tenth day of the first month of the following quarter. The progress reports shall conform to requirements in the relevant tasks in the Corrective Action Scope of Work herein.

d. Respondent shall provide draft and final Interim Measures, RCRA Facility Investigation, Corrective Measure Study and Corrective Measures Implementation Program Plan reports to IDEM in accordance with the schedule proposed by NIPSCO and approved by IDEM in the respective Workplan documents prepared for each of the aforementioned phases of work.

e. IDEM will review all draft or final reports, and notify Respondent in writing of IDEM's approval, disapproval or modification and approval of the report or any part thereof. In the event of any disapproval, IDEM shall specify in writing the deficiencies and reasons for such disapproval. Within ninety (90) days of the receipt of IDEM's disapproval of any report, Respondent shall amend the report based on IDEM's comments and submit a revised report. All IDEM approved reports shall be deemed incorporated into and part of this Order by reference.

f. Three (3) hard copies and one (1) electronic copy of all documents, including Workplans, Program Plans, preliminary and final reports, progress reports,

and other correspondence to be submitted pursuant to this Order shall be hand delivered or sent by certified mail, return receipt requested, to the Project Manager designated pursuant to paragraphs F.10 and F.11 of this Order below. The preferred format for the electronic copy is Acrobat Reader (.pdf).

g. All work performed pursuant to this Order shall be under the direction and supervision of a licensed Professional Engineer or certified Professional Geologist or other qualified environmental professional with expertise in hazardous waste site investigation and remediation. Thirty (30) days after the effective date of this Order or within ten (10) of retaining a new supplier to this project, whichever is later, NIPSCO shall notify IDEM in writing of the name, title, and qualifications of the engineer, geologist or other qualified professional, and of any contractors or subcontractors and their key personnel to be engaged by NIPSCO in carrying out the terms of this Order.

h. IDEM may determine that certain tasks, including investigatory work or engineering evaluation, are necessary in addition to the tasks and deliverables included in this Order when new findings indicate that such additional work is necessary. IDEM shall request in writing that Respondent perform the additional work in this situation and shall specify the basis and reasons for IDEM's determination that the additional work is necessary. Within seven (7) days after the receipt of such request, Respondent shall have the opportunity to meet with IDEM to discuss the additional work IDEM has requested. Unless the Respondent can show that, the work is unnecessary and does not protect human health or the environment, Respondent shall perform the additional work IDEM has requested according to an IDEM approved workplan. All additional work performed by Respondent under this paragraph shall be performed in a manner consistent with this Order.

5. QUALITY ASSURANCE

Throughout all sample collection and analysis activities, Respondent shall use IDEM approved quality assurance, quality control, and chain-of-custody procedures. In addition, Respondent shall:

a. Ensure that laboratories used by Respondent for sample analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste, (SW-846, 3rd edition or most recent edition, and the most recent updates) or other methods deemed satisfactory by IDEM. If methods other than IDEM approved methods are to be used, Respondent shall submit all protocols to be used for analyses to IDEM for approval within sixty (60) days prior to the commencement of analyses; and

b. Ensure that laboratories used by Respondent for sample analyses participate in a quality assurance/quality control program equivalent to that which is followed by the Office of Land Quality (OLQ) of IDEM. As part of such a program, and upon request by IDEM, such laboratories shall perform analyses of samples provided by IDEM to demonstrate the quality of the analytical data.

6. PUBLIC COMMENT AND PARTICIPATION

a. Upon approval by IDEM of a Corrective Measures Study Final Report, IDEM shall make the RCRA Facility Investigation Final Report, the Corrective Measures Study Final Report, summary of the proposed corrective measure and justification for proposing selection of that corrective measure available to the public for review and comment for at least forty-five (45) days.

b. Following the public review and comment period, IDEM shall approve or modify the corrective measure selected. IDEM shall inform Respondent in writing of the reasons for such modification, and the Respondent shall modify the RFI or CMS Final Report based upon public comment if directed to do so by IDEM.

c. All documentation contained in the public (Virtual File Cabinet) file supporting the selection of the corrective measure may be viewed utilizing computer terminals located at the 12th floor Central File Room of IDEM from 8:30 a.m. until 4:30 p.m. Monday through Friday, and on IDEM's web-based Virtual File Cabinet at http://www.in.gov/idem/6551.htm.

7. ON-SITE AND OFF-SITE ACCESS

a. Upon the effective date of this Order, IDEM representatives are authorized to enter and freely move about the Facility upon reasonable notice and at reasonable times during the effective dates of this Order, while complying with all safety rules of the Facility applicable to Facility personnel, contractors and visitors for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting and copying any non-privileged records, logs or contracts pertaining to work undertaken pursuant to the Order and that are in Respondent's possession and control; reviewing Respondent's progress in carrying out the terms of this Order; conducting such tests, sampling or monitoring as IDEM deems necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to IDEM by the Respondent. Prior to and during entry of the Facility for any purpose under the authority of this Order, IDEM representatives must comply with Respondent's approved site-specific Health and Safety Plan (HASP), including the wearing of all required personal protective equipment (PPE). Completion of NIPSCO-specific training/orientation and compliance with entry requirements (e.g., no non-NIPSCO vehicles allowed on company property) shall be met. In addition, IDEM representatives shall follow standard safe-work protocols during field sampling activities.

b. To the extent that work required by this Order must be done on property not owned or controlled by Respondent, Respondent shall use its best efforts to obtain site access agreements from the present owner(s) of such property within thirty (30) days of approval of any Workplan or required activity for which site access is required. Best efforts as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owners of such property requesting access agreements to permit Respondent and IDEM and its authorized representatives to access such property. Any such access agreement shall be incorporated by reference into this Order. In the event that agreements for access are not obtained within the effective date of this Order, Respondent shall notify IDEM in writing within seven (7)

days thereafter regarding both the efforts undertaken to obtain access and its failure to obtain such agreements.

c. Nothing in this section limits or otherwise affects IDEM's right of access and entry pursuant to applicable law, including IC 13-14-2-2.

8. SAMPLING AND DATA. DOCUMENT AVAILABILITY

a. The Respondent shall submit to IDEM the results of all sampling and/or tests or other data generated by, or on behalf of the Respondent, in accordance with the requirements of this Order and its Exhibits. Raw data shall be made available to IDEM upon request.

b. Respondent shall notify IDEM at least fourteen (14) days before engaging in any field activities, such as well drilling, installation of equipment, or sampling. At the request of IDEM, Respondent shall provide IDEM or its authorized representative split samples of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, IDEM shall allow Respondent or its authorized representatives to take split or duplicate samples of all samples collected by IDEM under this Order.

c. Respondent may assert a business confidentiality claim in accordance with 329 IAC 6.1, covering all or part of any information submitted to IDEM pursuant to this Order. Any assertion of confidentiality shall be adequately substantiated by Respondent when the assertion is made, and the submission must meet all applicable statutory requirements. Information determined to be confidential by IDEM shall be disclosed only to the extent permitted by IC 13-14-11 and IC 5-14-3-4. If no such confidentiality claim accompanies the information when it is submitted to IDEM or it is improperly submitted, it may be made available to the public by IDEM without further notice to the Respondent. Respondent agrees not to assert any confidentiality claim with regard to any physical or analytical data.

9. RECORD PRESERVATION

Respondent shall preserve, during the pendency of this Order and for a minimum of six (6) years after its termination, all data, (including raw data), records, and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, successors and assigns which relate in any way to this Order or to hazardous waste management and/or disposal at the facility. Respondent shall notify IDEM thirty (30) days prior to the destruction of any such records, and shall provide IDEM with the opportunity to take possession of any such records.

10. PROJECT MANAGER

a. On or before the effective date of this Order, IDEM and Respondent shall each designate a Project Manager. Respondent shall notify IDEM in writing of the Project Manager it has selected. Each Project Manager will be IDEM's designated representative at the facility. All communications between Respondent and IDEM, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through the Project Managers.

b. Respondent shall provide at least thirty (30) days written notice prior to changing the Project Manager.

c. The absence of IDEM's Project Manager from the facility shall not be cause for the stoppage of work.

11. NOTIFICATION

Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices or other submissions relating to or required under this Order shall be in writing and shall be hand delivered or sent via certified mail to the Project Managers.

Three hard copies and one electronic copy of all documents to be submitted to IDEM should be sent to:

Indiana Department of Environmental Management, Permits Branch
Chris L. Myer
MC 66-20, IGCN 1101
100 North Senate Avenue
Indianapolis, IN 46204-2251

Documents to be submitted to the Respondent should be sent to:

NIPSCO
Attention: Daniel Sullivan Attention:
Environmental Health and Safety
801 E. 86th Ave.
Merrillville, IN 46410

12. DELAY IN PERFORMANCE/STIPULATED PENALTIES

a. Unless there has been a written modification of a compliance date by IDEM, in the event Respondent fails to meet any requirement set forth in the Order, Respondent shall pay stipulated penalties as set forth below. Compliance by Respondent shall include completion of an activity under this Order or a plan approved under this Order or any matter under this Order in an acceptable manner and within the specified time schedules in and approved under this Order.

1) For failure to commence work as prescribed in this Order: $1000 per day for one to seven days of delay, and $2500 per day for each day of delay, thereafter;

2) For failure to submit any preliminary and final reports, at the time required pursuant to this Order: $1000 per day for the first one to seven days of delay, and $2500 per day for each day of delay thereafter;

3) For failure to submit progress reports, at the time required pursuant to this Order: $500 per day for the first one to seven days of delay, and $1000 per day for each day of delay thereafter;

4) For failure to submit other deliverables required by this Order: $500 for the first one to seven days, and $1000 for each seven-day delay, or part thereof, thereafter; and

5) For other failure to comply with provisions of this Order after notice by IDEM of noncompliance: $1000 for the first one to seven days, and $10,000 for each seven-day delay, or part thereof, thereafter.

b. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day or correction of noncompliance. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Order days of receipt of a notification of noncompliance. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty- day period. Respondent shall pay interest on the unpaid balance at the rate established by IC 24-4.6-1-101.

d. All penalties shall be payable by certified or cashier's check to the Indiana Environmental Special Fund and shall be remitted to:

Office of Land Quality
Indiana Department of Environmental Management
100 North Senate Avenue, Mail Code 50-10 C
Indianapolis, Indiana 46204

Attention: Cashier

All payments shall reference the name of the facility, the Respondent's name and address, and IDEM cause number of this action. Copies of the transmittal of payment shall be sent simultaneously to the Project Manager.

e. The stipulated penalties set forth in this Section do not preclude IDEM from pursuing any other remedies or sanctions which may be available to IDEM by reason of Respondent's failure to comply with any of the requirements of this Order, any applicable law, or regulatory requirements under 329 IAC 3.1.

13. FORCE MAJEURE AND EXCUSABLE DELAY

a. A force majeure event, for purposes of this Agreed Order, is defined as any event arising from causes not foreseen and beyond the control of the Respondent or of any entity controlled by Respondent, including, but not limited, to, its contractors and subcontractors, that delays or prevents the performance of any obligation under this Agreed Order despite Respondent's best efforts to fulfill the obligation. The requirement that the Respondent exercise best efforts to fulfill the obligation includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. A force majeure event does not include financial inability to complete the work required by this Agreed Order or increases of costs to perform the work.

b. Respondent shall notify the IDEM by calling within three (3) calendar days and by writing no later than seven (7) calendar days after any event, which Respondent contends is a force majeure event. Such notification shall describe the anticipated length of the delay, the cause or causes of the delay,

the measures taken or to be taken by Respondent to minimize the delay, and the timetable by which these measures will be implemented. Respondent shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event. The Respondent shall have the burden of demonstrating that the event is a force majeure. The decision shall be made by the Assistant Commissioner of the Office of Land Quality or his/her Order.

c. If a delay is attributable to a force majeure event, the time period for performance under this Agreed Order shall be extended, in writing, by the amount of time that is attributable to the event constituting the force majeure.

d. If IDEM determines that activities in compliance or noncompliance with the Order, have caused or may cause a release of hazardous waste, hazardous constituent, or a pollutant or contaminant, or a threat to the public health or to the environment, IDEM may order Respondent to stop further implementation of this Order for such period of time as may be needed to abate any such release or threat and/or to undertake any action which IDEM determines is necessary to abate such release or threat.

14. DISPUTE RESOLUTION

This section shall apply to any dispute arising out of any section of this Agreed Order, unless specifically excepted.

a. The parties shall use their best efforts, and good faith, to resolve all disputes or differences of opinions informally. If, however, disputes arise concerning this Order that the parties are unable to resolve informally, Respondent may present written notice of such dispute to the IDEM and set forth specific points of dispute and the position of Respondent. This written notice shall be submitted no later than ten (10) business days after Respondent discovers that the project managers are unable to resolve the dispute by informal means. Respondent's project manager will notify IDEM's project manager immediately by telephone or other appropriate method of communication, prior to written notice, when he/she believes that the parties are unable to resolve a dispute.

b. If the IDEM concurs with the position of the Respondent, Respondent shall be notified in writing and this Order shall be modified to include appropriate extensions of time, variations of work or any other agreed change. If the IDEM does not concur with the position of the Respondent, the IDEM, through the Assistant Commissioner of Land Quality, shall issue a final determination regarding the disputed issues, and the Respondent shall comply with the terms of the final determination.

c. The pendency of dispute resolution set forth in this section shall not affect the time period for completion of work and/or obligations to be performed pursuant to this Order. Elements of work and/or obligations not affected by the dispute shall be completed in accordance with the schedule contained in the Work Plans.

d. Elements of work and any actions required as a result of such dispute resolution shall immediately be incorporated, if necessary, into the appropriate plan or procedure, and into this Order. Respondent shall proceed with all remaining work according to the modified plan or procedure.

e. In any judicial proceeding initiated by the IDEM concerning enforcement of this Order, the party or parties disputing the IDEM's position shall have the burden of proving that the IDEM's position is inconsistent with the terms of this Agreement.

15. RESERVATION OF RIGHTS

a. IDEM expressly reserves all rights and defenses that it may have, including the right both to disapprove work performed by Respondent pursuant to this Order and to request that Respondent perform tasks in addition to those stated in the Work Plans, Scopes of Work, and any other plan or activity required by this Agreed Order.

b. IDEM hereby reserves all of its statutory and regulatory powers, authorities, rights, remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of the Order, including without limitation the assessment of penalties under IC 13-30-4. This Order shall not be construed as a covenant not to sue, release, waiver or limitation of any rights, remedies, powers and/or authorities, civil or criminal, which IDEM has, or any other statutory, regulatory or common law enforcement authority of the State of Indiana.

c. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with IC 13, 329 IAC 3.1 or any other applicable local, state or federal laws and regulations, even if those laws or regulations are more stringent than the requirements or provisions of this Order.

d. The entry of this Order and Respondent's compliance shall not limit or otherwise preclude the EPA from taking additional enforcement action pursuant to Section 3008(h) (42 U.S.C. 6928(h)) RCRA should the EPA determine that such actions are warranted.

e. This Order is not intended to be nor shall it be construed as a permit. This Order does not relieve Respondent of any obligation to obtain and comply with any local, state, or federal permits.

f. IDEM reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and response/corrective actions as it deems necessary to protect public health and the environment. The EPA and the State of Indiana may exercise its authority under CERCLA or state authority, to undertake removal actions or remedial actions at any time. In any event, IDEM reserves its right to seek reimbursement from Respondent for such additional costs incurred by State of Indiana. Notwithstanding compliance with the terms of this Order, Respondent is not released from liability, if any, for the costs of any response actions taken by IDEM.

g. Nothing in this Order shall prevent IDEM, or anyone acting on its behalf, from

communicating with the EPA or any other agency or entity about any matters relating to this Order. IDEM or anyone acting on its behalf shall not be held liable for any costs or penalties Respondent may incur as a result of such communications with the EPA or any other agency or entity.

16. OTHER CLAIMS

Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the facility.

17. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, state and federal laws and regulations, even if those laws or regulations are more stringent than the requirements or provisions of this Order. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

18. INDEMNIFICATION OF THE STATE OF INDIANA

To the fullest extent permitted by law, the Respondent shall indemnify and hold harmless the State of Indiana, its agencies, departments, agents, and employees, from any and all liabilities, obligations or claims, whether absolute, accrued, contingent or otherwise and whether a contractual, statutory, tax or any other type of liability, obligation or claim, (including, without limitation, all reasonable costs and expenses, including reasonable attorneys' fees, interest and penalties), caused by negligent acts or omissions of the Respondent, its contractor, subcontractor, anyone directly of indirectly employed by them or anyone for whose acts they may be liable.

19. SUBSEQUENT MODIFICATION

a. This Order may only be amended by mutual agreement of IDEM and Respondent. Such amendments shall be in writing, shall be signed by both parties, shall have as their effective date, the date on which they are signed by IDEM and shall be incorporated into this Order by reference.

b. Any reports, plans, specifications, schedules, and attachments required by this Order are, upon written approval by IDEM, incorporated into this Order by reference. Any noncompliance with such IDEM approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Order and shall subject Respondent to the stipulated penalty provisions included in this Order.

c. No informal advice, guidance suggestions, or comments by IDEM regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as relieving Respondent of its obligation to obtain written approval, when required by this Order.

20. SEVERABILITY

If any provision or authority of this Order or the application of this Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.

21. TERMINATION AND SATISFACTION

The provisions of this Order shall be deemed satisfied upon Respondent's receipt of written notice from IDEM that Respondent has demonstrated, to the satisfaction of IDEM, that the terms of this Order, including any additional tasks determined by IDEM to be required pursuant to this Order, or any continuing obligation or promises (e.g., Record Retention, Reservation of Rights) have been satisfactorily completed.

22. EFFECTIVE DATE

The effective date of this Order shall be the date on which Respondent receives the Notice of Approval of this Agreed Order. Because this Order was entered with the consent of both parties, Respondent waives its right to request a public hearing pursuant to IC 4-21.5-3-7, and judicial review pursuant to IC 4-21.5-5.

IT IS SO AGREED AND ORDERD:

TECHNICAL RECOMMENDATION

BY: _____
Michael E. Sickels,
Senior Technical Advisor for the
RCRA Corrective Action Program

DATE: 9/27/13

FOR THE RESPONDENT

BY: _____

SVP + COO
TITLE

DATE: 8/15/13

ATTORNEY FOR THE RESPONDENT

Schiff Hardin LLP

BY: _____

FIRM: Schiff Hardin LLP

DATE: 8/18/13

APPROVED BY THE INDIANA DEPARTMENT
OF ENVIRONMENTAL MANAGEMENT

this 2ND day of OCTOBER, 2013

Bruce H Palin

Bruce H Palin, Assistant Commissioner, Office of Land Quality
Indiana Department of Environmental Management

EXHIBIT A

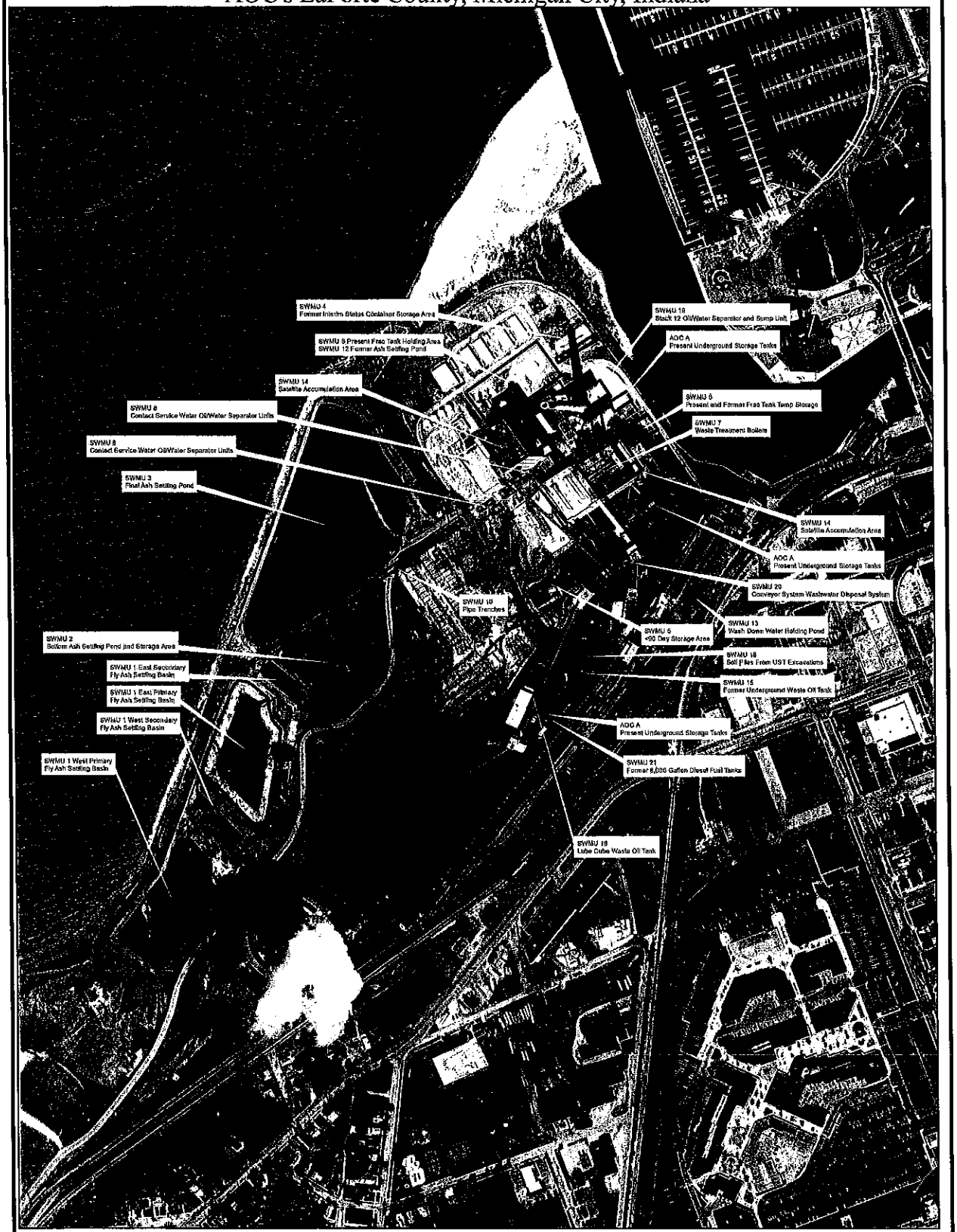
SOLID WASTE MANAGEMENT UNITS
LOCATION MAP

CAUSE No. H-13872

NIPSCO MICHIGAN CITY GENERATING STATION
MICHIGAN CITY, INDIANA

EPA ID No. IND000715375

# Fiqure 3:NIPSCO Generating Station SWMU's and AOC's LaPorte County, Michigan City, Indiana




This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Mapped By:
Shane Moore, Office of Land Quality
Date:12/06/2011

Sources:
Non Orthophotography
Data - Obtained from the State of Indiana Geographical Information Office Library
SWMU and AOC data is digitized from a georeferenced scanned image. They should be considered estimates and are meant as a visual cue only.
Orthophotography - Obtained from Indiana Map Framework Data (www.indianamap.org)
Map Projection: UTM Zone 16 N Map Datum: NAD83

N
W E
S

0 75 150 300 Meters
0 120 240 600 Feet

PORTER LAPORTE

Figure 1

SWMU = Solid Waste Management Unit
AOC = Area of Concern

IDEM

# EXHIBIT B

## CORRECTIVE ACTION SCOPE OF WORK

## CAUSE No. H-13872

NIPSCO MICHIGAN CITY GENERATING STATION
MICHIGAN CITY, INDIANA

EPA ID No. IND000715375

## CORRECTIVE ACTION SCOPE OF WORK

The Resource Conservation and Recovery Act (RCRA) corrective action requirements for NIPSCO Michigan City generation Station, the Owner/Operator (Respondent) are specified in the Agreed Order for Cause No. H-13872, (Order), to which this scope of work is an exhibit. The corrective action for Respondent's facility located at 101 Wabash Street on the lake, Michigan City, La Porte, 46360, (the "Facility"), includes discrete elements. The scope of work for each of the elements is specified below. All workplans, draft reports, and final reports are subject to approval, disapproval or modification and approval by the Indiana Department of Environmental Management (IDEM).

I. INTERIM MEASURES (IM)

Pursuant to the Order, the Respondent shall prepare an Interim Measures Workplan, as necessary. The workplan shall include the development of several plans which shall be prepared concurrently.

A. Interim Measures Objectives

The workplan shall specify the objectives of the interim measures, demonstrate how the interim measures will abate releases and threatened releases, and to the extent possible, be consistent and integrated with any long-term solution at the facility. The IM Workplan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The workplan will also include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. This plan shall also document the overall management approach to the interim measures.

B. RCRA Facility Investigation Workplan

The RCRA Facility Investigation (RFI) Workplan shall incorporate all interim measure activities under the Health and Safety Plan and the Community Relations Plan.

C. Reports

At the completion of the interim measures, the Respondent shall submit to IDEM a report which documents all interim measure activities.

II. RCRA FACILITY INVESTIGATION (RFI)

The purpose of the RFI is to determine the nature and extent of releases of hazardous waste or hazardous constituents from regulated units, solid waste management units (SWMUs), Areas of Concern (AOCs), and other potential source areas at the facility and to gather all necessary data to support the Corrective Measures Study. The Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RCRA Facility Investigation.

The RCRA Facility Investigation consists of seven (7) tasks.

Task One: Description of Current Conditions

A. Facility Background
B. Nature and Extent of Contamination
C. Implementation of Interim Measures

Task Two: Pre-Investigation Evaluation of Corrective Measure Technologies

Task Three: RFI Workplan Requirements

A. Quality Assurance Project Plan
B. Health and Safety Plan
C. Community Relations Plan

Task Four: Facility Investigation

A. Environmental Setting
B. Source Characterization
C. Contamination Characterization
D. Potential Receptor Identification

Task Five: Investigation Analysis

A. Data Analysis
B. Protection Standards

Task Six: Laboratory and Bench-Scale Studies

Task Seven: Reports

A. Preliminary and Workplan
B. Progress
C. Draft and Final

## TASK ONE: DESCRIPTION OF CURRENT CONDITIONS

Pursuant to the Order, the Respondent shall submit for approval by IDEM a report providing the background information pertinent to the facility, contamination and interim measures as set forth below. The data gathered during any previous investigations or inspections and other relevant data shall be included.

### A. Facility Background

The Respondent's report shall summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage or disposal of solid and hazardous waste. The Respondent's report shall include the following.

1. Maps depicting the following:

   a. General geographic location, at least encompassing a five (5) mile radius;

   b. Property lines, with the owners of all adjacent property clearly indicated;

   c. Topography and surface drainage depicting all waterways, wetlands, flood plains, water features, drainage patterns, and surface-water containment areas;

   d. All tanks, building, utilities, paved areas, easements, rights-of-way, and other features;

   e. All solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980;

   f. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980;

   g. All known past and present product and waste underground tanks or piping;

   h. Surrounding land uses (residential, commercial, agricultural, recreational);

   i. The location of all residential, production, recovery, and groundwater monitoring wells. These wells shall be clearly labeled and have ground and top of casing elevations and construction details included (include all known information on residential wells);

   j. Terrestrial habitat cover-types (i.e., vegetation communities) with emphasis on locating natural (undisturbed) areas; and

   k. Wildlife nesting and foraging locations for mammals, birds, fish, benthos species, etc. Any critical habitats should be identified, and threatened and endangered species possibly on or near the site should be identified as early as possible.

All maps shall be of sufficient detail and accuracy to locate and report all current and future work performed at the site.

2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.

3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the

location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response.

4. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses, and a list of documents and studies prepared for the facility along with a brief summary of their findings.

B. Nature and Extent of Contamination

The Respondent shall prepare and submit for IDEM approval a preliminary report describing the existing information on the nature and extent of contamination.

1. The Respondent's report shall summarize all possible source areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Respondent shall identify the following:

   a. Location of unit/area (which shall be depicted on a facility map);

   b. Quantities of solid and hazardous wastes;

   c. Hazardous waste or constituents; and

   d. Identification of areas where additional information is necessary.

2. The Respondent shall prepare an assessment and description of the existing degree and extent of contamination. This should include:

   a. Available monitoring data and qualitative information on locations and levels of contamination at the facility;

   b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality;

   c. The potential impacts on human health and the environment, including demography, ground-water and surface-water use, and land use; and

   d. Habitats and species (including threatened and endangered species) potentially exposed to contaminants and any known or observed effects of site contaminants on biota, such as fish kills or other obvious impacts. Habitat description should be based on available information and a

field reconnaissance by a trained ecologist. Experts on local flora and fauna should also be consulted.

C. Implementation of Interim Measures

The Respondent's report shall document interim measures which were or are being undertaken at the facility. This shall include:

1. Objectives of the interim measures: how the measure is mitigating a potential threat to human health and/or the environment and is consistent with and integrated into any long term solution at the facility;

2. Design, construction, operation, and maintenance requirements;

3. Schedules for design, construction and monitoring; and

4. Schedule for progress reports.

TASK TWO: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURE TECHNOLOGIES

Prior to starting the facility investigation, the Respondent shall submit to IDEM a report that identifies the potential corrective measure technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. This report shall also identify any field data that needs to be collected in the facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.). Consideration of potential remedial technologies at the Facility will help to guide the investigation, when deciding which types of data will be needed.

TASK THREE: RFI WORKPLAN REQUIREMENTS

Pursuant to the Order, the Respondent shall prepare a RCRA Facility Investigation (RFI) Workplan. This RFI Workplan shall include the development of a Quality Assurance Project Plan, a Health and Safety Plan, and a Community Relations Plan, all of which shall be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate the facility specific situation. The RFI Workplan includes the following:

A. Quality Assurance Project Plan (QAPP)

The Respondent shall prepare a plan to document all monitoring procedures, sampling, field measurements, and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP shall be consistent with the United States Environmental Protection Agency (U.S. EPA) guidance on

developing Quality Assurance Project Plans, "Guidance for Quality Assurance Project Plans (QA/G-5)", EPA/240/R-02/009, December 2002, (PDF 111pp, 401K). Note: This version replaces the original document issued in February 1998 (EPA/600/R-98/018).

The QAPP must address:

1. Project management;
2. Data Quality Objectives;
3. Data collection quality assurance;
4. Sampling;
5. Field measurements;
6. Sample analysis; and
7. Data management

Four copies of the QAPP must be submitted initially and for each required revision.

After final approval of the QAPP by IDEM, the Project Manager will determine the distribution, and the responsibility for this distribution, of QAPP copies to each person/organization having a major responsibility for the proposed environmental measurements. This includes, but is not limited to, contractors, subcontractors, and each laboratory.

B. Health and Safety Plan

The Respondent shall prepare a facility Health and Safety Plan.

1. Major elements of the Health and Safety Plan shall include:
   a. Facility description including availability of resources such as roads, water supply, electricity and telephone service;
   b. Describe the known hazards and evaluate the risks associated with possible incidents and with each activity conducted;
   c. List key personnel and alternates responsible for site safety, response operations, and for protection of public health;
   d. Delineate work area;
   e. Describe levels of personal protective equipment to be worn by personnel in work area;

f. Establish procedures to control site access;

g. Describe decontamination procedures for personnel and equipment;

h. Establish site emergency procedures;

i. Address emergency medical care for possible injuries and toxicological problems;

j. Describe requirements for an environmental surveillance program;

k. Specify any routine and special training required for responders; and

l. Establish procedures for protecting workers from weather-related problems.

2. The facility Health and Safety Plan shall be consistent with:

a. *NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (1985);

b. U.S. EPA Order 1440.1-Respiratory Protection and OSHA 29 CFR 1910.134 (revised April 8, 1998);

c. U.S. EPA Order 1440.2-Health and Safety Requirements for Employees engaged in Field Activities;

d. Facility Contingency Plan as required by 29 CFR 1910.38

e. *U.S. EPA Standard Operating Safety Guide* (1984);

f. OSHA regulations, particularly in 29 CFR 1910 and 1926;

g. State and local regulations; and

h. Other IDEM or U.S. EPA guidance as updated.

C. Community Relations Plan

The Respondent shall prepare a plan, for the dissemination of information to the public regarding investigation activities and results. The Community Relations Plan shall be consistent with "IDEM's Guide for Citizen Participation" and U. S. EPA's "1996 RCRA Public Participation Manual".

TASK FOUR: FACILITY INVESTIGATION

The Respondent shall conduct those investigations necessary to: Characterize the facility; define the potential contaminant sources; define the degree and extent of contamination; and identify actual and/or potential receptors. The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the Corrective Measures Study.

The site investigation activities shall follow the plans set forth in Task Three. All sampling and analyses shall be conducted in accordance with the approved Quality Assurance Project Plan (QAPP). All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Respondent shall collect information to supplement and verify existing information on the environmental setting at the facility. The Respondent shall characterize the following:

1. Hydrogeology

The Respondent shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

a. A description of the regional and facility specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the facility, including:

(1) Regional and facility-specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;

(2) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);

(3) Depositional history;

(4) Identification and characterization of areas and amounts of recharge and discharge;

(5) Regional and facility-specific groundwater flow patterns; and

(6) Characterize seasonal variations in the groundwater flow regime.

b. An analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis).

c. Based on field data, test, and cores, a representative and accurate classification and description of the hydrogeologic

units which may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:

(1) Hydraulic conductivity and porosity (total and effective);

(2) Lithology, grain size, sorting, degree of cementation;

(3) An interpretation of hydraulic interconnections or the lack thereof, between saturated zones; and

(4) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).

d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:

(1) Sand and gravel deposits in unconsolidated deposits;

(2) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

(3) Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;

(4) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs; and

(5) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.

e. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:

(1) Water-level contour and/or potentiometric maps;

(2) Hydrologic cross sections showing vertical gradients;

(3) The flow system, including the vertical and horizontal components of flow; and

(4) Any temporal changes in hydraulic gradients, (e.g., seasonal influences).

f. A description of manmade influences that may affect the hydrogeology of the site, identifying:

(1) Active and inactive local water-supply and production wells with an approximate rate and schedule of pumping; and

(2) Manmade hydraulic structures (pipelines, french drains, slurry walls, ditches, unlined ponds, septic tanks, National Pollutant Discharge Elimination System (NPDES) outfalls, retention areas, etc.).

2. Soils

The Respondent shall conduct a program to characterize the soil and rock units above the water table in the vicinity of the contaminant release(s). Such characterization shall include but not be limited to, the following information:

a. USDA soil classification;

b. Surface soil distribution;

c. USDA soil profile;

d. Transects of soil stratigraphy;

e. Hydraulic conductivity (saturated and unsaturated);

f. Relative permeability;

g. Bulk density;

h. Porosity;

i. Soil sorptive capacity;

j. Cation exchange capacity (CEC);

k. Soil organic content;

l. Soil pH;

m. Particle size distribution;

n. Depth of water table;

o. Moisture content;

p. Effect of stratification on unsaturated flow;

q. Infiltration;

r. Evapotranspiration;

s. Storage capacity;

t. Vertical flow rate; and

u. Mineral content.

3. Surface Water and Sediment

The Respondent shall conduct a program to characterize the surface-water bodies in the vicinity of the facility. Such characterization shall include, but not be limited to, the following activities and information:

a. Description of the intermittent and permanent surface-water bodies including:

(1) For lakes: location, elevation, surface area, in-flow, out-flow, depth, temperature stratification, and volume;

(2) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;

(3) For streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year and 500-year events):

(4) Drainage patterns; and

(5) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients ($NH_3$, $NO_3^{-1}$, $PO_4^{-3}$), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics including:

(1) Deposition area;

(2) Thickness profile; and

(3) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the facility. Such information shall include, but not be limited to:

(1) Annual and monthly rainfall averages;

(2) Monthly temperature averages and extremes;

(3) Wind speed and direction;

(4) Relative humidity/dew point;

(5) Atmospheric pressure;

(6) Evaporation data;

(7) Development of inversions; and

(8) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.

b. A description of topographic and manmade features which affect air flow and emission patterns, including:

(1) Ridges or hills;

(2) Valleys;

(3) Surface water bodies (e.g., rivers, lakes, ponds, etc.);

(4) Wind breaks and forests; and

(5) Buildings.

B. Source Characterization

The Respondent shall collect analytic data to completely characterize the wastes and the areas where wastes have been leaked, placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e.g., facility security, engineered barriers, etc.). This shall include a discussion of the following specific characteristics, at each source area.

1. Unit/Disposal Area Characteristics:
   a. Location of unit/disposal area;
   b. Type of unit/disposal area;
   c. Design features;
   d. Operating practices (past and present);
   e. Period of operation;
   f. Age of unit/disposal area;
   g. General physical conditions; and
   h. Method used to close the unit/disposal area.
2. Waste Characteristics:
   a. Type of waste placed in the unit;
      (1) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
      (2) Quantity; and
      (3) Chemical composition.
   b. Physical and chemical characteristics;
      (1) Physical form (solid, liquid, gas);
      (2) Physical description (e.g., powder, oily sludge);
      (3) Temperature;
      (4) pH;
      (5) General chemical class (e.g., acid, base, solvent);
      (6) Molecular weight;
      (7) Density;
      (8) Boiling point;
      (9) Viscosity;
      (10) Solubility in water;

(11) Cohesiveness of the waste;

(12) Vapor pressure; and

(13) Flash point.

c. Migration and dispersal characteristics of the waste;

(1) Sorption;

(2) Biodegradability, bioconcentration, biotransformation;

(3) Photodegradation rates;

(4) Hydrolysis rates; and

(5) Chemical transformations.

The Respondent shall document the procedures used in making the above determinations.

C. Contamination Characterization

The Respondent shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, and conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Respondent shall address the following types of contamination at the facility.

1. Groundwater Contamination

The Respondent shall conduct a Groundwater Investigation to characterize any plumes of contamination at the facility. This investigation shall at a minimum provide the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;

b. The horizontal and vertical direction of contaminant movement;

c. The velocity of contaminant movement;

d. The horizontal and vertical concentration profiles of all hazardous constituents in the plume(s);

e. An evaluation of factors influencing the plume movement; and

f. An extrapolation of future contaminant movement.

The Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Respondent shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

a. A description of the vertical and horizontal extent of contamination;

b. A description of contaminant and soil chemical properties within the contaminant source area and plume (including contaminant solubility, specification, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation);

c. Specific contaminant concentrations;

d. The velocity and direction of contaminant movement; and

e. An extrapolation of future contaminant movement.

The Respondent shall document the procedures used in making the above determinations.

3. Surface-water and Sediment Contamination

The Respondent shall conduct a surface-water investigation to characterize contamination in surface-water bodies resulting from contaminant releases at the facility.

The investigation shall include, but not be limited to, the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;

b. The horizontal and vertical direction of contaminant movement;

c. The contaminant velocity;

d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;

e. An extrapolation of future contaminant movement; and

f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Respondent shall document the procedures used in making the above determinations.

4. Air Contamination

The Respondent shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

a. A description of the horizontal and vertical direction and velocity of contaminant movement;

b. The rate and amount of the release; and

c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Respondent shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

The Respondent shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste and hazardous constituents in the groundwater. This investigation shall include the following information:

a. A description of the horizontal and vertical extent of subsurface gas migration;

b. The chemical composition of the gases being emitted;

c. The rate, amount, and density of the gases being emitted;

d. Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Respondent shall document the procedures used in making the above determinations.

D. Potential Receptors

The Respondent shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained. The following characteristics shall be identified.

1. Local uses and possible future uses of groundwater:

   a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

   b. Location of groundwater users including wells and discharge areas.

2. Local uses and possible future uses of surface waters draining the facility:

   a. Domestic and municipal (e.g., potable and lawn/gardening watering);

   b. Recreational (e.g., swimming, fishing);

   c. Agricultural;

   d. Industrial; and

   e. Environmental (e.g., fish and wildlife propagation).

3. Human use of or access to the facility and adjacent lands, including but not limited to:

   a. Trespasser;

   b. Employees;

   c. Construction workers;

   d. Recreation;

   e. Hunting/fishing;

   f. Residential;

   g. Commercial;

   h. Zoning; and

i. Relationship between population locations and prevailing wind direction.

4. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.

5. A description of the ecology overlying and adjacent to the facility.

6. A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.

7. A description of any endangered or threatened species near the facility.

TASK FIVE: INVESTIGATION ANALYSIS

The Respondent shall prepare an analysis and summary of all facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the Corrective Measures Study.

A. Data Analysis

The Respondent shall analyze all facility investigation data outlined in Task Four and prepare a report on the type and extent of contamination at the facility including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area.

B. Protection Standards

1. Groundwater Protection Standards

For regulated units the Respondent shall provide information to support IDEM's selection/development of Groundwater Protection Standards for all hazardous waste and hazardous constituents found in the groundwater during the Facility Investigation (Task Four).

a. The Groundwater Protection Standards shall consist of:

(1) For any constituents listed in 329 IAC 3.1-9-1 (40 CFR 264.94), the respective value given in that table (maximum level) if the background level of the constituent is below the value given; or

(2) The background level of any constituent in the groundwater; or

(3) An approved Alternate Concentration Limit (ACL).

b. Information to support IDEM's subsequent selection of Alternate Concentration Limits (ACL's) shall be developed by the Respondent in accordance with IDEM's Remediation Closure Guide (RCG), and other IDEM guidance and policy; and all applicable U.S. EPA guidance. For any proposed ACL's the Respondent shall include a justification based upon the criteria set forth in 40 CFR 264.94(b).

c. Within thirty (30) days of receipt of IDEM's notification of disapproval of any proposed ACL, the Respondent shall amend and submit revisions to IDEM.

2. Other Relevant Protection Standards

For all SWMUs and AOCs, the Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., IDEM's RCG nonrule policy, National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

TASK SIX: LABORATORY AND BENCH-SCALE STUDIES

The Respondent shall conduct laboratory and/or bench scale studies to determine the applicability of a corrective measure technology or technologies to facility conditions. The Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements. The Respondent shall develop a testing plan identifying the type(s) and goal(s) of the study or studies, the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan. The Respondent shall prepare a report summarizing the testing program and its results, both positive and negative.

TASK SEVEN: REPORTS

A. Preliminary and Workplan

The Respondent shall submit to IDEM reports on Task One and Task Two when it submits the RCRA Facility Investigation Workplan (Task Three).

B. Progress

The Respondent shall, at a minimum, provide IDEM with signed quarterly progress reports containing:

1. A description and estimate of the percentage of the RFI completed;

2. Summaries of all findings;

3. Summaries of all changes made in the RFI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

C. Draft and Final

Pursuant to the Order, the Respondent shall prepare a RCRA Facility Investigation Report to present Task Four and Task Five. The RFI Report shall be developed in draft form for IDEM review. The RFI Report shall be developed in final format incorporating comments received on the Draft RFI Report. Task Six shall be submitted as a separate report when the Final RFI Report is submitted.

Four (4) copies of all reports, including the Task One report, Task Two report, Task Three workplan, Task Six report and both the Draft and Final RFI Reports (Task Four and Task Five) shall be provided by the Respondent to IDEM.

## III. CORRECTIVE MEASURES STUDY (CMS)

Pursuant to the Order, the Respondent shall submit a CMS Workplan. The purpose of the Corrective Measures Study (CMS) is to ensure that the Respondent develops and evaluates the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken at the facility. The Respondent will furnish the personnel, materials, and services necessary to prepare the Corrective Measures Study, except as otherwise specified.

The Corrective Measures Study consists of four tasks.

### Task Eight: Identification and Development of the Corrective Measure Alternative or Alternatives

A. Description of Current Situation
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measure Technologies
D. Identification of the Corrective Measure Alternative or Alternatives

Task Nine: Evaluation of the Corrective Measure Alternative or Alternatives

A. Technical/Environmental/Human Health/Institutional
B. Cost Estimate

Task Ten: Justification and Recommendation of the Corrective Measure or Measures

A. Technical
B. Environmental
C. Human Health
D. Cost

Task Eleven: Reports

A. Progress
B. Draft
C. Final

TASK EIGHT: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Based on the results of the RCRA Facility Investigation and consideration of the identified Preliminary Corrective Measure Technologies (Task Two), the Respondent shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Respondent shall submit to the IDEM, an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Respondent shall provide an update to information presented in Task One of the RFI to IDEM regarding previous response activities and any interim measures which have been or are being implemented at the facility. The Respondent shall also make a facility-specific statement of the purpose for the response, based on the results of the RCRA Facility Investigation. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Respondent, in conjunction with IDEM, shall establish site-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, IDEM's RCG Program, EPA guidance, and the requirements of any applicable State or Federal statutes.

C. Screening of Corrective Measure Technologies

The Respondent shall review the results of the RCRA Facility Investigation and reassess the technologies specified in Task Two and to identify additional technologies which are applicable at the facility. The Respondent shall screen the preliminary corrective measure technologies identified in Task Two of the RCRA Facility Investigation and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below.

1. Site Characteristics

   Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2. Waste Characteristics

   Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste Characteristics particularly affect the feasibility of *in-situ* methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

   During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternative or Alternatives

The Respondent shall develop the Corrective Measure Alternative or Alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task Two of the RCRA Facility Investigation and as supplemented following the preparation of the RFI Report. The Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable for the site. Technologies can be combined to form

the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Respondent shall document the reasons for excluding technologies, identified in Task Two, as supplemented in the development of the alternative or alternatives.

TASK NINE: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

The Respondent shall describe each corrective measure alternative that passes through the initial screening in Task Eight and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Respondent shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Respondent shall provide a description of each corrective measure alternative which includes but is not limited to the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Respondent shall evaluate each alternative in the four following areas.

1. Technical

The Respondent shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

a. The Respondent shall evaluate performance based on the effectiveness and useful life of the corrective measure:

(1) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

(2) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology

eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technology, must be considered in estimating the useful life of the project.

b. The Respondent shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:

(1) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

(2) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors or the other technologies; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. The Respondent shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:

(1) Constructability is determined by conditions both internal and external to the facility conditions and includes such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the

location of suitable off-site treatment or disposal facilities; and

(2) Time has two components that shall be addressed; the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. The Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

The Respondent shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short-term and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

The Respondent shall assess each alternative in terms of the extent of which it mitigates short-term and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected population. Each alternative will be evaluated to determine the level of exposure to contaminant and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to IDEM.

4. Institutional.

The Respondent shall assess relevant institutional needs for each alternative. Specifically, the effects of federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

For the purposes of cost comparisons and financial assurance, the Respondent shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (non-construction and overhead) costs.

   a. Direct capital costs include:

      (1) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure.

      (2) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is complete;

      (3) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and

      (4) Buildings and services costs: Costs of process and non-process buildings, utility connections, purchased services, and disposal costs.

   b. Indirect capital costs include:

      (1) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;

      (2) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;

      (3) Startup and shakedown costs: Costs incurred during corrective measure startup; and

      (4) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective

measure. The Respondent shall consider the following operation and maintenance cost components:

a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;

b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;

d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;

e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;

f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and

i. Other costs: Items that do not fit any of the above categories.

TASK TEN: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Respondent shall justify and recommend a corrective measure alternative using technical, human health, environmental, and cost criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. IDEM will select the corrective measure alternative or alternatives to be implemented based on the results of Task Nine and Task Ten. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;

2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated will be given preference;

3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and

4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing IDEM and U.S. EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

D. Cost

If multiple corrective measures are found to be technically adequate and sufficiently protective of human health and the environment, the corrective measure(s) which cost(s) the least will be selected.

TASK ELEVEN: REPORTS

Pursuant to the Order, the Respondent shall prepare a Corrective Measures Study Report presenting the results of Task Eight through Task Ten and recommending a corrective measure alternative. Four (4) copies of the preliminary report shall be provided by the Respondent.

A. Progress

The Respondent shall at a minimum provide IDEM with signed, quarterly progress reports containing:

1. A description and estimate of the percentage of the CMS completed;
2. Summaries of all findings;
3. Summaries of all changes made in the CMS during the reporting period;
4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken to rectify problems;
7. Changes in personnel during reporting periods;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Draft

The report shall at a minimum include:

1. A description of the facility;
   a. Site topographic map and preliminary layouts.
2. A summary of the corrective measure or measures;
   a. Description of the corrective measure or measures and rationale for selection;
   b. Performance expectations;
   c. Preliminary design criteria and rationale;
   d. General operation and maintenance requirements; and
   e. Long-term monitoring requirements.
3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures;
   a. Field studies (groundwater, surface water, soil, air); and
   b. Laboratory studies (bench scale, pick scale).

4. Design and Implementation Precautions;

   a. Special technical problems;

   b. Additional engineering data required;

   c. Permits and regulatory requirements;

   d. Access, easements, right-of-way;

   e. Health and safety requirements; and

   f. Community relations activities.

5. Cost Estimates and Schedules;

   a. Capital cost estimate;

   b. Operation and maintenance cost estimate; and

   c. Project schedule (design, construction, operation).

Four (4) copies of the draft shall be provided by the Respondent to IDEM.

C. Final

The Respondent shall finalize the Corrective Measures Study Report incorporating comments received from IDEM on the Draft Corrective Measures Study Report.

## IV. CORRECTIVE MEASURE IMPLEMENTATION (CMI)

The purpose of the Corrective Measure Implementation Program Plan is to ensure that the Respondent designs, constructs, operates, maintains, and monitors the performance of the corrective measure or measures selected to protect human health and the environment. The Respondent will furnish all personnel, materials and services necessary for the implementation of the corrective measure or measures.

The Corrective Measure Implementation program consists of four tasks.

Task Twelve: Corrective Measure Implementation Program Plan

A. Program Management Plan
B. Community Relations Plan

Task Thirteen: Corrective Measure Design

A. Design Plans and Specifications
B. Operation and Maintenance Plan
C. Cost Estimate
D. Project Schedule

E. Construction Quality Assurance Objectives
F. Health and Safety Plan
G. Design Phases

Task Fourteen: Corrective Measure Construction

A. Responsibility and Authority
B. Construction Quality Assurance Personnel Qualifications
C. Inspection Activities
D. Sampling Requirements
E. Documentation
F. Financial Assurance

Task Fifteen: Reports

A. Progress
B. Draft
C. Final

TASK TWELVE: CORRECTIVE MEASURE IMPLEMENTATION PROGRAM PLAN

Pursuant to the Order, Respondent shall submit to IDEM, a Corrective Measure Implementation Program Plan. This program will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as the work is performed to focus efforts on a particular problem. The CMI Program Plan includes the following plans.

A. Program Management Plan

The Respondent shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance and monitoring of corrective measure(s). The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the CMI, including contractor personnel.

B. Community Relations Plan

The Respondent shall revise the Community Relations Plan to include any changes in the level of concern of information needs to the community during design and construction activities.

1. Specific activities which must be conducted during the design stage are the following:

a. Revise the facility Community Relations Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and

b. Prepare and distribute a public notice and an updated fact sheet at the completion of engineering design.

2. Specific activities to be conducted during the construction stage could be the following: Depending on citizen interest at a facility at this point in the corrective action process, community relations activities could range from group meetings to fact sheets on the technical status.

TASK THIRTEEN: CORRECTIVE MEASURE DESIGN

The Respondent shall prepare final construction plan and specifications to implement the corrective measure(s) at the facility as defined in the Corrective Measures Study.

A. Design Plans and Specifications

The Respondent shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including;

   a. Compliance with all applicable or relevant environmental and public health standards; and

   b. Minimization of environmental and public impacts.

2. Discussion of the technical factors of importance including;

   a. Use of currently accepted environmental control measures and technology;

   b. The constructability of the design; and

   c. Use of currently acceptable construction practices and techniques.

3. Description of assumptions made and detailed justification of these assumptions;

4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Detailed drawings of the proposed design including;

   a. Qualitative flow sheets; and

   b. Quantitative flow sheets.

6. Tables listing equipment and specifications;

7. Tables giving material and energy balances;

8. Appendices including;

   a. Sample calculations (one example presented and explained clearly for significant or unique design calculations);

   b. Derivation of equations essential to understanding the report; and

   c. Results of laboratory or field tests.

B. Operation and Maintenance Plan

The Respondent shall prepare an Operation and Maintenance Plan to cover both implementation and long term maintenance of the corrective measure. The plan shall be composed of the elements listed below.

1. Description of normal operation and maintenance (O&M):

   a. Description of tasks for operations;

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions; and

   d. Schedule showing frequency of each O&M task.

2. Description of potential operating problems:

   a. Description and analysis of potential operation problems;

   b. Sources of information regarding problems; and

   c. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing:

   a. Description of monitoring tasks;

   b. Description of required laboratory tests and their interpretation;

   c. Required QA/QC; and

   d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.

4. Description of alternate O&M:

   a. Should systems fail, alternate procedures to prevent undue hazard; and

b. Analysis of vulnerability and additional resource requirements should a failure occur.

5. Safety Plan:

a. Description of precautions, of necessary equipment, etc., for site personnel; and

b. Safety tasks required in event of systems failure.

6. Description of equipment:

a. Equipment identification;

b. Installation of monitoring components;

c. Maintenance of site equipment; and

d. Replacement schedule for equipment and installed components.

7. Records and reporting mechanisms required:

a. Daily operating logs;

b. Laboratory records;

c. Records for operating costs;

d. Mechanism for reporting emergencies;

e. Personnel and maintenance records; and

f. Quarterly /annual reports to state agencies.

An initial Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Document Submission and the Final Operation and Maintenance Plan with the Final Design Documents.

C. Cost Estimate

The Respondent shall develop cost estimates for the purpose of assuring that the facility has the financial resources necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measures Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and O&M costs. An Initial Cost Estimate shall be submitted simultaneously with the Prefinal Design submission and the Final Cost Estimate with the Final Design Document.

D. Project Schedule

The Respondent shall develop a Project Schedule for construction and implementation of the corrective measure or measures which identifies timing for initiation and completion of all critical path tasks. Respondent shall specifically identify dates for completion of the project and major interim milestones. An Initial Project Schedule shall be submitted simultaneously with the Prefinal Design Document submission and the Final Project Schedule with the Final Design Document.

E. Construction Quality Assurance Objectives

The Respondent shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation.

F. Health and Safety Plan

The Respondent shall modify the Health Safety Plan developed for the RCRA Facility Investigation to address the activities to be performed at the facility to implement the corrective measure(s).

G. Design Phases

The design of the corrective measure(s) should include the phases outlined below.

1. Preliminary design

The Respondent shall submit the Preliminary design when the design effort is approximately 30% complete. At this stage the Respondent shall have field verified the existing conditions of the facility. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The preliminary construction drawings by the Respondent shall reflect organization and clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. The Respondent shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.

2. Intermediate design

Complex project design may necessitate review of the design documents between the preliminary and the prefinal/final design. At the discretion of IDEM, a design review may be required at 60% completion of the project. The intermediate design submittal should include the same elements as the prefinal design.

3. Correlating plans and specifications

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the Respondent shall:

a. Coordinate and cross-check the specifications and drawings; and

b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95% prefinal submittal to IDEM.

4. Equipment start-up and operator training

The Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, startup and operation of the treatment systems, and training covering appropriate operational procedures once the startup has been successfully accomplished.

5. Additional studies

Corrective Measure Implementation may require additional studies to supplement the available technical data. At the direction of IDEM for any such studies required, the Respondent shall furnish all services, including field work as required, materials, supplies, plant, labor, equipment, investigations, studies and superintendence. Sufficient sampling, testing and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There shall be an initial meeting of all principal personnel involved in the development of the program. The purpose will be to discuss objectives, resources, communication channels, role of personnel involved and orientation of the site, etc. The interim report shall present the results of the testing with the recommended treatment or disposal system (including options). A review conference shall be scheduled after the interim report has been reviewed by all interested parties. The final report of the testing shall include all data taken during the testing and a summary of the results of the studies.

6. Prefinal and final design

The Respondent shall submit the prefinal/final design documents in two parts. The first submission shall be at 95% completion of design (i.e., prefinal). After approval of the prefinal submission, the Respondent shall execute the required revisions provided from IDEM review and submit the final documents 100% complete with reproducible drawings and specifications.

The prefinal design submittal shall consist of the Design Plans and Specifications, Operation and Maintenance Plan, Capital and Operating and Maintenance Cost Estimate, Project Schedule, Quality Assurance Plan and Specifications for the Health and Safety Plan.

The final design submittal shall consist of the Final Design Plans and Specifications (100% complete), the Respondent's Final Construction Cost Estimate, the Final Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule and Final Health and Safety Plan specifications. The quality of the design documents should be such that the Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK FOURTEEN: CORRECTIVE MEASURE CONSTRUCTION

Following IDEM approval of the final design, the Respondent shall develop and implement a Construction Quality Assurance (CQA) Program to ensure, with a reasonable degree of certainty, that a completed corrective measure(s) meets or exceeds all design criteria, plans and specifications. The CQA plan is a facility-specific document which must be submitted to IDEM for approval prior to the start of construction. At a minimum, the CQA plan should include the elements, which are summarized below. Upon IDEM approval of the CQA plan, the Respondent shall construct and implement the corrective measures in accordance with the approved design, schedule and the CQA plan. The Respondent shall also implement the elements of the approved Operation and Maintenance plan.

A. Responsibility and Authority

The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measure shall be described fully in the CQA plan. The Respondent must identify a CQA officer and the necessary supporting inspection staff.

B. Construction Quality Assurance Personnel Qualifications

The qualifications of the CQA officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

C. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the corrective measure(s) shall be summarized in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, the Respondent shall conduct the following activities:

1. Preconstruction inspection and meeting

   The Respondent shall conduct a preconstruction inspection and meeting to:

   a. Review methods for documenting and reporting inspection data;

   b. Review methods for distributing and storing documents and reports;

   c. Review work area security and safety protocol;

   d. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and

   e. Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

   The preconstruction inspection and meeting shall be documented by a designated person and minutes should be transmitted to all parties.

2. Prefinal inspection

   Upon preliminary project completion, the Respondent shall notify IDEM for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and IDEM approved corrective measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by the Respondent. The Respondent will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report must outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final inspection

Upon completion of any outstanding construction items, the Respondent shall notify IDEM for the purposes of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

D. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specifications shall be presented in the CQA plan.

E. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA plan. This should include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records also should be presented in the CQA plan.

F. Financial Assurance

The implementation of a corrective measure requires the establishment of financial assurance for the estimated costs of the corrective action. The demonstration of financial assurance shall be in accordance with 329 IAC 3.1-15-4 (40 CFR 264.143).

TASK FIFTEEN: REPORTS

Pursuant to the Order, the Respondent shall prepare plans, specifications, and reports as set forth in Task Twelve through Task Fifteen to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to the following.

A. Progress

The Respondent shall, at a minimum, provide IDEM with signed, quarterly progress reports during the design and construction phases and semi-annual progress reports for operation and maintenance activities containing:

1. A description and estimate of the percentage of the CMI completed;

2. Summaries of all findings;

3. Summaries of all changes made in the CMI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Draft

1. The Respondent shall submit a draft Corrective Measure Implementation Program Plan as outlined in Task Twelve;

2. The Respondent shall submit draft Construction Plans and Specifications, Design Reports, Cost Estimates, Financial Assurance, Project Schedules, Operation and Maintenance plans, and Study Reports as outlined in Task Thirteen;

3. The Respondent shall submit a draft Construction Quality Assurance Program Plan and Documentation as outlined in Task Fourteen; and

4. At the "completion" of the construction of the project and/or pursuant to the Order, the Respondent shall submit a Draft Corrective Measure Implementation Report to IDEM. The Draft CMI Report shall document that the project is consistent with the design specifications, and that the corrective measure is performing adequately. The Report shall include, but not be limited to the following elements:

   a. Synopsis of the corrective measure and certification of the design and construction;

   b. Explanation of any modifications to the plans and why these were necessary for the project;

   c. Listing of the criteria, established before the corrective measure was initiated, for judging the functioning of the

corrective measure and also explaining any modification to these criteria;

d. Results of facility monitoring, indicating that the corrective measure will meet or exceed the performance criteria; and

e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report should include all of the daily inspection summary reports, inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

C. Final

The Respondent shall finalize the Corrective Measure Implementation Program Plan, Construction Plans and Specifications, Design Reports, Cost Estimates, Financial Assurance, Project Schedules, Operation and Maintenance Plan, Study Reports, Construction Quality Assurance Program Plan/Documentation and the Corrective Measure Implementation Report incorporating all IDEM comments received on draft submissions.

Original: 4/16/97
Revised: 3/7/07

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
*We Protect Hoosiers and Our Environment.*
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(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
*Governor*

Carol S. Comer
*Commissioner*

September 22, 2015

**VIA CERTIFIED MAIL**

Mr. Dan Sullivan, Principle
Remediation, Environmental,
Safety and Sustainability
NiSource Corporate Services Company
801 E. 86th Avenue
Merrillville, IN 46410

Dear Mr. Sullivan:

Re: Notice of Approval of the
Amendment to the Agreed Order
on Cause No. H-13872
Indiana Department of Environmental
Management versus Northern Indiana
Public Service Company (NIPSCO)
Michigan City Generating Station
EPA ID No. IND000715375

This is to inform you that the Commissioner of the Indiana Department of Environmental Management (IDEM) or authorized delegate, has approved the amendment to the agreed order negotiated between you and members of our staff. A copy of the amendment executed by the Commissioner on behalf of IDEM, is enclosed.

You are no doubt familiar with the terms of the order necessary to ensure future compliance. The amendment and the timeframes for compliance are effective upon your receipt of this correspondence. Please direct any questions you may have, or any submittals required under this order to Mr. Chris Myer of the Hazardous Waste Permit Section at cmyer@idem.in.gov, this address, or contact him by phone at (317) 233-4625.

Sincerely,

Bruce H Palin

Bruce H Palin,
Assistant Commissioner
Office of Land Quality

Enclosure

cc: LaPorte County Health Department (with enclosure)
Mr. Daniel J. Deeb, Schiff Hardin LLP (with enclosure)
Ms. Lisa McCoy, IDEM Office of Legal Counsel (with enclosure)
Mr. Michael Beedle, U.S. EPA (with enclosure)
Mr. Michael E. Sickels (with original enclosure)

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**Michael R. Pence**
*Governor*

**Carol S. Comer**
*Commissioner*

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| IN THE MATTER OF: COMMISSIONER, | ) | |
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| Northern Indiana Public Service Company | ) | |
| Michigan City Generating Station | ) | |
| Michigan City, Indiana | ) | |
| U.S. EPA ID No. IND000715375 | ) | |
| | ) | |
| Respondent | ) | |

## AMENDMENT TO THE AGREED ORDER OF OCTOBER 2, 2013

Come now the parties of this cause, and desiring to modify and amend the Agreed Order signed by the Assistant Commissioner of the Office of Land Quality on October 2, 2013, hereby consent to the following amendment to the Agreed Order of October 2, 2013.

### Agreed Modifications

1. This amendment allows the filling of the East and West Secondary Fly Ash Settling Basins of Solid Waste Management Unit 1 with boiler slag, in a manner to support a final cap with a 2% minimum slope and 5% maximum slope. These activities must be conducted in a manner that prevents the migration of wastes beyond the limits of the units, prevents the release of hazardous constituents, and is protective of human health and the environment.

2. This amendment requires the submittal of closure and post-closure plans for each of the following basins; the East and West Secondary Fly Ash Settling Basins, and the West Primary Fly Ash Settling Basin. The closure and post-closure plans shall be submitted by January 2, 2018, for the commissioner's approval under 329 IAC 10-3-1(9). Since coal combustion residuals are commonly classified as Type I Restricted

Wastes and the regulations for Type I Restricted Waste Sites provide a model for management practices that are protective of human health and the environment for final disposal of the type of waste in these impoundments, the closure and post-closure plans shall address relevant aspects of 329 IAC 10-29, 10-30, and 10-31, including the following.

a. A closure plan that includes the cover design and installation procedures consistent with relevant aspects of 329 IAC 10-30, and a closure cost estimate,

b. A post-closure plan that includes a proposed ground water monitoring system consistent with relevant aspects of 329 IAC 10-29, post-closure maintenance and monitoring consistent with relevant aspects of 329-IAC 10-31, and a post-closure cost estimate,

c. Financial Assurance consistent with relevant aspects of 329 IAC 10-39 for closure and post-closure, and

d. A schedule of all activities to be included in each of the closure and post-closure plans.

3. Modification 2 above does not preclude the commissioner from approving other management practices that are determined to be protective of human health or the environment or from requiring additional management practices necessary to protect human health or the environment as a condition of approving the closure plan.

4. Before initiating final closure for any other solid waste impoundment, solid waste landfill or other solid waste disposal unit at the Michigan City Generating Station, NIPSCO must submit a closure plan for review and approval under applicable solid waste program regulations.

5. Modification of the October 2, 2013 Agreed Order is limited to the items specifically addressed by this amendment. All remaining portions of the Agreed Order remain in full force and effect.

6. This amendment to the Agreed Order shall be effective ("Effective Date"), on the date it is signed by the Assistant Commissioner of the Office of Land Quality.

IT IS SO AGREED AND ORDERD:

TECHNICAL RECOMMENDATION

BY: _____
Michael E. Sickels,
Senior Technical Advisor for the
RCRA Corrective Action Program

DATE: 9/22/15

FOR RESPONDENT

BY: _____
General Manager
TITLE

DATE: 9/16/15

ATTORNEY FOR RESPONDENT

BY: _____

FIRM: Schiff Hardin LLP

DATE: 9/17/15

APPROVED BY THE INDIANA DEPARTMENT
OF ENVIRONMENTAL MANAGEMENT

this 22ND day of SEPTEMBER, 2015

Bruce H Palin

Bruce H Palin, Assistant Commissioner, Office of Land Quality
Indiana Department of Environmental Management