INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN INITIAL ASSESSMENT

CCR 257.82(c)

East Bottom Ash Pond

Rockport Plant
Rockport, Indiana

October, 2023

Prepared for: Indiana Michigan Power Company Rockport Plant

2791 North US HWY 231

Rockport Indiana 47635

Prepared by: Worley

One Meridian Boulevard

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EAST BOTTOM ASH POND

PREPARED BY Erik Leiby Digitally signed by Erik Leiby DN: cn=Erik Leiby, c=US, o=Worley, ou=Civil Engineer, email=Erik.Leiby@worley.com Reason: I am the author of this document Date: 2023.10.13 22:41:39 -04'00' DATE _____

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Yingwu Xu, P.E.

YINGWU XU REGISTERED No. 12000238 STATE OF INDIANA PROFESSIONAL ENGINEER

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I certify to the best of my knowledge, information, and belief that the information contained in this Inflow Design Flood Control System Plan meets the requirements of 40 CFR § 257.82(c).

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Attachments

1.0 OBJECTIVE

This report was prepared by Worley for AEP to fulfill requirements of CCR 257.82(c) for the Inflow Design Flood Control Plan. The report is a summary of the initial evaluation for the Rockport east bottom ash pond following completion of a retrofit.

2.0 DESCRIPTION OF CCR IMPOUNDMENT

The Rockport Plant is located in Spencer County, Indiana. It is owned and operated by Indiana Michigan Company (I&M). Historically, bottom ash was managed at the Rockport Plant, in two contiguous ponds, referred to the East and West BA Ponds. The West Bottom Ash Pond will commence closure when the retrofitted East Bottom Ash Pond goes into service and will then become a stormwater pond after closure.

The east bottom ash pond discharges to the east waste water pond via a reinforced concrete vertical drop inlet connected to a 48-inch diameter pipe. The east waste water pond discharges through a gated structure to either the reclaim pond or to the clear water pond. The reclaim pond discharges to the clear water pond through a 42-inch diameter pipe. The clear water pond discharges to the Ohio river via a 66-inch diameter CMP.

3.0 INFLOW DESIGN FLOOD

The east bottom ash pond has been determined to be a Low Hazard Potential CCR impoundment. Based on this hazard classification, the design flood as determined by section 257.82(a)(3) is to be the 100-year storm event that would incur 7.23 inches of precipitation in a 24-hour period. The site was modeled, however, using additional greater storms of 200-yr, 500-yr and 1,000-yr (1,000-year: 10.3 inches of precipitation in 24 hrs) to provide a more conservative analysis (Attachment A).

4.0 FLOOD CONTROL PLAN

The catchment area for the east bottom ash pond is limited to the actual pond area itself. Attachment A shows the Pondpack analysis results for passing the various inflow design floods. The analysis shows that the pond has the capacity to manage the 100-yr inflow design flood, as well as larger flood events such as the 1000-yr flood.

5.0 SUMMARY OF POND INFLOWS AND FLOOD ELEVATIONS

The following table provides the maximum inflows and flood elevations for the east bottom ash pond.

East Bottom Ash Pond	24-hr, 100-yr	24-hr, 200-yr	24-hr, 500-yr	24-hr, 1,000-yr
Catchment Area = Pond Area	30 acres	30 acres	30 acres	30 acres
Initial WSEL (max operating pool)	396	396	396	396
Stormwater Volume (acre-ft)	18.06	20.21	23.28	25.73
Post Storm Peak Pool Elevation	396.45	396.50	396.57	396.63
Top of Pond Elevation	399	399	399	399
Freeboard (feet)	2.55	2.5	2.43	2.37

Rainfall Inputs from NOAA Atlas 14	
24-hr, 100-yr Rainfall	7.23 inches
24-hr, 200-yr Rainfall	8.09 inches
24-hr, 500-yr Rainfall	9.32 inches
24-hr, 1000-yr Rainfall	10.3 inches

Assumptions:

1. The East Bottom Ash Pond is operating at the maximum pool levels as shown on AEP Drawing 30027-8 at start of storm.
2. The water discharging through the primary discharge structure is equal to the influent rate (i.e. water in = water out).
3. Drainage area for the East Bottom Ash Pond is equal to the pond area.

ATTACHMENT A

Hydrologic and Hydraulic Analysis of Rockport East Bottom Ash Pond

NOAA Atlas 14, Volume 2, Version 3
Location name: Rockport, Indiana, USA*
Latitude: 37.9171°, Longitude: -87.0363°
Elevation: 397.71 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.362 (0.331-0.396)	0.427 (0.391-0.468)	0.498 (0.456-0.545)	0.556 (0.507-0.607)	0.629 (0.572-0.687)	0.686 (0.620-0.749)	0.739 (0.665-0.807)	0.795 (0.711-0.869)	0.866 (0.768-0.947)	0.919 (0.809-1.01)
10-min	0.571 (0.522-0.625)	0.675 (0.618-0.740)	0.790 (0.724-0.865)	0.877 (0.800-0.959)	0.985 (0.895-1.08)	1.07 (0.966-1.17)	1.15 (1.03-1.25)	1.23 (1.10-1.34)	1.33 (1.18-1.46)	1.40 (1.24-1.54)
15-min	0.709 (0.648-0.776)	0.841 (0.770-0.921)	0.987 (0.904-1.08)	1.10 (1.00-1.20)	1.24 (1.12-1.35)	1.34 (1.21-1.47)	1.44 (1.30-1.58)	1.54 (1.38-1.69)	1.67 (1.48-1.82)	1.76 (1.55-1.93)
30-min	0.960 (0.877-1.05)	1.15 (1.05-1.26)	1.38 (1.27-1.52)	1.57 (1.43-1.71)	1.80 (1.64-1.97)	1.98 (1.79-2.17)	2.16 (1.95-2.36)	2.34 (2.10-2.56)	2.58 (2.29-2.82)	2.76 (2.44-3.03)
60-min	1.19 (1.09-1.30)	1.43 (1.31-1.56)	1.76 (1.61-1.93)	2.02 (1.84-2.21)	2.37 (2.16-2.59)	2.66 (2.40-2.90)	2.95 (2.65-3.21)	3.25 (2.90-3.55)	3.66 (3.24-4.00)	3.98 (3.50-4.36)
2-hr	1.43 (1.31-1.56)	1.73 (1.59-1.88)	2.15 (1.97-2.34)	2.49 (2.28-2.71)	2.95 (2.69-3.20)	3.32 (3.01-3.60)	3.70 (3.34-4.02)	4.10 (3.68-4.46)	4.65 (4.13-5.06)	5.09 (4.48-5.55)
3-hr	1.54 (1.42-1.68)	1.86 (1.71-2.03)	2.31 (2.12-2.52)	2.68 (2.46-2.92)	3.20 (2.91-3.47)	3.62 (3.28-3.93)	4.05 (3.65-4.40)	4.51 (4.04-4.90)	5.16 (4.56-5.61)	5.67 (4.98-6.19)
6-hr	1.89 (1.74-2.07)	2.28 (2.09-2.49)	2.83 (2.60-3.09)	3.29 (3.01-3.59)	3.94 (3.58-4.28)	4.47 (4.04-4.85)	5.04 (4.53-5.47)	5.64 (5.03-6.12)	6.49 (5.71-7.06)	7.19 (6.26-7.83)
12-hr	2.26 (2.07-2.47)	2.72 (2.50-2.98)	3.37 (3.09-3.69)	3.91 (3.57-4.27)	4.67 (4.24-5.10)	5.30 (4.79-5.78)	5.96 (5.36-6.50)	6.67 (5.95-7.27)	7.67 (6.76-8.38)	8.48 (7.39-9.29)
24-hr	2.71 (2.52-2.93)	3.26 (3.03-3.52)	4.06 (3.77-4.38)	4.71 (4.36-5.08)	5.65 (5.19-6.08)	6.42 (5.87-6.91)	7.23 (6.56-7.81)	8.09 (7.28-8.76)	9.32 (8.27-10.1)	10.3 (9.05-11.3)
2-day	3.25 (3.01-3.51)	3.90 (3.61-4.22)	4.85 (4.49-5.25)	5.64 (5.21-6.10)	6.78 (6.22-7.34)	7.73 (7.05-8.38)	8.74 (7.90-9.51)	9.84 (8.81-10.7)	11.4 (10.1-12.5)	12.7 (11.1-14.1)
3-day	3.46 (3.22-3.74)	4.15 (3.86-4.49)	5.17 (4.79-5.59)	6.01 (5.55-6.49)	7.23 (6.64-7.82)	8.25 (7.53-8.94)	9.35 (8.46-10.2)	10.5 (9.45-11.5)	12.2 (10.8-13.5)	13.7 (11.9-15.1)
4-day	3.68 (3.42-3.97)	4.41 (4.10-4.76)	5.48 (5.09-5.92)	6.38 (5.90-6.89)	7.68 (7.07-8.30)	8.77 (8.02-9.51)	9.95 (9.02-10.8)	11.2 (10.1-12.3)	13.1 (11.6-14.4)	14.6 (12.8-16.2)
7-day	4.30 (3.98-4.67)	5.15 (4.78-5.59)	6.42 (5.94-6.97)	7.51 (6.92-8.15)	9.12 (8.35-9.90)	10.5 (9.54-11.4)	12.0 (10.8-13.1)	13.7 (12.2-15.0)	16.2 (14.1-17.9)	18.3 (15.7-20.4)
10-day	4.85 (4.49-5.25)	5.80 (5.38-6.29)	7.20 (6.66-7.80)	8.39 (7.73-9.09)	10.1 (9.28-11.0)	11.6 (10.6-12.6)	13.2 (11.9-14.4)	15.0 (13.4-16.4)	17.6 (15.4-19.4)	19.7 (17.1-21.9)
20-day	6.68 (6.27-7.13)	7.93 (7.45-8.47)	9.54 (8.94-10.2)	10.8 (10.1-11.6)	12.6 (11.8-13.5)	14.1 (13.0-15.1)	15.6 (14.3-16.7)	17.1 (15.7-18.4)	19.2 (17.4-20.9)	20.9 (18.7-22.8)
30-day	8.23 (7.76-8.74)	9.73 (9.17-10.3)	11.5 (10.8-12.2)	13.0 (12.2-13.7)	14.9 (14.0-15.8)	16.4 (15.3-17.5)	18.0 (16.7-19.2)	19.6 (18.1-20.9)	21.7 (19.8-23.3)	23.3 (21.1-25.2)
45-day	10.4 (9.84-11.0)	12.2 (11.6-12.9)	14.3 (13.5-15.0)	15.8 (15.0-16.7)	17.9 (16.9-18.9)	19.5 (18.3-20.6)	21.1 (19.7-22.4)	22.6 (21.1-24.1)	24.6 (22.8-26.3)	26.1 (24.0-28.1)
60-day	12.4 (11.7-13.1)	14.6 (13.8-15.4)	16.9 (16.0-17.8)	18.6 (17.6-19.6)	20.8 (19.6-21.9)	22.4 (21.1-23.7)	23.9 (22.5-25.4)	25.4 (23.8-27.0)	27.3 (25.4-29.1)	28.7 (26.6-30.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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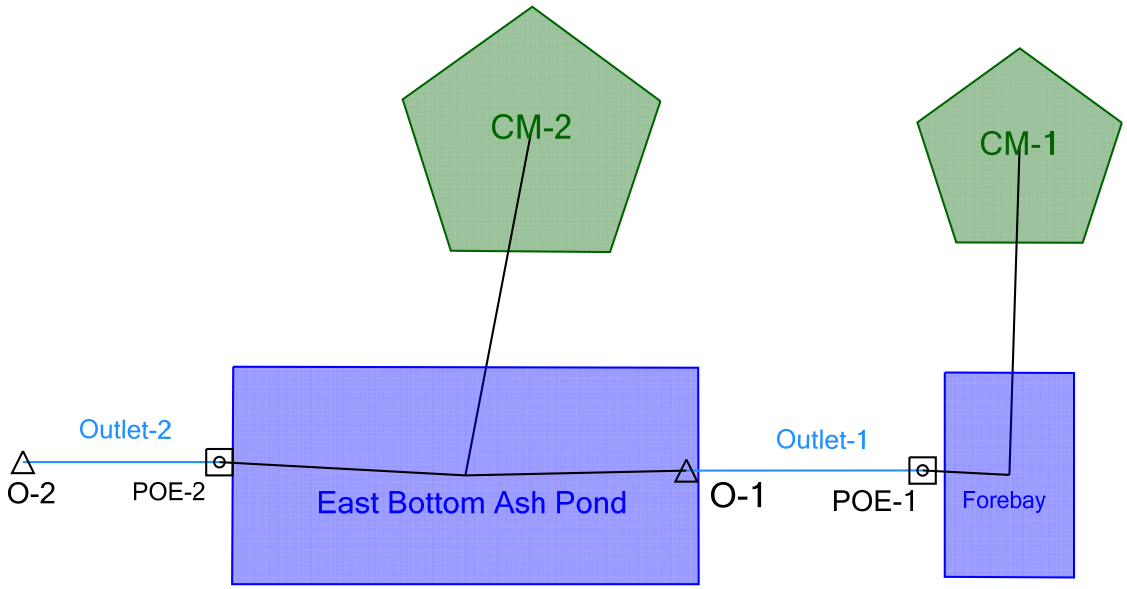
PF graphical

Scenario: Post-Development 1000 year



Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
CM-1	Post-Development 100 year	100	3.612	11.900	55.86
CM-1	Post-Development 200 year	200	4.042	11.900	62.50
CM-1	Post-Development 500 year	500	4.657	11.900	72.00
CM-1	Post-Development 1000 year	1,000	5.146	11.900	79.57
CM-2	Post-Development 100 year	100	14.450	11.900	223.42
CM-2	Post-Development 200 year	200	16.168	11.900	250.00
CM-2	Post-Development 500 year	500	18.627	11.900	288.01
CM-2	Post-Development 1000 year	1,000	20.585	11.900	318.29

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
O-2	Post-Development 100 year	100	5.808	14.850	5.50
O-2	Post-Development 200 year	200	6.599	14.850	6.19
O-2	Post-Development 500 year	500	7.742	14.450	7.75
O-2	Post-Development 1000 year	1,000	8.867	14.200	9.01

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Forebay (IN)	Post-Development 100 year	100	3.612	11.900	55.86	(N/A)	(N/A)
Forebay (OUT)	Post-Development 100 year	100	0.000	0.050	0.07	396.45	77.250
Forebay (IN)	Post-Development 200 year	200	4.042	11.900	62.50	(N/A)	(N/A)
Forebay (OUT)	Post-Development 200 year	200	0.361	15.600	2.65	396.50	77.551

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Forebay (IN)	Post-Development 500 year	500	4.657	11.900	72.00	(N/A)	(N/A)
Forebay (OUT)	Post-Development 500 year	500	0.012	21.700	1.26	396.57	77.935
Forebay (Reverse)	Post-Development 500 year	500	-0.001	12.400	-0.55	(N/A)	(N/A)
Forebay (IN)	Post-Development 1000 year	1,000	5.146	11.900	79.57	(N/A)	(N/A)
Forebay (OUT)	Post-Development 1000 year	1,000	0.000	0.050	0.10	396.63	78.245
East Bottom Ash Pond (IN)	Post-Development 100 year	100	14.450	11.900	223.42	(N/A)	(N/A)
East Bottom Ash Pond (OUT)	Post-Development 100 year	100	5.808	14.850	5.50	396.45	350.289
East Bottom Ash Pond (IN)	Post-Development 200 year	200	16.530	11.900	250.00	(N/A)	(N/A)
East Bottom Ash Pond (OUT)	Post-Development 200 year	200	6.599	14.850	6.19	396.50	351.544
East Bottom Ash Pond (IN)	Post-Development 500 year	500	18.636	11.900	288.01	(N/A)	(N/A)
East Bottom Ash Pond (OUT)	Post-Development 500 year	500	7.742	14.450	7.75	396.57	353.146
East Bottom Ash Pond (IN)	Post-Development 1000 year	1,000	20.586	11.900	318.29	(N/A)	(N/A)
East Bottom Ash Pond (OUT)	Post-Development 1000 year	1,000	8.867	14.200	9.01	396.63	354.440

Storm Event	100-Yr
Return Event	100 years
Duration	24.000 hours
Depth	7.23 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	6.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	56.72 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	55.86 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	6.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.23 in
Runoff Volume (Pervious)	3.615 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	3.612 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	81.58 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	200-Yr
Return Event	200 years
Duration	24.000 hours
Depth	8.09 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	6.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	63.47 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	62.50 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	6.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.09 in
Runoff Volume (Pervious)	4.045 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4.042 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	81.58 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	500-Yr
Return Event	500 years
Duration	24.000 hours
Depth	9.32 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	6.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	73.12 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	72.00 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	6.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	9.32 in
Runoff Volume (Pervious)	4.660 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	4.657 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	81.58 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	1000-Yr
Return Event	1,000 years
Duration	24.000 hours
Depth	10.30 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	6.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	80.81 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	79.57 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	6.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	10.30 in
Runoff Volume (Pervious)	5.150 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	5.146 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	81.58 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	100-Yr
Return Event	100 years
Duration	24.000 hours
Depth	7.23 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	24.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	226.89 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	223.42 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	24.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.23 in
Runoff Volume (Pervious)	14.460 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	14.450 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	326.32 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	200-Yr
Return Event	200 years
Duration	24.000 hours
Depth	8.09 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	24.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	253.88 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	250.00 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	24.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	8.09 in
Runoff Volume (Pervious)	16.180 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	16.168 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	326.32 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	500-Yr
Return Event	500 years
Duration	24.000 hours
Depth	9.32 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	24.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	292.48 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	288.01 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	24.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	9.32 in
Runoff Volume (Pervious)	18.640 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	18.627 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	326.32 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Storm Event	1000-Yr
Return Event	1,000 years
Duration	24.000 hours
Depth	10.30 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	24.000 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	11.911 hours
Flow (Peak, Computed)	323.24 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	11.900 hours
Flow (Peak Interpolated Output)	318.29 ft³/s

Drainage Area	
SCS CN (Composite)	100.000
Area (User Defined)	24.000 acres
Maximum Retention (Pervious)	0.00 in
Maximum Retention (Pervious, 20 percent)	0.00 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	10.30 in
Runoff Volume (Pervious)	20.600 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	20.585 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670
Unit peak, qp	326.32 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	396.00	396.00	396.00	396.00	396.00
0.250	396.00	396.00	396.00	396.00	396.00
0.500	396.00	396.00	396.00	396.00	396.00
0.750	396.00	396.00	396.01	396.01	396.01
1.000	396.01	396.01	396.01	396.01	396.01
1.250	396.01	396.01	396.01	396.01	396.01
1.500	396.01	396.01	396.01	396.01	396.01
1.750	396.01	396.01	396.01	396.01	396.01
2.000	396.01	396.01	396.01	396.01	396.01
2.250	396.01	396.01	396.02	396.02	396.02
2.500	396.02	396.02	396.02	396.02	396.02
2.750	396.02	396.02	396.02	396.02	396.02
3.000	396.02	396.02	396.02	396.02	396.02
3.250	396.02	396.02	396.02	396.02	396.02
3.500	396.02	396.02	396.02	396.02	396.02
3.750	396.03	396.03	396.03	396.03	396.03
4.000	396.03	396.03	396.03	396.03	396.03
4.250	396.03	396.03	396.03	396.03	396.03
4.500	396.03	396.03	396.03	396.03	396.03
4.750	396.03	396.03	396.03	396.03	396.03
5.000	396.04	396.04	396.04	396.04	396.04
5.250	396.04	396.04	396.04	396.04	396.04
5.500	396.04	396.04	396.04	396.04	396.04
5.750	396.04	396.04	396.04	396.04	396.04
6.000	396.04	396.04	396.04	396.05	396.05
6.250	396.05	396.05	396.05	396.05	396.05
6.500	396.05	396.05	396.05	396.05	396.05
6.750	396.05	396.05	396.05	396.05	396.05
7.000	396.05	396.05	396.05	396.06	396.06
7.250	396.06	396.06	396.06	396.06	396.06
7.500	396.06	396.06	396.06	396.06	396.06
7.750	396.06	396.06	396.06	396.06	396.06
8.000	396.06	396.06	396.07	396.07	396.07
8.250	396.07	396.07	396.07	396.07	396.07
8.500	396.07	396.07	396.07	396.07	396.07
8.750	396.07	396.07	396.08	396.08	396.08
9.000	396.08	396.08	396.08	396.08	396.08
9.250	396.08	396.08	396.08	396.08	396.08
9.500	396.09	396.09	396.09	396.09	396.09
9.750	396.09	396.09	396.09	396.09	396.09
10.000	396.09	396.10	396.10	396.10	396.10
10.250	396.10	396.10	396.10	396.10	396.11
10.500	396.11	396.11	396.11	396.11	396.11
10.750	396.11	396.12	396.12	396.12	396.12
11.000	396.12	396.12	396.13	396.13	396.13
11.250	396.13	396.14	396.14	396.14	396.14

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: 100-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
11.500	396.15	396.15	396.16	396.17	396.18
11.750	396.19	396.21	396.24	396.27	396.31
12.000	396.35	396.37	396.39	396.39	396.40
12.250	396.40	396.41	396.41	396.41	396.42
12.500	396.42	396.42	396.42	396.42	396.43
12.750	396.43	396.43	396.43	396.43	396.43
13.000	396.43	396.43	396.44	396.44	396.44
13.250	396.44	396.44	396.44	396.44	396.44
13.500	396.44	396.44	396.44	396.44	396.44
13.750	396.44	396.44	396.44	396.44	396.45
14.000	396.45	396.45	396.45	396.45	396.45
14.250	396.45	396.45	396.45	396.45	396.45
14.500	396.45	396.45	396.45	396.45	396.45
14.750	396.45	396.45	396.45	396.45	396.45
15.000	396.45	396.45	396.45	396.45	396.45
15.250	396.45	396.45	396.45	396.45	396.45
15.500	396.45	396.45	396.45	396.45	396.45
15.750	396.45	396.45	396.44	396.44	396.44
16.000	396.44	396.44	396.44	396.44	396.44
16.250	396.44	396.44	396.44	396.44	396.44
16.500	396.44	396.44	396.44	396.44	396.44
16.750	396.44	396.44	396.44	396.44	396.44
17.000	396.44	396.44	396.44	396.44	396.44
17.250	396.44	396.44	396.44	396.44	396.44
17.500	396.44	396.43	396.43	396.43	396.43
17.750	396.43	396.43	396.43	396.43	396.43
18.000	396.43	396.43	396.43	396.43	396.43
18.250	396.43	396.43	396.43	396.43	396.43
18.500	396.43	396.43	396.43	396.43	396.43
18.750	396.43	396.43	396.42	396.42	396.42
19.000	396.42	396.42	396.42	396.42	396.42
19.250	396.42	396.42	396.42	396.42	396.42
19.500	396.42	396.42	396.42	396.42	396.42
19.750	396.42	396.42	396.42	396.41	396.41
20.000	396.41	396.41	396.41	396.41	396.41
20.250	396.41	396.41	396.41	396.41	396.41
20.500	396.41	396.41	396.41	396.41	396.41
20.750	396.41	396.41	396.41	396.40	396.40
21.000	396.40	396.40	396.40	396.40	396.40
21.250	396.40	396.40	396.40	396.40	396.40
21.500	396.40	396.40	396.40	396.40	396.40
21.750	396.40	396.40	396.40	396.39	396.39
22.000	396.39	396.39	396.39	396.39	396.39
22.250	396.39	396.39	396.39	396.39	396.39
22.500	396.39	396.39	396.39	396.39	396.39
22.750	396.39	396.39	396.39	396.39	396.38
23.000	396.38	396.38	396.38	396.38	396.38

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 100 year

Return Event: 100 years
Storm Event: 100-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
23.250	396.38	396.38	396.38	396.38	396.38
23.500	396.38	396.38	396.38	396.38	396.38
23.750	396.38	396.38	396.38	396.38	396.38
24.000	396.37	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 200 year

Return Event: 200 years
Storm Event: 200-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	396.00	396.00	396.00	396.00	396.00
0.250	396.00	396.00	396.00	396.00	396.00
0.500	396.00	396.00	396.00	396.00	396.00
0.750	396.00	396.01	396.01	396.01	396.01
1.000	396.01	396.01	396.01	396.01	396.01
1.250	396.01	396.01	396.01	396.01	396.01
1.500	396.01	396.01	396.01	396.01	396.01
1.750	396.01	396.01	396.01	396.01	396.01
2.000	396.01	396.01	396.02	396.02	396.02
2.250	396.02	396.02	396.02	396.02	396.02
2.500	396.02	396.02	396.02	396.02	396.02
2.750	396.02	396.02	396.02	396.02	396.02
3.000	396.02	396.02	396.02	396.02	396.02
3.250	396.02	396.02	396.03	396.03	396.03
3.500	396.03	396.03	396.03	396.03	396.03
3.750	396.03	396.03	396.03	396.03	396.03
4.000	396.03	396.03	396.03	396.03	396.03
4.250	396.03	396.03	396.03	396.03	396.03
4.500	396.03	396.04	396.04	396.04	396.04
4.750	396.04	396.04	396.04	396.04	396.04
5.000	396.04	396.04	396.04	396.04	396.04
5.250	396.04	396.04	396.04	396.04	396.04
5.500	396.04	396.04	396.05	396.05	396.05
5.750	396.05	396.05	396.05	396.05	396.05
6.000	396.05	396.05	396.05	396.05	396.05
6.250	396.05	396.05	396.05	396.05	396.05
6.500	396.05	396.06	396.06	396.06	396.06
6.750	396.06	396.06	396.06	396.06	396.06
7.000	396.06	396.06	396.06	396.06	396.06
7.250	396.06	396.06	396.06	396.06	396.07
7.500	396.07	396.07	396.07	396.07	396.07
7.750	396.07	396.07	396.07	396.07	396.07
8.000	396.07	396.07	396.07	396.07	396.07
8.250	396.07	396.08	396.08	396.08	396.08
8.500	396.08	396.08	396.08	396.08	396.08
8.750	396.08	396.08	396.08	396.09	396.09
9.000	396.09	396.09	396.09	396.09	396.09
9.250	396.09	396.09	396.09	396.09	396.10
9.500	396.10	396.10	396.10	396.10	396.10
9.750	396.10	396.10	396.10	396.10	396.10
10.000	396.11	396.11	396.11	396.11	396.11
10.250	396.11	396.11	396.11	396.12	396.12
10.500	396.12	396.12	396.12	396.12	396.13
10.750	396.13	396.13	396.13	396.13	396.14
11.000	396.14	396.14	396.14	396.14	396.15
11.250	396.15	396.15	396.16	396.16	396.16

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
11.500	396.17	396.17	396.18	396.19	396.20
11.750	396.22	396.24	396.27	396.31	396.35
12.000	396.39	396.42	396.43	396.44	396.45
12.250	396.45	396.45	396.46	396.46	396.47
12.500	396.47	396.47	396.47	396.47	396.48
12.750	396.48	396.48	396.48	396.48	396.48
13.000	396.49	396.49	396.49	396.49	396.49
13.250	396.49	396.49	396.49	396.49	396.49
13.500	396.49	396.49	396.50	396.50	396.50
13.750	396.50	396.50	396.50	396.50	396.50
14.000	396.50	396.50	396.50	396.50	396.50
14.250	396.50	396.50	396.50	396.50	396.50
14.500	396.50	396.50	396.50	396.50	396.50
14.750	396.50	396.50	396.50	396.50	396.50
15.000	396.50	396.50	396.50	396.50	396.50
15.250	396.50	396.50	396.50	396.50	396.50
15.500	396.50	396.50	396.50	396.50	396.50
15.750	396.50	396.50	396.50	396.50	396.50
16.000	396.50	396.50	396.50	396.50	396.50
16.250	396.50	396.50	396.50	396.50	396.50
16.500	396.50	396.50	396.50	396.50	396.50
16.750	396.50	396.50	396.50	396.50	396.50
17.000	396.50	396.50	396.50	396.50	396.50
17.250	396.50	396.50	396.50	396.50	396.50
17.500	396.50	396.50	396.50	396.50	396.50
17.750	396.50	396.50	396.50	396.50	396.50
18.000	396.50	396.50	396.50	396.50	396.50
18.250	396.50	396.49	396.49	396.49	396.49
18.500	396.49	396.49	396.49	396.49	396.49
18.750	396.49	396.49	396.49	396.49	396.49
19.000	396.49	396.49	396.49	396.49	396.49
19.250	396.49	396.48	396.48	396.48	396.48
19.500	396.48	396.48	396.48	396.48	396.48
19.750	396.48	396.48	396.48	396.48	396.48
20.000	396.48	396.48	396.48	396.47	396.47
20.250	396.47	396.47	396.47	396.47	396.47
20.500	396.47	396.47	396.47	396.47	396.47
20.750	396.47	396.47	396.47	396.47	396.47
21.000	396.46	396.46	396.46	396.46	396.46
21.250	396.46	396.46	396.46	396.46	396.46
21.500	396.46	396.46	396.46	396.46	396.46
21.750	396.46	396.46	396.45	396.45	396.45
22.000	396.45	396.45	396.45	396.45	396.45
22.250	396.45	396.45	396.45	396.45	396.45
22.500	396.45	396.45	396.45	396.45	396.45
22.750	396.44	396.44	396.44	396.44	396.44
23.000	396.44	396.44	396.44	396.44	396.44

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 200 year

Return Event: 200 years
Storm Event: 200-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
23.250	396.44	396.44	396.44	396.44	396.44
23.500	396.44	396.44	396.43	396.43	396.43
23.750	396.43	396.43	396.43	396.43	396.43
24.000	396.43	(N/A)	(N/A)	(N/A)	(N/A)

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	396.00	396.00	396.00	396.00	396.00
0.250	396.00	396.00	396.00	396.00	396.00
0.500	396.00	396.00	396.00	396.00	396.01
0.750	396.01	396.01	396.01	396.01	396.01
1.000	396.01	396.01	396.01	396.01	396.01
1.250	396.01	396.01	396.01	396.01	396.01
1.500	396.01	396.01	396.01	396.01	396.01
1.750	396.01	396.01	396.02	396.02	396.02
2.000	396.02	396.02	396.02	396.02	396.02
2.250	396.02	396.02	396.02	396.02	396.02
2.500	396.02	396.02	396.02	396.02	396.02
2.750	396.02	396.02	396.02	396.02	396.03
3.000	396.03	396.03	396.03	396.03	396.03
3.250	396.03	396.03	396.03	396.03	396.03
3.500	396.03	396.03	396.03	396.03	396.03
3.750	396.03	396.03	396.03	396.03	396.03
4.000	396.04	396.04	396.04	396.04	396.04
4.250	396.04	396.04	396.04	396.04	396.04
4.500	396.04	396.04	396.04	396.04	396.04
4.750	396.04	396.04	396.04	396.04	396.04
5.000	396.05	396.05	396.05	396.05	396.05
5.250	396.05	396.05	396.05	396.05	396.05
5.500	396.05	396.05	396.05	396.05	396.05
5.750	396.05	396.05	396.05	396.06	396.06
6.000	396.06	396.06	396.06	396.06	396.06
6.250	396.06	396.06	396.06	396.06	396.06
6.500	396.06	396.06	396.06	396.06	396.07
6.750	396.07	396.07	396.07	396.07	396.07
7.000	396.07	396.07	396.07	396.07	396.07
7.250	396.07	396.07	396.07	396.07	396.08
7.500	396.08	396.08	396.08	396.08	396.08
7.750	396.08	396.08	396.08	396.08	396.08
8.000	396.08	396.08	396.08	396.08	396.09
8.250	396.09	396.09	396.09	396.09	396.09
8.500	396.09	396.09	396.09	396.09	396.09
8.750	396.10	396.10	396.10	396.10	396.10
9.000	396.10	396.10	396.10	396.10	396.10
9.250	396.11	396.11	396.11	396.11	396.11
9.500	396.11	396.11	396.11	396.11	396.11
9.750	396.12	396.12	396.12	396.12	396.12
10.000	396.12	396.12	396.12	396.13	396.13
10.250	396.13	396.13	396.13	396.13	396.14
10.500	396.14	396.14	396.14	396.14	396.14
10.750	396.15	396.15	396.15	396.15	396.16
11.000	396.16	396.16	396.16	396.17	396.17
11.250	396.17	396.18	396.18	396.18	396.19

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
11.500	396.19	396.20	396.20	396.21	396.23
11.750	396.25	396.27	396.31	396.35	396.40
12.000	396.45	396.48	396.50	396.51	396.51
12.250	396.52	396.52	396.53	396.53	396.54
12.500	396.54	396.54	396.54	396.55	396.55
12.750	396.55	396.55	396.55	396.55	396.56
13.000	396.56	396.56	396.56	396.56	396.56
13.250	396.56	396.56	396.56	396.57	396.57
13.500	396.57	396.57	396.57	396.57	396.57
13.750	396.57	396.57	396.57	396.57	396.57
14.000	396.57	396.57	396.57	396.57	396.57
14.250	396.57	396.57	396.57	396.57	396.57
14.500	396.57	396.57	396.57	396.57	396.57
14.750	396.57	396.57	396.57	396.57	396.57
15.000	396.57	396.57	396.57	396.57	396.57
15.250	396.57	396.57	396.57	396.57	396.57
15.500	396.57	396.57	396.57	396.57	396.57
15.750	396.57	396.57	396.57	396.57	396.56
16.000	396.56	396.56	396.56	396.56	396.56
16.250	396.56	396.56	396.56	396.56	396.56
16.500	396.56	396.56	396.56	396.56	396.56
16.750	396.56	396.56	396.56	396.56	396.56
17.000	396.56	396.55	396.55	396.55	396.55
17.250	396.55	396.55	396.55	396.55	396.55
17.500	396.55	396.55	396.55	396.55	396.55
17.750	396.55	396.55	396.55	396.55	396.55
18.000	396.54	396.54	396.54	396.54	396.54
18.250	396.54	396.54	396.54	396.54	396.54
18.500	396.54	396.54	396.54	396.54	396.54
18.750	396.54	396.54	396.54	396.53	396.53
19.000	396.53	396.53	396.53	396.53	396.53
19.250	396.53	396.53	396.53	396.53	396.53
19.500	396.53	396.53	396.53	396.53	396.52
19.750	396.52	396.52	396.52	396.52	396.52
20.000	396.52	396.52	396.52	396.52	396.52
20.250	396.52	396.52	396.52	396.52	396.51
20.500	396.51	396.51	396.51	396.51	396.51
20.750	396.51	396.51	396.51	396.51	396.51
21.000	396.51	396.51	396.51	396.51	396.51
21.250	396.50	396.50	396.50	396.50	396.50
21.500	396.50	396.50	396.50	396.50	396.50
21.750	396.50	396.50	396.50	396.50	396.50
22.000	396.50	396.50	396.49	396.49	396.49
22.250	396.49	396.49	396.49	396.49	396.49
22.500	396.49	396.49	396.49	396.49	396.49
22.750	396.49	396.49	396.49	396.49	396.48
23.000	396.48	396.48	396.48	396.48	396.48

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 500 year

Return Event: 500 years
Storm Event: 500-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
23.250	396.48	396.48	396.48	396.48	396.48
23.500	396.48	396.48	396.48	396.48	396.48
23.750	396.48	396.47	396.47	396.47	396.47
24.000	396.47	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 1000 year

Return Event: 1,000 years
Storm Event: 1000-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	396.00	396.00	396.00	396.00	396.00
0.250	396.00	396.00	396.00	396.00	396.00
0.500	396.00	396.00	396.00	396.01	396.01
0.750	396.01	396.01	396.01	396.01	396.01
1.000	396.01	396.01	396.01	396.01	396.01
1.250	396.01	396.01	396.01	396.01	396.01
1.500	396.01	396.01	396.01	396.01	396.02
1.750	396.02	396.02	396.02	396.02	396.02
2.000	396.02	396.02	396.02	396.02	396.02
2.250	396.02	396.02	396.02	396.02	396.02
2.500	396.02	396.02	396.02	396.02	396.03
2.750	396.03	396.03	396.03	396.03	396.03
3.000	396.03	396.03	396.03	396.03	396.03
3.250	396.03	396.03	396.03	396.03	396.03
3.500	396.03	396.03	396.03	396.04	396.04
3.750	396.04	396.04	396.04	396.04	396.04
4.000	396.04	396.04	396.04	396.04	396.04
4.250	396.04	396.04	396.04	396.04	396.04
4.500	396.04	396.04	396.05	396.05	396.05
4.750	396.05	396.05	396.05	396.05	396.05
5.000	396.05	396.05	396.05	396.05	396.05
5.250	396.05	396.05	396.05	396.05	396.06
5.500	396.06	396.06	396.06	396.06	396.06
5.750	396.06	396.06	396.06	396.06	396.06
6.000	396.06	396.06	396.06	396.06	396.07
6.250	396.07	396.07	396.07	396.07	396.07
6.500	396.07	396.07	396.07	396.07	396.07
6.750	396.07	396.07	396.07	396.08	396.08
7.000	396.08	396.08	396.08	396.08	396.08
7.250	396.08	396.08	396.08	396.08	396.08
7.500	396.08	396.08	396.09	396.09	396.09
7.750	396.09	396.09	396.09	396.09	396.09
8.000	396.09	396.09	396.09	396.09	396.09
8.250	396.10	396.10	396.10	396.10	396.10
8.500	396.10	396.10	396.10	396.10	396.10
8.750	396.11	396.11	396.11	396.11	396.11
9.000	396.11	396.11	396.11	396.11	396.12
9.250	396.12	396.12	396.12	396.12	396.12
9.500	396.12	396.12	396.12	396.13	396.13
9.750	396.13	396.13	396.13	396.13	396.13
10.000	396.14	396.14	396.14	396.14	396.14
10.250	396.14	396.14	396.15	396.15	396.15
10.500	396.15	396.15	396.16	396.16	396.16
10.750	396.16	396.16	396.17	396.17	396.17
11.000	396.17	396.18	396.18	396.18	396.19
11.250	396.19	396.19	396.20	396.20	396.21

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 1000 year

Return Event: 1,000 years
Storm Event: 1000-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
11.500	396.21	396.22	396.22	396.24	396.25
11.750	396.27	396.30	396.34	396.39	396.44
12.000	396.49	396.53	396.55	396.56	396.57
12.250	396.57	396.58	396.58	396.59	396.59
12.500	396.59	396.60	396.60	396.60	396.60
12.750	396.61	396.61	396.61	396.61	396.61
13.000	396.61	396.62	396.62	396.62	396.62
13.250	396.62	396.62	396.62	396.62	396.62
13.500	396.62	396.62	396.62	396.63	396.63
13.750	396.63	396.63	396.63	396.63	396.63
14.000	396.63	396.63	396.63	396.63	396.63
14.250	396.63	396.63	396.63	396.63	396.63
14.500	396.63	396.63	396.63	396.63	396.63
14.750	396.63	396.63	396.63	396.63	396.63
15.000	396.63	396.62	396.62	396.62	396.62
15.250	396.62	396.62	396.62	396.62	396.62
15.500	396.62	396.62	396.62	396.62	396.62
15.750	396.62	396.62	396.62	396.62	396.62
16.000	396.62	396.62	396.62	396.62	396.62
16.250	396.61	396.61	396.61	396.61	396.61
16.500	396.61	396.61	396.61	396.61	396.61
16.750	396.61	396.61	396.61	396.61	396.61
17.000	396.61	396.61	396.60	396.60	396.60
17.250	396.60	396.60	396.60	396.60	396.60
17.500	396.60	396.60	396.60	396.60	396.60
17.750	396.60	396.60	396.60	396.59	396.59
18.000	396.59	396.59	396.59	396.59	396.59
18.250	396.59	396.59	396.59	396.59	396.59
18.500	396.59	396.59	396.58	396.58	396.58
18.750	396.58	396.58	396.58	396.58	396.58
19.000	396.58	396.58	396.58	396.58	396.58
19.250	396.58	396.57	396.57	396.57	396.57
19.500	396.57	396.57	396.57	396.57	396.57
19.750	396.57	396.57	396.57	396.57	396.57
20.000	396.56	396.56	396.56	396.56	396.56
20.250	396.56	396.56	396.56	396.56	396.56
20.500	396.56	396.56	396.56	396.55	396.55
20.750	396.55	396.55	396.55	396.55	396.55
21.000	396.55	396.55	396.55	396.55	396.55
21.250	396.55	396.54	396.54	396.54	396.54
21.500	396.54	396.54	396.54	396.54	396.54
21.750	396.54	396.54	396.54	396.54	396.54
22.000	396.53	396.53	396.53	396.53	396.53
22.250	396.53	396.53	396.53	396.53	396.53
22.500	396.53	396.53	396.53	396.53	396.53
22.750	396.52	396.52	396.52	396.52	396.52
23.000	396.52	396.52	396.52	396.52	396.52

Subsection: Time vs. Elevation
Label: East Bottom Ash Pond (IN)
Scenario: Post-Development 1000 year

Return Event: 1,000 years
Storm Event: 1000-Yr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
23.250	396.52	396.52	396.52	396.52	396.52
23.500	396.51	396.51	396.51	396.51	396.51
23.750	396.51	396.51	396.51	396.51	396.51
24.000	396.51	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Elevation-Area Volume Curve
Label: East Bottom Ash Pond
Scenario: Post-Development 1000 year

Return Event: 1,000 years
Storm Event: 1000-Yr

Elevation (ft)	Planimeter (ft^2)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
378.50	0.0	0.336	0.000	0.000	0.000
379.00	0.0	3.227	4.604	0.767	0.767
380.00	0.0	9.821	18.678	6.226	6.993
381.00	0.0	17.351	40.226	13.409	20.402
382.00	0.0	20.111	56.142	18.714	39.116
383.00	0.0	20.303	60.621	20.207	59.323
384.00	0.0	20.497	61.200	20.400	79.723
385.00	0.0	20.690	61.780	20.593	100.316
390.00	0.0	21.671	63.536	105.893	206.209
392.00	0.0	22.069	65.609	43.739	249.949
394.00	0.0	22.469	66.806	44.537	294.486
395.00	0.0	22.786	67.882	22.627	317.113
396.00	0.0	22.960	68.619	22.873	339.986
397.00	0.0	23.134	69.141	23.047	363.033
398.00	0.0	23.308	69.663	23.221	386.254
399.00	0.0	23.483	70.186	23.395	409.650

Subsection: Elevation-Area Volume Curve
Label: Forebay
Scenario: Post-Development 1000 year

Return Event: 1,000 years
Storm Event: 1000-Yr

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
378.50	0.0	0.000	0.000	0.000	0.000
379.00	0.0	0.631	0.631	0.105	0.105
380.00	0.0	1.933	3.668	1.223	1.328
381.00	0.0	3.254	7.695	2.565	3.893
382.00	0.0	4.193	11.141	3.714	7.607
383.00	0.0	4.275	12.702	4.234	11.840
384.00	0.0	4.357	12.948	4.316	16.156
385.00	0.0	4.441	13.197	4.399	20.555
390.00	0.0	4.868	13.959	23.264	43.820
392.00	0.0	5.044	14.867	9.911	53.731
394.00	0.0	5.223	15.400	10.266	63.998
395.00	0.0	5.427	15.974	5.325	69.322
396.00	0.0	5.491	16.377	5.459	74.781
397.00	0.0	5.555	16.569	5.523	80.304
398.00	0.0	5.619	16.761	5.587	85.891
399.00	0.0	5.684	16.954	5.651	91.543

Requested Pond Water Surface Elevations	
Minimum (Headwater)	378.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	399.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	394.00	399.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	394.00 ft
Weir Length	510.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Requested Pond Water Surface Elevations	
Minimum (Headwater)	378.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	399.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 2A	Forward	Culvert - 1	396.00	399.00
Inlet Box	Riser - 1	Forward	Culvert - 1	397.00	399.00
Rectangular Weir	Weir - 2B	Forward	Culvert - 1	396.00	399.00
Culvert-Circular	Culvert - 1	Forward	TW	385.90	399.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	48.0 in
Length	85.00 ft
Length (Computed Barrel)	85.00 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.005
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.093
T2 ratio (HW/D)	1.195
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	390.27 ft	T1 Flow	87.96 ft³/s
T2 Elevation	390.68 ft	T2 Flow	100.53 ft³/s

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	397.00 ft
Orifice Area	16.0 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Weir - 2A Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	396.00 ft
Weir Length	2.90 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Weir - 2B Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	396.00 ft
Weir Length	2.90 ft
Weir Coefficient	3.00 (ft^0.5)/s