

Emergency Action Plan (EAP) for Coal Combustion Residuals (CCR) Units

J. H. Campbell Facility

Prepared for
Consumers Energy Company



December 2016



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Certification

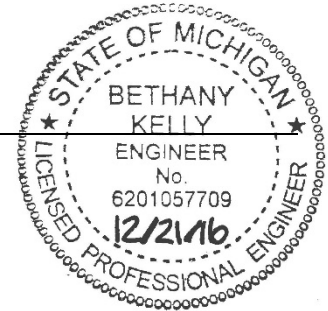
I hereby certify that this emergency action plan complies with the provisions of Title 40 of the Code of Federal Regulations Section 257.73 (40CFR§257.73) and in accordance with standard engineering practice, including consideration of applicable industry standards. Further, I hereby certify this plan 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
PE #: 6201057709

December 21, 2016

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
ICS	Incident Command System
JHC	J. H. Campbell

1.0 Introduction

Consumers Energy Company's (CEC) J. H. Campbell (JHC) facility stores coal combustion residuals (CCR) in surface impoundments which are classified as significant hazard potential units. Therefore, pursuant to the United States Environmental Protection Agency's (EPA) 40 CFR Part 257 (specifically 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) to:

- 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 J. H. Campbell facility is located in West Olive, Michigan (shown on Figure 1). Two of JHC's CCR surface impoundments (CCR units), Pond A and Bottom Ash Ponds 1-2, have been classified as "significant hazard potential CCR surface impoundments" (Golder, 2016a and Golder, 2016b). 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 units. The CCR units are toward the interior of the property which is bordered by the Pigeon River approximately 1,500 feet to the south, Lakeshore Avenue approximately 600 feet to the west and closed or inactive ash disposal areas to the east and north.

1.1 CCR Units

The two CCR units with significant hazard potential classifications are bounded by internal and perimeter dikes. The internal and perimeter dikes are used as roadways, therefore being well compacted, and typically constructed with a mixture of bottom ash and sand fill (AECOM, 2009). Perimeter dikes were constructed on native sandy soil. In accordance with 40CFR§257.73(a)(3)(i)(D) and to provide context for failure detection and response actions, these two CCR units are described in more detail in the following sections.

1.1.1 Pond A

Pond A was completed as part of initial construction of the facility. The pond contains CCR material and water. The northwest corner of Pond A receives continuously flowing water. Effluent water flows through a pipe that penetrates the perimeter dike, discharging into an open channel ditch on the southern side of the perimeter ditch.

The outfall structure consists of a 24-inch corrugated metal pipe which outlets into a concrete stilling basin. Visual observations indicate the normal/minimum freeboard is approximately 10 feet (AECOM, 2016). An overflow pipe (to mitigate a potential overtopping scenario) comprised of a 30-inch HDPE pipe inlet is also located at Pond A. Water level within the pond varies with total storage capacity estimated at 250,000 cubic yards (CY) (Golder, 2016).

1.1.2 Bottom Ash Ponds 1-2

Bottom Ash Ponds 1-2 act as temporary impoundments for bottom ash and plant process water. The ponds contain an internal dike which separates the unit into Ponds 1-2 South and Ponds 1-2 North. Overflow/emergency outlets were constructed in 1993. The pond also has an emergency overflow outlet known as the "high-high" emergency overflow (AECOM, 2009).

Water level in the pond varies, with total dam break volume estimated at 63,000 CY for the CCR unit (Golder, 2016b). Annually, as needed, bottom ash is mechanically removed to maintain storage capacity.

2.0 Safety Emergency

For purposes of this EAP, a safety emergency would occur if one of the subject CCR units 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 units occurred. Therefore, an immediate response according to the EAP is conservative to protect the anticipated affected area. Additional actions after the initial response (cleanup, investigation, repairs, etc.) would be geared toward the actual conditions of the emergency.

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., or uncontrolled seepage causing internal dike erosion and dike breach) and/or overtopping and erosion of the dike (due to a significant storm event, change in upstream operational conditions, etc.).

At Pond A, a third potential failure mode is failure of the outlet pipe installed through the dike. Discharged water could erode the dike material around the pipe creating a circumstance which would breach the dike. Additionally, pipe failure (plugged, partially blocked, or collapsed pipe) could restrict the normal discharge from the pipe, creating a condition which could lead to an overtopping scenario.

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; either 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, following 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:
 - changes in dike alignment
 - changes in dike crest elevation
- Whirlpool within pond
- Turbid discharge water
- CCR unit pond level and freeboard.
- Indications of seepage through dikes such as:
 - soft/saturated toe of slope
 - mid-slope water discharge
- Uncommon variation in vegetation type and density

Any plant personnel may note and report potential concerns, however, some persons on site are required to make regular observations of conditions. Security personnel conduct rounds at least once per shift (three times per day), and the fuel handling supervisor is required to walk through portions of the facility daily. These staff are trained and instructed to identify questionable conditions which are reported to the security command center or Internal Environmental & Technical Support.

Finally, 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

Dam break analyses for the subject CCR units were completed and certified by Golder Associates. Based on the results of a dam break analysis for Pond A (Golder, 2016a), the area which would potentially be affected by a failure (i.e., the potential inundation area) is shown on Figure 2. Based on the results from the dam break analysis for Bottom Ash Ponds 1-2 (Golder, 2016b), the areas which would potentially be affected by two failure scenarios (Ponds 1-2 North and Ponds 1-2 South) are shown on Figures 3 and 4.

3.0 Responsible Persons, Responsibilities, and Notification Procedures

In adherence with 40CFR§257.73(a)(3)(B), Figures 5a and 5b outlines the approach to responding to a CCR unit safety emergency. Figure 5a details the notification procedures during normal working hours, and Figure 5b presents the notification procedures for non-working hours (i.e., after hours, weekends, and holidays). Responsible persons, their responsibilities, and the notification order are summarized on Figures 5a and 5b 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), Figures 5a and 5b also show emergency responders, including their contact information, who will be contacted in the event of a safety emergency.

4.0 Annual Exercise Meeting

An annual meeting will be coordinated by site Environmental & Technical Support department personnel and will include CEC representatives and local emergency responders. The CEC representatives and emergency responders included on Figures 5a and 5b 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 §257.105(f)(6).

6.0 References

AECOM, 2009. Potential Failure Mode Analysis (PFMA) Report for J. H. Campbell Generating Facility. AECOM Project No. 60100985. November 24, 2009.

Consumers Energy Company, 2015. General Administrative Procedures G-A-601 Coal Combustion Residuals Periodic Inspections, Revision 1.0. Approval Date: October 5, 2015. Implementation Date: October 19, 2015.

Consumers Energy Company, 2010. Coal Ash Landfill Site Specific Surveillance and Monitoring Plan for JH Campbell Facility. November, 2010.

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

Golder Associates, Inc., 2016a. Pond A Hazard Potential Classification Assessment Report for J. H. Campbell Generating Facility. Golder Project No. 1654923. October 14, 2016.

Golder Associates, Inc., 2016b. Bottom Ash Pond 1-2 Hazard Potential Classification Assessment Report for J. H. Campbell Generating Facility. Golder Project No. 1654923. October 14, 2016.

Figures

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Lake
Michigan

Margaret Ave

Olive Shore Ave

Lakeshore Dr

Croswell St

Hiawatha Dr

Bottom Ash
Pond 1-2N

Bottom Ash
Pond 1-2S

"High-high"
Emergency
Overflow

Pond A
(active)

Pond A
Outlet

Pigeon Lake

Pigeon River

Aerial Source: 2014 USDA NAIP



0 400 800
Feet

SITE PLAN
JH Campbell Facility
Consumers Energy Company

FIGURE 1



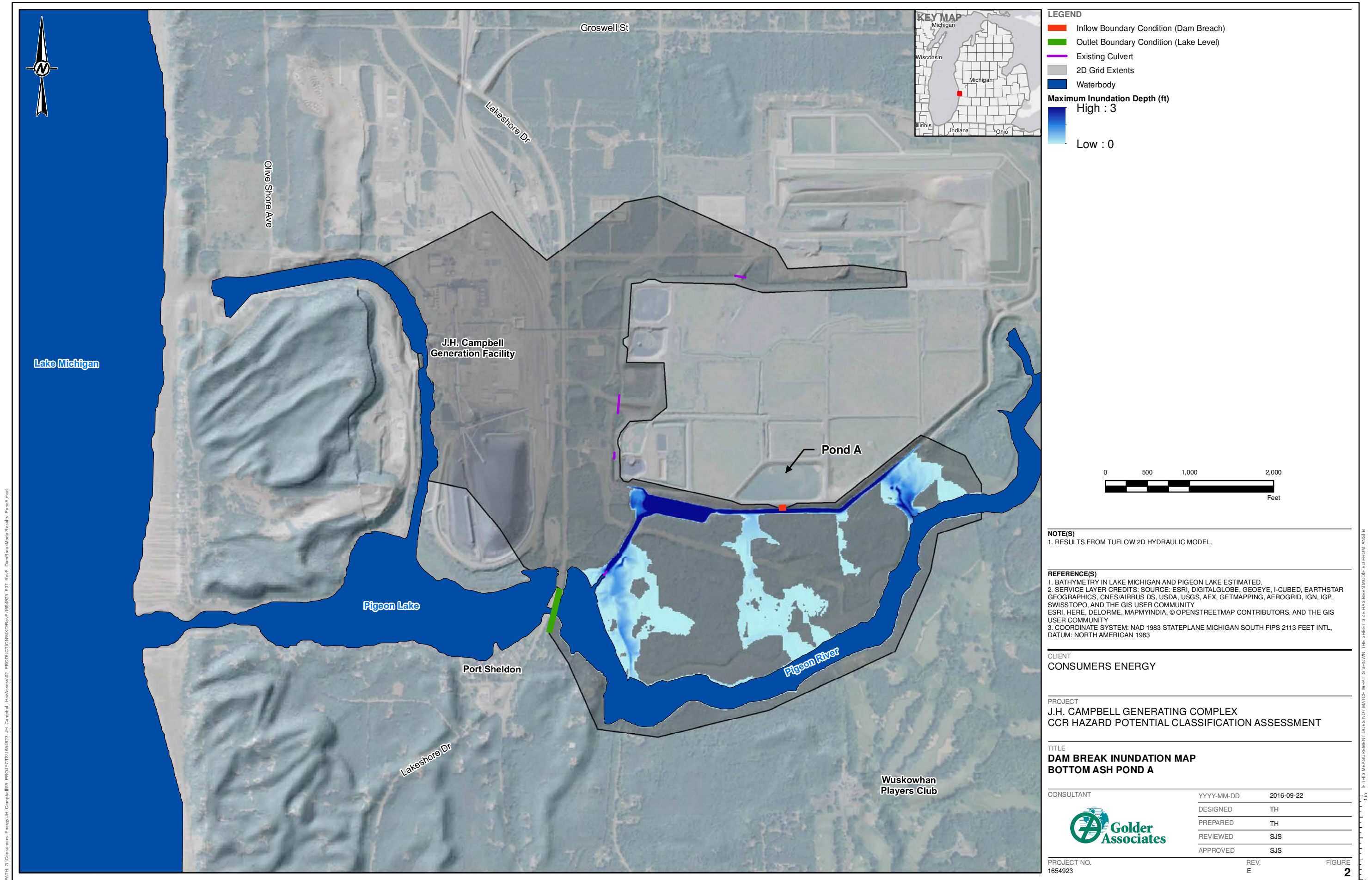
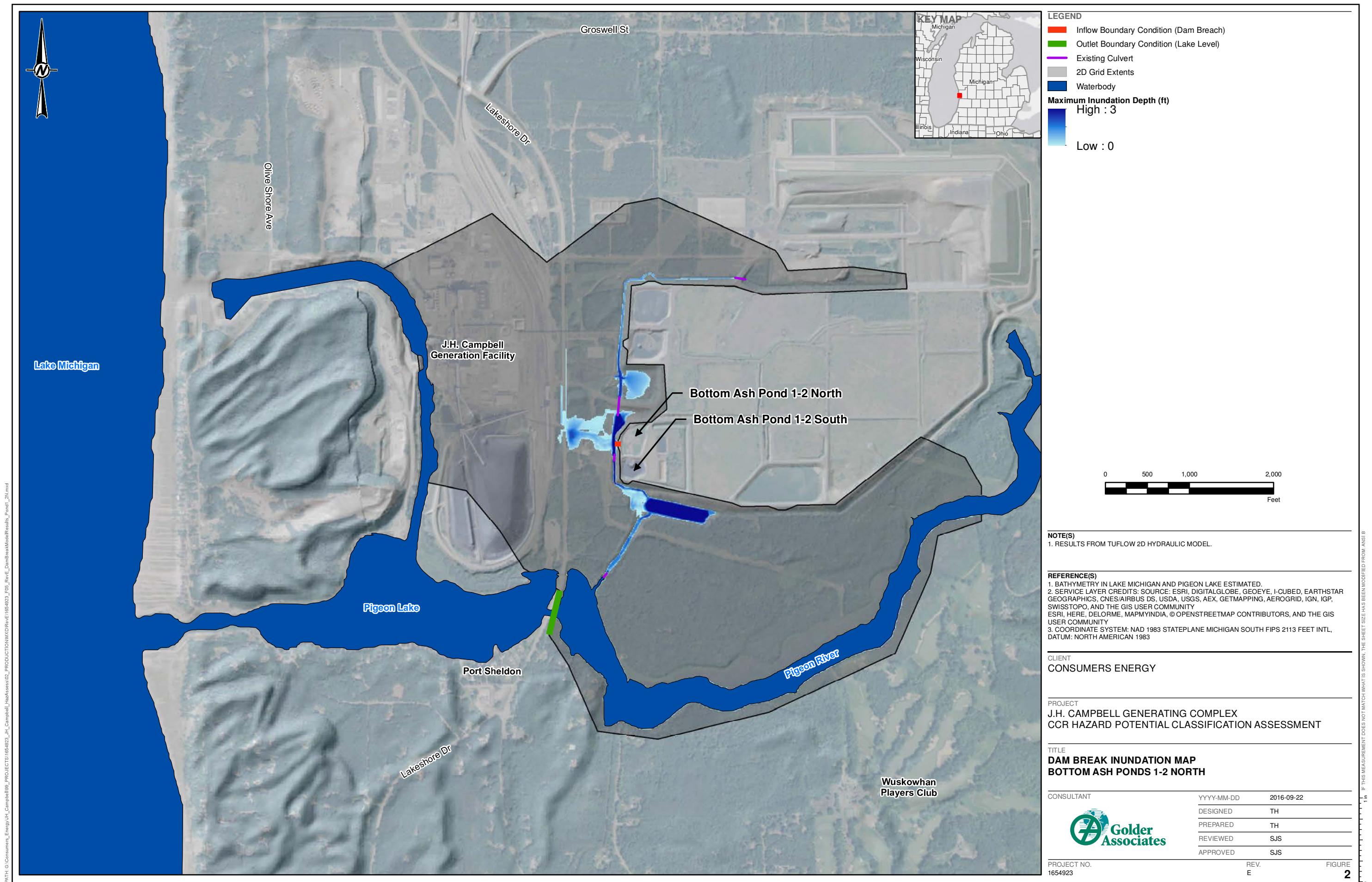


FIGURE 2



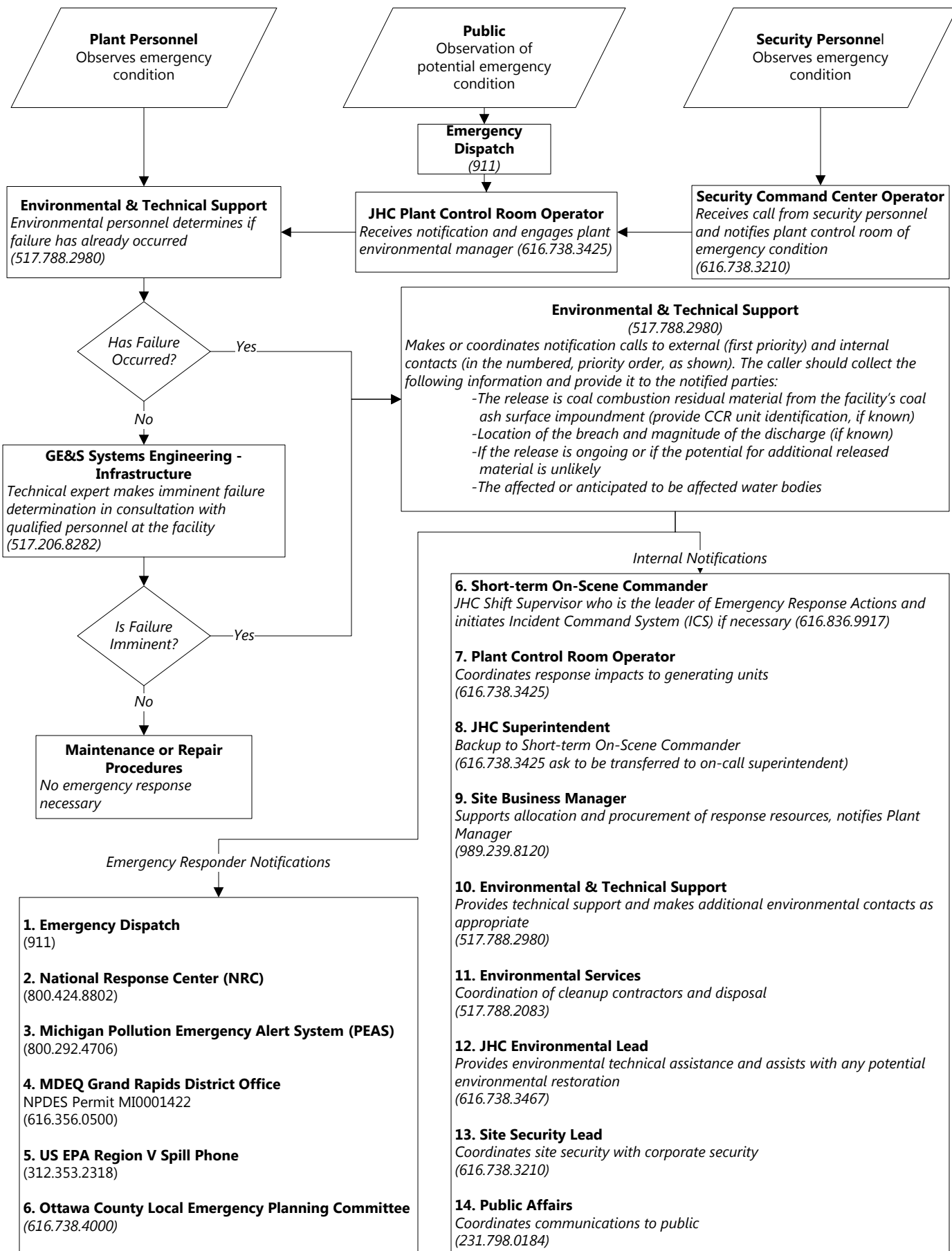


Figure 5a

NON-WORKING HOURS

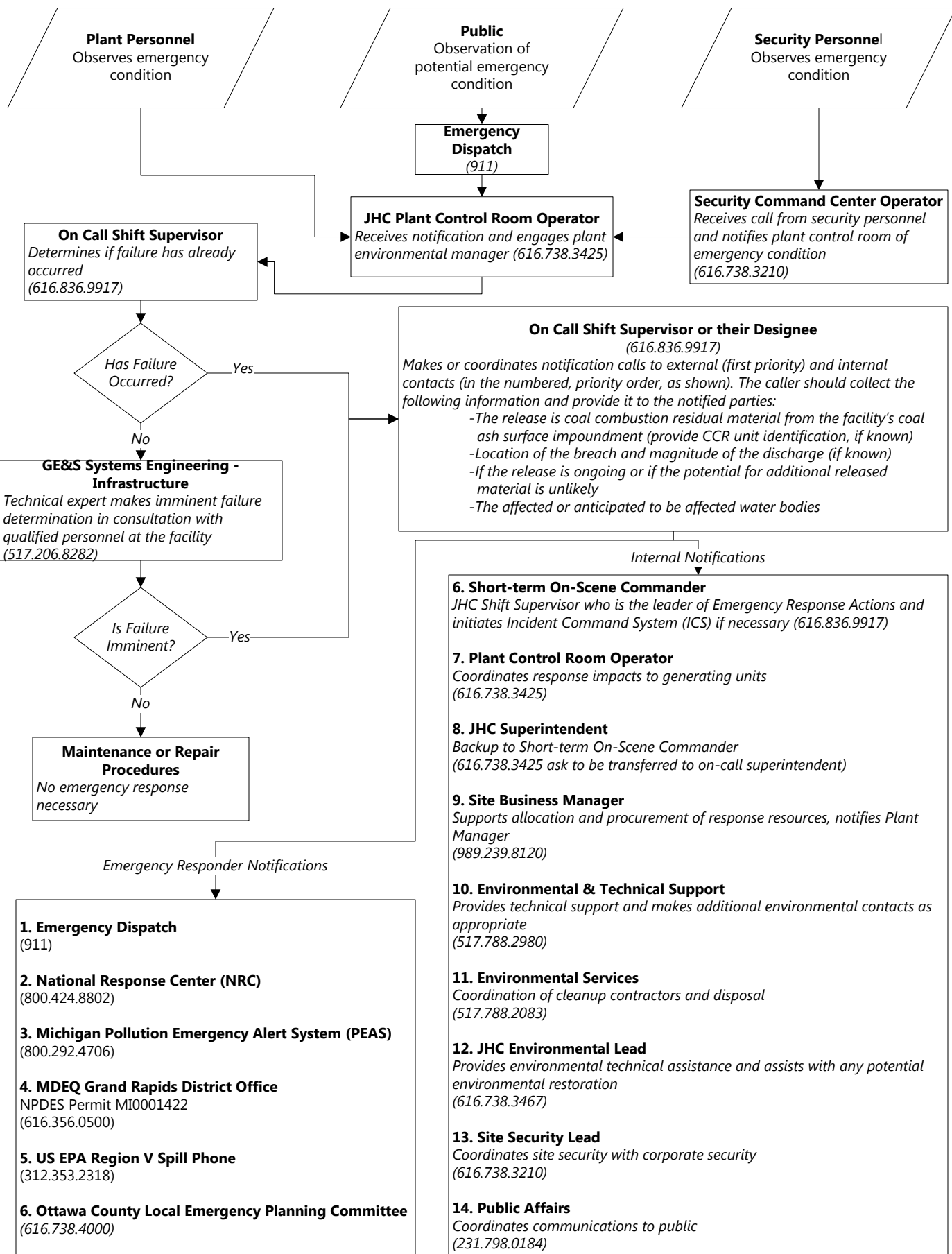


Figure 5b

EMERGENCY ACTION PLAN NOTIFICATION PROCEDURE
NON-WORKING PERIODS
Pond A and Ponds 1-2
J. H. Campbell Facility
West Olive, MI