4.17 Prime Farmland

4.17.1 Introduction

Resource Issues
▶ Farmland conversion

This section addresses soil resources with high agricultural value that are classified as prime farmland. Farmland conversion is the key issue for this resource, with soil erosion as a secondary impact, and was used to determine potential impacts associated with a change in the reservoir operations policy. Farmland conversion occurs by shifting the use of land to non-farm uses, with irretrievable losses occurring when the land is developed. Farmland is considered prime or unique as determined by the appropriate state or local unit of government. Prime farmland is defined as:

> Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland includes land that possesses the above characteristics but is being used currently to produce livestock and timber. (7 USC 4201 et seq.)

Farmland conversion and soil erosion are expected to occur as a result of both direct and indirect actions as a result of TVA operations. Indirect impacts would result from land use activities occurring in the backlands (lands extending out 0.25 mile from the shoreline and generally in private ownership) that would either influence farmland conversion or increase soil erosion. A direct impact on prime farmland and soils would result from erosion along the shoreline. It is anticipated that the loss of prime farmland as a result of shoreline erosion is small compared to the loss as a result of farmland conversion. Floods also affect farmland; however, the impact of flooding was considered to be a temporary economic impact as it pertains to loss of use and crop loss.

The study area for prime farmlands is the zone around the reservoirs extending 0.25 mile from the shoreline, since this zone is considered to be the area influenced by the reservoir operations policy (TVA 1998). Because the data associated with the 0.25-mile zone are limited, data for counties that border TVA reservoirs were used to interpolate the amount or percentage of prime farmland in the study area. In addition, seven representative reservoirs in the water control system were selected to show current use of prime farmland and how prime farmland has and is currently being converted to other land uses.

4.17.2 Regulatory Programs and TVA Management Activities

Regulatory Programs

As a federal agency, TVA is mandated by the Farmland Protection and Policy Act (FPPA) (7 CFR 658.1 et seq.) to complete a prime farmland review prior to initiating a program. Congress passed the Agriculture and Food Act of 1981 (Public Law 97–98), which contains the FPPA—Subtitle I of Title XV, Section 1539–1549. The FPPA does not authorize the federal

government to regulate the use of private or nonfederal land, or in any way to affect the property rights of landowners.

Parcels allocated by TVA for development prior to the passage of the FPPA would be excluded, and the remaining parcels with 10 or more acres of soils classified as prime farmland would be required to complete the FPPA process prior to development. The FPPA excludes land that is "already in" or committed to urban development or water storage from its definition of farmland land:

- Farmland already in urban development includes all lands with a density of 30 structures per 40-acre area.

- Farmland already in urban development also includes lands identified as "urbanized area" on the Census Bureau Map, or as urban areas mapped with a "tint overprint" on the USGS topographical maps, or as "urban built-up" on the USDA Important Farmland Maps (7 CFR 658.2).

Section 26a of the TVA Act established standards to minimize soil erosion by requiring soil stabilization measures and vegetation management, which reduce the erosion potential from development activities. These activities are required for all development projects on lands under TVA's jurisdiction.

TVA Management Activities

As a federal agency, TVA uses the criteria of the FPPA to (1) identify and take into account adverse effects on preservation of prime farmland that may occur due to TVA activities; (2) consider alternative actions, as appropriate, that could lessen the adverse effects; and (3) ensure that TVA programs, to the extent practicable, are compatible with units of state and local government, and other private programs and policies to protect farmland.

This programmatic EIS provides an overview of the prime farmland resource in the TVA region and evaluates potential effects on prime farmland that could result from reservoir operations policy alternatives. More detailed assessments using FPPA criteria will be conducted as LMPs for specific reservoirs are written and updated, and as future specific land-disturbing projects are proposed. Subsequent assessments will complete Form AD 1006, Farmland Conversion Impact Rating, when appropriate (with assistance from the Natural Resources Conservation Service [NRCS]). These assessments will include summarizing total acres of prime farmland to be converted directly and indirectly by a proposed action, and assigning a total score for the rating process.

TVA initiated a comprehensive reservoir lands planning process in 1979. Since that time, LMPs have been completed and approved by the Board for seven mainstem reservoirs. The SMI projected a maximum buildout of 38 percent of the shoreline into residential use by 2023. The land planning process identifies and evaluates the most suitable use of lands under TVA's control and custody, and then allocates the land into clearly defined zones. TVA considers

leases for agricultural land as short-term uses with renewable leases, which are compatible with TVA land use zones, and it is assumed that the same zones will protect prime farmland based on allowable uses.

4.17.3 Farmland Conversion

Existing Conditions

Within the counties surrounding TVA reservoirs, approximately 34 percent of the total land area is considered farmland, of which 21 percent (or 62 percent of the farmland) is considered prime farmland (Table 4.17-01). In the study area, the percentage of prime farmland surrounding a reservoir ranges from approximately 3 to 71 percent, based on data from representative reservoirs (Table 4.17-02). Over 50 percent of the prime farmland is in forestland for all six reservoirs (Table 4.17-02). On average, less than 10 percent of prime farmland on these reservoirs is in non-farm use.

The acreage of farmland in the counties surrounding TVA reservoirs has declined 2.9 percent from 1987 to 1997. The highest declines occurred in the tributary reservoirs where there is the lowest total prime farmland acreage presently (Table 4.17-03).

Soil erosion potential is influenced by vegetative cover. Forestland is considered to have the least potential to erode compared to cropland and grassland while bare ground has the highest potential. The majority of the soils bordering the representative reservoirs have a moderate potential for soil erosion based on an erodibility factor (k) of 0.2 to 0.3 (Brady 1990).

Table 4.17-01 Acreage of Prime Farmland in the Tennessee River Watershed

Land Area in Counties Surrounding Reservoirs[1]	1987 Farmland[2]		1997 Farmland[2]		1997 Prime Farmland[3]		Farmland Conversion Rate from 1987 to 1997[2]
Acres	Acres	% Total Land Area	Acres	% Total Land Area	Acres	% Total Land Area	Percent
18,296,866	6,343,153	35	6,165,591	34	3,849,358	21	-2.9

[1] Acreage of counties bordering the TVA reservoirs in this EIS.

[2] Source: Oregon State University Libraries, Corvallis, Oregon. GovStats. (http://govinfo.kerr.orst.edu/php/agri/index.php).

[3] Data provided by the Natural Resources Conservation Service county offices.

Table 4.17-02 Land Use of Prime Farmland within 0.25 Mile of Representative Reservoirs

Reservoir	Reservoir Category [1]	Total Land Within 0.25 Mile (acres)[2]	Prime Farmland		Prime Farmland Land Use			
			Acres[3]	Percent	Forestland (%)[4]	Pasture/ Hay[4] (%)	Row Crops[4] (%)	Non-Farm[4] (%)
Chatuge	TS	11,047	None					
Cherokee	TS	32,088	4,059	13	69	20	4	7
Fort Loudoun	MS	27,914	4,454	16	54	38	6	3
Kentucky	MS	81,779	30,163	37	67	8	8	16
Nickajack	MR	9,085	369	4	57	20	12	11
Normandy	TS	9,831	319	3	75	16	4	5
Tims Ford	TS	24,491	17,443	71	55	18	16	11

[1] TS = Tributary storage; MS = Mainstem storage; MR = Mainstem run-of-river.

[2] Landsat TM imagery (circa 1992).

[3] STATSGO (Natural Resources Conservation Service 1994a-d).

[4] Non-farm includes commercial, industrial, transportation, quarries, strip mines and gravel pits. Data generated by overlaying STATSGO data layer with Landsat TM imagery to which the U.S. Geological Survey land use classification was applied.

Table 4.17-03 Acreage of Farmland by Reservoir Grouping

Reservoir	Reservoir Category[1]	Total Prime Farmland in County [2](acres)	Total Land in County[2] (acres)	Prime Farmland in County (%)	Farmland Conversion Rate[3](%)
Chickamauga	MS	254,688	1,183,360	21.5	-5.2
Fort Loudoun	MS	123,638	843,794	14.7	-7.1
Melton Hill	TR	120,143	938,523	12.8	-6.2
Nickajack	MR	157,503	827,870	19.0	-6.14
Tellico	TS	116,670	936,594	12.5	-7.1
Watts Bar	MS	125,964	731,163	17.2	-6.6
Apalachia	TR	NA[4]	NA		
Blue Ridge	TR	8,345	461,000	1.8	-29.0
Boone	TS	49,500	484,890	10.2	-4.5
Chatuge	TS	10,859	482,886	2.2	-22.0
Cherokee	TS	73,456	961,000	7.6	-12.8
Douglas	TS	98,494	840,860	11.7	-13.0
Fontana[5]	TS	3,114	193,018	1.6	-7.0
Fort Patrick Henry	TR	49,500	484,890	10.2	-7.5
Hiwassee	TS	NA	NA		
Norris	TS	43,492	1,162,068	3.7	-4.0
Nottely	TS	8,345	461,000	1.8	-4.5
Ocoee #1, #2, and #3	TS and TR	19,715	282,900	7.0	-15.9
South Holston	TS	27,153	624,100	4.4	-13.0
Wautaga	TS	23,130	413,360	5.6	-13.0
Wilbur	TR	14,142	222,000	6.4	3.4
Guntersville	MS	391,730	1,595,720	24.5	3.3
Kentucky	MS	1,000,013	3,836,740	26.1	2.2
Pickwick	MS	507,882	1,514,520	33.5	-4.5
Wheeler	MS	1,168,253	2,610,690	44.7	3.6
Wilson	MR	482,196	1,318,570	36.6	6.8
Upper Bear, Bear	TR and TS	54,405	475,870	11.4	-2.0
Normandy	TS	206,922	582,200	35.5	1.6
Tims Ford	TS	138,120	442,100	31.2	-14.22

1 TS = Tributary storage; TR = Tributary run-of-river; MS = Mainstem storage; MR = Mainstem run-of-river.

2 Natural Resources Conservation Service county soil data.

3 Census of Agriculture, 1987 to 1997. Percent change of total farmland acres from 1987 to 1997.

4 NA = Data not available.

5 Farmland data were available only for Graham County, North Carolina. No data were collected on Great Falls Reservoir.

Future Trends

As data were not available on conversion of prime farmland, trends in farmland conversion were based on total cropland data by county from the Census of Agriculture. The Census defines cropland as "land from which crops were harvested or hay was cut; land in orchards, citrus groves, vineyards, nurseries, and greenhouses; cropland used only for pasture or grazing; land in cover crops, legumes, and soil-improvement grasses; land on which all crops failed; land in cultivated summer fallow; and idle cropland."

The Census of Agriculture indicated that from 1987 to 1997 over 50 percent of the counties in the TVA region experienced conversion of farmland to non-farm use, with 20 counties experiencing a conversion of 10 percent or higher (Figure 4.17-01). The Census of Agriculture indicated that 22 counties experienced an increase in farmland, the majority occurring in Alabama (Highland Rim) and along the northern portion of the Kentucky Reservoir (Coastal Plain and Highland Rim). These numbers reflect a strong farm economy in those regions. Overall, the TVA region experienced a 2.9-percent (or a 177,562-acre) decline in farmland (Table 4.17-01).

The decline in farmland in the majority of counties bordering the TVA region is expected to continue based on anticipated land use pressures from development and recreation (as outlined in Section 4.15 [Land Use] and in Section 4.24 [Recreation]). The highest rate of conversion is expected to continue to occur in the eastern portion of the region, based on past trends or population growth around urban centers.

The conversion of prime farmland was projected to 2030 based on the assumption of a fixed rate of conversion, using the average farmland conversion rate for counties bordering the representative reservoirs during the decade from 1987 to 1997 (Table 4.17-04). Further assumptions were made that farmland conversion would occur at a faster rate than forestland conversion, as the characteristics of farmland are considered ideal for development, and all the conversion would affect prime farmland. Based on these assumptions, farmland conversion would be less than the SMI maximum projected buildout of 38 percent by 2023. Kentucky and Normandy Reservoirs would actually experience an increase in prime farmland if current conversion rates continue (Table 4.17-04).

The loss of prime farmland bordering the representative reservoirs would vary between 5 and 37 percent of the total prime farmland within 0.25 mile of each reservoir (Table 4.17-04). The majority of conversions would occur in areas away from the influence of a reservoir operations policy.

Soil erosion would be directly influenced by changes in land use. Soil erosion would continue as land would be converted from forestland, although the degree of erosion would be lessened through practices such as those required by Section 26a. Activities in the backlands that are not under TVA jurisdiction would come under the jurisdiction of county regulations, which may not specify minimum erosion control standards.

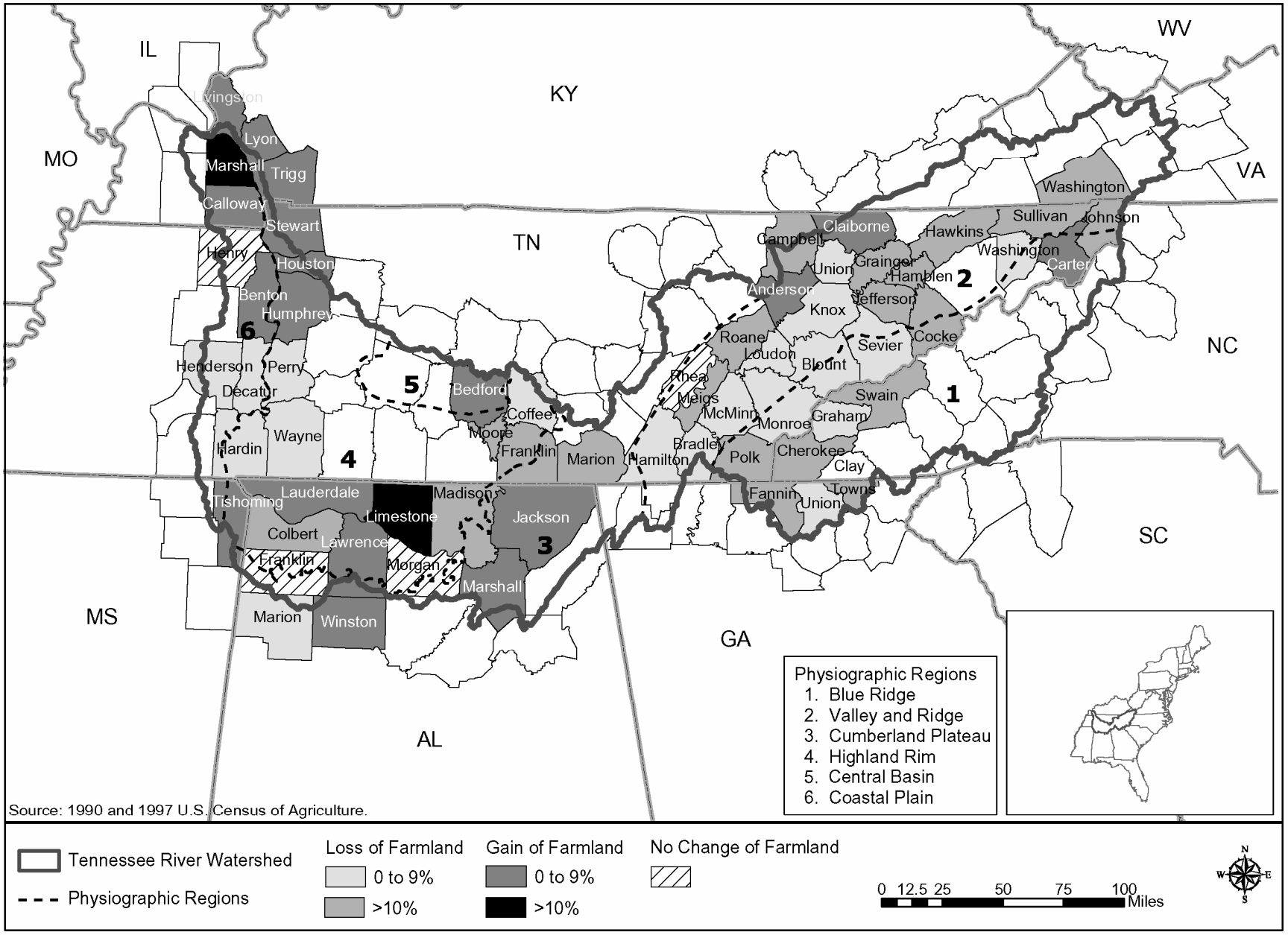

Figure 4.17-01 Farmland Conversion within Counties in the Tennessee River Watershed (1987 to 1997)

Table 4.17-04 Projection of Prime Farmland Conversion within 0.25 Mile of Representative Reservoirs

Reservoir	Total Prime Farmland in Cropland[1] (acres)	Farmland Conversion Rate[2] (%)	Projected Prime Farmland Conversion (acres)				
			2010	2020	2030	Total Converted	SMI Buildout Cap[3]
Chatuge	–[4]	–[4]		–[3]	–[3]		
Cherokee	982	-12.8	-125	-109	-95	-330	373
Fort Loudoun	1,926	-7	-136	-127	-118	-380	732
Kentucky	5,032	+2.2	110	113	115	+338	1,912
Nickajack	119	-6.1	-7	-7	-6	-21	45
Normandy	65	+1.6	+1	+1	+1	+3	25
Tims Ford	5,891	-14.2	-838	-719	-616	-2,173	2,239

[1] Sum of pasture/hay and row crops from Landsat TM imagery (circa 1992) (NRCS 1994a-d).

[2] Rate based on change in total county acreage from 1987 to 1997 Oregon State University Libraries, Corvallis Oregon. GovStats. Available at http://govinfo.kerr.orst.edu/php/commerce/state/show.php.

[3] Shoreline Management Initiative (SMI) maximum buildout of 38 percent.

[4] Chatuge Reservoir has no cropland within 0.5 mile of its border.