solutions and action

Wisconsin Power and Light Company
Rock River Generating Station
CCR Surface Impoundment Structural Stability Assessment
154.018.028.006.001
Report issued: May 6, 2026

Hard Hat Services
ph: 630-688-1314
hardhatinc.com
245 Kenilworth Ave
Glen Ellyn, IL 60137

Executive Summary

This Structural Stability Assessment (Report) for the former Rock River Generating Station (ROR) has been prepared in accordance with the requirements of the United States Environmental Protection Agency rules for Hazardous and Solid Waste Management System – Disposal of CCR from Electric Utilities (40 CFR Parts 257 and 261, also known as CCR Rule).

On May 8, 2024, the EPA issued the Final Legacy Coal Combustion Residual (CCR) Surface Impoundment Rule ("Legacy Surface Impoundment Rule") that established regulations for CCR surface impoundments at inactive facilities (40 C.F.R. § 257.100). The Legacy Surface Impoundment Rule requires that legacy surface impoundments that no longer receive CCR but contain both CCR and liquid on or after October 19, 2015 and that are located at an inactive electric utility, generally comply with the EPA requirements for inactive CCR surface impoundments in accordance with Title 40 of the Code of Federal Regulations, Part 257 Subpart D Hazardous and Solid Waste Management System; Disposal of CCR from Electric Utilities.

This Report serves as the initial structural stability assessment for the ROR Final WPDES Settling Pond in Beloit, Wisconsin in accordance with §257.73(b) and §257.73(d) of the CCR Rule and is focused on documenting whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded within each CCR unit.

Table of Contents

Figures

Appendices

1. INTRODUCTION

The owner or operator of Coal Combustion Residual (CCR) units must conduct an initial and periodic structural stability assessment and document whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein. This Report serves as the initial review and has been prepared in accordance with the requirements of §257.73(b) and §257.73(d) of the CCR Rule.

1.1 CCR Rule Requirements

The CCR Rule requires an initial and periodic structural stability assessment by a qualified professional engineer (PE) for existing and legacy CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more; or the existing CCR surface impoundment has a height of 20 feet or more (40 CFR §§ 257.73(b), 257.73(d) and 257.83(b)).

1.2 Structural Stability Assessment Applicability

The Wisconsin Power and Light Company (WPL), Rock River Generating Station (ROR) in Beloit, Wisconsin has one legacy CCR surface impoundment, identified as the Final WPDES Settling Pond (Figure 1). The Final WPDES Settling Pond meets the requirements of §257.73(b)(1) and §257.73(b)(2) and is subject to the periodic structural stability assessment requirements of the CCR Rule.

2. FACILITY DESCRIPTION

ROR was located north of town on the western shore of the Rock River in Rock County at 827 W. B. R. Townline Road in Beloit, Wisconsin (Figure 1). ROR was bounded on the north by Townline Road, on the west by property owned by WPL known as Riverside Energy Center (REC), and on the south and east by the Rock River, which is a navigable body of water.

ROR was commissioned in 1954 as a coal-fired power plant. The facility consisted of two units. ROR ended coal combustion when the coal-fired boilers were converted to natural gas in 2000. The facility terminated generation of all electricity in 2012 and was demolished in 2017.

General Facility Information:

Date of Initial Facility Operations:		1954
Historical WPDES Wastewater Permit Number:		WI-0002402-05-0
Historical WPDES General Storm water Permit Number:		WI-S067857-3
Latitude / Longitude:	42°34’54.66”N	89°1’38.80”W
Unit Nameplate Ratings:	Unit 1 (1954) 75 MW - Coal	
	Unit 2 (1955) 75 MW - Coal	
Impoundment WDNR State ID	None	

2.1 ROR Final WPDES Settling Pond Location

The Final WPDES Settling Pond is located south of the Closed Ash Landfill and storm water retention pond. The eastern and southern embankemnts of the Final WPDES Settling Pond are bordered by the Rock River, while the western boundary is bordered by a set of railroad tracks. Figure 1 shows the location of the Final WPDES Settling Pond. As of 2012, the estimated volume of CCR in the surface impoundment was 2,000 cubic yards as identified within the December

2012 Settling Basin Abandonment Plan and Landfill Closure Plan Modification. The CCR has been removed from the Final WPDES Settling Pond as of October 2025 (Appendix A).

The adjacent areas of the site comprise several components, including an Ash Disposal Facility (Landfill) Area, a former coal yard, and a Storm Water Management Pond. Storm water from the former coal yard is conveyed through a 36-inch concrete pipe into the Storm Water Management Pond. Similarly, runoff from the Landfill Area is directed into the Storm Water Management Pond through open channel swales. The Storm Water Management Pond is constructed with an embankment height of 8 feet and serves as the primary collection point for site runoff. From there, storm water is discharged via a 24-inch concrete pipe located at elevation 745.8 feet into the Final WPDES Settling Pond. Additionally, surface runoff from the area surrounding the Final WPDES Settling Pond is also directed into the pond.

The Final WPDES Settling Pond is approximately 5.0 acres with embankments approximately 9 feet high relative to pond side and estimated at 20 feet high on the Rock River side based on stream bed information from available Federal Emergency Management Agency (FEMA) Flood Zone Profiles for Rock County, WI (Appendix B). Storm water exfiltrates into underlying and adjacent soils under normal conditions. However, during high-intensity storm events, excess water could be discharged through an approximate 10 foot wide, 1-foot-deep emergency spillway installed on top of the southern embankment during closure construction set at elevation 753 feet.

3. STRUCTURAL STABILITY ASSESSMENT- §257.73(d)

This Report documents whether the design, construction, operation, and maintenance of the ROR Final WPDES Settling Pond CCR unit is consistent with recognized and generally accepted good engineering practices for maximum volume of CCR and CCR wastewater which can be impounded.

3.1 Final WPDES Settling Pond

The embankment of the Final WPDES Settling Pond consists of approximately 1.5 horizontal to 1.0 vertical side slopes. The interior slope has riprap in place and the exterior slope facing the Rock River has vegetated growth including woody vegetation with roots.

The Final WPDES Settling Pond had a concrete inlet structure and outlet pipe that formerly allowed overflow to the Rock River on the south side of the impoundment. This discharge structure was demolished and the outlet pipe was abandoned in-place with flowable fill during the CCR removal construction in 2025. Storm water in the Final WPDES Settling Pond exfiltrates into underlying and adjacent soils under normal conditions.

In 2025, subsurface soil investigations were undertaken to collect soil samples and determine the in-situ density of the embankments and install monitoring wells. Soil borings were advanced using hollow stem augers and sampling was completed with a standard split spoon (ASTM D1556) (Appendix C).

Based on the annual inspections conducted by Hard Hat Services, there have been no significant changes regarding settlement, instability, or reconfiguration of the Final WPDES Settling Pond, other than the closure construction activities in 2025.

3.1.1 CCR Unit Foundation and Abutments - §257.73(d)(1)(i)

A review of regional geology indicates the site is within the ancestral Rock River valley, which is filled with glacial outwash. The site is near the western edge of the ancestral river valley. The uppermost bedrock is Prairie du Chien dolomite, which overlies St. Croix sandstone. The depth to bedrock in the area is approximately 250 to 350 feet. The bedrock is overlain by thick deposits of glacial outwash and alluvium material deposited within the ancestral Rock River valley. These deposits consist primarily of sand and gravel. These soils are consistent with the results of the site borings performed in 2025. The soils encountered in the borings are medium dense and have no inherent instability.

3.1.2 Slope Protection - §257.73(d)(1)(ii)

The Final WPDES Settling Pond is incised on the north side. The south and west sides have embankment crests that are approximately 10 feet wide. The north slope separates the Final WPDES Settling Pond from the Closed Ash Disposal Facility Landfill and the Storm Water Management Pond. The slopes are approximately 3.0 horizontal to 1.0 foot vertical and are comprised of shallow rooting vegetation, which is adequate to protect against surface erosion. The south and west embankments are approximately 1.5 horizontal to 1.0 vertical slopes. The interior slopes have riprap and the exterior slopes are vegetated with woody vegetation with roots, both of which protect the slopes against surface erosion.

Sudden drawdown is addressed in Section 3.2.7.

3.1.3 CCR Embankment Density- §257.73(d)(1)(iii)

The embankment is constructed of medium dense sand and silt that is similar to the native sands at the ROR site. The results of soil borings taken in 2025 show that the medium dense

embankment sand was well compacted to a density that is greater than the native sands below the embankment (Appendix C). The stability of the 1.5 horizontal to 1.0 vertical embankment slope is controlled by the strength of the native sands below the embankment. The ROR Safety Factor Report identifies stability results under various loading conditions.

3.1.4 Vegetation Management - §257.73(d)(1)(iv)

Historically, vegetation management has not been conducted on a periodic basis. Annual inspections and 7-day inspections have been conducted according to the CCR Rule. Based on those inspections, ROR has started the closure construction activities which included removal of the CCR which had been completed as of October 2025. ROR has decided to keep the mature trees on the external embankment of the impoundment after the CCR has been removed from the impoundment.

3.1.5 Spillway Management - §257.73(d)(1)(v)

Storm water that flows into the ROR Final WPDES Settling Pond exfiltrates into underlying and adjacent soils under normal conditions. As identified in the ROR Inflow Design Flood Control Plan, the ROR Final WPDES Settling Pond will store the 1000-year storm event without overtopping. However, excess water could be discharged through an approximate 10-foot wide, 1-foot deep emergency spillway installed on top of the southern embankment below the maximum berm elevation which would safely discharge to the Rock River. The emergency spillway has riprap and gravel ground cover which is capable of preventing erosion.

3.1.6 Hydraulic Structures - §257.73(d)(1)(vi)

The ROR Final WPDES Settling Pond area has an emergency spillway which only discharges water when the water elevation reaches the corresponding outflow level. The pond is largely an

exfiltration pond. The ROR Final WPDES Pond has been designed to maintain structural integrity and is free of significant deterioration, deformation, distortion, bedding deficiencies, sedimentation, and debris which may negatively affect the operation of the hydraulic structure.

3.1.7 Sudden Drawdown - §257.73(d)(1)(vii)

The southern embankment of the ROR Final WPDES Settling Pond is subject to the rise and fall of flood water from the Rock River. The Rock River 100-year flood condition will rise to approximately 750 feet elevation. Rise of the flood on the Rock River is often rapid, but drawdown is slower (US Army Corps of Engineers Rock River at Afton, WI River Gage Historic Data) (Appendix D). In the event of drawdown, drainage would occur primarily through upper medium dense sand and silt portion of the embankment as the river stage lowered to the approximate historic typical stage of approximately 744-746 feet elevation range based on historic river gage data. The embankment has been exposed to multiple cycles of drawdown since construction in the 1950s that have not resulted in negative impacts to the downstream slope.

4. QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

To meet the requirements of 40 CFR 257.73(d)(3), I Mark W. Loerop hereby certify that I am a licensed professional engineer in the State of Wisconsin; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in 40 CFR 257.73(b) and 40 CFR 257.73(d).

By: _____

Name: MARK LOEROP

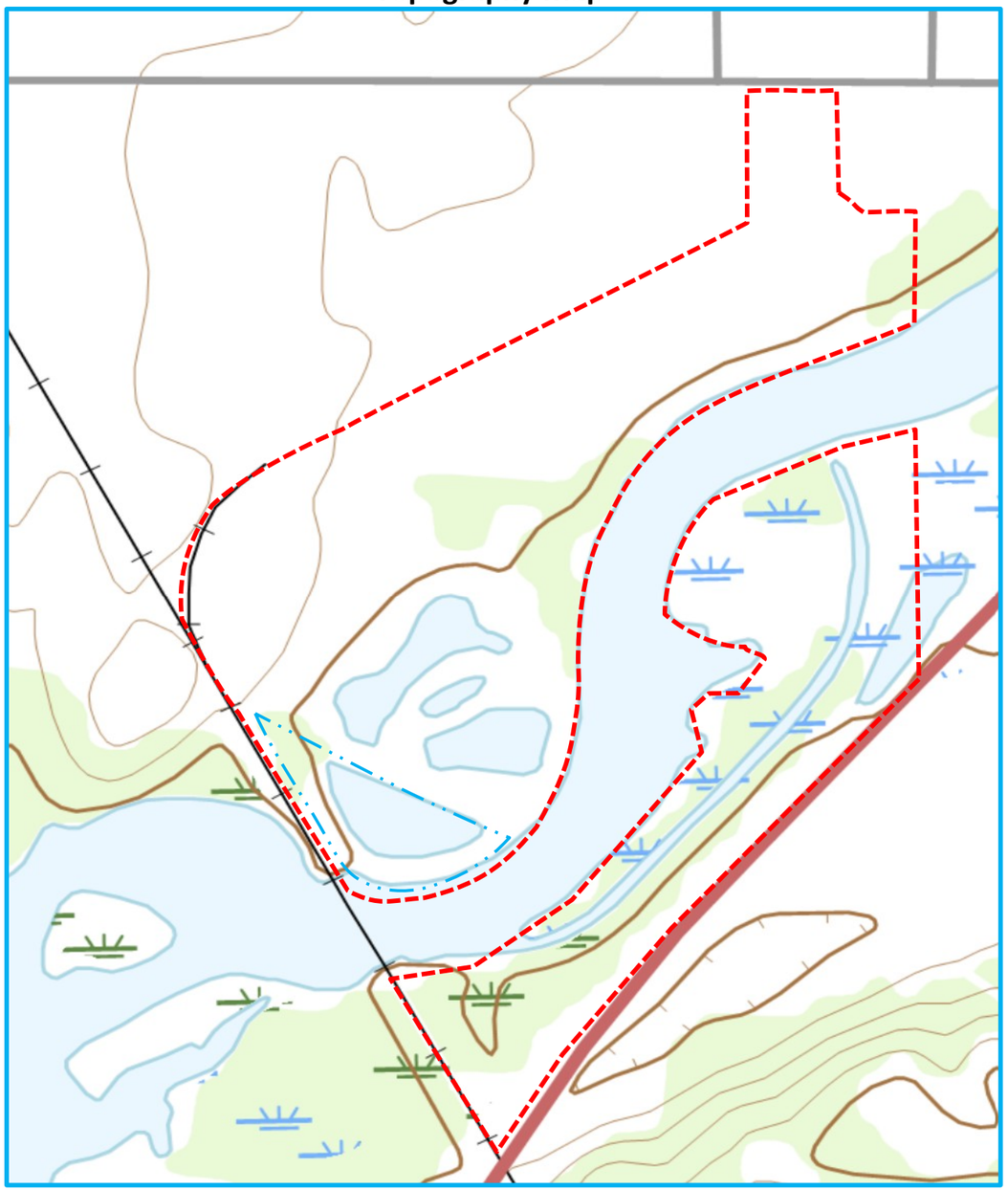
Date: MAY 6, 2026

FIGURES

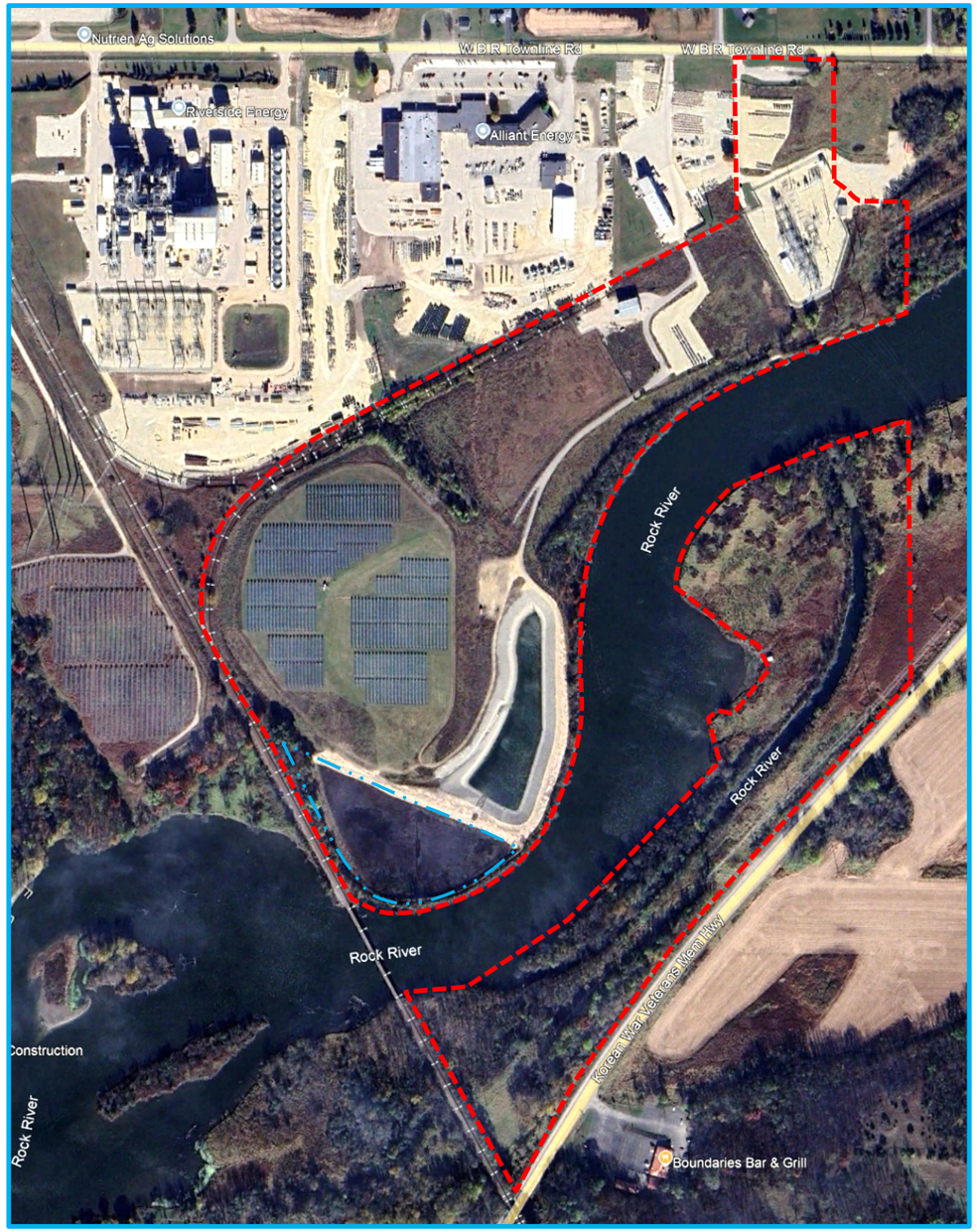
Alliant Energy
Wisconsin Power and Light Company
Rock River Generating Station
Beloit, Wisconsin

Structural Stability Assessment

Topography Map



Aerial Photo



Approximate Property Boundary

Final WPDES Settling Pond

hard hat SERVICES

Site Location
Rock River Generating Station
Wisconsin Power and Light Company

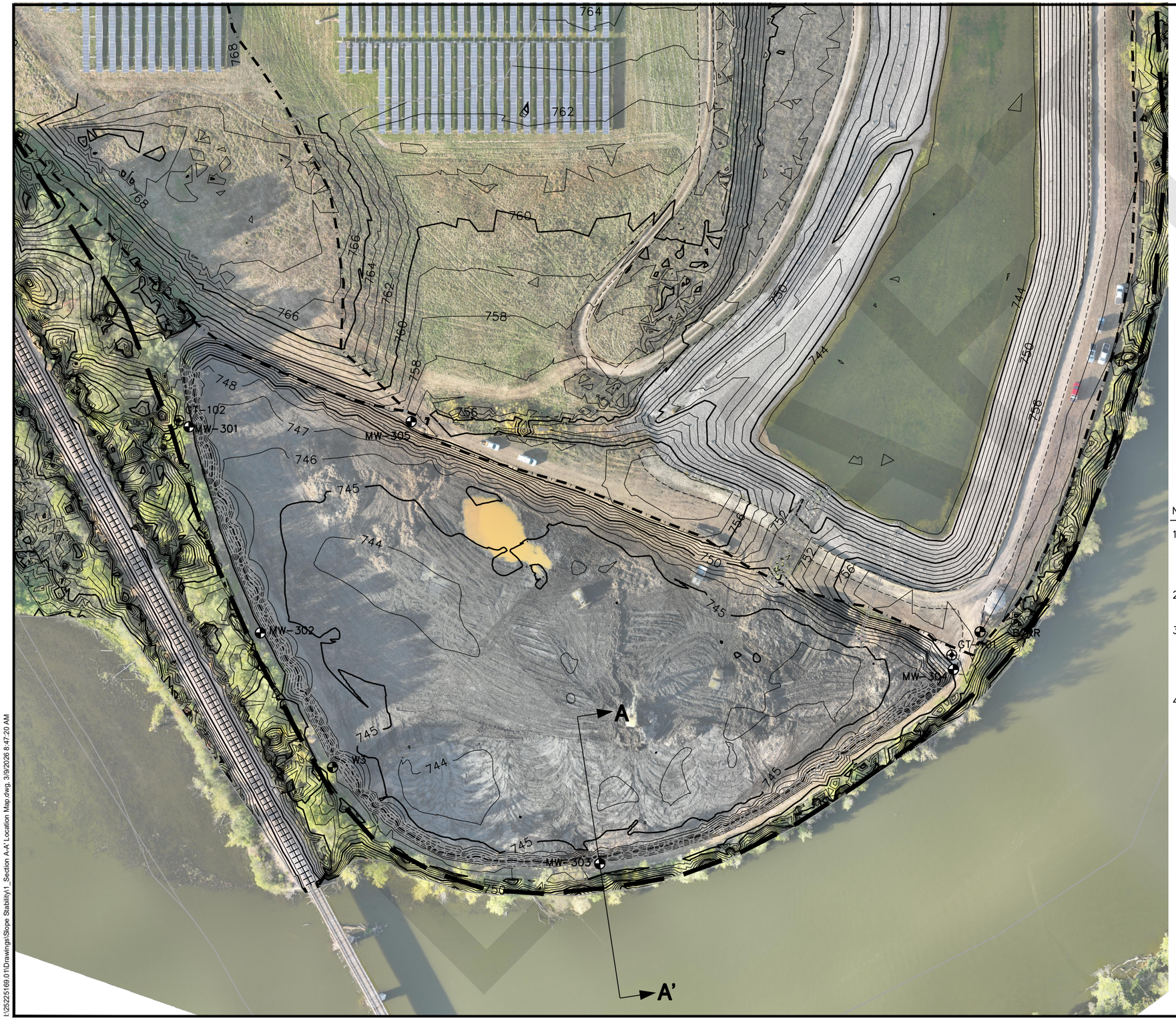
Drawing
Figure 1

Date
4/28/2026

APPENDIX A – WPDES Final Settling Pond Cross Section Location

Alliant Energy
Wisconsin Power and Light Company
Rock River Generating Station
Beloit, Wisconsin

Structural Stability Assessment



LEGEND

- 746 EXISTING GRADE (1' CONTOUR)
- 745 EXISTING GRADE (5' CONTOUR)
- RAILROAD TRACKS
- FENCE
- PAVED ROAD
- UNPAVED ROAD
- CULVERT
- ASH MANAGEMENT AREA
- APPROXIMATE LIMITS OF EXISTING FINAL COVER
- MONITORING WELL
- PIEZOMETER
- STAFF GAUGE
- GEOTECHNICAL SOIL BORING

NOTES:

1. HORIZONTAL DATUM BASED ON WIISCONSIN COUNTY COORDINATE SYSTEM, ROCK COUNTY. VERTICAL SITE DATUM REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
2. TOPOGRAPHIC SURVEY AND AERIAL IMAGERY FROM SCS ENGINEERS DRONE FLIGHT ON SEPTEMBER 30, 2025.
3. GT-101 AND GT-102 AND MW-301 TO MW-305 INSTALLED BY HORIZON CONSTRUCTION AND EXPLORATION, LLC AND OVERSEEN BY SCS ENGINEERS ON NOVEMBER 10-13, 2025. LOCATIONS SURVEYED BY BIRRENKOTT SURVEYING ON JANUARY 15, 2026.
4. OTHER MONITORING WELL AND SITE FEATURES BASED ON FINAL SETTLING POND CCR REMOVAL CONSTRUCTION DOCUMENTATION DRAWINGS BY SCS ENGINEERS DATED NOVEMBER 2025.

N

100 0 100

SCALE: 1" = 100'

CROSS SECTION LOCATION

FIGURE 1

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

SITE
WISCONSIN POWER AND LIGHT
ROCK RIVER ASH DISPOSAL LANDFILL
827 WBR TOWNLINE ROAD
BELOIT, WISCONSIN

CLIENT
Wisconsin Power and Light Company

PROJECT NO.	25225169.01
DRAWN:	12/10/2025
REVISED:	03/06/2026
DRAWN BY:	AR
CHECKED BY:	BSS
APPROVED BY:	

I:\25225169.01\Drawings\Slope Stability\1_Section A-A' Location Map.dwg, 3/9/2026 8:47:20 AM

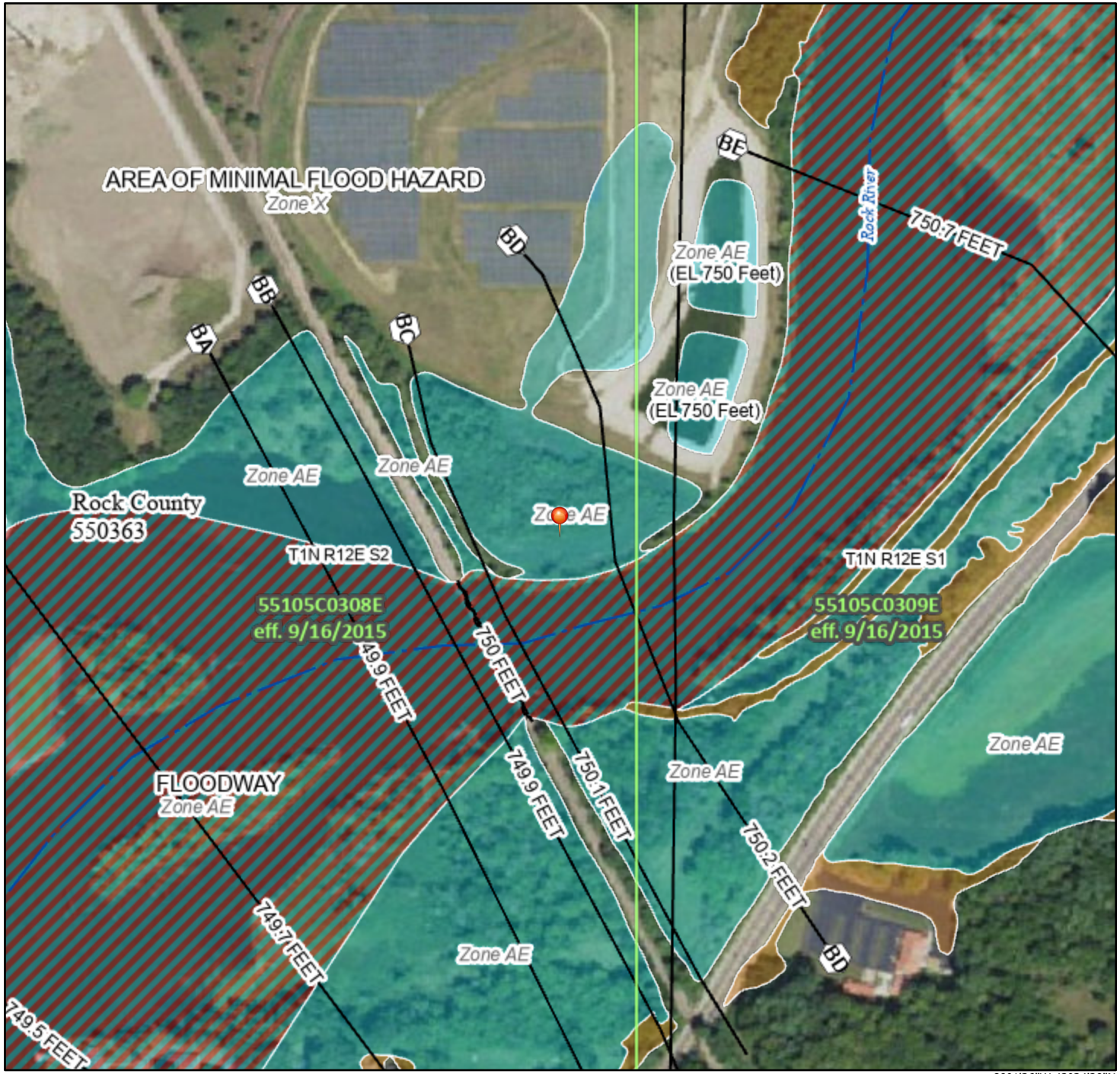
APPENDIX B – FEMA Flood Zone Profiles for Rock County

Alliant Energy
Wisconsin Power and Light Company
Rock River Generating Station
Beloit, Wisconsin

Structural Stability Assessment

National Flood Hazard Layer FIRMette

89°2'14"W 42°34'47"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

89°1'36"W 42°34'20"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/7/2026 at 3:32 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX C – Boring Logs and Lab Data

Alliant Energy
Wisconsin Power and Light Company
Rock River Generating Station
Beloit, Wisconsin

Structural Stability Assessment

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Rock River Generating Station SCS#: 25225169.01		GT-101

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon	11/12/2025	11/13/2025	solid stem auger

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			744.4 Feet	755.75 Feet	1.75/3.5 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane 230,282 N, 491,215 E S/C/N
SE 1/4 of SE 1/4 of Section 2, T 1 N, R 12 E
Lat 42° 20' 36.49" Long 89° 0' 54.04"
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	Rock	54	Beloit

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S1	16	18	1.5	SILTY SAND with gravel (SM), dark brown (10YR 3/3), medium dense, very fine to coarse angular sand, fine to coarse angular gravel	SM					M				Samples from (ft): 0-2, 2.5-4.5, 5-7, 8.5-10.5 (Shelby Tube), 10.5-12.5, 13-15, 15-17 (failed shelby attempt),17-19, 19.5-21.5, 22-24, 24.5-26.5, 27-29, 29.5-31.5, 32-34, 34.5-36.5, 37-39
				SILT with fine to coarse subround sand and gravel, black (10YR 2/1), stiff, with roots	ML									
S2	6.5	94	3.0	CLAYEY SAND (SC) with gravel, dark brown and dark yellowish brown (10YR 3/3 and 4/4), very dense, sand is fine to medium round sand, fine to coarse angular and round gravel, tree root in bottom of run, potential gray ash	SC				1.25	M				
			4.5											
S3	21.5	94	6.0	SANDY SILT with gravel (ML), black (10YR 2/1), hard, fine to coarse angular and round gravel, fine to coarse subangular sand, small 2 inch seam of yellowish brown sand at ~6.75ft	ML				~1.5, brittle	M				
			7.5											
ST			9.0	Shelby tube, Clayey sand, black (10YR 2/1) with some yellow brown, stiff, fine to medium (SC)	SC				1.0	M	22	8	28.6	water content =14.37%
			10.5											
S4	3	11	12.0	SILTY SAND with gravel (SM), grayish brown (10YR 5/2), medium dense, fine to coarse subangular sand and gravel	SM					M				Started mud drilling, until this point dry drilling
S5	8	4	13.5	SILT (ML), olive (5Y 4/3), very loose to loose, fine to coarse angular sand and gravel	ML					W				
			15.0											
ST fail			16.5	SHELBY TUBE ATTEMPT, No sample all fell out, assumed very soft silt	NO CORE									
				SILT (ML), same as above, with sand and gravel, same color, hard	ML									
S6	14	40	18.0	POORLY GRADED (SP), light olive brown (2.5Y 5/3), dense, very fine to coarse round to subround sand, fine to coarse subangular to subround gravel	SP					W				
			19.5		SM									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Bridget Jaworski Firm SCS Engineers Tel: Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number GT-101 Use only as an attachment to Form 4400-122.

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S7	10.5	150	21.0	SILTY SAND with gravel (SM), light olive brown (2.5Y 5/3), dense, fine to coarse subround sand and gravel (outwash)	SM					W				Samples from (ft): 19.5-21.5, 22-24, 24.5-26.5, 27-29, 29.5-31.5, 32-34, 34.5-36.5, 37-39
S8	~20	200	22.5	SILT (ML), light olive brown (2.5Y 5/4), very dense, some fine to medium round sand	ML					W				Recovery from 22-24ft is estimated. Little actual material, mostly liquified and goo-like
S9	24	20	24.0							W				
S10	11.5	21	25.5	SILTY SAND with gravel (SM) transition, last 3 inches, same color as above, medium dense	SM / SP					W				sluff in first foot, silty goo
			27.0	POORLY GRADED GRAVELLY SAND (SP), light olive brown (2.5Y 5/4), medium dense, both fine to coarse round, with silt (outwash)	SM									
			28.5	SILTY SAND with gravel (SM), same color, medium dense, very fine to coarse angular sand, fine to coarse subangular gravel (outwash)										
S11	9.5	19	30.0	POORLY GRADED SAND with silt (SP-SM), light yellowish brown (2.5Y 6/4), medium dense, similar to above in grain size/shape, but more sand than silt	SP-SM					W				still some silt sluff
S12	10	10	31.5	fine to coarse round sand and gravel, otherwise same as above						W				still some silt sluff
S13	3	9	33.0	POORLY GRADED SAND (SP), light yellowish brown (2.5Y 6/4), loose, with very fine to coarse round sand and fine to coarse round gravel (outwash)						W				no more sluff
S14	10	13	34.5	more coarse sand grains, but medium dense, still very fine to coarse round sand and fine to coarse round gravel same color	SP					W				
S15	8.5	19	36.0	same as above						W				
S16	11	19	37.5	POORLY GRADED GRAVELLY SAND (SP), pale brown (10YR 7/3 and 8/3) with silt, medium dense, fine to coarse subangular to subround gravel, very fine to coarse subround and subangular sand						W				Samples from (ft): 39.5-41.5, 42-44, 44.5-46.5, 47-49, 49.5-51.5, 54.5-56.5
S17	9	16	39.0							W				
S18	6.5	13	40.5							W				
S19	3.5	24	42.0		SP-SM					W				
			43.5											
			45.0											
			46.5											
			48.0											
			49.5	same as above										
			51.0											
			52.5											

Boring Number GT-101 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			54.0	light gray (10YR 7/3), otherwise same as above	SP-SM									
S20	11	16	55.5							W				
			57.0											
			58.5											
S21	11	NM NM NM NM	60.0	same as above, but subround to round										missed blow counts on accident
			61.5											
			63.0											
			64.5											
S22	13	27	66.0	POORLY GRADED SAND (SP), light yellowish brown (10YR 6/4), medium dense, with some fine to coarse subround sand and gravel	SP					W				Samples from (ft): 64.5-66.5, 68.5-70
			67.5											
S23	11	28	69.0							W				
				End of boring at 70ft, grouting for abandonment										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
Rock River Generating Station SCS#: 25225169.01		GT-102

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon	11/12/2025	11/12/2025	solid stem auger

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			744.1 Feet	756.29 Feet	1.75/3.5 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane 230,507 N, 490,461 E S/C/N
NW 1/4 of SW 1/4 of Section 2, T 1 N, R 12 E
Lat 42° 20' 37.32"
Long 89° 1' 12.07"
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	Rock	54	Beloit

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S1	19	19	1.5	SILTY SAND with gravel (SM), pale brown and yellow (10YR 6/3 and 8/6), medium dense, fine to coarse subangular	SM					M				Samples taken from (ft): 0-2, 2.5-4.5, 5-7, 7.5-9.5, 10-12, 12.5-14.5, 15-17, 17.5-19.5
S2	22	19	3.0 4.5	SILT, very dark brown (10YR 2/2) brittle, very stiff SANDY SILT (ML), silt is very dark brown (10YR 2/2), sand is yellowish brown (10YR 5/4), very stiff, sand and gravel are fine to coarse, round	ML ML					M				Dry drilling no water use
S3	24	13	6.0	POORLY GRADED SAND (SP-SM), dark yellowish brown (10YR 4/6), medium dense, with silt and gravel SILT (ML), very dark brown (10YR 2/2) 4 inches, stiff	SP-SM ML SP					M				
S4	24	22	7.5 9.0	POORLY GRADED SAND (SP) dark yellowish brown (10YR 4/6), stiff, with gravel fine to coarse SILT (ML), very dark brown (10YR 2/2), very stiff, with sand and gravel	ML SP					M				
S5	20	3	10.5 12.0	POORLY GRADED SAND, dark yellowish brown and yellowish brown (10YR 3/4 and 5/6), medium dense, fine to coarse round LEAN CLAY (CL), black (5Y 2.5/1), soft, trace silt and sand, fine to medium grained	SP CL			1.5 1.0		M/W W				DTW at about 11.75-12ft Redrilled hole next to this to obtain Shelby Tube Sample from 10.5-12.83ft, collapsed in at bottom
S6	10	6	13.5	SILTY SAND with gravel (SM), dark olive gray (5Y 3/2), loose, very fine to coarse angular sand and fine to coarse angular gravel	SM					W				
S7	12	16	15.0 16.5	same as above, but color change to olive (5Y 4/3 and 5/4), very soft						W				
S8	14	27	18.0 19.5	POORLY GRADED SAND with gravel, olive yellow (2.5Y 6/6), medium dense, fine to coarse angular sand, fine to coarse angular and round gravel, large round cobbles and trace silt (Outwash)	SP					W				

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Bridget Jaworski Firm SCS Engineers Tel: Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number GT-102 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
S9	13	34	21.0	same as above, but light yellowish brown (2.5Y 6/3), dense						W				
			22.5											
S10	13	24	24.0	POORLY GRADED SAND, pale brown (10YR 6/3), medium dense, with very fine to coarse round to subround grains, and fine to coarse round and angular gravel, no more silt	SP					W				
S11	1.5	10	25.5	same as above but no angular, just rounded, loose to medium dense						W				
			27.0											
S12	1	3	28.5	same as above but fine to medium round sand, no gravel and trace silt						W				
				End of boring at 29.5ft drilling second hole, step out to take Shelby tube 10.5ft to 12.83ft. Abandoned holes with Bentonite chips										

GESTRA

191 W. Edgerton Ave
Milwaukee, WI 53207
(414)933-7444

Report On: Test Report Attachment

Lab No: 25-06466
Report No: 25-06466

Project No: 25369-40 **Cust No:** 0410

Client: SCS Engineers
Debra Nelson
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

Project: WPL Rock River Ash Disposal Facility

Location:

Report Date: 12/19/2025

Sample Date: 12/18/2025
Sampled By: Client

Orig: SCS Engineers Attn: Debra Nelson
(1-ec copy)
1-cc Laboratory

Respectfully Submitted,

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Atterberg Limits of Soil

Project Name:	Rock River Ash Disposal Facility	Date:	December 17, 2025
Project Number:	25369-40	Client:	SCS
Project Location:	Beloit, WI	SCS #:	25225169.01
ASTM Designation:	**D4318 (Method A)**		

Sample Information

Type of Sample	Shelby Tube
Boring Number	GT-101
Sample Number	--
Depth of Sample	8.5' - 10.5'

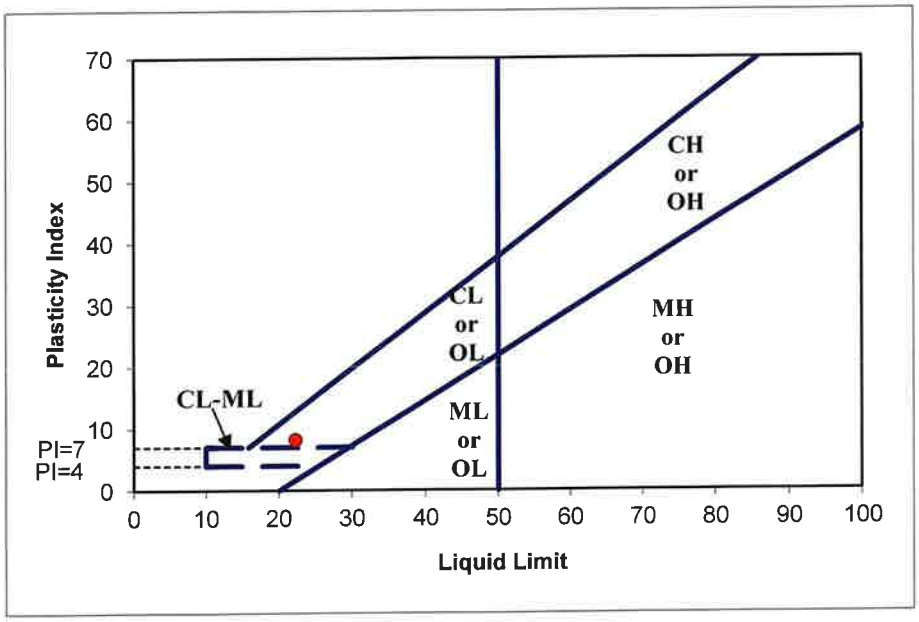
Determination of Liquid Limit

Cup Number			
Weight of Cup (g)	10.91	10.85	10.91
Weight of Wet Soil and Cup (g)	36.70	34.80	32.82
Weight of Dry Soil and Cup (g)	32.04	30.25	28.54
Moisture Content (%)	22.1	23.5	24.3
Blow Counts	26	19	15

Determination of Plastic Limit

Cup Number		
Weight of Cup (g)	7.19	7.24
Weight of Wet Soil and Cup (g)	16.78	17.55
Weight of Dry Soil and Cup (g)	15.62	16.30
Moisture Content (%)	13.8	13.8

Compilation of Test Results



Liquid Limit	22
Plastic Limit	14
Plasticity Index	8
USCS Symbol	**CL**

Performed by: C. Schneider

Reviewed By: Nicole Merkes
GESTRA Engineering, Inc.

Geotechnical-Structural-Pavement-Construction Material

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

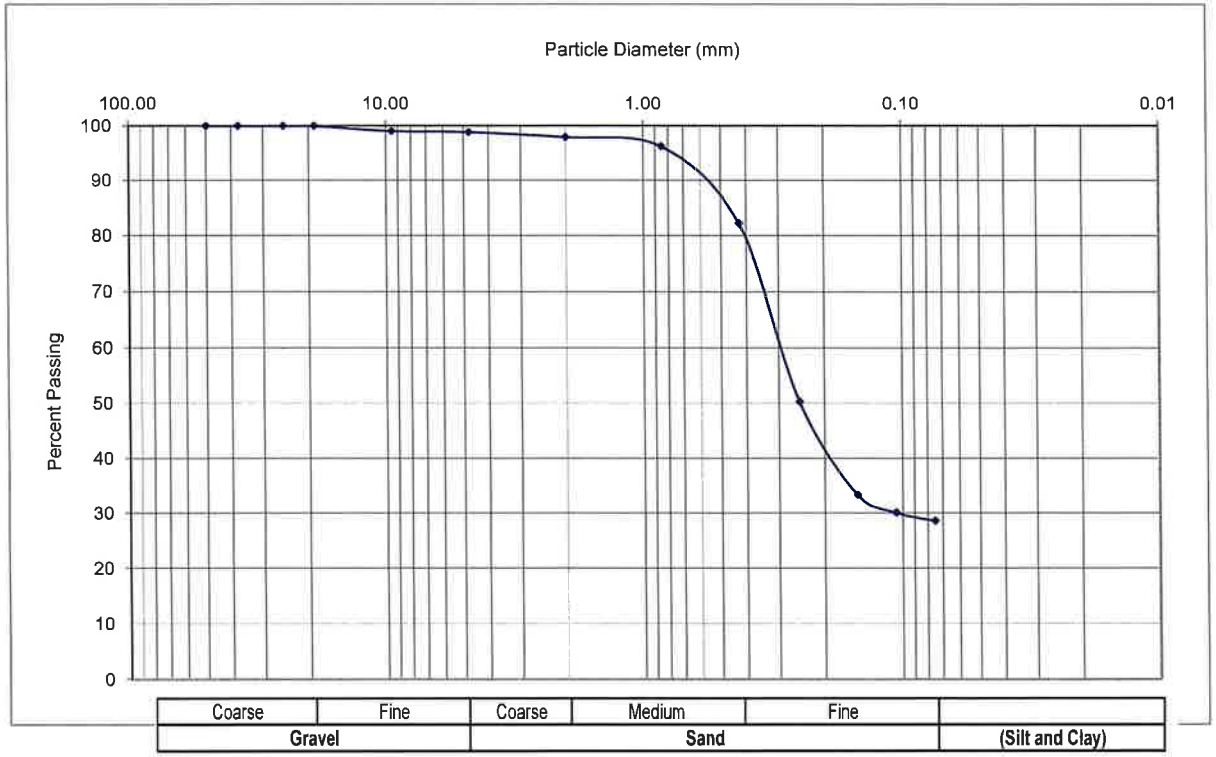
Project Name:	Rock River Ash Disposal Facility	Date:	December 11, 2025
Project Number:	25369-40	Reported To:	SCS
Project Location:	Beloit, WI	SCS #:	25225169.01
ASTM Designation:	**D6913** **Method A**		

Sample Information

Type of Sample: Shelby Tube
Boring Number: GT-101 Depth of Sample: 6.5'-10.5'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50	100.0
1 1/2	37.5	100.0
1	25.0	100.0
3/4	19.0	100.0
3/8	9.5	99.1
#4	4.75	98.8
#10	2.000	97.9
#20	0.850	96.2
#40	0.425	82.2
#60	0.250	50.3
#100	0.150	33.5
#140	0.106	30.1
#200	0.075	28.6
Pan		27.5



Moisture Content 14.8 %

Remarks: Gravel 1.2 % Sand 70.2 %
Passing #200 Sieve (Silt & Clay) 28.6 %

Performed by: C. Schneider

Reviewed by: Nicole Merkes
GESTRA Engineering, Inc.

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Shelby Tube Extraction Form

Project Name:	Rock River Ash Disposal Facility	Date:	December 5, 2025
Project Number:	25369-40	Client:	SCS
Projection Location:	Beloit, WI	SCS #:	25225169.01
ASTM Designation:	**D2488**		

Sample Information

Boring Number	GT-101
Sample Number	--
Depth of Sample	8.5' - 10.5'

qp: 1.0

Recovery:	23" (bottom 3" remained in damaged portion of tube)
Soil Description:	Top 4" - Slough
	Bottom 13" - Dark brown, sandy lean clay, moist, medium stiff to to stiff, trace gravel.
	6" - to 10" - Silty sand, light brown, moist, trace gravel.

Performed By: S. McLafferty

Reviewed By: Nicole Merkes

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Atterberg Limits of Soil

Project Name:	Rock River Ash Disposal Facility	Date:	December 17, 2025
Project Number:	25369-40	Client:	SCS
Project Location:	Beloit, WI	SCS #:	25225169.01
ASTM Designation:	**D4318 (Method A)**		

Sample Information

Type of Sample	Shelby Tube
Boring Number	GT-102
Sample Number	--
Depth of Sample	10.5' - 12.3'

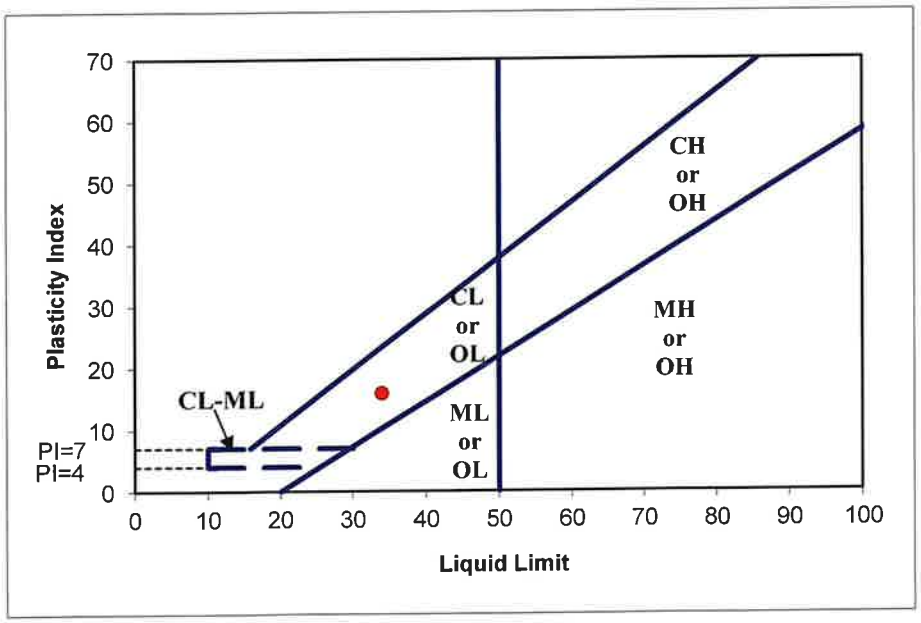
Determination of Liquid Limit

Cup Number			
Weight of Cup (g)	18.91	18.93	18.86
Weight of Wet Soil and Cup (g)	40.16	41.71	42.03
Weight of Dry Soil and Cup (g)	34.88	35.92	35.98
Moisture Content (%)	33.1	34.1	35.3
Blow Counts	28	25	20

Determination of Plastic Limit

Cup Number		
Weight of Cup (g)	7.30	7.45
Weight of Wet Soil and Cup (g)	14.66	14.91
Weight of Dry Soil and Cup (g)	13.57	13.77
Moisture Content (%)	17.4	18.0

Compilation of Test Results



Liquid Limit	34
Plastic Limit	18
Plasticity Index	16
USCS Symbol	**CL**

Performed by: M. Biddick

Reviewed By: Nicole Merkes
GESTRA Engineering, Inc.

Geotechnical-Structural-Pavement-Construction Material

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Rock River Ash Disposal Facility
Project Number: 25369-40
Project Location: Beloit, WI
ASTM Designation: **D6913** **Method B**

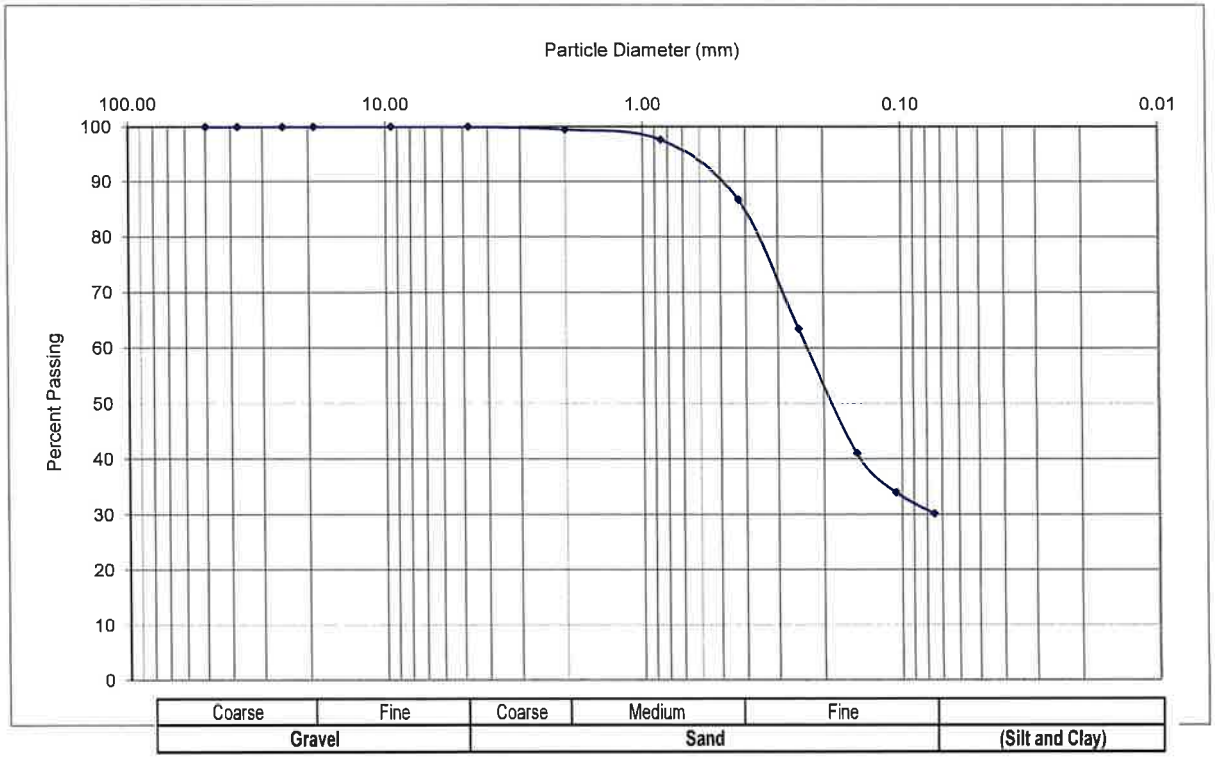
Date: December 11, 2025
Reported To: SCS
SCS #: 25225169.01

Sample Information

Type of Sample: Shelby Tube
Boring Number: GT-102 Depth of Sample: 10.5'-12.3'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50	100.0
1 1/2	37.5	100.0
1	25.0	100.0
3/4	19.0	100.0
3/8	9.5	100.0
#4	4.75	100.0
#10	2.000	99.5
#20	0.850	97.7
#40	0.425	86.7
#60	0.250	63.4
#100	0.150	41.1
#140	0.106	34.1
#200	0.075	30.2
Pan		28.2



Moisture Content 25.5 %

Remarks: Gravel 0.0 % Sand 69.8 %
Passing #200 Sieve (Silt & Clay) 30.2 %

Performed by: C. Schneider

Reviewed by: Nicole Merkes
GESTRA Engineering, Inc.

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone: (414) 933-7444; Fax: (414) 933-7844

Shelby Tube Extraction Form

Project Name:	Rock River Ash Disposal Facility	Date:	December 5, 2025
Project Number:	25369-40	Client:	SCS
Projection Location:	Beloit, WI	SCS #:	25225169.01
ASTM Designation:	**D2488**		

Sample Information

Boring Number	GT-102
Sample Number	--
Depth of Sample	10.5' - 12.3'

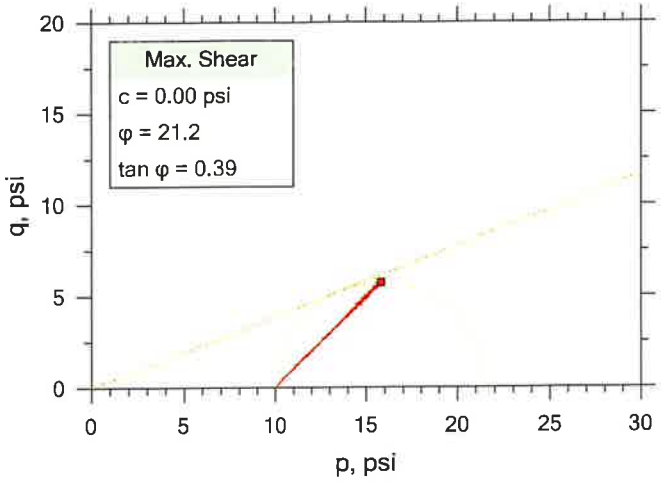
qp: N/A

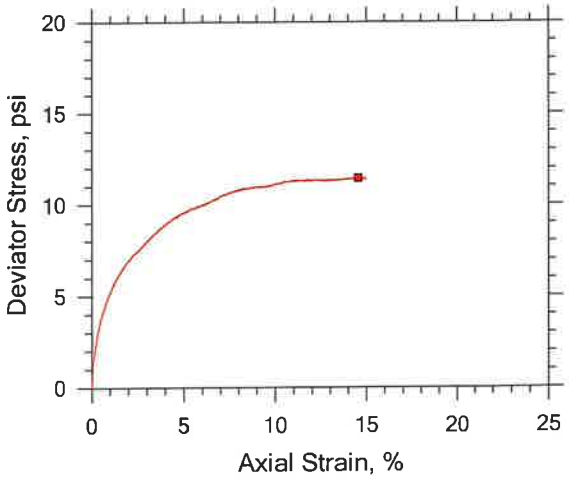
Recovery:	13" (bottom 2" remained in damaged portion of tube).
Soil Description:	Top 6" - Silty sand with gravel, gray, moist.
	Bottom 7" - Sand with silt, light brown, most, trace gravel.
	Dark brown sandy lean clay, sand lense in bottom 4" (qp: 1.00)

Performed By: S. McLafferty

Reviewed By: Nicole Merkes

Unconsolidated Undrained by ASTM D2850





Symbol		
Sample ID		N/A
Depth		8.5' - 10.5'
Test Number		1
Initial	Height, in	5.765
	Diameter, in	2.839
	Moisture Content (from Cuttings), %	14.3
	Dry Density, pcf	117.
	Saturation (Wet Method), %	88.8
	Void Ratio	0.432
Final	Moisture Content, %	16.0
	Dry Density, pcf	117.
	Cross-Sectional Area (Method A), in²	6.322
	Saturation, %	100.0
	Void Ratio	0.429
	Back Pressure, psi	0.000
Vertical Effective Consolidation Stress, psi		9.986
Horizontal Effective Consolidation Stress, psi		9.992
Vertical Strain after Consolidation, %		0.000
Volumetric Strain after Consolidation, %		0.000
Time to 50% Consolidation, min		0.000
Shear Strength, psi		5.727
Strain at Failure, %		14.6
Strain Rate, %/min		1.000
Deviator Stress at Failure, psi		11.45
Effective Minor Principal Stress at Failure, psi		10.21
Effective Major Principal Stress at Failure, psi		21.66
B-Value		---

Notes:
- Before Shear Saturation set to 100% for phase calculation.
- Moisture Content determined by ASTM D2216.
- Atterberg Limits determined by ASTM D4318.
- Deviator Stress includes membrane correction.
- Values for c and φ determined from best-fit straight line for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site conditions.

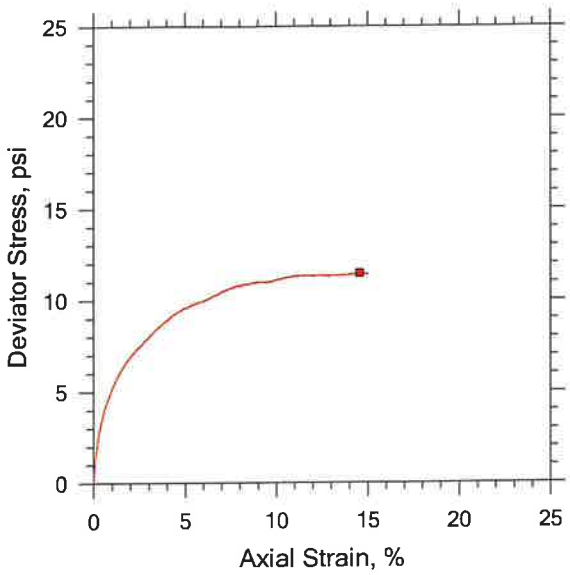
GESTRA

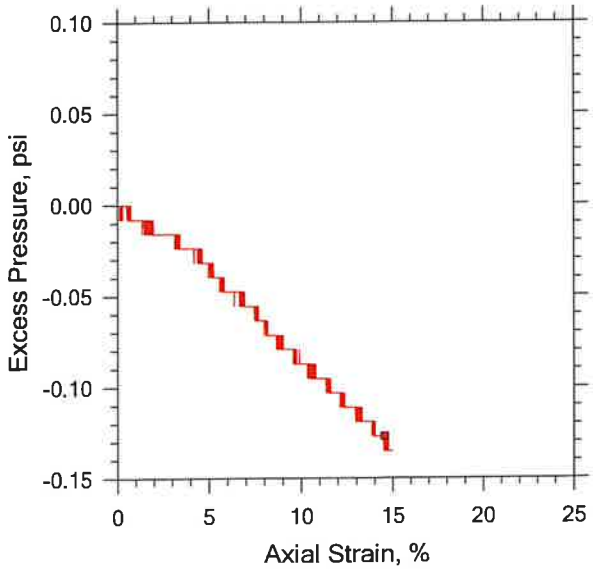
Project Name: Rock River Ash Disposal	Location: Beloit, WI	Project Number: 25369-40
Boring Number: GT-101	Tester: N. Merkes	Checker: N. Merkes
Sample Number: N/A	Test Date: 12/09/2025	Depth: 8.5' - 10.5'
Test Number: 1	Preparation: Shelby Tube	Elevation:
Client: SCS	Classification:	Group Symbol:

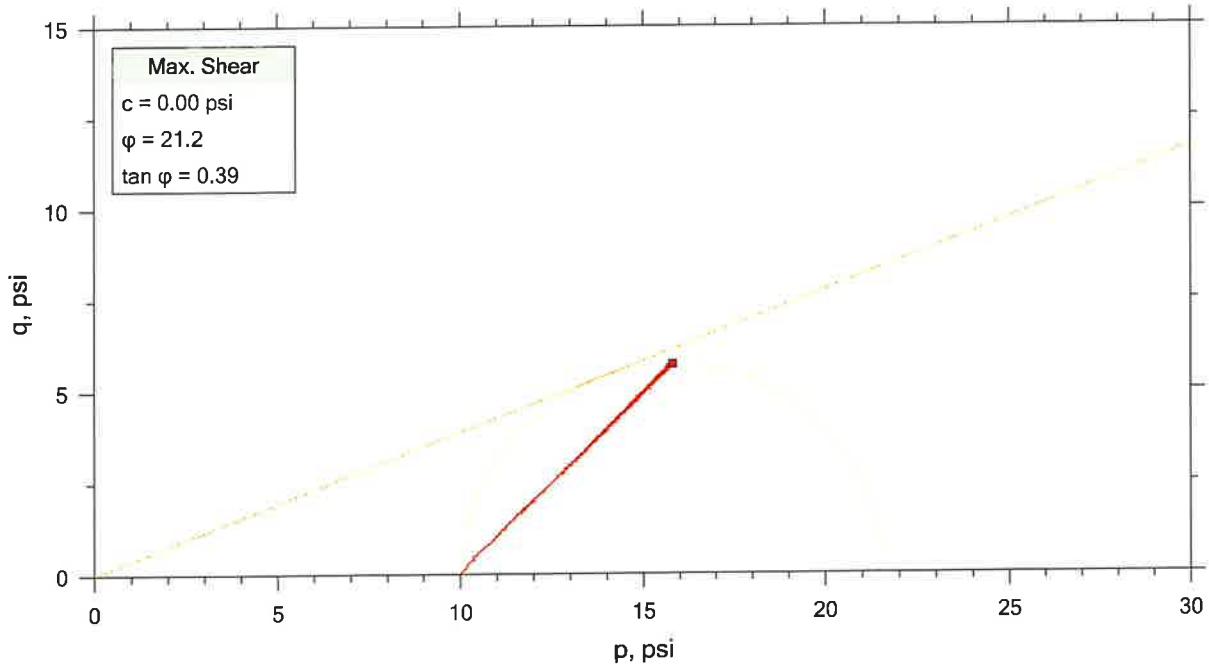
Description: Dark brown sandy lean clay. (Silt lense present in bottom 4")

Remarks:

Unconsolidated Undrained by ASTM D2850







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	N/A	1	8.5' - 10.5'	N. Merkes	12/09/2025	N. Merkes	12/18/2025	GT-102, UU 10psi.dat

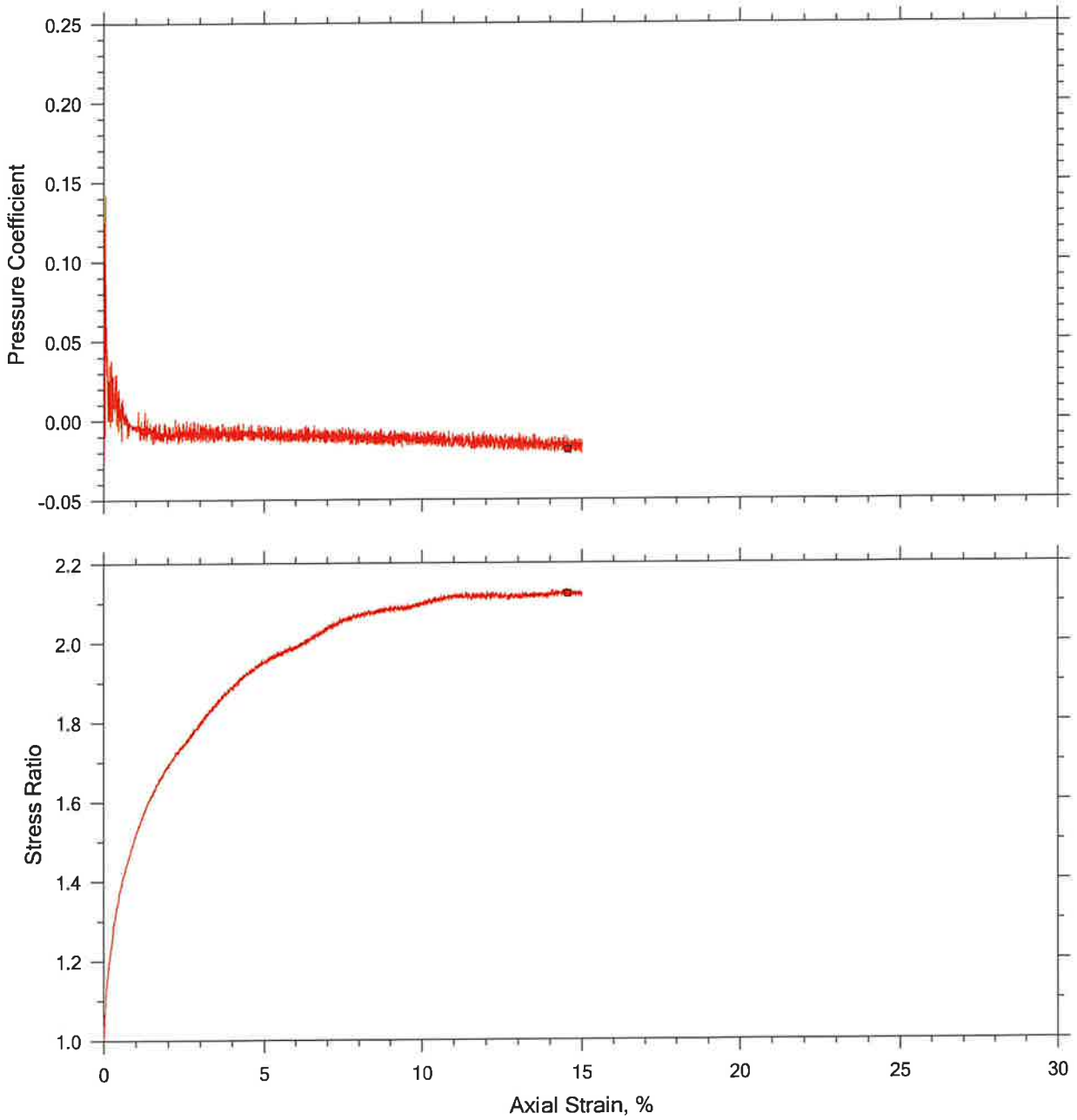
GESTRA

Project Name: Rock River Ash Disposal	Location: Beloit, WI	Project Number: 25369-40
Boring Number: GT-101	Tester: N. Merkes	Checker: N. Merkes
Sample Number: N/A	Test Date: 12/09/2025	Depth: 8.5' - 10.5'
Test Number: 1	Preparation: Shelby Tube	Elevation:
Client: SCS	Classification:	Group Symbol:

Description: Dark brown sandy lean clay. (Silt lense present in bottom 4")

Remarks:

Unconsolidated Undrained by ASTM D2850



	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
■	N/A	1	8.5' - 10.5'	N. Merkes	12/09/2025	N. Merkes	12/18/2025	GT-102, UU 10psi.dat

GESTRA

Project Name: Rock River Ash Disposal	Location: Beloit, WI	Project Number: 25369-40
Boring Number: GT-101	Tester: N. Merkes	Checker: N. Merkes
Sample Number: N/A	Test Date: 12/09/2025	Depth: 8.5' - 10.5'
Test Number: 1	Preparation: Shelby Tube	Elevation:
Client: SCS	Classification:	Group Symbol:

Description: Dark brown sandy lean clay. (Silt lense present in bottom 4")

Remarks:

GESTRA Engineering, Inc
191 W. Edgerton Ave
Milwaukee, WI 53207
Phone (414) 933-7444, Fax (414) 933-7844

Laboratory Test Results of Moisture Content, Organic Content, and Density of Soil

Project Name:	Rock River Ash Disposal Facility	Date:	December 5, 2025
Project Number:	25369-40	Report To:	SCS
Project Location:	Beloit, WI	GZA#:	25225169.01
ASTM Designation:	**D2216, D2974 (Method A), D7263**		

Boring Number	GT-101		GT-102							
Sample Number	8.5' - 10.5'		10.5' - 12.3'							
Cup Number										
Weight of Cup (g)	72.53		52.30							
Weight of Wet Soil and Cup (g)	153.14		117.31							
Weight of Dry Soil and Cup (g)	143.04		103.38							
Weight of Soil and Cup After Burn (g)	141.30		100.86							
Weight of Sample for Density (lbs)										
Diameter (in)										
Length(in)										
Moisture Content (%)	14.3		27.3							
Organic Content (%)	2.5		4.9							
Wet Density (pcf)										
Dry Density (pcf)										

Boring Number										
Sample Number										
Cup Number										
Weight of Cup (g)										
Weight of Wet Soil and Cup (g)										
Weight of Dry Soil and Cup (g)										
Weight of Soil and Cup After Burn (g)										
Weight of Sample for Density (lbs)										
Diameter (in)										
Length(in)										
Moisture Content (%)										
Organic Content (%)										
Wet Density (pcf)										
Dry Density (pcf)										

Performed by C. Schneider/ N. Merkes

Reviewed by Nicole Merkes

APPENDIX D – Rock River Hydrograph Data

Alliant Energy
Wisconsin Power and Light Company
Rock River Generating Station
Beloit, Wisconsin

Structural Stability Assessment

RIVERGAGES.COM
Water Levels of Rivers and Lakes

US Army Corps of Engineers

If you're having problems with your bookmarks, please clear your browser cache and try agai

Water Levels By:
Choose An Option

National Weather Service Products

Bookmark

Google Earth | What's This? | Google Map

Upstream

Rock River at Afton, WI

Downstream

Stream Name: Rock River
Gage Zero: 742.36 Ft. NGVD29
Flood Stage:9 Ft.
Record High Stage:13.51 Ft.

Longitude: -89.07056000
Latitude: 42.60917000
River Mile: 173 miles above the mouth of the Rock River
Record High Stage Date: 06/21/2008

Drainage Area : 3340.00 Mi^2

Location of Gage :

Located in Rock County, WI. on the right bank 0.3 miles downstream of the Highway bridge and 1.1 miles upstream from Bass Creek.

For official flow data, please visit the USGS website listed in the Additional Links for this station. The National Weather Service information is also linked in the Additional Links for this station.

This gage is operated by the U.S. Geological Survey - Wisconsin District.

Latest Data
03/12/2026 05:00 Central

Latest Stage	5.71 Ft.
24 Hr. Change	-0.05 Ft.
Last Year's Stage	5.98 Ft.
Latest Flow	3,032 CFS

7 Days | Stage

Plot | Tabulate

Daily Historic Data
(06:00 Central Reading)

HG - Stage (Ft)

From JAN 1 1986
To DEC 31 2026

Elevation

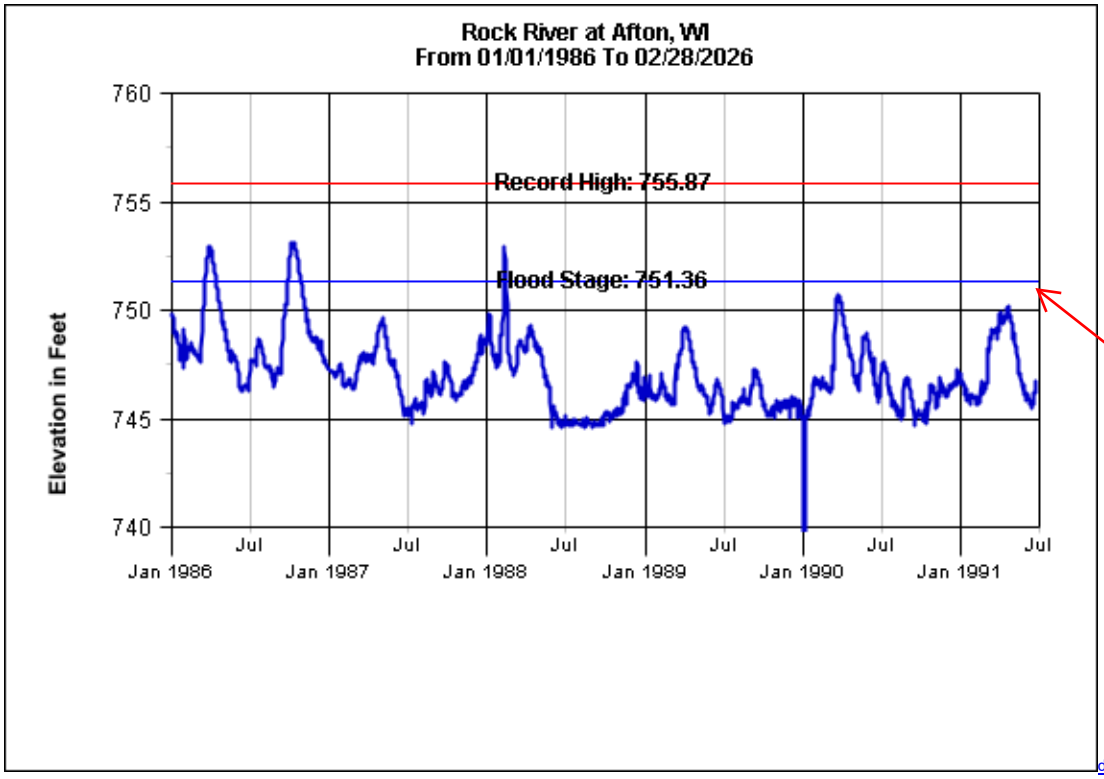
Plot | Tabulate | Tabulate (Yearly Formatted)

View All Images

Additional Links:
View Record Stage High / Lows
DECODES XML
Historic Flood Profiles (Hwy 59 WI RM 207.8 to RM 156.3)
Rating Table
Bench Marks and Reference Points
Official USGS data for this station
Official National Weather Service information for this station

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

Rock River at Afton, WI
(06:00 Central)

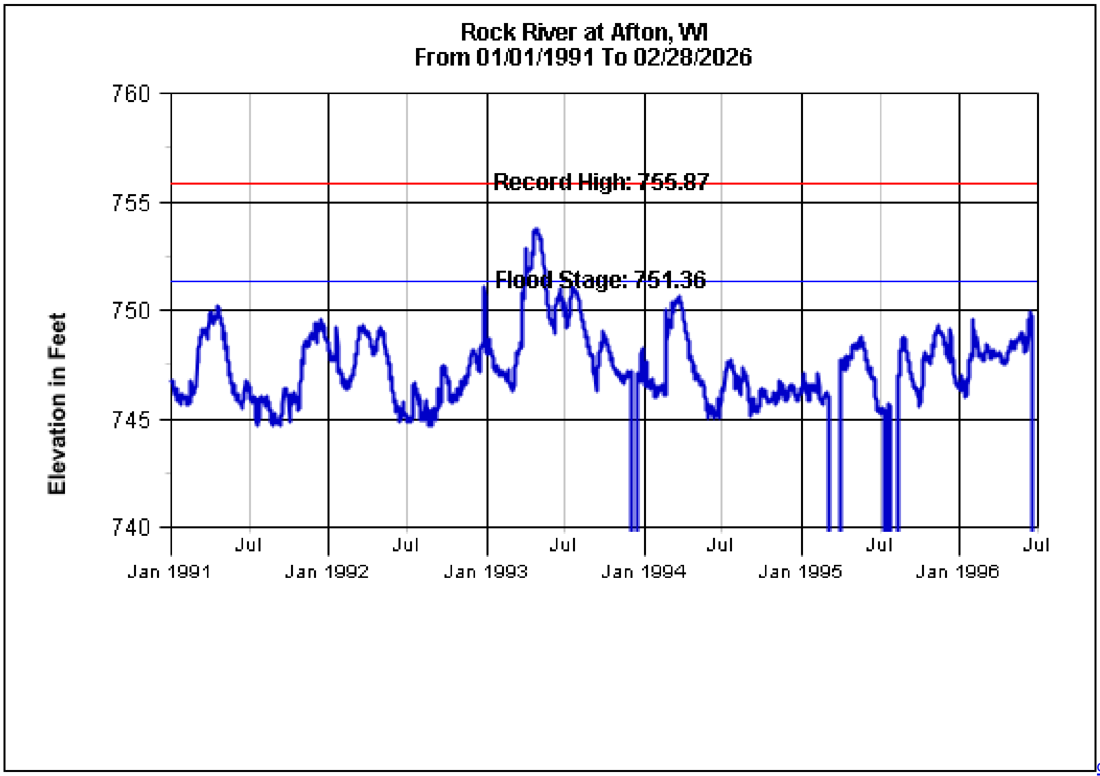


Flood Elevation
On Off
Record High Elevation
On Off
View Graph

100-year flood stage downstream at Rock River Final WPDES Settling Pond from FEMA is at elevation ~750 feet

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

Rock River at Afton, WI
(06:00 Central)

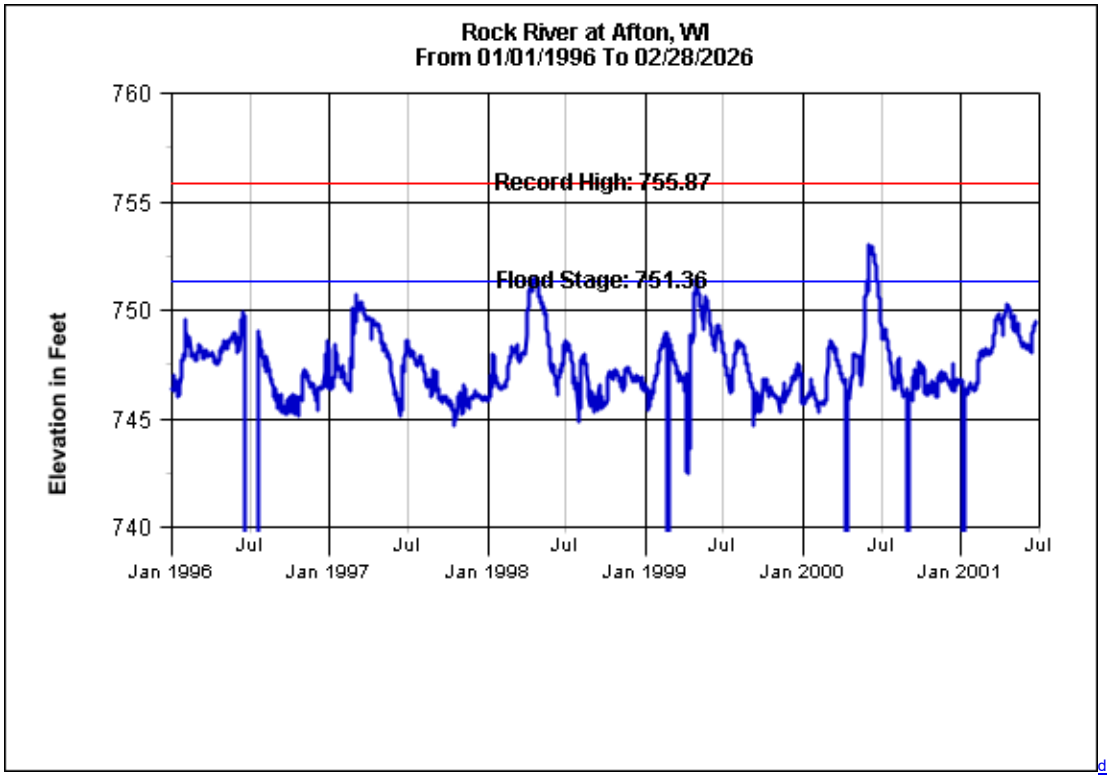


Flood Elevation
On Off
Record High Elevation
On Off
View Graph

d

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

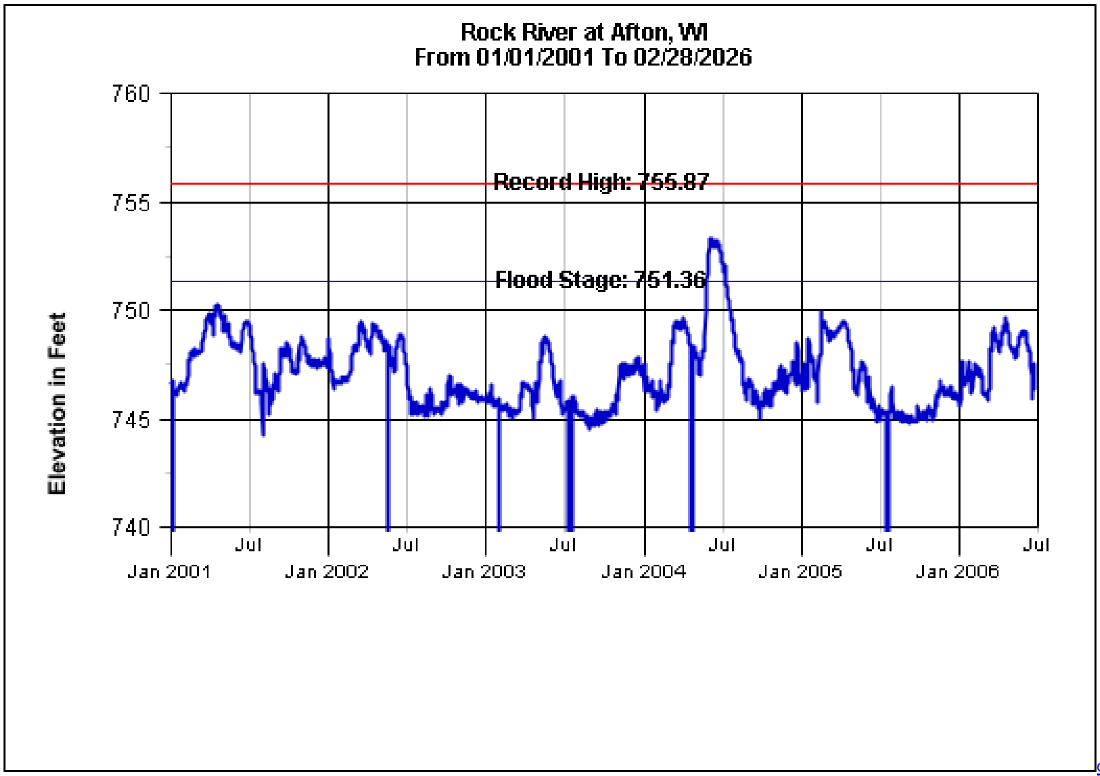
Rock River at Afton, WI
(06:00 Central)



Flood Elevation
On Off
Record High Elevation
On Off
View Graph

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

Rock River at Afton, WI
(06:00 Central)

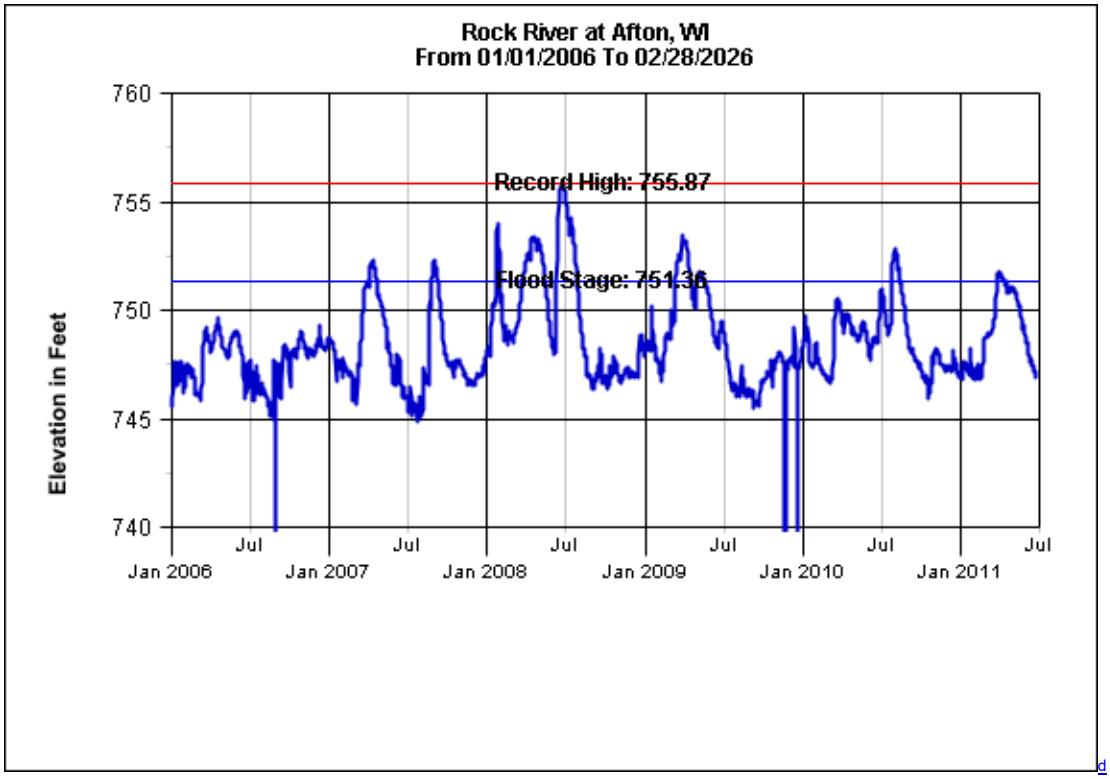


Flood Elevation
On Off
Record High Elevation
On Off
View Graph

d

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

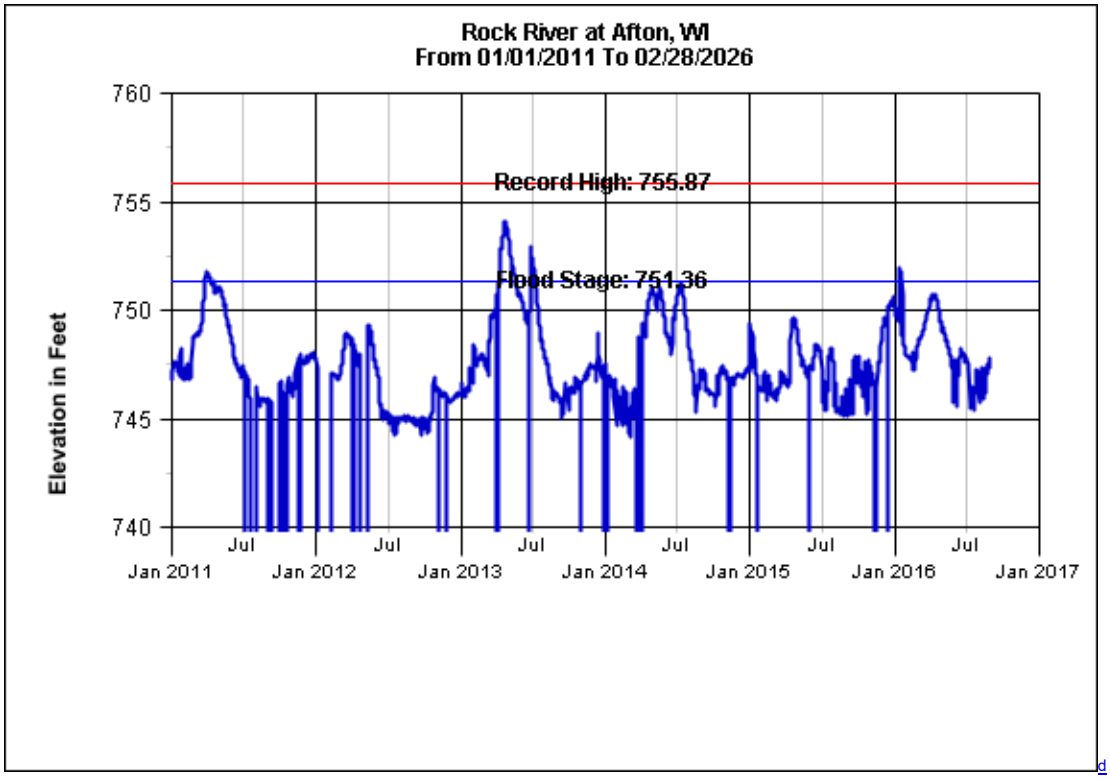
Rock River at Afton, WI
(06:00 Central)



Flood Elevation
On Off
Record High Elevation
On Off
View Graph

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

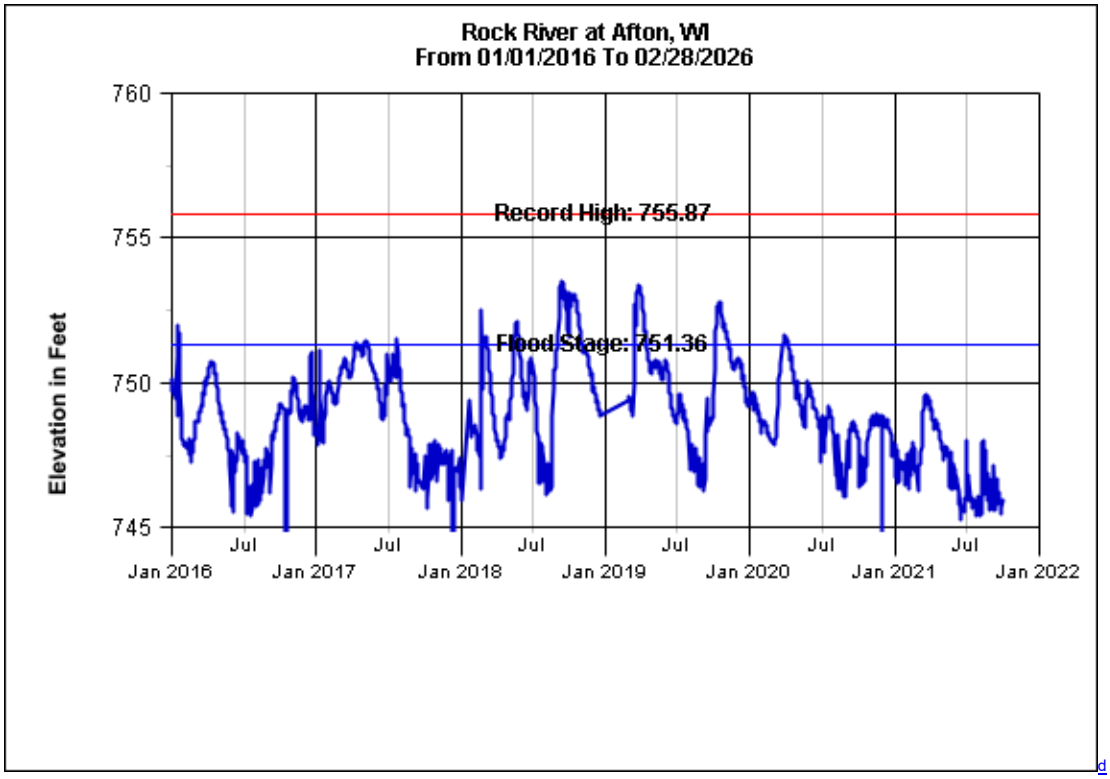
Rock River at Afton, WI
(06:00 Central)



Flood Elevation
On Off
Record High Elevation
On Off
View Graph

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

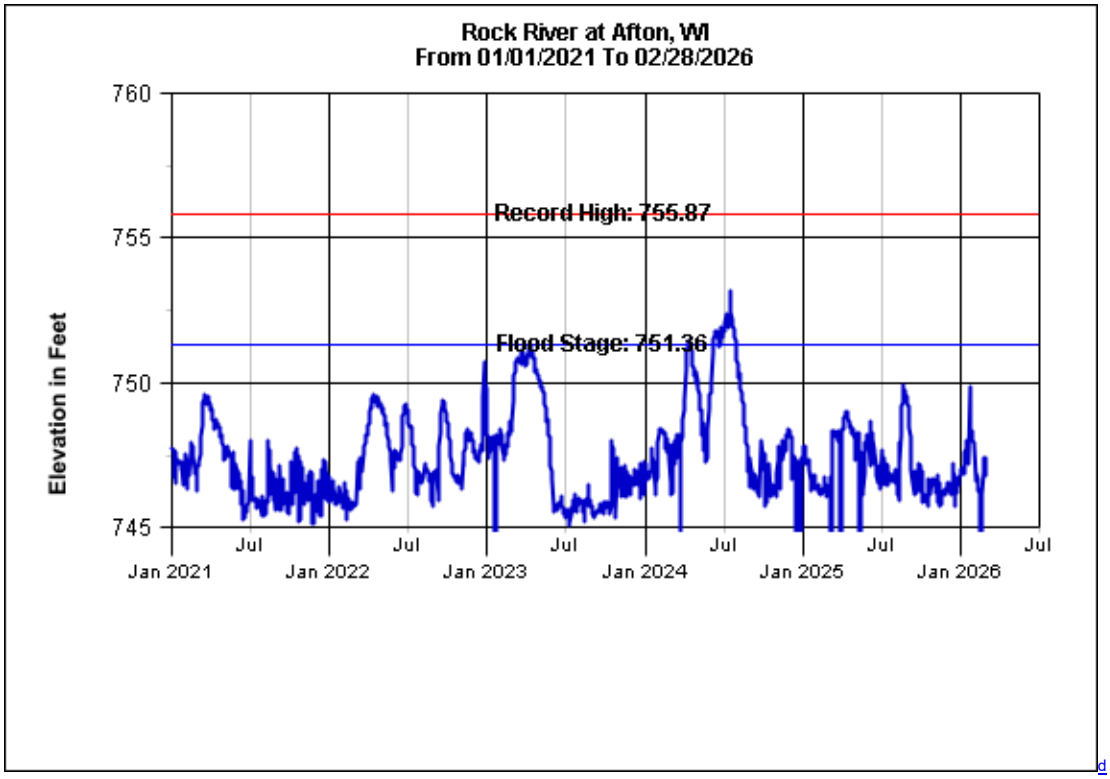
Rock River at Afton, WI
(06:00 Central)



Flood Elevation
On Off
Record High Elevation
On Off
View Graph

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us

Rock River at Afton, WI
(06:00 Central)



Flood Elevation
On Off
Record High Elevation
On Off
View Graph

US Army Corps of Engineers - Rock Island District - Water Control Center - Contact Us