APPENDIX U

JURISDICTIONAL WATERS DETERMINATION FOR THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES

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JURISDICTIONAL WATERS DETERMINATION FOR THE PROPOSED STURGEON CREEK AND WAR FORK RESERVOIR SITES

Jackson County, Kentucky

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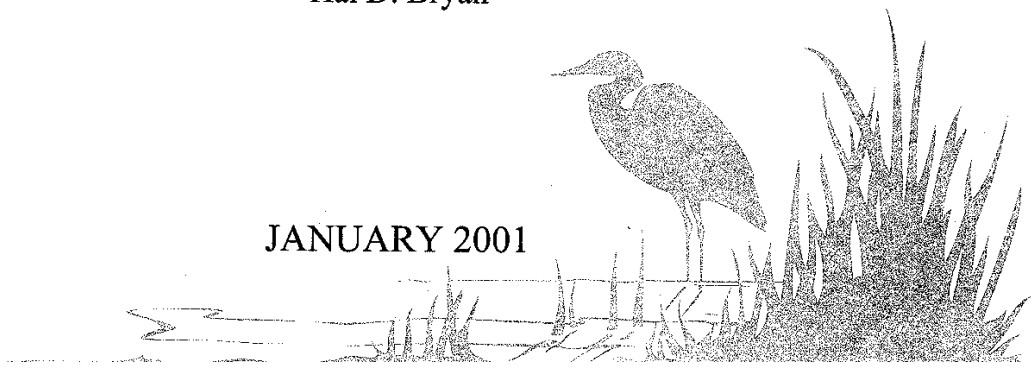

JANUARY 2001

I. INTRODUCTION

Section 404 of the Clean Water Act requires the U. S. Army Corps of Engineers (ACE) to regulate most discharges of dredge or fill material into waters of the U. S., including wetlands. The phrase "discharges of dredge or fill material" essentially includes all land disturbing activities accomplished via use of mechanized equipment. Waters of the U. S. includes most waterways (i.e., intermittent or perennial rivers, streams, creeks, tributaries), water bodies (i.e., lakes, ponds), and wetlands.

The regulatory definition of a Section 404 jurisdictional wetland, according to the U. S. Environmental Protection Agency (EPA) and the ACE, is "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The U. S. Department of Agriculture Natural Resources Conservation Service (NRCS) and U. S. Fish and Wildlife Service (FWS) define wetlands somewhat differently, but all four agencies include three basic elements--hydrology, soils and vegetation--for identifying wetlands. Wetland communities are recognized as providing many valuable functions that improve our environment.

II. PROJECT DESCRIPTION

Eco-Tech Consultants, Incorporated, was contracted by the Mangi Environmental Group, Incorporated, to provide a jurisdictional waters determination for the proposed Sturgeon Creek and War Fork reservoir sites, Jackson County, Kentucky (see attached project location maps).

Sturgeon Creek and War Fork study areas are located in northeast Jackson County in Kentucky. The project areas are situated within the southern reaches of the Kentucky River Basin. Sturgeon Creek is a direct tributary of the Kentucky. War Fork is a headwater tributary of Station Camp Creek which flows directly into the Kentucky River.

Both Sturgeon Creek and War Fork are located within the Cumberland Plateau Section of the Appalachian Plateaus Province. This region lies within the mixed mesophytic forest region (Braun 1950). White oak-hemlock, mixed oak, and oak- hickory forest are common on the gentle to steep slopes of this region. In areas where streams have cut through the surface rock, deep gorges have formed with numerous rock houses. In these deep gorge areas hemlock-mixed mesophytic forest and hemlock-rhododendron communities are common.

III. FINDINGS

Data was obtained prior to the field visit by reviewing the Maulden, McKee, Sturgeon, and Tyner, Kentucky 7.5 minute U.S.G.S. topographic maps, National Wetlands Inventory maps, aerial photographs, and the *Soil Survey of Jackson and Owsley Counties, Kentucky* (Hayes 1989). Potential wetland areas identified from these sources were then investigated in the field.

In 2000, an on-site wetland delineation was conducted according to the three-parameter method described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), which is the legally accepted system for identifying a wetland. This method normally requires positive evidence of three criteria--hydrophytic vegetation, hydric soils and wetland hydrology--before an area can be termed a wetland. Areas generally must have all three criteria to be designated wetlands, although under certain conditions only two of the characteristics may be present. In addition, a field survey of all waters of the United States was conducted.

An on-site field investigation was essential to determine the location of wetlands and waters. Vegetative and soil determination plots were taken and notes were made on hydrologic conditions. Based on these observations, the routine on-site determination method was used to delineate wetland boundaries. The conclusions of this report are based on the consultant's judgement of whether jurisdictional waters are present and where wetland boundaries are located. This preliminary determination will officially become a legal determination when concurrence is received from the ACE, the final authority governing wetland delineations and regulations.

Using the three-parameter method described in the 1987 *Corps of Engineers Wetlands Delineation Manual*, five (5) wetland areas (Table 1) were found at the Sturgeon Creek site and no wetlands were found at the War Fork site.

At the Sturgeon Creek site, Wetlands A and B are located on old surface mining benches adjacent to Blackwater Creek. Wetlands C through E are located adjacent to Sturgeon Creek near Elias.

These wetlands are described according to the classification of Cowardin *et al.* (1979) and positive evidence of wetland criteria is summarized following Table 1. More site specific details concerning these wetlands are in the attached data forms.

Table 1. Classification and acreage of wetlands at the proposed Sturgeon Reservoir site, Jackson County, Kentucky.

Wetland	Classification	Acreage
A	PEM1Es	0.44 acre
B	PEM1Cs	0.19 acre
C	PFO/PSS1E	0.34 acre
D	PFO/PSS/PEM1Ch	1.72 acres
E	PFO1C	0.02 acre
	TOTAL	2.71 acres

NOTE: Wetland A is just outside of the project boundary and may not be affected by construction.

Wetland A is a herbaceous wetland situated on an old surface mine bench. The dominant plant species are soft rush (*Juncus effusus*), wool grass (*Scirpus cyperinus*), and broad-leaf cat-tail

(*Typha latifolia*). Indicators of hydrology include inundated and saturated conditions, water marks, drift lines, wetland drainage patterns, numerous oxidized root channels in the upper 12 inches of soil, water-stained leaves, and a positive FAC neutral test. The soils are typed as well-drained complexes (Bethesda-Fairport complex and Shelocta-Gilpin channery silt loam). However, the soil observed in Wetland A is a result of previous surface mining. At present, the matrix chroma in the B horizon is mostly dark gray (10 YR 4/1).

Wetland B is similar to Wetland A. It is a herbaceous wetland with a few scattered trees. The dominant plant species are soft rush, wool grass, broad-leaf cat-tail, blunt broom sedge (*Carex tribuloides*), and red maple (*Acer rubrum*). Indicators of hydrology include saturated conditions, water marks, drift lines, wetland drainage patterns, oxidized root channels in the upper 12 inches of soil, water-stained leaves, and a positive FAC neutral test. The soils are typed as well-drained complexes. However, the soil observed in Wetland B is a result of previous disturbance. At present, the matrix chroma in the B horizon is mostly dark grayish brown (10 YR 4/2) with mottles.

Wetland C is an old meander of Sturgeon Creek. This "C" shaped linear slough is a scrub/shrub wetland. Dominant plant species include brookside alder (*Alnus serrulata*), buttonbush (*Cephalanthus occidentalis*), ironwood (*Carpinus caroliniana*), black willow (*Salix nigra*), red maple, sweetgum (*Liquidambar styraciflua*), and river birch (*Betula nigra*). Indicators of hydrology include inundated and saturated conditions, water marks, drift lines, sediment deposits, wetland drainage patterns, numerous oxidized root channels in the upper 12 inches of soil, water-stained leaves, and a positive FAC neutral test. The soil series is typed as Grigsby fine sandy loam. Soil samples from the area fit the description of Bonnie silt loam and in the *Soil Survey of Laurel and Rockcastle Counties, Kentucky* (Ross 1981). While Grigsby fine sandy loam is described as well drained, Hayes (1989) stated that "included are small areas of poorly drained soils, soils that contain more than 35 percent coarse fragments in their control section, and sandy soils that have been recently deposited by streams. Individual areas of the included soils generally are less than 3 acres. The included soils make up about 25 percent of the map unit." Bonnie silt loam is poorly drained. Soils meet the criteria for hydric soils as they have a

matrix chroma of 10 YR 6/1 with some low chroma mottles of 10 YR 4/3, numerous oxidized root channels, aquic moisture regime, and reducing conditions.

Wetland D is largely scrub-shrub and forested wetland with smaller amounts of herbaceous wetland within the boundaries. The dominant plant species are brookside alder, red maple, buttonbush, river birch, ironwood, pin oak (*Quercus palustris*), cinnamon fern (*Osmunda cinnamomea*), elderberry (*Sambucus canadensis*), sensitive fern (*Onoclea sensibilis*), rice cut-grass (*Leersia oryzoides*), smooth turtlehead (*Chelone glabra*), drooping sedge (*Carex crinita*), and mermaid-weed (*Proserpinaca palustris*). Indicators of hydrology include inundated and saturated conditions, water marks, drift lines, sediment deposits, wetland drainage patterns, numerous oxidized root channels in the upper 12 inches of soil, water-stained leaves, and a positive FAC neutral test. Spring peepers (*Hyla crucifer*), marbled salamanders (*Ambystoma opacum*), and red spotted newts (*Notophthalmus viridescens*) were captured in this wetland. Soils are the same as Wetland A.

Wetland E is a small, forested wetland. Characteristic plant species include river birch, false nettle (*Boehmeria cylindrica*), poison ivy (*Toxicodendron radicans*), and blunt broom sedge (*Carex tribuloides*). Indicators of hydrology include saturated conditions, water marks, drift lines, sediment deposits, wetland drainage patterns, oxidized root channels in the upper 12 inches of soil, water-stained leaves, and a positive FAC neutral test. The soil series is typed as Rowdy silt loam. Hayes (1989) stated that "included are deep, well drained, gravelly soils on colluvial fans at the mouths of hollows (generally not subject to flooding) and small areas of poorly drained soils. The included soils make up about 25 percent of the map unit." Soils meet the criteria for hydric soils as they have a matrix chroma of 10 YR 4/2 with mottles, numerous oxidized root channels, aquic moisture regime, and reducing conditions.

Twenty one (21) man made ponds were found within or directly adjacent to the Sturgeon Creek reservoir sites (Table 2). No ponds are located within or adjacent to the War Fork reservoir site. Five (5) of the 21 ponds at Sturgeon Creek meet the criteria of jurisdictional wetland (Ponds 6, 8, 12, 16, and 20). These ponds are shallow enough to be over 50% vegetated by emergent [such as broad-leaf cat-tail, soft rush, bur-reed (*Sparganium americanum*), green bulrush (*Scirpus*

atrovirens)], submerged [such as water naiad (*Najas minor*)] and floating-leaved aquatic plants [such as pondweed (*Potamogeton nodosus*) and creeping water primrose (*Ludwigia peploides*)]. Of the 21 ponds, nine (9) are located just outside of the project boundaries and may not be affected by reservoir construction. See the "POND AND WETLAND LOCATION MAP" following the data forms to see the exact location of these ponds in realation to the proposed reservoir. These ponds were all created for farming (livestock and/or irrigation), sediment control (mining or oil wells), or recreation (aesthetics and fishing).

Table 2. Classification and acreage of ponds at the proposed Sturgeon Reservoir site, Jackson County, Kentucky.

Pond	Classification	Acreage
1	PUBHh	0.05 acre
2	PUBHh	0.08 acre
3	PUBHh	0.05 acre
4	PUBHh	0.05 acre
5	PUBHh	0.12 acre
6	PAB3/PEM1Fh	0.12 acre
7	PUBHh	0.29 acre
8	PAB3/PEM1Fx	0.07 acre
9	PUBHx	0.29 acre
10	PUBHh	0.12 acre
11	PUBHh	0.12 acre
12	PAB3/PEM1Fh	0.05 acre

13	PUBHh	0.29 acre
14	PUBHx	0.05 acre
15	PUBHh	0.07 acre
16	PAB3/PEM1Fh	0.05 acre
17	PUBHx	0.05 acre
18	PUBHh	0.07 acre
19	PUBHx	0.12 acre
20	PAB3/PEM1Fh	0.05 acre
21	PUBHh	1.50 acres
	TOTAL	3.66 acres

Total acreage of ponds is within and directly adjacent to the Sturgeon Creek reservoir site is 3.66 acres. Total acreage of ponds within the project boundaries is 2.68. Total acreage of ponds (6, 8, 12, 16, 20) that meet the criteria for wetland is 0.34 acre. While these five ponds meet the criteria for wetland, they are not considered "jurisdictional" wetland in this regulatory district unless they were built in hydric soils or a stream channel. None of these ponds were built in hydric soils or a stream channel.

Approximately 27,000 linear feet of Sturgeon Creek would be inundated by the proposed reservoir. In addition, approximately 10,400 linear feet of Blackwater Creek, 5,800 linear feet of Wilfreds Fork, and 15,200 linear feet of several unnamed tributaries of Sturgeon , Blackwater Creek, and Wilfreds Fork would also be inundated. The average stream channel width of Sturgeon Creek and Blackwater Creek is about 30 feet, the average width of Wilfreds Creek is about 20 feet, and the average width of the unnamed tributaries is about 10 feet. Total linear feet of streams at the Sturgeon Creek site is 58,400 (about 31.91 acres).

At the War Fork site approximately 12,600 linear feet of War Fork and 4,800 linear feet of Steer Fork would be inundated. About 800 linear feet of Guys Branch and 2200 linear feet of three separate unnamed tributaries would also be inundated. War Fork has an average stream channel width of about 30 feet, Steer Fork has an average width of about 20 feet, and Guys Branch and the unnamed tributaries have an average width of about 10 feet. Total linear feet of streams at the War Fork site is 20,400 (about 11.57 acres).

IV. CONCLUSIONS

In accordance with the 1987 Corps of Engineers Wetland Delineation Manual and Part 328 of Title 33 Code of Federal Regulations, Eco-Tech, Incorporated, performed a detailed, but preliminary determination of jurisdictional waters of the United States at the proposed Sturgeon Creek and War Fork reservoir sites in Jackson County, Kentucky. Wetlands were delineated using all three wetland criteria and the attached data forms summarize the characteristics of soils, vegetation, and hydrology. Wetlands were found at the Sturgeon Creek site but not at the War Fork site. As indicated in Table 1, the total area of jurisdictional wetlands on the Sturgeon Creek site is 2.71 acres. At present,wetlands that are considered isolated may not be jurisdictional wetlands. Wetlands A and B may be considered isolated as their only connection to Blackwater Creek is by gulleys on the slopes. Wetlands C, D, and E are directly connected to Sturgeon Creek by overbank flooding.

In addition, several ponds occur within and adjacent to the project boundaries at Sturgeon Creek. Twenty one (21) ponds total about 3.66 acres. Five of these ponds meet the criteria for wetland, 0.34 acre total. However, these ponds are not presently considered "jurisdictional" wetlands in this district. No ponds were found within or adjacent to the War Fork site.

Approximately 58,400 linear feet of streams (including Blackwater Creek, Wilfreds Fork, and some portions of unnamed tributaries) would be inundated at the Sturgeon Creek reservoir site. Approximately 20,400 linear feet of streams (including Steer Fork, Guys Branch, and some portions of unnamed tributaries).

The results of this jurisdictional waters determination are not official until concurrence is received by the United States Army Corps of Engineers, Louisville Regulatory District, Louisville, Kentucky. Given the magnitude of impacts to waters of the United States (primarily streams), an Individual Permit (IP) would be required to complete the proposed project at any of the sites. After a complete permit application package is submitted (including a mitigation plan), a Public Notice will be issued by the ACE. Processing of an IP generally takes between 90 and 120 days, but can take longer depending on the amount of comments received.

V. LITERATURE CONSULTED

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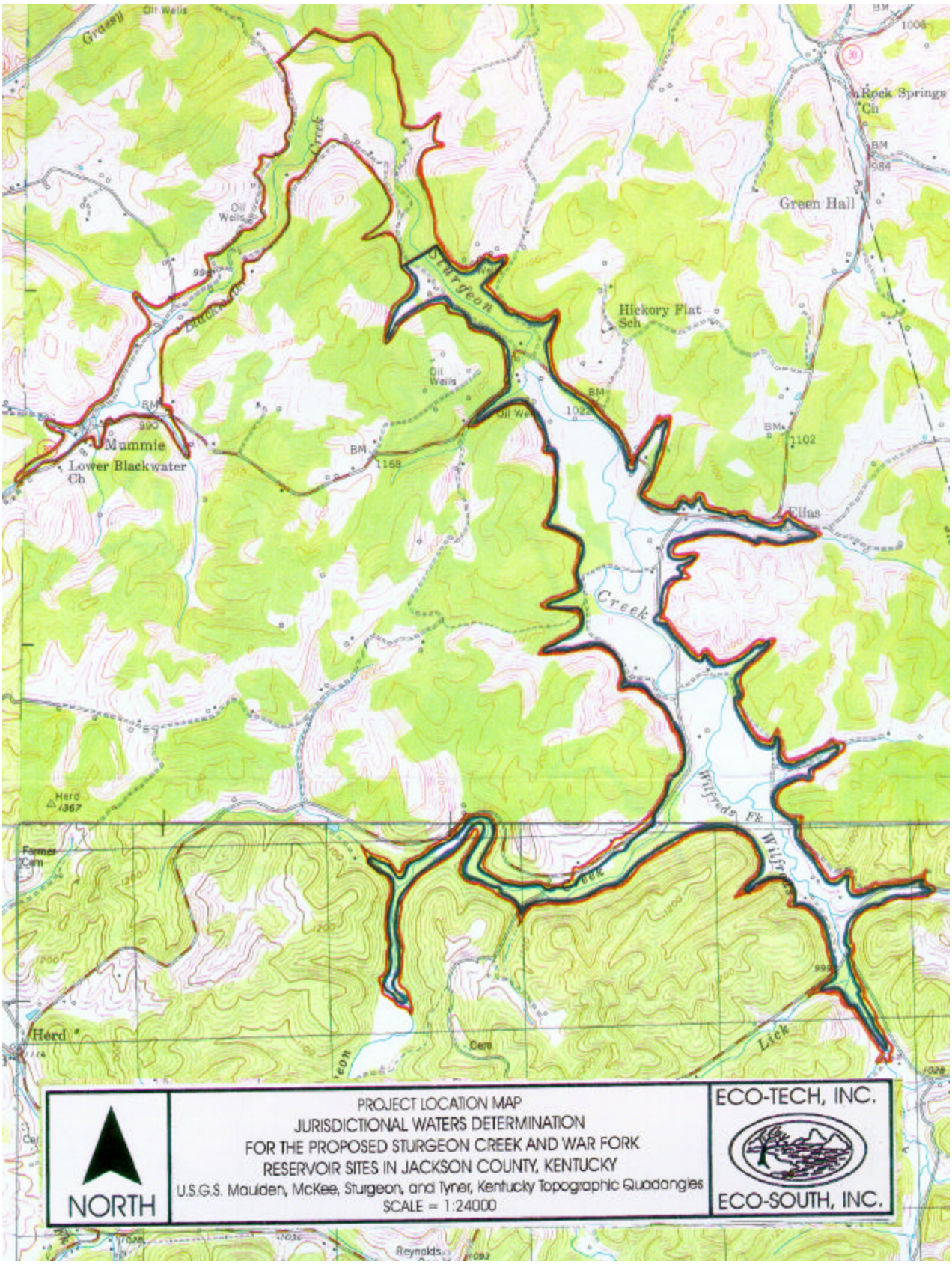
Data Forms for Routine Wetland Determination (1987 COE Wetlands Delineation Manual), Wetlands A through E, are unavailable electronically. These Data Forms are available in the hardcopy of the Jackson County Lake Project Final Environmental Impact Statement, Appendix U. Refer to a hardcopy for this information.


Grassy
Oil Wells
Rock Springs Ch
Green Hall
Hickory Flat Sch
Sturgeon Creek
Mammie
Lower Blackwater Ch
Elias
Herd
Former Cem
Wilfreds Fk
Lick
Reynolds
NORTH
PROJECT LOCATION MAP
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.G.S. Maulden, McKee, Sturgeon, and Tyner, Kentucky Topographic Quadrangles
SCALE = 1:24000
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SYSTEM: R — RIVERINE

SUBSYSTEM	1 — TIDAL		2 — LOWER PERENNIAL	3 — UPPER PERENNIAL	4 — INTERMITTENT	5 — UNKNOWN PERENNIAL	
CLASS	RB — ROCK	UB — UNCONSOLIDATED BOTTOM	*SB — STREAMBED	AB — AQUATIC BED	RS — ROCKY SHORE	US — UNCONSOLIDATED SHORE	**EM — EMERGENT	OW — *OPEN WATER/ Unknown Bottom*
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 *Unknown Submergent* 6 *Unknown Surface*	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	2 Nonpersistent	

*STREAMBED is limited to TIDAL and INTERMITTENT SUBSYSTEMS, and comprises the only CLASS in the INTERMITTENT SUBSYSTEM.

**EMERGENT is limited to TIDAL and LOWER PERENNIAL SUBSYSTEMS. The remaining CLASSES are found in all SUBSYSTEMS.

SYSTEM: P — PALUSTRINE

CLASS	RB — ROCK BOTTOM	UB — UNCONSOLIDATED BOTTOM	AB — AQUATIC BED	US — UNCONSOLIDATED SHORE	ML — MOSS-LICHEN	EM — EMERGENT	SS — SCRUB-SHRUB	FO — FORESTED	OW — *OPEN WATER/ Unknown Bottom*
Subclass	1 Bedrock 2 Rubble	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular 5 *Unknown Submergent* 6 *Unknown Surface*	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated	1 Moss 2 Lichen	1 Persistent 2 Nonpersistent	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 *Deciduous* 7 *Evergreen*	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 *Deciduous* 7 *Evergreen*	

MODIFIERS

In order to more adequately describe wetland and deepwater habitats one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

WATER REGIME

Non-Tidal

- A Temporarily Flooded
- B Saturated
- C Seasonally Flooded
- D *Seasonally Flooded/ Well Drained*
- E *Seasonally Flooded/ Saturated*
- F Semipermanently Flooded
- G Intermittently Exposed
- H Permanently Flooded
- J Intermittently Flooded
- K Artificially Flooded
- W Intermittently Flooded/Temporary
- Y Saturated/Semipermanent/ Seasonal
- Z Intermittently Exposed/Permanent
- U *Unknown*

Tidal

- K *Artificially Flooded*
- L Subtidal
- M Irregularly Exposed
- N Regularly Flooded
- P Irregularly Flooded
- *S Temporary-Tidal
- *R Seasonal-Tidal
- *T Semipermanent-Tidal
- *V Permanent-Tidal
- U *Unknown*

*These water regimes are only used in tidally influenced, freshwater systems.

WATER CHEMISTRY

Coastal Halinity

1 Hyperhaline
2 Euhaline
3 Mixohaline *(Brackish)*
4 Polyhaline
5 Mesohaline
6 Oligohaline
0 Fresh

Inland Salinity

7 Hypersaline
8 Eusaline
9 Mixosaline
0 Fresh

pH Modifiers for all Fresh Water

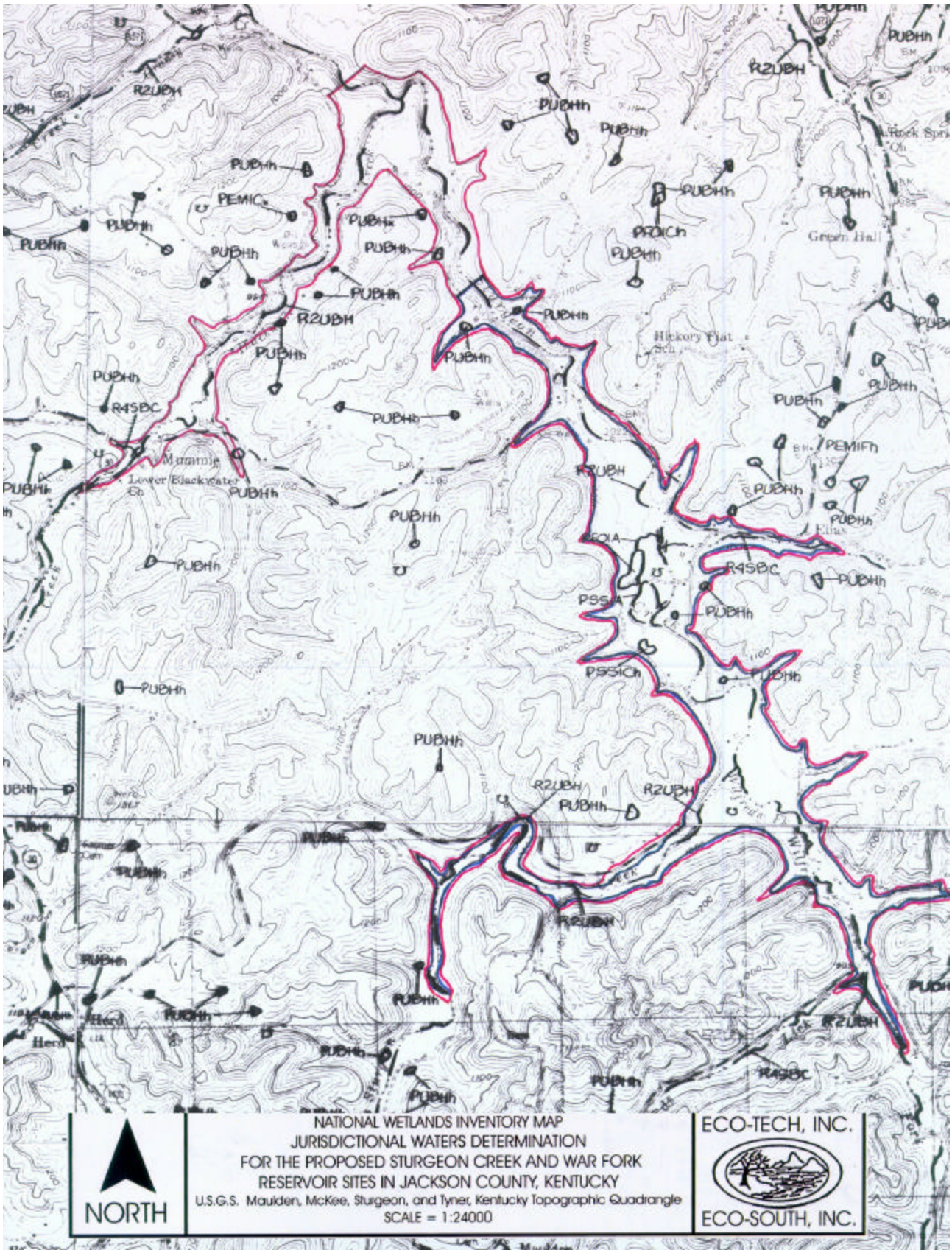
a Acid
t Circumneutral
i Alkaline

SOIL

- g Organic
- n Mineral

SPECIAL MODIFIERS

- b *Beaver*
- d *Partially Drained/Ditched*
- f Farmed
- h *Diked/Impounded*
- r Artificial Substrate
- s *Spoil*
- x Excavated


NORTH
NATIONAL WETLANDS INVENTORY MAP
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.G.S. Maulden, McKee, Sturgeon, and Tyner, Kentucky Topographic Quadrangle
SCALE = 1:24000
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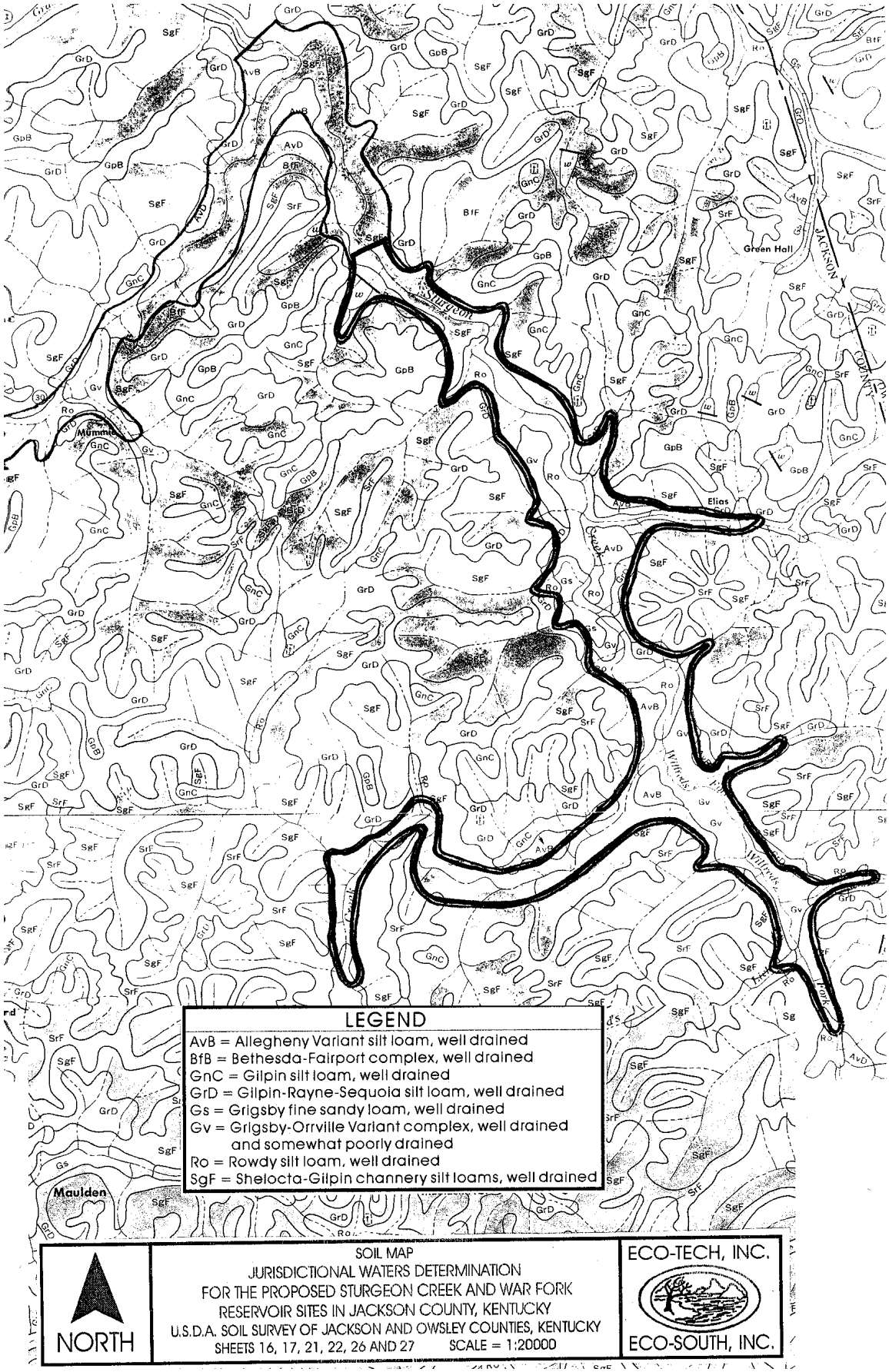
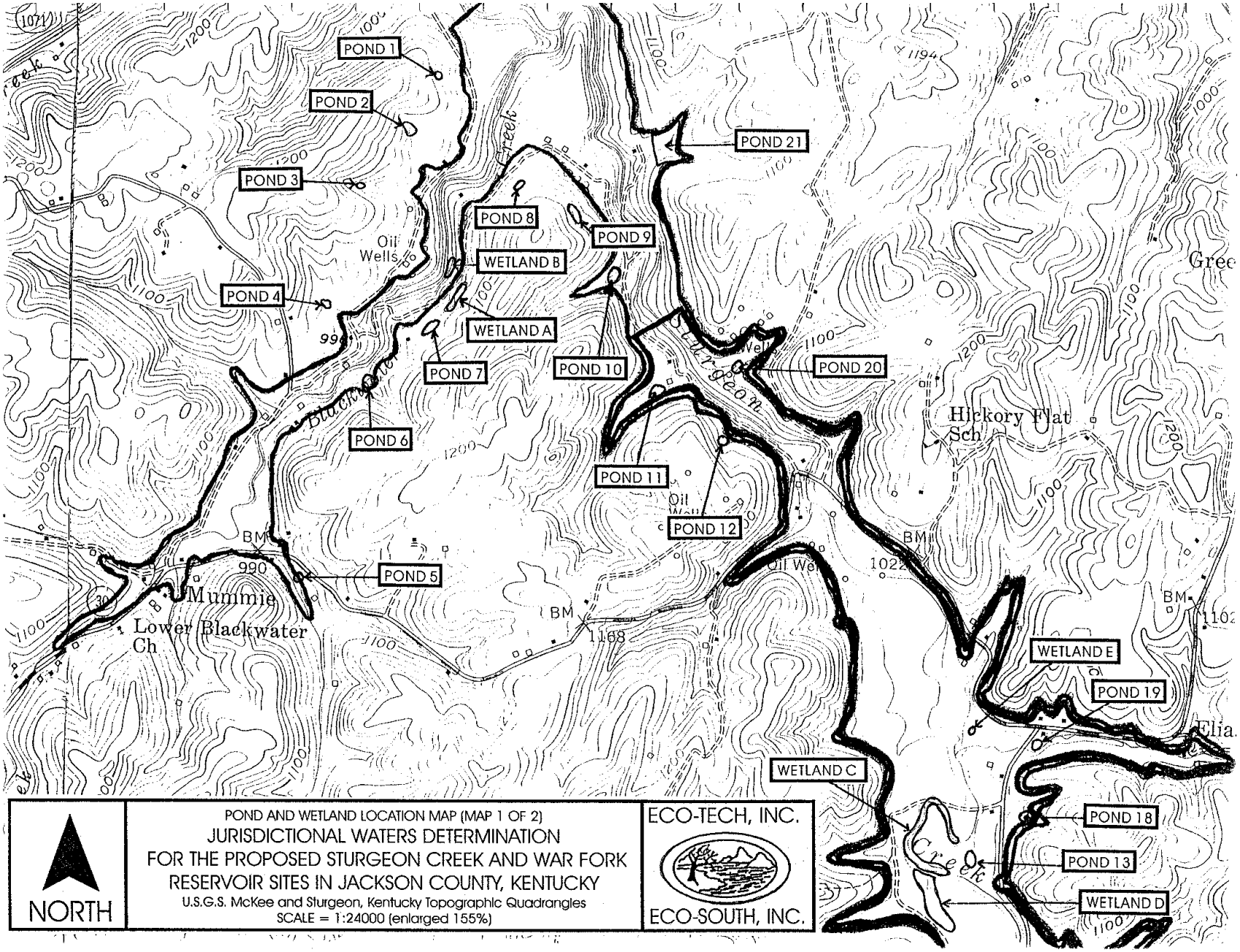

LEGEND
AvB = Allegheny Variant silt loam, well drained
BfB = Bethesda-Fairport complex, well drained
GnC = Gilpin silt loam, well drained
GrD = Gilpin-Rayne-Sequoia silt loam, well drained
Gs = Grigsby fine sandy loam, well drained
Gv = Grigsby-Orrville Variant complex, well drained and somewhat poorly drained
Ro = Rowdy silt loam, well drained
SgF = Shelocta-Gilpin channery silt loams, well drained
NORTH
SOIL MAP
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.D.A. SOIL SURVEY OF JACKSON AND OWSLEY COUNTIES, KENTUCKY
SHEETS 16, 17, 21, 22, 26 AND 27 SCALE = 1:20000
ECO-TECH, INC.
ECO-SOUTH, INC.
Green Hall
Elias
Maulden
JACKSON


POND 1
POND 2
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POND 4
POND 5
POND 6
POND 7
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POND 11
POND 12
POND 20
POND 21
POND 18
POND 19
WETLAND A
WETLAND B
WETLAND C
WETLAND D
WETLAND E
Oil Wells
Mummie
Lower Blackwater Ch
Hickory Flat Sch
Sturgeon Creek
Blackwater Creek
BM
NORTH
POND AND WETLAND LOCATION MAP (MAP 1 OF 2)
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.G.S. McKee and Sturgeon, Kentucky Topographic Quadrangles
SCALE = 1:24000 (enlarged 155%)
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POND 17
POND 15
POND 14
WETLAND D
POND 16
NORTH
POND AND WETLAND LOCATION MAP (MAP 2 OF 2)
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.G.S. Maulden and Sturgeon, Kentucky Topographic Quadrangles
SCALE = 1:24000 (enlarged 155%)
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U M B E R L A N D
O N A L
F O R E S T
Girl Scout Camp
Turkey Foot
Turkey Foot Ch
Elam
Hughes
Steer
Rocky
Smith Sch
Radio Tower
Jacks
NORTH
PROJECT LOCATION MAP
JURISDICTIONAL WATERS DETERMINATION
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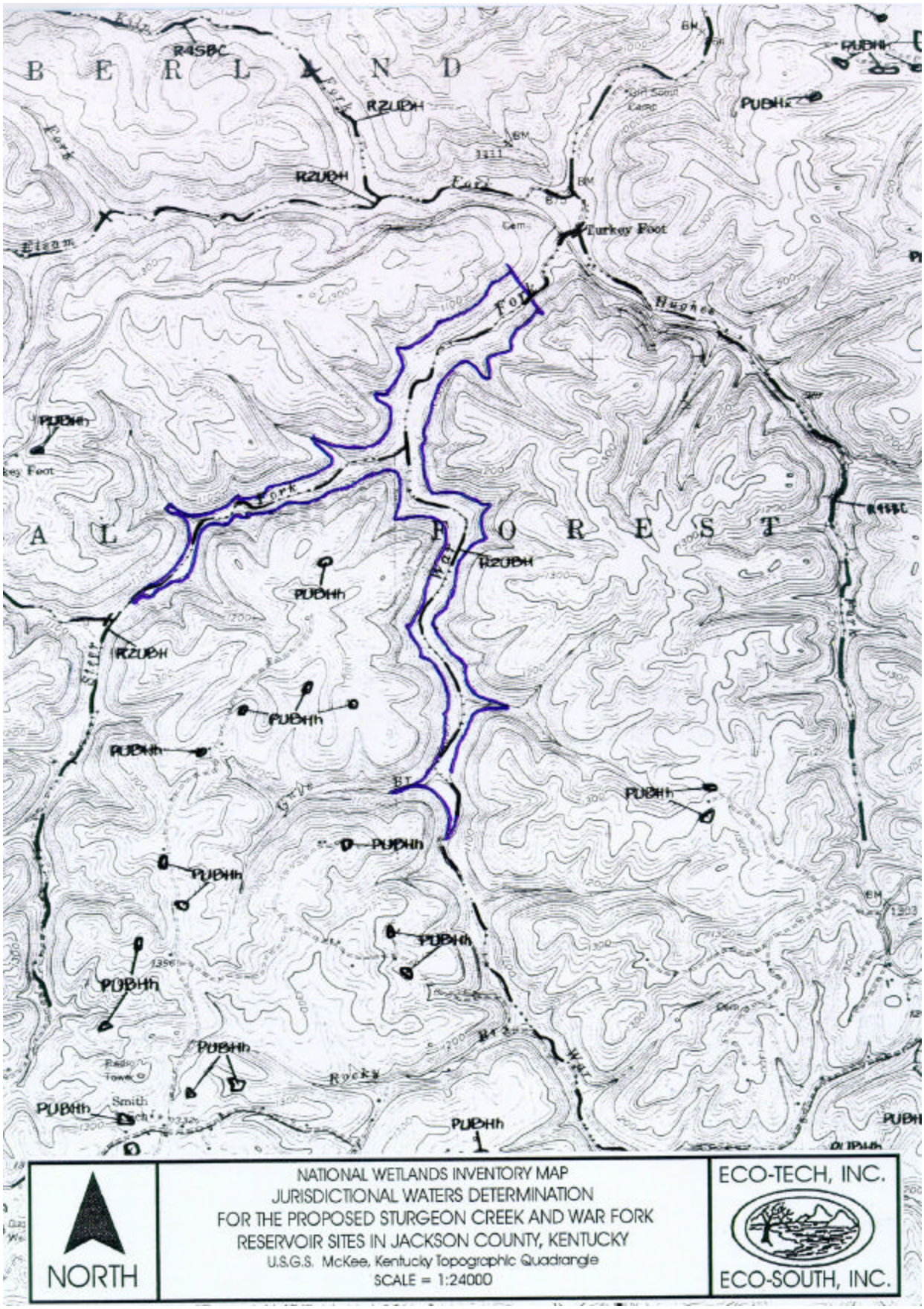
B E R L A N D
A L F O R E S T
R4SBC
RZUBH
PUBHh
Turkey Foot
Elam
Fork
Rocky
Smith
NORTH
NATIONAL WETLANDS INVENTORY MAP
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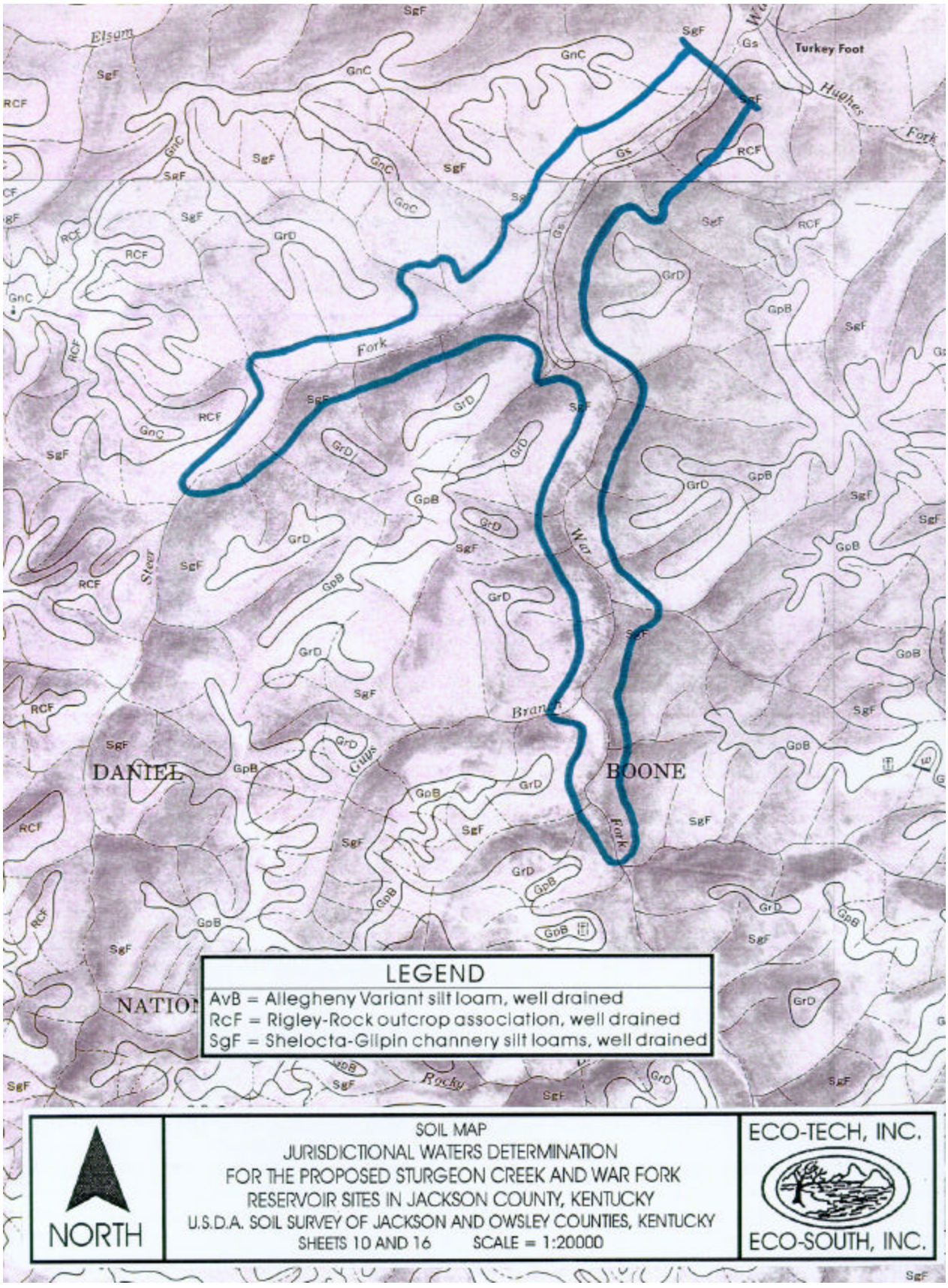
Elsam
Turkey Foot
Hughes
Fork
Fork
Steer
War
Branch
Gilpin
Rocky
DANIEL
BOONE
NATIO
LEGEND
AvB = Allegheny Variant silt loam, well drained
RcF = Rigley-Rock outcrop association, well drained
SgF = Shelocta-Gilpin channery silt loams, well drained
NORTH
SOIL MAP
JURISDICTIONAL WATERS DETERMINATION
FOR THE PROPOSED STURGEON CREEK AND WAR FORK
RESERVOIR SITES IN JACKSON COUNTY, KENTUCKY
U.S.D.A. SOIL SURVEY OF JACKSON AND OWSLEY COUNTIES, KENTUCKY
SHEETS 10 AND 16 SCALE = 1:20000
ECO-TECH, INC.
ECO-SOUTH, INC.

Site Photographs for Jurisdictional Waters Determination are unavailable electronically. These photographs are available in the hardcopy of the Jackson County Lake Project Final Environmental Impact Statement, Appendix U. Refer to a hardcopy for these graphics.