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October 9, 2015

Mr. Bobby Bull, PE
Florida Department of Environmental Protection
Siting Coordination Office (SCO)
2600 Blair Stone Road, MS 5500
Tallahassee, FL 32399-2400

Dear Mr. Bull,

The Orlando Utilities Commission (OUC) is responding to the October 6th, 2014 Request for Additional Information from Ms. Debra Laisure of the Florida Department of Environmental Protection (FDEP) concerning the design of the lined industrial wastewater ponds at the OUC Stanton Energy Center (SEC), in Orange County, Florida. The FDEP questions and comments were issued upon review of the Engineering Report; Technical Specifications and Construction Quality Assurance Plan; and Design Drawings for Recycle Pond Expansion and Sedimentation Pond (originally designated as South Coal Storage Area Pond), which were prepared by Ardaman & Associates, Inc., dated August 25, 2014. OUC has completed and revised the design and is therefore including a complete, revised set of design drawings for your review. The FDEP questions and comments are shown below in bold format followed by the OUC responses in italicized red print.

Please contact me directly if you have any questions or need any additional information. OUC personnel are available at your convenience to meet with you in Tallahassee or at the Central District offices to discuss any areas of concern or ambiguity.

Thank you,

Charlie Doud, PE

Charlie Doud, PE
cdoud@ouc.com
407 719 6055

cc: Garfield Blair, Director, OUC Environmental Division
Nadim Fuleihan, PE, Ardaman & Associates, Inc.
Mohamad Al-harwaree, PE, Ardaman & Associates, Inc.
Tom Lubozynski, PE, Administrator, FDEP
Chris Ferraro, PE, Water Facilities Administrator
Justin Green, Program Administrator, Siting Coordination Office, FDEP
Cindy Mulkey, Program Administrator, Office of Business Planning, FDEP
Laxsamee Levin, Solid Waste Permitting Manager, FDEP

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1. **In section 1.4 on page 2 of the Engineering Report it is stated that the Recycle Pond receives wastewater from the control center, administration and plant services buildings. Is this domestic wastewater? If so, is it treated or untreated? Please explain in detail.**

Response:

Domestic wastewater is routed to the sewage treatment plant. Discharge from the sewage treatment plant is conveyed to the makeup water pond.

2. **For each of the ponds that will be modified, please provide a simplified report of:**

   A. **The daily inflows to the pond and the volumes, i.e. what comes in from where and how much;**

   B. **The daily outflows from the pond and the volumes, i.e. how much water goes out and to where?**

Response:

Coal Storage Area (CSA) Runoff Ponds

The watershed reporting to the CSA runoff ponds is approximately 60 acres with a ponded area of about 10 acres.

Daily Inflows:

- *Rainfall Runoff: Ranges between 118,000 and 412,000 gpd with an average of 226,000 gpd.*
- *From CC units (when operating)*
  - *Unit A: 14,000 gpd*
  - *Unit B: 7,000 gpd*

Daily Outflows:

- *Evaporation Estimates: Ranges between 68,000 and 159,000 gpd with an average of 112,000 gpd*
- *To Recycle Basin: Varies.*
- *To Recycle Basin Expansion: Varies.*

Coal Waste Storage Area (CWSA) Runoff Pond

The watershed reporting to the CWSA runoff ponds is approximately 55 acres with a ponded area of about 10 acres.

Daily Inflows:

- *Rainfall Runoff: Ranges between 108,000 and 377,000 gpd with an average of 208,000 gpd.*

Daily Outflows:

- *Evaporation Estimates: Ranges between 64,000 and 149,000 gpd with an average of 105,000 gpd*
- *To Recycle Basin: Varies.*
- *To Recycle Basin Expansion: Varies.*

Recycle Basin Expansion (RBE)

The watershed reporting to the RB is approximately 9.5 acres with a ponded area of about 7.5 acres.

Daily Inflows:

- *Rainfall Runoff: Ranges between 19,000 and 65,000 gpd with an average of 36,000 gpd.*

Daily Outflows:

- *Evaporation Estimates: Ranges between 19,000 and 45,000 gpd with an average of 32,000 gpd*
- *To Recycle Basin: Varies.*

Recycle Basin (RB)

The watershed reporting to the RB is approximately 14 acres with a ponded area of about 12 acres.

Daily Inflows:

- *Rainfall Runoff: Ranges between 27,000 and 96,000 gpd with an average of 53,000 gpd.*
- *From CSA: Varies*
- *From RBE: Varies*

- *From CWSA Runoff Pond: Varies*
- *From Neutralization Basin: 158,000 gpd.*
- *From FGD (when operating)*
  - *Unit 1: 144,000 gpd*
  - *Unit 2: 144,000 gpd*
- *Misc. Wastewater: 430,000*

Daily Outflows:

- *Evaporation Estimates: Ranges between 30,000 and 69,000 gpd with an average of 49,000 gpd*
- *To FGD (when operating): Varies.*
  - *Unit 1: 850,000 gpd.*
  - *Unit 2: 770,000 gpd.*
- *Ash handling (when operating): 90,000 gpd.*

Total Average Daily Net Outflow: 588,000 gpd

3. **The underdrain system in the Recycle Pond and the Recycle Pond Expansion will lower the groundwater table. How far out from the ponds will the impact to the groundwater table elevation extend?**

Response:

Based on a three-dimensional, transient groundwater modeling analysis performed using MODFLOW, the 1.0 foot calculated water-table drawdown contour occurs at a distance of about 2,700 feet west from the Recycle Pond Expansion after operating the underdrain system for 180 days assuming just 1 inch of recharge during that period of time. (Refer to HSW Engineering Technical Memorandum dated September 21, 2015).

4. **Will the lowering of the groundwater table elevation extend out to the wetlands located southwest of the Recycle Pond and the Recycle Pond Expansion? If so, demonstrate that the change in groundwater elevation will not adversely impact the wetland.**

Response:

Refer to HSW Engineering Technical Memorandum dated September 21, 2015. Results of the groundwater modeling analysis indicate that any water table drawdown in the vicinity of the wetlands located southwest of the Recycle Pond and south of the Recycle Pond Expansion induced by the underdrain system will be offset by recharge from an existing drainage ditch located immediately north of the wetlands. The ditch system extends westward from the southwest corner of the Makeup Pond to the southwest corner of the proposed Recycle Pond expansion

and is deep enough to be hydraulically connected to the Makeup Pond. The Makeup Pond is maintained at a nearly constant level by transmitting treated water from off-site Orange County facilities when needed.

5. **In section 1.5 on page 5 of the Engineering Report it is stated that the minimum and maximum operating water elevations for the Recycle Pond Expansion are +70 and +79 feet (NAVD88), respectively. In section 7.2 on page 19 and in subsequent sections, it is stated that the minimum and maximum operating water elevations for the Recycle Pond Expansion are +72 and +79 feet (NAVD88), respectively. Please either clarify or correct this apparent inconsistency.**

Response:

The minimum bottom elevation of the Recycle Pond Expansion is +70 feet (NAVD88) and the maximum top of HDPE liner elevation of the Recycle Pond Expansion at the spillway is +80.6 feet (NAVD88). OUC will operate the Recycle Pond Expansion between a minimum operating water elevation of +72 (NAVD88) and a maximum operating water elevation of +79 feet (NAVD88). The statement in Section 1.5 reads "The proposed Recycle Pond Expansion will have a design storage volume of approximately 60 acre-feet between the minimum and maximum operating water elevations of +70 and +79 feet (NAVD88)". The statement should have read "The proposed Recycle Pond Expansion will have a design storage volume of approximately 64 acre-feet between water elevations of +70 and +80.6 feet (NAVD88)".

6. **Please provide complete stage/storage information for the modified Recycle Pond, the Recycle Pond Expansion, the modified North Coal Storage Area Pond, and the modified South Coal Storage Area Pond (future sedimentation pond).**

Response:

The stage storage information for the modified Recycle Pond, the Recycle Pond Expansion, the modified North Coal Storage Area Pond, and the Sedimentation Pond are presented in Tables 1 through 4 of this response, respectively. Plots of stage storage relationship for each pond are presented in Appendix 1 of this response.

7. **Appendix 17 of the Engineering Report provided documentation supporting the hydraulic and hydrogeological evaluation of the coal storage area. Please provide similar supporting documentation for the other ponds.**

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Response:

Supporting documentation for hydraulic evaluation of the Stack-Out pad area, from which the Sedimentation Pond receives the stormwater runoff, is provided in Appendix 3 of the Engineering Report. Neither the modified Recycle Pond nor the Recycle Pond Expansion directly receive any stormwater runoff thus the documentations for hydraulic evaluations are not provided.

8. **The Coal Storage Area Runoff Pond volumetric analysis was done for the 100-year/24-hour storm. Were the other ponds evaluated for the 100-year/24-hour storm? If not, what storm event was used to evaluate each of the other ponds?**

Response:

Supporting calculation for Sedimentation Pond considering 100-year/24-hour storm event is presented in Appendix 2 of this response. As stated previously, neither modified Recycle Pond nor Recycle Pond Expansion directly receive any stormwater runoff thus the volumetric analyses are not provided.

9. **As discussed during the pre-application meeting, evaluating the system for only a single large event does not provide reasonable assurance that the system will perform as a zero discharge system. Please evaluate the system for a wet season such as we had this summer.**

Response:

With both coal units operating, the lined ponds will be operated between the Minimum Operating Water Level and Normal Operating Water Level. At the Normal Operating Water Level throughout the year, the CWSA and Coal Storage ponds (NCP & SCP) will have a storage capacity of about 15 and 14 million gallons between the normal operating water level and the maximum operating water level, respectively, which is adequate to contain 100 percent of the runoff generated from the 8.5 inches 25-year 24-hour storm. After the storm, each pond will still have about four feet of freeboard to the top of the perimeter dike.

At the Normal Operating Water Level, the RBE and RB will have a storage capacity of 11 and 18.5 million gallons between the normal operating water level and the maximum operating water level, respectively. This volume is adequate to contain a second 25-year 24-hour storm event over the entire NCP, CWSA, RBE and RB watersheds.

Even after two back to back 25-year 24-hour storm events, the system will still have a total remaining storage capacity of about 20 million gallons before the water level reaches the invert of the spillway (equivalent to about another 5 inches of rainfall over the entire watershed). The invert elevation of the spillway is about 2.5 feet below the top of the dike.

10. Please provide the following information for review:

A. An operating schedule or water regulation schedule for the system;

Response:

Pond Name	*Operating Water Level (Feet NAVD88)*			
	Minimum	*Normal*	*Maximum*	*Emergency*
CWSA	*75.5*	*77.5*	*85.0*	*87.0*
NCP (CSA)	*72.0*	*74.0*	*79.0*	*80.5*
SCP (Sedimentation Pond)	*72.0*	*74.0*	*79.0*	*80.5*
RBE	*72.0*	*74.0*	*79.0*	*80.6*
RB	*72.0*	*74.0*	*79.0*	*80.6*

B. The frequency and volume of withdrawals from the system;

Response:

The FGD system consumption (when operating) is as follows:
Unit 1 = 770,000 gpd and
Unit 2 = 850,000 gpd.

The Ash handling consumption (when operating) is approximately 90,000 gpd.

C. The time period after a 100-year/24-hour storm event required for the volume in the system to become available again, assuming typical operation and no subsequent rain events;

Response:

The 100-year storm is about 11.3 inches and it will generate about 9 inches of runoff or about 34 million gallons over the 139 acres watershed. Assuming typical operation (both coal units operating) and no subsequent rain events, the system could have a net consumption of about 1,100,000 gallons per day which could consume the excess water in 31 days.

D. Whether or not typical operation of the system returns the water elevation to the minimum level or to another set elevation and, if so, what elevation.

Response:

Typical operation relies on full or part time utilization of the coal units. Utilization of the coal units can be adjusted to manage excess water and to maintain water levels within the operation limits.

Table 1

Stage-Storage Relationship for Modified Recycle Pond

Elevation (feet, NAVD88)	Incremental Volume		Total Volume		
	(Cubic Yard)	(ft^3)	(ft^3)	(Mgal)	(ac-ft)
83	21,717	586,346	5,775,894	43.21	132.60
82	21,044	568,184	5,189,548	38.82	119.14
81	20,375	550,123	4,621,364	34.57	106.09
80	19,710	532,163	4,071,240	30.45	93.46
79	19,048	514,304	3,539,077	26.47	81.25
78	18,391	496,545	3,024,773	22.63	69.44
77	17,737	478,887	2,528,228	18.91	58.04
76	17,086	461,329	2,049,341	15.33	47.05
75	16,440	443,873	1,588,012	11.88	36.46
74	15,797	426,517	1,144,139	8.56	26.27
73	14,426	389,498	717,623	5.37	16.47
72	9,496	256,397	328,125	2.45	7.53
71	2,499	67,477	71,728	0.54	1.65
70	75	2,030	4,251	0.03	0.10
69	51	1,374	2,221	0.02	0.05
68	31	846	846	0.01	0.02

Table 2

Stage-Storage Relationship for Recycle Pond Expansion

Elevation (feet, NAVD88)	Incremental Volume		Total Volume		
	(Cubic Yard)	(ft^3)	(ft^3)	(Mgal)	(ac-ft)
83	13,202	356,457	3,658,600	27.37	83.99
82	12,854	347,051	3,302,143	24.70	75.81
81	12,509	337,741	2,955,092	22.11	67.84
80	12,168	328,528	2,617,351	19.58	60.09
79	11,830	319,412	2,288,823	17.12	52.54
78	11,496	310,393	1,969,411	14.73	45.21
77	11,166	301,470	1,659,018	12.41	38.09
76	10,839	292,644	1,357,548	10.16	31.17
75	10,515	283,914	1,064,905	7.97	24.45
74	10,196	275,281	780,991	5.84	17.93
73	9,849	265,933	505,709	3.78	11.61
72	7,112	192,016	239,776	1.79	5.50
71	1,611	43,509	47,760	0.36	1.10
70	75	2,030	4,251	0.03	0.10
69	51	1,374	2,221	0.02	0.05
68	31	846	846	0.01	0.02

Table 3

Stage-Storage Relationship for Coal Storage Area Runoff Pond

Elevation (feet, NAVD88)	Incremental Volume		Total Volume		
	(Cubic Yard)	(ft^3)	(ft^3)	(Mgal)	(ac-ft)
83	13,379	361,244	3,573,817	26.73	82.04
82	13,066	352,769	3,212,574	24.03	73.75
81	2,575	69,513	2,859,805	21.39	65.65
80.8	9,969	269,175	2,790,293	20.87	64.06
80	12,099	326,678	2,521,117	18.86	57.88
79	11,700	315,893	2,194,439	16.42	50.38
78	11,304	305,209	1,878,547	14.05	43.13
77	10,912	294,625	1,573,338	11.77	36.12
76	10,524	284,143	1,278,713	9.57	29.36
75	10,139	273,762	994,570	7.44	22.83
74	9,759	263,481	720,808	5.39	16.55
73	9,361	252,742	457,327	3.42	10.50
72	5,754	155,349	204,585	1.53	4.70
71	1,664	44,941	49,235	0.37	1.13
70	77	2,073	4,294	0.03	0.10
69	51	1,374	2,221	0.02	0.05
68	31	846	846	0.01	0.02

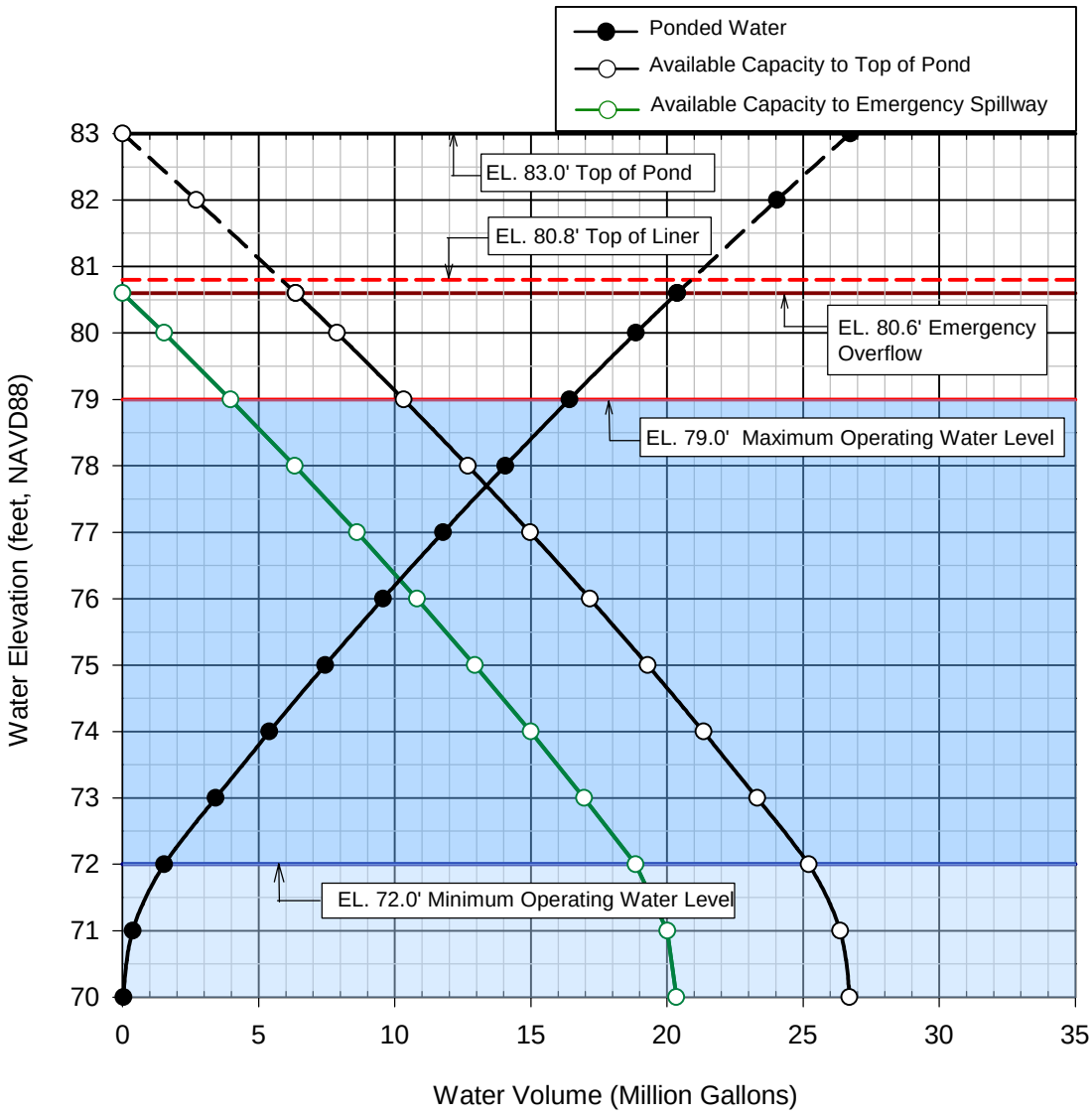
Table 4

Stage-Storage Relationship for Sedimentation Pond

Elevation (feet, NAVD88)	Incremental Volume		Total Volume		
	(Cubic Yard)	(ft^3)	(ft^3)	(Mgal)	(ac-ft)
83	3,263	88,100	884,695	6.618	20.310
82	3,144	84,896	796,594	5.959	18.287
81	3,027	81,742	711,699	5.324	16.338
80	2,912	78,633	629,957	4.712	14.462
79	2,799	75,568	551,324	4.124	12.657
78	2,687	72,548	475,756	3.559	10.922
77	2,577	69,572	403,208	3.016	9.256
76	2,468	66,639	333,636	2.496	7.659
75	2,361	63,751	266,997	1.997	6.129
74	2,256	60,911	203,246	1.520	4.666
73	2,152	58,115	142,335	1.065	3.268
72	2,050	55,354	84,220	0.630	1.933
71	1,033	27,891	28,866	0.216	0.663
70	19	508	975	0.007	0.022
69	11	308	467	0.003	0.011
68	6	158	158	0.001	0.004

APPENDIX 1

PLOTS OF STAGE STORAGE RELATIONSHIPS



Description	Water Elevation (feet, NAVD88)	Ponded Water Volume (Million Gallons)	Remaining Capacity to Top of Pond (Million Gallons)	Remaining Capacity to Top of Emergency Spillway (Million Gallons)
Top of Pond	83.0	26.7	0.0	-
Emergency Spillway	80.6	20.4	6.4	0.0
Maximum Operating	79.0	16.4	10.3	4.0
Minimum Operating	72.0	1.5	25.2	18.8

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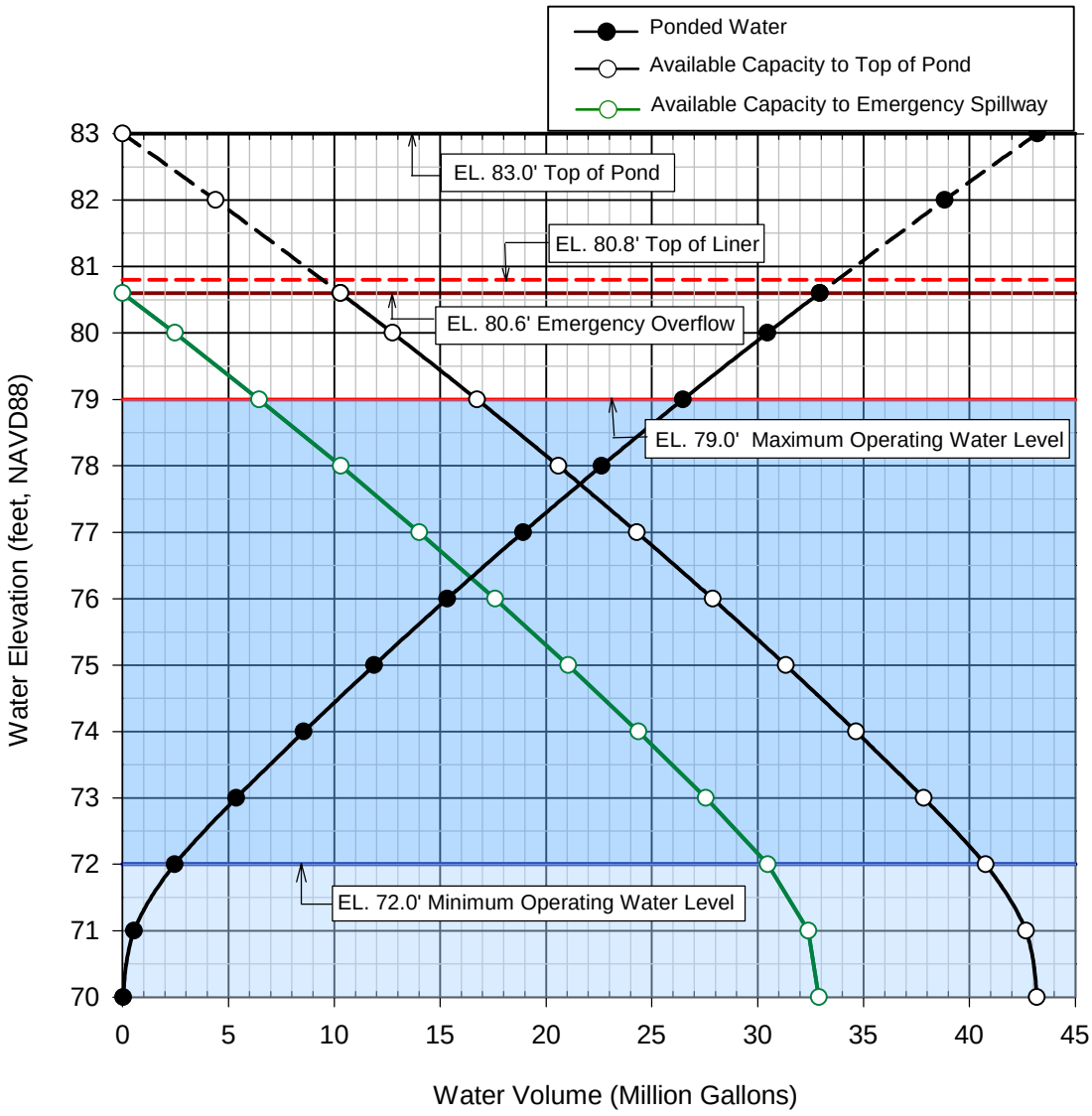

Description	Water Elevation (feet, NAVD88)	Ponded Water Volume (Million Gallons)	Remaining Capacity to Top of Pond (Million Gallons)	Remaining Capacity to Top of Emergency Spillway (Million Gallons)
Top of Pond	83.0	43.2	0.0	-
Emergency Spillway	80.6	32.9	10.3	0.0
Maximum Operating	79.0	26.5	16.7	6.4
Minimum Operating	72.0	2.5	40.8	30.5

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STAGE-STORAGE RELATIONSHIP
RECYCLE POND
WITH 83 FEET DIKE

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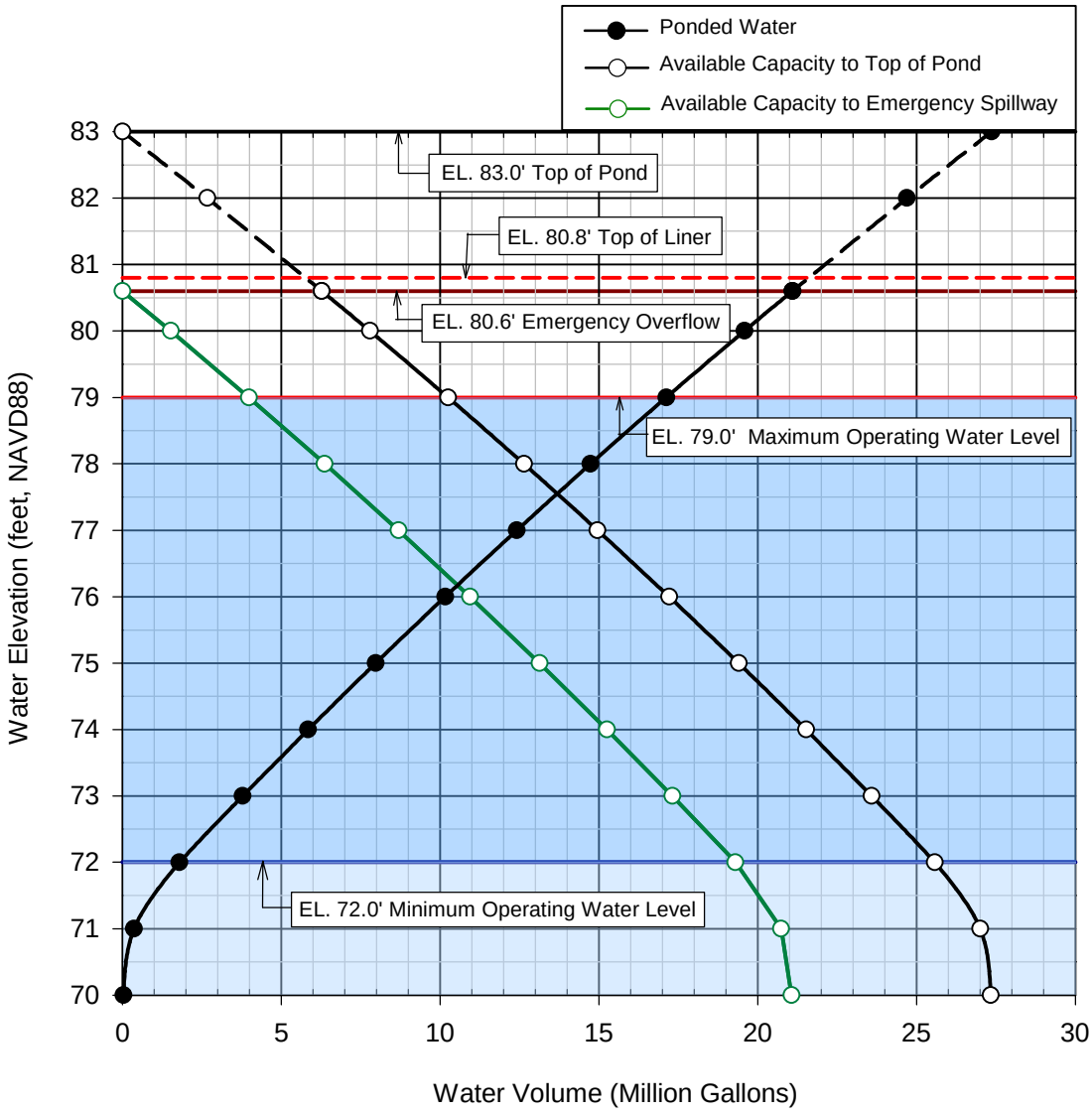

Description	Water Elevation (feet, NAVD88)	Ponded Water Volume (Million Gallons)	Remaining Capacity to Top of Pond (Million Gallons)	Remaining Capacity to Top of Emergency Spillway (Million Gallons)
Top of Pond	83.0	27.4	0.0	-
Emergency Spillway	80.6	21.1	6.3	0.0
Maximum Operating	79.0	17.1	10.2	4.0
Minimum Operating	72.0	1.8	25.6	19.3

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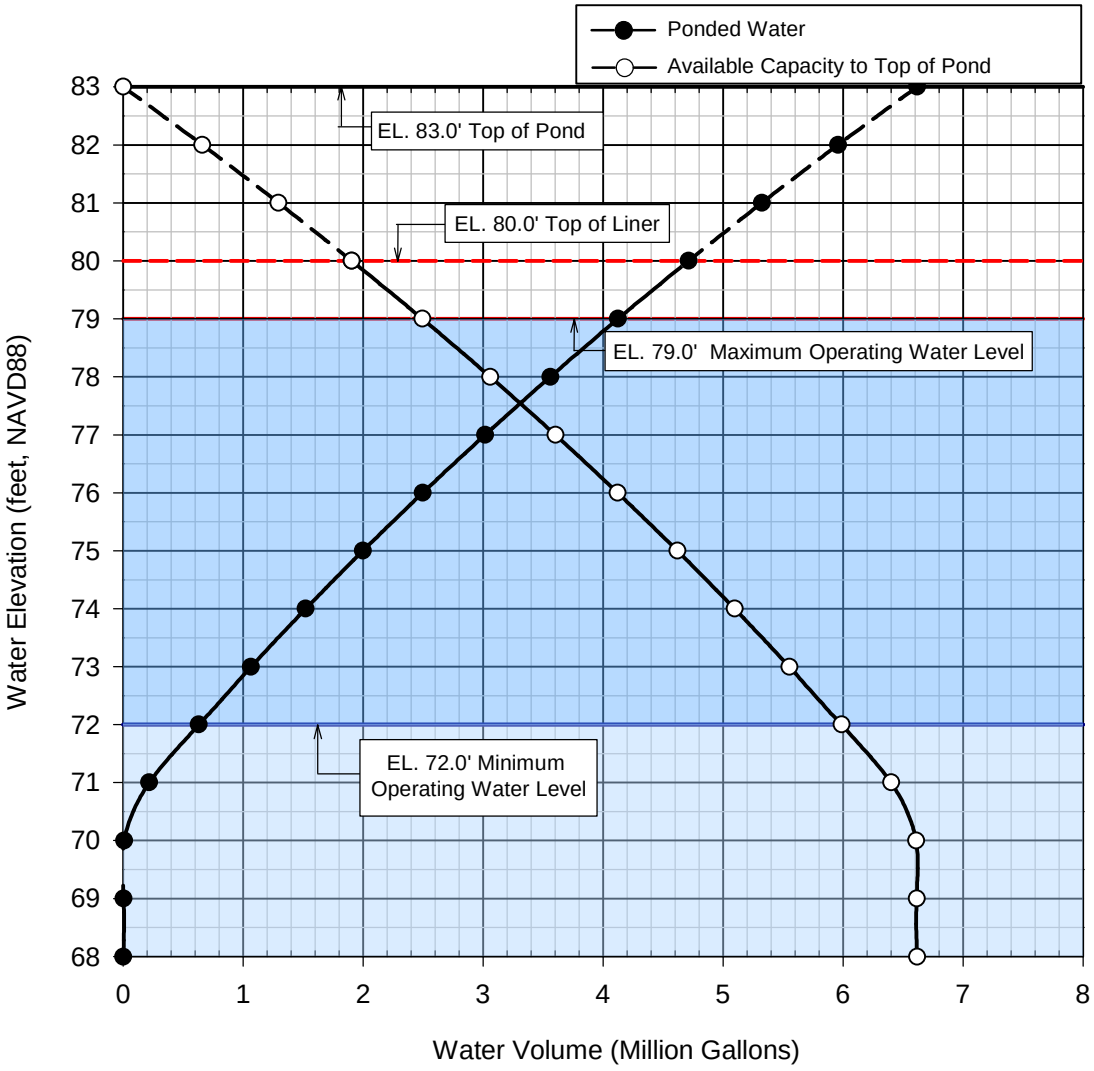

Description	Water Elevation (feet, NAVD88)	Ponded Water Volume (Million Gallons)	Remaining Capacity to Top of Pond (Million Gallons)
Top of Pond	83.0	6.6	0.0
Maximum Operating	79.0	4.1	2.5
Minimum Operating	72.0	0.6	6.0

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STAGE-STORAGE RELATIONSHIP
SEDIMENTATION POND
WITH 83 FEET DIKE

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ORANGE COUNTY, FLORIDA

APPENDIX 2

COAL STORAGE AREA RUNOFF POND VOLUMETRIC ANALYSIS

COAL STORAGE AREA RUNOFF POND
VOLUMETRIC ANALYSIS

Total Contributing Area:

- Coal Yard = 31.25 acre
- Stack Out Pad = 4.20 acre
- North Coal Pond = 8.92 acre

Total = 44.37 acres

Curve Number Assumptions:

- Land Use (Florida Land Use and Forms Classification System)
  - Coal Yard = 150 (Industrial)
  - Stack Out Pad = 150 (Industrial)
  - North Coal Pond = 166 (Holding Pond)

- Soils: Hydrologic Group = D (AMC_II)

Curve Number, CN (SCS TR-55):

- Coal Yard = 93
- Stack Out Pad = 93
- North Coal Pond = 100

Weighted Curve Number:

$$CN = \frac{93(31.25 + 4.2) + 100(8.92)}{44.37}$$

$$CN = 94.41$$

Rainfall (100yr/24hr) depth = 11.4 inches (St. John's River Water Management District 24hr Isohyetal Map)

Soil Conservation Service (SCS) Runoff Volume:

$$S = \frac{1000}{94.41} - 10 = 0.59"$$

$$Q = \frac{[11.4 - (0.2 \text{ x } 0.59)]^2}{11.4 + (0.8 \text{ x } 0.59)} = 10.72 \text{ inches}$$

Total Runoff Volume = 44.37 acres x 10.72 inches x 1 ft/12 inches = 39.64 acre-ft

North Pond Capacity at EL. 81 = 65.7 acre-ft. > Total Runoff Volume