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Regulation Compliance Report

Weston Units 3 & 4 Bottom Ash Basin Hazard Potential Classification Assessment and Emergency Action Plan Determination

Weston Generating Station
Rothschild, Wisconsin

Submitted to:
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October 2021, Revision 1
Project 1803049

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Revision Schedule

Revision 0 October 2016

Revision 1 October 2021: This plan was updated in accordance with § 257.73 (f)(3) which required the owner or operator of the CCR unit to prepare periodic hazard potential classification assessments, periodic structural stability assessments, and periodic safety factor assessments every five years. Updated the existing site conditions and engineering calculations.

1. Introduction

The WEC Energy Group (WEC) owns and operates the Weston Generating Station located at 2501 Morrison Avenue in Rothschild, Wisconsin. The facility is a base load, coal-fired, electrical power station having two coal-fired boilers, a natural gas-fired generating unit, and two peaking units used for electricity production. The two coal-fired units, Units 3 & 4, have nameplate rated capacities of 325 and 595 MW and were commissioned in 1981 and 2008, respectively. WEC burns sub-bituminous coal from the Powder River Basin as the primary fuel source in the boilers. As a result, coal combustion residuals (CCR), such as fly ash, bottom ash, and flue-gas desulfurization (FGD) material, are generated.

CCR are sluiced to one of two primary settling basins where the CCR quickly settles out and the sluice water flows to the secondary basins. In 2005, to increase the rail car capacity of the plant, the secondary bottom ash basins were bisected to facilitate the construction of a rail line. So rather than having north and south secondary bottom ash basins, Weston has Northeast, Northwest, Southeast, and Southwest secondary bottom ash basins. Currently, only the Northeast and Southeast secondary bottom ash basins accept CCR.

In general, the primary basins are dry and the dewatered bottom ash is removed from the primary basins on a weekly basis using a front-end loader and transported via dump truck to the ash storage pad for future beneficial use. The Northeast and Southeast secondary bottom ash basins are designed to provide a residence time for the CCR fines to settle out from the sluice water. To improve residence time and assist in settling the fines, silt curtains are used in the Northeast and Southeast secondary bottom ash basins.

The Northwest and Southwest bottom ash basins are no longer designed to accept CCR and simply provide additional capacity of treated water. Water from the secondary bottom ash basins is treated for pH and suspended solids, as needed, and pumped to a Tertiary Basin where the water is either reused as carriage water for sluicing bottom ash in a closed-loop system, used as non-potable water for the power plant, or discharged to the Wisconsin River under WPDES Permit No. WI-0042756-07-0 through Outfall 002. Figure 1 – Basin Flow Summary shows a generalized cross section with locations of the secondary and tertiary bottom ash basins and the Wisconsin River along with groundwater and flood information.

Based on the Rule, the Weston Units 3 & 4 bottom ash basins are regulated under 40 CFR Part 257 Subpart D as an existing CCR surface impoundment. Each CCR unit will record compliance with these requirements in the facility's operating record, notify the state of decisions, and maintain a publicly available website of compliance information.

As part of the design criteria under § 257.73 *Structural integrity criteria for existing CCR surface impoundments*, the owner or operator must operate perform periodic hazard potential classification assessments (§ 257.73 (a)(2)) to determine the need for an Emergency Action Plan

(§ 257.73 (a)(3)) and based on the height and storage capacity of the impoundments determine the need for history of construction (§ 257.73 (c)), periodic structural stability assessments (§ 257.73 (d)), and periodic safety factor assessments (§ 257.7(e)). This report provides the hazard potential classification assessment and determinations for the Emergency Action Plan; history of construction; periodic structural stability assessment; and periodic safety assessments. The report contains the following sections:

Section 1 – Introduction

Section 2 – Hazard Potential Assessment

Section 3 – Emergency Action Plan Determination

Section 4 – History of Construction, Periodic Structural Stability Assessments, and Periodic Safety Factor Assessments Determinations

Section 5 – Conclusion

Section 6 – References

2. Hazard Potential Assessment

As part of the design criteria under § 257.73 (a)(2) – Periodic Hazard Potential Assessments, the owner or operator must conduct an initial hazard potential classification assessment of the CCR unit. The hazard potential classification is defined by the Rule as:

> *Hazard potential classification means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of the diked CCR surface impoundment or mis-operation of the diked CCR surface impoundment or its appurtenances. The hazardous potential classifications include high hazard potential CCR surface impoundment, significant hazard potential CCR surface impoundment, and low hazard potential CCR surface impoundment, which terms mean:*
> *(1) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.*
> *(2) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.*
> *(3) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact*

The United State Army Corp of Engineers ER 1110-2-106 - Recommended Guidelines for Safety Inspection of Dams dated 26 September 1979, outlines principal factors to be weighed in the determination of existing or potential hazards. Based on the ER 1110-2-106 the two significant factors in determining the hazard potential classification are the size of the impoundment and the potential for the loss of life. Table 3.1 – Size Classification categorizes the impoundments based on storage capacity and height of the dam.

Table 3.1
Size Classification

Category	Impoundment	
	Storage (acre-feet)	Height (feet)
Small	50 and <1,000	25 and <40
Intermediate	1,000 and <50,000	40 and <100
Large	>50,000	>100

Table 3.2 – Hazard Potential categorizes the impoundments based on the potential for loss of life and economic loss.

Table 3.2 Hazard Potential		
Category	Loss of Life (Extent of Development)	Economic Loss (Extent of Development)
Low	None Expected (No permanent structures for human habitation)	Minimal (undeveloped to occasional structures or agriculture)
Significant	Few (No urban development and no more than a small number of uninhabited structures)	Appreciable (notable agriculture, industry, or structures)
High	More than a few	Excessive (Extensive community, industry, or agriculture)

The hazard potential of the impoundments is dependent on the impoundments' location relative to inhabited structures, industrial and urban development, and critical infrastructure. The area downstream of the impoundments is rural, wooded, and undeveloped. The nearest critical infrastructure downstream of the impoundments is the Mosinee Dam, which is approximately 6 miles downstream along the Wisconsin River. This reach of the river is wooded and undeveloped. Figure 2 – Flow Path to Mosinee Dam is an image from Google Earth showing the flow path from the southwest impoundment to the Mosinee Dam.

Table 3.3 – Weston Bottom Ash Basins Size Classification and Hazard Potential summarizes the size, height, and hazard potential for loss of life and economic loss.

Table 3.3 Weston Bottom Ash Basins Size Classification and Hazard Potential			
Impoundment	Size (acre-feet)	Height (feet)	Hazard Potential
Northeast	11.3	8.5	Low/Low
Southeast	14.2	11.0	Low/Low

Based on impoundments' capacity, height, location, and the distance to critical infrastructure, the Weston Units 3 & 4 Bottom Ash Basins are less than small in size and low hazard potential CCR surface impoundments. This determination is consistent with findings presented in dam assessment report for the CCR units conducted by Dewberry Consultants, LLC (Dewberry) as part of the Round 12 CCR Impoundment Dam Assessment Reports completed for the US EPA. Dewberry concluded that the impoundments are small, low-hazard potential dams; critical infrastructure is nearly non-existent within 5 miles downstream of the impoundments; and during the site visit this potential failure path was observed to intersect a perimeter ditch, originally constructed as part of construction storm water management. This ditch terminates at a berm, which would prevent releases from entering the Wisconsin River.

3. Emergency Action Plan Determination

As part of the design criteria, § 257.73 (a)(3) Emergency Action Plan, the owner or operator is required to prepare an Emergency Action Plan if the owner or operator determines the CCR surface impoundment is either a high hazard potential or a significant hazard potential CCR surface impoundment. The Units 3 & 4 Bottom Ash Basins at the Weston Generating Station are low hazard potential surface impoundments and WEC is not required to develop an Emergency Action Plan in accordance with § 257.73 (a)(3).

4. History of Construction, Periodic Structural Stability Assessments, and Periodic Safety Factor Assessments Determinations

As part of the design criteria, § 257.73 (b) exempts low height and low volume CCR surface impoundments from the requirements to document the history of construction, § 257.73 (c), periodic structural stability assessments, § 257.73 (d), and periodic safety factor assessments § 257.7(e).

§ 257.73 (b) The requirements of paragraphs (c) through (e) of this section apply to an owner or operator of an existing CCR surface impoundment that either:

(1) Has a height of five feet or more and a storage volume of 20 acre-feet or more; or

(2) Has a height of 20 feet or more.

Based on the size of the impoundments summarized in Table 3.3 – Weston Bottom Ash Basins Size Classification and Hazard Potential and Appendix A – Secondary Bottom Ash Basins Staged-Storage Capacity, WEC is exempt from the requirements of § 257.73 paragraphs (c) through (e) in accordance with § 257.73 (b)(1) because none of the impoundments have a height of five feet or more and a storage volume of 20 acre-feet or more.

5. Conclusion

The Weston Units 3 & 4 Bottom Ash Basins are regulated under 40 CFR Part 257 Subpart D as an existing CCR surface impoundment. § 257.73 (a) specifies that existing CCR surface impoundments must conduct and complete the assessments required by this section every five years. The deadline for the assessment is based on the date of completing the previous assessment. Based on the initial hazard potential assessment, the Weston Units 3 & 4 Bottom Ash Basins are small, low hazard potential impoundments and are not required to develop an Emergency Action Plan in accordance § 257.73 (a)(3).

§ 257.73 (b) requires impoundments having height of five feet or more and a storage volume of 20 acre-feet or more; or a height of 20 feet or more to compile a history of construction, completed periodic structural stability assessments, and periodic safety factor assessments in accordance with paragraphs § 257.73 (c), § 257.73 (d), and § 257.7(e), respectively. Based on the size of the Weston Units 3 & 4 Bottom Ash Basins, WEC is exempt from compiling a history of construction, completing periodic structural stability assessments, and completing periodic safety factor assessments in accordance with paragraphs § 257.73 (c), § 257.73 (d), and § 257.7(e), respectively.

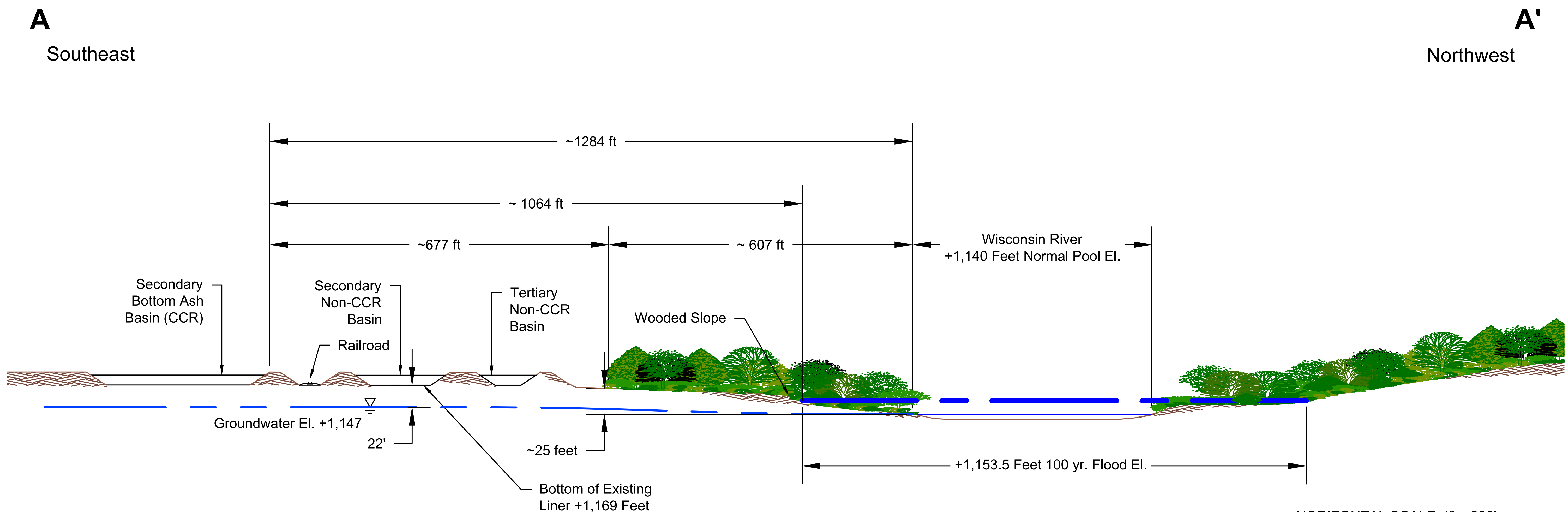
The Hazard Potential Classification and Emergency Action Plan determination were completed under the direction of John, M. Trast, P.E. I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wisconsin Administrative Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wisconsin Administrative Code; 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 Part 257 Subpart D.

6. References

Dewberry Consultants LLC (2014). Coal Combustion Residue Impoundment Round 12 – Dam Assessment Report. Weston Generating Station (Site 26) Northeastern, Northwestern, Southeastern and Southwestern Secondary Bottom Ash Treatment Ponds. Wisconsin Public Service, Rothschild, WI. February 2014.

U.S. Army Corp of Engineers, (1979), "Recommended Guidelines for Safety Inspection of Dams," ER 1110-2-106. Washington D.C., September 1979.

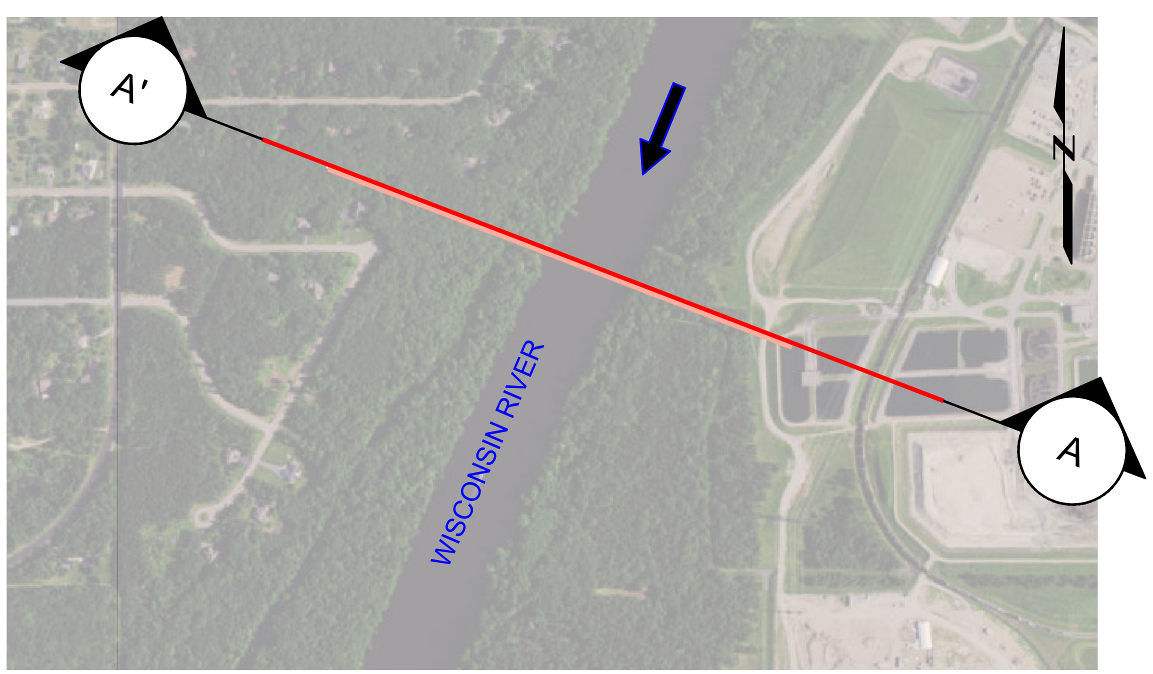
Figures



SECTION VIEW

HORIZONTAL SCALE: 1" = 200'
0 200' 400'

0 100' 200'
VERTICAL SCALE: 1" = 100'
NOTE: 2x VERTICAL EXAGGERATION



PLAN VIEW
NOT TO SCALE

WEC Weston Units 3 & 4 Bottom Ash Basins Weston Generating Station, Rothschild, Wisconsin	GEI Consultants	BASIN FLOW SUMMARY GENERALIZED CROSS SECTION
WEC Energy Group Milwaukee, Wisconsin 53203	Project 1803049	September 2021 Fig. 1

\\grb-pzcc-1\ K:\WEC Energy Group\1609370_WPS Weston Units 3-4 Ash Impoundments\CAD_GIS\01_GIS\07_CAD Figures\1803049_Aquifer_2021.dwg - 9/26/2021

3,000 1,500 0 3,000

Feet

WEC Weston Units 3 & 4 Bottom Ash Basins Weston Generating Station, Rothschild, Wisconsin	GEI Consultants	Flow Path to Mosinee Dam
WEC Energy Group Milwaukee, Wisconsin 53203	PROJECT 1803049	June 2021 Fig. 2

02-AUG-16 K:\WEC Energy Group\1609370_WPS Weston Units 3-4 Ash Impoundments\CAD_GIS\01_GIS\02_MXDs\1803049_Fig02_DOWNSTREAM STRUCTURES_2021.mxd CEF

Appendix A

Secondary Ash Basins Staged-Storage Capacity

WEC Weston Generating Station
Weston Units 3 4 Bottom Ash Basins
GEI Project Number 1803049

Secondary Bottom Ash Basins Stage-Storage Capacity

GEI Consultants

Elevation (feet) (NAVD 1988)	Storage Capacity by Basin			
	NE Secondary Basin	Cumulative Capacity NE Basin	SE Secondary Basin	Cumulative Capacity SE Basin
	(gallons)	(acre-feet)	(gallons)	(acre-feet)
1,173.00	0	0.0	0	0.0
1,173.25	0	0.0	0	0.0
1,173.50	0	0.0	0	0.0
1,173.75	30,832	0.1	57,860	0.2
1,174.00	85,734	0.4	115,454	0.5
1,174.25	112,834	0.7	143,253	1.0
1,174.50	114,740	1.1	145,435	1.4
1,174.75	116,655	1.4	147,623	1.9
1,175.00	118,578	1.8	149,818	2.3
1,175.25	120,509	2.1	152,020	2.8
1,175.50	122,448	2.5	154,228	3.3
1,175.75	124,395	2.9	156,442	3.8
1,176.00	126,351	3.3	158,663	4.2
1,176.25	128,314	3.7	160,891	4.7
1,176.50	130,286	4.1	163,128	5.2
1,176.75	132,267	4.5	165,372	5.7
1,177.00	134,256	4.9	167,625	6.3
1,177.25	136,255	5.3	169,886	6.8
1,177.50	138,262	5.7	172,156	7.3
1,177.75	140,278	6.2	174,433	7.8
1,178.00	142,303	6.6	176,719	8.4
1,178.25	144,336	7.1	179,013	8.9
1,178.50	146,379	7.5	181,316	9.5
1,178.75	148,430	8.0	183,628	10.1
1,179.00	150,490	8.4	185,948	10.6
1,179.25	152,559	8.9	188,277	11.2
1,179.50	154,637	9.4	190,615	11.8
1,179.75	156,723	9.8	192,961	12.4
1,180.00	158,818	10.3	195,316	13.0
1,180.25	160,923	10.8	197,679	13.6
1,180.50	163,035	11.3	200,052	14.2
1,180.75	165,157	11.8	202,433	14.8
1,181.00	167,288	12.3	204,822	15.4
1,181.25	169,387	12.9	207,180	16.1
1,181.50	171,415	13.4	209,467	16.7
1,181.75	173,411	13.9	211,722	17.4
1,182.00	175,416	14.5	213,985	18.0
1,182.25	177,427	15.0	216,258	18.7
1,182.50	179,427	15.6	218,558	19.4
Total Basin Storage Capacity	5,070,555	15.6	6,310,238	19.4

Normal maximum operating elevation is El. 1,180.50 feet