BREVARD COUNTY FLOODPLAIN REPORT

Prepared by Ralph Brown, PE

Blue Goose Survey and Design LLC

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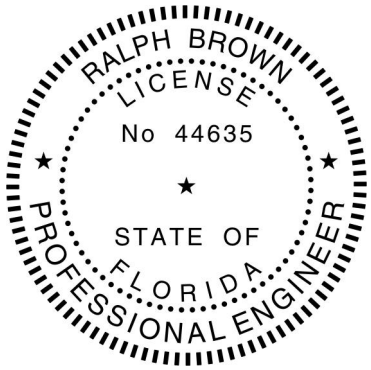


RALPH E BROWN

Digitally signed by RALPH E BROWN
Date: 2025.11.24 13:33:59 -05'00'

The purpose of this report is to provide a compensating floodplain analysis showing compensation for floodplain impacts (fill in existing floodplain areas) in the proposed 78.17 acres of lake excavation located Sunshine Mine Phase 3.

The proposed mining project is located west of Babcock Street and south of Centerlane Road in south Brevard County. The project site is 274 acres and is located north of the previously permitted Sunshine State Mine phases 1 and 2. Phases 1 and 2 were previously issued Brevard County land alteration permits. Three mining cells (future lakes) are proposed in Phase 3 and are described below:

- Pit 1 is located in the northeast section of the property and is 19.11 acres in size.
- Pit 2 is located in the southeast section of the property and is 19.60 acres in size.
- Pit 3 is located on the west side of the property and is 39.46 acres in size.

The three mining cells (lakes) will result in floodplain storage not presently existing on the site. The storage in the lakes will be used to compensate for fill in the floodplain resulting from haul road construction. The haul roads will result in fill in the existing floodplain and are required to provide access to the site and the three mining cells.

Refer to sheets C10 and C11 of the plans for floodplain details. Sheet C11 is also attached to this report.

FLOODPLAIN FILL COMPENSATION CALCULATIONS:

Compensating floodplain storage available in the lakes:

Based on the 100 year floodplain elevation of 24.4 ft. NGVD (23.0 ft. NAVD) and the 100 year peak stage in the lakes there is compensating storage available in the three lakes. Note that the FEMA maps use the NAVD datum. The topographic survey for the site was done in NGVD. The calculations below use the floodplain elevation of 24.4 ft. NGVD. Below are calculations of the 100 year floodplain storage available in the three lakes:

1. Lake 1 – 19.11 acres in size with a 100 year, 24 hour peak stage of 20.71 ft. See the attached ICPR analysis for calculation of the lake peak stage. Based on the 100 year stage in the lake of 20.71 ft. there is 3.69 ft. of vertical storage in the lake. This corresponds to 64 acre-ft. of floodplain storage in the lake.
    - Vertical storage in Lake = 24.4 ft. (floodplain elevation) – 20.71 ft. (100 year stage in lake = 3.69 ft.
    - Average area of lake between elevations 20.71 ft. and 24.4 ft. = 17.35 acres
    - 100 year floodplain storage available = (17.35 acres)(3.69 ft.) = 64 acre-ft. of 100 year floodplain storage.
2. Lake 2 – 19.6 acres in size with a 100 year, 24 hour peak stage of 21.11 ft. See the attached ICPR analysis for calculation of the lake peak stage. Based on the 100 year stage in the lake of 21.11 ft. there is 3.29 ft. of vertical storage in the lake. This corresponds to 58 acre-ft. of floodplain storage in the lake.
    - Vertical storage in Lake = 24.4 ft. (floodplain elevation) – 21.11 ft. (100 year stage in lake = 3.29 ft.
    - Average area of lake between elevations 21.11 ft. and 24.4 ft. = 17.65 acres
    - 100 year floodplain storage available = (17.65 acres)(3.29 ft.) = 58 acre-ft. of 100 year floodplain storage.

3. Lake 3 – 39.46 acres in size with a 100 year, 24 hour peak stage of 20.69 ft. See the attached ICPR analysis for calculation of the lake peak stage. Based on the 100 year stage in the lake of 21.11 ft. there is 3.71 ft. of vertical storage in the lake. This corresponds to 140 acre-ft. of floodplain storage in the lake.
    - Vertical storage in Lake = 24.4 ft. (floodplain elevation) – 20.69 ft. (100 year stage in lake = 3.71 ft.
    - Average area of lake between elevations 20.69 ft. and 24.4 ft. = 37.7 acres
    - 100 year floodplain storage available = (37.7 acres)(3.71 ft.) = 140 acre-ft. of 100 year floodplain storage.

The total amount of 100 year floodplain storage available in the three lakes is 262 acre-ft.

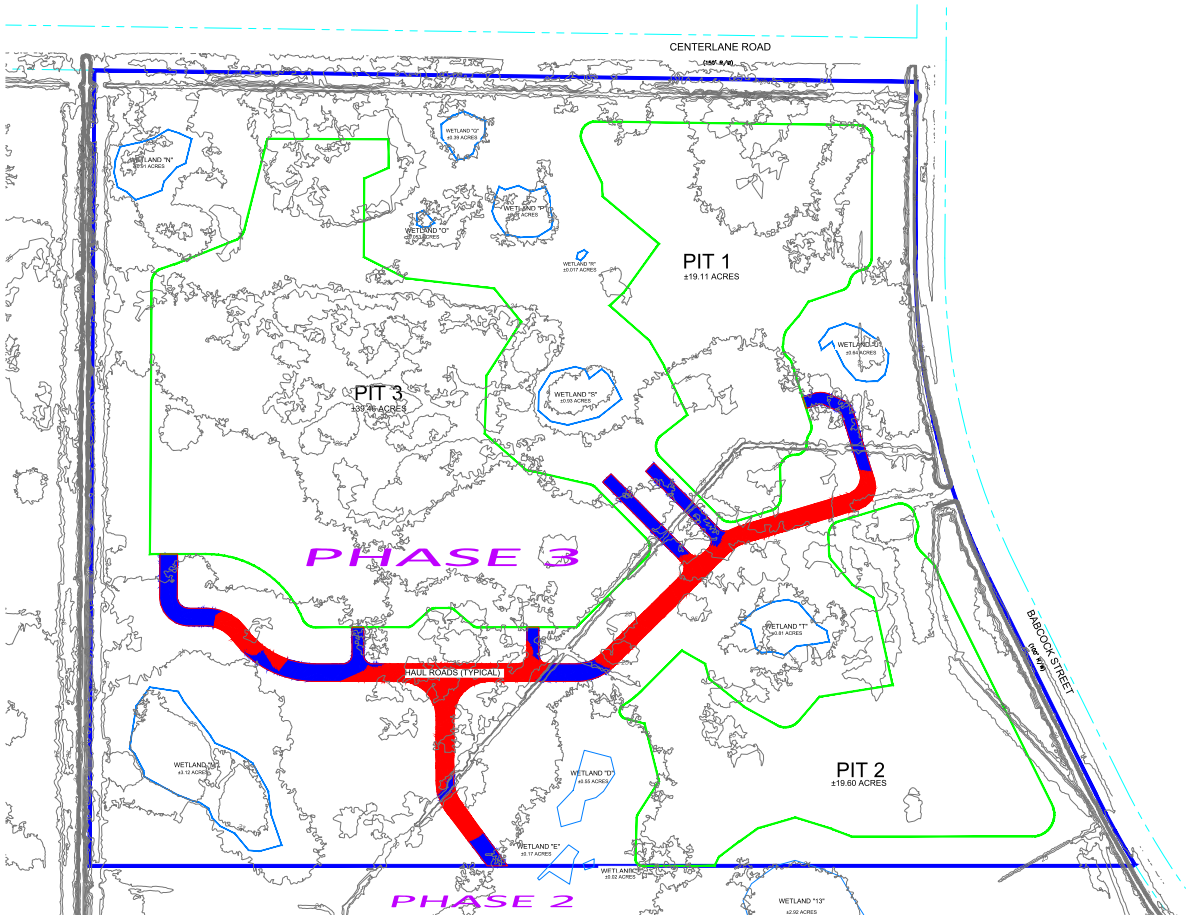
Proposed fill in the 100 year floodplain from road construction:

Sheet C11 of the plans shows the areas of fill in the 100 year floodplain for the proposed road construction. The calculation of the fill placed below the 100 year floodplain elevation of 24.4 ft. NGVD is also calculated using CAD on Sheet C11 and is summarized below:

- Haul Road fill ranging between an existing ground elevation of 22.0 ft. and a top of road elevation of 24.4 ft. (area shown in blue on Sheet C11) = 13,806.55= 0.32 acre-ft.

Conclusion:

The amount of floodplain storage provided in the three lakes is 262 acre-ft. The amount of fill placed in the 100 year floodplain is 0.32 acre-ft. The fill is required for construction of the haul roads and is shown in blue on Sheet C11 of the plans. The calculations show that the amount of 100 year floodplain created with excavation of the lakes far exceeds the fill volume in the 100 year floodplain resulting from haul road construction.



200 150 100 50 0 100 200 400

SCALE IN FEET: 1" = 200'

ACREAGE

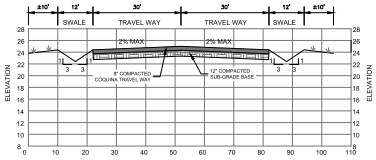
PHASE 3 = ±186.72 ACRES

NOTES

1. ALL PUMPED DISCHARGES DURING DE-WATERING OF PITS SHALL BE DISCHARGED TO RECHARGE DITCHES.
2. ALL DE-WATERING SHALL BE IN ACCORDANCE WITH THE PERMITS DE-WATERING PLAN.
3. IN SOME INSTANCES, GRAPHIC REPRESENTATIONS AND SYMBOLS SHOWN HAVE BEEN EXAGGERATED TO MORE CLEARLY ILLUSTRATE THE RELATIONSHIP BETWEEN PHYSICAL IMPROVEMENTS AND/OR LOT LINES. THE DIMENSIONS SHOWN SHALL CONTROL THE LOCATION, OF THE IMPROVEMENTS, OVER THE SCALED POSITIONS.
4. THE TOPOGRAPHIC DATA WAS BASED ON A TOPOGRAPHIC SURVEY PERFORMED BY JEFF L. HARTLEY (PSM 5716) DATED JUNE 6, 2011, AND IS IN THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29) AND IN U.S. SURVEY FEET.
5. TO CONVERT FROM THE NGVD 1929 DATUM TO THE NAVD 88 DATUM, SUBTRACT A FACTOR OF 1.394. THE CONVERSION FACTOR WAS DERIVED USING THE U.S. ARMY CORPS OF ENGINEERS PROGRAM CORPSCON VERSION 6.0.1.
6. LANDS SHOWN HEREON WERE NOT ABSTRACTED BY THIS OFFICE FOR RIGHTS-OF-WAY, EASEMENTS OF RECORD, OWNERSHIP, ABANDONMENTS, DEED RESTRICTIONS, OR MURPHY ACT DEEDS. THIS INFORMATION SHOULD BE OBTAINED THROUGH APPROPRIATE TITLE VERIFICATION.
7. WETLANDS SHOWN HEREON WERE DELINEATED BY ERIC MULDOWNEY, E-RES CONSULTING, LLC, ON JULY 9, 2025, AND MAPPED BY BLUE GOOSE CONSTRUCTION LLC.
8. ALL HAUL ROADS SHALL BE CONSTRUCTED WITH ROAD SIDE SWALES. TYPICAL ROADS WILL BE ELEVATION 25.0 FEET, NGVD 1929.
9. TOP OF BANK OF PROPOSED PITS WILL BE ELEVATION 24.0, NGVD 1929.
10. THE 100 YEAR FLOOD PLAIN ELEVATION, PROVIDED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) IS 23.0, NAVD 1988. CONVERTING THAT ELEVATION TO NGVD 1929, EQUALS 24.394.

LEGEND

R/W	RIGHT-OF-WAY
ORB	OFFICIAL RECORDS BOOK



ROADWAY CROSS SECTION (TYPICAL)

H: 1" = 20'
V: 1" = 10'

Elevations Table					
Number	Minimum Elevation	Maximum Elevation	Color	Area	Volume
1	22.900	24.394		114075.62 FT2	13806.55 CUYD
2	24.394	25.625		163244.11 FT2	3160.76 CUYD

NO.	DESCRIPTION	DATE

REVISIONS

BLUE GOOSE SURVEY & DESIGN LLC
1900 NORTH OLD DIXIE HIGHWAY
FORT PIERCE, FLORIDA 34946
Phone: 772.465.7555
PROFESSIONAL SURVEYOR & MAPPER BUSINESS LICENSE LB6630

SUNSHINE STATE WILDLIFE CONSERVATION, LLC
BREVARD COUNTY, FLORIDA
FEMA FLOOD PLAIN EXHIBIT PHASE 3

PROJECT No.: 1686

RALPH BROWN LICENSE No 44635 STATE OF FLORIDA PROFESSIONAL ENGINEER

RALPH BROWN, P.E.
FL LICENSE No. 44635

JOB No.: 1686
FILE: 1686 FEMA FLOOD PLANE R1.dwg
SCALE: 1" = 200'

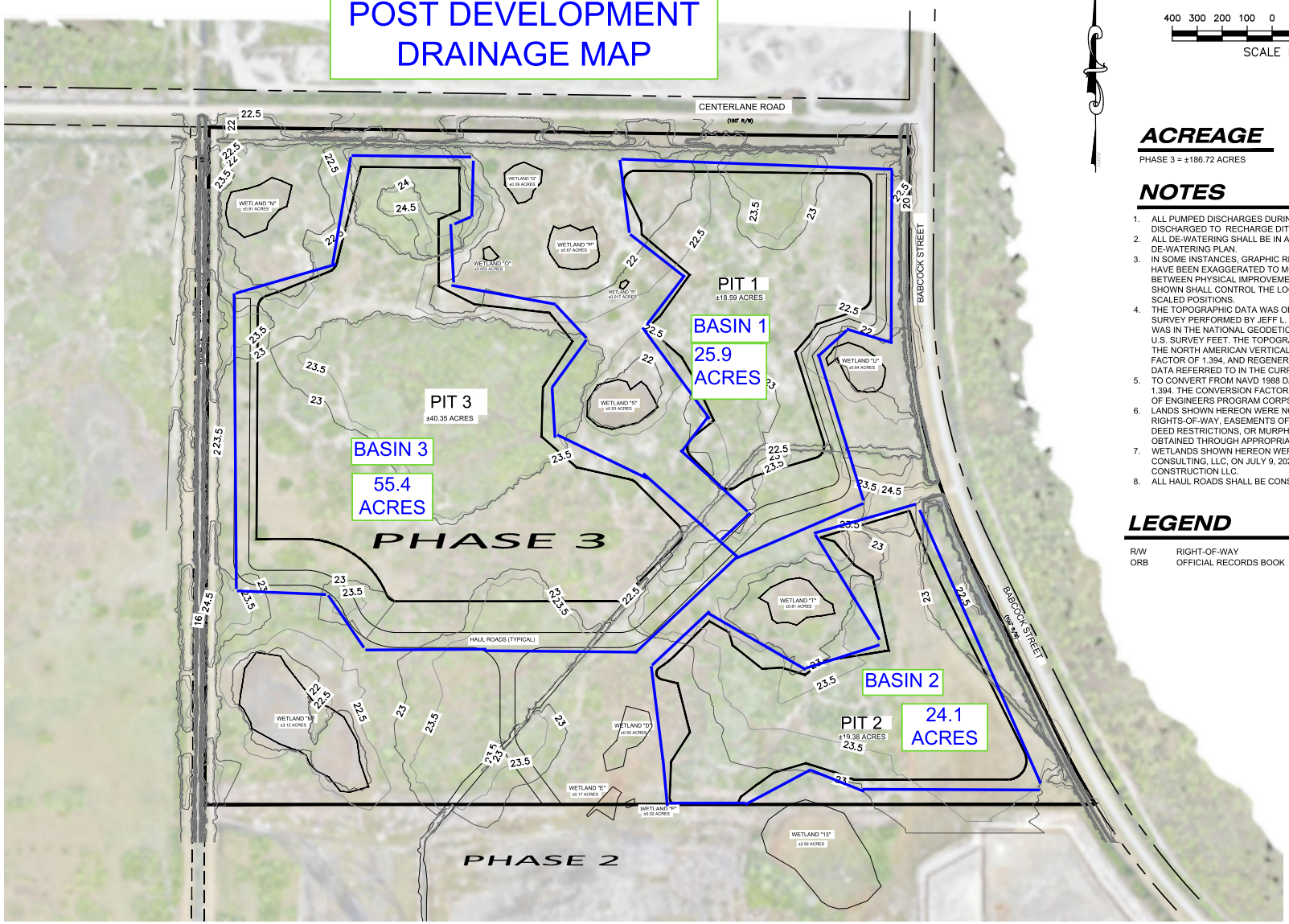
C11
SHEET No.

BLUE GOOSE SURVEY & DESIGN LLC
1900 Old Dixie Hwy
Fort Pierce, Fl. 34946
772-465-7555

Always call 811 two full business days before you dig
Sunshine811.com

DRAINAGE BASIN MAP USED IN ICPR MODELING

POST DEVELOPMENT DRAINAGE MAP



400 300 200 100 0 200 400 800

SCALE IN FEET: 1"= 400'

ACREAGE

PHASE 3 = ±186.72 ACRES

NOTES

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5. TO CONVERT FROM NAVD 1988 DATA TO NGVD 29, DATA ADD A FACTOR OF 1.394. THE CONVERSION FACTOR WAS DERIVED USING THE U.S. ARMY CORPS OF ENGINEERS PROGRAM CORPSCON VERSION 6.0.1.
6. LANDS SHOWN HEREON WERE NOT ABSTRACTED BY THIS OFFICE FOR RIGHTS-OF-WAY, EASEMENTS OF RECORD, OWNERSHIP, ABANDONMENT'S, DEED RESTRICTIONS, OR MURPHY ACT DEEDS. THIS INFORMATION SHOULD BE OBTAINED THROUGH APPROPRIATE TITLE VERIFICATION.
7. WETLANDS SHOWN HEREON WERE DELINEATED BY ERIC MULDOWNEY, E-REG CONSULTING, LLC, ON JULY 9, 2025, AND MAPPED BY BLUE GOOSE CONSTRUCTION LLC.
8. ALL HAUL ROADS SHALL BE CONSTRUCTED WITH ROAD SIDE SWALES.

LEGEND

R/W	RIGHT-OF-WAY
ORB	OFFICIAL RECORDS BOOK

NO.	DESCRIPTION	DATE
	REVISIONS	

BLUE GOOSE SURVEY & DESIGN LLC
1900 NORTH OLD DIXIE HIGHWAY
FORT PIERCE, FLORIDA 34946
Phone: 772.465.7555
PROFESSIONAL SURVEYOR & MAPPER BUSINESS LICENSE LB8630

SUNSHINE STATE WILDLIFE CONSERVATION, LLC
BREVARD COUNTY, FLORIDA
PHASE 3
-DEVELOPMENT DRAINAGE MAP

JOB No.: 1686
DATE: 8/27/2025
FILE: 1686 Pre-Development Drainage Map.dwg
SCALE: 1" = 400'
SHEET No. 1

RALPH BROWN LICENSE No 44635 STATE OF FLORIDA PROFESSIONAL ENGINEER

RALPH BROWN, P.E.
FL LICENSE No. 44635

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ICPR MODELING OF THE 100 YEAR, 24 HOUR STORM EVENT

THE MODELING DETERMINES THE ONSITE 100 YEAR PEAK STAGE IN THREE LAKES

Simple Basin: BASIN1

Scenario:	Scenario1
Node:	LAKE1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	99999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	32.9000 ac
Curve Number:	87.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment: BASIN 1 DRAINS TO LAKE 1

Simple Basin: BASIN2

Scenario:	Scenario1
Node:	LAKE2
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	99999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	42.5000 ac
Curve Number:	85.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment: BASIN 2 DRAINS TO LAKE 2

Simple Basin: BASIN3

Scenario:	Scenario1
Node:	LAKE3
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	10.0000 min
Max Allowable Q:	99999.00 cfs

Time Shift:	0.0000 hr
Unit Hydrograph:	UH323
Peaking Factor:	323.0
Area:	71.2000 ac
Curve Number:	88.0
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment: BASIN3 DRAINS TO LAKE 3

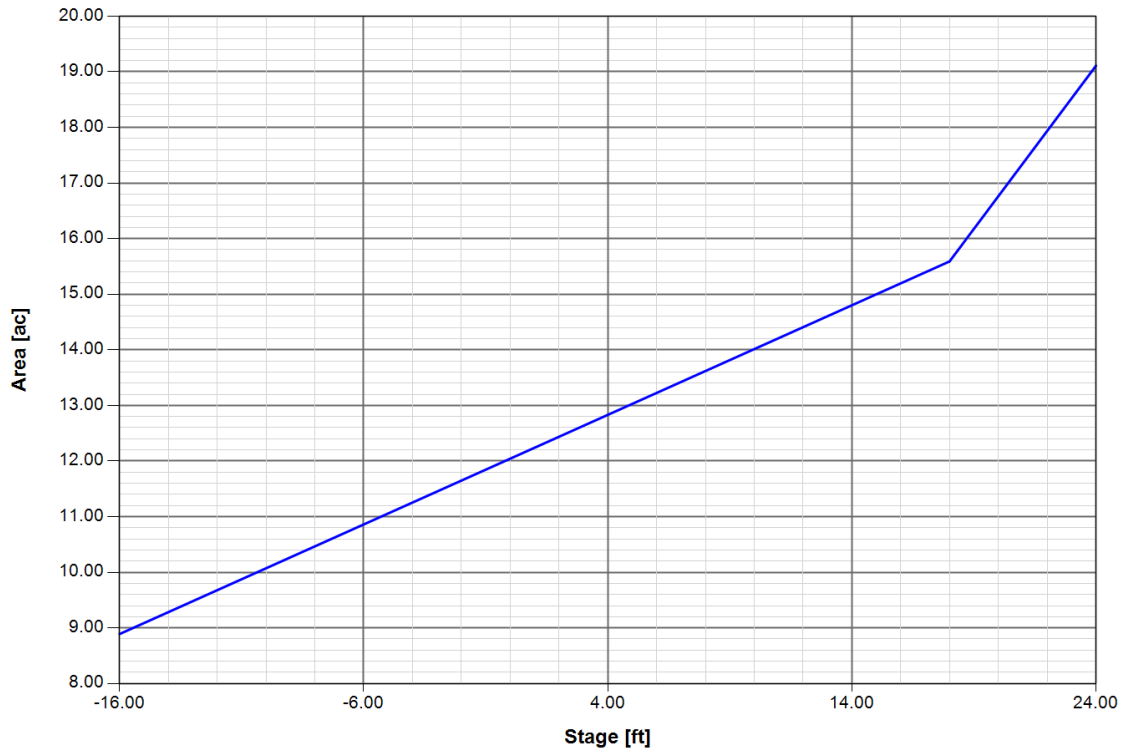
Node: LAKE1

Scenario:	Scenario1
Type:	Stage/Area
Base Flow:	0.00 cfs
Initial Stage:	19.00 ft
Warning Stage:	24.00 ft

Stage [ft]	Area [ac]	Area [ft2]
-16.00	8.8900	387248
18.00	15.5900	679100
24.00	19.1100	832432

Comment:

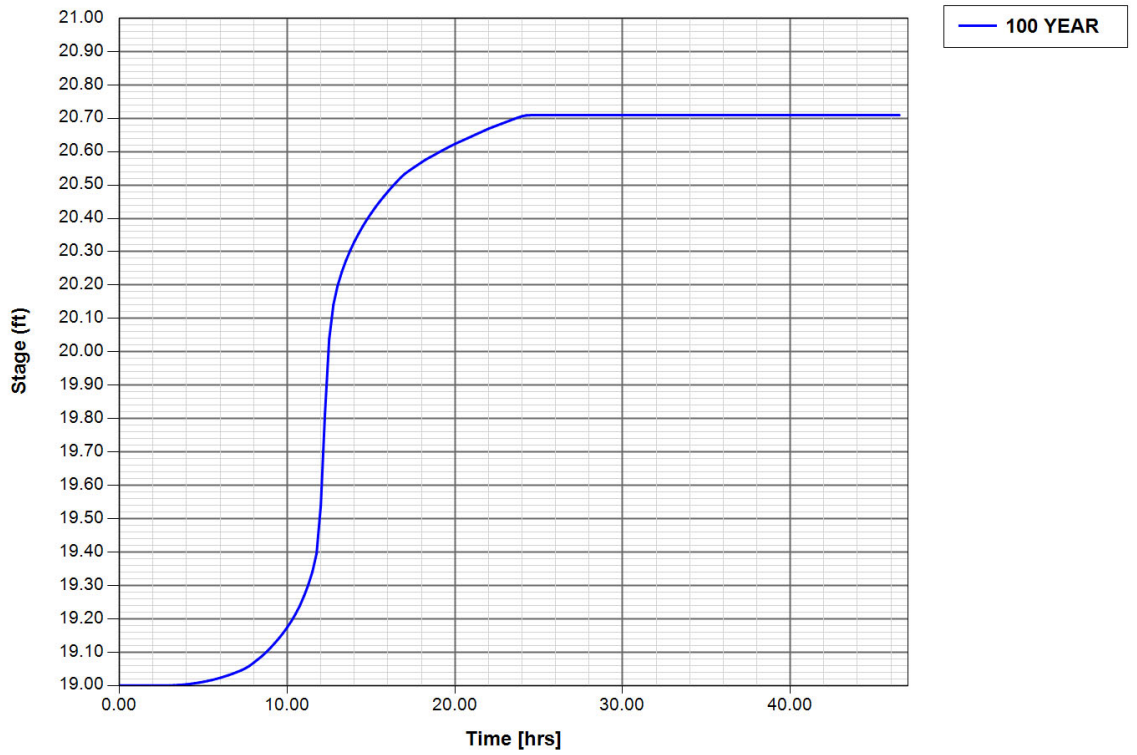
Node: LAKE1 Scenario: Scenario1



Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
LAKE1	100 YEAR	24.00	20.71	0.0008	240.76	0.00	748341	24.8912	10.6444	12.2497	0.0000

Stage [Node: LAKE1]



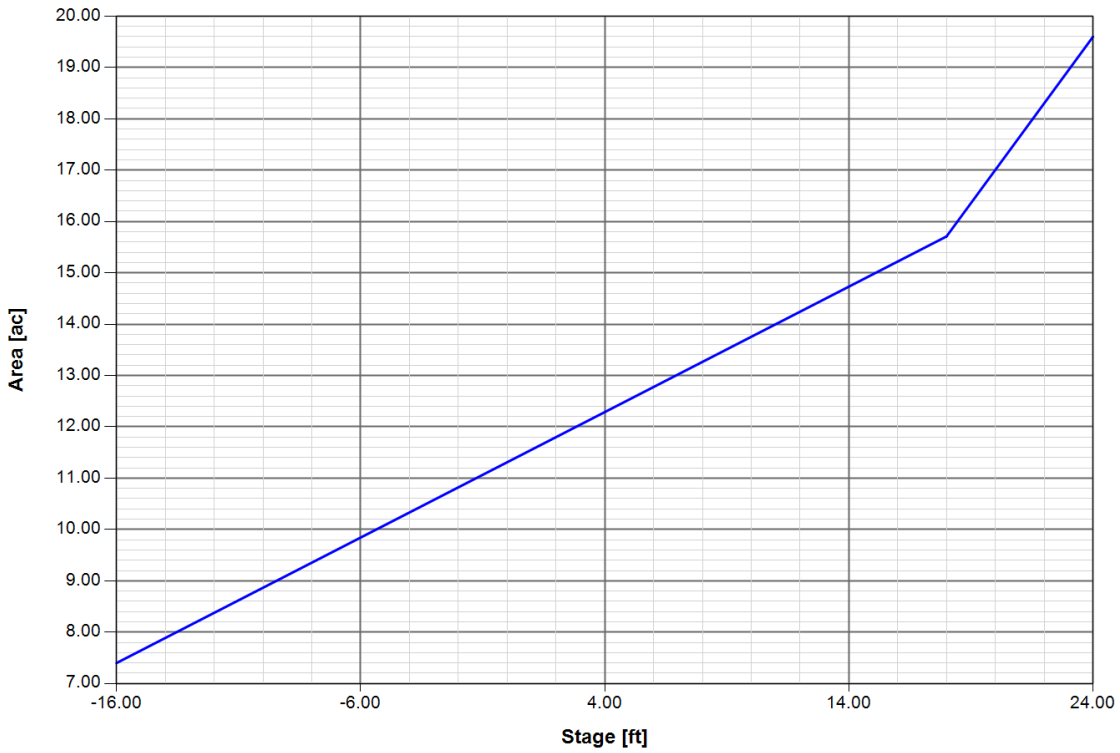
Node: LAKE2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 19.00 ft
Warning Stage: 24.00 ft

Stage [ft]	Area [ac]	Area [ft2]
-16.00	7.4000	322344
18.00	15.7100	684328
24.00	19.6000	853776

Comment:

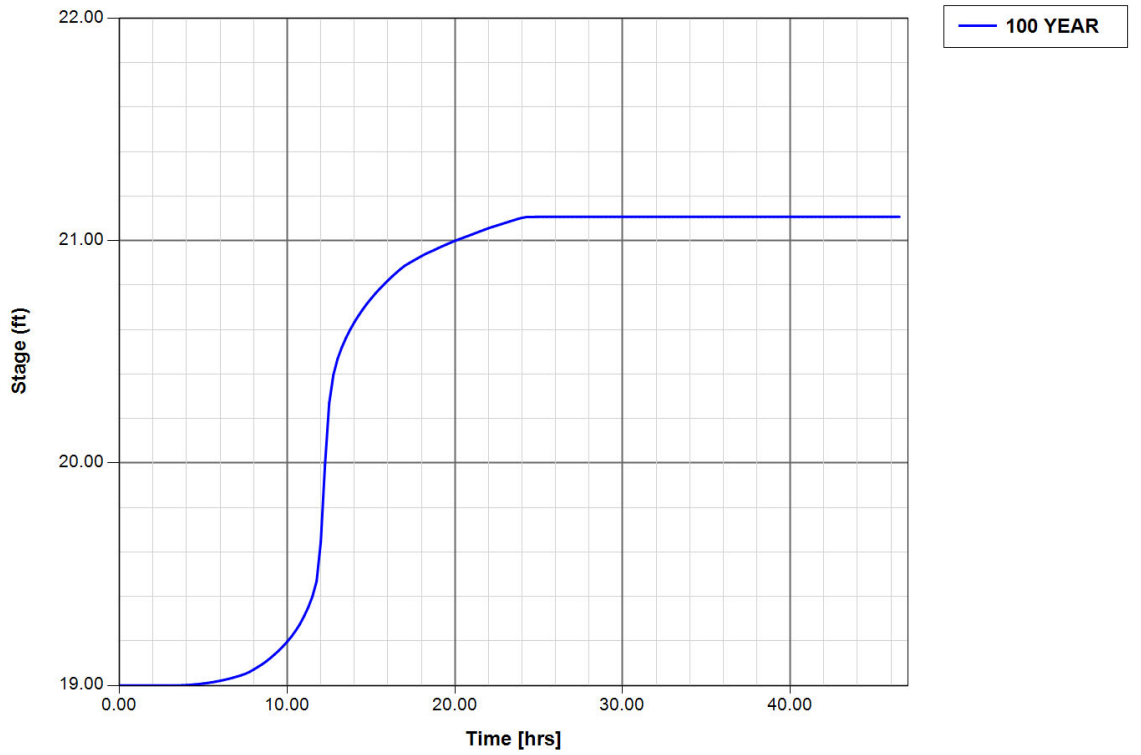
Node: LAKE2 Scenario: Scenario1



Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
LAKE2	100 YEAR	24.00	21.11	0.0010	306.92	0.00	772065	24.8912	12.1897	12.2497	0.0000

Stage [Node: LAKE2]



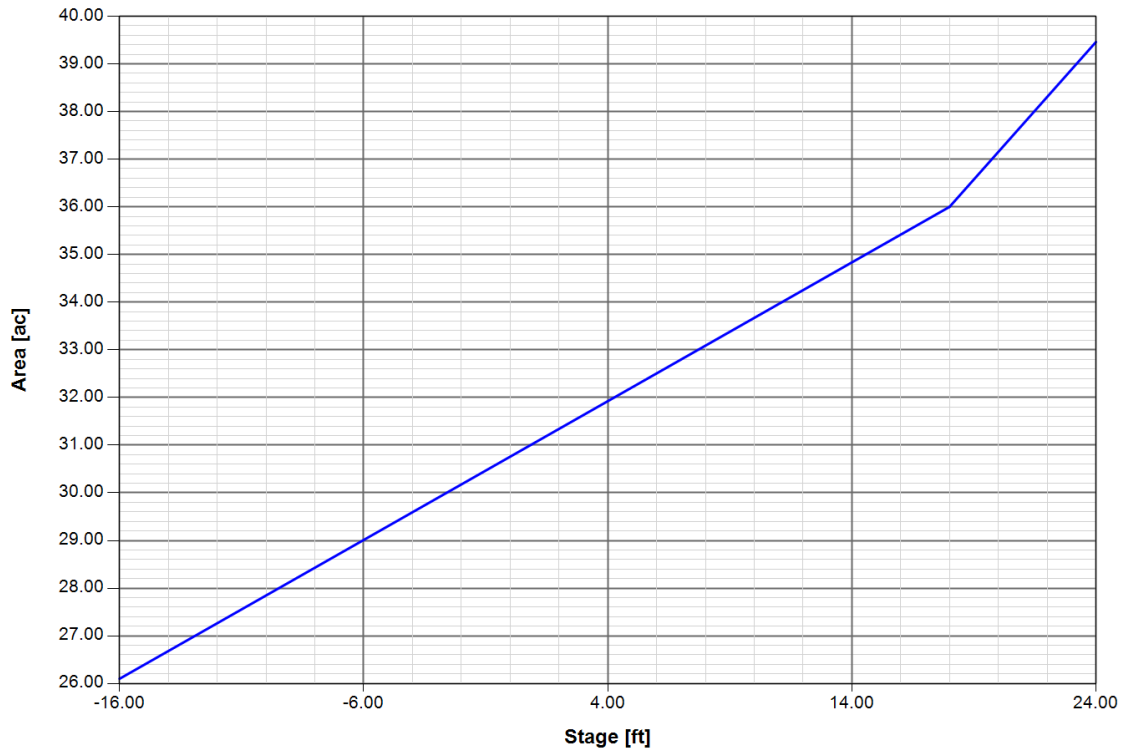
Node: LAKE3

Scenario:	Scenario1
Type:	Stage/Area
Base Flow:	0.00 cfs
Initial Stage:	19.00 ft
Warning Stage:	24.00 ft

Stage [ft]	Area [ac]	Area [ft2]
-16.00	26.1000	1136916
18.00	36.0000	1568160
24.00	39.4600	1718878

Comment:

Node: LAKE3 Scenario: Scenario1



Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
LAKE3	100 YEAR	24.00	20.69	0.0008	524.13	0.00	1635620	24.8912	10.6444	12.2497	0.0000

Stage [Node: LAKE3]