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FINAL ENVIRONMENTAL ASSESSMENT

GALLATIN FOSSIL PLANT
RAIL COAL UNLOADING AND BLENDING FACILITY
Sumner County, Tennessee

TENNESSEE VALLEY AUTHORITY

AUGUST 2005

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Final Environmental Assessment **August 2005**

Proposed project: Gallatin Fossil Plant
Rail Coal Unloading and Blending Facility
Sumner County, Tennessee

Lead agency: Tennessee Valley Authority

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Abstract: The Tennessee Valley Authority (TVA) has prepared a Final Environmental Assessment (FEA) for a proposal to reactivate the rail coal delivery system and install coal-blending capabilities at the Gallatin Fossil Plant (GAF). The proposed project would realize substantial savings to TVA in fuel delivery costs. This FEA considers the impacts of the Action Alternative and the No Action Alternative.

Issues and areas identified in scoping of potential environmental impacts and subsequently analyzed in the FEA were socioeconomics (income and employment, traffic delays, waterway commercial traffic, environmental justice, and visual resources); noise; safety; air resources; water resources; terrestrial ecology; aquatic life; endangered, threatened, and rare (protected) species; wetlands; and cultural resources.

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CHAPTER 1

1. PURPOSE OF AND NEED FOR ACTION

1.1. The Decision

As part of continuing efforts to provide low-cost and reliable power, the Tennessee Valley Authority (TVA) is proposing to restart the delivery of coal to the Gallatin Fossil Plant (GAF) by rail instead of the current method of delivery by river barge. Substantial savings in fuel delivery costs can be achieved by switching to rail delivery. This project would help TVA meet its goal of supplying low-cost, reliable power and assist in accomplishing the strategic objective of reducing TVA's delivered cost of power.

1.2. Background

Prior to 1997, GAF primarily received coal by rail. Starting in 1997, a barge unloading facility was completed, and since that time, the plant has not received coal by rail. The barge facility was constructed as the most economical means of delivery for the new low-sulfur coal GAF needed to meet Clean Air Act requirements. Currently, two different low-sulfur coals are delivered by rail to a barge terminal located on the Mississippi River where the coals are blended and loaded into barges for delivery to GAF. Since rail delivery of these coals originates in the west, the rail infrastructure could not support the delivery of high volumes of coal east of the Mississippi River to GAF. However, responding to changing market conditions, CSX Railroad has recently approached TVA with an offer to deliver all of GAF's coal by rail. In switching from barge to rail delivery, substantial cost savings could be realized by TVA due to reduced handling of the coal. Under the proposal, TVA would have to install its own blending capacity at the plant.

1.3. Other Pertinent Environmental Reviews or Documentation

The environmental review performed for the facility modifications that were needed when TVA switched from rail to barge delivery of coal in 1997:

> Final Environmental Assessment (File No. 54,331) Proposed Coal Unloading Terminal and Mooring Facilities Between Miles 241.1 and 241.7, Right Bank, Cumberland River, Gallatin Fossil Plant, Sumner County, Tennessee. Tennessee Valley Authority, U.S. Army Corps of Engineers, March 1996

1.4. Public Review

TVA's scoping and analyses for this proposed action identified potential socioeconomic and noise impacts in and around the city of Gallatin. The Final Environmental Assessment (FEA) assesses these socioeconomic and noise impacts, as well as other impacts. A Draft Environmental Assessment (DEA) assessing the impacts of coal delivery was made available for public review on June 6, 2005. The period for public comments was open until June 27, 2005. A public meeting to receive comments was held on June 21, 2005, from 5:00 to 8:00 p.m. at the Gallatin City Hall basement, 132 West Main Street, Gallatin, Tennessee 37066. TVA has given consideration to the comments received from other agencies and the public. A summary of those comments on the DEA and TVA's responses to public comments are provided in Appendix A of this EA.

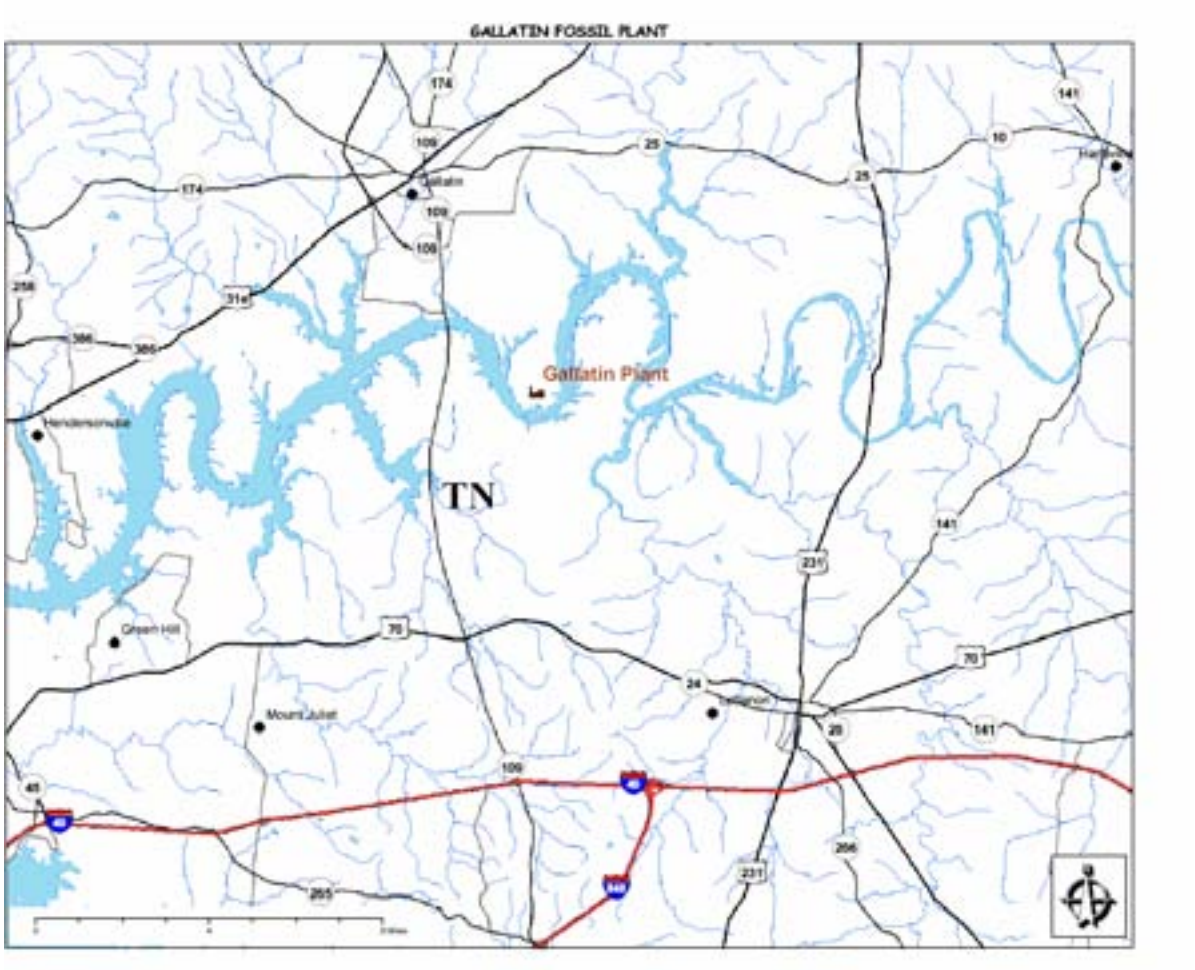

Figure 1-1. Gallatin Fossil Plant Area Map

CHAPTER 2

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. Alternatives

TVA is considering two alternatives: the No Action Alternative (Continue Barge Delivery of Coal) and the proposed Action Alternative (Reactivate Rail Coal Delivery and Install Coal-Blending Capabilities).

2.1.1. Alternative A – The No Action Alternative – Continue Barge Delivery of Coal

Under the No Action Alternative, TVA would continue to receive coal by barge at GAF, the existing rail delivery system would not be upgraded, and the coal-blending capabilities would not be installed.

2.1.2. Alternative B – Proposed Action - Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

Existing Equipment and Operation

For rail deliveries, the existing coal unloading system includes a single-car rotary dumper and an adjacent bottom-dump delivery system feeding the same hoppers. Both have been out of service for over 8 years.

In the present configuration as depicted in Figure 2-1, the coal is transferred from the rotary dumper via two hoppers and vibrating feeders to a belt conveyor. From there, it continues through the breakers that properly size the coal for transfer to another conveyor. The coal is then routed to an existing stocking-out conveyor and deposited in the coal yard. All features have a delivery rate of approximately 1,400 tons per hour (TPH) that eventually feed directly to the four-unit plant.

An existing barge unloader located at Cumberland River Mile 241.5 presently delivers preblended coal in various ratios to the coal stockpile area. This facility would remain in place and could be utilized if necessary.

Proposed New Facility

The physical additions and alterations to GAF for the proposed action include the installation of a new rapid discharge rail coal unloading and blending facility; modifications to approximately 8 miles of the existing rail spur line; rail unloading and conveying structures; new coal conditioning equipment; expansion of the stockout machinery; the additions of new coal-blending and reclaim mechanisms; and all associated accessories to ensure the facility would operate as specified. A conceptual sketch in Figure 2-2 depicts what this new facility would encompass.

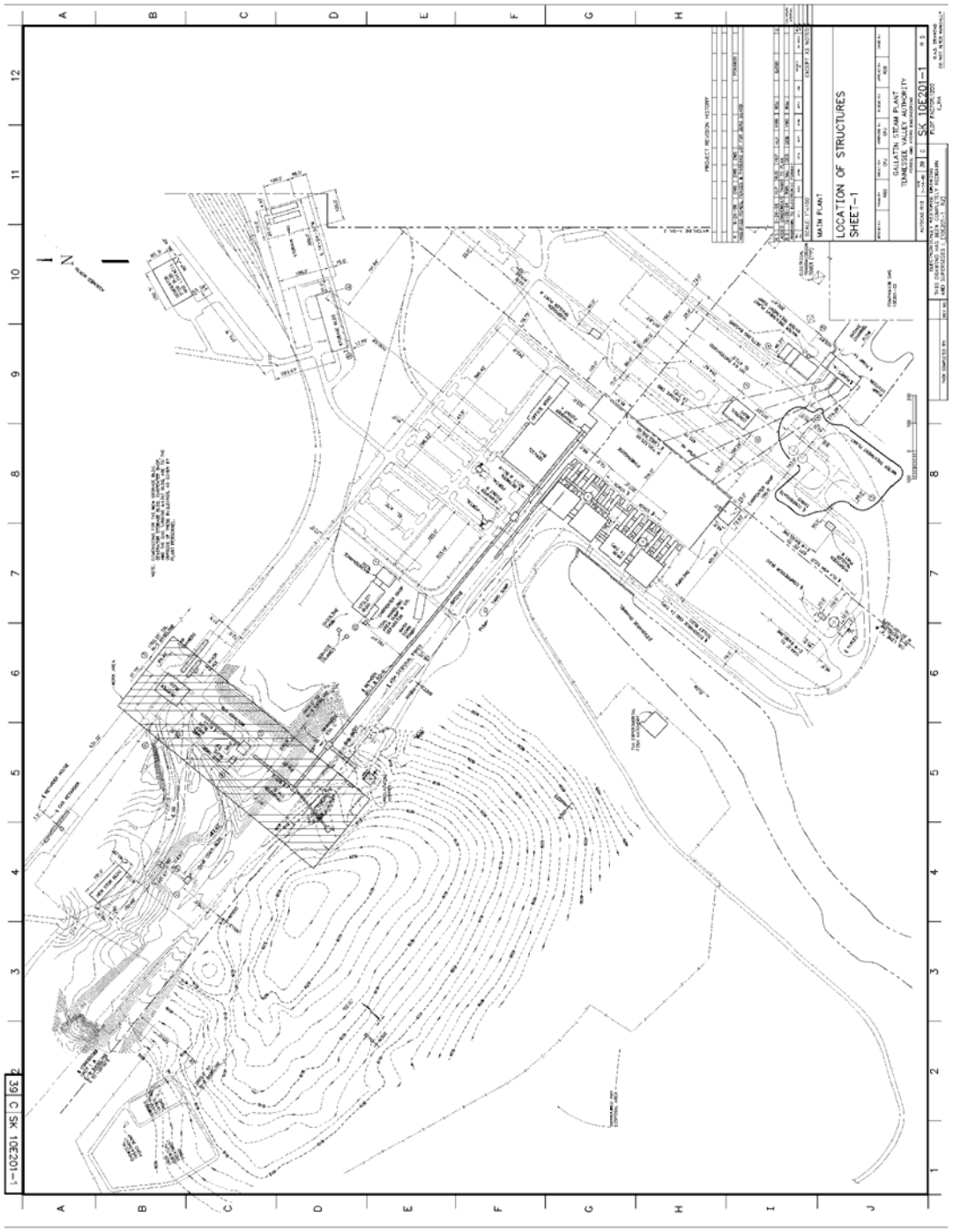

Figure 2-1. Location of Structures

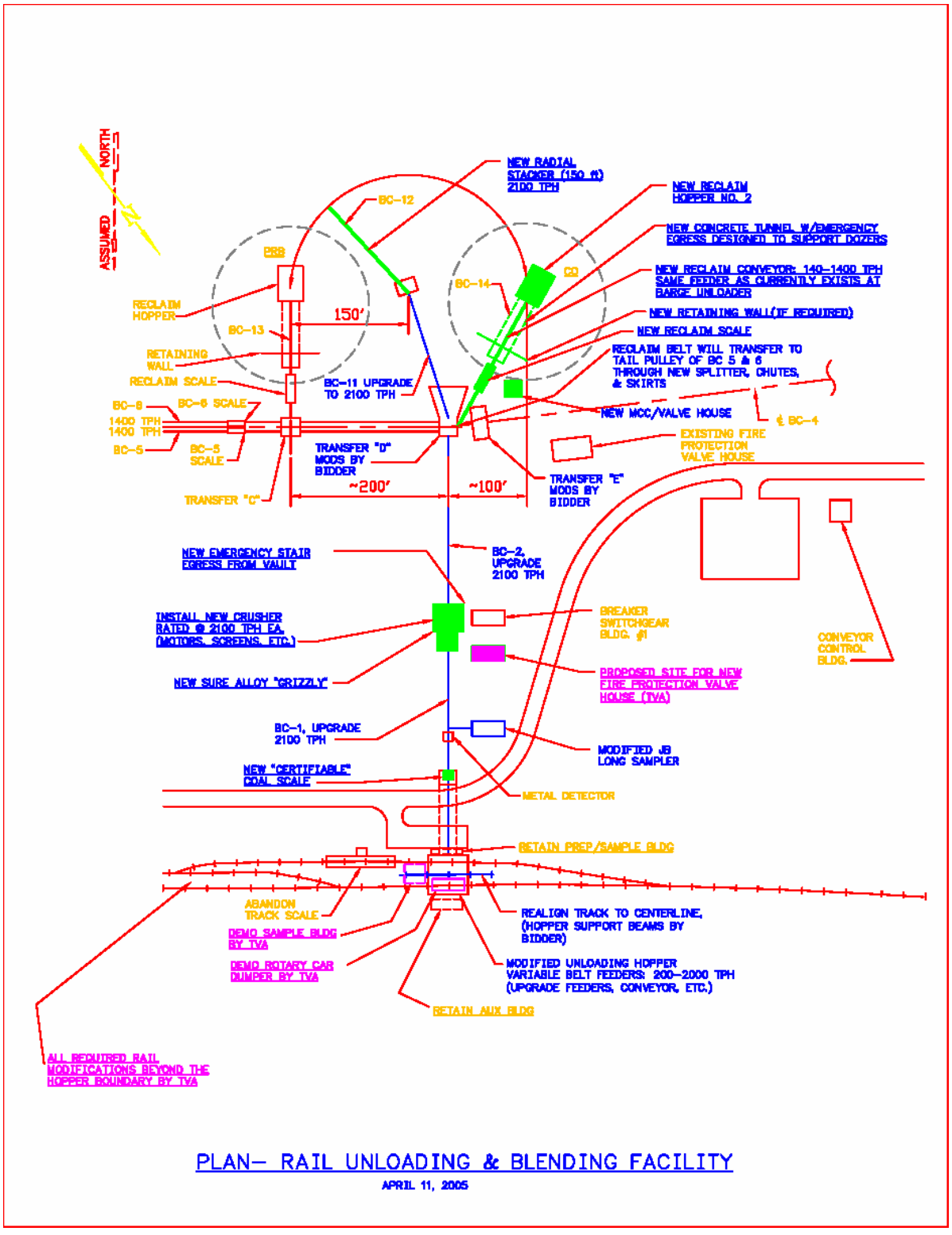

Figure 2-2. Proposed Rail Unloading and Blending Facility

Performance requirements for the systems include:

- The new systems would be capable of unloading, delivering, and blending an uninterrupted supply of coal.
- The facility would be capable of continuous operation to receive, blend, and reclaim coal from the rail unloading facility 24 hours per day, 7 days per week with an allowance of 14 days per year for scheduled maintenance activities.
- The new system would be capable of unloading a 135-car unit train in 10 hours or less. The system would be designed to achieve a minimum unloading and take away rate of 2,100 TPH.
- The new system would provide blending and reclaim capability for two different coals totaling 1,400 TPH.
- Service life would be a minimum of 10 years from startup.
- The unloading and reclaim systems would remain fully functional over an ambient outdoor temperature range from –15 degrees Fahrenheit (^{o}F) to 110^{o}F.
- The new system would provide a new crusher for the coal.
- The new system would be capable of providing a blend ratio or 10-100 percent for the two coals.
- Dust control would be provided at the unloading hoppers, all transfer points, and crusher building. The dust control would be designed such that conditions would not exceed one-eighth-inch accumulation on surrounding surfaces per 24-hour period.

Rail Line Improvements

GAF has not received coal via rail for the last 8 years. The proposed action includes upgrade and repair of the railroad spur to allow GAF once again to receive coal via railroad. The GAF railroad lead track extends from the turnout at the CSX Transportation line through the interchange yard and runs parallel to the plant access highway to the turnout at the loaded (receiving) yard at the north end of the plant reservation (Figure 2-3).

The lead track extends through the loaded yard and unloaded yard and connects to the west side of the turnout located at the north end of the loaded yard, thus forming the GAF railroad loop.

The GAF railroad lead track would be repaired and upgraded from the CSX switch to the GAF north loop switch by repairing a stripped joint on the lead track in the interchange yard, replacing decaying ties as needed for safe train operation, installing ballast, replacing and tightening bolts, and replacing missing or loose spikes. All replaced crossties would be recycled as appropriate or disposed of in an approved landfill.

The asphalt road crossing at California Industrial Products would be replaced. The crossing timbers and asphalt would be removed. The crossties would be inspected and replaced if needed; new crossing timbers and asphalt would be installed. Four 15-foot-wide unpaved road crossings would be paved.

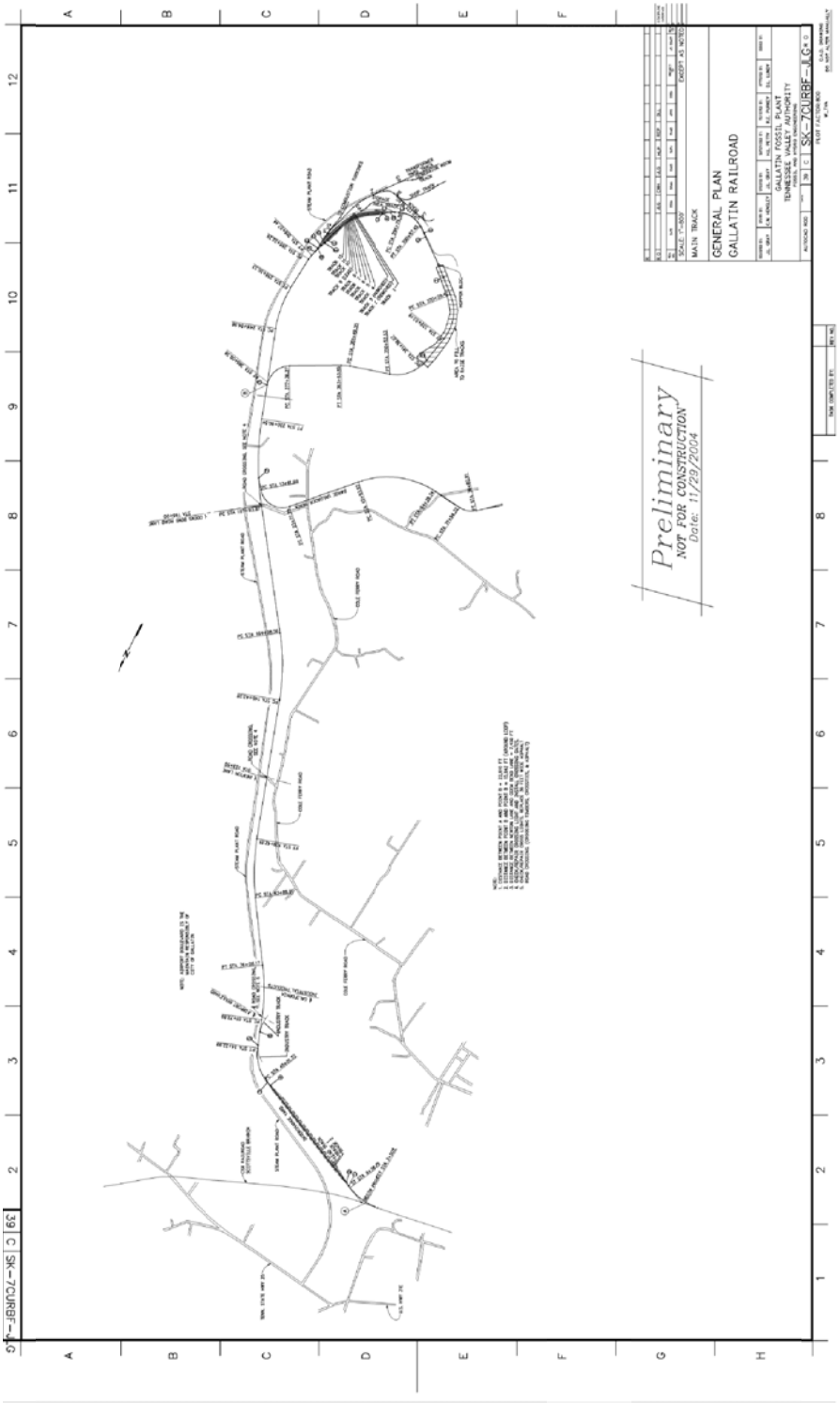

Figure 2-3. Gallatin Railroad General Plan

The signals at four existing road crossings would be inspected and repaired. The insulated track gage rods rear the Airport Road crossing would be replaced. Four unpaved 15-foot-wide private road crossings would be paved.

The track is presently completely overgrown in several areas. The entire lead track would be sprayed for vegetation control. Only registered pesticides that have not been classified for restricted use would be applied. Brush would be cut at road crossing and along the railroad right-of-way as indicated in Figure 2-3. Brush would be cut on both sides of the track. The clearing would start at the intersection of the road crossing with the centerline of the track and continue for a distance of 500 feet in both directions from the intersection. The width of brush cutting would be 30 feet on either side of the track centerline. Private road crossings are to be cleared a maximum of 30 feet in each direction or to the right-of-way. All brush would be cut to within 10 inches of the ground. The disposal of brush would be by chipper or by hauling the brush off site. Brush would not be disposed of in any manner that would impair natural drainage.

A new access road would be constructed near the north switch of the loop to allow access to the railroad loop interior when a train blocks the existing crossing. See Figure 2-4 for the new access road location. An electric motor would operate sliding gates, and a card reader would be installed at the entrance to the access road.

In the unloader yard, 2,700 track feet of track (subgrade and ties) would be removed so the track bed could be raised 5 feet. Crossties not suited for reuse would be sent to the salvage area. The track would be raised as depicted in Figure 2-4 using rock fill obtained from an existing quarry or soil from previously approved on-site areas.

A new road crossing and access road would be installed to replace the ones removed to raise the track 5 feet as depicted in Figure 2-4. Drainage ditches would be installed to direct storm water from the interior of the loop to a new 60-inch-diameter storm drainpipe. Railroad construction would conform to the 1985 American Railway Engineering Association's *Manual for Railway Engineering* and CSX (2003) construction specification on track spike pattern requirement for curved track construction.

Although predicted durations of traffic blockage across rail-highway intersections by the coal-bearing trains are within local ordinance requirements and the impacts determined insignificant (see section 3.1.2.2 Traffic Delays), CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times. One method under consideration to increase train speeds (up to about 15mph) and thereby to decrease the blockage time, is the reconstruction of a portion of the rail bed just past the Route 31 E crossing on the C & N track leading to the TVA rail spur, with banking of a curve and reconstruction of the current bridge crossing over Town Creek within that stretch of track. Continuous ribbon rail could also be used in this area. No agreement for implementing such mitigation has been reached among the parties. If such mitigation is implemented in the future, the traffic delays would be at levels lower than those identified in this EA.

Delivery of Coal

Coal delivery averages about 135 cars per unit train for Powder River Basin coal (60 percent of deliveries) and 105 cars per unit train for Colorado coal (40 percent of deliveries). Based upon information provided by CSX, anticipated time-of-day deliveries would vary randomly. Coal deliveries would be made approximately five times a week, with a unit train going to and leaving the plant. It is expected that the unit trains would be at the

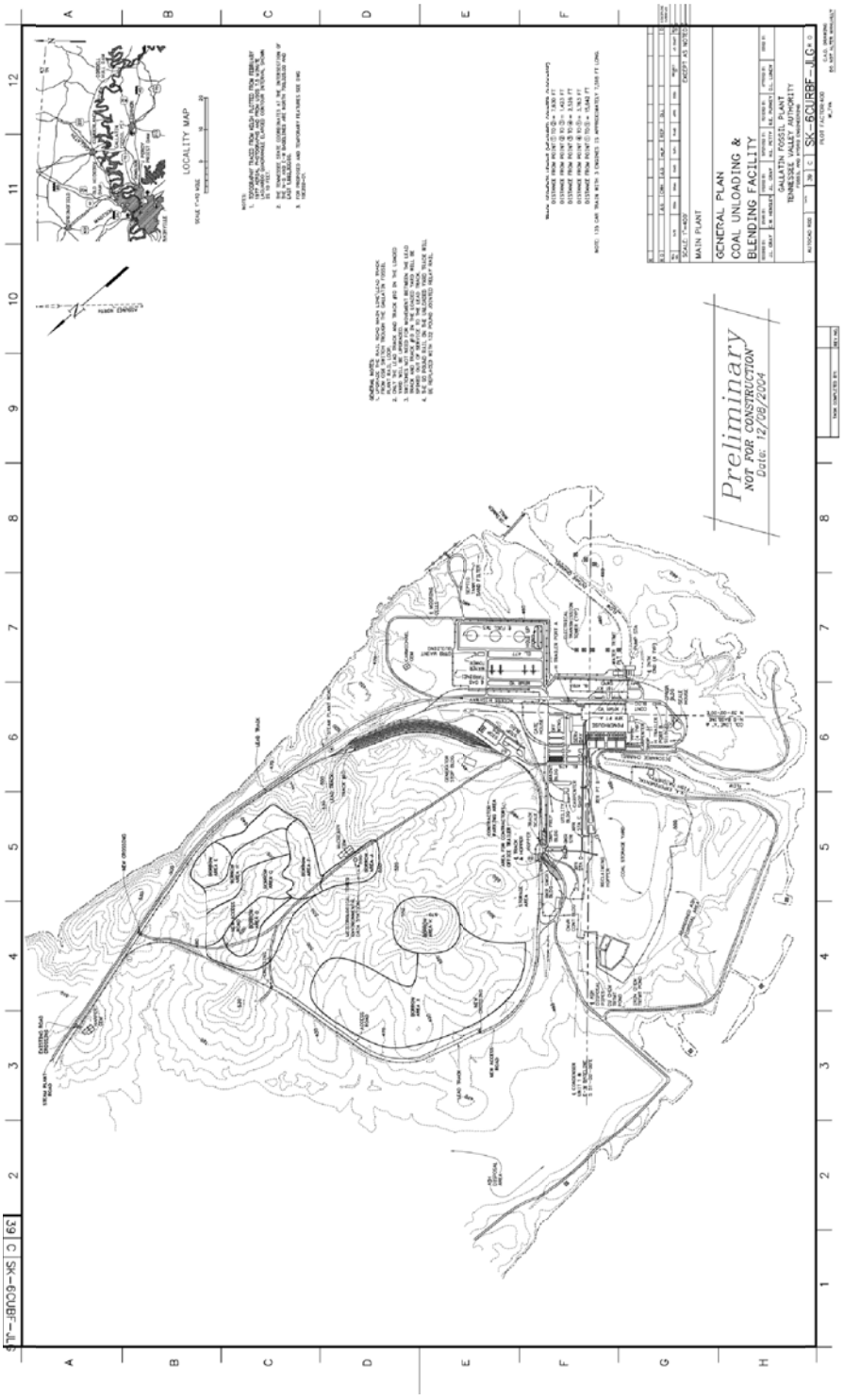

Figure 2-4. Coal Unloading and Blending Facility General Plan

GAF site for a 12-hour period before leaving. This includes 10 hours to unload the coal and 2 more hours for inspections. When rail delivery was last used in 1996, an average of just over seven trains per week, with 90 cars per train, came through Gallatin to make coal deliveries. In 1996, the majority of the trains making coal deliveries arrived by 7:00 a.m. and departed in the midafternoon, creating a higher probability of the trains arriving and departing during peak hour periods than under the random delivery schedule of the proposed action. This random nature of train arrivals, together with longer unit trains and fewer weekly deliveries, would mitigate some of the delays experienced by drivers in the Gallatin area.

Logistics of proposed coal deliveries by rail for GAF are as follows: CSX would transport unit trains directly to Gallatin over the Amqui line railroad spur and loop track. The unit train would have distributed power (not all engines at one end of the train). The unit train would proceed north, just past Cobbs Lane, until it can stop without blocking any at-grade road crossings.

The unit train would stop and the crew would go to the rear engine to change directions. This direction change is mandatory due to the track geometry of the C&N line that connects the CSX Amqui line with the GAF track and would take place in 30 to 45 minutes, with no delay to traffic. When coal was last received by rail at GAF, this direction change took approximately 45 to 60 minutes without a traffic delay. This difference in time was because the train only had locomotives on the front of the unit train. The engines had to be unhooked and relocated to the rear, which took a substantially longer time than just relocating the locomotive crew. The train would proceed through Gallatin both to and from the plant with distributed power. The train would then proceed north toward Bowling Green, Kentucky. When the loaded trains in 1996 made the switch to the plant rail line, the unit train blocked the intersection at U.S. Highway 31 East (US 31E) for an additional 4 to 6 minutes due to the switching process. The passage of trains associated with the proposed action would not present this problem due to remote-switching capabilities. With the addition of remote switching capabilities, at these rail intersections, the train will not have to stop to open and close the switch; they will be opened and closed remotely by the engineer from the lead engine. The locomotive configuration and the switch upgrades are methods of mitigating traffic impacts that would enable CSX to maintain train speed straight through the switches onto GAF and help minimize the impact on traffic for the residents of Gallatin.

2.2. Comparison of Alternatives

See Table 2-1 for a comparison of alternatives.

Table 2-1. Summary and Comparison of Alternatives by Resource Area

Issue Area	Impacts From No Action Alternative	Impacts From Proposed Action Alternative
Socioeconomics		
Income and Employment	• None	• There would be a small positive benefit to the area.
Traffic Delays	• None	• Since no rail deliveries of coal have occurred in the last 8 years, compared to current conditions, incrementally greater traffic delays and reduction in level of service (LOS) would be experienced due to reinstating coal deliveries at GAF. • The predominantly off-peak deliveries (83 percent of the time) would be anticipated to have substantially less impact on traffic delays than those for on-peak deliveries (17 percent of the time). • Proposed reinstatement of coal delivery to GAF would have substantively less severe effects on traffic delays than those experienced for deliveries prior to 1997. • If rail delivery of coal occurs during peak traffic hours, the average delay experienced by motorists at five crossings would temporarily reflect an LOS of C or D. However, three of these five crossings are currently experiencing a low level of service even without coal deliveries. Based upon the random arrival of trains once per day, 5 days per week, this situation would likely occur about 16.7 percent of the time a train was arriving or departing, i.e., approximately one or two times a week. • Compared to those delays experienced due to rail delivery of coal in 1996 and before, except for Odoms Bend Road and Newton Lane, all of the crossing delays if rail delivery of coal were reinstated for GAF (peak or off-peak hours), are anticipated to be less than those previously experienced. • With random delivery times anticipated, the probability of off-peak hour deliveries occurring is 83.3 percent, i.e., 4 out of 5 deliveries made to GAF would occur in the off-peak hour periods. The more probable off-peak arrival of trains would substantially reduce the predicted level of impacts on traffic from those levels predicted for peak traffic hours.

Issue Area	Impacts From No Action Alternative	Impacts From Proposed Action Alternative
		• During the predominantly off-peak deliveries anticipated, every intersection affected would have better levels of service and lower per-vehicle delay times than were experienced in 1996, when coal was most recently delivered by rail to GAF.
Waterway Commercial Traffic	• None	• There would be decreased lock usage at Old Hickory Dam.
Environmental Justice	• None	• Residents around and just north of West Eastland would experience incrementally greatest impacts.
Visual Resources	• None	• None
Noise	• None	• There would be insignificant impacts from operation of the rail unloader at the nearest residence one mile away from the unloading facility. • Noise from trains delivering coal would result in a severe impact at three homes and an impact at five additional homes along Steam Plant Road. Without the proposed mitigation, these noise levels could cause sleep disruption for residents of the homes suffering a severe impact during nighttime deliveries between 10:00 p.m. and 7:00 a.m.
Safety	• None	• The potential risk from reinstating rail delivery of coal is estimated to be one car/train accident every 50 years and one casualty in 124 years. • Elimination of barge delivery and unloading activities would reduce or eliminate the risk level for death or injury to employees involved in undertaking those activities.
Air Quality	• None	• There would be a minor increase in automobile emissions from idling vehicles at rail crossings. • Impacts from construction activities would be at most, minor and transient on off-site air quality that would not exceed or violate any applicable ambient air quality standard.
Surface Water	• None	• There would be insignificant impacts by complying with an approved Storm Water Construction Permit.
Terrestrial Ecology	• None	• None
Aquatic Life	• None	• None

Issue Area	Impacts From No Action Alternative	Impacts From Proposed Action Alternative
Protected Species	• None	• None
Wetlands	• None	• None
Cultural Resources	• None	• None

2.3. The Preferred Alternative

TVA's preferred alternative is the proposed action, Alternative B - Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities.

2.4. Environmental Permits and Applicable Regulations

- An Air Construction Permit would be required from the Tennessee Department of Environment and Conservation (TDEC).

- Coverage under the Construction Storm Water Permit would be obtained from TDEC to ensure all construction-related activities comply with applicable regulatory requirements.

- A Title V air permit application would be submitted to the state within 1 year of operations.

- In the event that discussions with the City of Gallatin and CSX were to result in the additional, voluntary mitigation described in Section 2.1.2 to reduce traffic delays further, possible reconstruction of the rail bridge over Town Creek would likely require an Aquatic Resource Alternation Permit (ARAP) from the State of Tennessee. Obtaining such a permit would be the responsibility of CSX.

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CHAPTER 3

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

One of the important reasons for conducting an environmental assessment is to determine the types, degree, and significance of impacts to the human environment (which includes the natural world) from proposed actions, so that decision makers are adequately informed regarding those impacts prior to making a decision. This section of the EA characterizes those impacts and, where pertinent, identifies mitigation to minimize or reduce those impacts to insignificance. TVA's determinations regarding significance of impacts have been made consistent with NEPA, Council on Environmental Quality (CEQ) regulations in 40 CFR Parts 1500-1508 (particularly 1508.27 pertaining to determination of significance) and TVA agency regulations for implementing NEPA. In determining the level of potential impacts, TVA's analysis was informed by applicable federal guidelines and criteria, and by criteria established in the local community ordinance. Additionally, TVA has utilized the services of experienced, private engineering firms to independently validate the approach, assumptions, methods, calculations, and reasonableness of conclusions for the analyses of traffic impacts, or to identify those residences along Steam Plant Road potentially needing mitigation of noise impacts.

3.1. Socioeconomics

3.1.1. Affected Environment

3.1.1.1. Income and Employment

GAF is located in the southern part of Sumner County, Tennessee, along the north shore of the Cumberland River. Sumner County, located northeast of Nashville, is a rapidly growing part of the greater Nashville area. The largest city in the county is Hendersonville, with a population of 40,620 in 2000; it is located in the southwest corner of the county near Nashville. Gallatin, located near the plant site, is the second-largest city in Sumner County with a population of 23,230 in 2000. Several smaller places are located around the county. The labor market area for GAF is defined to include all adjacent counties and nearby Smith County; this includes two counties in Kentucky, along with Davidson County (Nashville) and four other counties in Tennessee, as well as Sumner County.

Population—According to the 2000 Census of Population, the population of Sumner County at that time was 130,449, an increase of 26.3 percent from the 1990 population of 103,281. This growth was much faster than the state (16.7) and the nation (13.2). Estimates by the U. S. Census Bureau for 2004 show an increase since 2000 of 8.6 percent, to a population of 141,611; again this was faster than the state (3.7) and the nation (4.3). The labor market area grew much more slowly than did Sumner County, at 17.0 percent from 1990 to 2000 and 3.3 percent from 2000 to 2004, similar to the state growth rates.

Income and Employment—Per capita personal income in Sumner County in 2003 was $28,544, just short of the state average of $28,641 and almost 91 percent of the national average of $31,472. The level in the labor market area as a whole was much higher, $33,951, close to 119 percent of the state average and almost 108 percent of the national average. There is considerable variability among the counties in the labor market area,

ranging from $21,146 in Trousdale County, east of the site, to $38,056 in Davidson County, southwest of the site.

Sumner County has a larger share of its workers, 4.6 percent, employed in farming than the state average of 3.0 percent. This, however, is lower than in any of the other counties in the labor market area except Davidson County. Manufacturing is also more important than the state average, with 15.4 percent of Sumner County workers employed in manufacturing, compared to the state average of 12.2 percent. Three of the counties in the labor market area have smaller shares than the state in manufacturing. Sumner County has a higher share of its workers in government, 13.7 percent, than does any other county in the labor market area or the state as a whole (12.5 percent).

Manufacturing accounted for 25.3 percent of total earnings in Sumner County in 2003, higher than the state (18.1 percent) and the nation (13.4 percent). In the labor market area, due largely to Davidson County, only 12.5 percent of total earnings were from manufacturing. Farming in Sumner County and in the labor market area had small earnings losses for the year; however, farming normally accounts for only a very small share of earnings, less than one-tenth of 1 percent of total earnings in the county and in the labor market area. Government earnings accounted for 13.7 percent of the total in Sumner County, similar to the state, 13.9 percent. The government share was slightly lower in the labor market area, 11.0 percent.

With a civilian labor force of 73,590 in 2004, Sumner County had an unemployment rate of 4.2 percent, below the rate in the labor market area (4.5), the state (5.4), and the nation (5.5). The rate in Sumner County was the lowest among the counties in the labor market area.

3.1.1.2. Traffic Delays

GAF is currently accessible by highway, railway, and waterway (barge) modes of transportation. The plant is located in Sumner County, Tennessee, near the city of Gallatin, approximately 25 miles northeast of Nashville, Tennessee. The nearest interstates are I-40, I-65, and I-24. GAF is accessible from U.S. Highway (US) 31E, Tennessee State Route (SR) 25, and SR 109. US 31E runs northeast from Nashville to Gallatin, SR 25 runs generally in a west to east direction through Gallatin, and SR 109 runs north to south from I-40 to Gallatin. SR 109 Bypass goes around the city of Gallatin to the west, intersecting US 31E and SR 25. SR 109 Bypass connects with Airport Road at the SR 109 intersection, south of the city of Gallatin. Traffic on Airport Road currently consists of a large number of trucks due to a bulk mail facility that is located directly north of the Gallatin Municipal Airport. The highways are rural roadways with good shoulder width, alignment, and speed limits. Portions of the existing transportation in and around Gallatin are shown in Figure 3-1.

From US 31E, GAF access is either from (a) SR 109 Bypass to Airport Road to Steam Plant Road, (b) SR 109 Bypass to SR 109 to Odoms Bend Road to Steam Plant Road, or (c) SR 25 to Steam Plant Road. From SR 25, access is either (a) directly by Steam Plant Road, (b) from SR 109 Bypass to Airport Road to Steam Plant Road, or (c) from SR 109 Bypass to SR 109 to Odoms Bend Road to Steam Plant Road. Plant access from SR 109 is via Odoms Bend Road, which intersects Steam Plant Road just north of the plant site.

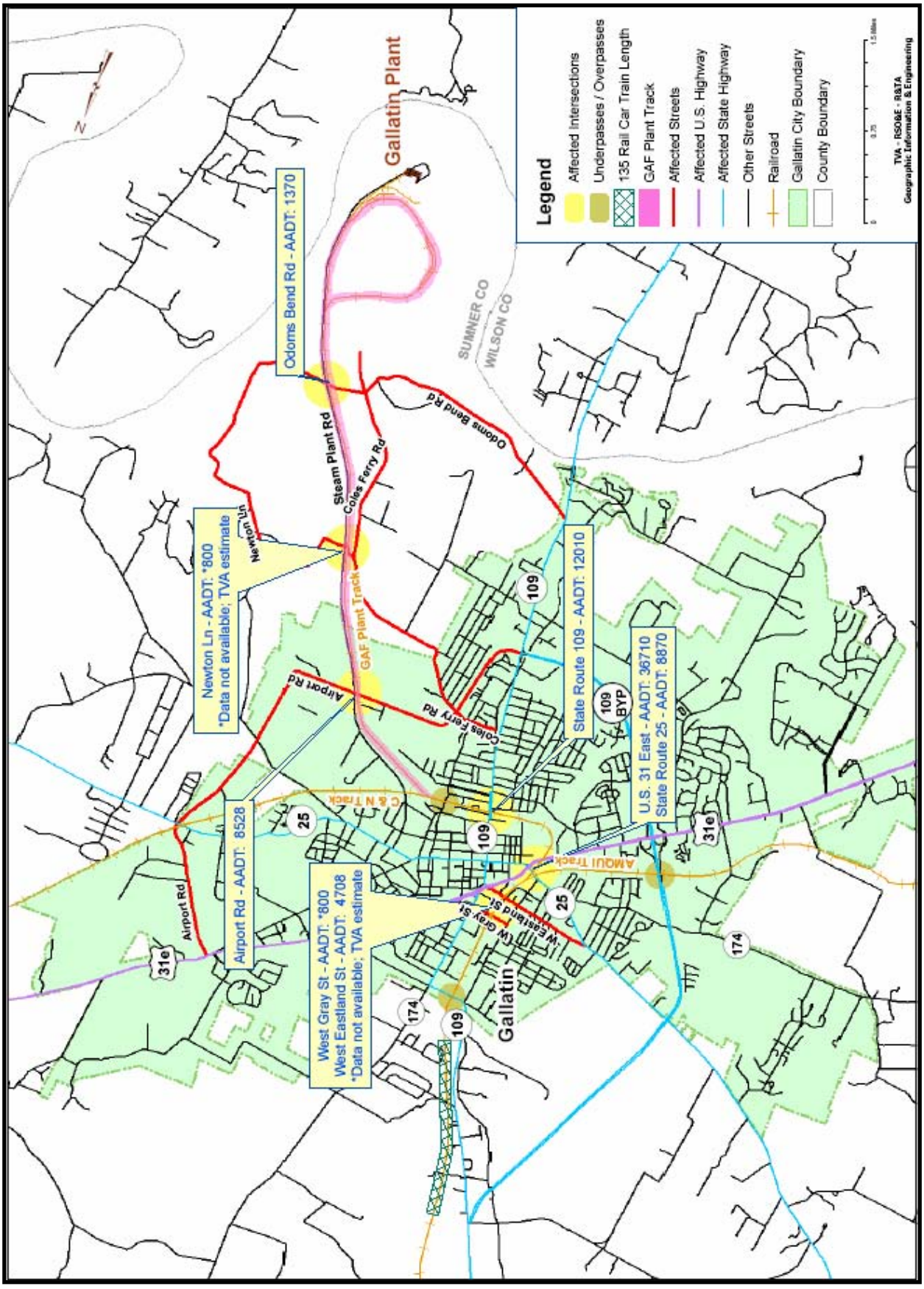

Figure 3-1. Gallatin Transportation Network

CSX operates a mainline rail, the Amqui line, northwest of the plant. This line runs northeast from Amqui to Trousdale, Tennessee. From Gallatin, a short 1.5-mile C&N line runs east to the TVA plant rail. From this point, the GAF railroad spur runs south, parallel to Steam Plant Road for 4.5 miles to the turnout at the loaded (receiving) yard at the north end of the plant reservation. GAF has a 3-mile loop track at the plant. Even though GAF has not received coal by rail since 1996, three industries are using the Gallatin rail lines for deliveries and/or the removal of products. One business receives five to six rail deliveries weekly, but would not reveal the number of cars per delivery (TVA's estimate is four to five cars per delivery). The second currently receives 20 cars per week (soon to be 40), but would not reveal the number of trips per week it takes to total this number of cars (TVA's estimate is four to five trips or deliveries). The third business that currently uses the rail lines did not respond to TVA's efforts to gain this information. The exact frequency, size, and speed of these trains, which are obviously much smaller than the proposed coal trains, are not known and were not obtainable by TVA personnel. The following highways and roads have at-grade intersections with the railroad in and around Gallatin: US 31E, SR 25 (two intersections), SR 109, Airport Road, West Eastland Street, West Gray Street, Newton Lane, and Odoms Bend Road. There are two other at-grade intersections that are close to Gallatin but were excluded from the analysis due to their distance away from the city of Gallatin and the availability of alternate routes. These are Cobbs Lane and Belvedere Drive North. They are 1.62 miles and 1.65 miles, respectively, away from the next closest at-grade crossing. The train length is 1.44 miles and would not block either of these crossing at the same time as any other at-grade crossings. There are two viaducts and one overpass that cross over the rail lines. These are at South Westland Street, at North Water Avenue (Old SR 109), and at the SR 109 Bypass just north of US 31E, respectively. All of these facilities are two-way, two-lane roads with the exception of US 31E and SR 109 Bypass, which are multilane highways. The city of Gallatin is home to approximately 13 schools, one community college, and one regional medical center. The Sumner County Regional Medical Center is located at the intersection of Steam Plant Road and SR 25. There is an emergency medical service (EMS) station that houses ambulances on South Water Avenue (SR 109). The Gallatin City Fire Department has a station located on Main Street (SR 25) near the SR 109 intersection and is constructing a new fire station on West Eastland Street, which should be operational in the summer/fall of 2005.

Most of these organizations are less than 0.5 mile from at least one of these rail crossings. Volunteer State Community College is the farthest school from one of the at-grade crossings at just less than 1 mile away. There is also a manufacturing facility, California Industrial Products, near the intersection of Airport and Steam Plant Roads that has its only access, in or out, across the plant spur rail line via a private crossing. The plant employs approximately 120 employees over three 8-hour shifts that could potentially be impacted by rail deliveries to GAF.

The assessment of traffic effects for the project is based on the transportation planning and engineering concept of Level of Service (LOS) found in the *Highway Capacity Manual* (Transportation Research Board, 2000), as well as direct estimates of traffic delays associated specifically with coal deliveries. The LOS concept addresses the quality of service, or operating conditions, provided by the roadway network, as perceived by motorists. LOS is a qualitative measure, expressed as one of six levels (A through F), that is described in terms of travel time, comfort, safety, and maneuvering freedom, and incorporates various measurable factors associated with a particular segment of a roadway into the analysis. The six levels of service (A through F) are defined as differing qualities of service provided by a roadway.

- LOS A is defined as the highest quality of service that a particular class of highway can provide. It is a condition of free flow in which there is little or no restriction on speed or maneuverability caused by the presence of other vehicles.

- LOS B is a zone of stable flow. The restriction on maneuverability is negligible, and there is little probability of major reduction in speed or flow.

- LOS C is a zone of stable flow, but at this volume and density level, most drivers are becoming restricted in their freedom to select speed, change lanes, or pass.

- LOS D approaches unstable flow. Tolerable average operating speeds are maintained, but could be subject to considerable and sudden variation. This condition is tolerable for short periods of time.

- LOS E is unstable with lower operating speeds and some momentary stoppages. There is little independence of speed selection and maneuverability. The upper limit of this level is the capacity of the facility.

- LOS F indicates forced-flow operations at low speeds. The level of density increases to the effect of a "traffic jam."

Table 3-1 shows the 2004 and 1996 Average Annual Daily Traffic (AADT) counts as reported by the Tennessee Department of Transportation (TDOT) and the associated LOS for the routes that would be or have been affected, either directly or indirectly, by rail coal deliveries to GAF. LOS values are based on peak hour flows and do not account for the effects of rail traffic. For the purposes of this analysis peak hours are defined as 7:00-9:00 am and 4:00-6:00 pm. These values take into consideration the capacity of the road based on the percentage of time spent following another vehicle, the average travel speed, and the physical and geometric characteristics of the section of roadway analyzed. These values simply reflect a comparison of the current traffic situation to that of the last year of train operation at GAF.

Table 3-1. 2004 and 1996 Average Annual Daily Traffic and Level of Service

Route Name	2004		1996		AADT Percent Change
	AADT	LOS	AADT	LOS	
US 31E	36,710	F	29,580	E	+24.1
SR 25	8,870	D	11,590	D	-23.5
SR 109	12,010	E	13,170	E	-8.8
SR 109 Bypass (South of US 31E)	18,540	B	9,440	A	+96.4
SR 109 Bypass (North of US 31E)	13,670	A	5,840	A	+134.1
Airport Road	8,528	E	6,445	E	+32.3
Odoms Bend Road	1,370	B	1,170	B	+17.1
Coles Ferry Road	4,040	C	2,330	C	+73.4
*Newton Lane	800	A	698	A	**+14.6
West Eastland Street	4,708	C	4,095	C	+15.0
*West Gray Street	800	A	698	A	**+14.6

*Data not available; TVA estimate

**Based on average change for similar type roads in Gallatin between 1996 and 2004

Only two of the above routes have declined in service since 1996 despite overall increases in the average daily traffic in and around Gallatin. US 31E declined from LOS E to LOS F (beyond facility capacity) and the section of SR 109 Bypass from US 31E south to SR 109 changed marginally from an LOS A to LOS B. There are two other routes that were at or beyond capacity in 1996 and still were in 2004, SR 109 and Airport Road. Since the LOS for these facilities (US 31E, SR 109, and Airport Road) are at or below E, it is expected that they would be prioritized high on TDOT's list of roads that need to be upgraded. Bridges may lessen the traffic delays at at-grade rail intersections; however, bridges would not cure the degraded LOS that exists on some of the roads even without the operation of trains. It can be seen that the busiest route in this area is US 31E, carrying roughly double the traffic as the next busiest route, the section of SR 109 Bypass, south of US 31E. Both sections of the SR 109 Bypass have significantly increased the number of vehicles per day they accommodate since the 1996 TDOT traffic counts were taken. Since 1996, a third section of the bypass has been completed and joins SR 25 with SR 109 north of the city of Gallatin. The two sections of the bypass that were in operation in 1996 have had tremendous increases (96.4 percent and 134.1 percent) in the levels of traffic handled daily. The increases on the SR 109 Bypass help explain the decrease in the AADT values for SR 25 and SR 109 since 1996. More motorists are electing to use the bypass to avoid the traffic associated with the central business district of Gallatin.

3.1.1.3. Waterway Commercial Traffic

The U. S, Army Corps of Engineers operates a lock at Old Hickory Dam. Commercial tonnages transported through the lock are approximately 4 million tons per year. Shipments of TVA coal for the operation of GAF currently constitute approximately 90 percent of that total tonnage.

3.1.1.4. Environmental Justice

The population of Sumner County, according to the 2000 Census of Population, is 9.4 percent minority, lower than the state average of 20.8 percent and the national average of 30.9 percent. In the city of Gallatin, the minority population is 23.0 percent of the total, much higher than the county and slightly higher than the state, but below the national average. The minority share in the labor market area, at 25.0 percent, is higher than the state average but lower than the national average. All counties in the labor market area except Davidson have minority shares lower than the state average.

The poverty level in 1999 in Sumner County, according to the 2000 Census of Population, was 8.1 percent, well below both the state level (13.5) and the national level (12.4). In the city of Gallatin, the level was 14.4 percent, higher than the county, state, and nation. In the labor market area, the poverty level was 11.5 percent, higher than in Sumner County but still below both the state and national levels.

The additional trains from the proposed action would be an increase in the already fairly heavy use of the Amqui track. The C&N track has lighter use and the steam plant spur track has only light usage to about Airport Road and no usage currently below that point. Impacts, especially from train noise, would be more noticeable to those areas where there is only light or no usage at the present time.

The area that would be most directly impacted by the proposal includes the areas near the CSX line (Amqui line) northeast of its crossing with SR 109S north past old SR 109, as well as the areas along the C&N line 1.5 miles east from the Amqui line to the GAF spur, and beside the GAF spur (see Section 3.2, Traffic). For Census of Population purposes, these

areas are designated as Census Tracts 207, 208, 209.01, and 209.02. These areas, except for Tract 209.01, are further subdivided into block groups. Data on minority populations and on poverty levels are shown below for these areas.

Table 3-2. Minority Population, 2000 and 1990, and Poverty Rates, 1999 and 1989

	Nonwhite Population (%)	White Hispanic or Latino Population (%)	Total Minority Population (%)	Below Poverty Level (%)
CT 207	15.8 (12.1)	1.8 (0.4)	17.6 (12.4)	21.4 (19.7)
Block Group 1	5.4 (1.6)	1.3 (0.1)	6.8 (1.7)	9.7 (8.2)
Block Group 2	19.2 (12.8)	4.2 (0.3)	23.4 (13.1)	30.9 (19.6)
Block Group 3	23.5 (21.6)	1.2 (0.7)	24.6 (22.2)	30.3 (30.8)
CT 208	51.5 (49.1)	1.7 (0.3)	53.3 (49.4)	20.9 (25.8)
Block Group 1	50.5 (52.9)	1.8 (0.2)	52.3 (53.1)	22.9 (25.6)
Block Group 2	54.1 (40.8)	1.5 (0.4)	55.6 (41.3)	16.0 (26.2)
CT 209.01	10.2 (7.4)	1.1 (0.0)	11.2 (7.4)	5.6 (7.4)
CT 209.02	10.1 (3.9)	1.1 (0.3)	11.2 (4.2)	11.1 (10.0)
Block Group 1	7.2 (2.2)	1.4 (0.3)	8.7 (2.5)	12.1 (12.7)
Block Group 2	13.6 (4.7)	1.0 (0.3)	14.6 (5.0)	14.3 (10.1)
Block Group 3	5.3 (4.0)	0.9 (0.3)	6.2 (4.3)	3.9 (7.6)
Gallatin	21.7 (19.6)	1.3 (0.4)	23.0 (20.0)	14.4 (16.3)
Sumner County	8.5 (6.0)	0.9 (0.4)	9.4 (6.4)	8.1 (9.1)
Labor Market	23.5 (18.8)	1.5 (0.5)	25.0 (19.3)	11.5 (12.4)
Tennessee	19.8 (17.0)	1.0 (0.4)	20.8 (17.4)	13.5 (15.7)
United States	24.9 (19.7)	6.0 (4.6)	30.9 (24.4)	12.4 (13.1)

Source: U.S. Census Bureau, Census of Population, 2000 and 1990
Note: Values for 1990 and 1989 are in parentheses.

3.1.1.5. Visual Resources

The physical, biological, and cultural features of an area combine to make the visual landscape character both identifiable and unique. Scenic integrity indicates the degree of unity or wholeness of the visual character. Scenic attractiveness is the evaluation of outstanding or unique natural features, scenic variety, seasonal change, and strategic location (TVA, 2003). Where and how the landscape is viewed would affect the more subjective perceptions of its aesthetic quality and sense of place. Views of a landscape are described in terms of what is seen in foreground, middleground, and background distances. In the foreground, an area within 0.5 mile of the observer, details of objects are easily distinguished in the landscape. In the middleground, normally between 1-4 miles from the observer, objects may be distinguishable but their details are weak and they tend to merge into larger patterns. Details and colors of objects in the background, the distant part of the landscape, are not normally discernible unless they are especially large and standing alone. The impressions of an area's visual character can have a significant influence on how it is appreciated, protected, and used. The general landscape character of the study area is described in this section with additional details in the section that follows.

GAF is located 5 miles southeast of Gallatin, Tennessee, on a peninsula on the north bank of the Cumberland River. Completed in 1959, GAF is a relatively large fossil site with extensive ash ponds and wooded rolling hills. The east, south, and west sides of the plant site abuts the Cumberland River, which is a wide expanse of open river used for an array of recreational purposes. The interior of the plant site consists mainly of industrial facilities surrounded by open areas of lawn. Elevations across the plant site and in the surrounding areas rise gradually from approximately 445 feet above sea level at the shorelines to about

500 feet just north of the plant. Little traffic is seen along the entrance road except at plant shift changes and during deliveries.

Areas adjacent to construction and modifications are typical of the plant site. These are mostly industrial settings with an array of broadly horizontal and medium to tall structures. These elements are seen mainly in the foreground by plant employees and visitors. Other physical features that would not be affected under the Action Alternative, such as the smokestacks and laced-steel transmission towers can be seen in the background distances by area residents, motorists along local roads, and recreation users along the Cumberland River. These elements combine to make a homogeneous industrial setting that has minimal scenic attractiveness and very low scenic integrity.

3.1.2. Environmental Consequences

3.1.2.1. Income and Employment

Alternative A – No Action
Under the No Action Alternative, as discussed in Section 2.1.1, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are, and no construction activities related to this decision would occur. Therefore, there would be no socioeconomic impacts.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
Under this alternative, as discussed in Section 2.1.2, coal would be delivered to the GAF site by rail rather than by barge, as it is currently delivered. This would require construction of a rail unloading facility and a blending facility at the site. The coal would be delivered by CSX to the site, using the existing rail facilities coming through Gallatin and to the site. Repair and reconstruction of the rail spur would be required.

Construction Impacts
Construction activity related to the new facilities and to rail bed repair would require a relatively small number of workers for a short time. This would have a small positive, but temporary, impact on income and employment in the local area.

Operations Impacts
An additional 19 workers would be required to handle coal deliveries at the plant site. This would be a very small positive impact to the local economy, an increase of less than one-tenth of 1 percent in employment and earnings in Sumner County.

Delivery of the coal by rail would result in an average of five trains per week with each train entering and leaving through the central area of Gallatin. Three of these trains would have 135 cars each (Powder River Basin Coal) and the other two would have only 105 cars (Colorado Coal). Each of the five trains per week would cross each at-grade crossing twice (loaded and unloaded) except for the West Eastland Street and West Gray Street crossings, which would be crossed three times each (loaded, loaded, and unloaded) due to the proposed CSX operations. These trains would not be on fixed schedule, but could arrive at any time. Each train would come into Gallatin using the Amqui line traveling 18 to 22 miles per hour (mph) and continue north of the city to change direction, which would take approximately 30 to 45 minutes, then proceed southward to the C&N line at 8 to 10 mph and then to the spur line that goes to the plant. Just past the Airport Road crossing,

the train would slow to 5 mph for the last two at-grade crossings. After unloading, the empty train would leave by the spur line, proceed west on the C&N line, and then turn north toward Bowling Green, Kentucky. Since the Amqui line already has relatively heavy traffic, five additional trains per week would be less noticeable than in the other areas.

3.1.2.2. Traffic Delays

Alternative A – No Action
Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are, and no construction activities related to this decision would occur. Therefore, there would be no incremental impacts on traffic.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

Traffic Impacts of Rail Deliveries During Peak Periods of Traffic

To quantify the consequences of the proposed coal delivery by rail upon the local traffic network, TVA performed a traffic analysis. This analysis was based upon the train speeds provided by CSX (18 to 22 mph Amqui line, 8 to 10 mph C&N line, and slowing to 5 mph on the GAF plant track between Airport Road and Newton Lane), amount of traffic from AADT counts during peak traffic periods, calculated traffic delays, and LOS. The effect of a train crossing in operation is similar to the red phase of a traffic signal.

The original DEA for this project contained a table identified as Table 3-4. This table may have caused some confusion because it identified US 31E as being blocked for 13.3 minutes daily. The model used to develop this table annualized the delays on a daily basis. This caused the model to predict a blockage of 13.3 minutes daily which includes 1.32 trains per day on average. In reality, there would be one train arriving at a time, not 1.32 trains. The analysis below clarifies the results for train movement.

CSX provided a simulation of coal delivery operations through Gallatin, using a system known as the Train Dynamic Analyzer (TDA), developed by New York Air Brake Company in Fort Worth, Texas. The technology simulates the actual train movement using criteria such as train weight, train length, grade, and other train and track information pertinent to operations. This system is used by CSX to validate actual train performance for the National Transportation Safety Board (NTSB). To evaluate the maximum impact of the rail traffic on the local road traffic, it was assumed a 135-car train arrived during one of two peak-hour periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). This scenario would help characterize the worst-case effect upon the traveling public for this temporary period while the train was present. Table 3-3 outlines the *Highway Capacity Manual* criteria for LOS for signalized intersections.

Table 3-3. Highway Capacity Manual Criteria for Level of Service for Signalized Intersections

LOS	Delay (sec/veh)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	**>55-80**
F	**>80**

According to the *Highway Capacity Manual*, most design or planning efforts typically maintain service rates at LOS C or D, to ensure an acceptable operating service for facility users that minimizes the inconveniences resulting from traffic delays. In terms of traffic delays, Tables 3-4 through 3-9 detail the impacts that a coal train would have on traffic in and around Gallatin for 2004 AADT counts and the historical impacts occurring in and prior to 1996 when daily rail delivery of coal was last active for GAF.

Consistent with the methods used by the Surface Transportation Board, the variables used in Tables 3-4, 3-5, 3-6, and 3-8 for estimating and understanding the degree of impacts to traffic flow are as follows:

- D_C is the actual blocked time at an at-grade intersection. This is based on train length, train speed, and the time it takes for warning devices to open and close when a train passes.

- D_A is the maximum time that the blockage would affect the entire traffic stream, from the first vehicle stopped in the queue to the last vehicle that had to slow down as a result of the train crossing.

- T_D is the number of vehicles arriving during the analysis period while a train is passing over a highway/rail at-grade crossing.

- Q is the estimated longest line of vehicles that would occur when a rail delivery of coal was made to GAF.

- D_V is the estimated average delay experienced by all drivers at the affected highway/rail at-grade crossing distributed over a 24-hour period, AADT.

- D_B is the total time per day, not train crossing, that a highway/rail at-grade crossing would be blocked for a rail coal delivery. This value takes into account the average number of trains per day.

Table 3-4. 2004 Motorist Average Delay and Queue Buildup During Peak Hour at Train Crossings

2004 Peak Hour Analysis	D_C, Crossing Delay due to Train (min)	D_A, Total Crossing Delay per Train Movement (min)	T_D, Vehicles Arriving While Train is Crossing	Q, Maximum Vehicle Queue in Analysis Hour	D_V, Average Delay for all Vehicles, AADT (sec/veh)	D_B, Total Average Daily Blocked Crossing Time (min)
US 31E	9.1	20.3	306	168	20.4	12.0
SR 25 (Amqui Line)	4.8	7.5	39	43	4.0	6.3
SR 25 (C&N Line)	9.1	14.3	74	81	14.3	12.0
SR 109	9.1	17.9	100	110	17.9	12.0
Airport Rd.	9.1	14.0	71	78	14.0	12.0
Odoms Bend Rd.	17.8	18.8	22	24	36.7	23.4
Newton Ln.	17.8	18.4	13	14	35.8	23.4
W. Eastland St. (Loaded)	4.8	6.0	31	23	4.7	9.5
W. Eastland St. (Unloaded)	9.1	11.3	59	43	17.0	18.0
W. Gray St. (Loaded)	4.8	5.0	5	4	3.9	9.5
W. Gray St. (Unloaded)	9.1	9.4	10	7	14.2	18.0

Table 3-5. 1996 Motorist Average Delay and Queue Buildup During Peak Hour at Train Crossings

1996 Peak Hour Analysis	D_C, Crossing Delay due to Train (min)	D_A, Total Crossing Delay per Train Movement (min)	T_D, Vehicles Arriving While Train is Crossing	Q, Maximum Vehicle Queue in Analysis Hour	D_V, Average Delay for all Vehicles, AADT (sec/veh)	D_B, Total Average Daily Blocked Crossing Time (min)
US 31E	12.0	21.6	518	178	45.4	25.2
SR 25 (Amqui Line)	9.4	17.7	158	108	29.0	19.7
SR 25 (C&N Line)	12.0	22.7	203	139	47.8	25.2
SR 109	12.0	25.9	231	158	54.4	25.2
Airport Rd.	12.0	16.3	113	77	34.2	25.2
Odoms Bend Rd.	12.0	12.6	21	14	26.5	25.2
Newton Ln.	12.0	12.4	12	8	26.0	25.2
W. Eastland St. (Loaded)	9.4	11.2	84	38	27.6	29.5
W. Eastland St. (Unloaded)	12.0	14.4	108	49	45.5	37.9
W. Gray St. (Loaded)	9.4	9.6	14	7	23.7	29.5
W. Gray St. (Unloaded)	12.0	12.4	18	8	39.0	37.9

Table 3-6. 2004 Motorist Average Delay and Queue Buildup During Off-Peak Hour at Train Crossings

2004 Off-Peak-Hour Analysis	D_C, Crossing Delay due to Train (min)	D_A, Total Crossing Delay per Train Movement (min)	T_D, Vehicles Arriving While Train is Crossing	Q, Maximum Vehicle Queue in Analysis Hour	D_V, Average Delay for all Vehicles, AADT (sec/veh)	D_B, Total Average Daily Blocked Crossing Time (min)
US 31E	9.1	11.1	306	54	10.3	12.0
SR 25 (Amqui Line)	4.8	5.1	39	14	2.5	6.3
SR 25 (C&N Line)	9.1	9.7	74	26	9.0	12.0
SR 109	9.1	9.9	100	35	9.2	12.0
Airport Rd.	9.1	9.7	71	25	8.9	12.0
Odoms Bend Rd.	17.8	17.9	22	8	32.2	23.4
Newton Ln.	17.8	17.9	13	5	32.1	23.4
W. Eastland St. (Loaded)	4.8	5.0	31	7	3.6	9.5
W. Eastland St. (Unloaded)	9.1	9.4	59	14	13.0	18.0
W. Gray St. (Loaded)	4.8	4.8	5	1	3.5	9.5
W. Gray St. (Unloaded)	9.1	9.2	10	2	12.7	18.0

Table 3-7. Comparison of Maximum Vehicle Queue Length for 2004 and 1996 Peak Hour and Off-Peak Hour Data

Maximum Vehicle Queue Length per Lane per Direction (miles)	2004 Peak Hour Length	2004 Off-Peak Hour Length	1996 Peak Hour Length
US 31E	0.70	0.22	0.74
SR 25 (Amqui Line)	0.18	0.06	0.45
SR 25 (C&N Line)	0.34	0.11	0.58
SR 109	0.46	0.15	0.66
Airport Rd.	0.32	0.10	0.32
Odoms Bend Rd.	0.10	0.03	0.06
Newton Ln.	0.06	0.02	0.03
W. Eastland St. (Loaded)	0.09	0.03	0.16
W. Eastland St. (Unloaded)	0.18	0.06	0.21
W. Gray St. (Loaded)	0.02	0.01	0.03
W. Gray St. (Unloaded)	0.03	0.01	0.03

Table 3-8. Comparison of Average Vehicle Delays and Total Daily Blocked Crossing Times Resulting From "No Train" and Rail Delivery of Coal for 2004 and 1996 Peak Hour and Off-Peak Hour Data

Rail Crossing	2004 Average Delay - No Coal Train (sec/veh)	2004 Peak Hour D_V, Average Delay for all Vehicles (sec/veh)	2004 Off-Peak D_V, Average Delay for all Vehicles (sec/veh)	1996 Peak Hour D_V, Average Delay for all Vehicles (sec/veh)	2004 Total Daily Blocked Crossing Time - No Coal Train (min)	2004 Peak Hour D_B, Total Daily Blocked Crossing Time (min)	2004 Off-Peak D_B, Total Daily Blocked Crossing Time (min)	1996 Peak Hour D_B, Total Daily Blocked Crossing Time (min)
US 31E	0	20.4	10.3	45.4	0	12.0	12.0	25.2
SR 25 (Amqui Line)	0	4.0	2.5	29.0	0	6.3	6.3	19.7
SR 25 (C&N Line)		14.3	9.0	47.8		12.0	12.0	25.2
SR 109	0	17.9	9.2	54.4	0	12.0	12.0	25.2
Airport Rd.	0	14.0	8.9	34.2	0	12.0	12.0	25.2
Odoms Bend Rd.	0	36.7	32.2	26.5	0	23.4	23.4	25.2
Newton Ln.	0	35.8	32.1	26.0	0	23.4	23.4	25.2
W. Eastland St. (Loaded)	0	4.7	3.6	27.6	0	9.5	9.5	29.5
W. Eastland St. (Unloaded)		17.0	13.0	45.5		18.0	18.0	37.9
W. Gray St. (Loaded)	0	3.9	3.5	23.7	0	9.5	9.5	29.5
W. Gray St. (Unloaded)		14.2	12.7	39.0		18.0	18.0	37.9

Table 3-9. Comparison of Temporary Level of Service Effects While Intersections are Affected by Trains Crossing for Rail Delivery of Coal for Peak Hour Delivery (1996 and 2004) and Off-Peak Hour (2004)

Rail Crossing	2004 Peak Hour Level of Service	2004 Off-Peak Level of Service	1996 Peak Hour Level of Service
US 31E	C	B	D
SR 25 (Amqui Line)	A	A	C
SR 25 (C&N Line)	B	A	D
SR 109	B	A	D
Airport Rd.	B	A	C
Odoms Bend Rd.	D	C	C
Newton Ln.	D	C	C
W. Eastland St. (Loaded)	A	A	C
W. Eastland St. (Unloaded)	B	B	D
W. Gray St. (Loaded)	A	A	C
W. Gray St. (Unloaded)	B	B	D

Since 1997, there have been no deliveries of coal by rail to GAF, and therefore there are no delays (delay times equal zero) or LOS effects associated directly with coal delivery trains crossing road intersections. As indicated in Tables 3-4, 3-8, and 3-9, the average delay experienced by motorists during the peak hour, D_V, if coal rail delivery occurs during the peak hour, would temporarily reflect an LOS of C or D for three of the crossings. The remaining crossings would be at LOS A or B. Based upon the random arrival of trains once per day, 5 days per week, this situation would likely occur about 16.7 percent of the time a train was arriving or departing. In other words, such traffic delays would be anticipated to occur one or two times a week. Moreover, one (US 31E) of the crossings noted above as experiencing lower LOS (C or D), already had an LOS of F even before including the effects of rail traffic.

By comparison, in 1996, when coal was last delivered to GAF by rail, the delay experienced at every crossing reflected an LOS of C or D. Thus, compared to those delays experienced due to rail delivery of coal in 1996 (Tables 3-5 and 3-8), except for Odoms Bend Road and Newton Lane, all of the crossing delays are anticipated to be less than those previously experienced if rail delivery of coal is reinstated, even in a peak hour delivery.

Traffic Impacts of Rail Deliveries During Off-Peak Periods, Emergency Services, and Alternative Routes

With random arrival as described in Section 2.1.2 Delivery of Coal, there would be an 83.3 percent probability that the trains would arrive or depart in an off-peak-hour period, and,

therefore, miss the two peak-hour traffic windows. Consequently, the above effects predicted for peak hours would be conservative. The more probable off-peak arrival of trains would substantially reduce the level of impacts on traffic from those levels predicted for peak hours. See Table 3-6 for off-peak delivery delays and Tables 3-8 and 3-9 for comparisons of 2004 and 1996 deliveries. Since there have currently been no deliveries of coal by rail to GAF for the previous 8 years, there would obviously be an incremental increase in delays and reduction in LOS from the current situation of "no delays" directly related to delivery of coal. However, during the predominantly off-peak deliveries anticipated, every intersection affected would have lower per-vehicle delay times than were experienced in 1996, when coal was most recently delivered by rail to GAF, with the exception of crossings at Odoms Bend Road and Newton Lane. These two crossings (LOS C) are the only ones that would not have LOS values of A or B, and neither is in the Gallatin city limits nor close to any schools or medical facilities and should not affect the majority of the citizens in the Gallatin area. It would be expected that the bulk of motorists delayed at these two crossings would be TVA personnel. Table 3-9 is a comparison of temporary LOS effects while intersections are affected by trains crossing for rail delivery of coal for peak hour delivery (1996 and 2004) and off-peak hour (2004). As noted earlier the peak hours are defined as 7:00-9:00 am and 4:00-6:00 pm. This comparison was conducted for signalized intersections with the train acting as the red phase of a traffic signal to project delay time in seconds which was used to predict an LOS for each of the at grade rail crossings

The possibility of further mitigating potential traffic delays by completely avoiding deliveries during peak traffic hours was investigated in conjunction with CSX's proposal for providing rail service. Such mitigation is problematic since CSX does not own track sidings long enough to store, without affecting intersections, a unit train that would be delivering coal to GAF prior to reaching the Gallatin area to avoid the two peak-hour periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). CSX sidings would likely have to be constructed, which would substantially increase the cost of their operations. Furthermore, while trains would be sitting idle on the sidings, CSX would also be losing additional revenue due to crew expenses. These increased costs would result in higher fuel delivery costs, preventing TVA from realizing the fuel savings, which is the primary purpose driving this project. Although predicted durations of traffic blockage across rail-highway intersections by the coal-bearing trains are within local ordinance requirements and the impacts determined insignificant (see Section 3.1.2.2 Traffic Delays), CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times.

Figure 3-1 shows that the two crossings on SR 25 are very close to each other. The possibility of a single car being caught by the first train passing and second train passing, as it travels the Amqui line north through Gallatin before taking 30 to 45 minutes to change directions only to pass over SR 25 again on the C&N line, was evaluated. According to Table 3-4, there would be 43 vehicles queued, Q, at the SR 25 Amqui line crossing, waiting on the train to pass during peak-hour deliveries. The same table shows that the crossing delay per train movement, D_A, would average only 7.5 minutes. Based on this, it is improbable that a single motorist would be delayed at both SR 25 at-grade crossings by the same train since there would be a 30- to 45-minute time lapse between SR 25 at-grade train crossings. With a view to taking a closer look at the traffic analyes, TVA hired an independent contractor to evaluate TVA's traffic analyses. BWSC conducted these analyses for TVA, finding generally that the assumptions, approach, and calculation utilized by TVA in its traffic analyses were reassembled. BWSC identified areas of the analyses that could be further strengthened. BWSC recommendations were adopted by TVA in serving the traffic analyses while finalizing this EA. One of the recommendations

suggested evaluating wavelengths resulting from traffic being blocked up due to the rail crossing.

Table 3-7 compares the maximum vehicle queue lengths for 2004 (peak and off-peak deliveries) and 1996 peak-hour deliveries. Only two at-grade crossings (Odoms Bend Road and Newton Lane) would develop longer vehicle queues than experienced in 1996, when peak-hour deliveries occur. When the more probable off-peak hour deliveries occur, every crossing would develop shorter vehicle queues than in 1996.

If coal delivery by rail resumes, because of the length (7,600 feet) of the 135-car trains, several intersections could be blocked at the same time. Those crossings are: (a) Odoms Bend Road and Newton Lane; (b) Newton Lane and Airport Road; (c) Airport Road and SR 109; (d) SR 109, US 31E, SR 25 (C&N Line), West Eastland Street, and West Gray Street; and (e) SR 25 (Amqui Line), West Eastland Street, and West Gray Street. The maximum number of crossings simultaneously blocked would be five. This would occur for 60 percent of the deliveries, peak-hour or off-peak hour, since three out of five deliveries would be Powder River Basin Coal (135 cars). The remaining 40 percent of the deliveries (Colorado Coal 105 cars) would only block four intersections simultaneously (US 31E, SR 25 [C&N Line], West Eastland Street, and West Gray Street). The total average daily blocked crossing time ranges from 6.3 to 23.4 minutes (including peak-hour deliveries), which is more than that currently experienced, but is still lower than the range of 19.7 to 37.9 minutes experienced by motorists prior to 1997. Actual blocked crossing times (per occurrence) if rail delivery resumes would range from 4.8 to 9.1 minutes within the Gallatin city limits and would be 17.8 minutes for the crossings near GAF, in Sumner County. These times are based on the train length, proposed CSX train speeds, and the time it takes for crossing warnings (lights, crossing arms) to activate and deactivate. These are less than the blocked crossing times last experienced due to coal trains in 1996.

According to Section 15-12 of the city of Gallatin's municipal code, "No person shall operate any railroad train across any street or alley without giving a warning of its approach as required by state law; nor shall he make such crossing at a speed in excess of twenty-five miles per hour. It shall also be unlawful for a railroad train to block or obstruct any street or alley or public way for a period of more than ten (10) consecutive minutes" (Code 1979, Section 12-813). The coal trains would sound their whistles at the intersections, meeting the requirement to give a warning of the trains' approach. As to requirements pertaining to the speed (25 mph) and blocked time (10 minutes), CSX has indicated that these requirements would not apply since federal regulations address these parameters, preempting local requirements. Nevertheless, as part of its NEPA review, TVA has assessed the impact of the project against the criteria in the local ordinance. The train would not exceed a speed of 25 mph when passing through the city of Gallatin. As to the blocked crossing time, the train would not exceed the city's socioeconomic criterion for blocked times (10 minutes) as shown in Tables 3-4 and 3-6 above.

CSX provided a proposed train velocity of 8 to 10 mph for the crossings at US 31E, SR 25 C&N line, SR 109, Airport Road, West Eastland Street, and West Gray Street, and provided speed ranges for other intersections. Based on this information and the information contained in Table 3-6, the proposed delivery of coal to GAF would result in blocked times at intersections within the city limits that are approximately at or far below the 10-minute criterion. The two crossings nearest GAF, Newton Lane and Odoms Bend Road, have blocked times higher than 10 minutes but are located in Sumner County, outside the Gallatin city limits. These estimated blocked times are derived from a worst-case analysis that assumes all trains to be 135 cars in length. In reality, two of the five trains arriving per

week (40 percent of the delivery) would be only 105 cars in length resulting in shorter delay times.

Emergency personnel or average motorists experiencing delays by coal rail delivery to GAF have alternate routes that can be taken. The two primary alternate routes are SR 109 Bypass and Coles Ferry Road. SR 109 Bypass is a multilane highway that goes around the city of Gallatin to the west. It currently has an LOS of A for the section from US 31E north to SR 109 and an LOS of B south of US 31E to SR 109. In 1996, both sections had LOS values of A. SR 109 Bypass could easily absorb more vehicles per day and still maintain its current LOS. Coles Ferry Road is a Class II, two-lane road that connects SR 109 with Airport Road, Newton Lane, and ultimately Odoms Bend Road. Coles Ferry Road has a current LOS of C, as it did in 1996. According to LOS calculations, Coles Ferry Road could handle approximately 3,000 more vehicles per day. With this amount of additional vehicular use, Coles Ferry Road would still maintain the current LOS. Additionally, there are three viaducts, or bridges, over the rail lines that can be used if an at-grade crossing is blocked. One is on South Westland Street, approximately 2,000 feet west of the SR 109 rail intersection. This route is easily accessible from SR 109 and the Sumner County Regional Hospital. Another is the Old SR 109 or North Water Avenue Bridge over the rail lines. This route is located approximately 1 mile north of the West Gray Street rail intersection. The third is on the SR 109 Bypass, just north of US 31E. Refer to Figure 3-1 for routes that could be used by emergency services and motorists if a primary route were blocked by a train delivering coal to GAF. TVA understands from conversations with local EMS and fire department personnel that there are no standard operating procedures (SOPs) for their personnel to follow if a crossing is blocked by a train while they are en route to an emergency situation. However, local authorities have indicated that if coal deliveries were reinstated, such procedures would be developed to minimize delays. Further, information made available by CSX of train arrivals would facilitate the implementation of the local procedures to minimize delays for emergencies.

To aid this effort, CSX and TVA would work with city officials to enhance the communications process or implement technologies that would help address concerns of the emergency-response agencies. With this information, it would be possible for Gallatin officials to plan accordingly, develop SOPs and decrease response times when at-grade crossings are blocked. Additional SOPs that could be considered are related to the operation of traffic signals throughout the city. A longer green phase could be added for major arteries after a train passes to clear the queue in a more expeditious manner.

This analysis was performed using the latest TDOT traffic counts available. TDOT typically assumes a 7 percent increase in AADT from year to year. This provides some idea of the predicted future AADTs for the affected streets along the rail coal delivery route. As to road upgrades, it is not possible for TVA to predict the potential road upgrades that the state, city, or county governments might make to improve the traffic conditions on some of these roads. However, it would be reasonable to anticipate that roads for which the LOS is at E or F would be high on TDOT's priority list of roads to be upgraded.

The above data and analyses reflect current conditions on the Amqui, C & N and plant track lines that would be affected by delivery of coal to GAF by rail. If the additional mitigation voluntary measures (Section 2.1.2 Rail Line Improvements) under discussion with the City of Gallatin and CSX, are made to the C and N branch line, the data for the at-grade intersections along the line would change. For,example, the crossing delays due to a train, D_c, would be reduced (decline) from 9.1 minutes to 6.3 minutes. These intersections so

affected are US 31E, SR 25, (C & N line crossing), SR 109, West Eastland Street, West Gray Street and Airport Road.

Summary of Effects of Rail Delivery of Coal to GAF on Traffic

- Since there have currently been no deliveries of coal by rail to GAF for the previous 8 years, there would obviously be an incremental increase in delays and reduction in LOS from the current situation of "no delays" directly related to delivery of coal.

- If rail delivery of coal occurs during peak traffic hours, the average delay experienced by motorists at three crossings would temporarily reflect an LOS of C or D (US 31E, Odoms Bend Road, and Newton Lane). However, US 31E is currently experiencing a low level of service even without coal deliveries. Based upon the random arrival of trains once per day, 5 days per week, this situation would likely occur about 16.7 percent of the time a train was arriving or departing, i.e., approximately one or two times a week.

- Compared to those delays experienced due to rail delivery of coal in 1996 and before, except for Odoms Bend Road and Newton Lane, all of the crossing delays if rail delivery of coal is reinstated for GAF (peak or off-peak hours), are anticipated to be less than those previously experienced.

- With random delivery times anticipated, the probability of off-peak-hour deliveries occurring is 83.3 percent, i.e., 4 out of 5 deliveries made to GAF would occur in the off-peak-hour periods. The more probable off-peak arrival of trains would substantially reduce the predicted level of impacts on traffic from those levels predicted for peak traffic hours.

- During the predominantly off-peak deliveries anticipated, every intersection affected, except Odoms Bend Road and Newton Lane, would have better LOS and lower per-vehicle delay times than were experienced in 1996, when coal was most recently delivered by rail to GAF.

- The blocked times for at-grade crossings within the Gallatin city limits would be approximately at or below the 10-minute criterion specified in the municipal code of the city of Gallatin.

- All analyses were performed assuming a worse case delivery of 135 rail cars for Powder River Basin Coal, which would occur only 60 percent of the time, or 3 out of 5 days of deliveries.

- In the event that agreement is reached among the parties, that the additional voluntary mitigation measures discussed in section 2.1.2 Rail Line Improvements are to be implemented, D_c values for the C & N line at grade intersections (also Airport Road) would be reduced (decline) from 9.1 to 6.3 minutes.

3.1.2.3. Waterway Commercial Traffic

Use of rail for all of TVA's coal shipments would result in a loss of about 90 percent of the tonnage now shipped through Old Hickory Lock. Based on data for 2004, this would decrease shipments through the lock to about 400,000 tons per year. Competing priorities at the location, such as flood control and hydropower, might decrease the relative emphasis on navigation. Additionally, the decreased usage of the lock could impact the funds

available for operation and maintenance of the lock relative to other navigation facilities throughout the inland waterway system. Such outcomes could have negative impacts on other users of the lock, including recreational as well as industrial users. The level of impact would depend not only on the national budget for navigation projects and facilities, but also on the evaluation of its relative importance with respect to other navigation projects.

3.1.2.4. Environmental Justice

Alternative A – No Action
Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are, and no construction activities related to this decision would occur. Therefore, there would be no impacts on environmental justice.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
The crossings at West Gray Street and at West Eastland Street are located in areas with large minority populations. The Gray crossing is located in Census Tract 208, Block Group 1, and the Eastland crossing is located at the boundary of Census Tract 208, Block Groups 1 and 2. These areas have minority population of greater than 50 percent. Block Group 1 also has a relatively high poverty level, 22.9 percent, and Block Group 2 a somewhat lower poverty rate of 16.0 percent; these are both high compared to a county level of 8.1 percent, a labor market area level of 11.5 percent, a state level of 13.5 percent, and a national level of 12.4 percent. As shown in Table 3-2, these areas already had large minority populations and high levels of poverty prior to 1997 when these tracks were previously used for coal deliveries.

The crossings at SR 25 also have large minority populations in Tract 208, Block Group 2, which is located just north of these crossings. The minority population is 55.6 percent of the total in this area. However, the poverty level on the south side (Tract 209.02, Block Groups 3 and 2) is low and the minority population is relatively small.

In addition, the crossing at SR 109 (S. Water Ave.) has relatively large minority populations to the north, in Tract 207, Block Group 3, which is the area just to the north, northeast, and northwest of the crossing. This Block Group has a minority population of 24.6 percent, largely concentrated in the area north of the C&N track going east toward the Steam Plant Spur. This Block Group also has a relatively high poverty level of 30.3 percent. This area also had high poverty levels and large minority populations prior to 1997. This crossing is also of concern because SR 109 is a north-south route.

The crossing at US 31 (Main Street) is not as close to areas where large numbers of minority or low-income populations live. However, it is a major north-south route through the city.

The other three crossings that would be affected are on Steam Plant Road, at Airport Road, Coles Ferry Road, and Newton Lane/Odoms Bend Road. These are in areas that are not densely populated and that have relatively small minority and low-income populations.

Those living in or needing access to and from the west of the rail line and north of SR 109 Bypass would generally be most impacted by delays at the West Gray, the West Eastland, and the two SR 25 crossings. Alternatives would be to go south to SR 109 bypass or north

to Old SR 109. In many cases, there would be little difference in time or distance, especially for those living in the lower or upper portion of this area, near either of these two alternatives. Those living in the middle of the area generally would be most impacted.

Those living east of the rail line (north part of the city) and west of US 31E (Broadway) would be most impacted by delays at these same four crossings. They would have an alternative via Old SR 109 (Albert Gallatin Avenue) or by going south to cross at Westwood Avenue.

For those living south of US 31E and north of the track, Westwood Avenue provides an alternative to Old SR 109 South.

Delays due to trains could be important for some individuals, including some members of disadvantaged populations. In particular, the area north and west of the Amqui line or east of that line on the north side of the city would be noticeably affected. Persons living in these areas would see the crossing at West Gray Street and one of the two crossings on SR 25 closed three times by each train, twice as it comes in to the plant and once as it leaves. However, this area of track already has relatively heavy use and, therefore, the increase in traffic would be less noticeable than it might be elsewhere. As noted above, these areas have relatively large disadvantaged populations. Impacts to disadvantaged populations in these areas likely would be considerably greater than impacts to the overall population in the affected areas of the city. Residents of the area north and east of the C&N Line, east to the plant spur, would be subject to southbound delays twice for each train, as it goes to the plant and as it leaves; this would be somewhat alleviated because of the viaduct at South Westland Street. However, to the west, access would be hindered by the closing of one or the other of the SR 25 crossings a total of three times for each train—the west one as the train comes in the city and the east one as the train goes to and as it leaves the plant. Disproportionate impacts to minorities in this area would be lower than in the area to the west and north.

Another potential source of impacts would be the increase in noise associated with the train traffic. Persons living close to the tracks would be more impacted than those living farther away, both from the noise of the train itself and from the crossing whistles. The majority of the affected population lives near the Amqui line, which already has relatively heavy traffic. Because of the proximity of a very large share of the disadvantaged populations to the track, as discussed above, the difference in impacts to these populations would be considerably greater than impacts to the overall population in affected areas of the city. This would be an incremental change in train noise for many of these residents. However, since these areas were subject to coal deliveries by train several times per week prior to 1997, resumption of coal deliveries is likely to be less impacting than would be the case otherwise. Furthermore, rail traffic on this main line (i.e., to Amqui line) could be just as high with or without coal deliveries to GAF due to the movement of other goods on this line.

3.1.2.5. Visual Resources

Visual consequences are examined in terms of visual changes between the existing landscape and proposed actions, sensitivity of viewing points available to the general public, their viewing distances, and visibility of proposed changes. Scenic integrity indicates the degree of intactness or wholeness of the landscape character. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty, and the aesthetic sense of place. The foreground, middleground, and

background viewing distances were previously described in the affected environment section.

No Action Alternative
Under the No Action Alternative, TVA would continue to receive coal by barge. The rail spur and associated unloading and blending facility would not be constructed. Therefore, there would be no visual impacts under this alternative.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
The rapid discharge rail coal unloading and blending facility would include construction of the new facility and associated rail line improvements, including raising a portion of the existing rail line five feet. These improvements would be located within the plant site and would be seen only by plant workers and occasional visitors to the site. Area residents, motorists along local roads, and recreation users along the Cumberland River would not notice a discernible change in the existing landscape. Scenic value class would likely not change.

Minor visual impacts would occur during the construction period. This would include a small increase in traffic along local roads due to the number of deliveries to the plant site. Plant employees and visitors would notice an increase in personnel and equipment on site. This would be temporary until all activities are complete.

Positive visual impacts would occur for recreation users and area residents along the Cumberland River. Barge traffic would be minimal for plant deliveries and unloading facilities would be occupied for less periods of time. This would provide greater scenic tranquility along this section of the river by restoring views that had previously been obscured by barge traffic. However, the scenic class level would likely not increase due to a decrease in water traffic.

The proposed rapid discharge rail coal unloading and blending facility would be visually similar to other features seen in the landscape now. There would be some minor cumulative visual impacts due to the introduction of additional structures and equipment in the landscape. Modifications to the existing rail line would produce temporary visual impacts due to an increase in personnel and equipment on site. The completed rail line would be visually similar to the existing rail line seen in the plant site now.

Operation of the rapid discharge rail coal unloading and blending facility would produce few discernible visual changes in the landscape within or outside GAF. Residents near the rail line route outside the plant site may notice an increase in delivery cars. These minor visual obtrusions would be noticeable for only brief periods of time. Visual impacts would be minor and temporary during the delivery periods.

Construction, operation, and maintenance of the proposed rapid discharge rail coal unloading and blending facility would be visually insignificant. There may be some minor visual discord during the construction period due to an increase in personnel and equipment and the use of laydown and materials storage areas. These minor visual obtrusions would be temporary until construction and laydown areas have been restored using TVA standard BMPs (Muncy, 1999). Therefore, there are no visual impacts anticipated as a result of this project.

3.2. Noise

3.2.1. Affected Environment

The plant site is bordered by the Cumberland River to the east, west, and south. There are homes located across the river to the south, as well as homes north of the plant. The nearest homes are located approximately 1 mile from the proposed rail unloader. There are small hills and dense woods between the proposed unloader and the nearby residences. There is no line of sight between the unloader and any residence.

There are 14 homes adjacent to the TVA spur railroad between Airport Road and the Gallatin plant boundary. This area is a mixture of residences, farms, and three old family cemeteries. There are two public grade crossings and six private grade crossings in this area. The northern public crossing is the Newton Lane grade crossing approximately 1.1 miles south of Airport Road. At this location, there are three residences within 500 feet of the grade crossing. The second public crossing is also at Newton Lane but is farther south where Newton Lane becomes Odoms Bend Road. This second location has two residences within 500 feet of the grade crossing and is approximately 2.5 miles south of Airport Road.

Ambient noise was measured with a Bruel&Kjaer 2237 Integrating Sound Level Meter on May 11, 2005. Noise measurements were taken in three residential locations surrounding the plant; these locations are shown in Figure 3-2.

Noise levels were measured three times at each location with each measurement lasting for 5 minutes. Leq is the continuous equivalent sound level or the “average” noise level during the measurement period. While Leq is very valuable for describing continuous noises, it is less useful for intermittent noises. Leq smoothes out the discrete high-level events, such as trucks passing, to the point of eliminating the annoyance factor of the events. MaxP is the maximum peak sound level during the measurement, which is an important descriptor for intermittent noises. The average Leq and the maximum MaxP of the measurements are shown in Table 3-10.

Table 3-10. Noise Measurements Surrounding Gallatin

Measurement Location	Average Leq (dBA)	Maximum Peak Sound Level (dBA)
1. At the intersection of Steam Plant Road and Newton Lane	47.4	89.0
2. At intersection of Twin Cove Drive and Cherry Point Road	38.9	77.5
3. At Coles Ferry Boat Ramp	42.9	77.2

Average noise levels in rural areas are typically around 40 dBA during the day, so noise levels at Locations 2 and 3 are fairly typical for rural areas. Since no boats were on the river when these measurements were taken, noise levels at these locations are expected to be higher on summer weekends when boats are present. Noise levels are somewhat higher at homes near Steam Plant Road due to traffic. There is also a shooting range in the vicinity, which would increase noise levels at nearby residences periodically when guns are being fired.

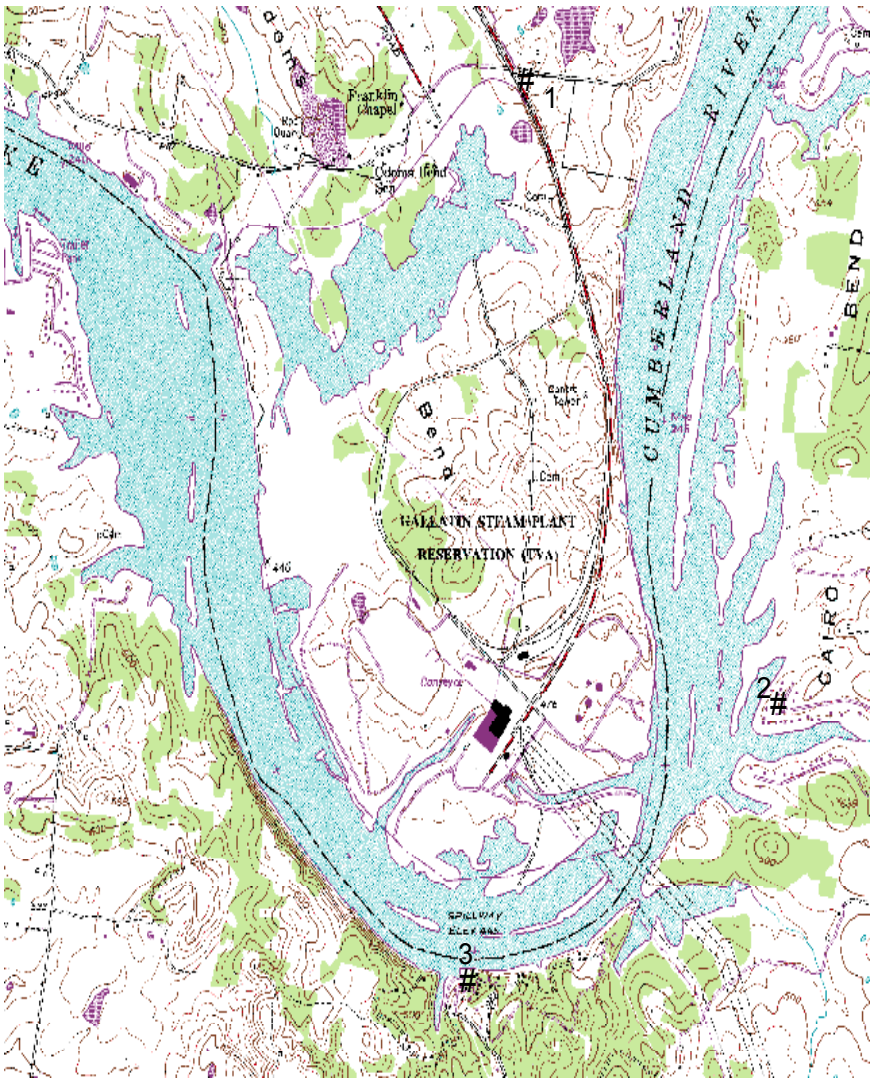

Figure 3-2. Map of Noise Measurement Locations

3.2.2. Environmental Consequences

Alternative A – No Action

Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are, and no construction activities related to this decision would occur. Therefore, there would be no noise impacts related to this alternative.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

Construction

Construction activities would include the use of compactors, front loaders, scrapers, excavators, and graders. This type of equipment is expected to generate noise levels from 79 to 88 dBA at 50 feet (U.S. Environmental Protection Agency [USEPA], 1971). In

general, noise from construction activities would be similar to noise from current plant operations.

Construction noise of 88 dBA at 50 feet would be less than 40 dBA at nearby residences approximately 1 mile away. This would not cause a significant increase in noise at nearby residences.

Blasting may be necessary during construction. Noise levels from blasting vary depending on such factors as the weight and type of the explosives, blast design, and the experience and knowledge of the blaster. Rotary drills and supporting logistical vehicles (shot preparation and bulk explosive trucks) are part of all blasting operations.

Blasting for construction is expected to have a temporary, periodic impact at residences in the vicinity of the plant. The federal requirement to limit blasting to daylight hours would help to reduce impacts at residences.

Because of the temporary nature of construction, the similarity of construction noise to plant operating noise, the distance to the nearest residence and the federal requirement to limit blasting to daylight hours, noise impacts from construction are expected to be insignificant.

Coal Unloading

Coal is currently delivered by barge and unloaded using a clamshell bucket. Four barges of coal are currently delivered each week, and it generally takes less than 2 hours to unload each barge. Barges are currently unloaded only during daylight hours. The clamshell bucket generates average noise, Leq, of approximately 83 dBA at 50 feet, which would be about 42 dBA at nearby residences 1 mile away. This is not generally audible over background noise levels at nearby residences.

Prior to 1997, coal was delivered by rail and unloaded using a rotary unloader. Noise levels from the rotary unloader would have been quite loud. This type of unloader required uncoupling and recoupling railcars, which is very loud. Rail unloading typically would have lasted 8 hours a day, 7 days a week. Peak noise from the rotary unloader and recoupling railcars would likely have been heard over background levels at the nearest residences.

Table 3-11. Expected Noise Levels From Proposed Rail Unloader

Location	Distance	Average Leq (dBA)	Maximum Peak (dBA)	Ldn (dBA)
At Unloader	50 feet	94	121	Not Applicable
At Nearest Residence	1 mile	38	66	45

The proposed rapid unloader would be similar to the one used at John Sevier Steam Plant. This unloader generates average noise levels of 94 dBA at 50 feet, which is roughly equivalent to 38 dBA 1 mile away, assuming 15-dBA attenuation provided by terrain and dense woods. Noise from the rapid rail unloader would include very loud impulse noises. These periodic peak noises could be up to 121 dBA at 50, which would be audible at the nearest residences approximately 1 mile away, but they are not expected to cause a significant impact.

Ldn is the 24-hour average noise level with a 10-dBA penalty during hours from 10 p.m. to 7 a.m. This penalty is to account for the greater sensitivity people have to noise during

typical sleeping hours. USEPA suggests a guideline of Ldn equal to or less than 55 dBA to protect public health and welfare with an adequate margin of safety (USEPA, 1974). The U.S. Department of Housing and Urban Development (HUD) considers an Ldn of 65 dBA or less to be compatible with residential areas (HUD, 1985). There is considerable variation in individual response to noise. Noise that one person would consider mildly annoying, another person may consider highly annoying or not annoying at all. One study showed that approximately 6 percent of people are highly annoyed by an Ldn of 60, 12 percent by an Ldn of 65, and 22 percent by an Ldn of 70 (Fidell, 1991).

If rail unloading occurred randomly at any time of the day or night, the Ldn at the nearest residence would be approximately 45 dBA. This would not exceed USEPA's guideline or HUD's residential land use criteria. Although no significant noise impacts are anticipated, in order to confirm the analyses, TVA will undertake a one-time effort to measure noise levels from the rail unloader once it is operational. In the event that unanticipated levels of noise exceeding applicable guidelines for impacts to affected residences were to be measured, TVA would mitigate those impacts by installing noise barriers, soundproofing systems, or incorporating other measures that achieve equivalent results.

Rail Delivery

Trains that deliver coal to the plant would be another potential noise impact. The railroad tracks follow along Steam Plant Road from the city of Gallatin to the plant. These tracks have not been used for over 8 years. There are 14 homes adjacent to the TVA spur railroad ranging from 50 feet to 540 feet away from the tracks.

The railroad to the plant has not been used since 1997. Prior to 1997, coal was typically delivered with a 90-car train, once per day, 7 days per week. The trains generally arrived at the plant between 6:30 and 7:00 a.m. and left between 3:30 and 4:00 p.m. All of the homes along Steam Plant Road that would be affected by proposed rail deliveries were built prior to 1997 and were affected by noise when coal was previously delivered by train.

TVA hired an independent contractor, Bowlby and Associates, to assess noise impacts of trains on residences in the vicinity of the TVA rail spur along Steam Plant Road. The contractor's report is included as Appendix B. TVA has critically evaluated the report and agrees with the assessment of noise impacts as set forth in Table 3-12. The Bowlby report also identifies the mitigation options available to TVA to mitigate the noise impacts. The assessment from the Bowlby report is summarized below.

Proposed rail deliveries would require five trains per week (five trains inbound to the plant and then the same five trains outbound), which is equivalent to 0.059 trains per hour. There would be 135 cars and three locomotives per train. It would take approximately 18 minutes for the train to pass a residence on the TVA rail spur, and a train would be audible for 6 minutes before it arrived and for 6 minutes after it passed. Coal may be delivered at any time of day or night. The empty train would pass again approximately 10 hours later.

Based on an operating speed of 5 mph and the requirement that the horn blow must commence 20 seconds before the train reaches the crossing, the freight train would generally begin the horn blow approximately 150 feet before the crossing. Thus, the area of direct impact from the horns is limited to the immediate vicinity of the crossing, a much different situation than for higher speed trains, where horn blowing must commence one-quarter mile upstream from the crossing.

Noise levels from trains are predicted by separately computing the contributions from the three major noise sources, locomotives, rail cars, and train horns, then combining these estimates to get an overall Ldn. The details of these calculations are provided in Appendix B. The day/night noise level, Ldn, was calculated for each residence along the TVA spur rail. This information is shown in Table 3-12.

Using the Federal Railroad Administration (FRA) Noise Impact Criteria chart, shown in Figure 3-3, each home was classified as No Impact, Impact, or Severe Impact; these classifications are also shown in Table 3-12. According to FRA, a proposed project classified as "No Impact" would result in an insignificant increase in the number of people highly annoyed by the new noise, while a project classified as "Severe Impact" would cause a significant percentage of people to be highly annoyed by the new noise. Projects classified as "Impact" would result in increased noise, but this increase may not be sufficient to cause strong, adverse reactions from the community.

Eight homes would be impacted; three of these would be severely impacted (Figure 3-4). TVA would mitigate the noise impact at the three severely impacted homes through soundproofing techniques such that impacts are rendered insignificant. TVA would also voluntarily mitigate impacts at the five homes that would experience an "impact" through use of soundproofing techniques. Soundproofing techniques, further described in Appendix C, would accomplish an outdoor to indoor noise reduction of approximately 25 dBA. Soundproofing is an appropriate mitigation technique for this location, since the primary land use activity occurs indoors. Two family cemeteries would also be impacted, though mitigation is not considered necessary due to infrequent use of the cemetery and the very low number of average trains per day.

Table 3-12. Predicted Overall Rail Noise at Nearby Residences

Parcel ID	Address	Description	Distance to Tracks (ft)	Predicted Ldn (dBA)	Impact
149-22	996 Newton Lane	House	400	53	Impact
149-22	996 Newton Lane	House	480	52	No Impact
149-22	1295 Steam Plant Rd.	Mobile Home	260	53	Impact
134-42.01	800 Coles Ferry Rd.	Mobile Home	510	51	No Impact
134-42	802 Coles Ferry Rd.	House	540	51	No Impact
134-40.02	845 Coles Ferry Rd.	House	270	52	No Impact
134-40	801 Coles Ferry Rd.	House	200	60	Severe
134-39.01	1130 Steam Plant Rd.	Mobile Home	160	57	Impact
134-39	849 Coles Ferry Rd.	House	270	52	No Impact
134-38	855 Coles Ferry Rd.	House	270	52	No Impact
134-36	1129 Steam Plant Rd.	House	210	55	Impact
134-34	1103 Steam Plant Rd.	House	170	59	Impact
134-33	1101 Steam Plant Rd.	House	175	61	Severe
134-08	Steam Plant Rd.	House	50	65	Severe
134-07	No address	Cemetery	130	57	Impact
134-06	No address	Cemetery	130	57	Impact

Predicted durations of traffic blockage across rail-highway intersections by the coal-bearing trains are within local ordinance requirements, and the impacts determined insignificant.

However, as described in section 2.1.2 Alternative B - Rail Line Improvements, CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times. One method under consideration to increase train speeds (up to about 15mph) and further reduce traffic delay impacts is the reconstruction of a portion of the rail bed on the C & N track leading to the TVA rail spur, use of continuous ribbon rail along that section, banking of a curve and reconstruction of the current bridge crossing over Town Creek. In the event that this additional mitigation should be implemented, noise impacts from such construction should be minor and temporary; and the use of ribbon rail (one benefit of which is reduced noise) should off-set additional noise generated by trains operating at higher speeds.

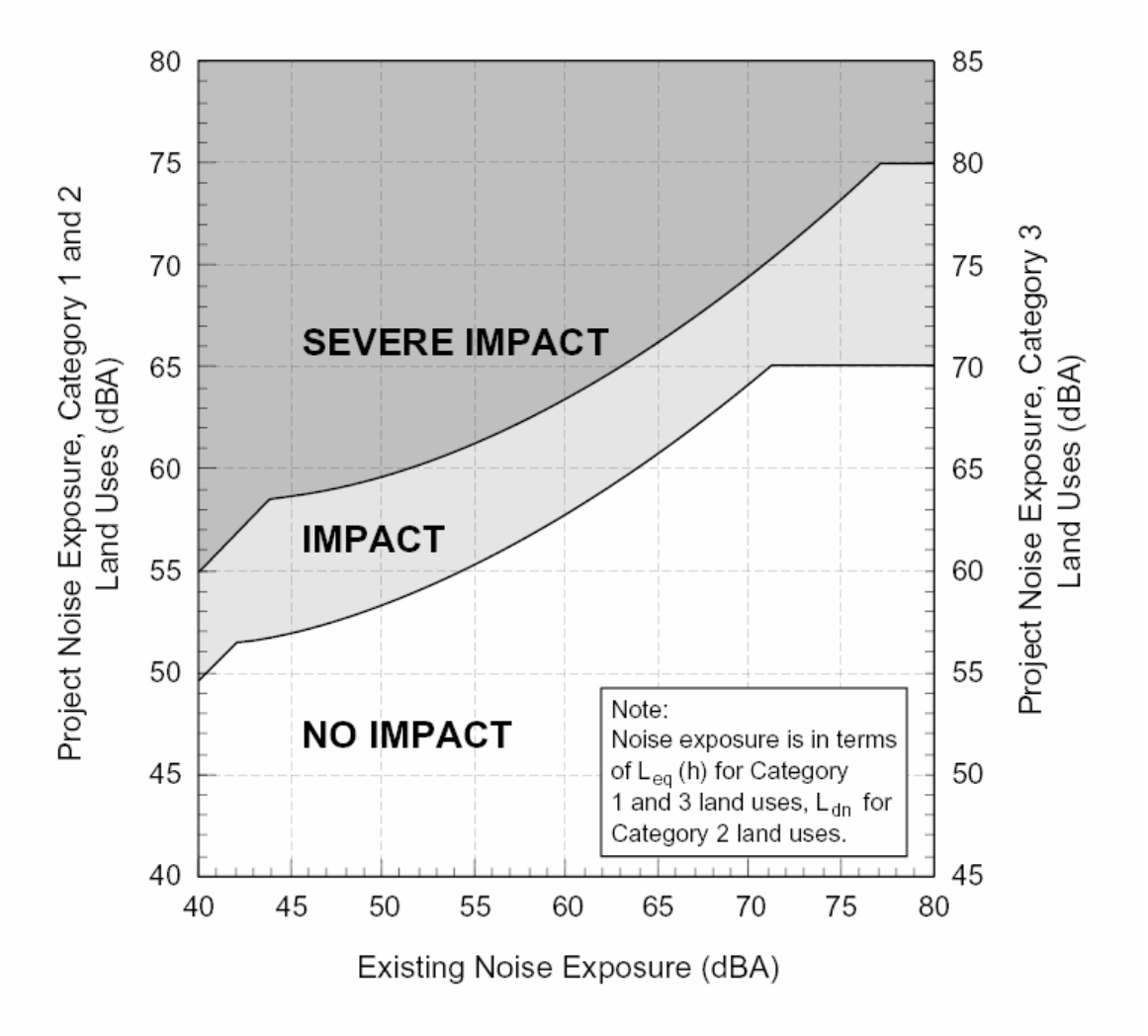

Figure 3-3. Federal Railroad Administration Noise Impact Criteria

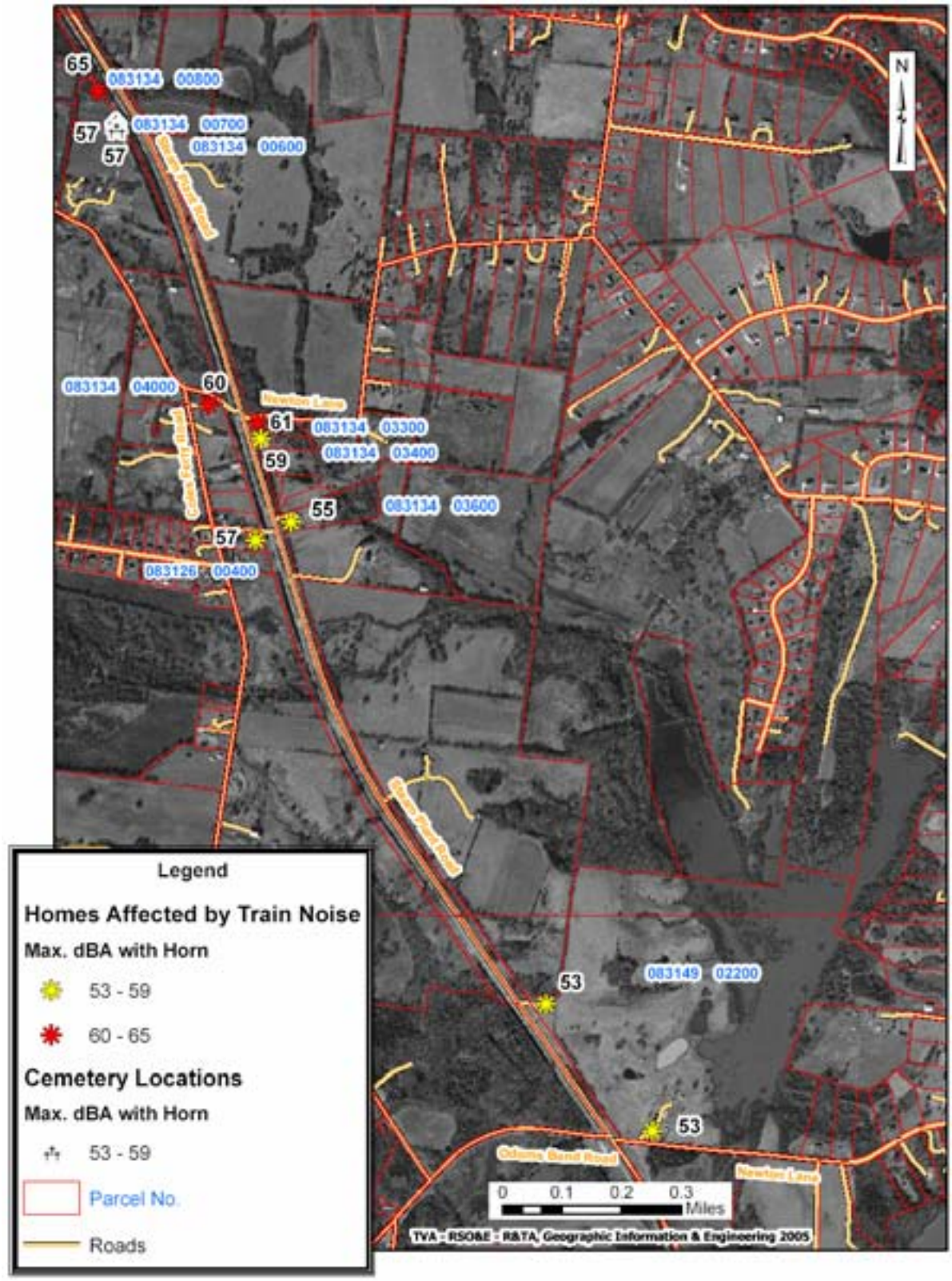

Figure 3-4. Homes Affected by Train Noise

3.3. Safety

3.3.1. Affected Environment

See Traffic Section.

3.3.2. Environmental Consequences

Alternative A – No Action
Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are, and no construction activities related to this decision would occur. Therefore, there would be no impacts on safety from Alternative A.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
Coal delivery by rail would increase the train traffic through Gallatin, which would increase the potential for accidents and casualties. According to statistics from the Federal Railroad Administration (FRA) Web site, the accident rate for trains decreased to 3.98 accidents per million train miles in 2004. The FRA data showed that incidents involving trespassers and highway-rail grade crossings accounted for almost 95 percent of all rail-related fatalities during the analysis year. According to the U.S. Department of Transportation, approximately 94 percent of all grade crossing accidents and 87 percent of fatalities involve motor vehicle driver as a principal factor. Based on a 22-mile affected area and the accident rate of 3.98 per million train miles, if rail is again used to deliver coal to GAF, the estimated potential risk for such an additional accident to occur is once in 50 years. Using the FRA-reported accident data for the state of Tennessee, an average of 38.6 percent of the accidents that occurred at public and private rail crossings resulted in casualties. With a risk of one additional accident occurring every 50 years, the estimated potential risk (i.e., probability) for an additional casualty to occur is approximately once in 124 years.

Use of rail deliveries would result in conjunction with the cessation of barge deliveries. Elimination of barge delivery and barge-unloading activities would reduce or eliminate the risk level for casualty or injury for persons in occupations at TVA or barge companies associated with those activities.

Traffic control devices are present at all at-grade crossings. Although it is not clear who owns and maintains all of these signals, TVA has agreed to inspect, repair, or replace the flashing light signals at Odems Bend and Newton Lane. The city of Gallatin, TDOT, and CSX would need to determine whether any other upgrades are warranted at the other at-grade crossings in the city limits.

Furthermore, changes in technology and changes to the operating plan from the last time TVA had train service allow trains to move through town without stopping. Therefore, the trains should move over each crossing in 8 to 10 minutes. CSX has each public crossing marked with a sign that gives the TDOT crossing number and the 800 number into CSX's Police Communications Center, which is staffed 24 hours a day. Anyone with a safety emergency can call this number and personnel handling the call have the capability to communicate with the train dispatcher. CSX and TVA would conduct meetings with all emergency response agencies in Gallatin to ensure that these agencies have the 800

number on file and have the capability to call in advance to check the crossing status if there were an emergency.

CSX would operate the trains at safe speeds on the C&N spur and the TVA spur track. Both of the rail spurs would be maintained to support the proposed train speeds. Additionally, periodic inspections are required to maintain the integrity of the rail system. All of the aspects would be conducted to minimize the probability of derailments.

3.4. Air Quality

3.4.1. Affected Environment

The air quality in the vicinity of GAF is generally good, with the area in compliance with all air quality standards. Regionally, air quality is also generally good. All areas in Tennessee had met attainment of the old 1-hour ozone standard. However, for some areas, attainment of the 8-hour ozone standard of 80 parts per billion (ppb) has been more difficult to achieve. Davidson County and four of the six surrounding counties, including Sumner County, have recently been classified as "nonattainment deferred" regarding the 8-hour ozone standard until December 31, 2007 conditioned upon compliance with the Early Action Compact that Tennessee entered into with USEPA. The latest 2004 ozone data shows that these five counties, including Sumner, will likely meet the 8-hour ozone standard if the requirements of the Early Action Compact are met and will likely be considered in attainment. In addition, some areas of the region—including Sumner County—could experience difficulty in maintaining attainment with the recently adopted annual $PM_{2.5}$ standard (particulate matter with a diameter less than or equal to 2.5 micrometers).

3.4.2. Environmental Consequences

Alternative A – No Action

Under the No Action Alternative, current air quality in the vicinity of GAF is expected to continue.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

Construction Impacts

Under the Action Alternative, transient air pollutant emissions would occur during the construction phase of this project. Since the GAF site has already been developed as an industrial site, construction-related emissions would be relatively less than for a new site. Construction-related air quality impacts are primarily related to land clearing, site preparation, and the operation of internal combustion engines. An Air Construction Permit would be required from TDEC.

Vehicle Emissions and Excavation Dust

Land clearing, site preparation, and vehicular traffic over unpaved roads and construction sites result in the emission of fugitive dust particulate matter (PM) during site preparation and active construction periods. The largest size fraction (greater than 95 percent by weight) of fugitive dust emissions would be deposited within the construction site boundaries. The remaining fraction of PM would be subject to longer-range transport. If necessary, wet suppression would be used on open-construction areas and unpaved roads to reduce fugitive dust.

Combustion of gasoline and diesel fuel by internal combustion engines (vehicles, generators, construction equipment, etc.) would generate local emissions of PM, nitrogen oxides (NOx), carbon monoxide, volatile organic compounds (VOCs), and sulfur dioxide throughout the site preparation and construction period. The total amount of these emissions would be small and would result in minimal off-site impacts.

Air quality impacts from construction activities would be temporary and would be dependent upon both man-made factors (e.g., intensity of activity, control measures, etc.), and natural factors (e.g., wind speed, wind direction, soil moisture, etc.). However, even under unusually adverse conditions, these emissions would have, at most, a minor, transient impact on off-site air quality that would not exceed or violate any applicable ambient air quality standard. Overall, the air quality impact of construction-related activities for the project would not be significant.

Operational Impacts

Operation of the Action Alternative under consideration would not adversely impact local air quality. Air emissions from the new rail coal unloading and blending facility consist of total particulate and emissions of particulate matter with a diameter less than or equal to 10 micrometers (PM_{10}). Emissions from coal handling activities at GAF for the past 4 years have averaged 35 tons of total particulate per year and 11 tons of PM_{10} per year. Emissions from the new rail coal unloading and blending facility would be less than prevention of significant deterioration (PSD) threshold limits of 25 tons per year increase for total particulate and 15 tons per year increase for PM_{10}. Controls used to minimize air emissions from the new coal handling activities include a water spray for the railcar unloading system, enclosures and appropriate suppression for coal transfer points, and wet suppression on coal haul roads in the coal storage area. The use of these control measures would keep emissions from this project from having an adverse impact on air quality. A permit application demonstrating that PSD limits would not be exceeded would be submitted to TDEC in order to obtain a permit prior to commencement of construction. Emissions from the combustion of coal in the GAF boilers are in compliance with all Federal and State emission standards. The transition from burning eastern bituminous to western subbituminous and bituminous coals has resulted in an overall reduction in emissions of toxic air pollutants.

Air emissions from vehicles idling at the nine railroad crossings were calculated from the 2004 Average Annual Daily Traffic (AADT) counts, average delay for all vehicles (seconds/vehicle), the idle emission rate (grams/hour) for light duty gasoline powered vehicles, and unit train deliveries of one per day five times a week. The calculated emissions for the vehicle exhaust while idling were 1 ton per year of VOCs, 5.6 tons per year of carbon monoxide, and 0.2 tons per year of NOx. Compared to the total annual highway vehicle emissions for Sumner County, these emissions represent a 0.036 percent increase of hydrocarbons (VOCs), a 0.016 percent increase of carbon monoxide (CO), and a 0.005 percent increase of nitrogen oxides (NOx).

Predicted durations of traffic blockage across rail-highway intersections by the coal-bearing trains are within local ordinance requirements, and the impacts determined insignificant. However, as described in section 2.1.2 Alternative B - Rail Line Improvements, CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times. One method under consideration to increase train speeds (up to about 15mph) and further reduce traffic delay impacts is the reconstruction of a portion of the rail bed on the C & N track leading to the TVA rail spur, use of continuous ribbon rail along that section, banking of a curve and reconstruction of the current bridge crossing over Town

Creek. In the event that this additional mitigation were to be implemented, the resulting reduction in queued, idling traffic should proportionally reduce even further the minor, insignificant amounts of air quality impacts calculated for idling traffic.

The ambient standard most related to vehicle emissions is the carbon monoxide 1 hour ambient air quality standard of 40,000 micrograms per cubic meter. The highest one hour ambient concentration of carbon monoxide produced by idling vehicles due to railroad crossings determined by air quality modeling is 1,371 micrograms per cubic meter. This is well below the carbon monoxide 1 hour ambient air quality standard and the prevention of significant deterioration significance level. Based on the total annual highway vehicle emissions for Sumner County and the estimated maximum 1 hour emissions due to idling vehicles, the emissions from the idling vehicles stopped during railroad crossings should not have a significant adverse impact on air quality.

Air emissions occurring in Sumner County comparing coal shipments by barge to coal shipments by rail were estimated using recent emission standards for marine and locomotive engines. These estimates are shown below.

Table 3-13. Comparison of Air Emissions Occurring in Sumner County From Coal Shipments by Barge and Coal Shipments by Rail

Emissions	Annual Air Emissions in Sumner County From Barge Delivery of Coal (Tons per Year)	Annual Air Emissions in Sumner County From Rail Delivery of Coal (Tons per Year)
Particulate (PM)	5.9	2.6
Carbon Monoxide (CO)	73.6	19.5
Total Hydrocarbons Plus Nitrogen Oxides (THC + NOx)	110	75.5

The air emissions occurring in Sumner County from rail delivery of coal would be less than barge delivery of coal. For particulates (PM), rail delivery emissions would be 44 percent of barge delivery emissions. For carbon monoxide (CO), rail delivery emissions would be 26 percent of barge delivery emissions. For total hydrocarbons plus nitrogen oxides (THC + NOx), rail delivery emissions would be 69 percent of barge delivery emissions.

Since the transportation related emissions for coal delivery will decrease and the emissions increase from vehicles will be small, the overall increase in transportation related pollutants is well below the threshold requiring a Federal Transportation Conformity analysis under the Federal Transportation Conformity Rules.

3.5. Surface Water

3.5.1. Affected Environment

Only one tributary would be affected by the repairing and upgrading activities for the GAF Rail Coal Unloading and Blending Facility. The existing railway now crosses over an unnamed tributary feeding into an unnamed body of water directly west-northwest of River Mile 246 of the Cumberland River. Only minor siltation and sedimentation would occur at the unnamed tributary, even if Best Management Practices (BMPs) were not utilized,

because the existing vegetation over the area is sufficient to absorb the energy, so that siltation would not reach the stream.

As described in section 2.1.2 Alternative B - Rail Line Improvements, CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times. Although the traffic delay impacts have been determined insignificant, one method under consideration to increase train speeds (up to about 15mph) and further reduce traffic delay impacts is the reconstruction of a portion of the rail bed on the C & N track leading to the TVA rail spur, use of continuous ribbon rail along that section, banking of a curve and reconstruction of the current bridge crossing over Town Creek.

3.5.2. Environmental Consequences

Alternative A – No Action
Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are with the current minor, insignificant level of effects to surface waters, and no construction activities related to this decision would occur. Therefore, there would be no additional impacts on surface water from the No Action Alternative.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
The area to be disturbed by repairing and upgrading activities between the CSX switch to GAF loop north switch is approximately 520 acres. A Construction General Storm Water Permit would be required for this project from the state of Tennessee. With use of proper construction BMPs, no impacts to surface water would be expected from installation/replacement of the railway or related construction. Additional BMPs to prevent erosion and runoff to surface waters would be implemented as needed.

With proper BMPs in place, the replacement of crossties, new railroad construction and raising the track bed at the unloaded yard, and construction of new road crossings would have no significant impacts to the surface water. Discontinuing use of the existing barge-unloading operation would eliminate effects to surface waters that occur with barge unloading as a result of proximity of the barge-unloading operation to the surface water. In the event that the additional mitigation under discussion, as described in Section 2.1.2 – Rail Line Improvements were implemented, with use of Best Management Practices only minor siltation and sedimentation would occur at Town Creek, which would result in insignificant impacts to surface waters.

3.6. Terrestrial Ecology

3.6.1. Affected Environment

3.6.1.1. Plants

GAF is located within the Central Basin Physiographic Region as described by Fenneman (1938). Botanically, the project area lies within the Mississippian Plateau Section of the Western Mesophytic Forest, located between the Cumberland Plateau and loess bluffs of the Mississippi River, with climax communities, including oak, hickory, tulip tree, and beech, which occur in hilly areas. Lower hills and flats support hickory, winged elm, hackberry, and blue ash. Deciduous species within the cedar glades are predominantly hickory, oak, and sugar maple (Braun, 1950).

The area in and around GAF has been heavily impacted and altered as a result of the construction and operation of the existing facilities. In the areas associated with the proposed actions, field inspections in May 2005 reveal that some native vegetation remains. Habitats observed within the project area are all early successional communities due to past and present habitat alterations. The project area can be characterized as having grass/forbs habitats.

Grass/forbs habitats are lands that are predominately managed fields with woody shrubs, vines, and trees scattered throughout and occupy 100 percent of the area. Fields that are managed are comprised mostly of widows cross, pitcher's sandwort, broomsedge, meadow brome, corn salad, oxeye daisy, sericea lespedeza, and white clover. Scattered woody vines, shrubs, and trees found are Japanese honeysuckle, fragrant sumac, multiflora rose, and eastern red cedar.

The plant communities observed along the proposed route are common and representative of the region. No uncommon plant communities of state significance have been identified in the project area

3.6.1.2. Invasive Terrestrial Plant Species

Invasive exotic plant species encountered along the proposed route include sericea lespedeza, Japanese honeysuckle, and multiflora rose. All of these species have the potential to impact the native plant communities adversely because of their potential to spread rapidly and displace native vegetation. Approximately 100 percent of the proposed project is on land in which the native vegetation has been extensively altered as a result of previous land-use history (e.g., clear-cuts, grass-dominated areas maintained by mowing and spraying, and roadsides).

3.6.1.3. Animals

The project area consists primarily of grass/forbs-dominated habitats. Shrubs with scattered small trees and small sections of mixed cedar/hardwood forests exist along the edges of the railroad right-of-way. This habitat provides nesting areas for mourning doves, Carolina chickadees, prairie warblers, indigo buntings, northern cardinals, eastern towhees, song sparrows, orchard orioles, and other common bird species. Treatment ponds adjacent to the railroad right-of-way provide habitat for red-winged blackbirds, beaver, muskrat, and a variety of shorebirds. Rocky outcrops in the shrubby and forested areas provide habitat for reptiles, including fence lizards, five-lined skinks, black rat snakes, garter snakes, and others.

3.6.2. Environmental Consequences

3.6.2.1. Plants

No Action Alternative
Adoption of the No Action Alternative would not result in any project-related impacts to the terrestrial ecology of the region.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
Vegetation in the project area includes grass/forbs habitats. No rare or uncommon plant communities were identified along the rail spur unloading and blending facility during field

surveys. The proposed project would pass through vegetation types that are common and representative of the region. Any project-related impacts to the terrestrial plant ecology of the region as a result of the proposed Action Alternative are expected to be insignificant.

3.6.2.2. Invasive Terrestrial Plant Species

No Action Alternative
Adoption of the No Action Alternative would not result in any project-related impacts due to the introduction or spread of invasive terrestrial plant species.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
Due to the previous level of disturbance to the native plant communities along the proposed project area due to clear-cuts, grass-dominated areas maintained by mowing and spraying, and roadsides, no significant impacts to such communities from the introduction and spread of invasive terrestrial plant species are expected as a result of the proposed Action Alternative.

3.6.2.3. Animals

Alternative A – No Action Alternative
Under the No Action Alternative, the proposed rail delivery system would not be upgraded, and no new land would be disturbed. Therefore, terrestrial animals and their habitats would not be affected.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
Habitat along the existing railroad has been largely maintained in an early successional state. The proposed project would not appreciably change this marginal habitat. Treatment ponds would not be impacted by the proposed project. Most wildlife in the project site is regionally abundant, and no rare habitat exists at the site. Therefore, the proposed project would not result in adverse impacts to local species of wildlife.

3.7. Aquatic Life

3.7.1. Affected Environment

The proposed project is located on the property of GAF in Sumner County, Tennessee. A field survey of the project area conducted on May 12, 2005, found no streams, wet-weather conveyances, or ponds in the project area that would be disturbed. Although not required for ensuring insignificant traffic delay impacts, as described in section 2.1.2, TVA and CSX are in discussion with the City of Gallatin on potentially including rail modifications to the C& N portion of the track leading to GAF. Reconstruction of one bridge crossing over Town Creek would be involved in the event that such additional mitigation is agreed upon.

3.7.2. Environmental Consequences

Alternative A – No Action
Under the No Action Alternative, there would be no change in the current delivery system for coal to GAF. Operations would continue as they are. Therefore, aquatic life would not be affected.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

No direct effects to aquatic resources are associated with this project, due to the absence of aquatic habitats that would be disturbed in the project area. Indirect effects to streams outside the project area from storm water runoff are possible, but would be insignificant with the use of BMPs as outlined in Muncy, 1999. Similarly, in the event that the additional mitigation described in section 2.1.2 were voluntarily implemented, there would be insignificant impacts to aquatic life in Town Creek. Bridge construction work would be conducted using Best Management Practices, and would be subject to any additional conditions identified in the applicable Aquatic Resources Alternation Permit (ARAP).

3.8. Protected Species

3.8.1. Affected Environment

3.8.1.1. Plants

A review of the TVA Natural Heritage database indicated there is one federally listed and nine state-listed plant species known from Sumner County, Tennessee (Table 3-14). Two species, springcreek bladderpod and water stitchwort, are known to occur within 5 miles of the project area and are in an adjacent county.

TVA biologists conducted a field survey of the project area in May 2005. No federally listed plants or state-listed species were identified during the survey.

Table 3-14. State-Listed Plant Species Known From Sumner County, Tennessee

Common Name	Scientific Name	Federal Status	State Status†
American ginseng	*Panax quinquefolius*		S-CE
Blue cohosh	*Caulophyllum giganteum*		THR
Blue-eyed Mary	*Collinsia verna*		END
Butternut	*Juglans cinerea*		THR
Goldenseal	*Hydrastis canadensis*		S-CE
Leafy prairie-clover	*Dalea foliosa*	LE	END
Michigan lily	*Lilium michiganese*		THR
Ozark least trillium	*Panax quinquefolius*		END
Sedge	*Carex hitchcockiana*		THR
Small white leek	*Allium tricoccum*		S-CE

† END – Endangered, LE – Listed Endangered, S-CE – Special Concern Commercially Exploited, THR – Threatened

3.8.1.2. Animals

A review of the TVA Natural Heritage database indicated that 12 protected species have been reported from Sumner and Wilson Counties (Table 3-15). These species are protected by the state of Tennessee and one is federally listed as protected.

Table 3-15. Protected Species of Terrestrial Animals Reported From Sumner and Wilson Counties, Tennessee

Common Name	Scientific Name	Federal Status	State Status
Amphibian			
Eastern hellbender	*Cryptobranchus alleghaniensis alleghaniensis*	-	NMGT
Tennessee cave salamander	*Gyrinophilus palleucus*	-	THR
Bird			
Great egret	*Casmerodius albus*	-	NMGT
Lark sparrow	*Chondestes grammacus*	-	THR
Appalachian Bewick's wren	*Thryomanes bewickii bewickii*	-	END
Barn owl	*Tyto alba*	-	NMGT
Mammals			
Gray bat	*Myotis grisescens*	LE	END
Allegheny woodrat	*Neotoma magister*	-	NMGT
Southeastern shrew	*Sorex longirostris*	-	NMGT
Meadow Jumping mouse	*Zapus hudsonius*	-	NMGT
Reptiles			
Alligator snapping turtle	*Macrochelys temminckii*	-	NMGT
Northern pine snake	*Pituophis melanoleucus melanoleucus*	-	THR

END – Endangered, LE – Listed Endangered, NMGT – Deemed in Need of Management, THR - Threatened

Eastern hellbenders are found in large and mid-size, fast-flowing, rocky rivers at elevations below 762 meters (Petranka, 1998). They have been collected in the Cumberland River and its tributaries within Sumner County and surrounding counties.

Tennessee cave salamanders occur in caves including those formed in sinkholes. They have been found in only one cave in the two counties encompassing the proposed project site.

Great Egrets typically nest in colonies with other heron species in seasonally or permanently flooded forested wetlands. Great egrets are known to nest on an island in the Cumberland River with black-crowned night herons and great blue herons.

Lark Sparrows occur in areas with extensive areas of bare ground, patchy herbaceous plant cover, and scattered saplings in a xeric environment. Cedar glades are often used as breeding sites. Numerous records for this species occur in both Sumner and Wilson Counties.

Appalachian Bewick's wrens occur in brushy areas, thickets, and scrub in open areas. A single population is known from Sumner County. This species has most likely been extirpated from the region.

Barn owls nest in cavities including caves, hollow trees, barns, and silos. They forage over open landscape such as abandoned farmland, but also in urban habitat such as vacant lots, cemeteries, and parks (Nicholson, 1997). Barn owls are known to nest approximately 7 miles from GAF.

Gray bats roost in caves during all seasons and typically forage over open water habitats. A population of gray bats occurs in a cave approximately 3 miles from the proposed project site.

Allegheny woodrats can be found in a variety of places including stream or gully banks, wooded bottomlands, swamps, caves, and cliffs (Linzey, 1998). Numerous records for this species occur in the two-county area encompassing the proposed study site. These records come from caves and cedar forests with rock outcrops.

Southeastern shrews are found in mostly moist situations in woods or fields (Linzey, 1998) including disturbed habitat such as abandoned fields with dense ground cover of honeysuckle, grasses, sedges, and herbs (Linzey and Brecht, 2002). Southeastern shrews were collected from one locality in Sumner County. They are likely found throughout the county.

Meadow jumping mice inhabit wet meadows, bogs, grasslands, abandoned grassy fields, and forest glades. They have been found in Sumner County.

Alligator snapping turtles are typically found in the deeper water of large rivers and their major tributaries but also can be found in lakes, ponds, and swamps (Ernst et al., 1994). They occur in the Cumberland River and its larger tributaries.

Northern pine snakes inhabit well-drained sandy or loamy soils with dense vegetation. They have been found in pine barrens, mixed scrub pine and oak woods, dry rocky mountain ridges, sand hills, and old fields (Ernst and Ernst, 2003).

3.8.1.3. Aquatic Species

Review of the TVA Natural Heritage database indicated that seven state-listed fish species are reported to occur in Sumner County, Tennessee (Table 3-16). None of these species are federally listed, and none are known to occur in tributary streams in the vicinity of this project.

The Blackfin Sucker is more tolerant of impoundments, and this species has been collected from the GAF intake channel during impingement studies in 1982. None of the other listed species known from Sumner County are tolerant of impoundments. Impoundment of the Cumberland River (Old Hickory Reservoir) has altered habitat conditions in the river, and little or no suitable habitat for these species is present in this reach of the Cumberland River.

Table 3-16. Sensitive Aquatic Animal Species Found in Sumner County, Tennessee

Scientific Name	Common Name	State Status
Etheostoma barbouri	Teardrop darter	NMGT
Etheostoma barrenense	Splendid darter	NMGT
Etheostoma bellum	Orangefin darter	NMGT
Notropis rupestris	Bedrock shiner	NMGT
Percina phoxocephala	Slenderhead darter	NMGT
Percina stictogaster	Frecklebelly darter	NMGT
Thoburnia atripinnis	Blackfin sucker	NMGT

NMGT = Deemed in Need of Management

3.8.2. Environmental Consequences

3.8.2.1. Plants

Action Alternative
No project-related impacts to rare plant species would result from adoption of the No Action Alternative.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
No federally listed or state-listed plant species were encountered in or adjacent to the proposed project area. Therefore, no impacts to federally listed or state-listed plant species would be anticipated as a result of the proposed action.

3.8.2.2. Animals

Alternative A – No Action
Under the No Action Alternative, the proposed rail delivery system would not be upgraded and no new land would be disturbed. Therefore, no listed terrestrial animals would be affected.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
According to the TVA Natural Heritage database, one federally listed and 12 state-listed species have been reported from Sumner and Wilson Counties in Tennessee. Suitable habitat for eastern hellbenders, Tennessee cave salamanders, great egrets, and alligator snapping turtles does not exist within the project site. No impacts are expected to any of these listed species.

The cedar/hardwood forests containing abundant rock outcroppings may have once been ideal habitat for lark sparrows. Because the forest contains a dense understory, it is highly unlikely that lark sparrows are currently present. No impacts are expected to this species.

Appalachian Bewick's wrens were not located during field investigations. This species is most likely extirpated from Sumner and Wilson Counties. If it does exist in the project area, the proposed project is not expected to eliminate habitat for this species; therefore, no impacts are expected.

No roosting habitat for gray bats exists on the project site. However, the species likely forages over the Cumberland River. The proposed project would not impact foraging sites for this species; therefore, no impacts are expected.

Marginal habitat for barn owls, Alleghany woodrats, southeastern shrews, meadow jumping mice, and northern pine snakes exists within the proposed project site. Foraging habitat for this species would not be greatly modified if the Action Alternative were selected; therefore, no impacts are expected.

3.8.2.3. Aquatic Species

Alternative A – No Action
Under the No Action Alternative, the existing rail delivery system would not be utilized and no impacts to protected aquatic animal resources would occur.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

Construction Impacts

Under Alternative B, potential construction impacts to the Cumberland River would include temporary erosion and siltation resulting from repair and upgrade activities on the existing railway, and construction of a new unloading and coal-blending facility inside the rail loop at GAF. All activities would take place within previously disturbed areas. Any impacts would be minimized by implementation of BMPs to control erosion during construction and stabilize disturbed areas after construction is complete. These measures would substantially reduce the potential impacts in the Cumberland River or its tributaries in the area. Only minor and temporary effects on fish and other aquatic life would occur from construction activities. No impacts to state-listed or federally listed aquatic species would occur as a result of the proposed activity.

Operational Impacts

Because all storm water from the plant unloading and blending facilities would be directed to the existing ash pond, no direct impacts to aquatic resources would occur. Herbicides would be periodically applied to the rail line and rail right-of-way for vegetation control. Herbicides would not be applied directly to surface waters, and only USEPA-registered herbicides that have not been classified for restricted use would be employed at stream crossings. This right-of-way is currently maintained by herbicide application.

3.8.2.4. Exotic or Invasive Aquatic Animal Species

Due to the nature of this activity, there is no potential for effects from exotic or invasive aquatic animals under either alternative.

3.9. Wetlands

3.9.1. Affected Environment

A wetland survey was performed according to U.S. Army Corps of Engineers' (USACE) standards (Environmental Laboratory, 1987), which require documentation of hydrophytic vegetation (U.S. Fish and Wildlife Service [USFWS], 1996), hydric soil, and wetland hydrology for a wetland determination. Broader definitions of wetlands, such as the definition provided in Executive Order 11990 (Protection of Wetlands), the Tennessee state regulatory definitions (Tennessee Rule: 1200-04-07 and TCA Section 69-3-103(33)), the USFWS definition (Cowardin et al., 1979), and the TVA Environmental Review Procedures definition (TVA, 1983) were also considered in this review.

3.9.2. Environmental Consequences

Alternative A – No Action

The No Action Alternative would not impact any wetlands because there would be no new disturbances.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities

A combined office and field level review was conducted for the GAF Rail Spur Coal Unloading and Blending Facility EA. The office review utilized National Wetland Inventory

data, maps and video, the U.S. Department of Agriculture Soil Survey for Sumner County, Tennessee; and the state hydric soils list for Tennessee.

A Wetland Biologist from TVA Natural Heritage conducted a ground survey of a segment of the Gallatin rail spur at TVA's GAF on May 11, 2005. The Gallatin rail spur traverses a portion of one of the GAF ash ponds. Although the GAF ash ponds have been colonized by wetland vegetation, they are not regulated as wetlands under Section 404 of the Clean Water Act. Current USACE regulatory policy is to exclude regulation of treatment ponds such as the ash ponds as "waters of the U.S.":

> Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States (33 CFR 328.2).

Even so, planned improvements to the Gallatin rail spur system at GAF and the construction of the unloader/blending facility would not adversely affect the wetlands at the site as a result of the BMPs implemented to minimize runoff.

3.10. Cultural Resources

3.10.1. Affected Environment

The northern Highland Rim and Nashville Basin of Middle Tennessee has been an area of human occupation for the last 12,000 years. Human occupation of the area is generally described in five broad cultural periods: Paleo-Indian (11000-8000 B.C.), Archaic (8000-1600 B.C.), Woodland (1600 B.C.-1000 A.D.), Mississippian (1000-1700 A.D.), and Historic (1700 A.D.-to present). Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on floodplains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands. European interactions with Native Americans associated with the fur trading industry in Sumner County began in the seventeenth and eighteenth centuries. In 1799, the city of Cairo was established by two merchants as a trading town. Cairo was an important river port during the Civil War. The first part of the nineteenth century was a time of growth and development. Better transportation through improved roads, a stagecoach line, river trade, and ferry services brought the establishment of about 30 communities. Sumner County supplied over 3,000 soldiers for the Civil War, and the county was primarily under the control of Union troops. The early twentieth century was focused on agriculture production. When TVA built Old Hickory Dam and a steam-electric generating plant at Gallatin, new jobs were brought to the county. The largest city in the county is Hendersonville, which became a tourist center for country music fans.

The Area of Potential Effect for the project was determined as all areas in which land-disturbing activities would take place, which include the road construction beginning at the toe of the railroad grade, and extending between 4.5 and 6m (15 and 20 feet) to the south and the necessary cutting and grading of the existing terrain. A Phase I survey was conducted on May 6, 2005, and no archaeological resources were identified.

3.10.2. Environmental Consequences

Alternative A – No Action
Under the No Action Alternative, TVA would continue to receive coal by barge. The rail spur and associated unloading and blending facility would not be constructed. Therefore, there would be no impacts to cultural resources under this alternative.

Alternative B – Reactivate the Rail Coal Delivery System and Install Coal-Blending Capabilities
The Phase I survey conducted on May 6, 2005, of the area at the toe of the railroad grade revealed that soils therein have been heavily disturbed in the past by fill and grading activities associated with the existing soil line and an ash disposal pond. Little topsoil was present in shovel tests, and no archaeologist materials were identified as a result of the survey. The Tennessee Historic Preservation Officer concurred with TVA's finding that the proposed understanding would not affect historic properties.

3.11. Summary of TVA Commitments and Proposed Mitigation Measures

The proposed action contains routine and compliance measures including the use of BMPs to minimize environmental impacts. In addition, to minimize and mitigate adverse effects, the following special mitigation measures will also be followed.

3.11.1. Routine and Compliance Commitments

- A construction permit application to demonstrate that prevention of significant deterioration (PSD) limits would not be exceeded would be submitted and permit would be obtained from TDEC prior to construction.

- If necessary, wet suppression would be used on open construction areas, and unpaved roads would be sprinkled with water to reduce fugitive dust.

- Controls used to minimize air emissions from the new coal-handling activities would include a water spray for the railcar unloading system, enclosures and appropriate suppression for coal transfer points, and wet suppression on coal haul roads in the coal storage area.

- All replaced crossties would be recycled as appropriate or disposed of in an approved landfill.

- The entire lead track would be sprayed for vegetation control with a registered herbicide that has not been classified for restricted use.

- The disposal of brush would be by chipper or by hauling the brush off site. Brush would not be disposed of in any manner that would impair natural drainage.

- Any impacts to water resources would be minimized by implementation of BMPs to control erosion during construction and stabilize disturbed areas after construction is complete.

- Herbicides would not be applied directly to surface waters, and only USEPA-registered herbicides that have not been classified for restricted use would be employed at stream crossings.

3.11.2. Special Commitments

- The signals at four existing road crossings would be inspected and repaired.

- The track would be raised as depicted in Figure 2-4 using rock fill obtained from an existing quarry or soil from previously existing, permitted sites.

- Railroad construction would conform to the 1985 American Railway Engineering Association's *Manual for Railway Engineering* and CSX (2003) construction specification on track spike pattern requirement for curved track construction.

- CSX would add remote-switching capabilities, provide an engine configuration with distributed power, and use other appropriate means such that the trains clear all crossings in the Gallatin city limits in 10 minutes or less.

- CSX and TVA would work with city officials to enhance the communications process and implement technologies to help facilitate the activities undertaken by emergency response organizations.

- For the eight residences in the vicinity of Steam Plant Road that have been determined to be impacted or severely impacted by rail noise, TVA would mitigate those impacts by offering to bear the cost of installing soundproofing systems in these homes.

- To confirm the finding of this assessment that no significant noise impacts would result from the operation of the rail unloader, TVA would undertake a one-time effort to measure noise levels from the rail unloader once it is operational. In the event that unanticipated levels of noise exceeding applicable guidelines for impacts to affected residences were to be measured, TVA would mitigate those impacts to the no impact level of the Federal Railroad Administration noise impact criteria by installing noise barriers, soundproofing systems, or incorporating other measures that achieve equivalent results.

Although predicted durations of traffic blockage across rail-highway intersections by the coal-bearing trains are within local ordinance requirements and the impacts determined insignificant (see section 3.1.2.2 Traffic Delays), CSX and TVA are continuing discussions with the City of Gallatin on ways to further reduce traffic delay times. If a method is technically and financially viable, the appropriate environmental review would be completed..

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CHAPTER 4

4. LIST OF PREPARERS

4.1. NEPA Project Management

Dave W. Robinson
Position: NEPA Specialist and Project Manager
Involvement: NEPA Compliance, Document Preparation

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Involvement: Natural Areas

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Involvement: Surface Water

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Position: Atmospheric Analyst
Involvement: Noise

CHAPTER 5

5. LIST OF AGENCIES AND PERSONS CONSULTED

Federal Agencies

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Cookeville, Tennessee

Mr. Bobby Blackmon
Federal Highway Administration
Nashville, Tennessee

Mr. Ron Gatlin
U.S. Army Corps of Engineers
Nashville, Tennessee

State Agencies

Mr. Doug Delaney
Tennessee Department of Transportation
Nashville, Tennessee

Mr. David Owenby
Tennessee Department of Environment and Conservation
Nashville, Tennessee

Individuals

Ms. Janis Chestnut
City Engineers Office
Gallatin, Tennessee

Mr. Ron Coleman
City Engineers Office
Gallatin, Tennessee

Mr. Keith Douglas
Sumner County EMS
Gallatin, Tennessee

Mr. Bill Draper, General Manager
Gallatin Department of Electricity
Gallatin, Tennessee

Mr. Shawn Frary
Sumner County EMS
Gallatin, Tennessee

Mr. Steve Fryer
Plant Manager of Hoeganaes
Gallatin, Tennessee

Mr. Scotty Parker
Sumner County Highway Superintendent
Gallatin, Tennessee

The Honorable Hank Thompson
Sumner County Mayor
Gallatin, Tennessee

Mr. Dennis Wallace
Sumner County EMS
Gallatin, Tennessee

The Honorable Don Wright
Mayor of Gallatin
Gallatin, Tennessee

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CHAPTER 6

6. SUPPORTING INFORMATION

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6.2. Glossary of Terms

^{o}F Degree Fahrenheit
AADT Average Annual Daily Traffic
A.D. Latin term, anno Domini, meaning “in the year of our Lord”
a.m. Latin term, ante meridiem, meaning “before noon”
B.C. Before Christ
BMP Best Management Practice
CFR Code of Federal Regulations
dB Decibel
dBA Decibel, A-weighted
DEA Draft Environmental Assessment
e.g. Latin term, exempli gratia, meaning “for example”
EMS Emergency Medical Service
et al. Latin term, et alii (masculine), et aliae (feminine), or et alia (neutral) meaning “and others”
FEA Final Environmental Assessment
FRA Federal Railroad Administration
GAF Gallatin Fossil Plant
HUD U.S. Department of Housing and Urban Development
Ldn Day-Night Average Sound Level
Leq Equivalent Sound Level
LOS Level of Service
MaxP Maximum peak sound level during a measurement for noise
mph Miles per Hour
NEPA National Environmental Policy Act
NOx Nitrogen Oxides
p.m. Latin term, post meridiem, meaning “after noon”
PM Particulate Matter
$PM_{2.5}$ Particulate Matter With a Diameter Less Than or Equal to 2.5 Micrometers
PM_{10} Particulate Matter With a Diameter Less Than or Equal to 10 Micrometers
PSD Prevention of Significant Deterioration
SOP Standard Operating Procedure
SR State Route
TCA Tennessee Code Annotated
TDEC Tennessee Department of Environment and Conservation
TDOT Tennessee Department of Transportation
TPH Tons per Hour
TVA Tennessee Valley Authority
US 31E U.S. Highway 31 East
U.S. United States
USACE U.S. Army Corps of Engineers
USEPA U.S. Environmental Protection Agency
USFWS U.S. Fish and Wildlife Service
VOC Volatile Organic Carbon

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APPENDIX A – SUMMARY OF COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT AND TVA RESPONSES TO COMMENTS

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Comments on the Draft Environmental Assessment (DEA) were received via e-mail, and letters or comment cards mailed to TVA, as well as those submitted at the public meeting as written comments or oral comments made to the registered reporter. A total of 24 individuals or representatives of government agencies and municipalities provided comment. A list of those persons providing comments appears at the end of this section.

The comments on the DEA identifying issues raised were categorized and summarized under the following headings. Each issue heading was characterized and the major points made in comments were described. Following the summary of each area of comments identifying an issue or environmental concern, TVA has identified how the agency has considered and responded to the comments made on the issue. The full set of comments is available as part of the public administrative record for the environmental document.

Comments were made in the following areas:

Issue 1. Traffic Delays and Congestion (current and that created by the proposal to reinstitute rail delivery of coal to Gallatin Fossil Plant)

Nineteen persons commented on the likelihood of increased traffic delays to result from the proposal to reinstitute rail delivery of coal to Gallatin Fossil Plant and effects on the public. (Note: Specific comments directed to issues regarding emergency services are handled under that issue heading, i.e., Issue 2, below).

Specific issues identified in comments as of concern were:

- Backups (queuing) created by the currently overcrowded, congested traffic conditions in downtown Gallatin.
- Worsening of level of service (LOS) and disruption of traffic flow while and after coal-laden trains are passing through town.
- Disruption of commercial and retail business-related traffic (cited particularly along State Routes (SR) 25 and 109 and U.S. Highway [US] 31) and inconveniencing of citizens (cited taking children to school) due to time delays at individual crossings.
- Simultaneous blocking of multiple crossing by passing trains as related to length and speed of train.
- A disparately greater disruption of traffic flow in the central portion of Gallatin as compared to other areas.
- The potential for randomness of arrival times for trains causing greater, rather than less, impact on traffic flow because of inability to plan for the disruption to work or to family and school schedules.
- Passage of trains both entering and exiting the power plant through the downtown and the potential to increase impact to traffic flow synergistically (i.e., not allowing queued traffic to clear before the train again passes) because of staging of trains in order to enter the rail spur to the plant.
- Concern with adding the impact of coal-laden trains to that of those trains already passing through the downtown.

Regarding the scope of analyses, one commenter noted a lack of consideration of impacts to the metropolitan Nashville area, i.e., Hendersonville (where two at-grade crossings exist);

and that the traffic analyses did not include the future impact of coal delivery in the context of anticipated future utilization of roads.

Three commenters stated that assumptions and conclusions of the traffic analyses were invalid or biased; the DEA understates the level of current traffic congestion; or the use of terms such as “incremental” and “random” implies that an increase in traffic will pose little problems.

Comments from the city of Gallatin noted that the Gallatin Municipal Code (operations of trains at crossing regulated) states that, “It shall be unlawful for a railroad train to block or obstruct any street or alley or public way for a period of more than ten (10) consecutive minutes.”

Suggested methods for avoiding or minimizing traffic disruptions or providing mitigation were: build a bridge; build overpasses for US 31E and SR 109; provide new rail access to the plant or reroute the rail lines to the steam plant; night delivery by trains only between 6 p.m. and 6 a.m.; and TVA taking over the maintenance of the spur crossing at Airport Road and Steam Plant Road. It was also suggested by two persons that TVA/CSX test run a 7,600-foot train through town to verify the speed and crossing times.

Response:
TVA acknowledges in the Environmental Assessment (EA) the likelihood of socioeconomic impacts on the flow of traffic in the downtown Gallatin area from the proposed reinstitution of rail delivery of coal at GAF. Using standard assumptions, methodologies, measures, and calculations, TVA has conducted a thorough analysis of the impacts to traffic flow in the downtown Gallatin area. Additionally, to confirm the validity of the traffic analyses, TVA had a Nashville, Tennessee, engineering firm, experienced in traffic analyses, independently review the assumptions, measures, calculations, and reasonableness of TVA conclusions. The firm indicated a general concurrence with TVA’s methodology and findings. Minor methodological improvements suggested in that report were incorporated into the final TVA assessment of traffic impacts.

The analyses of traffic impacts in Sections 3.1.1.2 and 3.1.2.2 of the EA include and consider basic information and measures characterizing the current and proposed project-related delay times or disruptions of traffic flow likely to be experienced at all of the rail crossings identified as of concern in public comments, as well as impacts regarding queuing of cars, loss of LOS of highways, the simultaneous, temporary blocking of up to five rail crossings, and the projected impacts of random times for rail deliveries on the public and commercial businesses.

As part of the consideration of potential impacts on traffic, the traffic analyst has used the latest Tennessee Department of Transportation (TDOT) traffic information available (2004). A 7 percent average annual increase in traffic is assumed by TDOT for traffic increases over time. This provides a rough estimate of the predicted future annual average daily traffic for the affected streets, assuming the city’s road transportation network remains static. However, the prediction of future impacts solely on this basis would be speculative in that it is not possible to accurately predict at this time the actions and timing of projects the state, city, or county might undertake to address even current road conditions and LOS. Assumptions regarding the extent of road projects, coupled with a flat annual percentage increase, can, basically, drive the results of a futuristic analysis to any conclusion, making such results unreliable and highly speculative.

TVA has noted and taken into account in its analysis of traffic impact, the 10-minute locally accepted threshold for blockage of rail crossings incorporated in the Gallatin Municipal Code.

Regarding the scope of review, the primary area of focus for impact analysis from TVA's proposed reinstitution of rail delivery of coal is the city of Gallatin because the main CSX line is one utilized for general interstate commerce of fungible commodities (including coal), the special localized staging of trains around Gallatin in order to access the rail spur to GAF, and the low speeds required in that area. In response to comments received, results of an additional analysis were included in Section 3.1.2.2 regarding the potential for trains staging to enter TVA's rail spur being so close together in time that queues of cars backed up from the initial passing of the train would not have time to clear before the train passed the affected intersections a second time. Information on the length and speed of trains was also added. Regarding other rail traffic, TVA sought information on the amount of such additional rail usage by other local industries, which have rail deliveries or use rail for shipping of products. TVA has added and discussed the information in Section 3.1.1.2 of the EA. Rail traffic created by the other Gallatin industries is comparatively minor.

Suggested mitigations were considered, but as discussed in the EA, were not identified as required for mitigation of the level of additional impacts projected. Rail overpasses would not solve the current baseline traffic problems being created in the downtown area of Gallatin. CSX has indicated to TVA that in order to run the rail system efficiently, it isn't possible to hold trains for any extended period of time (i.e., "stage" timing of trains for arrival at particular times). However, in continued discussion with the City of Gallatin, CSX has offered one hour during the day that it would allow the trains to be placed on a local siding. In order to do this, the C& N spur would be used to hold the train, which would require Gray Street to be blocked. No agreement has been reached among the parties as to whether or not this additional mitigation would be implemented to further reduce traffic delays. Also because of the "turn around" times for trains, the feasibility of restricting trains traversing the city both entering and leaving GAF to "night-time only "or other particular times would not be operationally workable. The proposed demonstration of impacts by going through an operational cycle of delivery by rail with an actual train is infeasible since the present condition of a portion of the TVA spur would not allow this test to be safely conducted without the refurbishment work already having been done. TVA's traffic analyses provided a reasonable demonstration on the bases of which the impacts were assessed.

Issue 2. Disruption of Governmental Emergency Services, Including Police, Fire and Ambulance Services

Eleven persons expressed concerns regarding blocked rail crossings, multiple blocked crossings, and added traffic congestion causing time delays and a degradation in the ability of police, fire, or emergency vehicles to respond; the temporary "cutting off" of portions of the town from such governmental services; and perceived disproportionate effect on these services in either the area of the town center, heavier populated areas of town, industrial areas, or the west end and north side of the city. The Gallatin Chief of Police noted a need for a service delivery study to minimize any disruption of the department's service. The Gallatin City Fire Chief also expressed concern regarding the potential use of heating devices to thaw rail cars at GAF leading to a large fire.

Response:

Emergency personnel or average motorists experiencing delays by coal rail delivery to GAF could avoid or minimize these delays by taking alternate routes. With the current configuration of streets and signaling, some greater degree of difficulty navigating to and from the center of town could be experienced. However, two primary alternate routes are SR 109 Bypass and Coles Ferry Road. SR 109 Bypass is a multilane highway that goes around the city of Gallatin to the west. It currently has an LOS of A for the section from US 31E north to SR 109 and an LOS of B south of US 31E to SR 109. In 1996, both sections had LOS values of A. SR 109 Bypass could easily absorb more vehicles per day and still maintain its current LOS. Coles Ferry Road is a Class II, two-lane road that connects SR 109 with Airport Road, Newton Lane, and ultimately Odoms Bend Road. Coles Ferry Road has a current LOS of C, as it did in 1996. According to LOS calculations, Coles Ferry Road could handle approximately 3,000 more vehicles per day. With this amount of additional vehicular use, Coles Ferry Road would still maintain the current LOS. Additionally, there are three viaducts, or bridges, over the rail lines that can be used if an at-grade crossing is blocked. One is on South Westland Street, approximately 2,000 feet west of the SR 109 rail intersection. This route is easily accessible from SR 109 and the Sumner County Regional Hospital. Another is the Old SR 109 or North Water Avenue Bridge over the rail lines. This route is located approximately 1 mile north of the West Gray Street rail intersection. The third is on the SR 109 Bypass, just north of US 31E. Refer to Figure 3-1 for routes that could be used by emergency services and motorists who are familiar with the area if a primary route were blocked by a train delivering coal to GAF.

Current city code prescribes a locally accepted threshold for blocked times, such that no crossing is to be blocked by trains for more than 10 consecutive minutes. The traffic analysis confirms that the blocked times at the crossings would be at or below the 10-minute threshold. Conversations with local emergency medical service (EMS) and fire department personnel have shown that there are no standard operating procedures for their personnel to follow with regard to a blocked crossing while they are en route to an emergency situation. The fire and police departments have, however, conducted training simulations in which one or more of the nine at-grade rail crossings would be “blocked,” and the emergency services traffic would be detoured to another route. These conversations have also revealed that each fire truck has a department officer onboard who is highly familiar with the area. This officer has the ability to make a judgment call regarding an alternate route if an at-grade crossing is blocked.

CSX’s Chief of Police will accompany TVA officials to meet with all appropriate emergency response agencies in Gallatin to understand better both their concerns and current capabilities. Based upon the information gathered at those meetings, CSX and TVA will work to enhance communication processes or implement technology that will help address concerns of the responding agencies. With this information, it should be possible for Gallatin officials to formulate procedures that minimize the effects of passing trains on response times when at-grade crossings are blocked

TVA would assist the city of Gallatin officials in establishing emergency operating procedures that could be used when crossings are being blocked due to coal deliveries by rail to GAF. Additionally, changes in technology and changes to the operating plan from the last time TVA had train service allow trains to move through town without stopping. With these technological improvements and improved operating plans, trains should move over each crossing in 5 to 10 minutes. CSX has each public crossing marked with a sign that gives the TDOT crossing number and the 1-800 toll free number into CSX's Police Command Center, which is staffed 24-hours a day. Anyone with a safety emergency can

call this number, and personnel handling the call have the capability to communicate with the train dispatcher. CSX and TVA will ensure that all emergency response agencies in Gallatin have the 800 number on file and have the capability to call in advance to check the crossing status if there is an emergency.

Although the previous rail unloader system at GAF did include a torch-type car-thawing system, the new design does not. The new design will not utilize a heating system, and instead will include a side-mounted car shaker to be utilized to free up stuck coal. During winter weather conditions, an approved additive is applied to the coal at the point of loading to reduce any potential freezing of coal.

Issue 3. Increased Air Emissions Leading to Decline in Air Quality

Nine persons commented with concerns related to the current air quality issues in Summer County and Middle Tennessee, including:

- The general effect of the proposed action on current air quality and specifically the additional air emissions resulting from idling vehicles at railway crossings if the proposed action is taken.
- Potential for worsening of pollution haze.
- The ability to recruit new industry to the area with consequent effects on income and employment.
- Coal dust from the rail cars causing “more bad air” from train emissions, resulting in increased health hardships for children and seniors afflicted with respiratory diseases, with consequently greater cost to the health care system.

Citing a 32 percent increase in emissions under the proposed action, one commenter stated that the DEA should provide more detail regarding the city’s current emission status and that air quality effects of the proposal were understated. The commenter also cited emissions reported on Toxic Release Inventory (TRI) data for lead, mercury, hydrochloric acid, hydrogen fluoride copper, and chromium compounds from GAF as related to effects from the additional releases from traffic and increased rail service.

One commenter proposed that encouraging neighboring counties and their residents to move forward with annual air quality inspections for motor vehicles would more than offset the additional air emissions created by idling vehicles at rail crossings. Another noted that with modern diesel locomotives meeting air quality standards, they would produce less air pollution than the diesel trucks traveling through Gallatin every day.

Response:

As discussed in the Air Quality section (3.4.2) of the EA, air emissions from vehicles idling at the nine railroad crossing were calculated. Based upon the estimated emissions from the idling vehicles and the total annual highway vehicle emissions for Sumner County, the emissions from vehicles stopped during railroad crossings should not have significant adverse impacts on air quality and, therefore, no significant effects on public health or the ability of the community to recruit business into the area. As discussed in the Air Quality section of the EA, with the coal handling measures identified, operational aspects of handling of rail deliveries of coal should result in no more than insignificant changes to the

total particulate and PM_{10} particulate matter released and be well under threshold limits for prevention of significant deterioration.

Air emissions occurring in Sumner County comparing coal shipments by barge to coal shipments by rail were estimated using recent emission standards for marine and locomotive engines. Both are minor contributors to total emissions in the county. The air emissions in Sumner County from rail delivery of coal would be less than for barge delivery of coal. For example, particulates (PM) rail delivery emissions would be 44 percent of those emissions for barge delivery. For carbon monoxide, rail delivery emissions would be 26 percent of barge delivery emissions. For total hydrocarbons plus nitrogen oxides (THC + NOx), rail delivery emissions would be 69 percent that of barge delivery emissions.

A commenter, citing a 32 percent increase in air emissions and questioning the basis for the finding of insignificance, appears to have misread the statement in the Air Quality section of the DEA stating that, "Compared to the total annual highway vehicle emissions for Sumner County, these emissions (*resulting from the proposed action*) represent a 0.32 percent (*i.e., about one-third of 1 percent*) increase of hydrocarbons (VOCs),…". As reflected in Section 3.4.2 of the Final EA, a refinement of calculations indicates this increase is about 0.036 percent.

Regarding the reference to TRI information presented by one commenter, emissions from the combustion of coal in the GAF boilers are in compliance with all federal and state emission standards. The transition from burning eastern bituminous coal to western subbituminous and bituminous coals has resulted in an overall reduction in emissions of toxic air pollutants from GAF.

The latter comments on neighboring counties and comparison of locomotives with local truck traffic were noted, but did not warrant any additional analysis for this EA.

Issue 4. Noise Pollution Resulting From Passing Trains

Five commenters expressed concern with noise pollution created by passing trains, and one commenter stated that the proposed Action Alternative exceeds the Federal Standard Community Noise Equivalent Level (CNEL) 65 dBA (a noise measurement), which was not stated in the DEA.

Response:

While some communities have local noise standards, there is not a federal standard requiring the CNEL to be less than 65 dBA. CNEL is the 24-hour continuous Leq with a 5-dBA penalty added during the period 7:00 p.m. to 10:00 p.m. and a 10-dBA penalty from 10:00 p.m. to 7:00 a.m. TVA followed the Federal Railroad Administration's (FRA) noise assessment methodology, which uses Ldn (referred to as DNL by our contractor) rather than CNEL in assessing the impacts of noise from coal delivery trains. Ldn, or DNL, is the 24-hour continuous Leq with a 10-dBA penalty from 10:00 p.m. to 7:00 a.m. Since the maximum Ldn is predicted to be 65 dBA, we would expect the CNEL to exceed 65 dBA at this location. However, planned mitigation would reduce Ldn levels below the FRA's impact criteria, and with mitigation, the CNEL is not expected to exceed 65 dBA.

Overall, rail deliveries would increase noise levels at residences along Steam Plant Road that are located within 150 feet of the railroad tracks. These houses were built and occupied during the period of earlier rail deliveries to GAF and, therefore, experienced

noise impacts by rail deliveries prior to 1997. For those individual residences along Steam Plant Road that may experience impacts in excess of applicable FRA guidelines, TVA will mitigate the noise impacts by offering to bear the cost of soundproofing systems. Impacts to up to eight houses along Steam Plant Road would be so mitigated.

As to the impacts of noise from the unloader, these impacts would also be insignificant. In order to confirm the analyses, TVA will undertake a one-time effort to measure noise levels from the rail unloader once it is operational. In the event that unanticipated levels of noise exceeding applicable guidelines for impacts to affected residences were to be measured, TVA would mitigate those impacts by installing noise barriers, soundproofing systems, or incorporating other measures that achieve equivalent results.

Issue 5. General Growth in Area and Relation to Socioeconomic Impacts of TVA Proposed Action on Downtown and Businesses

Thirteen persons made comments on the fact that the Gallatin area has experienced robust growth in the interim years since rail delivery of coal to GAF was previously used, and this is a factor TVA should consider. Concerns were that the robust growth in the area or the operations of particular businesses might be constrained by TVA returning to rail delivery of coal at GAF, or that recent growth was a contributing factor in the level of concern expressed regarding particular issues such as quality of life, air quality, more traffic congestion, or potential effects on people's decision to locate in Gallatin. Two of the commenters noted positive economic benefits from the TVA proposed action.

Response:

TVA's proposed action to reinstitute rail delivery of coal would help ensure that operation of GAF would continue to contribute to the local economy, as well as provide reliable and competitively priced electricity for the region. As discussed in the EA, since TVA's proposed action does not significantly affect the air quality of the area, this action would not trigger nor contribute to the triggering of Clean Air Act limitations on local economic growth. The reinstitution of coal delivery by rail to GAF would add to existing traffic issues in downtown Gallatin. However, based upon analyses of traffic impacts, trains should be able to pass the downtown intersections within the 10-minute threshold time prescribed in the city of Gallatin Municipal Code and, therefore, considered acceptable by the local community. As discussed in the EA, TVA would also work with the local city of Gallatin officials on developing city operating procedures to minimize to the extent possible the effects of rail deliveries on the traffic, governmental services, and businesses in the Gallatin area.

Issue 6. Effects of Ceasing Delivery of Coal to GAF by Barge on Continued Operation of Old Hickory Lock

Four comments were received concerning the potential effect of ceasing coal delivery to GAF by barge on the continued operation of Old Hickory Lock by the U.S. Army Corps of Engineer (USACE).

Response:

Section 3.1.2.3 discusses the potential effects on navigation and barge traffic related to TVA's proposal to switch to rail delivery of coal to GAF. Ceasing use of barges for delivery of coal to GAF would reduce the tonnage of materials moving through Old Hickory Lock by about 90 percent. Of the remaining approximately 394,000 tons of material moved annually

through the lock, 70 percent (about 271,000 tons) is sand and gravel. The predominant portion of the remainder is material delivered to DuPont. The sizable reduction in tonnages of materials moving through the lock could possibly affect the USACE's funding priorities for operation or maintenance of the Old Hickory Lock. Although speculative, it is likely the USACE would at least maintain daylight hours of operation for the lock for recreational boat users and for the remaining one to two commercial tows per week that would utilize the lock. It is pertinent to note that the USACE did not provide any comments on this issue upon review of the DEA.

Issue 7. Safety – Rail Derailments

Four commenters, some noting previous train derailments in the Gallatin area, expressed their concern about the possibility of future derailments occurring with reinstitution of coal delivery to GAF.

Response:

CSX will operate the trains at safe speeds on the C&N spur and the TVA spur track. Both of the rail spurs will be maintained to support the proposed train speeds. Additionally, periodic inspections are required to maintain the integrity of the rail system. Although rail derailments do infrequently occur, it is typically in the best legal, social, and financial interests of all parties to minimize the likelihood of such occurrences. In the unfortunate event of such a remote occurrence, local, state, and federal emergency procedures would be appropriately deployed to contain the adverse impacts of the derailment.

Issue 8. Request for Mid-Contract Assessment of the Environmental Impacts of the Proposed Project

One person requested a periodic reassessment of the project impacts.

Response:

TVA has thoroughly assessed the potential for environmental impacts in the current EA. Special commitments noted in the EA to avoid, minimize, or reduce impacts are tracked through the life of the project in TVA's Environmental Management System. In the event that changing conditions or new information should warrant a reassessment of environmental effects, TVA would assess the need to do so at that time.

Issue 9. Disclosure of Financial Information

On person requested that more detail regarding the financial aspects of savings to TVA in order to provide a general relative scale to understand how the savings (*to TVA*) would justify any adverse consequences on the city of Gallatin. Another commented that the true cost of the proposal to switch from barge delivery to rail delivery cannot be measured solely in dollar comparisons between barge and rail cars.

Response:

The financial details of contractual arrangements between TVA and CSX, following a decision to proceed, would be proprietary. However, qualitatively, as a benefit, the potential cost savings to TVA are substantial. As to the human cost to the environment, the environmental impacts have been qualitatively assessed throughout the EA. Because of the important qualitative considerations, the environmental costs are best assessed using nonmonetary metrics as has been done in this EA.

Issue 10. Need for Independent Review of Environmental Impacts
Two persons called for an independent performance of the EA. Four persons questioned the validity of the traffic impact analyses.

Response:
TVA is ultimately responsible for considering the environmental impacts of its actions when making an informed decision whether to proceed with a proposal, such as the decision whether to reinstitute delivery of coal to GAF by rail. In discharging its responsibilities under the National Environmental Policy Act (NEPA), TVA may not delegate that responsibility to another party. As such, TVA maintains a professional staff that utilizes the best available information and resources to gather, analyze, consider, and present the environmental information to decision-makers. When appropriate, TVA utilizes outside expertise for independent validation of assumptions, methodologies, and the reasonableness of findings. For the present review, TVA has utilized the services of engineering support firms in the Nashville area independently to validate the traffic analyses and to assist the agency in developing mitigation for noise impacts.

Issue 11. Lack of Public Involvement in the Process
Two persons commented that there was a lack of opportunity for input from local citizenry or local officials.

Response:
TVA encourages the public to participate in the environmental review process conducted under NEPA. As part of that process, during the review period and through the public meeting held, TVA afforded the opportunity for the public, agencies, and officials to comment on the scope, alternatives and assessment of environmental impacts for this particular proposal. TVA has also made several contacts with various state and local officials to obtain their views as to the impacts of the proposal. Information on those contacts has been added to the materials in Chapter 5 of the EA.

Issue 12. Complete an Environmental Impact Assessment of Statement
Three persons commented that an Environmental Impact Assessment (EIA or EIS) should be completed for this project.

Response:
NEPA, the Council on Environmental Quality regulations in 40 CFR and TVA's Implementing Procedures for NEPA provide the guidance for conducting environmental reviews and agency decisions on the appropriate levels of review. A purpose of the environmental review is to provide information on environmental issues to the decision-makers such that they can make an informed decision regarding the potential for impacts of the proposed action. TVA has conducted an evaluation of the potential for environmental impacts to the human environment (physical and natural) and based upon consideration of the scope, types, nature, and degree of impacts from the proposal to reinstitute rail delivery of coal to GAF, as well as public comment, concluded that the appropriate documentation of that evaluation is at the level of an Environmental Assessment.

Issue 13. Clarity of Evaluation of Environmental Justice, Incremental Impacts, and Impact to Areas Currently Unaffected

One comment was provided that indicated an improvement in the clarity of the section of the EA on Environmental Justice was needed and that the analyses needed to consider the actual impact of "incremental" increases and to those areas currently not affected.

Response:

The EA assesses the impacts to disadvantaged groups under Environmental Justice. The discussion, focused on those areas where larger concentrations of disadvantaged populations occur, is in terms of the additional incremental impacts to the affected populations and includes discussion of the varying impacts to different affected areas. The EA Section 3.1.2.4 on Environmental Justice has also been edited to increase the clarity.

Issue 14. Question on Abandonment of the Barge Facility at GAF

One commenter asked whether, after spending a substantial amount of money to develop the barge unloading facility at GAF, TVA would abandon it, once rail deliveries of coal began.

Response:

TVA will not abandon the barge unloading facility. The plan is to remain flexible and, if needed or advantageous, return to water transportation of coal supplies.

List of Persons Providing Written Comments
(i.e., letters, comment cards, e-mails, and faxes on the DEA)

Lee Barclay, Field Supervisor, U.S. Fish and Wildlife Service, Cookeville, Tennessee

The Honorable Diane Black, State Senator, Gallatin, Tennessee

Mary Coley, Gallatin, Tennessee

Scott Dulin, Gallatin, Tennessee

Walter T. Durham, Gallatin, Tennessee

Jerry Fox, Nashville, Tennessee

John Garrott, Gallatin, Tennessee

John B. Garrott, Jr., Gallatin, Tennessee

Herbert L. Harper, Deputy State Historic Preservation Office, Nashville, Tennessee

Robert Hendrickson, Gallatin, Tennessee

Gordon Kenney, Gallatin, Tennessee

Kathleen J. Kuná, Project Manager, U.S. Army Corps of Engineer, Nashville District

John McClendon, Nashville, Tennessee

Elisa R. McDole, Gallatin, Tennessee

Carolyn Neal, Henderson, Tennessee

Lee Raines, Gallatin, Tennessee

Evan and Carol Reilly (Gallatin, Tennessee?)

Eloise Shick, Gallatin, Tennessee

John Tisdale, Chief, Gallatin Police Department (Memo, June 17, 2005, Novitsky/Tisdale to Wright, forwarded with Mayor Wright's comments)

Thomas R. Vorholt, Ingram Barge Company, Nashville, Tennessee

Joe M. Womack, Chief, Gallatin Fire Department (Memo, June 27, 2005, Womack to Wright, forwarded with Mayor Wright's comments)

The Honorable Don Wright, Mayor of Gallatin

List of Persons Providing Oral Comments on the DEA
to the Registered Reporter at the Public Meeting

John Garrott

John Garrott, Jr.

Jim Hawkins

Bettye Scott

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WRITTEN CORRESPONDENCE RECEIVED FROM STATE AND FEDERAL AGENCIES

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July 13, 2005, Correspondence From Deputy State Historic Preservation Officer Herbert Harper

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

July 13, 2005

Mr. J. Bennett Graham
Tennessee Valley Authority
400 W. Summit Hill Drive
WT 11D - Cultural Resources
Knoxville, Tennessee 37902

RE: TVA, ARCHAEOLOGICAL ASSESSMENT, RAIL SPUR SERVING STEAM PLANT, GALLATIN, SUMNER COUNTY, TN

Dear Mr. Graham:

At your request, our office has reviewed the above-referenced archaeological survey report in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, we concur that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places.

If project plans are changed or archaeological remains are discovered during construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your cooperation is appreciated.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jmb

June 17, 2005, Concurrence From USFWS Field Supervisor Lee Barclay

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

RECEIVED
Environmental Policy and Planning

June 17, 2005

JUN 2 2 2005

Doc. Type:
Index Field:
Project Name:
Project No.:

Mr. Jon M. Loney
Manager, NEPA Administration
Environmental Policy and Planning
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Re: FWS #05-1298

Dear Mr. Loney:

Thank you for your letter and enclosure of June 6, 2005, transmitting an environmental assessment for the proposal to construct a rail unloading and blending facility at the Gallatin Fossil Plant in Sumner County, Tennessee. Fish and Wildlife Service biologists have reviewed the document and we offer the following comments.

The environmental assessment describes the proposal to reestablish rail delivery of coal to the Gallatin Fossil Plant and to establish a coal blending facility. The document also contains a description of the fish and wildlife resources in the project area and the potential impacts to those resources from implementing the preferred alternative.

We concur that implementation of the preferred alternative--i.e., construction of a coal blending and delivery system at Gallatin Fossil Plant--is not likely to adversely affect the federally endangered gray bat (*Myotis grisescens*) or leafy prairie clover (*Dalea foliosa*). In view of this, we believe that the requirements of section 7 of the Endangered Species Act have been fulfilled. Obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this review, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Thank you for the opportunity to comment on this action. If you have any questions, please contact Jim Widlak of my staff at 931/528-6481, ext. 202.

Sincerely,

for Lee A. Barclay, Ph.D.
Field Supervisor

June 27, 2005, Comment From Kathleen J. Kuná, USACE

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

REPLY TO ATTENTION OF:

June 27, 2005

Regulatory Branch

SUBJECT: File No. 200501415; No Permit Required for the Proposed Gallatin Fossil Plant Rail Coal Unloading and Blending Facility, Sumner County, Tennessee.

Mr. Jon M. Loney, Manager
TVA - NEPA Administration
Environmental Policy and Planning
400 West Summit Hill Drive
Knoxville, TN 37902-1499

Dear Mr. Loney:

This is in response to your Draft Environmental Assessment (DEA) and Draft Finding of No Significant Impact (DFONSI) dated June 2005, regarding the subject proposal. Please refer to File No. 2005-01415 in future correspondence with us related to this project.

Based upon the information and plans submitted with your DEA and resources available to our office, we have determined a DA permit pursuant to Section 404 of the Clean Water Act would not be required for the proposed project as indicated on the maps you provided. Section 301 of the Clean Water Act (CWA) prohibits the discharge of dredged or fill material into the waters of the US, including wetlands, unless the discharge is authorized by a DA permit.

If I can be of further assistance or if you have any questions regarding DA permit requirements, please contact me at the above address, telephone 615-369-7506.

Sincerely,

Kathleen J. Kuná
Project Manager
Operations Division

Enclosure

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APPENDIX B – NOISE MITIGATION ANALYSIS AND RECOMMENDATIONS

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Bowlby & Associates, Inc.

504 Autumn Springs Court, # 11
Franklin, Tennessee 37067-8278

(615) 771-3006, Fax: (615) 771-3406
wbowlby@bowlbyassociates.com

June 20, 2005

Mr. Ronald E. Purkey, P.E.
Tennessee Valley Authority
2G Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Dear Mr. Purkey:

Subject: TVA Gallatin Fossil Plant Noise Mitigation Analysis and Recommendations

As requested, I am pleased to submit this report to you on our TVA Gallatin Fossil Plant train noise mitigation analysis and recommendations.

Scope

Our scope for the project included the following tasks:

- Review any existing data
- Determine the existing noise levels
- Predict the future noise levels with CSX freight trains on the TVA rail spur
- Assess the noise impacts of the CSX freight trains on the TVA rail spur
- Investigate options to mitigate the noise from the freight operations
- Recommend a mitigation option for each impacted residence

Project Area

Figure 1 shows the limits for the project. Our analysis was limited to the length of rail track and the adjacent residences and noise sensitive land uses located from Airport Road on the north end to Newton Lane/Odom's Bend on the south end. The project area is a mixture of residences, farms, and three old family cemeteries. Of interest for the project are the two public grade crossings and six private grade crossings shown in Figure 1.

The northern public crossing is the Newton Lane grade crossing approximately 1.1 miles south of Airport Road. At this location there are three residences within 500 feet of the grade crossing. The second public crossing is also at Newton Lane but is farther south where Newton Lane becomes Odom's Bend Road. This second location has two residences within 500 feet of the grade crossing and is approximately 2.5 miles south of Airport Road.

Starting on the north end, the first private crossing within the project is a driveway just south of the Gallatin city limit. From our field review this driveway appeared to only serve a single residence. The next private grade crossing is a driveway accessing the residence at 1130 Steam Plant Road south of the Newton Lane public crossing. Our field review indicated that this residence may be able to exit the property via Coles Ferry Road as well. The remaining four private crossings are field access paths located between the 1130 Steam Plant Road driveway and the southern public crossing at Newton Lane/Odom's Bend Road.

Existing Noise Environment

To assess the impact, an assumption needs to be made about the existing noise environment without any train operations. For a rural environment, lacking any other data, FRA recommends a Day-Night Level (DNL) of 45 dBA for the existing condition. DNL is a single number that averages all of the sound energy in a 24-hour period after adding a 10 dB "nighttime penalty" for all noise between 10 p.m. and 7 a.m.

During our field review we conducted a three-hour noise measurement from 9:30 a.m. to 12:30 p.m. at a location 150 ft from the edge of the closest travel lane on Steam Plant Road. This measurement showed that the typical daytime background hourly equivalent sound level was 50 dBA, established by the noise from vehicles on Steam Plant Road. Based on that data and our estimations of hourly equivalent sound levels for the evening and nighttime hours of the day we calculated an existing DNL of 48 dBA for the residences of concern in the project corridor. This 48 dBA DNL, which coincides with the level used in the Affected Environment section of the EA, was assumed for all residences of concern

Impact Criteria

For rail noise assessment, the Federal Railroad Administration (FRA) has adopted the noise impact criteria developed and used by the Federal Transit Administration (FTA). For residential areas, these criteria use the DNL. As background, the USEPA adopted DNL as a descriptor of choice for assessing the affects of noise on people in residential environments in its 1973 report to Congress titled "Levels of Noise Requisite to Protect the Public and Welfare with an Adequate Margin of Safety." DNL is also used by the FAA for aircraft noise and the U. S. Department of Housing and Urban Development for studies of noise impacts from rail, aviation and highways on proposed residential developments using HUD funding.

The FRA Impact Criteria graph is shown in Figure 2. The FTA manual also presents Noise Impact Criteria (NIC) for different land use activity categories. These NIC are in terms of the hourly equivalent sound level and the DNL, depending on the type of use of the property. Land Use Category 2 was used in this study, which the FTA manual describes as "Residences

and buildings where people normally sleep. This category includes homes, hospitals and hotels where nighttime sensitivity to noise is assumed to be of utmost importance."

The NIC relate the existence of an impact and the severity of that impact to the actual noise level created by the project and the *difference* between the existing noise levels (without the project) and the levels created by the project. In other words, a lower level of train noise would cause an impact in a currently quiet area compared to a currently noisy area. Further, areas with high existing, pre-project noise levels are more sensitive to an increase in the total noise level with the project.

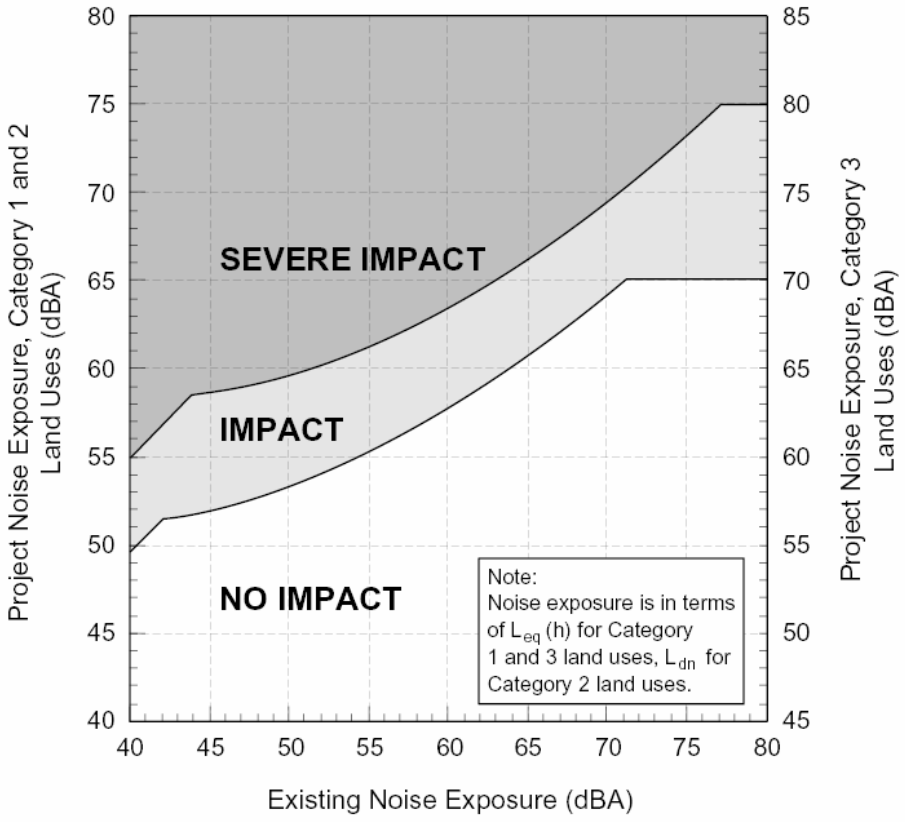

Figure 2. Federal Railroad Administration Noise Impact Criteria
(From FRA manual "High Speed Ground Transportation Noise and Vibration Impact Assessment", December 1998)

Prediction of Freight Train Noise

Computing the DNL from trains involve separately computing the contributions from the three major noise sources - locomotives, rail cars, and train horns - and then combining them to get an overall DNL. There are several methodologies available, but they have limitations or problems. As noted below we have therefore developed our own composite spreadsheet based on the theory behind these methodologies to compute the individual component DNLs for locomotive, rail car and locomotive horn noise, as well as the total DNL.

First, FTA has provided a prediction methodology and equations in its guidance manual for agencies to follow when conducting noise studies for transit projects involving federal-aid funds. This manual, titled *Transit Noise and Vibration Impact Assessment*, includes a diesel locomotive source, a rail car source, and a horn source that is based on a maximum sound level of 105 dB at a distance of 50 feet. However, the equation for horn noise has a train speed-dependent function. We have found that use of the speed-dependent horn function over-predicts horn noise, basically because horn noise is more time-dependent than speed-dependent.

Separately, FRA has published a high speed rail noise and vibration assessment report that is intended for use to assess high speed passenger rail trains. Unfortunately, the equations in it are not intended for use for slow speed diesel freight trains.

FRA has also separately published a spreadsheet for locomotive horn noise modeling (available at http://www.fra.dot.gov/us/content/167). This FRA horn noise model uses a maximum level of 104 dB at 100 feet, which is higher than the FTA level of 105 dBA at 50 feet. Unfortunately, this spreadsheet only gives the distance from the tracks and the crossing to the 65 dB DNL. It does not give the DNL at user-supplied distances, which we needed to do to assess impacts and mitigation requirements at particular residences.

Our spreadsheet initially computes one-hour sound levels from each source and then computes DNL for each source before combining the DNL to get the total DNL. The diesel locomotive and rail car reference noise emission levels used are from the FTA manual (sound exposure levels (SEL) at 50 mph and 50 feet of 92 and 82 dBA, respectively).

Horn noise differs from locomotive and rail car noise in that horn noise is only produced along a portion of the track, not the entire length of the track. Its contribution to the DNL at a residence is thus directly related to the location of where the horn is being blown and to the location of the residence, both in terms of distance from the track as well as distance upstream or downstream from the grade crossing for which the horn is being sounded. Neither the FTA nor FRA procedures are able to handle all of these variables.

As a result, for input into our spreadsheet, we used a version of the Federal Highway Administration STAMINA 2.0 traffic noise model modified to include locomotive horns as the noise source instead of automobiles and trucks (Lmax (maximum sound level) at 100 feet of 104 dB per the FRA Horn Noise Spreadsheet). This computer program allows the input of the specific horn blowing locations along the track and a variety of residence distances from the track and from the crossing for accurate prediction of location-specific levels. The level predicted is the one-hour average sound level for one train per hour, which we then factored down to an average number of trains per hour, from which DNL may be calculated.

There is one other consideration for the horn noise. Because horns are only blown while *approaching* (and passing through) the crossing, inbound and outbound trains have to be modeled separately to properly account for the each train's horn noise at any given noise-sensitive receptor point.

For slow-moving trains, Federal regulations require that the locomotives begin blowing their warning horn no less than 20 seconds before entering a crossing. During this 20 second period, the horn will be blown in a prescribed pattern of two "long" blasts, one "short" blast, and then one "long" blast, carrying the last long blast until the leading edge of the front locomotive makes it all the way through the crossing. The duration of these blows is not prescribed and depends on the train's engineer. For the purpose of this analysis, based on a conversation with Mr. Jim Cain, a CSX Public Safety Coordinator in the Nashville area, we determined that the horn would be blown for about 50% of the 20-second window before reaching the crossing, or 10 seconds. Mr. Cain also informed us that typically an engineer will not sound the horn at the majority of private crossings unless the engineer perceives a danger as the crossing is approached. For our analysis, we have assumed that the horn will not be sounded at the private crossings within the project limits.

Based on an operating speed of 5 mph and the requirement that the horn blow must commence 20 seconds before the train reaches the crossing, the freight train would generally begin the horn blow approximately 150 feet before the crossing. Thus, the area of direct impact from the horns is limited to the immediate vicinity of the crossing, a much different situation than for higher speed trains, where horn blowing must commence one-quarter mile upstream from the crossing.

Data provided by TVA shows that there will be an average of five trains per week (five trains inbound to the plant and then the same five trains outbound). The DNL calculation is based on an annualized average of daily operations. Assuming authorizations every week, there would be 520 total train operations per year (52 weeks times 10 operations per week). The annualized daily average would be 520 divided by 325 days per year, or from 1.4 operations per day. Trains may arrive at any hour of the day or night. TVA estimates that an arriving train would unload and depart about ten hours later. An analysis of these arrival and departure

patterns shows that, on average, 62% of the train operations would occur in the daytime hours (from 7 a.m. to 10 p.m.) and 38% would occur during the nighttime hours (10 p.m. to 7 a.m.). The noise calculation uses the average number of train operations per hour which would be the average daily total of 1.425 operations divided by 24 hours or 0.059 operations per hour.

Based on all the above information and data, the spreadsheet was used to predict the day/night level with the blowing of horns at the two public grade crossings for each noise-sensitive receptor identified in the field review and aerial photo review.

Assessment of Noise Impacts

We used the Sumner County GIS to gather data on all of the residences identified in our field review as potentially impacted by noise from the freight train operations. A summary of those residences, including their Parcel ID, address, and distances to the railroad track and nearest public crossing is shown in Table 1. In addition to the 14 residences, we also included two historic cemeteries in our listing.

Using the FRA Noise Impact Criteria chart, shown in Figure 2, we then determined whether each land use was in the No Impact, Impact or Severe Impact category.

Figures 3, 4 and 5 show the residences and cemeteries and their predicted DNL from train operations. To demonstrate the effect of the locomotive horns the figures show both a No Horn and With Horn scenario.

Mr. Ronald E. Purkey, P.E.
June 20, 2005
Page 7

Table 1. Predicted DNL for Land Use of Concern

Parcel ID	*Address*	*Description*	*Distance to Track CL and Crossing* (ft)*	*Predicted DNL (dBA)*	*Impact?*
149-22	996 Newton Lane	House	400 / 180	53	Impact
149-22	996 Newton Lane	House	480 / 200	52	No
149-22	1295 Steam Plant Rd.	Mobile Home	260 / 1200	53	Impact
134-42.01	800 Coles Ferry Rd.	Mobile Home	510 / 240	51	No
134-42	802 Coles Ferry Rd.	House	540 / 60	51	No
134-40.02	845 Coles Ferry Rd.	House	270 / 800	52	No
134-40	801 Coles Ferry Rd.	House	200 / 120	60	Severe
134-39.01	1130 Steam Plant Rd.	Mobile Home	160 / 1100	57	Impact
134-39	849 Coles Ferry Rd.	House	270 / 1050	52	No
134-38	855 Coles Ferry Rd.	House	270 / 1200	52	No
134-36	1129 Steam Plant Rd.	House	210 / 1100	55	Impact
134-34	1103 Steam Plant Rd.	House	170 / 300	59	Impact
134-33	1101 Steam Plant Rd.	House	175 / 150	61	Severe
134-08	Steam Plant Road	House	50 / 3050	65	Severe
134-07	No address	Cemetery	130 / 2800	57	Impact
134-06	No address	Cemetery	130 / 2700	57	Impact

* Upstream or downstream distance to a perpendicular line from the residence to the track.

Mitigation Options

The main noise impact associated with the re-introduction of train operations along this rail line is operations during the nighttime when people are inside their homes. As a result, the focus of the noise mitigation is on mitigating night-time, interior impacts for the residences. Mitigation was not considered for the two old family cemeteries on the northern end of the study area because of their infrequent use and the very low number of average trains per day.

A number of mitigation options have been identified and studied:

- Noise barriers
- Buy-out of residences
- Sound insulation of residences
- Wayside horn
- Quiet Zone designation

Each option is discussed below.

Noise Barriers

The installation of noise barriers along the TVA railroad right-of-way was considered as a potential mitigation method for several of the impacted residences. However, when impacted residences are either isolated or several hundred feet apart, the cost of constructing a barrier that would effectively reduce the noise level is prohibitive. In the situations where residences are impacted by locomotive horn noise, a barrier's effectiveness is often severely reduced by the need for a large gap at the grade crossing which would include adequate sight distance. For residences that are impacted by the rail car and locomotive noise and not horn noise, barriers are not effective at abating the low frequency noise from those sources.

In all cases that we examined, an effective barrier was possible only for isolated residences and the alternative mitigation methods at far lower costs were deemed a better option. Typically, a noise barrier costs $20 per square foot; with an average height of 16 feet, for a unit cost of $320 per running foot. To avoid sound that comes past the end of the barrier from minimizing the noise reduction, the barrier length needs to be approximately eight times the distance that the house is from the tracks. Thus for a house 150 feet away, a barrier would need to be 1,200 feet long, which would cost approximately $384,000.

Buy-out of Residences

This mitigation option was suggested by TVA. Our estimations of buy-out cost are based on the 2003 market values listed in the Sumner County GIS system. A Sumner County planning staff member estimated that market values in the area of the project have increased by 10% from 2003 to 2005. We have added that 10% estimation to the 2003 market value to give a 2005 market value. As directed by TVA, we have also added 30% to the 2005 market value to arrive at a total cost that would include moving the current residents and any administrative costs.

Sound Insulation of Residences

Sound insulation addresses all "weak links" for sound propagation into a building. The initial focus is on the windows. Basically, window options similar to the following can be used. First is the installation of a well-sealed interior storm sash of 1/4" laminated glass with a minimum 1-1/2" air space between the prime window and the sash (regular exterior storm windows will not be sufficient due to the lightweight glass and aluminum framing and the fact that they are often vented, allowing easy noise transmission). Second is use of 1/2" laminated single-glazed window instead of the typical "insulating" double-glazed system, with a well-sealed frame (preferably wood instead of aluminum or vinyl).

Hollow-core doors may need to be replaced with solid core doors and/or the addition of glass storm doors. Any openings such as vent pipes, soffets, and crawl space vents also need to be considered. The ceiling may also need additional mass, using either plywood or fiberboard "flooring" on top of the ceiling joists in the attic space or the replacement of the sheet rock ceiling with 1/2" fiberboard.

Then, there are several options for wall treatment if needed in addition to treatment of windows, doors and ceilings: (1) addition of brick veneer; (2) addition of interior sheet rock or exterior sheathing using resilient mounting; (3) simple use of a double mass (two sheets) of sheet rock or exterior sheathing; or (4) rebuilding of walls with staggered studs in the wall framing to increase the space between the interior and exterior walls and to "decouple" them from each other.

Typically, when designing sound insulation for a house, the goal is to provide a closed-window noise reduction of 25-35 dB in the DNL, with the greater noise reduction for houses with very high outdoor DNL, which is not the situation for this project. A goal of a 25-30 dB noise reduction is suggested to adequately reduce the interior noise level for the impacted residences. Each impacted residence would need to be carefully inspected to identify the exact sound insulation measures necessary to achieve that goal. However, we expect that the installation of windows, doors, wall and ceiling insulation and air conditioning and ventilation systems will be necessary to mitigate the rail noise.

A presentation by Michael Payne of The Jones Payne Group (*3rd Annual Standards for Best Practices*, 4th Annual AEEE Quieter Home Sound Insulation Symposium, October 2004) gave an average cost for sound insulation programs for residences exposed to aircraft operations at nearly 30 airports across the country of about $32,000 per residence. This average cost includes construction costs averaging over $25,000, consultant fees of $5,500 and in-house costs over just over $1,000. Mr. Gary Erhlich, an acoustical consultant at Wyle Labs who has assessed sound proofing costs for the US Navy, suggested raising that cost up to $35,000 due to the harder-to-attenuate lower frequency rumble of train noise. This cost includes adding air conditioning since a closed-window condition is being created.

Wayside Horn

We investigated the option of installing wayside horns at both of the public grade crossings. Wayside horns are permanent installations at each side of a crossing that blow when a train is a designated amount of time from the crossing. The wayside horn eliminates the need for the locomotive horn and typically reduces the area exposed to horn noise. However, in this case, with the TVA trains traveling under10 mph, the area exposed to horn noise is only slightly reduced.

According to Mr. Jim Cain of CSX and according to a representative of Railroad Controls Limited, a supplier and installer of automated horn systems, each wayside horn installation is estimated to cost $220,000 including updating the train detection circuitry. Since the total wayside horn installation cost ($440,000) would be higher than the cost of insulating the impacted residences and would not reduce the number of impacted residences, this option has been eliminated from further consideration.

Quiet Zone Designation

According to the FRA's Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings, local public authorities have the ability to create a quiet zone. This designation would prevent locomotives from sounding their horns at grade crossings for the length of the defined quiet zone. If a quiet zone were designated for the project area, the noise impacts from the project would be reduced.

However, in order for a quiet zone to be established, appropriate supplementary safety measures must be installed to substitute for the loss of warning provided by the train horn. If Sumner county officials chose to pursue a quiet zone for the area of this project, both of the grade crossings would require the installation of a Four Quad Gate system as a supplementary safety measure. We received an estimate of $325,000 for each Four Quad Gate system from Railroad Controls Limited for a total of $650,000. The cost of installing the quiet zone safety

measures is more expensive than the sound insulation option on a per impacted residence basis and has been eliminated from consideration.

After consideration, our mitigation efforts do not include reducing noise at the two historic cemeteries because of their infrequent use.

Mitigation Costs and Recommendations

Listed in Table 2 are the mitigation options considered for each impacted residence. Because of the ineffectiveness of noise barriers when needing gaps for the grade crossings, plus their high costs per residence when only protecting few houses, barriers are not feasible. The choice is then between sound insulation or buying out the property.

Table 3 presents the mitigation costs for each impacted parcel and our recommendations. Sound insulation costs, including air conditioning, are conservatively estimated at $35,000 per house. Sound insulation is not considered an option for the house on Parcel 134-08. This house was built in 1910 and a quick visual inspection suggested that the cost to sound-insulate it would be prohibitive.

Buy-out costs range from $65,000 to $184,000 for most of the impacts, with a cost of over $1 million for the house and mobile home on parcel 149-22 (996 Newton Lane) due to the large amount of acreage of this property.

In all cases except Parcel 134-08, sound insulation has the lower cost and is recommended. The total of our recommended mitigation actions for the impacted residences is $320,361.

Table 2. Mitigation Options for Noise Impacts

Residence (DNL [dBA])	*Mitigation Option*		
	Insulate	***Buy-out***	***Barrier***
149-22 House (53)	✓ 25 dB NLR*	✓ Marginal Impact	✖ Gap in barrier is necessary, minimizing noise reduction.
149-22 Mobile Home (53)	✓ 25 dB NLR	✓ Marginal Impact	✖ Barrier would cost $800,000 because of distance from mobile home to tracks
134-40 House (60)	✓ 30 dB NLR	✓	✖ Would require barrier off TVA property
134-39.01 Mobile Home (57)	✓ 30 dB NLR	✓	✖ Gap in barrier necessary
134-36 House (55)	✓ 30 dB NLR	✓	✖ Horns not an issue Private crossing creates gap
134-34 House (59)	✓ 30 dB NLR	✓	✖ Gap will not block noise from southbound train horns
134-33 House (61)	✓ 30 dB NLR	✓	✖ Minimal effectiveness
134-08 House (65)	✖ Too old to insulate	✓	✖ Gap for private crossing

✓ = mitigation option is feasible ✖ = mitigation option is not feasible or possible

* NLR is the noise level reduction from the exterior DNL to the interior DNL with sound insulation.

Table 3. Cost of Mitigation Options for Noise Impacts and Recommendation

Residence (DNL [dBA])	*Estimated Cost of Mitigation Option*		*Recommendation*
	Insulate	*Buy-out*	
149-22 House (53)	$35,000	$ 1,103,960	Insulate
149-22 Mobile Home (53)	$35,000	Included in above cost because it is on the same property	Insulate
134-40 House (60)	$35,000	$ 158,873	Insulate
134-39.01 Mobile Home (57)	$35,000	$ 65,351	Insulate
134-36 House (55)	$35,000	$ 184,041	Insulate
134-34 House (59)	$35,000	$ 131,560	Insulate
134-33 House (61)	$35,000	$ 115,973	Insulate
134-08 House (65)	N/A	$ 75,361	Buyout

This concludes our report. If you have any questions or need further information, please give me a call.

Sincerely yours,

Original Signed by William Bowlby

William Bowlby, Ph.D., P.E.
President

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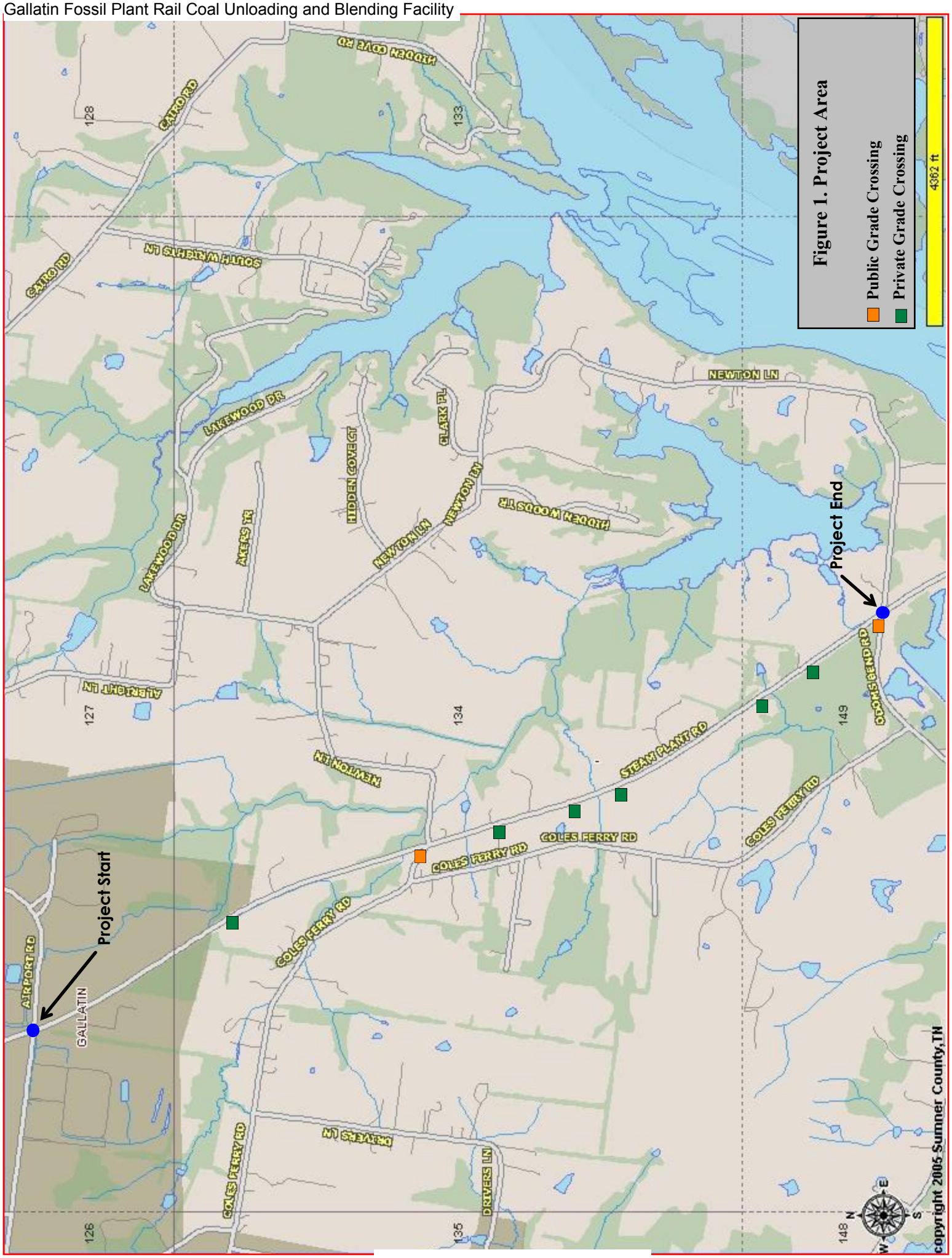
Figure 1. Project Area
Public Grade Crossing
Private Grade Crossing
4362 ft
Project Start
Project End
HIDDEN COVE RD
CAIRO RD
SOUTH WRIGHTS LN
LAKEWOOD DR
HIDDEN COVECT
CLARK PL
NEWTON LN
HIDDEN WOODS TR
AKERS TR
ALBRIGHT LN
COOMSEEND RD
STEAM PLANT RD
COLES FERRY RD
AIRPORT RD
GALLATIN
DRIVERS LN
128
133
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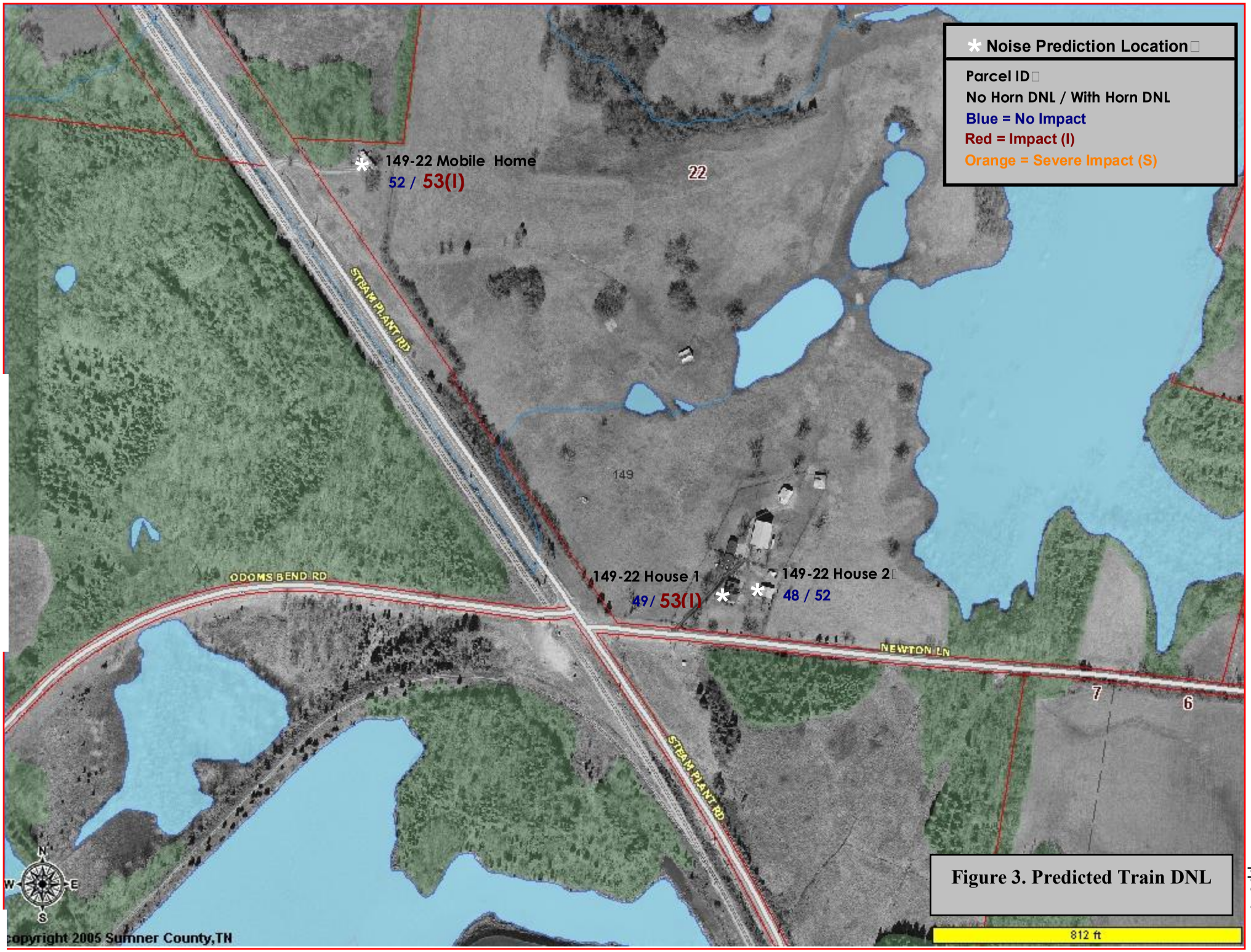
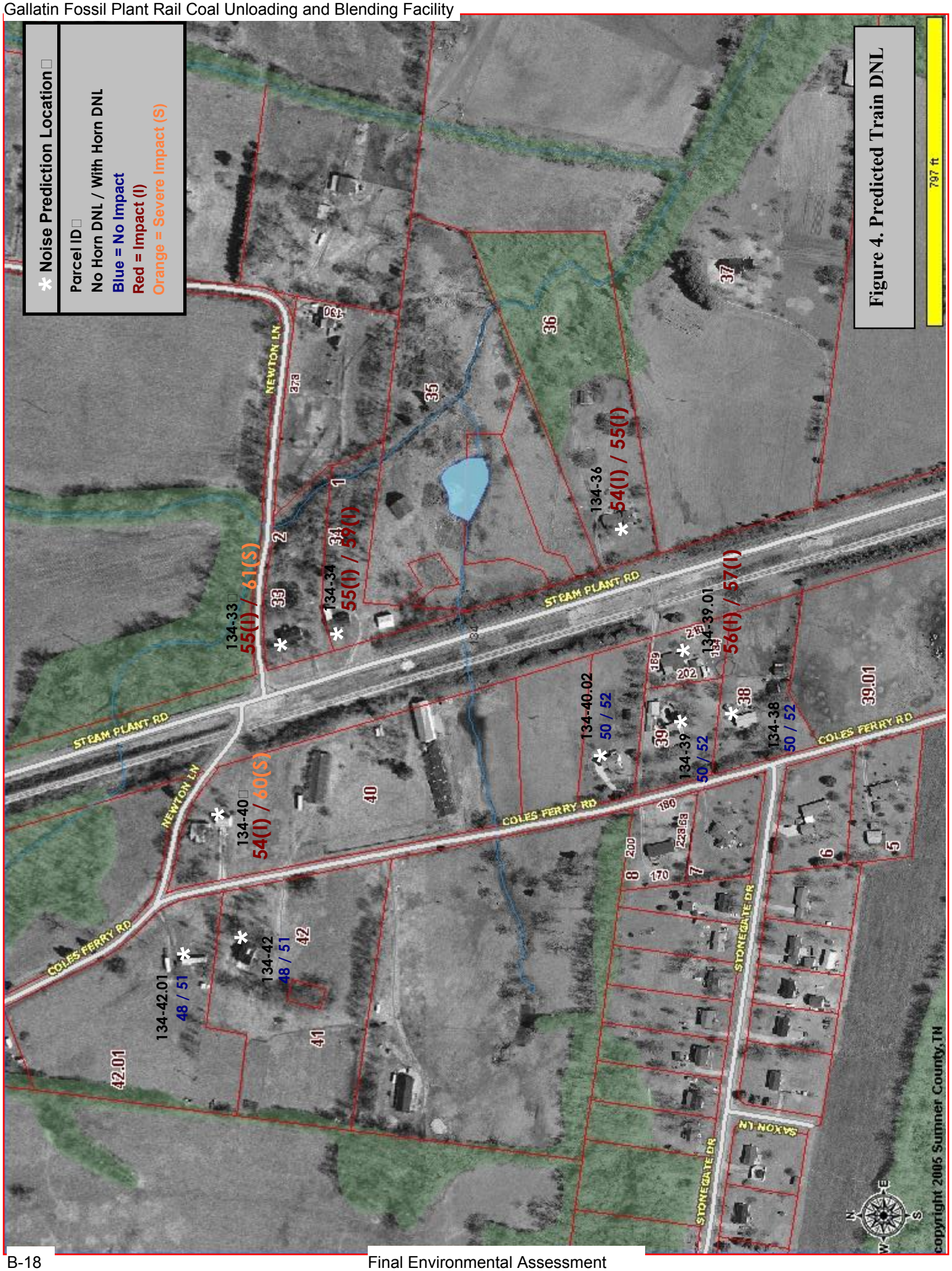


Figure 3. Predicted Train DNL


* Noise Prediction Location
Parcel ID
No Horn DNL / With Horn DNL
Blue = No Impact
Red = Impact (I)
Orange = Severe Impact (S)
Figure 4. Predicted Train DNL
797 ft
STEAM PLANT RD
COLES FERRY RD
NEWTON LN
STONEGATE DR
SAXON LN
134-33
55(I) / 61(S)
134-34
55(I) / 59(I)
134-36
54(I) / 55(I)
134-39.01
56(I) / 57(I)
134-40.02
50 / 52
134-39
50 / 52
134-38
50 / 52
134-40
54(I) / 60(S)
134-42
48 / 51
134-42.01
48 / 51
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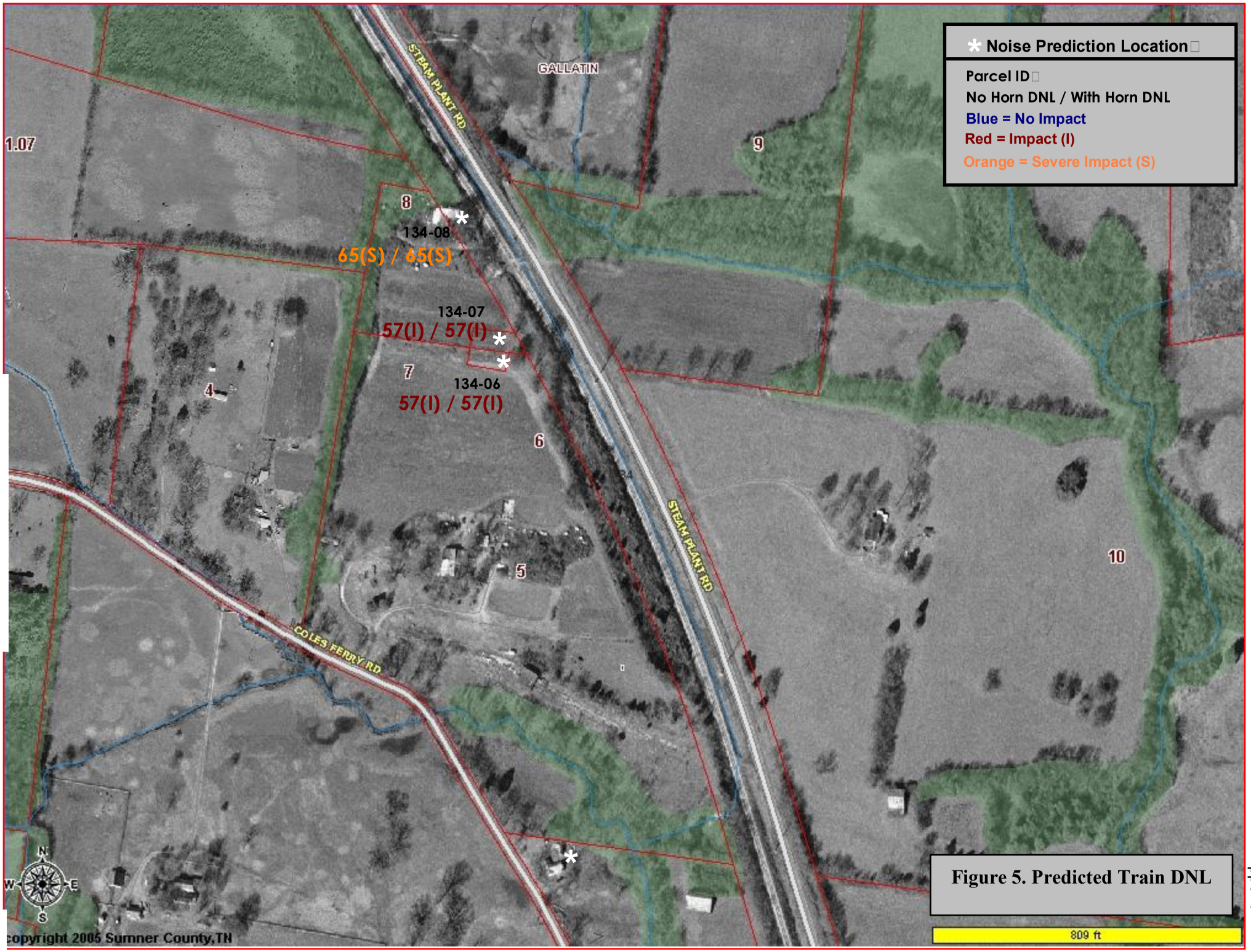

Figure 5. Predicted Train DNL