DTE Energy St. Clair Power Plant

Unit 6 Scrubber Basins

CCR Rule Compliance Project

Annual Inspection Report - 2017

Project Number: 60546402

June 30, 2017

Prepared by:

AECOM

27777 Franklin Road, Suite 2000
Southfield, MI 48034
Tel: 248-204-5900
Fax: 248-204-5901

http://www.aecom.com/

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1. Introduction

1.1 Introduction

The 2017 Annual Inspection Report (AIR) was prepared by AECOM for the DTE Electric Company (DTE) to summarize the results of the annual inspection of the St. Clair Power Plant Unit 6 Scrubber Basins (Scrubber Basins). This annual inspection complies with the United States Environmental Protection Agency Coal Combustion Residual Rule (40 CFR 257.73). Under the CCR Rule, the Scrubber Basins is an "existing surface impoundment" and must be inspected by a qualified professional engineer on a periodic basis, not to exceed one year.

1.2 Background Information

The St. Clair Power Plant is located in East China Township, St. Clair County, Michigan on the west bank of the St. Clair River. The plant was initially built in 1953. Unit 6 Scrubber basins were built in 1973 to handle FGD scrubber material generated as the scrubber cleaned the gases passing through the smokestacks. Filling of the basins ceased in the mid-1970's.

1.3 Personnel

The annual inspection was performed by Mr. Scott G. Hutsell, P.E., with assistance from DTE personnel. Weekly inspections have been and continue to be performed by DTE's plant personnel.

2. Annual Inspection Results

2.1 2017 Inspections

DTE performed the following visual inspections in 2017:

- The annual inspection on June 28, 2017 (provided in Appendix A
- Weekly inspections during 2017

The annual and weekly inspections included the embankment crest, exterior slopes of the embankment, discharge structures, and discrete observations of the interior of the basins based on accessibility. In addition to the annual and weekly inspections, the general condition of the site and embankment was visually inspected by DTE on a daily basis.

In general, no sign of vegetative distress or structural issues were observed during the annual inspection on the embankment crest, exterior slopes of the embankment and discharge structure. These structures appeared to be in good condition. Areas of concern are listed below; these conditions do not represent an immediate concern for the safe operation or stability of the Scrubber Basins.

- The Scrubber Basins are heavily vegetated and a thorough inspection of the entire surface area of the impoundment is not practical; DTE will be removing the overgrowth from the Scrubber Basins in late July and weekly inspections after that time should focus on areas that are more accessible

3. Maintenance Activities in 2017

3.1 Maintenance Activities

DTE has been pumping down the accumulated surface water in the pond since late May 2017 in preparation for closure of the ponds beginning in September 2017. The current water level is less than 6 inches of water in the eastern basin and between 6 to 12 inches of water in the western basin. Standing water is only present in the southern third of each basin.

4. Conclusion and Certification

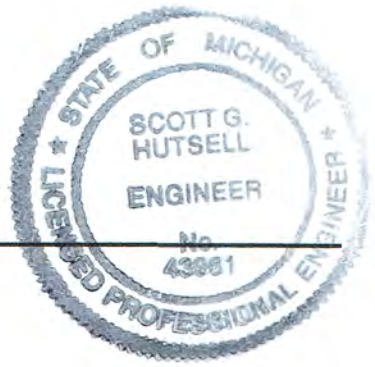
4.1 Conclusion

The annual inspection did not identify and evidence of structural weakness or instability in the Unit 6 Scrubber Basins at DTE's St. Clair Power Plant.

Based on the annual inspection results and review of available data (including design documents and weekly inspection documentation) the Scrubber Basins were designed and constructed with generally accepted good engineering standards. Additionally, the Scrubber Basins are operated and maintained using generally accepted good engineering practice.

4.2 Certification

Certified by:



Scott G. Hutsell, P.E. Michigan License #43961

Senior Project Manager

AECOM

Appendix A

CCR Impoundment Inspection Report

Station/Owner	**County,**	**State**
St. Clair Unit 6 Scrubber Basins / DTE Energy	St. Clair	Michigan

Inspected By	**Date**	**Phone No.**
Scott G. Hutsell, P.E.	07/01/2017	517-505-1301

Type of Impoundment: ☐ Concrete Gravity ☒ Embankment ☐ Concrete Arch ☐ Stone Masonry ☐ Concrete Buttress ☐ Other	**Type of Inspection** ☒ Initial ☐ Periodic ☐ Follow up ☐ Other	**Weather** ☐ Wet ☒ Dry ☐ Snow Cover ☐ Other

Hazard Description	**Condition Assessment**
The Unit 6 Scrubber Basins have not been used for active disposal of CCR materials in decades; the current impoundment is in good condition and holds surface water runoff.	☒ Satisfactory ☐ Unsatisfactory ☐ Poor ☐ Not rated ☐ Fair

Remarks	**Actions**	**Recommendations**
DTE has been pumping the basins down since late May in preparation of closure activities later this summer.	☐ None ☐ Maintenance ☒ Monitoring ☐ Minor Repair ☐ Engineering	☒ Inspection letter ☐ ☐ Deficiency letter ☐ ☐ EOR notice ☐ ☐ Engineering study ☐ Periodic reinspection ☐ Inspection by EOR

Pool Level (ft)	**Total Precipitation since last inspection**
Approximately 1 ft of water is standing in the basin	n/a

UPSTREAM SLOPE/FACE

Problems				**COVER:**
☐ 1. None ☒ 2. Vegetation >2" dia. ☒ 3. Veg. height >6" ☒ 4. High bushes ☒ 5. Animal Burrows ☐ 6. Livestock damage	☐ 7. Wave Erosion ☐ 8. Slides ☐ 9. Depressions ☐ 10. Bulges ☐ 11. Cracks ☐ 12. Spalling	☐ 13. Scarps ☐ 14. Sloughing ☐ 15. Holes ☐ 16. Undermining ☐ 17. Displaced joints ☐ 18. Deteriorated joints	☐ 19. Exposed reinforcement ☐ 20. Veg. or sediment in rip rap ☐ 21. Displaced rip rap ☐ 22. Sparse rip rap ☐ 23. Other Erosion ☐ 24. Other	☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other

Comments /Action Items

Exterior of Scrubber Basins are overgrown with vegetation; very difficult to walk around and inspection was limited to established paths and areas of lesser undergrowth. No cracks or structural issues were noticed during the inspection. In limited areas trees and bushes with trunks greater than 2" occur. Some holes from animal burrows were noticed. The Scrubber Basins are scheduled for closure by removal in late summer of 2017.

Actions ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

TOP OF DAM/CREST

PROBLEMS				**COVER:**
☐ 1. None ☒ 2. Vegetation >2" dia. ☒ 3. Veg. height >6" ☒ 4. High bushes ☒ 5. Animal Burrows ☐ 6. Livestock damage	☐ 7. Ruts ☐ 8. Depressions ☐ 9. Unlevel ☐ 10. Misalignment ☐ 11. Signs of overtopping	☐ 12. Cracks ☐ 13. Deteriorated joints ☐ 14. Displaced joints ☐ 15. Exposed reinforcement ☐ 16. Settlement	☐ 17. Scarps ☐ 18. Spalling ☐ 19. Sinkholes ☐ 20. Puddles ☐ 21. Other	☒ Vegetation ☒ Rip rap ☐ Concrete ☐ Asphalt ☐ Other

Comments /Action Items

Some areas of rip-rap from the original construction exist around the crest of the Scrubber Basins – these areas are generally in good repair although some limited vegetation is present. The remainder of the crest is overgrown with dense vegetation; this includes the separation berm.

Actions ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

CCR Impoundment Inspection Report

DOWNSTREAM SLOPE/FACE

PROBLEMS				COVER:
☐1. None ☒2. Vegetation >2" dia.\ ☒3. Veg. height >6" ☒4. High bushes ☐5. Poor grass cover ☒6. Animal Burrows ☐7. Livestock damage	☐8. Wetness ☐9. Seepage ☐10. Boils ☐11. Puddles ☐12. Erosion ☐13. Slope instability ☐14. Scarps	☐15. Sloughs/bulges ☐16. Depressions ☐17. Undercutting ☐18. Rutting/rills ☐19. Cracks ☐20. Scour ☐21. Spalling	☐22. Displaced joints ☐23. Deteriorated joints ☐24. Exposed reinforcement ☐25. Riprap needs attention ☒26. Veg. or sediment in rip rap ☐27. Other	☒Vegetation ☐Rip rap ☐Concrete ☐Asphalt ☐Other

28. Does standing water or seepage contain sediment?	☐Yes ☒No ☐NA
29. Is there natural hillside seepage in in embankment area?	☐Yes ☒No ☐NA

Describe seepage with regard to quantity and clarity (turbidity). Note changes:

None

Comments /Action Items

Some areas of rip-rap from the original construction exist on the interior slopes of the Scrubber Basins – these areas are generally in good repair although some limited vegetation is present.

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

TOE CONTACT

PROBLEMS				COVER:
☐1. None ☒2. Vegetation >2" dia. ☐3. Veg. height >6" ☒4. High bushes ☐5. Poor grass cover ☐6. Animal Burrows ☐7. Livestock damage	☐8. Wetness ☐9. Seepage ☐10. Boils ☐11. Puddles ☐12. Erosion ☐13. Slope instability ☐14. Scarps	☐15. Sloughs/bulges ☐16. Depressions ☐17. Undercutting ☐18. Rutting/rills ☐19. Cracks ☐20. Scour ☐21. Spalling	☐22. Displaced joints ☐23. Deteriorated joints ☐24. Exposed reinforcement ☐25. Riprap needs attention ☐26. Veg. or sediment in rip rap ☐27. Other	☒Vegetation ☐Rip rap ☐Concrete ☐Asphalt ☐Other

28. Does standing water or seepage contain sediment?	☐Yes ☒No ☐NA

Describe seepage with regard to quantity and clarity (turbidity). Note changes:

None

Comments /Action Items

Toe is inaccessible to direct inspection due to heavy vegetation. Portions of the toe of slope that are visible from the south bank and other slopes look to be in good condition.

Actions ☐None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

ABUTMENT CONTACTS

PROBLEMS				COVER:
☐1. None ☐2. Vegetation >2" dia. ☐3. Veg. height >6" ☐4. High bushes ☐5. Poor grass cover ☐6. Animal Burrows ☐7. Livestock damage	☐8. Wetness ☐9. Seepage ☐10. Boils ☐11. Puddles ☐12. Erosion ☐13. Slope instability ☐14. Scarps	☐15. Sloughs/bulges ☐16. Depressions ☐17. Undercutting ☐18. Rutting/rills ☐19. Cracks ☐20. Scour ☐21. Spalling	☐22. Displaced joints ☐23. Deteriorated joints ☐24. Exposed reinforcement ☐25. Riprap needs attention ☐26. Veg. or sediment in rip rap ☐27. Other	☐Vegetation ☐Rip rap ☐Concrete ☐Asphalt ☐Other

Comments /Action Items

Not applicable

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

CCR Impoundment Inspection Report

PRINCIPAL SPILLWAY

OBSERVATIONS

☒ No Spillway

Is spillway control system operating properly? ☐ **Yes** ☐ **No**

PROBLEMS				CHANNEL LINING
☐ 1. None ☐ 2. Trashguard ☐ 3. Debris ☐ 4. Obstructed ☐ 5. Plugged/Clogged ☐ 6. Gates Damaged ☐ 7. Gates leaking ☐ 8. Gates Rusted	☐ 9. Misalignment ☐ 10. Joints leaking ☐ 11. Joint deterioration ☐ 12. Joint displacement ☐ 13. Conduit collapsed ☐ 14. Exposed reinforcement ☐ 15. Erosion	☐ 16. Undermining ☐ 17. Voids ☐ 18. Cracks ☐ 19. Holes ☐ 20. Spalling ☐ 21. Slides ☐ 22. Outlet undercutting	☐ 23. Sloughing ☐ 24. Scarps ☐ 25. Deteriorated lining ☐ 26. Boils ☐ 27. Outlet erosion ☐ 28. Displaced rip rap ☐ 29. Sparse rip rap ☐ 30. Other	☐ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other

Comments /Action Items

Not Applicable

Actions ☐ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

EMERGENCY SPILLWAY

OBSERVATIONS

☒ No emergency spillway ☐ Same as primary spillway

PROBLEMS				CHANNEL LINING
☐ 1. None ☐ 2. Debris in channel ☐ 3. Gates ☐ 4. Misalignment	☐ 5. Joint deterioration ☐ 6. Joint displacement ☐ 7. Exposed reinforcement ☐ 8. Erosion	☐ 9. Undermining ☐ 10. Voids ☐ 11. Cracks ☐ 12. Holes ☐ 13. Outlet erosion	☐ 14. Displaced rip rap ☐ 15. Sparse rip rap ☐ 16. Outlet undercutting ☐ 17.Inadequate capacity ☐ 18. Other	☐ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other

Comments /Action Items

Not Applicable

Actions ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

DRAINS/OUTLET STRUCTURE

Observations

1.	Is discharge system operating properly?	☒ **Yes** ☐ **No** ☐ **N/A**
2.	Valves and operators in good condition?	☐ **Yes** ☐ **No** ☒ **N/A**
3.	Walkway in good condition?	☐ **Yes** ☐ **No** ☒ **N/A**
4.	Is there any turbidity observed at the outlet?	☐ **Yes** ☐ **No** ☒ **N/A**
5.	Seepage at pipe outlet	☐ **Yes** ☐ **No** ☒ **N/A**
6.	No Bottom Drain	☐ **Yes** ☐ **No** ☒ **N/A**
7.	Bottom Drain Operable	☐ **Yes** ☐ **No** ☒ **N/A**
8.	Subsurface Drain Dry	☐ **Yes** ☐ **No** ☒ **N/A**
9.	Subsurface drain muddy flow	☐ **Yes** ☐ **No** ☒ **N/A**
10.	Subsurface drain obstructed	☐ **Yes** ☐ **No** ☒ **N/A**
11.	Animal guard	☐ **Yes** ☐ **No** ☒ **N/A**
12.	other	☐ **Yes** ☐ **No** ☐ **N/A**

Comments /Action Items

DTE discharges from the basin on an as-needed basis; pumping has been going on in the basin since late May in preparation for closure activities later this summer.

Actions ☒ None ☐ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering

CCR Impoundment Inspection Report

RESERVIOR/POOL

OBSERVATION					
Has there been a sudden drop in the content level of the Impoundment					☐Yes ☒No
PROBLEMS					
☒1. None ☐2. Inadequate freeboard	☐3. Skimmer ☐4. Depressions	☐5. Whirlpools	☐6. Sinkholes	☐7. Unwanted growth in pond water	

Comments /Action Items

DTE discharges from the basin on an as-needed basis; pumping has been going on in the basin since late May in preparation for closure activities later this summer.

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

OTHER

OBSERVATIONS		
1.	leachate/stormwater (RCP; CMP) drain pipes that pass through or under an ash basin intact?	☐**Yes** ☐**No** ☒**N/A**
2.	Drainage/ diversion ditches/riprap-lined channels in good condition?	☐**Yes** ☐**No** ☒**N/A**
3.	Other steel structures/steel reinforcement in concrete structures in good condition?	☐**Yes** ☐**No** ☒**N/A**
4.	Other concrete structures in good condition?	☐**Yes** ☐**No** ☒**N/A**
5.	Overflow pipes and flap gates on filter dam/ drain pipe filter zone in good condition?	☐**Yes** ☐**No** ☒**N/A**
6.	Howell Bunger Valves in good condition?	☐**Yes** ☐**No** ☒**N/A**
7.	Weirs in good condition?	☐**Yes** ☐**No** ☒**N/A**
8.	Perimeter Fences and Gates in good condition?	☒**Yes** ☐**No** ☐**N/A**
9.	Security devices in good condition	☐**Yes** ☐**No** ☒**N/A**
10.	Signs in good condition	☐**Yes** ☐**No** ☒**N/A**
11.	Instrumentation in good condition	☐**Yes** ☐**No** ☒**N/A**
12.	Reference monuments/Survey Monuments in good condition	☐**Yes** ☐**No** ☒**N/A**
13.	other	☐**Yes** ☐**No** ☒**N/A**

Comments /Action Items

Fence surrounding the Scrubber Basins is old but generally in good repair – access to the scrubber basins are through gates on the north and south ends. The gates remain open a majority of the time.

Actions ☒None ☐Maintenance ☐Monitoring ☐Minor Repair ☐Engineering

Are there any other abnormal conditions at the Impoundment that could pose a risk to public health, safety or welfare; the environment or natural resources ☐Yes ☒No

Inspector Signature Scott G. Hutsell

Date: 07/01/17

Photo 1: West Basin, picture taken from coal conveyor, 06/09/17

Photo 2: Headwall and East Basin, 06/09/17

Photo 3: East Basin, view from south, 06/16/17

Photo 4: West basin, view from north, 04/20/17