

Emergency Action Plan for Coal Combustion Residuals Unit

J. R. Whiting Facility

22581014.00

Prepared for
Consumers Energy Company



April 2017



Emergency Action Plan for Coal Combustion Residuals Unit at J. R. Whiting Facility

April 2017

Contents

Certification.....	ii
1.0 Introduction	1
1.1 CCR Unit.....	1
2.0 Safety Emergency	3
2.1 Events or Circumstances Which Represent a Safety Emergency	3
2.2 Detection Procedures.....	3
2.3 Delineation of the Downstream Affected Area.....	4
3.0 Responsible Persons, Responsibilities, and	6
4.0 Annual Exercise Meeting	7
5.0 Revisions.....	8
6.0 References	9

List of Figures

Figure 1	Site Plan
Figure 2	Approximate Affected Area Due to Failure of West Dike
Figure 3	Approximate Affected Area Due to Failure of South Dike
Figure 4	Approximate Affected Area Due to Failure of East Dike
Figure 5	Emergency Action Plan Notification Procedure

Certification

I hereby certify that this emergency action plan complies with the provisions of Title 40 of the Code of Federal Regulations Section 257.73 (40CFR§257.73) and in accordance with standard engineering practice, including consideration of applicable industry standards. Further, I hereby certify this plan was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Bethany Kelly

Bethany Kelly
PE #: 6201057709

April 13, 2017

Date



Acronyms

Acronym	Description
CEC	Consumers Energy Company
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EAP	Emergency Action Plan
EPA	Environmental Protection Agency
HPCR	Hazard Potential Classification Report
ICS	Incident Command System
JRW	J. R. Whiting Facility

1.0 Introduction

Consumers Energy Company's (CEC) J. R. Whiting (JRW) facility stores coal combustion residuals (CCR) in surface impoundments, which are classified as significant hazard potential units in accordance with United States Environmental Protection Agency's (EPA) 40 CFR Part 257 (specifically 40CFR§257.73(a)(2)). Therefore, pursuant to the 40CFR§257.73(a)(3)(i)), this facility must prepare and maintain a written Emergency Action Plan (EAP). The purpose of the EAP is to define emergencies related to CCR surface impoundments, define responsible persons, and define notification procedures in the event of an emergency. The EAP must be completed and placed in the facility's operating record no later than April 17, 2017. 40CFR§257.73(a)(3)(i)) requires that the owner or operator of the CCR Unit (EPA 2015):

- A. Define the events or circumstances involving the CCR unit that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;
- B. Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit;
- C. Provide contact information of emergency responders;
- D. Include a map which delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit; and
- E. Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders.

The JRW facility is located in Erie, Michigan (shown on Figure 1). JRW's CCR surface impoundment (CCR unit), Pond 1&2, has been classified as a "significant hazard potential CCR surface impoundment" (Mannik Smith Group, 2016). The EAP provides CEC with a pre-planned and organized method to identify and implement a response to a safety emergency related to the CCR unit. The impoundments are bounded on the west by the west forebay, on the south by the facility's formerly used cooling water discharge channel, and on the east by a public beach on the shore of Lake Erie. The generation facility is not in operation and no longer discharges water or CCR material to the impoundments. Only rain which falls on the impoundments and potential, though unlikely, precipitation overflow from the nearby treatment ponds contribute additional water to the impoundments.

1.1 CCR Unit

The CCR unit is bounded by a perimeter dike and is separated into two ponds by an internal dike. The perimeter dikes were constructed of CCR material and clay excavated during construction of the unit. The unit was originally constructed as a single pond prior to plant operation in 1952 and was used to store fly ash. In 1964, the pond was reconstructed into two ponds to assist in clarifying water from the sluiced bottom ash (Consumers, 2016).

The unit was completed as part of the initial construction of the facility. When the generating facility was in operation, CCR and water was sluiced to the bottom ash pond. Water gravity flowed from Pond 2

to Pond 1 via a submerged pipe in the internal dike before discharging from Pond 1 to the west forebay at Outfall 001b (AECOM, 2009). Since the plant is no longer operating, Outfall 001b has been grouted in place to prevent discharge from the pond.

Key features and hydraulic connections of the waterbodies adjacent to the CCR unit are shown on Figure 1. As depicted, the west forebay is connected to the intake channel (Maumee Bay) through a concrete structure beneath the causeway. The discharge channel is connected to Lake Erie via culverts at the east end of the channel. Formerly, the west end of the discharge channel was connected to the intake channel via a recirculating gate structure, but this has been permanently closed and filled with concrete.

2.0 Safety Emergency

For purposes of this EAP, a safety emergency would occur if the subject CCR unit failed or if failure were imminent. While the magnitude or severity of such a safety emergency might vary, the EAP was prepared with conservative assumptions that a catastrophic failure of the CCR unit occurred. Additional actions after the initial response (cleanup, investigation, repairs, etc.) would be geared toward the actual conditions of the emergency and are, therefore, not prescribed in this EAP.

2.1 Events or Circumstances Which Represent a Safety Emergency

A safety emergency occurs in the event of failure of the CCR unit, or if observed conditions represent imminent failure of the CCR unit as determined by a professional engineer in the GE&S Systems Engineering – Infrastructure group (an internal CEC group of subject matter experts) in consultation with *Qualified Personnel* at the facility (Qualified Person as defined in 40CFR§257.53: a person trained to recognize specific appearances of structural weakness and other conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit by visual observation). Imminent failure will be determined based on knowledge of the CCR unit construction and the failure modes evaluated in the Potential Failure Mode Analysis performed for the facility (AECOM, 2009).

Potential failure modes include a physical dike failure (i.e., uncontrolled seepage causing internal dike erosion and dike breach) and/or overtopping and erosion of the dike (due to a significant storm event).

A final, although unlikely, potential failure mode would be failure induced by uncontrolled earthwork such as excavation at the toe of slope and/or placement of excess load on side slopes or slope crests, such as by heavy equipment activity or a seismic event induced movement causing instability of the dike; any of which may in some circumstances initiate slope failure.

2.2 Detection Procedures

The CCR units are periodically inspected for structural and operational conditions by a *Qualified Person* in adherence with 40CFR§257.83(a)(1) and 257.84(a)(1). Weekly inspections are completed to monitor and document the physical condition of the CCR units. In these inspections, the *Qualified Person* conducts a visual evaluation for conditions such as vegetation, beaching, bulging, depressions, cracking, erosion rilling and gullies, seepage, sloughing and sliding, or unnatural settlement (CEC, 2015). Observations are reviewed by an employee of the site's Environmental & Technical Support department. If conditions of potential concern are observed they are promptly reported, after which notification and response procedures may be enacted (see Section 3.0).

Annual inspections are completed by a qualified Professional Engineer (CEC, 2015). This annual inspection also includes a review of available information, including weekly inspection reports, to understand trends which may be apparent based on changes documented over time. Periodic assessments are also completed as required by the CCR rule. Beyond the visual indicators that are reviewed in weekly inspections, specific items inspected for include, but may not be limited to:

- New and/or uncontrolled slope erosion
- Indicators of potential slope movement such as:
 - o changes in dike alignment
 - o changes in dike crest elevation
 - o cracks in dike surface
- Whirlpool within pond
- Turbid discharge water
- CCR unit pond level and freeboard
- Indications of seepage through dikes such as:
 - o soft/saturated toe of slope
 - o mid-slope water discharge
- Uncommon variation in vegetation type and density

Members of the public may report a condition or situation indicative of an emergency event to emergency dispatch (911); see Section 3.0.

Currently, the CCR units do not have, nor do they require, instrumentation.

2.3 Delineation of the Downstream Affected Area

According to the Hazard Potential Classification Report (HPCR) for Pond 1&2 (Mannik Smith Group, 2016), potential dike failures may occur along the east, west, and south slopes of the impoundment dike. The HPCR states that a breach of the impoundment dike would result in a discharge of CCR material and water to the west forebay and then to Maumee Bay, causing an anticipated rise in the water level of the west forebay and discharge into Maumee Bay. The HPCR therefore categorized the impoundments as significant hazards because no probable loss of human life is expected, however, environmental damage may result which would not be limited to CEC property.

In development of the EAP for JRW pursuant to 40CFR§257.73, Barr created Figures 2, 3, and 4 to approximate the area which would be affected by a catastrophic discharge of CCR material and water from the impoundments to the potential receiving waters of the breaches. Based on a review of the surrounding topography, a breach of the west dike would presumably discharge to the west forebay (Figure 2), a breach of the south dike would discharge to the discharge channel then to Lake Erie (Figure 3), and a breach of the east dike would discharge to Lake Erie (Figure 4).

The affected areas presented on these figures were estimated based on the volume of stored CCR material and water which could potentially be discharged during an emergency event using the conservative breach scenarios identified in the HPCR. The west dike breach scenario assumes that a breach would occur at the point of the former outfall adjacent to the west forebay.

According to the HPCR, a conservative breach scenario would assume the volume of water and CCR material resulting from a 1,000 year storm event. Per the HPCR, the volume of the two ponds would be approximately 150 acre feet. A conservative scenario would presume that the entirety of this volume would be discharged at once during an emergency event. Under this assumption, an affected area might include 150 acres of the area adjacent to a dam breach (assuming an inundation of 1 foot).

This is a conservative assumption since a break resulting in the instantaneous and simultaneous discharge of the entire maximum storage capacity from both ponds would be unlikely.

Using the conservative inundation area and topographic data for the adjacent areas (NOAA OCM, 2012) the approximate affected area shown on Figures 2, 3, and 4 depicts the water and shoreline which would be affected by the 1-foot inundation inclusive of the 150-acre area. The edges and general shape of this area are approximate.

3.0 Responsible Persons, Responsibilities, and Notification Procedures

In adherence with 40CFR§257.73(a)(3)(B), Figure 5 outlines the approach to responding to a CCR unit safety emergency. Responsible persons, their responsibilities, and the notification order are summarized on Figure 5 to provide a quick-reference document during implementation of the EAP. In the event that a long-term response action is necessary, the Short-term On-Scene Commander will activate needed positions within CEC's Incident Command System (ICS) based upon the needs of the incident. The ICS and related programs are outside the context of this plan and the notification procedures defined herein.

Pursuant to 40CFR§257.73(a)(3)(C), Figure 5 also shows emergency responders, including their contact information, and who will be contacted in the event of a safety emergency.

4.0 Annual Exercise Meeting

An annual meeting will be coordinated by Environmental & Technical Support department personnel and will include CEC representatives and local emergency responders.

The CEC representatives and emergency responders included on Figure 5 will be invited to participate.

5.0 Revisions

CEC has a program to periodically review and amend emergency planning documents. The EAP will be included in this program and reviewed, at a minimum, every five years. The current EAP, i.e. the reviewed or revised EAP, will be placed in the facility's operating record as required by 40CFR\$257.105(f)(6).

6.0 References

AECOM, 2009. Potential Failure Mode Analysis (PFMA) Report for J.R. Whiting Generating Facility. AECOM Project No. 60100985. December 7, 2009.

Consumers Energy Company, 2016. JR Whiting History of Construction Ponds 1&2. October 17, 2016.

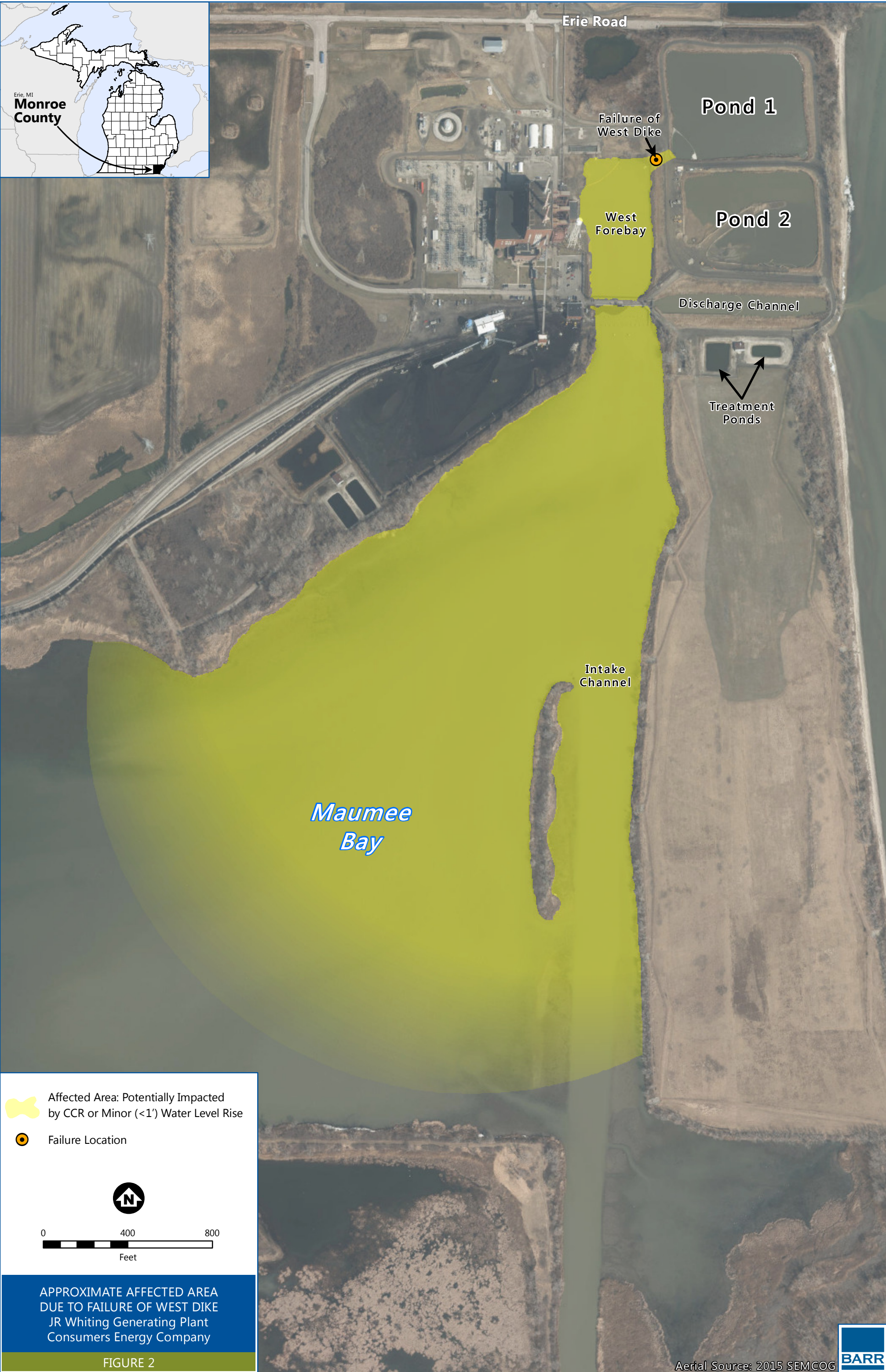
EPA (Environmental Protection Agency), 2015. Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. 40 CFR Part 257. Effective Date October 19, 2015.

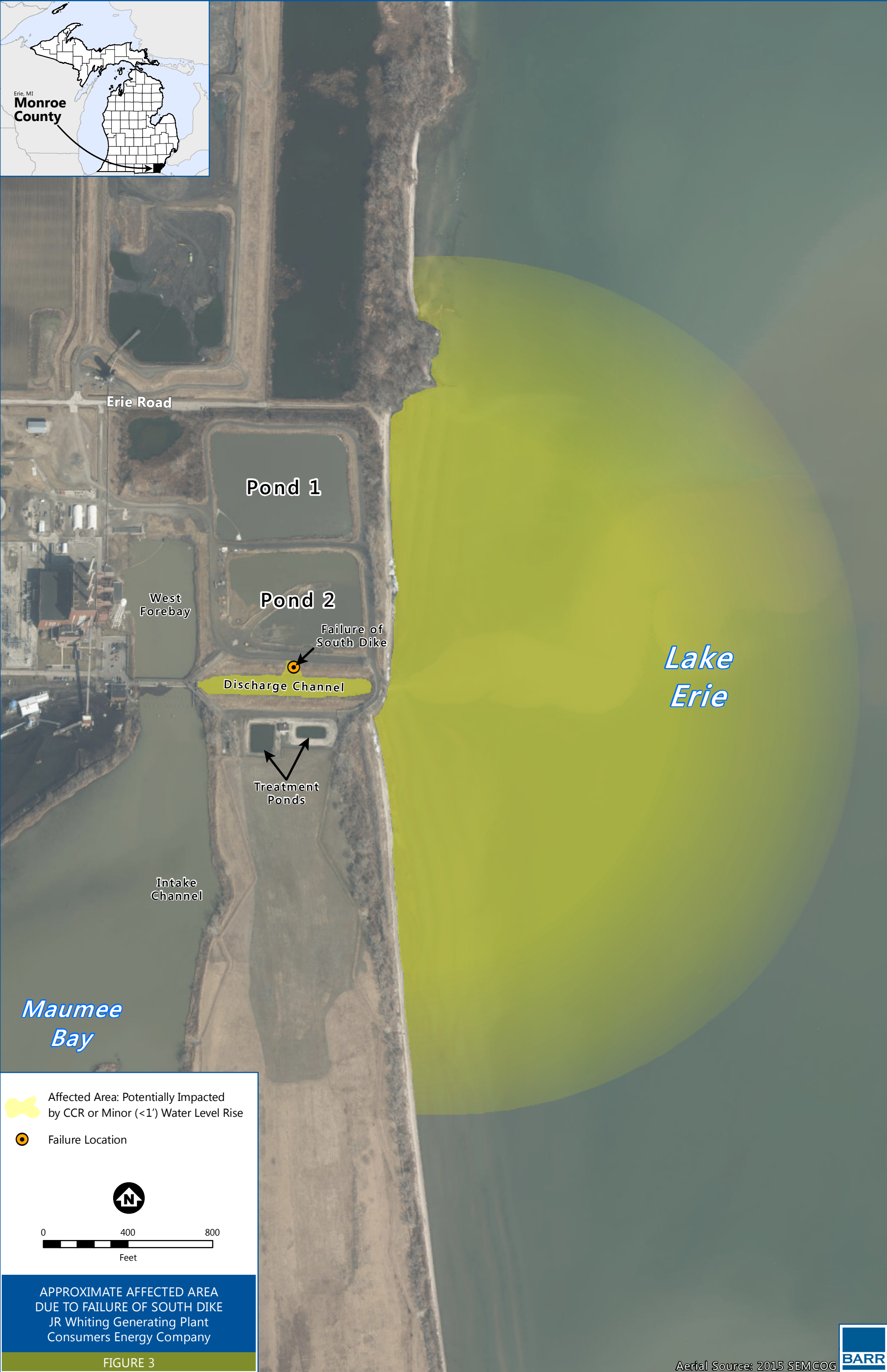
Mannik Smith Group, 2016. J. R. Whiting Generating Facility Ponds 1 and 2 Hazard Potential Classification Report. October, 2016.

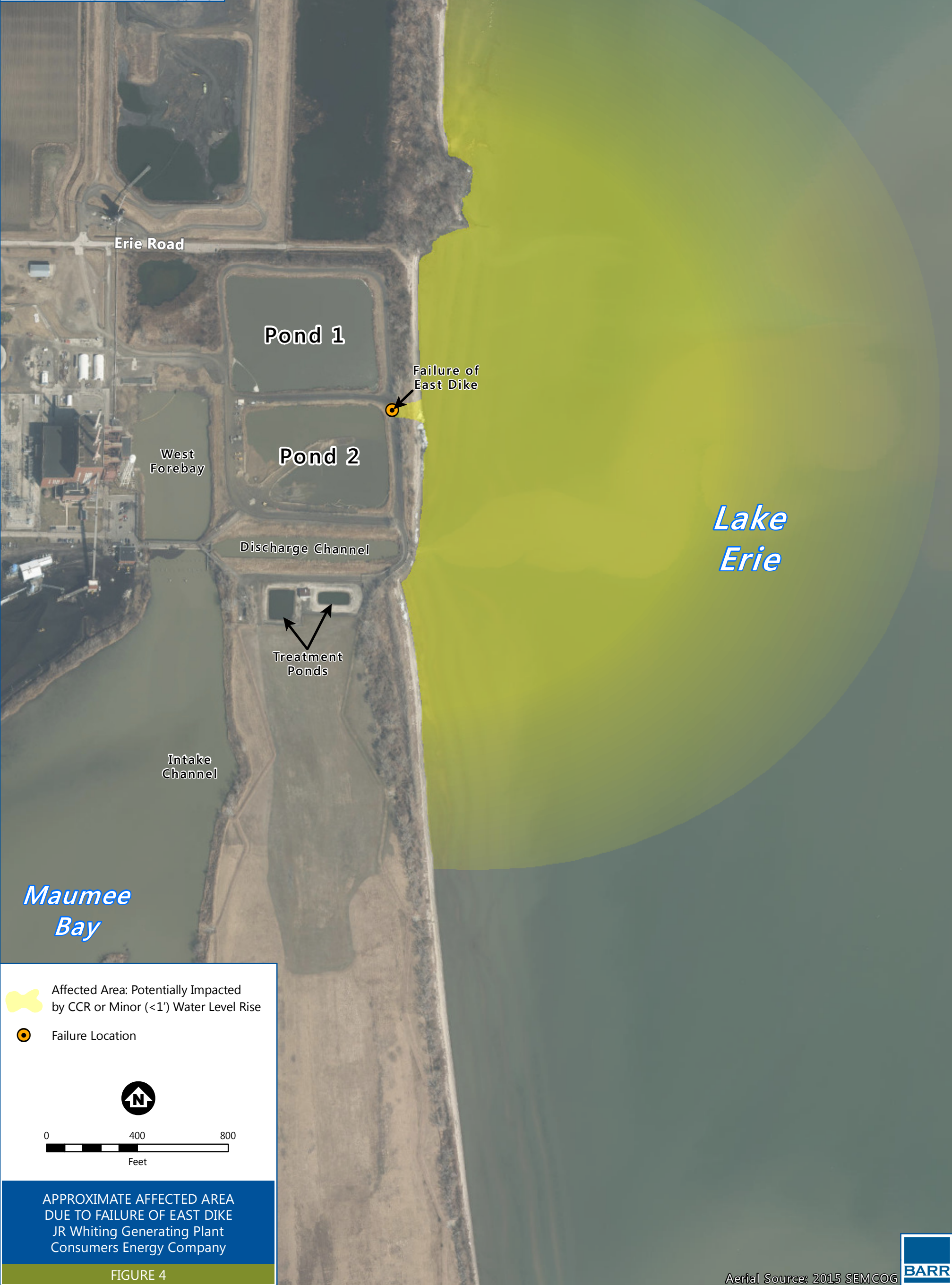
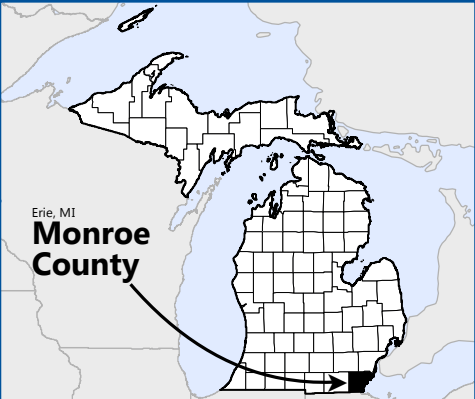
NOAA OCM, 2012. NOAA Office for Coastal Management (OCM) 2011-2012 USACE Great Lakes Topobathy Lidar: Lake Erie (MI, OH, PA, NY). Released, 2012.

Figures









 Affected Area: Potentially Impacted by CCR or Minor (<1') Water Level Rise

 Failure Location



0400800

Feet

APPROXIMATE AFFECTED AREA
DUE TO FAILURE OF EAST DIKE
JR Whiting Generating Plant
Consumers Energy Company

FIGURE 4

Note:
DE Karn (DEK) personnel will provide assistance with emergency notification procedures

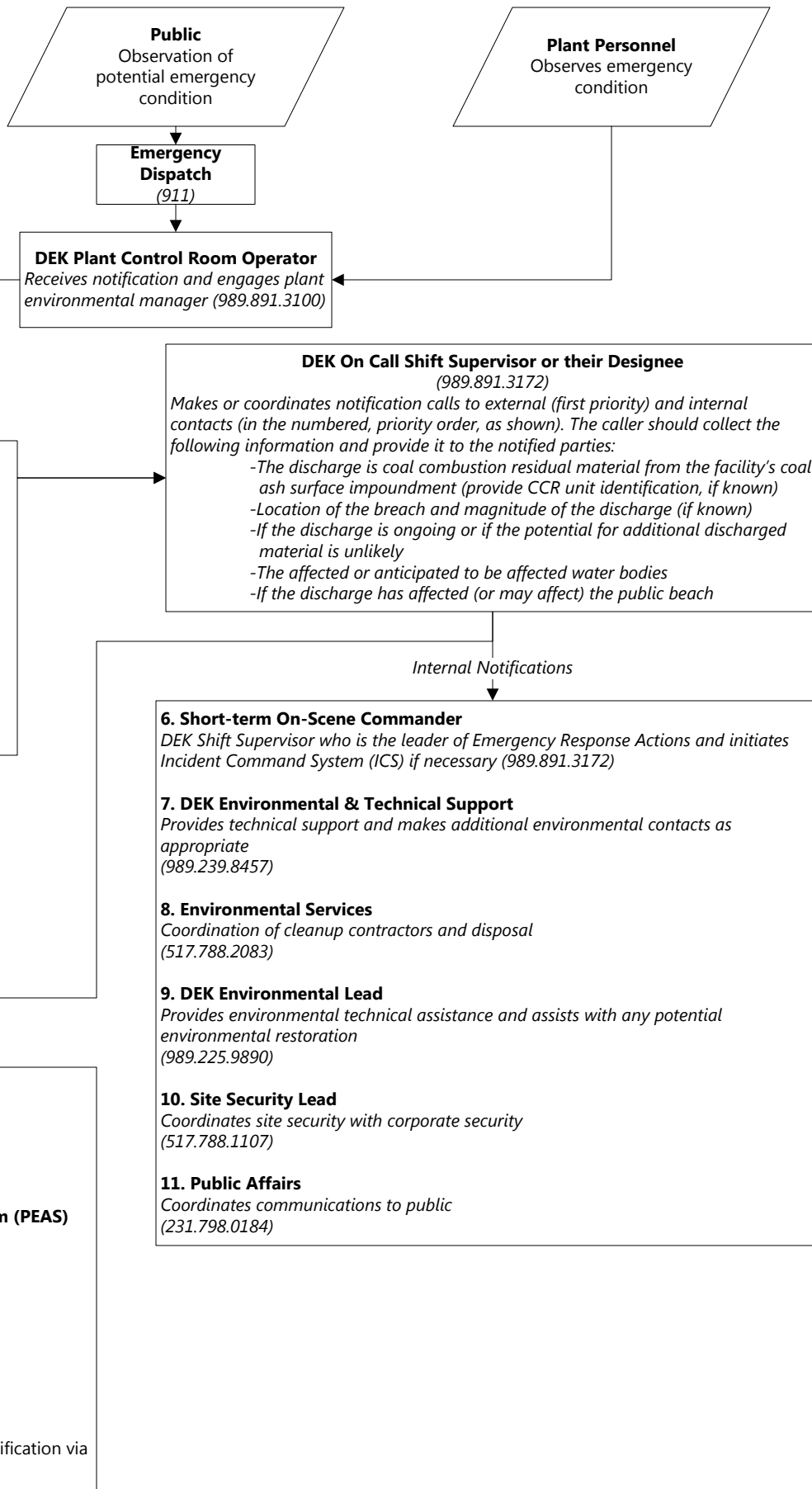


Figure 5

EMERGENCY ACTION PLAN NOTIFICATION PROCEDURE

Ponds 1 & 2
J. R. Whiting Facility
Erie, MI