Consumers Energy

A CMS Energy Company

Environmental Services

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Mr. Stephen Hoffman
U.S. Environmental Protection Agency
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Arlington, Virginia 22202-2733

DAM SAFETY ASSESSMENT OF CCW IMPOUNDMENTS J.R. WHITING PLANT, ERIE, MICHIGAN ; CONSUMERS ENERGY RESPONSE TO RECOMMENDATIONS

Dear Mr. Hoffman:

Consumers Energy received and has reviewed the final report for the JR Whiting dam safety assessment that resulted from the site assessment of the coal ash disposal facilities conducted by US EPA and its engineering contractor O'Brien & Gere on September 23, 2010. Consumers Energy supports the EPA's objective to ensure safe disposal of coal combustion residuals. We have a comprehensive monitoring, maintenance, and inspection program in place for all of our coal ash disposal facilities and remain committed to operating and maintaining these facilities safely.

The coal ash management units at the JR Whiting Plant are organized in three distinct disposal areas; Ponds 1&2, Ponds 3, 4, and 5, and Pond 6. These coal ash disposal facilities are currently licensed as Type III surface impoundments under the regulatory authority of the Michigan Department of Environmental Quality, Resource Management Division (MDEQ-RMD). The Department is regularly engaged in the ash management activities at the land disposal facility and makes compliance inspection visits at least once per quarter.

EPA's engineering contractor, O'Brien & Gere provided a "Significant Hazard Potential" classification for Ponds 1&2 and Pond 6 based on EPA's criteria. As noted in the final report, this rating is not an indication of the structural integrity of the impoundment but a hazard potential in the event that the impoundment were to fail. The "Significant Hazard Potential" is applied where results due to a dike failure results in no probably loss of human life but can cause significant economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.

Consumers Energy responded to the CERCLA 104(e) Request for Information Question #1 that Pond #6 had been identified on the National Inventory of Dams and listed as a low (L) downstream hazard. At the time of the response none of the other Ponds had hazard potential evaluations. Consumers Energy also responded to CERCLA 104(e) Request for Information Question #6 that proposals to four (4) qualified engineering firms had requested to perform an independent assessment of the structural integrity of the ash impoundments with results completed by the fourth quarter of 2009. These results culminated in the Potential Failure Modes Analysis (PFMA) Report and Dike Structural Integrity Report provided to O'Brien and Gere at the time of the site assessment. Third party consultant AECOM provided a "Low Hazard Potential" classification for Ponds 1&2 and Pond 6 following FERC guidelines that provides differentiation in classification based on potential for loss of human life and impacts to

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economic, environmental, and lifeline facilities should an uncontrolled failure occur. This highlights a difference between the approach of O'Brien & Gere utilizing an EPA-based criteria and the AECOM PFMA approach utilizing FERC guidelines that ultimately resulted in a different professional opinion in regards to the hazard classification.

In terms of the complete O'Brien & Gere assessment, Ponds 3, 4, and 5 were not rated due to lack of hydraulic function at the time of inspection in agreement with conclusions from the PFMA Report and dike structural inspection completed by AECOM. Consumers Energy remains committed to meeting all state and federal requirements and to managing all of its coal combustion byproducts disposal facilities in a very safe and responsible manner.

We are confident, based on our ongoing monitoring, maintenance and inspections, that the disposal facilities have the structural integrity necessary to protect the public and the environment. EPA's report supports this conclusion and found that acceptable performance is expected for all disposal facilities in accordance with the applicable safety regulatory criteria. However, O'Brien & Gere made several recommendations to address studies, operations and maintenance, and repairs that would provide further assurance of continued structural integrity. Consumers Energy responds to each of these recommendations as follows:

6.2 REPAIRS/LONG TERM IMPROVEMENT

The following items should be considered for improvement of the stability and/or operation of the impoundments:

Ponds 1 & 2

The inboard slopes should have trees removed, heavy vegetation (phragmites) regularly trimmed, and rodent burrows filled.

Trees and heavy vegetation have been removed along the inboard slopes since the time of the site assessment on September 23, 2010. Additionally, Consumers Energy formalized a Surveillance Monitoring Program dated December 2010 that provides procedures to address vegetation management and animal burrow repairs. Weekly inspections under the enhanced surveillance monitoring plan are conducted by environmental technicians and reviewed by the JR Whiting Environmental Lead. These weekly inspections are intended to provide early identification of potential structural integrity issues with the perimeter embankment dikes, including identifying rodent burrows.

The outboard slopes should have heavy vegetation (phragmites, shrubs) and mature trees removed to facilitate future inspection. Upon completion of removal activities, any irregularities in the slope surfaces should be repaired and appropriate vegetation or rip rap armoring should be implemented as needed to protect the embankments.

Consumers Energy developed a Surveillance Monitoring Program dated December 2010 that includes procedures to evaluate and remove heavy vegetation and mature trees from the outboard slopes and procedures and job aids for slope repairs. A dike structural inspection will be performed by a third party qualified engineer in 2012. At that time, the vegetation and condition of this outboard slope will be evaluated and recommendations for long term management will be developed. These recommendations will be balanced with the benefits provided by the vegetation including preservation of a wildlife management area and stabilization of the exterior slope along Lake Erie. Consumers Energy will submit the results of the dike structural stability inspection to the MDEQ-RMD Lansing District Office upon completion.

Since stability calculations have not been performed for Ponds 1 & 2, the facility should consider stability analyses to demonstrate compliance with prevailing dam safety criteria for normal pool with steady state seepage, maximum surcharge pool, and seismic loading conditions.

Consumers Energy has commissioned NTH Consultants, Ltd to evaluate the slope stability condition for Ponds 1&2 under the short-term and long-term pool conditions and seismic loading conditions. This report is being finalized and will be submitted to the MDEQ-RMD Lansing District Office by December 31, 2011.

A SDF analysis should also be considered to demonstrate that the embankments will not be overtopped during a PMF-level storm event.

Ponds 1&2 have pool surface area of approximately 7.8 acres and 7.1 acres, respectively and are hydraulically isolated basins within the plant area. While these units receive co-disposed liquid wastes regulated under the NPDES permit (MI0001864), the only potential for overtopping from any storm event is due to direct precipitation and not influenced by flood routing within a regional watershed basin. These units have been in service since 1952 and have never had issues with overtopping under any operating conditions. Due to the limited surface area available to receive direct precipitation and minimum freeboard maintained in each of these ponds, Consumers Energy does not believe a formal SDF analysis is need for these units.

Pond 6

Rodent burrows, minor erosion and scarping should be repaired around the perimeter of the impoundment

Consumers Energy completed a Surveillance Monitoring Program that includes procedures and job aids to address repairs due to erosion or scarping as well as damage from animal burrows. Weekly inspections under the enhanced surveillance monitoring plan are conducted by environmental technicians and reviewed by the JR Whiting Environmental Lead. These weekly inspections are intended to provide early identification of potential structural integrity issues with the perimeter embankment dikes, including identifying rodent burrows. Consumers Energy is currently completing the 2011 contract program of trapping rodents and repairing animal burrows and minor erosional features. This contract work including repairs identified by O'Brien & Gere will be completed by December 31, 2011.

The area with evidence of standing water on the southern portion of the west embankment should be monitored. The area should be re-graded to establish positive drainage if standing water and/or poor drainage continues.

Consumers Energy developed a Surveillance Monitoring Program in December 2010 that maintains a weekly inspection of structural area. This area of concern will be added to the weekly inspection program and corrective actions will be taken if deemed necessary.

The facility should consider performing slope stability analyses for the Pond 6 embankments with its current configuration to demonstrate compliance with prevailing dam safety criteria for normal pool with steady state seepage, maximum surcharge pool, and seismic loading conditions.

Stability analysis for Pond 6 was conducted as part of an MDEQ-approved engineering plan and final cover system report dated March 24, 2009. Consumers Energy is completing a supplemental evaluation to look at two (2) cross sections of unbuttressed perimeter embankment dike to complete the stability analyses in accordance with recommendations from the AECOM PFMA Report (2009). The results will be submitted to the MDEQ-RMD Lansing District Office by December 31, 2011.

The facility should consider evaluating the installation of emergency drawdown facilities, if the current operating procedures and the 3" outlet pipe are not adequate for reliable drawdown of the pond, or if the pipe has insufficient capacity. A SDF analysis would likely demonstrate that the embankments will not be overtopped during a PMF-level storm event and aid in the evaluation of spillway design if found necessary.

Pond 6 has a pool surface area of approximately 32.1 acres and is a hydraulically isolated basin within the plant area. While a pool elevation between 592.6 feet to 596.5 feet (IGLD 85) is manually controlled to prevent fugitive dust emissions, the only potential for overtopping from any storm event is due to direct precipitation and not influenced by flood routing within a regional watershed basin. This pond was constructed in 1979 and has never had issues with overtopping. Due to the limited surface area of the disposal area and the expected initiation for placement of the approved final cover set to begin in 2013 and dewatering (pool elevation lowering) of the structure prior to final cover placement, Consumers Energy does not believe that a formal SDF analysis is needed for this disposal facility.

6.3 MONITORING AND FUTURE INSPECTION

General

A formal dam safety inspection program should be implemented for the active impoundments. An appropriate inspection program might consist of the following:

Monthly impoundment inspection by facility personnel noting basic conditions such as pond levels, inlet and outlet conditions, erosion, rodent burrows, seepage, etc.

Consumers Energy completed a Surveillance Monitoring Program dated December 2010 that provides procedures to address repairs due to erosion or scarping as well as damage from animal burrows. Weekly inspections under the enhanced surveillance monitoring plan are conducted by environmental technicians and reviewed by the JR Whiting Environmental Lead. These weekly inspections are intended to provide early identification of potential structural integrity issues with the perimeter embankment dikes, including identifying rodent burrows.

Annual detailed assessment by a third party professional engineer or corporate engineering staff.

Consumers Energy completed a Surveillance Monitoring Program dated December 2010 that includes third party inspections by a qualified engineer once every three years. Based on the current timetable, a dike structural inspection is scheduled to be performed by a third party qualified engineer in 2012.

Ponds 3, 4 & 5

As previously noted in Section 5 of the final report, the future monitoring and inspection for this area should proceed in accordance with MDNRE Part 115 Rules. Additional future inspection of this unit from a dam safety perspective will not likely provide additional value to the operation of the area, since it is no longer hydraulically operational.

Consumers Energy agrees with O'Brien & Gere's recommendation. An enhanced inspection schedule for this disposal area is included in the December 2010 Surveillance Monitoring Program for perimeter embankments of this disposal area.

Pond 6

According to records, the former surveying program ended in the mid-1990's, around the time that the buttress was installed along the majority of the impoundment. There have been no observations of settlement, slope deformations or seepage since then. However, given the chronology of failures, settlement and numerous modifications to the Pond 6 embankments outlined in Table 3.1 of the final report, a detailed quarterly or semi-annual inspection program performed by a professional engineer or corporate engineering staff is recommended.

Based on the "Significant Hazard Potential" classification assigned by O'Brien & Gere, typical inspection timetables for qualified engineers are recommended at least once every four (4) years based on the Michigan Dam Safety Act. Consumers Energy completed a Surveillance Monitoring Program dated December 2010 that includes third party inspections by a qualified engineer once every three years. Based on the current timetable, a dike structural inspection is scheduled to be performed by a third party qualified engineer in 2012. Consumers Energy will submit the results of the dike structural stability inspection to the MDEQ-RMD Lansing District Office upon completion.

6.4 TIME FRAME FOR COMPLETION OF REPAIRS/IMPROVEMENTS

Ponds 1 & 2

The tree and heavy vegetation removal from the inboard slopes and any minor erosion and rodent burrows repairs should be completed within one year of this inspection.

Consumers Energy has completed the removal of tree and heavy vegetation from the inboard slopes and expects to complete the annual contract for rodent trapping and erosion and burrow repairs, including repairs identified by O'Brien & Gere by December 31, 2011. The need for future repairs and/or vegetation removal will be monitored through the Surveillance Monitoring Program dated December 2010.

For the outboard slopes, a systematic sequence of vegetation removal should be implemented within three years of this inspection as follows:
1) Heavy vegetation (phragmites, shrubs) should be removed first, making the true condition of the embankment slopes more visible.
2) As heavy vegetation is removed, appropriate surface repair should be completed where practical (slope regarding, proper vegetative cover reestablished and/or rip rap added).
3) A systematic tree removal program should then be planned and executed, by which a certain percentage of trees and stumps are removed per year or are removed associated to the perceived risk they present to embankment stability.
4) Upon removal of trees and stumps according to the established program, areas disturbed by tree removal should be repaired as described in #2 above.

Consumers Energy commissioned AECOM to evaluate each of the coal ash management units at the JR Whiting Plant culminating in the PFMA and dike structural inspection reports (2009). One of AECOM's recommendations was to develop a vegetation maintenance plan that balances the need to improve visibility of downstream slopes for inspection purposes with the benefits of maintaining a wildlife management area and structural stability. Consumers currently has a dike structural inspection

scheduled for 2012 with a third party qualified engineer and will solicit recommendations for how to manage the vegetation to improve the inspectability of the structure as part of the evaluation. The results of this inspection will be provided to MDEQ-RMD Lansing District Office upon completion of the report.

Pond 6

Repair of the rodent burrows, minor erosion and scarping observed around the impoundment should be completed within one year of this inspection.

Consumers Energy expects to complete the annual contract for rodent trapping and erosion and burrow repairs, including repairs identified by O'Brien & Gere by December 31, 2011. The need for future repairs and/or vegetation removal will be monitored through the Surveillance Monitoring Program dated December 2010.

Please feel free to contact me with any questions regarding the above responses.

Sincerely,

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