# Annual CCR Surface Impoundment PE Inspection

Pond 004

New Madrid Power Plant

New Madrid, MO

Associated Electric Cooperative, Inc.

# Inspection

*Visual Inspection*

On January 11, 2019, a visual inspection of the surface impoundment was completed. The visual inspection included both a visual inspection of the CCR impoundment to identify signs of distress or malfunction and a visual inspection of the hydraulic structures for structural integrity. The following subsections and enclosed inspection report describe the conditions observed during the inspection.

*Changes in Geometry*

There have been no changes to the geometry of the impounding structure since the previous annual inspection.

*Instrumentation Readings*

Piezometers/monitoring wells are located along the crest of the dikes of Pond 004. The piezometers/groundwater monitoring wells were installed for purposes of monitoring groundwater and are not monitored for structural stability purposes. No readings were taken. No other instrumentation was identified as part of the inspection.

*Impounded Water Depth*

On the inspection date, the pond water elevation was recorded at 294.5 ft. This is equivalent to a depth of approximately 8.5 feet. Since the last inspection the maximum elevation was 294.5 feet and the minimum elevation was 294 feet.

*Storage Capacity*

The remaining storage capacity of the impoundment was approximated to be 25 acre-ft. As part of normal operation, ash collected in the pond is periodically disposed of in the Utility Waste Landfill and a very minimal amount of ash accumulates in the pond.

*Volumes*

The impounded water is approximated to be 27 acre-ft. The impounded CCR volume was approximated to be 33 acre-ft. As part of normal operation, ash collected in the pond is periodically disposed of in the Utility Waste Landfill and a very minimal amount of ash accumulates in the pond.

*Inspection for Structural Weaknesses*

The impoundment was visually inspected for any appearances of an actual or potential structural weakness of the CCR unit. The visual inspection did not indicate any deficiencies. Details of this inspection can be found in the enclosed inspection checklist.

## Certification

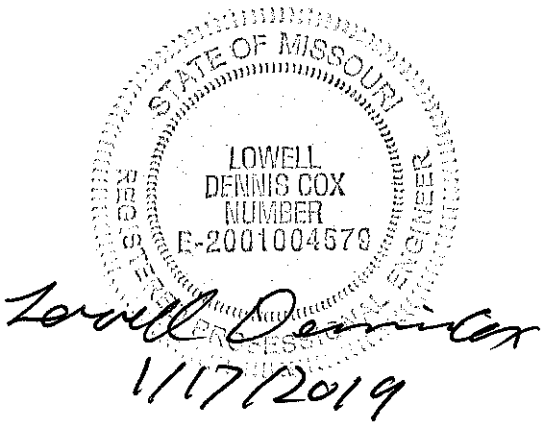
The assessment of the general condition of the surface impoundment is based upon available data and visual observation as required by 40 CFR 257.83 (b) – Inspection Requirements for CCR Surface Impoundments. In reviewing this report, it should be realized that the described condition of the surface impoundment is based on observations of field conditions at the time of inspection. Conditions of surface impoundments depend on numerous internal and external conditions, therefore it should be noted that the estimates and observations only represent the conditions at the time of inspection.

Signed: Lowell Dennis Cox

Print Name: Lowell Dennis Cox

Missouri License Number: 2001004579

Date: 1/17/2019




Lowell Dennis Cox

1/17/2019

# Dam/Impoundment Evaluation Summary Detail Sheet

| | | | |
|---|---|---|---|
| 1. NID ID: | N/A | 4. Inspection Date: | January 11, 2019 |
| 2. Dam Name: | Pond 004 | 5. Last Insp. Date: | January 19, 2018 |
| 3. Dam Location: | 41 St. Jude Park, Marston, MO | 6. Next Inspection: | |
| 7. Inspector: | Dennis Cox, P. E. | | |
| 8. Consultant: | N/A | | |
| 9. Hazard Code: | | 9a. Is Hazard Code Change Requested?: | |
| 10. Insp. Frequency: | #N/A | 11. Overall Physical Condition of Dam: | |
| 12. Spillway Capacity (% SDF) | | | |

| | | | |
|---|---|---|---|
| E1. Design Methodology: | 4 | E7. Low-Level Discharge Capacity: | 5 |
| E2. Level of Maintenance: | 4 | E8. Low-Level Outlet Physical Condition: | 5 |
| E3. Emergency Action Plan: | 5 | E9. Spillway Design Flood Capacity: | |
| E4. Embankment Seepage: | 5 | E10. Overall Physical Condition of the Dam: | 5 |
| E5. Embankment Condition: | 5 | E11. Estimated Repair Cost: | N/A |
| E6. Concrete Condition: | 5 | | |

## Evaluation Description

**E1: DESIGN METHODOLOGY**
1. Unknown Design – no design records available
2. No design or post-design analyses
3. No analyses, but dam features appear suitable
4. Design or post design analysis show dam meets most criteria
5. State of the art design – design records available & dam meets all criteria

**E2: LEVEL OF MAINTENANCE**
1. Dam in disrepair, no evidence of maintenance, no O&M manual
2. Dam in poor level of upkeep, very little maintenance, no O&M manual
3. Dam in fair level of upkeep, some maintenance and standard procedures
4. Adequate level of maintenance and standard procedures
5. Dam well maintained, detailed maintenance plan that is executed

**E3: EMERGENCY ACTION PLAN**
1. No plan or idea of what to do in the event of an emergency
2. Some idea but no written plan
3. No formal plan but well thought out
4. Available written plan that needs updating
5. Detailed, updated written plan available and filed with MADCR, annual training

**E4: SEEPAGE (Embankments, Foundations, & Abutments)**
1. Severe piping and/or seepage with no monitoring
2. Evidence of monitored piping and seepage
3. No piping but uncontrolled seepage
4 Minor seepage or high volumes of seepage with filtered collection
5. No seepage or minor seepage with filtered collection

**E5: EMBANKMENT CONDITION**
1. Severe erosion and/or large trees
2. Significant erosion or significant woody vegetation
3. Brush and exposed embankment soils, or moderate erosion
4. Unmaintained grass, rodent activity and maintainable erosion
5. Well maintained healthy uniform grass cover

**E6: CONCRETE CONDITION**
1. Major cracks, misalignment, discontinuities causing leaks, seepage or stability concerns
2. Cracks with misalignment inclusive of transverse cracks with no misalignment but with potential for significant structural degradation
3. Significant longitudinal cracking and minor transverse cracking
4. Spalling and minor surface cracking
5. No apparent deficiencies

**E7: LOW-LEVEL OUTLET DISCHARGE CAPACITY**
1. No low level outlet, no provisions (e.g. pumps, siphons) for emptying pond
2. No operable outlet, plans for emptying pond, but no equipment
3. Outlet with insufficient drawdown capacity, pumping equipment available
4. Operable gate with sufficient drawdown capacity
5. Operable gate with capacity greater than necessary

**E8: LOW-LEVEL OUTLET PHYSICAL CONDITION**
1. Outlet inoperative needs replacement, non-existent or inaccessible
2. Outlet inoperative needs repair
3. Outlet operable but needs repair
4. Outlet operable but needs maintenance
5. Outlet and operator operable and well maintained

**E9: SPILLWAY DESIGN FLOOD CAPACITY**
1. 0 - 50% of the SDF or unknown
2. 50-90% of the SDF
3. 90 - 100% of the SDF
4. >100% of the SDF with actions required by caretaker (e.g. open outlet)
5. >100% of the SDF with no actions required by caretaker

**E10: OVERALL PHYSICAL CONDITION OF DAM**
1. UNSAFE – Major structural, operational, and maintenance deficiencies exist under normal operating conditions
2. POOR - Significant structural, operation and maintenance deficiencies are clearly recognized under normal loading conditions
3. FAIR - Significant operational and maintenance deficiencies, no structural deficiencies. Potential deficiencies exist under unusual loading conditions that may realistically occur. Can be used when uncertainties exist as to critical parameters
4. SATISFACTORY - Minor operational and maintenance deficiencies. Infrequent hydrologic events would probably result in deficiencies.
5. GOOD - No existing or potential deficiencies recognized. Safe performance is expected under all loading including SDF

**E11: ESTIMATED REPAIR COST**
Estimation of the total cost to address all identified structural, operational, maintenance deficiencies. Cost shall be developed utilizing standard estimating guides and procedures

## Changes/Deviations to Database Information since Last Inspection

## IMPOUNDMENT/DAM DEFICIENCIES

| | |
|---|---|
| **Impoundment/Dam Name** | |
| **NID ID #** | |

| **Deficiency No.** | **Description** |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

# DAM SAFETY INSPECTION CHECKLIST

| | | | |
|---|---|---|---|
| NAME OF DAM: | Slag Dewatering Pond (004 Pond) Dam | STATE ID #: | MO-0001171 |
| REGISTERED: (YES/NO) | No | NID ID #: | N/A |
| STATE SIZE CLASSIFICATION: | Small | STATE HAZARD CLASSIFICATION: | TBD |
| | | CHANGE IN HAZARD CLASSIFICATION REQUESTED?: (YES/NO) | No |

*DAM LOCATION INFORMATION*

| | | | |
|---|---|---|---|
| CITY/TOWN: | New Madrid | COUNTY/STATE: | *New Madrid/Missouri* |
| DAM LOCATION: (street address if known) | 41 St. Jude Park, Marston, MO | ALTERNATE DAM NAME: | N/A |
| USGS QUAD.: | New Madrid, MO-KY | LAT.: | 36° 30.9' N |
| | | LONG.: | 89° 33.6' W |
| DRAINAGE BASIN: | N/A | RIVER: | Mississippi River |
| IMPOUNDMENT NAME(S): | Slag Dewatering Pond (004 Pond) Dam | | |

*GENERAL DAM INFORMATION*

| | | | |
|---|---|---|---|
| TYPE OF DAM: | Earthen Incised and Bermed | OVERALL LENGTH (FT): | 3000 |
| PURPOSE OF DAM: | Sedimentation and Storage Basin | NORMAL POOL STORAGE (ACRE-FT): | |
| YEAR BUILT: | 1972 | MAXIMUM POOL STORAGE (ACRE-FT): | 14 |
| STRUCTURAL HEIGHT (FT): | 20 | EL. NORMAL POOL (FT): | 294.0 |
| HYDRAULIC HEIGHT (FT): | 6 | EL. MAXIMUM POOL (FT): | 300.0 (minimum crest elevation) |
| RESERVOIR SURFACE AREA (ACRES): | 10 | WINTER DRAWDOWN (FT BELOW NORMAL POOL) | 0.0 |
| PUBLIC ROAD ON CREST: | No | DRAWDOWN VOL. (AC-FT) | 0.0 |
| PUBLIC BRIDGE OVER SPILLWAY: | No | | |

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

*INSPECTION SUMMARY*

DATE OF INSPECTION: January 11, 2019 DATE OF PREVIOUS INSPECTION: January 19, 2018

TEMPERATURE/WEATHER: Cloudy, 32 degrees ARMY CORPS PHASE I: (YES/NO) If YES, date

CONSULTANT: N/A PREVIOUS ALT. PHASE I: (YES/NO) If YES, date

BENCHMARK/DATUM: NAVD88

OVERALL PHYSICAL CONDITION OF DAM: DATE OF LAST REHABILITATION: N/A

SPILLWAY CAPACITY:

EL. POOL DURING INSP.: 294.6 EL. TAILWATER DURING INSP.: 294.6

*PERSONS PRESENT AT INSPECTION*

| NAME | TITLE/POSITION | REPRESENTING |
|---|---|---|
| Dennis Cox | Senior Plant Engineer | AECI |
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|---|---|---|---|
| NAME OF DAM: | Slag Dewatering Pond (004 Pond) Dam | STATE ID #: | MO-0001171 |
| INSPECTION DATE: | January 11, 2019 | NID ID #: | N/A |

| | | | | | |
|---|---|---|---|---|---|
| OWNER: | ORGANIZATION | Associated Electric Cooperative, I | CARETAKER: | ORGANIZATION | Associated Electric Cooperative, Inc. |
| | NAME/TITLE | Dennis Cox - Senior Plant Eng. | | NAME/TITLE | Dennis Cox - Senior Plant Eng. |
| | STREET | P.O. Box 156 | | STREET | P.O. Box 156 |
| | TOWN, STATE, ZIP | New Madrid, MO 63869 | | TOWN, STATE, ZIP | New Madrid, MO 63869 |
| | PHONE | | | PHONE | |
| | EMERGENCY PH. # | | | EMERGENCY PH. # | |
| | FAX | | | FAX | |
| | EMAIL | | | EMAIL | |
| | OWNER TYPE | Private | | | |

| | | | |
|---|---|---|---|
| PRIMARY SPILLWAY TYPE | Decant Structure | | |
| SPILLWAY LENGTH (FT) | N/A | SPILLWAY CAPACITY (CFS) | N/A |
| AUXILIARY SPILLWAY TYPE | N/A | AUX. SPILLWAY CAPACITY (CFS) | N/A |
| NUMBER OF OUTLETS | One | OUTLET(S) CAPACITY (CFS) | Unknown |
| TYPE OF OUTLETS | One Decant | TOTAL DISCHARGE CAPACITY (CFS) | Unknown |
| DRAINAGE AREA (SQ MI) | 0.02 | SPILLWAY DESIGN FLOOD (PERIOD/CFS) | Unknown |
| HAS DAM BEEN BREACHED OR OVERTOPPED? (YES/NO): | No | IF YES, PROVIDE DATE(S) | |
| FISH LADDER (LIST TYPE IF PRESENT) | Unknown | | |
| DOES CREST SUPPORT PUBLIC ROAD? (YES/NO) | No | IF YES, ROAD NAME: | |
| PUBLIC BRIDGE WITHIN 50' OF DAM? (YES/NO): | No | IF YES, ROAD/BRIDGE NAME: | |
| | | MHD BRIDGE NO. (IF APPLICABLE) | |

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## EMBANKMENT (CREST)

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| CREST | 1. SURFACE TYPE | Gravel access road, western crest was paved levee road | X | | |
| | 2. SURFACE CRACKING | None observed | X | | |
| | 3. SINKHOLES, ANIMAL BURROWS | None observed | X | | |
| | 4. VERTICAL ALIGNMENT (DEPRESSIONS | None observed | X | | |
| | 5. HORIZONTAL ALIGNMENT | None observed | X | | |
| | 6. RUTS AND/OR PUDDLES | None observed | X | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | Regularly mowed grass | X | | |
| | 8. ABUTMENT CONTACT | None observed | X | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## EMBANKMENT (D/S SLOPE)

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| D/S SLOPE | 1. WET AREAS (NO FLOW) | None observed | X | | |
| | 2. SEEPAGE | None observed | X | | |
| | 3. SLIDE, SLOUGH, SCARP | None observed | X | | |
| | 4. EMB.-ABUTMENT CONTACT | N/A | | | |
| | 5. SINKHOLE/ANIMAL BURROWS | None observed | X | | |
| | 6. EROSION | None observed | X | | |
| | 7. UNUSUAL MOVEMENT | None observed | X | | |
| | 8. VEGETATION (PRESENCE/CONDITION) | Slopes are mowed grass | X | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## EMBANKMENT (U/S SLOPE)

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| U/S SLOPE | 1. SLIDE, SLOUGH, SCARP | None observed | X | | |
| | 2. SLOPE PROTECTION TYPE AND COND. | None observed | X | | |
| | 3. SINKHOLE/ANIMAL BURROWS | None observed | X | | |
| | 4. EMB.-ABUTMENT CONTACT | None observed | X | | |
| | 5. EROSION | None observed | X | | |
| | 6. UNUSUAL MOVEMENT | None observed | X | | |
| | 7. VEGETATION (PRESENCE/CONDITION) | None observed | X | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## INSTRUMENTATION

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| INSTR. | 1. PIEZOMETERS | None present | X | | |
| | 2. OBSERVATION WELLS | None present | X | | |
| | 3. STAFF GAGE AND RECORDER | None present | X | | |
| | 4. WEIRS | None present | X | | |
| | 5. INCLINOMETERS | None present | X | | |
| | 6. SURVEY MONUMENTS | None present | X | | |
| | 7. DRAINS | None present | X | | |
| | 8. FREQUENCY OF READINGS | No measurements are taken | X | | |
| | 9. LOCATION OF READINGS | N/A | X | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## DOWNSTREAM AREA

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| D/S AREA | 1. ABUTMENT LEAKAGE | None Present | X | | |
| | 2. FOUNDATION SEEPAGE | None Present | X | | |
| | 3. SLIDE, SLOUGH, SCARP | None Present | X | | |
| | 4. WEIRS | None Present | X | | |
| | 5. DRAINAGE SYSTEM | None Present | X | | |
| | 6. INSTRUMENTATION | None Present | X | | |
| | 7. VEGETATION | Grass less than 6" | X | | |
| | 8. ACCESSIBILITY | Gravel access road along crest. Full time security and fence | X | | |
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| | 9. DOWNSTREAM HAZARD DESCRIPTION | | | | |
| | 10. DATE OF LAST EAP UPDATE | | | | |

ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## PRIMARY SPILLWAY

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| SPILLWAY | SPILLWAY TYPE | Decant structure | X | | |
| | WEIR TYPE | Concrete stoplogs in decant structure | X | | |
| | SPILLWAY CONDITION | Fair | X | | |
| | TRAINING WALLS | None present | X | | |
| | SPILLWAY CONTROLS AND CONDITION | None present | X | | |
| | UNUSUAL MOVEMENT | None present | X | | |
| | APPROACH AREA | Fair | X | | |
| | DISCHARGE AREA | Fair | X | | |
| | DEBRIS | None present | X | | |
| | WATER LEVEL AT TIME OF INSPECTION | 294.6 | X | | |
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ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## OUTLET WORKS

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| OUTLET WORKS | TYPE | Outlet - 18 in. diameter currugated HDPE. Discharge to Mississippi River | X | | |
| | INTAKE STRUCTURE | Decant structure with stoplogs | X | | |
| | TRASHRACK | N/A | X | | |
| | PRIMARY CLOSURE | N/A | X | | |
| | SECONDARY CLOSURE | N/A | X | | |
| | CONDUIT | N/A | X | | |
| | OUTLET STRUCTURE/HEADWALL | 15 ft. length, 4 ft. height, 10 in. thick. Appears stable | X | | |
| | EROSION ALONG TOE OF DAM | None | X | | |
| | SEEPAGE/LEAKAGE | None | X | | |
| | DEBRIS/BLOCKAGE | None | X | | |
| | UNUSUAL MOVEMENT | None | X | | |
| | DOWNSTREAM AREA | Heavily vegetated. Woody vegetation. | X | | |
| | | | | | |
| | MISCELLANEOUS | | | | |
| | | | | | |

ADDITIONAL COMMENTS:

NAME OF DAM: Slag Dewatering Pond (004 Pond) Dam STATE ID #: MO-0001171

INSPECTION DATE: January 11, 2019 NID ID #: N/A

## UNDERLYING HYDRAULIC STRUCTURES/PIPES

| AREA INSPECTED | CONDITION | OBSERVATIONS | NO ACTION | MONITOR | REPAIR |
|---|---|---|---|---|---|
| UNDERLYING HYDRAULIC STRUCTURES /PIPES | TYPE | 18" corrugated HDPE outlet | | | |
| | INLET | | | | |
| | CONDUIT | | | | |
| | OUTLET STRUCTURE/HEADWALL | Fair | | | |
| | EROSION ALONG STRUCTURE | None present | | | |
| | SEEPAGE/LEAKAGE | None present | | | |
| | DEBRIS/BLOCKAGE | None present | | | |
| | UNUSUAL MOVEMENT | | | | |
| | DOWNSTREAM AREA | | | | |
| | | | | | |
| | MISCELLANEOUS | | | | |
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ADDITIONAL COMMENTS:

Note: Use additional sheets for additional outlets.