PMBelCOL PEmails

From: BelCol Resource
Sent: Tuesday, June 30, 2009 1:30 PM
To: PMBelCOL PEmails
Subject: FW: COE-6
Attachments: FSAR_FIG02_04_01_206.pdf; BLN COE-6 Information Need Response.doc; ER_FIG02_01_01.pdf; ER_FIG02_04_01.pdf; ER_FIG02_04_04.pdf; FSAR_FIG02_04_01_205.pdf

note: zip files extracted to allow document to be processed. no other changes made.

From: Spink, Thomas E [mailto:tespink@tva.gov]
Sent: Friday, June 26, 2009 1:57 PM
To: Hood, Mallecia
Subject: COE-6

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Hearing Identifier: Bellefonte_COL_Public_EX
Email Number: 1590

Mail Envelope Properties (5A7F273F3E481245BC055B36939D3463252C248DD5)

Subject: FW: COE-6
Sent Date: 6/30/2009 1:30:19 PM
Received Date: 6/30/2009 1:30:21 PM
From: BelCol Resource

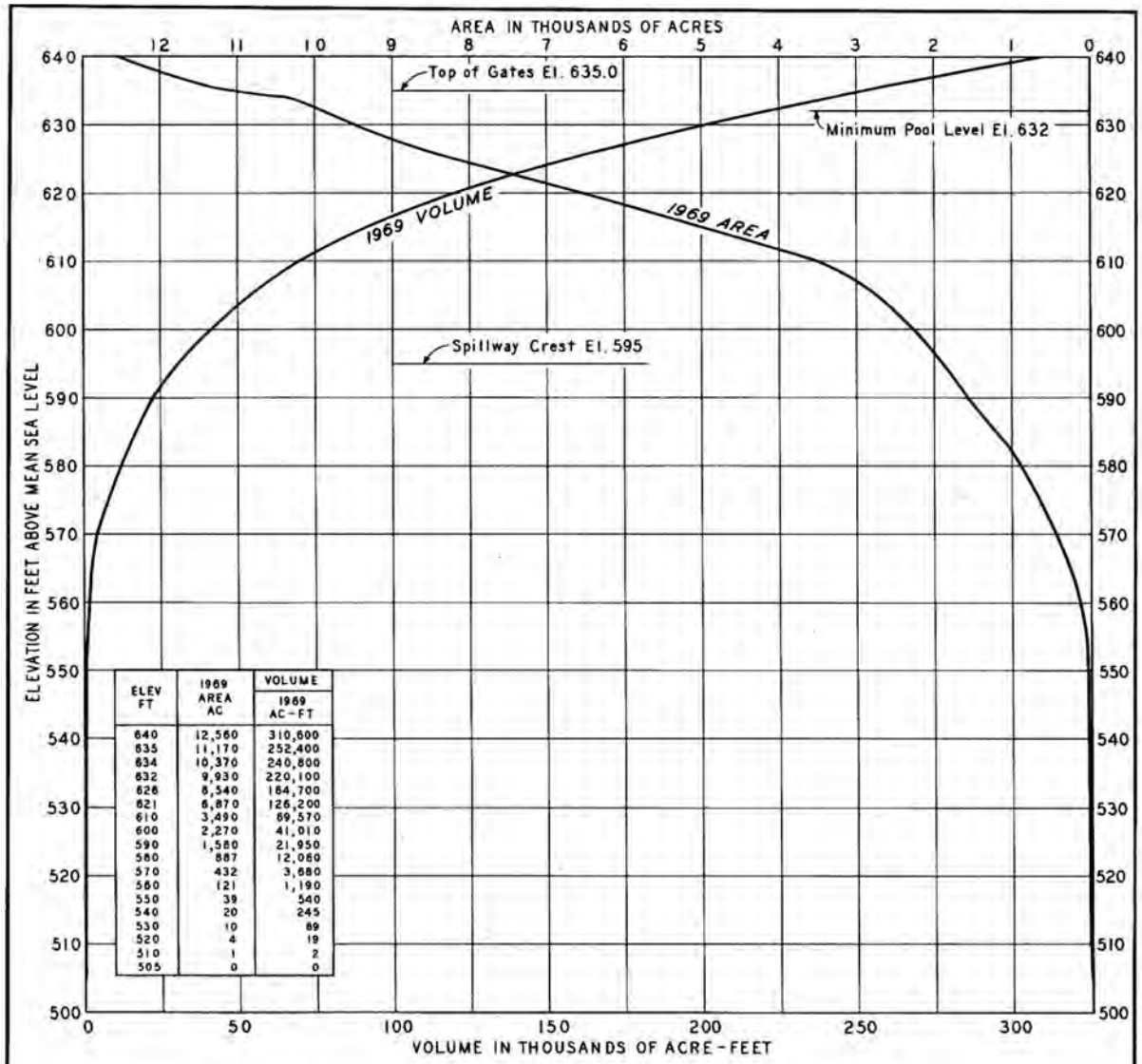
Created By: BelCol.Resource@nrc.gov

Recipients:
"PMBelCOL PEmails" <PMBelCOL.PEmails@nrc.gov>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	412	6/30/2009 1:30:21 PM
FSAR_FIG02_04_01_206.pdf	138368	
BLN COE-6 Information Need Response.doc	45562	
ER_FIG02_01_01.pdf	907023	
ER_FIG02_04_01.pdf	237553	
ER_FIG02_04_04.pdf	131128	
FSAR_FIG02_04_01_205.pdf	124839	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:



ELEV FT	1969 AREA AC	VOLUME 1969 AC-FT
640	12,560	310,600
635	11,170	252,400
634	10,370	240,800
632	9,930	220,100
626	8,540	164,700
621	6,870	126,200
610	3,490	69,570
600	2,270	41,010
590	1,580	21,950
580	887	12,060
570	432	3,680
560	121	1,190
550	39	540
540	20	245
530	10	89
520	4	19
510	1	2
505	0	0

NOTES:
Reservoir areas were measured on a composite map prepared by the Hydraulic Data Branch. Areas from Nickajack Dam to Hales Bar Dam were measured on a navigation map, Scale 1" = $\frac{1}{4}$ mile, with contours at 10' intervals from elevations 560 to 610, 5' intervals from elevations 610 to 630, and at elevations 634 and 640. Previously measured areas above Hales Bar Dam (See dwg. no. 71-DA-1-321G791) were adjusted to agree with the 1969 survey. Contours were made to conform to elevations on TVA sediment range cross sections which are located at one-half to one mile intervals within the reservoir.

The 1969 volume was computed by the contour method.

Elevations are referred to the USC&GS 1936 Supplementary Adjustment.

Area of original river within reservoir = 4,200 acres.

Drainage area at dam = 21,870 sq. mi.

Dam closure December 14, 1967.

REV NO.	DATE	MADE	CHKD	SUPV	INSP
1	9-6-72	DCW		PCS	
ADJUST AREA AT ELEV. 634					

DRWN ..... COMPUTED
TRCD. RNL ENGINEER
CHKD .....

TENNESSEE RIVER MILE 424.7

RESERVOIR AREAS AND VOLUMES

NICKAJACK PROJECT
TENNESSEE VALLEY AUTHORITY
DIVISION OF WATER CONTROL PLANNING

SUBMITTED Edwin B. McCain — RECOMMENDED Paul C. Spath — APPROVED Reed G. Elliott

KNOXVILLE | 12-28-70 | 69 | DA | 1 | 321G867R1

FIGURE 2.4.1-206
Nickajack Reservoir Elevation-Storage Relationship

U.S. Army Corps of Engineers Information Needs – June 2009

In Preparation for Bellefonte Units 3 and 4 Corps of Engineers Site Visit, July 8-10, 2009

COE INFORMATION NEED: COE-6

Provide an SME and supporting data and information/references to discuss impacts of the pre- construction, construction and operation of the proposed plant on flooding of the Tennessee River downstream of the BLN site and impact of flooding of the Tennessee River on buildings and structures at Bellefonte. The description should include but not be limited to:

- Portions of the project that will be located in the floodplain,
- Fill material to be placed in the flood plain resulting in a loss of water storage during a flood event,
- Impact of changes in runoff due to construction and operation at BLN on down stream potential for flooding including a review of the site grading and storm water management plan.

BLN RESPONSE:

As stated in the ER, one purpose of TVA's management of the Tennessee River system is flood control though a network of dams and reservoirs and, as noted in Subsection 2.3.1.3, "Under flood conditions, TVA's water management objective for these and most of its other dams within the system is to operate the reservoir system to minimize downstream effects by timing turbine discharges, gate openings, and spillway discharges as required." Detailed information on the dams and reservoirs located on the Tennessee River in Alabama and Tennessee is provided in Table 2.3-19.

Subsection 2.3.1.2.6 provides a discussion on flood profile. A summary of the design-basis flood elevation study for the BLN site (along with additional flood-related information) is presented in FSAR Section 2.4.

Guntersville Reservoir and Dam are characterized in ER Subsection 2.3.1.3.2, along with elevation-storage and flood-detention information. FSAR Figures 2.4.1-205 and 2.4.1-206 illustrate flood-elevation relationships for Nickajack and Guntersville reservoirs are provided as attachments.

ER Subsection 2.3.3.4.3, Dams and Reservoirs, provides the following discussion:

> "…streamflow within the Guntersville Reservoir is controlled by two flood control and hydroelectric dams. Nickajack Dam releases water from Nickajack Reservoir, approximately 33 river mi. upstream from the BLN site into the Tennessee River, which then flows into the Guntersville Reservoir, created by the Guntersville Dam. The Guntersville Dam is located approximately 43 river mi. southwest of the BLN. The Tennessee River then flows west from Guntersville Dam for approximately 35 mi. where it enters Wheeler Reservoir."

ER Subsection 4.1.1.1 provides a discussion on site preparation and the placement of dredged material and borrow material as it relates to stabilization of materials and runoff (page 4.1-2)

ER Section 4.2 addresses water-related impacts of site preparation and construction, including hydrologic alterations and water use impacts. In particular, Subsection 4.2.1.6 discusses construction impacts on floodplains, and Subsection 4.2.1.10 describes stormwater control and other actions to minimize construction effects on water.

Construction effects on aquatic ecosystems are addressed in ER Section 4.3.2 and Subsection 4.3.2.1. (Guntersville Reservoir), which includes the following statements regarding the effects of construction on flood control storage:

> "The BLN project would comply with the TVA Flood Control Storage Loss Guideline because there would be no loss of flood control storage (i.e., the dredge spoil would be placed and contained on land lying on-site at BLN above the 500-year flood elevation). Precautions including use of BMPs are expected to be utilized to prevent the reentry of the spoil material into the reservoir."

Water-related impacts during operation of BLN are discussed in ER Section 5.2.

Flooding potential at the BLN site was evaluated as part of the alternative site selection process and is addressed in ER Subsection 9.3.3.1 under Plant Safety Evaluation - Flooding Potential. Table 9.3-1 provides flooding potential results of TVA's Alternative Site Evaluation, including flooding potential.

ATTACHMENTS:

ER Figure 2.1-1 Site Plot Plan

ER Figure 2.4-1 BLN Vegetation Coverage

ER Figure 2.4-2 BLN Aquatic Habitats

FSAR Figure 2.4.1-205 Guntersville Reservoir Elevation-Storage Relationship

FSAR Figure 2.4.1-206 Nickajack Reservoir Elevation-Storage Relationship

TRUE NORTH
AL EAST GRID (NAD 83)

NEW UNITS 3 & 4 GENERATION FACILITY LEGEND:

1. CONTAINMENT/SHIELD BUILDING
2. TURBINE BUILDING
3. ANNEX BUILDING
4. AUXILIARY BUILDING
5. SWS COOLING TOWERS
7. RADWASTE BUILDING
10. DIESEL GENERATOR BUILDING
13. FIRE WATER/CLEARWELL STORAGE TANK
14. FIRE WATER STORAGE TANK
15. TRANSFORMER AREA
17. CONDENSATE STORAGE TANK
18. DIESEL GENERATOR OIL STORAGE TANKS
19. DEMINERALIZED WATER STORAGE TANK
20. BORIC ACID STORAGE TANK
22. TURBINE BUILDING LAYDOWN AREA
25. PASSIVE CONTAINMENT COOLING ANCILLARY WATER STORAGE TANK
26. DIESEL-DRIVEN FIRE PUMP/ENCLOSURE
99. T-PAD FOR CRANE

BUILDING LEGEND:

1. NEW PRIMARY ACCESS PORTAL & SECONDARY ALARM STATION
2. NEW ADMINISTRATION BUILDING
3. REMOVE EXIST BLDGS.
4. NEW MAINTENENCE BUILDING
5. NEW MATERIAL RECEIVING & SALLY PORT BUILDING
6. EXISTING SIMULATOR BUILDING
7. EXISTING UNIT 1 & 2 BUILDINGS
8. EXISTING SITE TRAINING BLDG
9. NEW SITE PARKING
10. EXISTING SWITCHYARD
11. NEW OUTAGE PARKING
12. EXISTING COOLING TOWERS
13. NEW SECURITY FENCE ASSY.
14. NEW SWITCHYARD BUILDING
15. EXISTING STORAGE AREA
16. NEW SECURITY ACCESS BLDG
17. NEW CIRCULATING PUMPS
18. NEW PSO SWITCHYARD FACILITY
19. EXISTING SECURITY RANGE FACILITY
20. NEW SECURITY TRAINING BUILDING
21. NEW TECH SUPPORT CENTER (WITHIN MAINTENECE BUILDING)
22. NEW H2 STORAGE BUILDING
23. NEW HAZ. WASTE STORAGE BUILDING
24. EXISTING INTAKE PUMPING STATION
25. NEW TSC DIESEL GENERATOR BUILDING

POND LEGEND:

POND A - YARD DRAINAGE POND
WWRB - WASTE WATER RETENTION BASIN
POND C - CONCENTRATED CHEMICAL TREATMENT POND (LINED)
POND D - DESILTING POND
POND E - ALUM SLUDGE PONDS

NOTES:

1. ELEVATIONS SHOWN ARE BASED ON MEAN SEA LEVEL (MSL).
2. EXISTING CONDITIONS AND TOPOGRAPHIC CONTOURS BASED UPON THE SANBORN MAP COMPANY, INC. PHOTOGRAMMETRIC SURVEY PERFORMED ON MARCH 26,2006 PROJECT NO. 060319.
3. CONTOUR INTERVAL IS 5 FEET.
4. 1000 FOOT GRID AND COORDINATE VALUES ARE BASED UPON AL EAST STATE PLANE COORDINATE SYSTEM NAD 83.

0 300 600 900
GRAPHIC SCALE (FEET)
1 INCH = 300 FT

FIGURE 2.1-1
Site Plot Plan

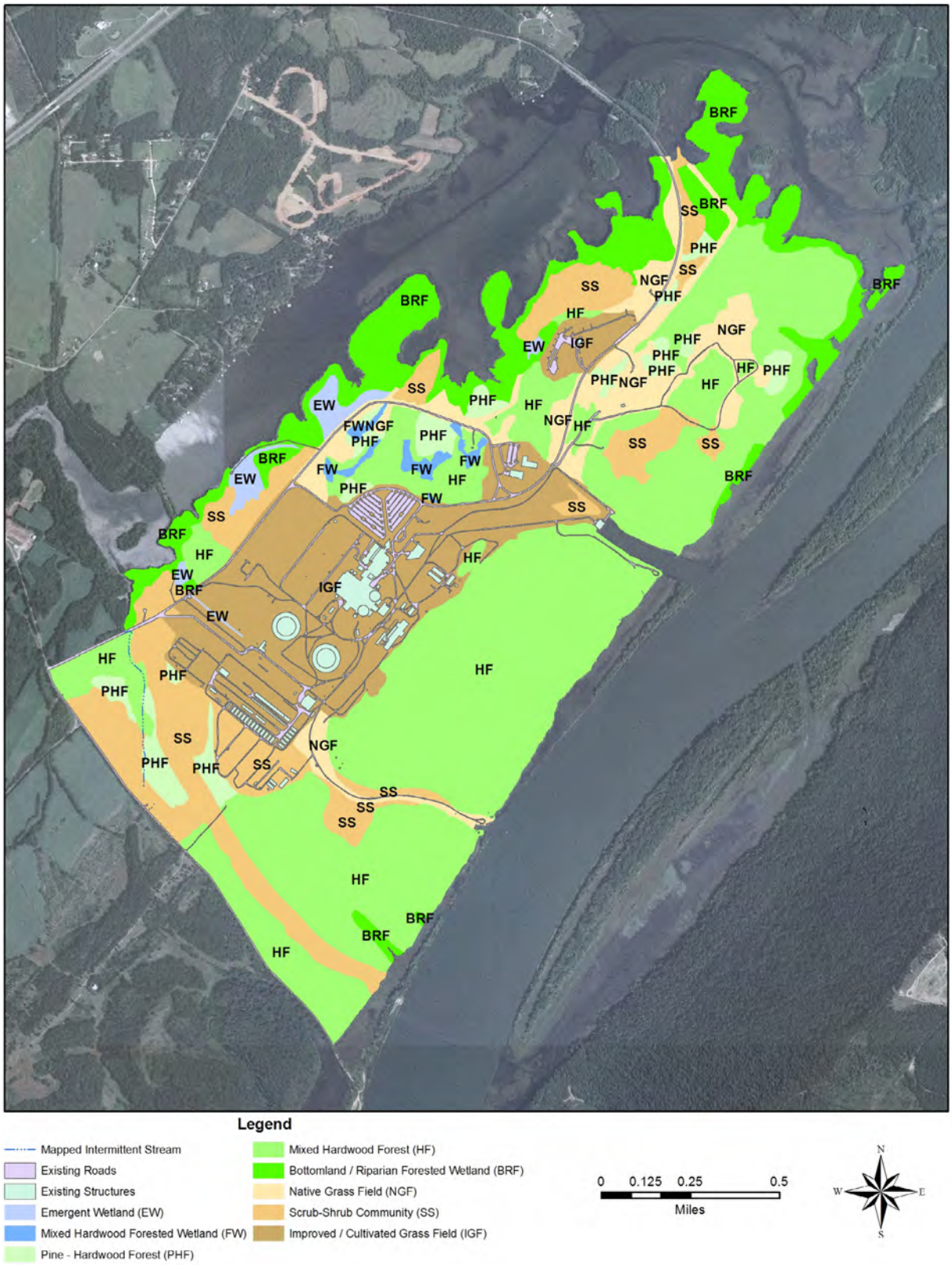


FIGURE 2.4-1
BLN Vegetation Coverage

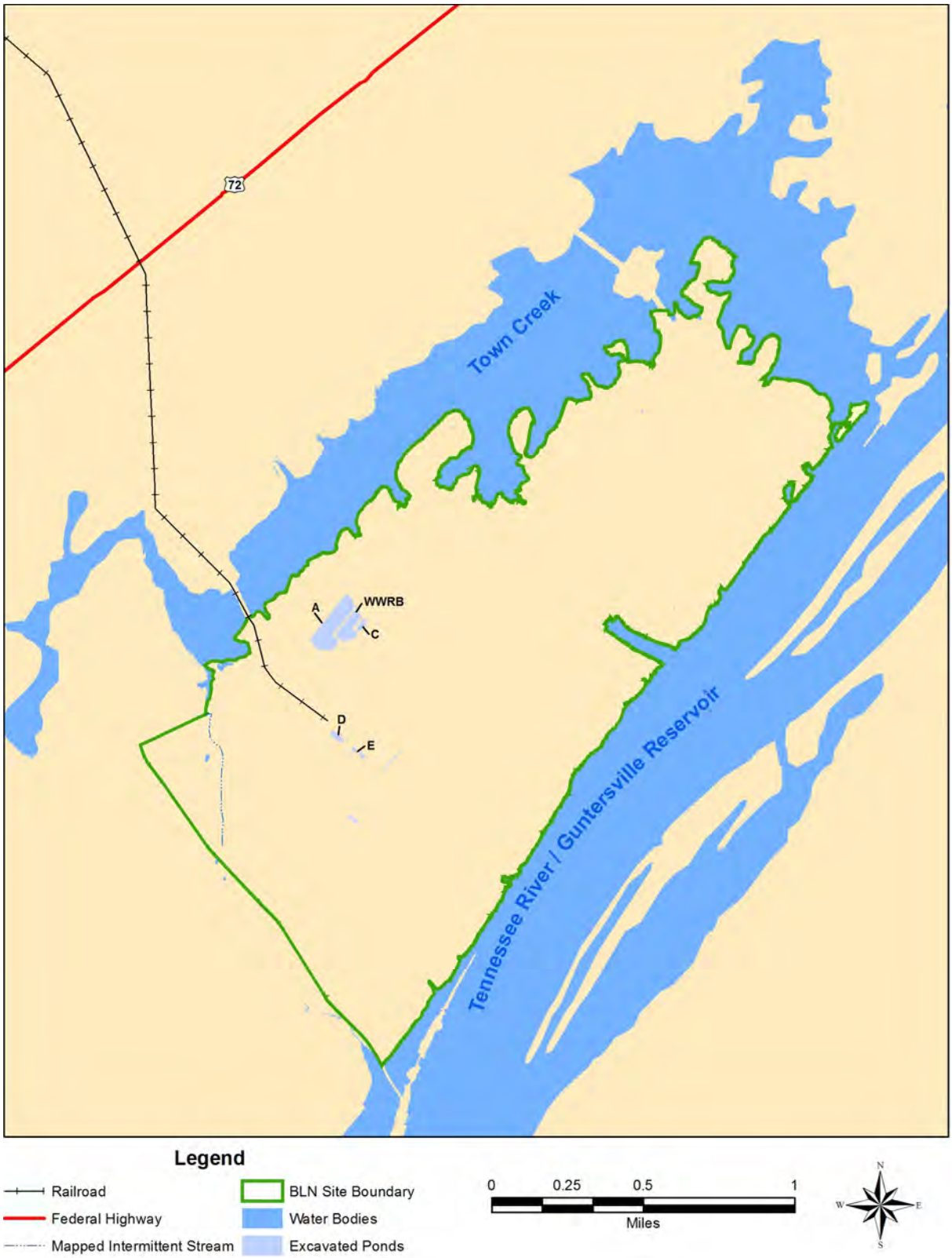
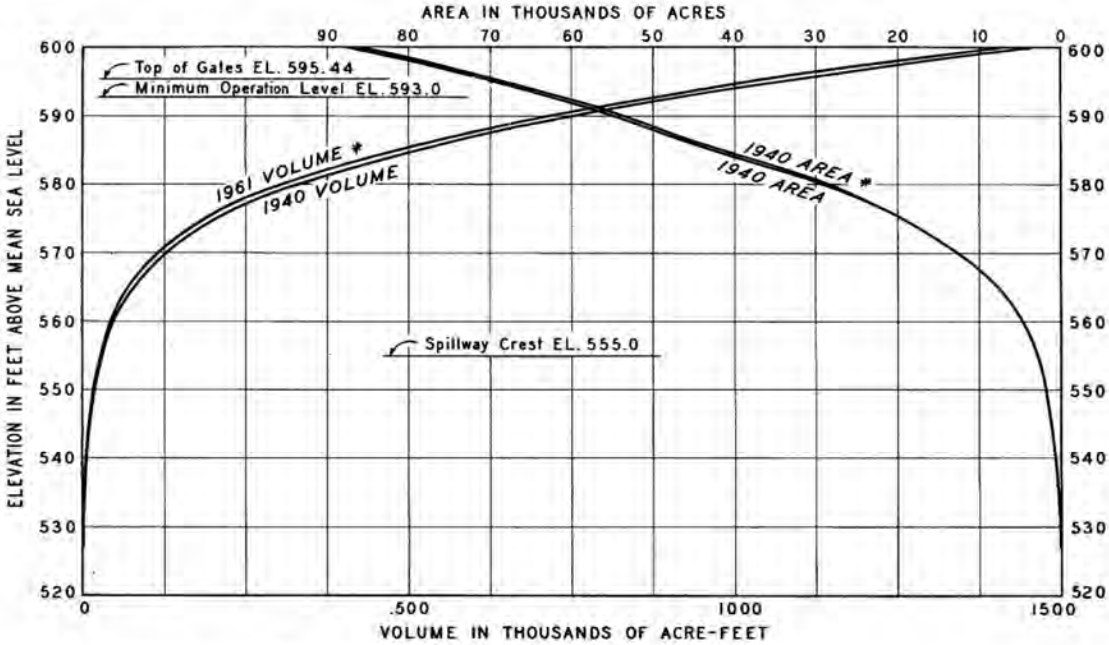


FIGURE 2.4-4
BLN Aquatic Habitats



ELEV FT	1940 AREA AC	VOLUME 1940 AC-FT	VOLUME 1947 AC-FT	VOLUME 1956 AC-FT	VOLUME 1961 AC-FT	1940 AREA* AC	VOLUME* 1940 AC-FT	VOLUME* 1961 AC-FT
600	87,700	1,456,000	1,440,000	1,432,000	1,423,000	86,600	1,438,000	1,406,000
595.44	71,200	1,097,000	1,081,000	1,073,000	1,064,000	70,200	1,085,000	1,052,000
595	69,100	1,063,000	1,046,000	1,039,000	1,030,000	67,900	1,050,000	1,018,000
590	54,500	752,000	735,000	728,000	719,000	53,600	745,000	712,000
585	42,800	510,000	492,000	487,000	477,000	41,800	508,000	474,000
580	29,100	330,000	316,000	311,000	301,000	28,700	330,000	301,000
570	12,400	127,000	121,000	117,000	113,000	12,400	127,000	113,000
560	4,480	46,800	44,000	40,800	39,100	4,480	46,800	39,100
550	1,800	17,650	16,600	14,500	14,800	1,800	17,650	14,800
540	880	4,470	4,220	3,210	3,910	880	4,470	3,910
530	15	25	14	2	0	15	25	0
526.6	0	0	0	0	0	0	0	0

NOTES:

Reservoir areas at elevation 580 and above were measured on navigation maps, scale 1"=2,000' showing field located contours at elevations 580, 585, 590, 595 and 600. Supplementary measurements were made on TVA land maps, scale 1"=500' with field located contours at elevations 595 and 600. Contours were drawn at 10' intervals and made to conform to elevations on TVA sediment range cross sections located at five to ten mile intervals. The 1940 volume was computed by the contour method. Volumes of sediment on succeeding dates were computed by the constant factor method.

Elevations are referred to the USC & GS 1929 General Adjustment.

Area of original river within reservoir = 12,065 acres.

Drainage area at dam = 24,450 square miles.

Dam closure January 16, 1939.

*Adjusted due to closure of Nickajack Dam Dec. 14, 1967, reducing length of Guntersville Reservoir by 6.4 miles.

THIS DRAWING SUPERSEDES 6-DA-1-321A21a2

FIGURE 2.4.1-205
Guntersville Reservoir Elevation-Storage Relationship