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ENVIRONMENTAL ASSESSMENT

BLUE RIDGE DAM REHABILITATION PROJECT SUPPLEMENT FOR EXTENDING PROJECT WORKING HOURS AND OTHER MINOR MODIFICATIONS OF THE ACTION ALTERNATIVE

FANNIN COUNTY, GEORGIA

PREPARED BY:
TENNESSEE VALLEY AUTHORITY

APRIL 2011

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Acronyms, Abbreviations, and Glossary of Technical Terms

AADT	Average Annual Daily Traffic
BMP(s)	Best Management Practice(s), i.e., accepted construction practices designed to reduce environmental effects
dB	Logarithmic decibel scale
dBA	Decibels, A-Weighted
EA	Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GADNR	Georgia Department of Natural Resources
GDOT	Georgia Department of Transportation
Hz	Hertz
Ldn	Day-night average sound levels
Leq	Equivalent sound levels
LOS	Level of Service
LLO	Low-Level Outlet, i.e., the outlet installed at Blue Ridge Dam in 2003 to permit water to be passed through Blue Ridge Dam during outages of the penstock
mph	Miles per hour
NEPA	*National Environmental Policy Act*
Penstock	A tube or tunnel that allows water to go through a dam to power a hydroelectric generator
ppm	Parts per million
proofroll	A civil engineering technique for evaluating whether a surface would support a load or fail.
ROS	*Reservoir Operations Study*
SEA	Supplemental Environmental Assessment
SR	State Route
Subgrade	a civil engineering term for a prepared earth surface which would serve as a foundation for fill material
Tailwater	The water in the natural stream immediately downstream from a dam
TVA	Tennessee Valley Authority
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

BLUE RIDGE DAM REHABILITATION PROJECT SUPPLEMENT FOR EXTENDING PROJECT WORKING HOURS AND OTHER MINOR MODIFICATIONS OF THE PROPOSED ACTION FANNIN COUNTY, GEORGIA

TENNESSEE VALLEY AUTHORITY

APRIL 2011

The Proposed Decision and Need

This document supplements the Tennessee Valley Authority (TVA) December 2009 *Blue Ridge Dam Rehabilitation Project Final Environmental Assessment* (original EA). The scope of the 2009 environmental assessment (EA) included repairing the penstock[1], repairing and stabilizing the upstream face of the dam, stabilizing the intake tower base, and stabilizing the downstream face of the dam in order to meet modern dam safety standards. This original EA is incorporated by reference. This supplement covers the environmental impacts for the following changes or additions to the rehabilitation the Blue Ridge Dam according to the Preferred Action Alternative of the original EA:

1. Extend project working hours for deliveries, rock handling, and placement activities to 24 hours per day, seven days per week, instead of limiting these activities to the hours between 7:00 a.m. and 10:00 p.m.

2. Establish an additional spoil area for temporary or permanent storage of old riprap and soil from the upstream and downstream faces of the dam near the intersection of North River Road and Veterans Memorial Highway[2] on the northeast side of the dam.

3. Reduce the risk of potential collisions that could be caused by construction-related traffic congestion on North River Road by temporarily closing one or more segments of North River Road to the public for the duration of the construction phase of the Blue Ridge Dam Rehabilitation Project. The construction phase is expected to be completed by October 2012. Due to safety concerns, one segment of North River Road has already been closed. This supplemental environmental assessment (SEA) evaluates the impacts of that temporary road closure as well as the effects of a potential future closure of another segment of North River Road.

As explained in the original EA, unforeseen events such as unseasonably heavy rains could refill Blue Ridge Reservoir to elevations in excess of those needed to ensure safe work on the penstock. Such events could lead to project delays if the work on the project must be halted while the reservoir level is again lowered. For this reason, to ensure greater flexibility in meeting the schedule for the project, this SEA addresses the monitoring and

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[1] The penstock is the tunnel that allows water to go through the dam to power the hydroelectric generator. The intake tower is the structure through which water enters the penstock.

[2] Veterans Memorial Highway is also known as “Old U.S. Highway 76” and “Morgantown Highway.” To avoid confusion with the current U.S. Highway 76, it will be referred to as Veterans Memorial Highway in the text.

mitigation measures needed for extending hours for deliveries, rock handling, rock placement, and other project outdoor activities that involve heavy equipment. The extension of working hours for these activities would occur only if necessary to maintain the project schedule. ,As required within the original EA, TVA has developed an Environmental Noise Monitoring Plan that would also apply to the proposed changes (Attachment A).

During the early design phases of the Blue Ridge Dam Rehabilitation Project reuse of the old riprap on the upstream and downstream dam faces was considered. However, use of the old riprap was dropped from consideration during later design phases because the material to be removed was a mixture of unknown sizes which could be problematic. Addition of a new onsite spoil area to store this material would provide greater flexibility for implementing the Blue Ridge Dam Rehabilitation Project.

Due to the perception of imminent danger by TVA project personnel, one segment of North River Road between the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access and Veterans Memorial Highway was temporarily closed to the public in July 2010. This temporary closure has alleviated traffic hazards in the immediate vicinity of the Blue Ridge Dam Rehabilitation Project. In this SEA, "temporary" means for the duration of the construction phase of the dam rehabilitation project. Blue Ridge Dam is located in north Georgia near the Tennessee and North Carolina state boundaries (Figure 1).

This SEA was prepared in accordance with the National Environmental Policy Act (NEPA) and TVA's internal NEPA implementing procedures.

Other Environmental Reviews and Documentation

Since acquiring the Blue Ridge Dam, TVA has completed other projects designed to improve safety or the function of the dam (Table 1).

Table 1. Environmental Assessments for Projects on Blue Ridge Dam

Title	FONSI Issue date	Summary/Relevance for this Review
Blue Ridge Project – Proposed Spillway Addition	1979	• Increased spillway capacity • Implementation of a comprehensive downstream emergency action plan. • The spillway addition was completed in 1985.
Construction of a Low-Level Outlet at Blue Ridge Dam and Hydro Plant	11/7/2001	• Construction of a low-level discharge outlet • The low-level discharge outlet (LLO) was completed in fall 2004
Construction of a Low-Level Outlet at Blue Ridge Dam and Hydro Plant, Fannin County, Georgia	11/25/2002	• Change in plan for proposed intake tunnel for the Low-Level Outlet • Change in location of the discharge structure for the Low-Level Outlet • Change in location of an access road.
Blue Ridge Dam Rehabilitation Project, Fannin County, Georgia	12/22/2009	• Repair of penstock • Repair and stabilization of the dam's upstream face • Stabilization of the intake tower base • Stabilization of the dam's downstream face

FONSI = Finding of No Significant Impact

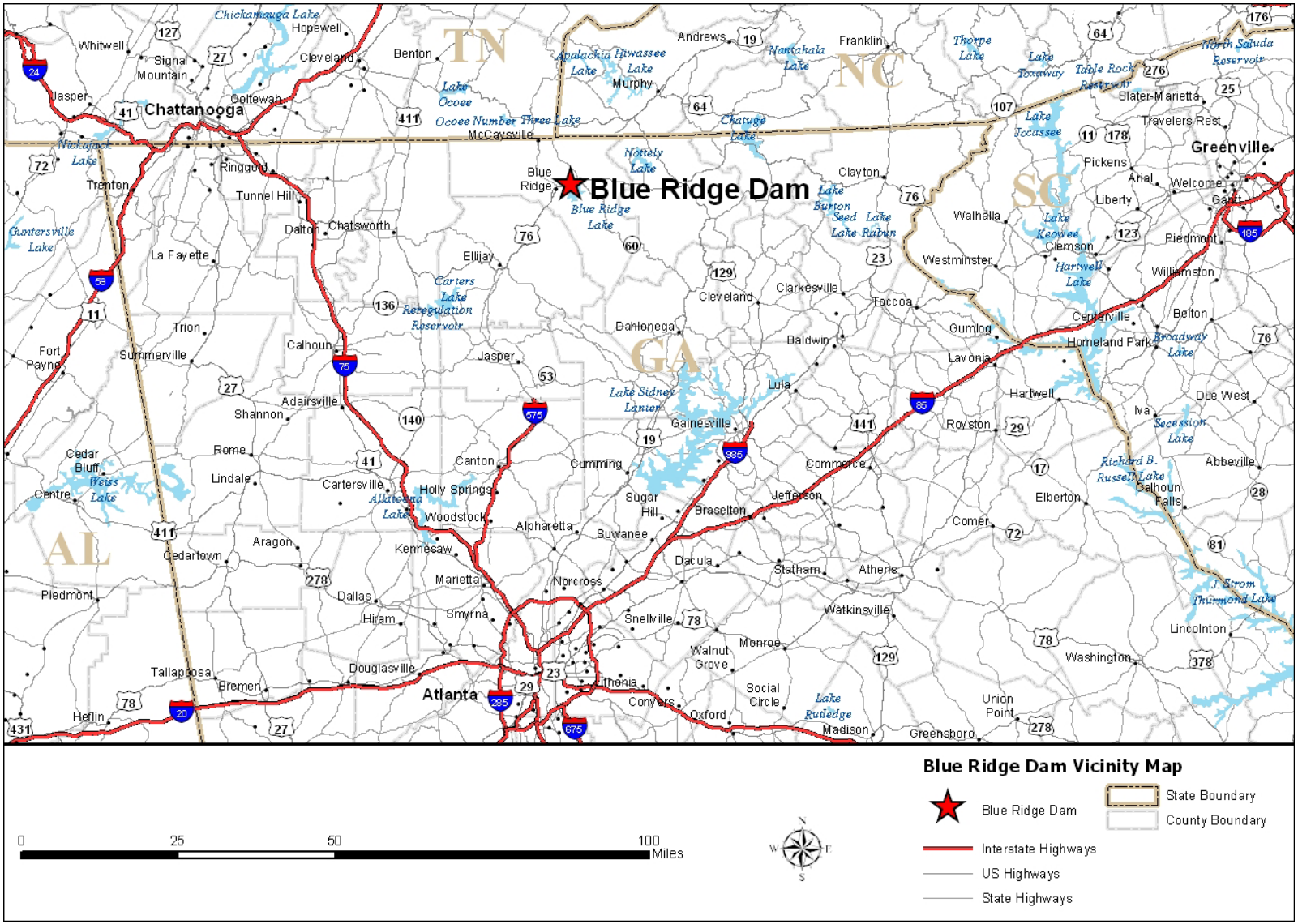

Figure 1. Blue Ridge Dam Vicinity Map

Changes to the Preferred Alternative

The alternatives originally proposed for the Blue Ridge Dam Rehabilitation project remain the same as for the original EA: the No Action Alternative and the Proposed Action Alternative of repairing the penstock, and upgrading Blue Ridge Dam to meet the recommendations in the *Federal Guidelines for Dam Safety* (FEMA 2004). However, the following are aspects of the proposed action that were not analyzed in the original EA:

Project Working Hour Extension

TVA would potentially extend project working hours for deliveries, rock handling, and placement activities up to 24 hours per day, seven days per week, instead of limiting these activities to the hours between 7:00 a.m. and 10:00 p.m. The limitations on working hours in the original EA were set to ensure that impacts of project related noise would be insignificant in the surrounding area. At the time of the original EA's preparation, the number and types of outdoor heavy equipment was not adequately defined for detailed analysis of noise impacts. In lieu of an in-depth noise analysis, TVA chose to limit outdoor activities to the hours between 7:00 a.m. and 10:00 p.m. as a conservative approach that would ensure the surrounding community would not be significantly impacted by construction-related noise. Hours for work that would be completed inside the penstock were not limited because the dam structure would prevent construction-related noise from reaching offsite noise receptors. The construction phase of the Blue Ridge Dam Rehabilitation Project is currently projected to be complete by October 2012, and the temporary work hour extension would occur during this phase. The Blue Ridge Dam Rehabilitation Project site, noise receptors, and surrounding roads are shown in Figures 2 and 3.

TVA could continue to work on the Blue Ridge Dam Rehabilitation Project during the hours specified in the original EA. However, should an unseasonably large rain event force work inside the penstock to be shut down then work on the project would have to be delayed until such time as the reservoir could be safely drawn down below 1,630 feet above mean sea level. Multiple rain events could lead to additional delays. As a result, workdays lost would be added to the completion schedule which could result in delay of refilling Blue Ridge Reservoir during spring of 2011. Similarly, if some other unforeseen event delayed project work, the schedule could be adversely impacted. A delay to the schedule of refilling Blue Ridge Reservoir could result in lower lake levels in 2011.

By extending the ability for project work to continue beyond the original planned hours, the project would not be delayed in the event of unforeseen circumstance. TVA would have the option to extend the hours for deliveries, rock handling and placement activities, and the associated use of heavy equipment up to 24 hours per day, seven days per week in order to recover lost work days and keep the project on schedule. This would increase the likelihood that the project would be completed on schedule and Blue Ridge Reservoir could begin filling early enough in the spring of 2011 to use the expected heavy spring rains. This revision to the action alternative includes all work schedule variations for extending project working hours for all delivery and construction activities for the Blue Ridge Dam Rehabilitation project after 10:00 p.m. and before 7:00 a.m. even if these schedule variations do not entail 24 hours per day and seven days per week operations. For the purposes of evaluating potential project hour extension impacts, analyses in this SEA assume that work schedules would be at the maximum of 24 hours per day seven days per week. Impacts on local roads would be minimal since the anticipated total number of project-related vehicle trips per day is comparable to that analyzed in the original EA and would be spread out over a longer period of time.

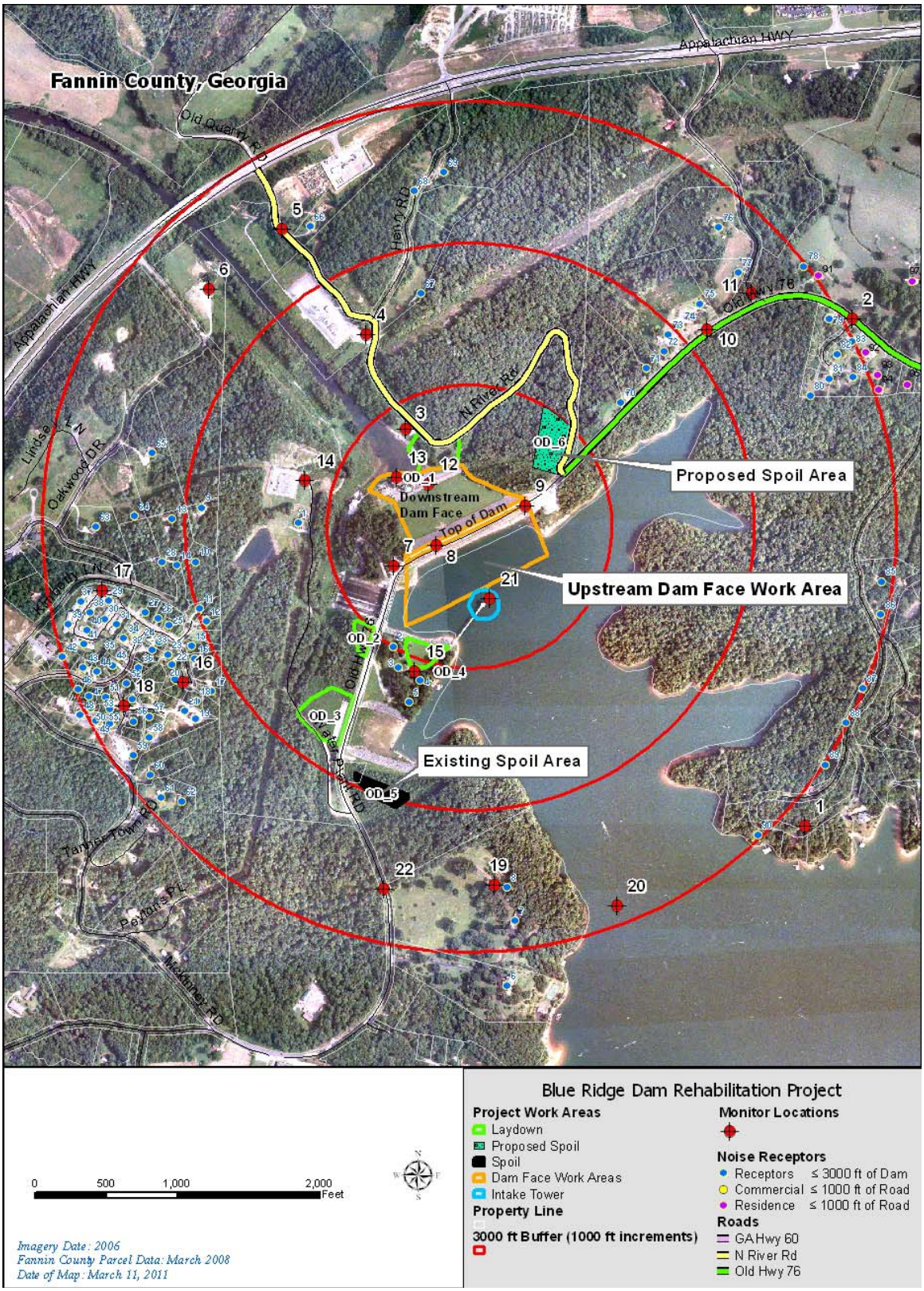

Figure 2. Blue Ridge Dam Rehabilitation Project Site with Project Work Areas, Noise Receptors, and Noise Monitoring Locations

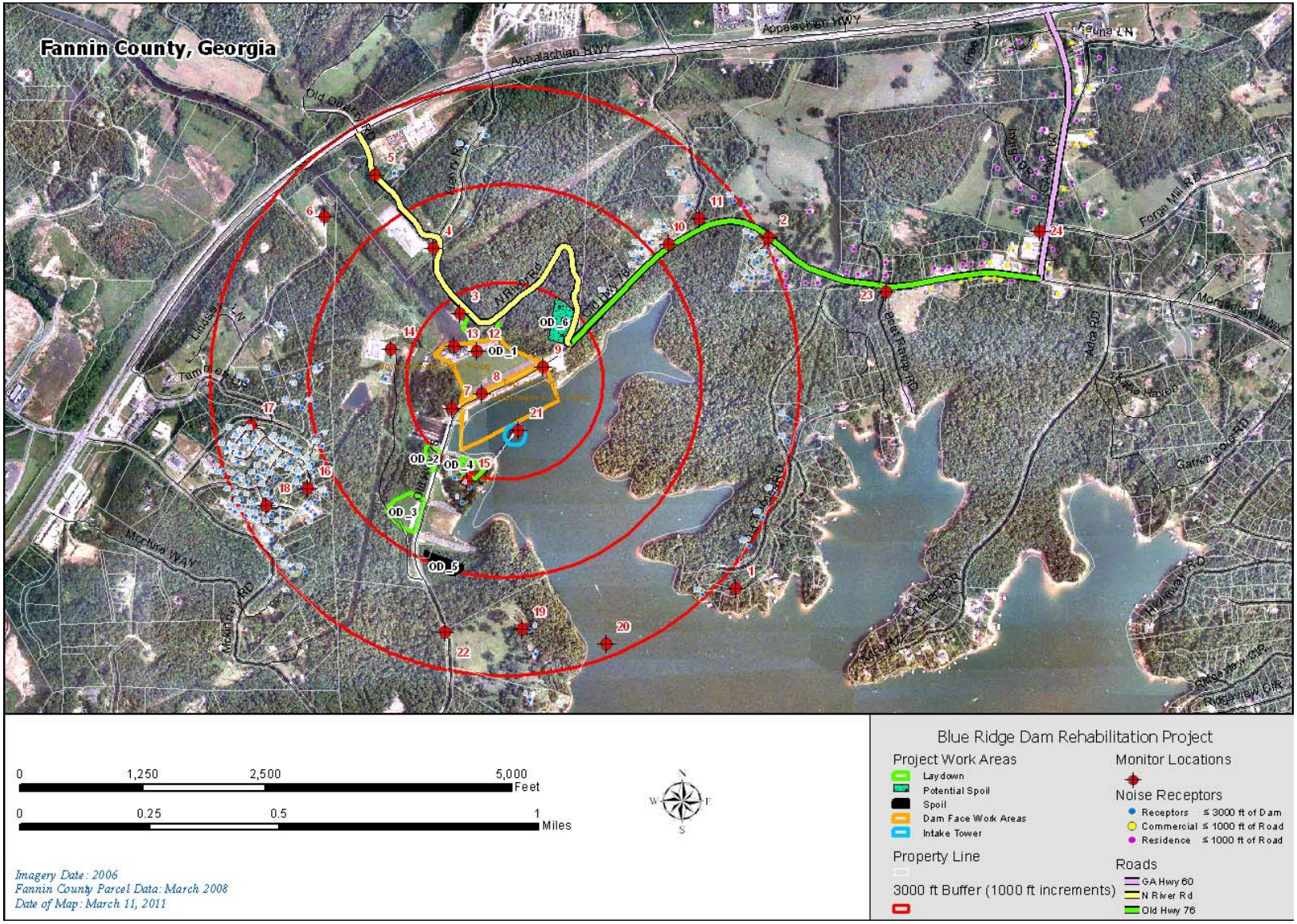

Figure 3. Blue Ridge Dam Rehabilitation Project Site and Adjacent Roads with Project Work Areas, Noise Receptors, and Noise Monitoring Locations

Establish an On-Site Spoil Area

TVA would create an additional on-site spoil area for temporary or permanent storage of old riprap and soil that would be removed from the upstream and downstream faces of the dam. The proposed site would be located near the intersection of North River Road and Veterans Memorial Highway on the northeast side of the dam (Figure 2).

The proposed on-site spoil area would be stripped of live, dead, or decayed vegetation, rubbish, debris, and other unsatisfactory material. All top soil would be removed. The subgrade[3] would be proofrolled[4] with a loaded tandem axle dump truck (ten ton gross load) to determine whether the subgrade is adequately prepared to support the new spoil area. Areas of excessive yielding would be excavated and backfilled with select fill. During construction of the spoils area, the manner and sequence of backfilling would be staged to provide proper drainage at all times. A slope of 3:1 would be used for the spoil area since this material would be from the dam faces where this slope has been maintained without issues. Erosion control measures that are consistent with TVA Best Management Practices (BMPs) and the Georgia Erosion and Sediment Control Manual would be used to prevent material deposited at the new on-site spoil area from eroding and reaching the Toccoa River. TVA's storm water pollution prevention plan has been modified to cover the new onsite spoil area. The plan includes requirements to promptly clean up any accidental spills, promptly and properly dispose of all wastes, and to monitor and sample receiving waters. At the conclusion of construction activities, the new on-site spoil area would be contoured and revegetated with native plant species or noninvasive plant species.

Temporary Closure of One or More Segments of North River Road

To reduce the risk of collisions between private motorists who might unexpectedly encounter slow-moving or stopped construction traffic on North River Road, TVA would temporarily close one or more segments of North River Road to the public for the duration of the construction phase of the Blue Ridge Dam Rehabilitation Project. Road closures would be implemented for the construction phase of the project which is expected to be completed by October 2012.

As previously mentioned, TVA has closed one segment of North River Road due to safety concerns (Figure 4). During the early phases of implementing the Blue Ridge Dam Rehabilitation Project, unanticipated traffic control issues associated with supply delivery were encountered on North River Road (Figure 5). TVA coordinated with Georgia and Fannin County officials to address these safety concerns during the summer of 2010. After advance notice of the closure appeared in the local newspaper, TVA closed public access to the southernmost segment of North River Road from the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access to Veterans Memorial Highway. This road segment is labeled: "North River Road Segment Temporarily Closed," in Figure 4. This road closure, a necessary safety measure, was not evaluated in the original EA. Localized traffic issues resulting from the need for tractor-trailer trucks to back into Power House Road from North River Road were not foreseen at the time of the preparation of the original EA. Figure 5 shows a truck backing into the road to the Power House from North River Road.

[3] Subgrade is a civil engineering term for the prepared earth surface which would serve as the foundation for the spoil area

[4] Proofrolling is a civil engineering technique for evaluating whether a surface would support a load or fail

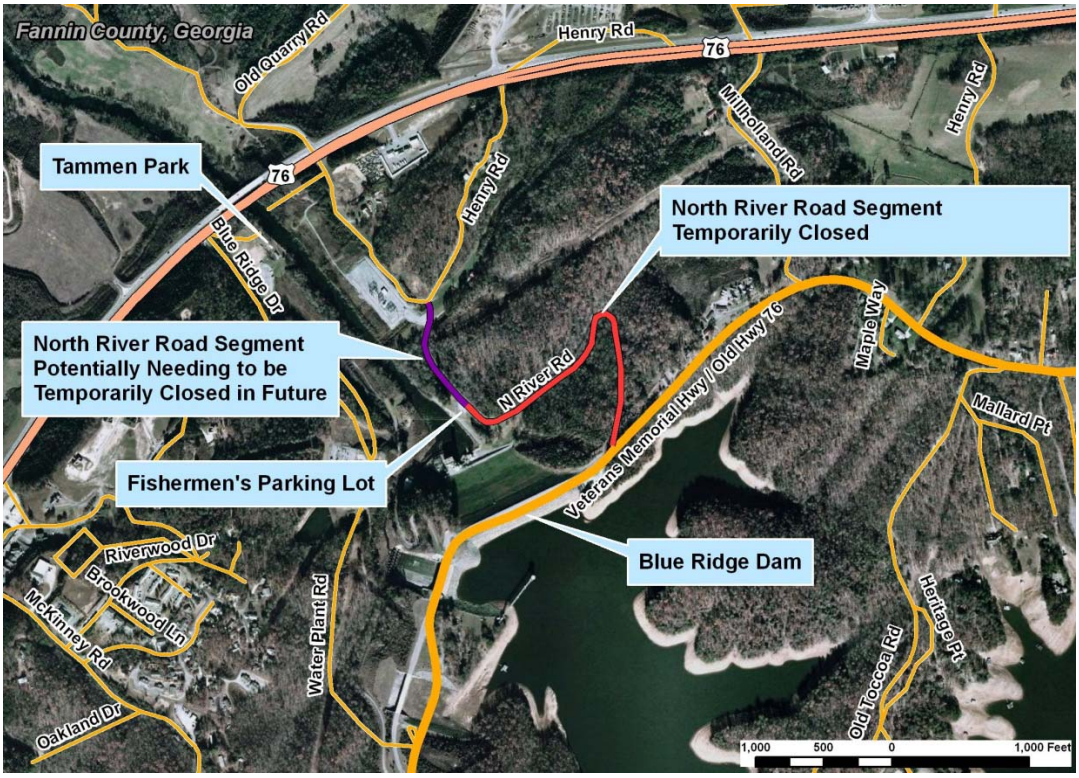

Figure 4 Segments of North River Road Potentially Needing Temporary Closure

Figure 5. Truck Backing Into Power House Road from North River Road

If practical, TVA plans to keep the Fishermen's Parking Lot and the Blue Ridge Dam Tailwater access open to the public for the duration of the construction phase of the Blue Ridge Dam Rehabilitation Project. However, should safety issues arise from project-related traffic, construction noise, or other aspects of construction, it may become necessary to close the segment of North River Road from the intersection with Henry Road to the Fishermen's Parking Lot (Shown in Figure 4 as "North River Road Segment Potentially Needing to be Temporarily Closed in the Future.") This SEA evaluates the environmental impacts of both the earlier temporary road closure and the potential future temporary road closure. Future Blue Ridge Dam Rehabilitation project-related temporary road closures would be managed using a collaborative process in which TVA would coordinate with Fannin County Road Department, the Fannin County School Board, Local Emergency Management Agencies, and the Georgia Department of Transportation (GDOT) (Attachment B).

Affected Environment and Evaluation of Impacts

Blue Ridge Dam and its surroundings were described in the original EA. Additional descriptive material in this section has been limited to details about the three proposed changes to the Action Alternative of Rehabilitating Blue Ridge Dam that were not included in the original EA.

Due to the nature of the three proposed changes to the construction phase of the Action Alternative of Rehabilitating Blue Ridge Dam, and the lack of wetlands, endangered and threatened species, managed areas, archaeological or cultural resources, or floodplains near the footprint of any of these proposed changes, impacts to these resources are not anticipated. Additionally, the proposed changes do not alter the analyses or conclusions of the analyses for air quality, socioeconomics, and environmental justice from the original EA, and no significant impacts on those resources are anticipated.

The three proposed changes to the original EA would not impact floodplains or wetlands, therefore, the proposed action would comply with Executive Order (EO) 11988 (Floodplain Management) and EO 11990 (Wetlands Protection).

<u>Surface Water Quality and Aquatic Life</u>

The analyses for potential impacts to Surface Water Quality and Aquatic Life in the original EA were based on the assumption that the construction phase of the project would proceed on a 24 hours per day, 7 days per week basis. As a result, the original EA commitments and mitigation measures would adequately protect surface water quality and aquatic life in event it is necessary to extend the project working hours.

Erosion control measures consistent with TVA BMPs and the Georgia Erosion and Sediment Control Manual would be used to prevent material deposited on the new spoil area from eroding and reaching the Toccoa River. The details of the protective measures such as locations for placement of silt fences, straw bales, or other barriers to erosion would depend on the final design and the requirements of the construction storm water permit, but would be implemented to prevent the discharge or loss of potential pollutants to either Blue Ridge Reservoir or the Toccoa Trout Tailwater. These measures would be expected to include requirements to promptly clean up any accidental spills, promptly and properly dispose of all wastes, and to monitor and sample receiving waters. Proper implementation of such control measures or any additional measure that might be required by the construction storm water permit would result in temporary and insignificant surface water and aquatic life impacts for construction and use of the proposed new onsite old

riprap and soil disposal area. Temporary road closures would have no anticipated surface water quality or aquatic life impacts. Due to the temporary and insignificant nature of the impacts of the proposed changes to the action alternative, no cumulative impacts to surface water and aquatic resources would occur.

Terrestrial Ecology

Project work hour extensions and temporary road closures would have no anticipated impacts on Terrestrial Ecology, because these changes do not include any new ground-disturbing activities. Impact analyses for the original EA assumed that project work would proceed at up to 24 hours per day 7 days per week, and no impacts were predicted as a result of that assumption. Creating a new on-site spoil area has some limited risk of spreading nonnative invasive species since material could be moved a short distance from the existing spoil area (shown as OD_5 in Figure 2) to the proposed new spoil area location (shown as OD_6 in Figure 2). However, this distance is relatively small, about 3000 feet. Site inspection did not find indications of developing red imported fire ant mounds or other evidence of exotic or invasive animal species. With the commitment to revegetate with native or noninvasive species, moving old riprap or soil from the existing spoil area to the new proposed on-site spoil area would have minimal risk of spreading invasive plant or animal species, and would comply with EO 13112. EO 13112 requires federal agencies to avoid causing the introduction or spread of invasive species.

Due to the temporary and insignificant nature of the impacts of the proposed changes to the action alternative, no cumulative impacts to terrestrial ecology would occur.

Recreation

Extending the project construction work hours of the Blue Ridge Dam Rehabilitation Project after 10:00 p.m. and before 7:00 a.m. would not be expected to adversely impact recreation. Potentially, if extended working hours resulted in the construction phase of the project being completed sooner and Blue Ridge Reservoir refilling to usual summer elevations sooner, a minor beneficial impact on recreation could occur. Establishing a new on-site spoil area for old riprap and soil removed from the dam faces would not be expected to impact recreation resources at Blue Ridge Reservoir or the Toccoa Trout Tailwater.

Temporarily closing one or more segments of North River Road could potentially have impacts on recreation. As discussed above, in response to unforeseen localized traffic issues, TVA temporarily closed the southernmost segment of North River Road from the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access to Veterans Memorial Highway in July, 2010. The Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access has remained open, and can be accessed from the northern segment of North River Road. Because the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access remains open, recreational impacts resulting from this temporary road closure on the Toccoa Trout Tailwater are minor and insignificant.

Recent forecasts of peak Blue Ridge Dam Rehabilitation Project truck deliveries per hour are somewhat less than earlier forecasts. However, when construction on the upstream dam face is complete, project-related truck traffic on North River Road is expected to increase which might cause delays and increase road hazards. If project management or their designated safety professionals deem it necessary for the safety of project personnel or members of the public, the segment of North River Road between the Fishermen's Parking Lot and the intersection of North River Road and Henry Road may need to be temporarily closed. For the purpose of impact analysis, this potential road closure would be

assumed to last for the remaining duration of the construction phase of the Blue Ridge Dam Rehabilitation Project. Closure of this additional road segment would in effect close public access to the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access.

TVA has two accesses on this part of Toccoa River: the Tailwater Access at Blue Ridge Dam Reservation and the Curtis Switch Access approximately 7.6 miles downstream. In addition, Fannin County has Tammen Park about 1,600 feet downstream of the Blue Ridge Dam Tailwater Access. The only recreational resource directly accessible by North River Road is the Tailwater Access, which is part of the TVA Reservation at Blue Ridge Dam. This facility is known by various names including River Access, Fisherman's Parking Lot, Fisherman's Parking Area, and "the steps below Blue Ridge Dam."

Research conducted for the Reservoir Operations Study (ROS) (TVA 2004) documented 17,394 recreational user days for the Blue Ridge Dam Tailwater Access during the 90 day period from August to October, 2002. The daily average of 193 users per day from the ROS is considered a low estimate of current peak use as demand has increased with population increases and two months of the 2002 survey period were outside of the Memorial Day to Labor Day peak summer recreation use period. Six fishing outfitters and one local canoeing and tubing outfitter provide trips on this section of the river. As discussed in the 2009 EA, the Toccoa River below Blue Ridge Dam is designated as a Primary Trout Stream by the State of Georgia and is stocked by the Georgia Department of Natural Resources.

If it becomes necessary to temporarily close both segments of North River Road leading to the Fishermen's Parking Lot at the Blue Ridge Dam Tailwater Access, or to close public access due to other issues, TVA would mitigate this temporary adverse impact on recreation by providing directional signage to the divert recreational users to the Tammen Park River Access, and by assisting if necessary to accommodate Fannin County's planned upgrades for the river access at Tammen Park. The planned upgrades at Tammen Park by Fannin County include streambank stabilization and construction of new river access stairs. By providing directional signage and improved river access facilities at Tammen Park, recreational impacts of closing the Blue Ridge Dam Tailwater Access for the duration of the construction phase of the Blue Ridge Dam Rehabilitation Project would be temporary and insignificant. Due to the temporary nature of the road closures, no cumulative impacts on recreation resources would be expected.

Visual Quality

As predicted in the original EA, temporary minor adverse visual impacts from the exposed overbank on the upstream side of the dam, construction activities, equipment movements, and traffic congestion have been observed in conjunction with the construction activities for the Blue Ridge Dam Rehabilitation Project. However, these impacts are temporary since the construction phase of the project is temporary. Long-term visual impacts of the project were addressed in the original EA (TVA 2009) and by a memorandum of agreement with the Georgia State Historic Preservation Officer.

Use of lights for illuminating work areas after 10:00 p.m. has the potential to cause light intrusion into homes. To mitigate this possibility, all lights used (including headlights and pole-mounted, equipment-mounted or structure-mounted floodlights) would either be fully shielded or would have internal low-glare optics, such that no light is emitted from the fixture at angles above the horizontal. For construction, this may require temporarily retrofitting headlights, floodlights, and other fixtures with external visors and side-shields.

Shielded Low Pressure Sodium would be used during the construction phase. Poles for area lighting and parking lot poles would be no taller than 40 feet, unless they are lighting objects taller than 40 feet. In such cases, pole heights would be minimized. Providing fixtures as indicated above would result in lighting that would have insignificant adverse impacts to other areas in the vicinity in event that project work hours were extended after 10:00 p.m. and before 7:00 a.m.

The visual disturbance from establishing a new on-site spoil area would be similar to other disturbed areas in the Area of Potential Effect (APE) evaluated in the original EA. Visual impacts on historical structures potentially eligible for inclusion in the National Register of Historic Places would not be expected.

The visual impacts of temporarily closing one or more segments of North River Road to the public would be limited to the minor increases in visible motor vehicle traffic on alternate routes. These minor, temporary, and insignificant increases in visual discord would end with the construction phase of the Blue Ridge Dam Rehabilitation Project.

Extending project working hours, building a new on site spoil pile, and closing one or more segments of North River Road would with the mitigation measures described above have only temporary and insignificant impacts on visual resources. Due to the temporary nature of these impacts, no cumulative impacts on visual resources would occur.

<u>Transportation</u>

Project Working Hour Extension

The evaluation of potential traffic impacts of extending project working hours up to 24 hours per day, 7 days per week was based on the transportation planning and engineering concept of level of service (LOS) found in the *Highway Capacity Manual* (Transportation Research Board 2000). The LOS concept includes 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 described in terms of travel time, comfort, safety, and maneuvering freedom, and it incorporates various measurable factors associated with a particular segment of a roadway. The six levels of service (A through F) listed below are defined by 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.

- 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."

Since the preparation of the original EA, revised estimates of the maximum numbers of trucks per hour have become available based on the rates at which the trucks can be loaded. The roads common to all the routes from the various quarries evaluated in the original EA are listed in Table 2. The road segments specific to the routes to each of the quarries are listed in Table 3. These tables update the information presented in the original EA to reflect the new estimated Average Annual Daily Traffic (AADT) counts and projected LOS for extending working hours to 24 hours per day 7 days per week. At this time, the Vulcan Materials Quarry in Blairsville (shown in bold in Table 3) would be assumed to be the most likely source of all rock used for the project because of contract obligations, but the quarries evaluated in the original EA were evaluated again, to provide impacts analyses in the event some unforeseen circumstance required TVA to use an alternate quarry.

As indicated in Tables 2 and 3, increasing deliveries of crushed stone and other materials to up to 24 hours per day, 7 days per week would not result in any changes in the levels of service of the surrounding roadway network. For this reason, the transportation impacts resulting from extending the project working hours up to and including 24 hours per day 7 days per week would be temporary and insignificant.

Establish an On-Site Spoil Area
The establishment of a new on-site spoil area for old riprap and soil from the upstream and downstream faces of Blue Ridge Dam would have no off-site transportation impacts due to the nature of this activity.

Table 2. Level of Service Analysis for Common Routes from Each Quarry: Projected Increases for 24-Hour Delivery

Route Name	Hours per Day	Days per Week	Weeks Duration	No. of Lanes	Projected 2011 AADT	Existing LOS	Projected Additional 2011 AADT	Percent Increase in AADT	Projected LOS
Georgia SR 515/Appalachian Highway	24	7	52	4	26,491	B	26,906	1.6	B
Old US 76 Connector			52	3+	data unavailable				
Old US 76/Veterans Memorial Highway	24	7	52	2	3,184	C	3,599	13	C

Table 3. Level of Service Analysis for Specific Routes from Each Quarry: Projected Increases for 24-Hour Delivery

Quarry Location	Route Name	Number of Lanes	Projected 2011 AADT Range	Existing LOS	Projected Increases in 2011 AADT Range	Percent Increase in AADT	Projected LOS
Dalton	US 76/Georgia SR 52	4	8,756	C	9,171	4.7	C
			40,019	D	40,434	1.0	D
	Georgia Alternate SR 52	2	4,208	D	4,623	9.9	D
			12,243	D	12,658	3.4	D
	Georgia SR 61	4	8,717	A	9,132	4.7	A
			15,848	B	16,263	2.6	B
	Georgia SR 282	4	4,745	A	5,160	8.7	A
			15,349	B	15,764	2.7	B
	Georgia SR 515/ Appalachian Highway	4	12,623	B	13,038	3.2	B
Ellijay	Georgia SR 52	2	6,148	D	6,563	6.8	D
			15,127	E	15,542	2.7	E
	Georgia SR 515/ Appalachian Highway	4	12,623	B	13,038	3.2	B
Blairsville	**Georgia SR 515/ Appalachian Highway**	**4**	**8,822**	**B**	**9,237**	**4.7**	**B**
			26,491	**B**	**26,906**	**1.5**	**B**
Murphy	US 74/US 19	4	23,594	B	24,009	1.7	B
	US 19/Blairsville Highway	2	7,472	D	7,887	5.6	D
	US 19/Georgia SR 11	2	6,606	C	7,021	6.3	C
			17,460	E	17,875	2.4	E
	Georgia SR 515/ Appalachian Highway	4	26,491	B	26,906	1.6	B
			12,623	B	13,038	3.3	B
Cleveland	US 64/Old Copper Rd	4	28,489	B	28,904	1.5	B
		2	6,182	C	6,597	6.7	C
			9,111	D	9,526	4.6	D
	Tennessee SR 68S	4	9,746	A	10,161	4.3	A
		2	8,937	D	9,352	4.6	D
	Georgia SR 5/ Blue Ridge Drive	2	8,573	D	8,988	4.8	D
			16,660	E	17,075	2.5	E
Hayesville	North Carolina SR 69	2	11,010	D	11,425	3.8	D
	US 76	4	9,477 22,533	B B	9,892 22,948	4.4 1.8	B B
	Georgia SR 515/ Appalachian Highway	4	8,822 26,491	B B	9,237 26,906	4.7 1.6	B B
Talking Rock	Whitestone Rd	2	No data				
	Georgia SR 515/ Appalachian Highway	4	19,711	B	20,126	2.1	B

AADT = estimated Average Annual Daily Traffic LOS = Level of Service

Bold = Route from the Blairsville Quarry assumed to be the most likely source of all rock for the project.

Temporary Closure of One or More Segments of North River Road
Temporary Closure of North River Road from Fisherman's Parking Area to Veterans Memorial Highway

For the purpose of environmental review of potential impacts, temporary road closures as described in this SEA should be assumed to be for the duration of the construction phase of the Blue Ridge Dam Rehabilitation Project. No traffic counts were provided by GDOT for North River Road in the Fannin County traffic count data. The primary purpose of North River Road is believed to be for access to the Blue Ridge Dam powerhouse and the Fishermen's Parking Area. Additionally, when fully open, North River Road is also used as a bypass for local traffic from Veterans Memorial Highway to the current US Highway 76. Given these conditions, North River Road would not be considered a primary traffic route and therefore maintains a low volume of traffic flow. During periods of normal traffic flow occuring before implementation of the Blue Ridge Dam Rehabilitation Project, the travel time from US Highway 76 to Veterans Memorial Highway would be expected to take about 2 to 3 minutes (see Figures 6 and 7). Before the Blue Ridge Dam Rehabilitation Project began, the default county road speed limit of 55 miles per hour (mph) applied to North River Road. After the project began, local motorists unexpectedly encountered either stopped or slow moving tractor-trailer trucks on North River Road resulting in a series of near collisions. Fannin County reduced the speed limit on North River Road to 15 mph, and numerous traffic citations were issued, however, the near-miss situations continued to occur.

Due to the lack of space for turning trucks around between Blue Ridge Dam, Power House Road, and the Toccoa River, trucks making deliveries to the downstream face of Blue Ridge Dam must back into Power House Road (Figure 5). This results in temporary road blockages which can not be seen by north-bound motorists travelling from Veterans Memorial Highway because of blind curves on North River Road. Due to concerns for the potential for imminent danger to private motorists, their passengers, flagmen, truck drivers, and the trucks associated with the Blue Ridge Dam Rehabilitation Project, TVA coordinated with GDOT, Fannin County Road Department, and the Fannin County School Board. The local newspaper published notice of the impending road closure on July 9, 2010. The southernmost segment of North River Road between the Fisherman's Parking Lot adjacent to the Blue Ridge Dam Tailwater Access and Veterans Memorial Highway was closed to public access on July 12, 2010. Since the northern segment of North River Road remains open, the public can still reach the Tailwater Access. Since the closure does not apply to project-related traffic, access to the dam powerhouse by construction related personnel and equipment has been improved by the removal of private motorists from this part of the road. Several alternate routes are available to serve local traffic travelling from US Highway 76 to Veterans Memorial Highway with the one or more segments of North River Road closed. Two of these are shown on Figures 8 and 9 and assume an individual would be travelling in the general west to east direction in relation to the road closure. For individuals travelling east to west/south in relation to the closure, travel times would be less. The first alternate route (Figure 8) takes into account the point an individual would have reached the intersection of North River Road and US Highway 76. This route goes east on US Highway 76 to Georgia Highway 60[5]. The route then turns right onto Georgia Highway 60, continuing south to intersect with Veterans Memorial Highway. The route goes west on Veterans Memorial Highway to the intersection with North River Road. The total length of this alternate route is approximately 3 miles with a travel time of 5 minutes.

[5] The section of Georgia Highway 60 being described is also known as Lakewood Highway, State Route 60, and SR 60. To avoid confusion, it will be referred to as Georgia Highway 60 in the text.

Figure 6. North River Road Near Blue Ridge Dam With Travel Time Information

Figure 7. North River Road and Henry Road Near Blue Ridge Dam With Travel Time Information

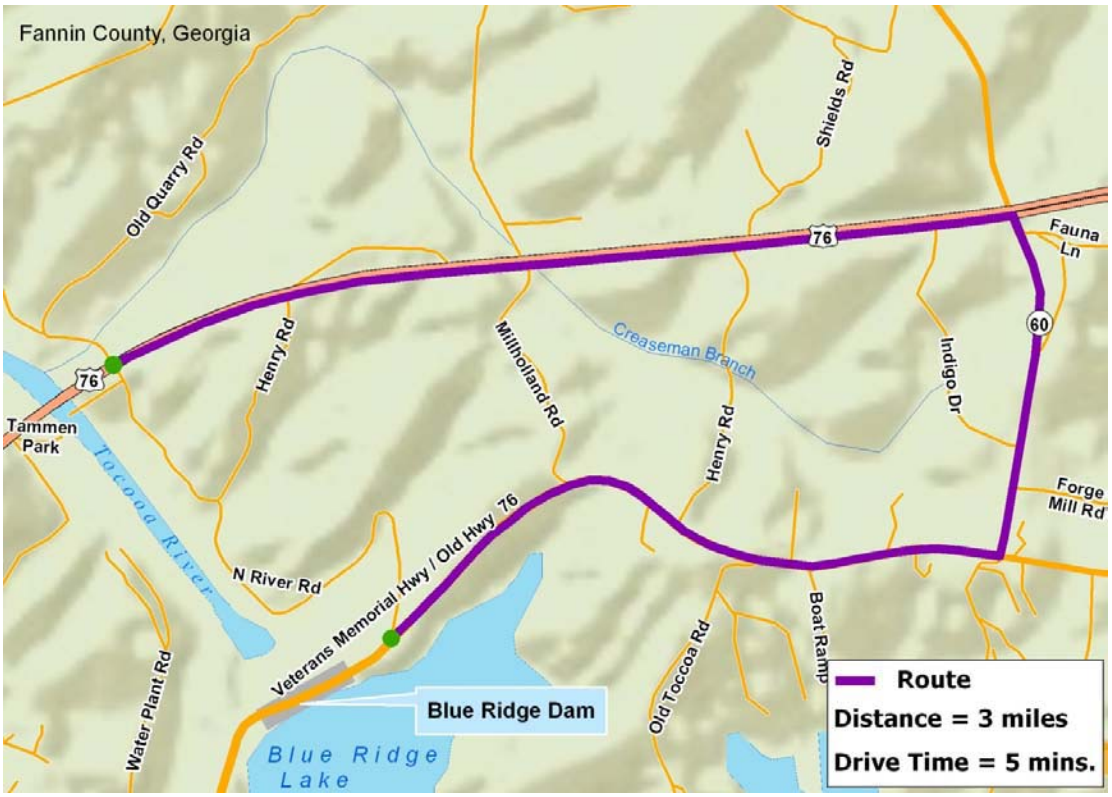

Figure 8. Alternate Route 1 for Closing North River Road Near Blue Ridge Dam

Figure 9. Alternate Route 2 for Closing North River Road Near Blue Ridge Dam

The second alternate route (Figure 9) would also go east on US Highway 76, but then turn right at the intersection with Millholland Road. The route then follows Millholland Road south to intersect with Veterans Memorial Highway. The route goes west on Veterans Memorial Highway to the intersection with North River Road. The total length of this alternate route is approximately 1.5 miles with a travel time of about 3 minutes. This route would be utilized by the Fannin County school bus that travels North River Road. The alternative route for the affected bus would only add about one minute to drive time. Since there are no residences adjacent to the road section to be closed, this rerouting would not affect number of stops by the school bus.

Due to the availability of alternative routes in close proximity to the temporary road closure, adverse direct and indirect impacts on transportation from temporarily closing North River Road between the Fishermen's Parking Area and Veterans Memorial Highway (as shown on Figure 4) will be temporary and insignificant. Beneficial impacts include improved public safety and traffic flow around the affected area. Due to the temporary nature of closure of this road segment and the availability of reasonable alternative routes, no cumulative effects are expected.

Potential Future Temporary Closure of North River Road from the Intersection with Millholland Road to Veteran's Memorial Highway

When the construction work on the upstream face of Blue Ridge Dam nears completion, the work will shift to the downstream face of the dam. Potentially up to 192 quad axle dump truck deliveries per day could be added to the traffic volume on North River Road. Since some of the truck traffic may continue to arrive by Veterans Memorial Highway, cross the dam, and access the downstream dam face from the southwestern side of the dam, peak traffic on North River Road may be less than 192 trucks per day, but the traffic on North River Road would increase. The anticipated peak number of tractor-trailer truck deliveries of about 5 to 8 trucks per hour could translate into truck arrivals of one truck every 7 to 12 minutes near the Garney Construction Trailer temporarily located just off of North River Road, immediately south of the Fisherman's Parking Lot below Blue Ridge Dam. Delays could result in multiple 30 foot long quad axle dump trucks being stopped and waiting along North River Road, essentially blocking the road. If localized project-related traffic increases on North River Road delay drive times from US Highway 76 to the Fisherman's Parking Lot to 20 minutes or more, or should other safety issues arise, it may become necessary to also close the segment of North River Road from the intersection with Henry Road to the Fishermen's Parking Lot (Shown in Figure 4 as "North River Road Segment Potentially Needing to be Temporarily Closed in the Future"). Since the segment of North River Road from the Fisherman's Parking lot to Veteran's Memorial Highway would remain closed, North River Road would be closed from its intersection with Henry Road to Veteran's Memorial Highway. Most of the property on both sides of this entire reach of North River Road is TVA land. There are a few residences located along Henry Road, but they have direct access to US Highway 76 by Henry Road and could use the alternate routes previously discussed to access Veterans Memorial Highway if necessary. Closing North River Road from Henry Road to the Fisherman's Parking Lot would have a temporary adverse effect because it would prevent public access to the Tailwater Access located immediately downstream of the dam. However, public access to the tailwater would still be available at Tammen Park, located about 1,600 feet downstream of the current access (Figure 4). If it became necessary to close this additional segment of North River Road, TVA would notify the local news media in advance of the closing and provide directional signage to reroute recreational users to the Tammen Park River Access. Due to the availability of multiple alternative routes in close proximity with increases in drive time of 10

minutes or less, and given the low volume traffic that uses North River Road, temporarily closing North River Road between the Henry Road intersection and Veterans Memorial Highway would have temporary, minimal and insignificant direct and indirect adverse impacts on the local traffic. The beneficial impacts of this additional temporary road closing would be to further improve public safety and traffic flow around the affect area. Since the road closing would be temporary, there would be no cumulative effects.

Noise

In order to evaluate potential combined noise effects of all of the proposed changes to the action alternative, these changes were assumed to be part of the construction phase of the project. The following noise analysis includes work at the proposed on-site spoil area and the noise emissions of project trucks on North River Road, as well as the potential noise impacts of extending project working hours.

Refined analysis of aerial photos with on the ground confirmation has led to the identification of 90 potential noise-sensitive receptors within approximately 3,000 feet of the dam. The potential noise receptors appear in Figure 2 as blue dots. Up to 22 noise monitoring locations have been monitored for baseline background and project noise within 3,000 feet of Blue Ridge Dam. These appear in Figure 2 as red dots with black cross-hatching. Figure 3 shows two more noise monitoring locations and 69 additional potential noise receptors located along Georgia Highway 60 and Veterans Memorial Highway. The additional noise receptors along Georgia Highway 60 and Veterans Memorial Highway have the potential to receive the noise of passing project-related trucks.

Noise Descriptors

Sound is caused by pressure fluctuations that generate energy waves in the surrounding air. Sound levels are typically measured using a logarithmic decibel (dB) scale. Sound that causes disturbance or annoyance, or unwanted sound, is often called noise. The terms sound and noise are used interchangeably in this analysis.

Human hearing varies in sensitivity for different sound frequencies. Frequency is the rate of variation of the pressure wave and is typically described in units of cycles per second or Hertz (Hz). Although we can hear sounds between roughly 20 and 20,000 Hz, the human ear is most sensitive to sound frequencies between 500 and 4,000 Hz and is less sensitive to sound frequencies below 250 Hz or above 10,000 Hz. Consequently, several different frequency weighting schemes have been developed to model the way the human ear responds to noise levels. The “A-weighted” decibel scale (dBA) is the most widely used for this purpose. A list of typical sound levels, in dBA, for example sound sources is presented in Table 4. Each increase of 10 dBA in sound pressure level is typically perceived as a doubling of loudness and each decrease of 10 dBA is typically perceived as cutting the loudness in half. A minimum of a 3 dBA change in sound pressure level is typically required for a person to notice the change.

Table 4 Sound Pressure Levels of Typical Noise Sources and Environments

Example Noise Source (at a Given Distance)	Sound Pressure Level in dBA	Example Noise Environment	Human Judgment of Noise Loudness
Commercial Jet Takeoff (200 ft)	120		Threshold of pain
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft)	100		Very loud
Motorcycle (25 ft)	90	Boiler Room	*4 times as loud
Highway Vehicles (50 ft)	80		*2 times as loud
Passing Cars (25 ft)	70	Urban Daytime	*Reference Loudness
Normal Conversation (5 ft)	60	Busy Office	*1/2 as loud
Light Traffic (100 ft)	50	Suburban Daytime	*1/4 as loud
Bird Calls (distant)	40	Rural Daytime	Quiet
Soft Whisper (5 ft)	30	Quiet Bedroom	Very Quiet
--	20	Recording Studio	Just audible
--	0		Threshold of hearing

Source: URS 2009
*Based on perception, relative to a reference sound pressure level of 70 dBA

Varying sound levels are often described in terms of an equivalent decibel level. Equivalent sound levels (L_{eq}) are not simple averages of decibel values but are based on the total acoustical energy associated with the varying sound levels. L_{eq} values sometimes are referred to as energy-averaged sound levels. They are the constant sound levels that have the same acoustic energy as the time-varying signal over a specified time period. As a consequence of the calculation procedure, high dB events contribute more to the L_{eq} value than do low dB events. L_{eq} values are used to develop single-value descriptions of average sound exposure over various periods of time. Such average sound exposure ratings often include additional weighting factors for potential annoyance due to time of day or other considerations. The L_{eq} data used for average sound exposure descriptors are generally based on A-weighted sound level measurements.

Sound exposure over a 24-hour period is often presented as a day-night average level (L_{dn}). L_{dn} values are calculated from hourly L_{eq} values, with the L_{eq} values for the nighttime period (10 p.m. to 7 a.m.) increased by 10 dB to reflect the greater disturbance potential from nighttime sounds.

Acoustical energy reduces with distance as it propagates over a larger area, generally in a spherical spreading pattern, away from a point source where the sound waves were generated. Generally speaking, the sound pressure level emitted from a point source (a sound source small in size compared to the distance of interest) decreases by approximately 6 dBA for each doubling of distance from the source. Sound emitted from a line of point sources spreads in a cylindrical pattern and decreases approximately 3 dBA for each doubling of distance from the source. In addition to this effect, sound intensity is also affected by atmospheric and ground effects outdoors at distances greater than several hundred feet from a sound source.

Existing Project-Related Background Sound Levels
Background noise monitoring with construction activities in progress was performed between 9:00 a.m. and 5:00 p.m., October 21, 2010. An appropriately calibrated integrating sound level meter was used to record the data. Weather conditions during the early part of the monitoring sessions were clear with light winds (5 miles per hour [mph] or less) and temperatures ranging from the low 40s to the low 50s in degrees Fahrenheit. Wind speeds

accelerated into the 6 to 11 mph range with gusts up to 20 mph during the readings collected later in the day; for the readings with wind gusts higher than 12 mph, only the field observations are reported. Table 5 summarizes the results of the daytime project background noise monitoring in the area, showing background sound levels in the mid to upper 40s on the dBA scale in the off-site noise-sensitive (residential) areas.

Without extension of working hours, the noise receptors nearest the project work site and adjacent to Georgia Highway 60 and Veterans Memorial Highway might occasionally hear either a passing project-related vehicle or construction noise from the project site, especially if they were outdoors. These minor and insignificant noises would occur between the hours of 7:00 a.m. and 10:00 p.m.

Table 5. Monitored Daytime Background and Project-Related Sound Pressure Levels near the Blue Ridge Dam Rehabilitation Project

Noise Monitoring Location	Description	15-Minute Leq (dBA)	Dominant Noise Sources
1*	Residences on Point southeast of Blue Ridge Dam	Readings invalid due to windspeed 10 mph with gusts to 19 mph	Distant construction noise, area secluded, no traffic
2*	Subdivision South of Veterans Memorial Highway to east and north of Blue Ridge Dam	Readings invalid due to windspeed 10 mph with gusts to 19 mph	Light traffic noise
3	TVA's Tailwater Access at Blue Ridge Dam	Readings invalid due to windspeed 9 mph with gusts to 14 mph	Construction near site and rushing water
4	TVA's Toccoa River, Georgia 161-kV Substation	Readings invalid due to windspeed 9 mph with gusts to 14 mph	Tractor-trailer truck idling nearby
5	Henry Road South of US Highway 76	Readings invalid due to windspeed 9 mph with gusts to 14 mph	Near highway (US Hwy 76 / GA Hwy 515), one loud car driving by
6	Tammen Park	55.7	Highway traffic audible from US Hwy 76 / GA Hwy 515
7	West end of the dam (top)	61.2	Occasional traffic from construction vehicles - dump trucks
8	Middle of the dam (top)	65.6	Construction on both sides, occasional construction traffic
9	East end of the dam (top)	Readings invalid due to windspeed 8 mph with gusts to 19 mph	Project trucks driving past
10*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway (Old US Highway 76)	Readings invalid due to windspeed 8 mph with gusts to 19 mph	Light traffic noise

Noise Monitoring Location	Description	15-Minute Leq (dBA)	Dominant Noise Sources
11*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway (Old US Highway 76)	Readings invalid due to windspeed 11 mph with gusts to 20 mph	Light traffic noise
12	Base of the dam on downstream side near the penstock	Readings invalid due to windspeed 8 mph with gusts to 18 mph	Rushing water
13	Taildeck of the powerhouse	64.3	Construction nearby, Blue Ridge Dam Low Level Outlet flowing at high velocity contributing to noise
14	Blue Ridge Water Treatment Plant	56.2	Rushing water; construction audible in distance
15*	Fannin County Recreation Department Housing on TVA Reservation west of dam	51.7	Light construction noise
16*	Subdivision West of Blue Ridge Dam	49.5	Distant highway noise
17*	Subdivision West of Blue Ridge Dam	48.8	Residents talking, passing cars
18*	Subdivision West of Blue Ridge Dam	47.1	Distant highway noise, passing car
19*	Residence South of Blue Ridge Dam	44.0	Birds and distant construction.

*Noise-sensitive area

Noise Criteria

The nearest local municipality that has regulations dealing with noise is the City of Blue Ridge; however, the Blue Ridge Dam is not in the City limits of Blue Ridge. The potentially relevant criterion addresses construction activities within 1,500 feet of residences or noise-sensitive areas and there are no Blue Ridge residences or noise-sensitive areas within 1,500 feet of the project activities. There are, therefore, no local criteria relevant to this project.

TVA does not have specifically identified noise criteria, except for those used for protecting workers from noise-induced hearing loss which are incorporated in TVA's Hearing Conservation Program, Procedure Number 310 (TVA 2010). These standards come from the Occupational Safety and Health Administration (OSHA) standards per 29 CFR Part 1910.95 which are based on a permissible exposure limit of an 8-hour time-weighted average (TWA) of 90 dBA without a documented hearing threshold shift and an 8-hour 85 dBA TWA with a hearing threshold shift. TVA's 8-hour TWA limit is 85 dBA. If these limits are exceeded, engineering or administrative controls to reduce exposures below the limits or a formal hearing conservation program are required.

Federal noise regulations for reference include those published by the Department of Housing and Urban Development (HUD) and the Federal Highway Administration (FHWA). HUD publishes exterior noise regulations in 24 CFR Part 51B. HUD's regulations consider an L_{dn} of less than 65 dBA outdoors to be an acceptable environment for housing with an

interior L_{dn} goal of 45 dBA. FHWA publishes their exterior noise limits in 23 CFR Part 772. This regulation limits surface vehicle noise levels to not approach or exceed (to within 1 dBA) a peak hour L_{eq} of 67 dBA or to not substantially increase hourly L_{eq} levels (defined by individual State Departments of Transportation as up to a 15 dBA hourly L_{eq} increase over existing levels without the project) for residential communities. GDOT defines a substantial noise increase as an increase of 10 dBA or more in hourly L_{eq} over existing levels.

The Federal Transit Administration (FTA) has construction noise guidelines (FTA 2006) but they are more relevant to shorter term projects in urban environments and the limits are much higher than other guidelines with a residential nighttime limit of 80 dBA hourly L_{eq} and 75 dBA L_{dn}. These kinds of limits would not be practical in the quiet suburban area around this project.

In the absence of applicable regulations for defining an absolute or relative threshold for acceptable noise from the project, an exterior L_{dn} of 55 dBA could be considered for the purposes of making a conservative environmental impact assessment. This guideline, from the U.S. Environmental Protection Agency (EPA), specifically addresses issues of community noise (EPA 1974) and contains goals for noise levels affecting residential land use of L_{dn} <55 dBA for exterior levels and L_{dn} <45 dBA for interior levels. Since L_{dn} is calculated with a 10-dBA penalty for sounds occurring between 10 p.m. and 7 a.m., a 45 dBA hourly L_{eq} nighttime limit would ensure nighttime compliance with the 55-dBA L_{dn} guideline. This 45 dBA L_{eq} nighttime exterior noise limit has also been established by the World Health Organization in their community noise guidelines (WHO 1999). The EPA/WHO noise limits of 45 dBA hourly L_{eq} for nighttime noise and 55 dBA L_{dn} for daytime noise was used as the noise criteria for off-site noise emissions for on-site construction operations for the Blue Ridge Dam Rehabilitation Project. The GDOT and FHWA absolute noise limit of 66 dBA hourly L_{eq}. noise emissions for traffic was used as the criteria for the off-site project related truck noise. The GDOT definition of a significant noise increase for traffic as being 10 dBA or more in hourly L_{eq} over existing levels was also used in the following analysis.

Noise Analysis Methodology

Noise Sources

As is stated above, this analysis was performed to determine the potential effects of extending the period of delivery, handling, and placement of crushed stone, riprap, and other materials to include the nighttime hours of 10:00 p.m. to 7:00 a.m. Table 6 lists reference sound levels for the types of equipment that may be used in these operations. These values are generally typical of those published by federal agencies for construction equipment and will be used as a basis for periodic monitoring to ensure compliance with the guidelines set forth in this document (see Attachment A). These levels are assumed to include all sound sources related to each piece of equipment, including back-up alarms and rock maneuvering.

Beside periodic truck movements around the entire area of the site for deliveries and hauling of materials, concentrated outdoor activities would occur at the upstream and downstream faces of the dam, in addition to continued penstock work that would be acoustically shielded by the dam structure for the most part. The concentrated nighttime activities would involve trucks, dozers, and a backhoe/excavator. Although the equipment would most likely be operating intermittently, this analysis assumed the worst case that all

of these pieces of equipment would be operating at their maximum permissible sound levels full time, simultaneously, and at the same location.

Table 6. Typical Maximum Noise Emissions for Equipment

Construction Equipment Type	Maximum Sound Pressure Level (L_{max}) in dBA measured at 50 feet
Air Compressor	80
Backhoe	80
Concrete or Grout Pump	82
Concrete Truck/Mixer	85
Crane, Mobile	85
Dozer	80
Dump Trucks	84
Generator	82
Grader	85
Hoe Ram	90
Jackhammer	85
Loader	79
Paver	85
Rock Drill (Pneumatic)	93
Rock Drill (Hydraulic)	88
Roller	80
Trackhoe	85
Miscellaneous Trucks	84

Sources: Blue Ridge Rehabilitation Project Final Environmental Assessment, 2009; and Sea to Sky Highway Improvement Project Appendix 4 Noise Monitoring and Mitigation Plan

Sound Propagation

As is mentioned above, sound pressure levels generally dissipate at a rate of 6 dBA per doubling of distance from a stationary source due to spherical spreading of the sound energy. In addition to that effect, ground cover and atmospheric conditions can affect sound travel over distances greater than several hundred feet from a source. The ground cover in and around the project site varies significantly, from the acoustically reflective surfaces of the dam and the nearby bodies of water to the acoustically absorptive surfaces of the vegetation and soft ground cover outside the project area, as well as the hilly terrain and sharp elevation changes of the dam (which can shield sound travel to surrounding areas). These complex aspects of the project area require the use of advanced calculation methods to ensure that these aspects are considered in the analysis. Therefore, the Cadna/A computer modeling was used to predict the project noise levels at the closest residences. Cadna/A is accepted internationally for noise mapping and is based on International Organization for Standardization (ISO) 9613-2 standard sound propagation methodologies. Topography and ground cover characteristics are key input values to the Cadna/A model.

Since on-site nighttime trucking operations would occur on North River Road as part of the project activities, as well as off-site trucking on Veterans Memorial Highway and Georgia

Highway 60, the latest version (2.5) of the FHWA Traffic Noise Model (TNM) was used to predict noise levels associated with passing trucks at the closest noise-sensitive locations. TNM is the standard traffic noise model used for projects throughout the US.

Existing Nighttime Background Sound Levels
Background noise monitoring (with no construction activities on the project site) in representative areas was performed between 11:00 p.m. on Sunday, October 31 and 6:00 a.m. on Monday, November 1, 2010. Weather conditions during the monitoring sessions were clear with light (5 miles per hour or less) winds and temperatures in the low 40's in degrees Fahrenheit. Table 7 summarizes the results of the nighttime background noise monitoring in the area, showing background sound levels in the mid to upper 30s on the dBA scale in off-site noise-sensitive (residential) areas. This means using the 45 dBA noise goal for offsite operations translates to roughly a 10 dBA increase over nighttime background levels, which is a typical limit used in effective community noise criteria.

Table 7. Monitored Nighttime Background Sound Pressure Levels Near the Blue Ridge Dam Rehabilitation Project with No Project Work in Progress

Noise Monitoring Location	Description	15-Minute Leq (dBA)	Dominant Noise Sources
1*	Residences on Point southeast of Blue Ridge Dam	38.6	
2*	Subdivision South of Veterans Memorial Highway to east and north of Blue Ridge Dam	36.6	
3	TVA's Tailwater Access at Blue Ridge Dam	54.9	Rushing water
4	TVA's Toccoa River, Georgia 161-kV Substation	45.2	Transformers
5	Henry Road South of US Highway 76	42.2	
6	Tammen Park	42.2	
7	West end of the dam (top)	42.1	
8	Middle of the dam (top)	48.3	Transformers
9	East end of the dam (top)	39.7	
10*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway (Old US Highway 76)	35.6	
11*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway (Old US Highway 76)	36.2	
12	Base of the dam on downstream side near the penstock	49.3	Rushing water
13	Taildeck of the powerhouse	N/A**	
14	Blue Ridge Water Treatment Plant	50.0	Rushing water
15*	Fannin County Recreation Department Housing on TVA Reservation west of dam	41.1	
16*	Subdivision West of Blue Ridge Dam	37.8	
17*	Subdivision West of Blue Ridge Dam	37.0	
18*	Subdivision West of Blue Ridge Dam	34.3	
19*	Residence South of Blue Ridge Dam	34.4	

*Noise-sensitive area
**Due to similarity between data from monitoring points 12 and 14, and time limitations; access was not attempted.

Noise Impacts Evaluated
The closest off-site noise-sensitive locations (the blue dots on Figure 2) to the project activities are receptor locations 9 to the west, 67 to the north, 8 to the south, and 70 to the east. Although receptor locations 1 through 5 are closer to the project site than these locations, they fall into different categories. Receptor location 1 is at the Blue Ridge Water Treatment Plant and it is not a noise-sensitive location. Receptor locations 2 through 5 are residential style buildings; however, only location 4 is an active residence, and they all are on TVA property and are being used by the Fannin County Recreation Department and the North Georgia Community Action Agency. Since these locations are closer to the project than the off-site locations, project sound levels were predicted to be up to 6 dBA higher at these locations than at the closest off-site noise-sensitive locations. This analysis mainly addresses the off-site locations.

Table 8 summarizes the maximum predicted project noise levels at the closest noise-sensitive locations in each direction. These values assume the project activities are concentrated at four locations (shown as red dots on Figure 2):

1. Monitoring location 7 at the west end of the top of the dam
2. Monitoring location 9 at the east end of the top of the dam
3. Monitoring location 12 at the center of the base of the downstream dam face
4. Monitoring location 13 at the west end of the downstream dam face (taildeck of the powerhouse)

It should be noted that the conditions for which all equipment are located at monitoring locations 7 and 9 represent worst-case scenarios for upstream dam face work since these locations are at higher elevations and closer to noise-sensitive receptors than the locations where work would actually occur.

Table 8 shows that the goal nighttime L_{eq} limit of 45 dBA is predicted to be exceeded at the closest residences to the west and east in some scenarios when the equipment is concentrated at the edges of the dam. Considering the measured background sound levels in the mid to upper 30's on the dBA scale in the closest residential communities, these activities may be audible at night in those areas. In each of these cases, however, the L_{dn} would be less than the EPA goal of 55 dBA. These predictions assume that the equipment would be operating continuously and simultaneously at the same location. The actual situation of equipment running intermittently and spread out (and moving) throughout the area would further reduce noise exposures to the surrounding communities.

Table 8. Maximum Predicted Nighttime Project Sound Pressure Levels at the Closest Noise-Sensitive Locations to the Project

Noise Receptor Location	Nighttime L_{eq} (dBA)			
	Sources at Monitoring Location 7	Sources at Monitoring Location 9	Sources at Monitoring Location 12	Sources at Monitoring Location 13
9 – west	46.5 (52.9 L_{dn})	43.5	44.9	46.6 (53 L_{dn})
67 – north	43.5	44.5	40.6	43.3
8 – south	41.7	41.9	29.6	28.6
70 - east	46.8 (53.2 L_{dn})	47.3 (53.8 L_{dn})	47.5 (53.9 L_{dn})	44.5

Therefore, as long as the equipment meets the noise limits prescribed in Table 6, no significant impact is expected from nighttime operations related to delivery, handling, and placement of rock for this project. Since rock drilling activities using equipment with noise emissions comparable to those in Table 6 would cause the sound levels to increase by up to 5 dBA over those listed in Table 8, rock drilling activities outside of the penstock would be limited to the hours between 7:00 am and 10:00 pm.

With regard to nighttime truck traffic on North River Road, the closest noise-sensitive locations are receptor location 66 (to the north of the project and 160 feet from the road) and receptor location 70 (to the east of the project and 333 feet from the road). TNM analysis for these locations, based on the maximum expected 8 trucks passing per hour at 15 miles per hour speeds, yields hourly L_{eq} values of 41.6 dBA at receptor location 70 and 46.7 dBA at receptor location 66. These values do not approach the FHWA or GDOT noise criteria and only slightly (by less than 2 dBA) exceed our 45 dBA goal at location 66 (which would be the only noise-sensitive location where the 45 dBA goal may be exceeded by truck traffic).

With regard to off-site nighttime trucking along Veterans Memorial Highway and Georgia Highway 60, the on-site section of Veterans Memorial Highway has been closed to public traffic since early in the project. Using GDOT traffic data for this area before the road was closed to public traffic, TNM calculates an existing nighttime hourly L_{eq} of 54.7 dBA at the closest residences to the roadways (roughly 50 feet away). Assuming the maximum planned nighttime project truck passbys of 16 per hour along Veterans Memorial Highway and Georgia Highway 60, TNM predicts an hourly L_{eq} of 58.7 dBA at the residences closest to these roadways. Since this relates to the closest residences to the roadways and the maximum number of nighttime truck passbys, it represents the worst case scenario. This translates to an increase in hourly L_{eq} of 4 dBA over existing levels, far less than the 10 dBA increase GDOT impact criterion. The absolute level of 58.7 dBA is also far less than the 66 dBA GDOT and FHWA absolute noise limit. Therefore, no significant impact is expected from off-site nighttime trucking activities for this project.

Cumulative Impacts

Project Working Hour Extension

Since the proposed project working hour extension is only for the project duration, there would be no long-term cumulative impacts. The minor visual impacts of construction activities would end with the project. The increased nighttime truck traffic would end with completion of the project. Similarly, evening noise generated by the project would end with the project. Therefore any temporary cumulative impacts would be minor and insignificant.

Establish an On-Site Spoil Area

As discussed above, the minor visual impacts of the construction activities at the new on-site spoil area would end when construction activities ended. Because the site would be appropriately contoured and revegetated with native or noninvasive plant species there would be no long-term cumulative adverse visual impacts due to the proposed new spoil area.

Temporary Closure of One or More Segments of North River Road

Because the proposed road closures would be temporary, there would be no long term cumulative impacts. The alternate routes available for public use would add from one to three minutes of drive time for the duration of the project depending on the route selected. North River Road is part of one Fannin County school bus route. The alternate route for the

affected bus would add about one minute of drive time. Since other school buses do not travel North River Road either during usual circumstances or when Veterans Memorial Highway is closed, there would be no additional impacts to school bus traffic from a partial closing of North River Road during the time Veterans Memorial Highway is closed over Blue Ridge Dam. Therefore, temporary cumulative impacts are minor and insignificant.

Mitigation Measures

Since transportation impacts remain minor and insignificant, no mitigation measures are needed. The environmental commitments and mitigation measures of the original EA are incorporated by reference. The following measures would ensure no significant environmental impacts for the minor modifications of the action alternative of rehabilitating Blue Ridge Dam

1. All lights used (including headlights and pole-mounted, equipment-mounted or structure-mounted floodlights) would be fully shielded or would have internal low-glare optics, such that no light is emitted from the fixture at angles above the horizontal. For construction, this may require temporarily retrofitting headlights, floodlights, and other fixtures with external visors and side-shields. Shielded low pressure sodium lights would be used during the construction and operational phases. Area lighting and parking lot poles would be no taller than 40 feet, unless they are lighting objects taller than 40 feet. In such cases pole heights would be minimized. Providing fixtures as indicated in this commitment would result in lighting that would have insignificant adverse impacts.

2. Erosion control measures consistent with TVA BMPs and the Georgia Erosion and Sediment Control Manual would be used to prevent material deposited at the new on-site spoil area from eroding and reaching the Toccoa River.

3. At the conclusion of construction activities, the new on-site spoil area would be contoured and revegetated with native plant species or noninvasive plant species.

4. If it becomes necessary to close North River Road from the intersection with Henry Road to Veterans Memorial Highway, public notice would be provided, and directional signage would be provided to reroute tailwater users to the Tammen Park River Access.

5. If it becomes necessary to close North River Road from the intersection with Henry Road to Veterans Memorial Highway, TVA would assist if necessary to accommodate Fannin County's planned upgrades of the river access at Tammen Park, including streambank stabilization and construction of new river access stairs.

6. The noise-monitoring plan described in Attachment A would be followed.

7. Noise emissions from equipment used for work on the dam faces after 10:00 PM and before 7:00 AM would be less than or equivalent to the values given in Table 6, or corrective measures as described in the noise monitoring plan would be implemented.

8. Rock drilling activities outside of the penstock would be restricted to the hours between 7:00 am and 10:00 pm.

9. All noise-producing equipment and vehicles using internal combustion engines should be equipped with exhaust mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., generators or air compressors) would be equipped with shrouds and noise control features that are readily available for that type of equipment.

10. All mobile or fixed noise-producing equipment used on the project, which is regulated for noise output by a local, state, or federal agency, would comply with such regulation while in the course of project activity.

11. The use of noise-producing signals, including horns, whistles, electronic alarms, sirens, and bells, would be for safety warning purposes only.

12. The trucking noise analysis assumed that engine brakes (also known as Jake brakes) would not be used. The contractors would be made aware that engine brake usage, especially at night, would be practiced only in emergency situations.

13. No project-related public address, loudspeaker, or amplified music system would exhibit sound levels that exceed limits imposed by local regulations at any adjacent noise-sensitive land use.

14. Additionally, TVA would implement a noise complaint process and hotline number for use by members of the surrounding community. Were such a hotline established, TVA or its compliance inspectors would have the responsibility and authority to receive, evaluate, and when appropriate make reasonable efforts to resolve noise complaints.

With implementation of mitigation measure 1, no significant adverse visual impacts would occur. Based on the noise criteria and modeling results, no adverse noise impacts would be anticipated from the proposed extension of project working hours. However, the noise analysis assumed that the work would use equipment that meets the limits prescribed in Table 6. Implementation of mitigation measures 6 through 14 would ensure that the assumptions for the noise analysis remain valid, and no significant adverse noise impacts would occur.

Preferred Alternative

TVA's preferred alternative remains the same as for the original EA, the Action Alternative, i. e., repair the penstock, repair and stabilize the upstream face of the dam, stabilize the intake tower, and stabilize the downstream face of the dam. This Supplemental EA addresses potential changes to the preferred alternative which were unforeseen at the time of the preparation of the original EA.

TVA Preparers

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Agencies and Others Contacted

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Attachments

Attachment A: Environmental Noise Monitoring Plan for the Blue Ridge Dam Rehabilitation Project

Attachment B: Adaptive Management Plan for Addressing Temporary Road Closures or Other Corrective Measures Needed to Reduce Road Safety Hazards Associated With the Blue Ridge Dam Rehabilitation Project

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Attachment A: Environmental Noise Monitoring Plan for the Blue Ridge Dam Rehabilitation Project

Background or Baseline Noise Measurements

Nighttime background noise readings at the Blue Ridge Dam Rehabilitation Project Site and the surrounding neighborhoods were made during a temporary halt of project work on Sunday September 19, 2010 and overnight between Sunday, October 31 and Monday, November 1, 2010. The lowest of these monitored levels ranged from the mid to upper 30's on the dBA scale in off-site noise-sensitive areas.

Equipment Noise Screening

If work outside of the penstocks is scheduled to occur after 10:00 pm and before 7:00 am, noise emissions from construction equipment to be used on site will be monitored within 5 working days of the equipment being brought to the site, if work is scheduled to occur after 10:00 p.m. and before 7:00 a.m. If project operations continue per the original Environmental Assessment, noise emissions from equipment being used on site will be monitored within the first month of use, or within the first month of adoption of this noise monitoring plan. . Digital photographs of the equipment will be made and where feasible, the vehicle identification number or equipment serial number will be recorded. Noise emissions from construction equipment will be monitored at a distance of 50 feet in the direction of the nearest sensitive noise receptor. Maximum noise emissions with typical operations will not exceed the values given in Table A-1, including back-up alarms. If any piece of equipment exceeds the levels in Table A-1 by 2 dB or more, appropriate mitigation measures will be taken to reduce the possibility of adverse off-site noise impacts. Appropriate mitigation measures for equipment with noise emissions in excess of the values in Table A-1 are listed below under Noise Reduction at the Source and Noise Reduction along the Pathway. The tri-axle dump trucks used to haul riprap and other stone products from the quarry will be monitored from 50 feet from the edge of the pavement at Noise Monitoring Location 24 (Figure A-2) along Georgia Highway 60 and also at Noise Monitoring Location 23 (See Figure A-2) along Veterans Memorial Highway. Truck license plates or other identifying features will be recorded with the instantaneous maximum noise readings of the trucks passing. Trucks will be monitored both loaded and unloaded. Noise emissions from two to three individual trucks or groups of trucks awaiting site access will be monitored in conjunction with overall project noise emissions monitoring described below. Also, any truck perceived as being unusually noisy will be subject to individual noise monitoring and corrective action. Individual trucks and other pieces of equipment need not be monitored more than once every six months, unless they exceed the values in Table A-1. Appropriate best management practices include:

Noise Reduction at the Source

(a) Removing the noncompliant equipment from the site permanently or for repairs or maintenance

(b) Maintaining all construction equipment in good working condition to reduce noise emissions.

(c) When practical, shut down heavy equipment when not in use, instead of allowing it to idle for long periods of time.

(d) When feasible, use the most quiet available type or model of equipment to do the job or to be used closest to the noise-sensitive receptors.

(e) If noise emissions from a piece of equipment cannot be reduced to the values given in Table A-1, limit its use to daytime hours only or to locations remote from noise-sensitive receptors. If operation of noncompliant noise emissions equipment is essential between the hours of 10:00 p.m. and 7:00 a.m., position the equipment at the lowest elevation feasible and as close to the middle of Blue Ridge Dam as possible.

Noise Reduction along the Pathway

If the above measures are not practical or do not achieve enough noise reduction, noise reductions in the range of 5 to 15 dBA may be achieved at a sensitive receiver by effectively blocking the noise path with noise barriers or by moving the equipment farther away or to an area where shielded by natural or manmade features. Pathway noise mitigation measures include:

(f) Locating and positioning stationary equipment (e.g., generators and compressors) so that the natural noise screening/dampening features of the site such as the dam or the natural terrain are used to shield noise directly from the sources to adjacent noise-sensitive areas; and

(g) When feasible, utilizing temporary noise barriers such as piles of new rock, old riprap or topsoil removed from the dam to obstruct the direct sound pathway between the source and receptor. Temporary rock or dirt berms/storage areas not evaluated in the original Environmental Assessment or this Supplemental EA will be evaluated by means of a the TVA Categorical Exclusion Checklist to ensure that these piles do not inadvertently impact streams and drainage basins, flood plains, threatened and endangered plants or animals or critical habitat for such organisms. Temporary rock or dirt berms for noise mitigation will be removed at the end of the project to avoid adverse visual impacts on the scenic and the historic Blue Ridge Dam.

Noise Reduction by Workforce Education and Vigilance

Successful reduction of noise emissions depends upon the workforce at the site. Workers need to be encouraged to report any equipment which is perceived as being unnecessarily noisy. Mitigation of noisy equipment will improve worker hearing protection and reduce impacts on the community.

TVA will implement a noise complaint process and hotline number for usage by members of the surrounding community. TVA or its compliance inspectors will have the responsibility and authority to receive, evaluate, and when appropriate make reasonable efforts to resolve noise complaints.

Overall Project Noise Emissions Monitoring

Regular Hours: If project working hours continue as described in the original Environmental Assessment, project noise monitoring will be conducted once every 4 to 12 weeks during project working hours, unless resolution of community concerns requires otherwise. Noise readings of 15 minute L_{eq} will be conducted at the monitoring points listed in Table A-2 and shown in Figure A-1. Truck noise monitoring will be conducted at monitoring points 23 and 24 shown in Figure A-2 by obtaining two hours of instantaneous maximum noise readings of project-related trucks passing. If the project is not working extended hours, truck monitoring will be conducted once every six months, or more often at the project manager's discretion.

Extended Hours: If project working hours extend past 10:00 p.m. and before 7:00 a.m. project noise monitoring will be conducted once every two weeks between 10:00 p.m. and 7:00 a.m., for the duration of the extended working hours. Project noise monitoring will consist of noise readings of 15 minute L_{eq} to be conducted at the monitoring points shown in Figure A-1. Two hours of instantaneous maximum noise readings of project-related trucks passing will be taken at monitoring points 23 and 24 shown on Figure A-2, within two weeks of the beginning of extended working hours. Monitoring of trucks passing will be repeated monthly for the duration of extended hours.

For Both Regular and Extended Hours: Truck noise monitoring should be done during daylight hours to make identification of potentially loud trucks easier.

Digital photographs of heavy equipment in use on both sides of the dam at the time of the noise readings will be taken to document what equipment is on-site at the time and notes will be made as to which pieces of equipment are operating. In the event that noise readings at the monitoring points exceed the baseline noise measurements by 10 dBA or more, two additional sets of 15 minute L_{eq} readings will be collected at the same monitoring point. Any noise readings in excess of baseline readings will be reported to the project manager for corrective action. Readings at any monitoring point of 85 dBA or greater will be reported to the Project Manager since this is the action level for the TVA Hearing Conservation Program.

The meter used will be a Type 1 or 2 (re ANSI S1.4-1983) sound level meter with an appropriate field calibrator. All sound level meters and calibrators will be factory-calibrated on an annual basis and associated documentation will be placed in the project files. Noise monitoring will not be performed during periods having precipitation or wind gust speeds greater than 12 miles per hour. Windscreens will be used for all readings. If during the course of a scheduled monitoring period, windspeeds increase to gusts or sustained winds of 12 mph or greater, the field monitoring crew will document what sounds are audible at the remaining monitoring points and resurvey when weather conditions permit.

The noise monitoring locations at TVA's Tailwater Access at Blue Ridge Dam, Blue Ridge Water Treatment Plant, and Fannin County Recreation Department Housing on Blue Ridge Dam Reservation are on TVA property in close proximity to the project, but are places accessible to the public. If noise levels at the any of these locations reach 85 dBA, closing the access to the public may be necessary since TVA's ability to enforce the use of hearing protection on the public is nonexistent. However, given the types and locations of equipment planned for use in this project, sound levels in public areas are not expected to approach 85 dBA at any time.

Table A-1. Guidelines for Maximum Permissible Noise Emissions for Equipment

Construction Equipment Type	Maximum Sound Pressure Level (L_{max}) in dBA measured at 50 feet
Air Compressor	80
Backhoe	80
Concrete or Grout Pump	82
Concrete Truck/Mixer	85
Crane, Mobile	85
Dozer	80
Dump Trucks	84
Generator	82

Construction Equipment Type	Maximum Sound Pressure Level (L_{max}) in dBA measured at 50 feet
Grader	85
Hoe Ram	90
Jackhammer*	85
Loader	79
Paver	85
Rock Drill (Pneumatic)	93
Rock Drill (Hydraulic)	88
Roller	80
Trackhoe	85
Miscellaneous Trucks	84

Table A-2. Noise Monitoring Locations for Blue Ridge Dam Rehabilitation Project

Noise Monitoring Location	Description	Baseline 15-Minute Leq (dBA)
1*	Residences on Point southeast of Blue Ridge Dam	38.6
2*	Subdivision South of Veterans Memorial Highway to east and north of Blue Ridge Dam	36.6
3	TVA's Tailwater Access at Blue Ridge Dam	54.9
4	TVA's Toccoa River, Georgia 161-kV Substation	45.2
5	Henry Road South of US Highway 76	42.2
6	Tammen Park	42.2
7	West end of the dam (top)	42.1
8	Middle of the dam (top)	48.3
9	East end of the dam (top)	39.7
10*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway (Old U.S. Highway 76)	35.6
11*	Residences and Businesses east of Blue Ridge Dam along Veterans Memorial Highway	36.2
12	Base of the dam on downstream side near the penstock	49.3
13	Taildeck of the powerhouse	64.3
14	Blue Ridge Water Treatment Plant	50.0
15*	Fannin County Recreation Department Housing on TVA Reservation west of dam	41.1
16*	Subdivision West of Blue Ridge Dam	37.8
17*	Subdivision West of Blue Ridge Dam	37.0
18*	Subdivision West of Blue Ridge Dam	34.3
22*	Road Adjacent to Residence South of Blue Ridge Dam	34.4
Truck Noise Monitoring Points - Daytime Only:		
23	Project Truck Noise Monitoring Point South Side Veterans Memorial Highway (Old U.S. 76)	Obtain Instantaneous maximum readings for 2 hours
24	Project Truck Noise Monitoring Point West Side Georgia Hwy 60	

*Noise-sensitive area

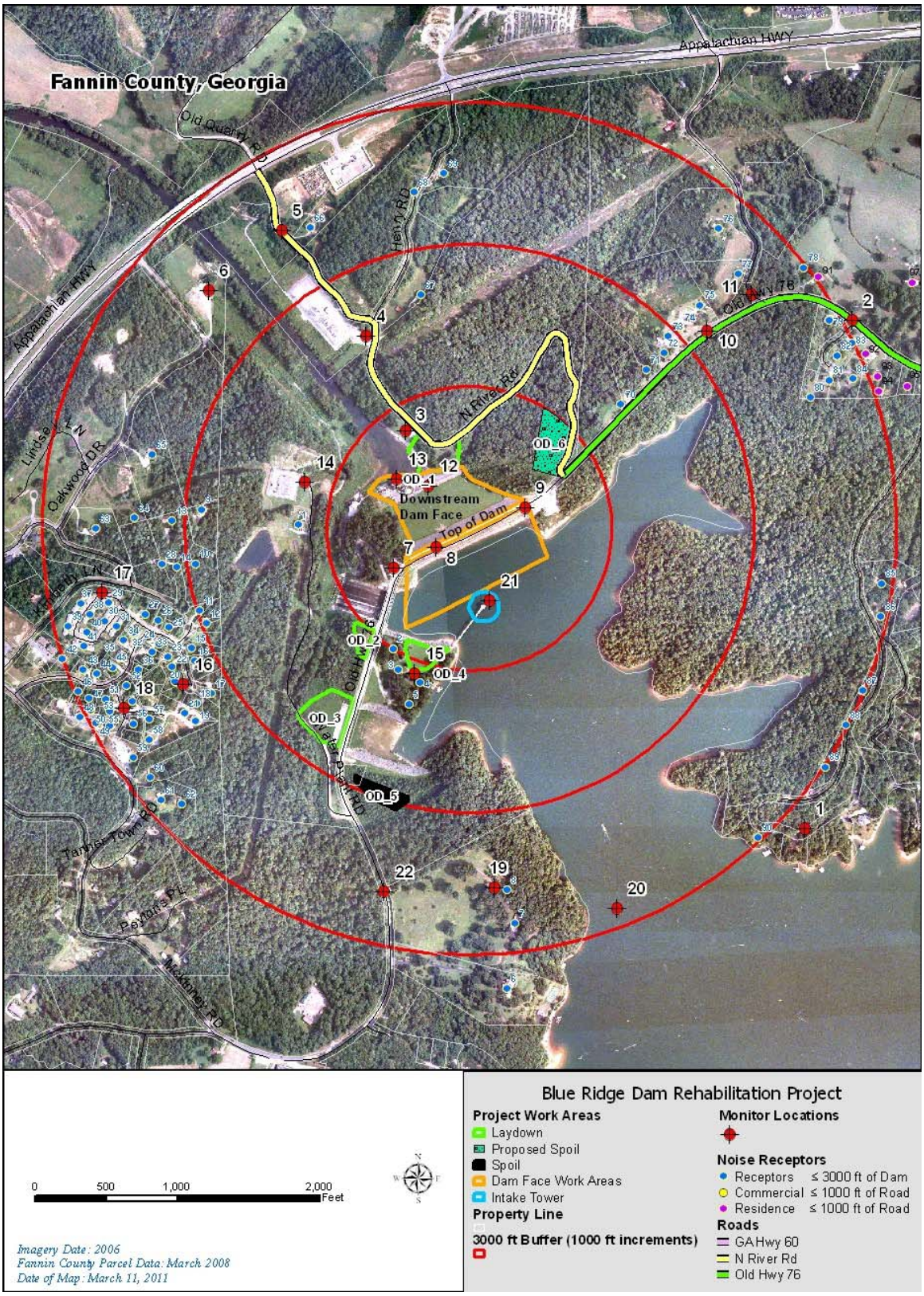

Figure A-1. Project Site with Noise Monitoring and Noise Receptor Locations

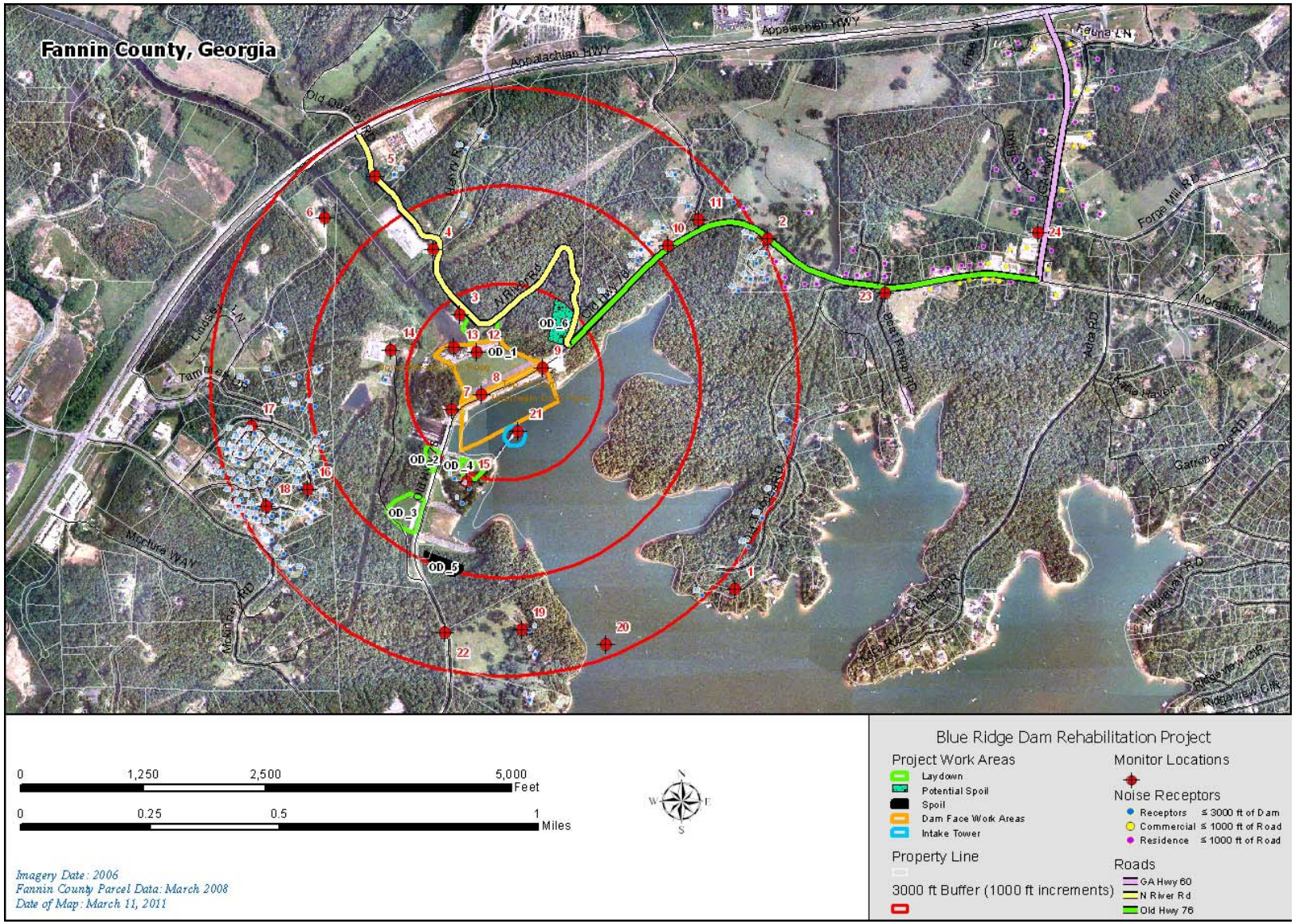

Figure A-2. Project Site and Adjacent Roads with Noise Monitoring and Noise Receptor Locations

Attachment B: Adaptive Management Plan for Addressing Temporary Road Closures or Other Corrective Measures Needed to Reduce Road Safety Hazards Associated With the Blue Ridge Dam Rehabilitation Project

Background and Purpose

The Blue Ridge Dam Rehabilitation Project is estimated to require about 15,000 truckloads of materials including aggregate, riprap, grout material, and penstock sleeve material. Delivering these materials as close to the point of intended use at as near to the time of intended use as feasible is a key strategy for completing the dam rehabilitation project in a timely manner to reduce impacts on the neighboring communities. Since some of the roads in the vicinity of the project are narrow and have steep hills and blind curves, trucks carrying materials for the project may be slow moving. Local motorists, unaccustomed to encountering large trucks on the roads in the vicinity of Blue Ridge Dam may drive at inappropriate speeds and put themselves, their passengers, truck drivers, flagmen, and other project personnel at risk for injuries from truck and automobile collisions. This document is a plan for:

A. Identifying potentially hazardous situations on the roads surrounding the Blue Ridge Dam Rehabilitation project.

B. Evaluating corrective measures for reducing the identified traffic hazards.

C. Implementing corrective measures for reducing identified traffic hazards.

Identifying Potentially Hazardous Traffic Situations

The following means will be used to identify potentially hazardous traffic situations:

a) A near miss traffic incident reported to project management, reported in a safety meeting, or observed and reported by one of the following: TVAP, Georgia Highway Patrol, Fannin County Roads Department, local law enforcement agencies, or local citizens.

b) Whenever possible, it is preferable to identify potential traffic hazards and corrective measures during the planning process. If the best professional judgment of the project management team is that some aspect of the project could be done more safely by a change which would need concurrence from stakeholders listed in Table B-1, this concern will be elevated to coordination and evaluation.

Evaluating Potential Corrective Measures for Reducing Identified Traffic Hazards

When one or more traffic hazards or issues needing coordination are identified, the Project Management Team will notify the officials listed in Table B-1. Notification will be by telephone with follow-up by email if appropriate. The Project Management team will discuss perceived hazards and potential solutions with the officials listed in Table B-1, then document the consensus for the corrective action via email. In event of an imminent danger situation, corrective action will be taken immediately. The Project Management Team (or their designee) will complete a Categorical Exclusion Checklist to determine if the proposed corrective action(s) has environmental consequences requiring mitigation. If the potential environmental effects of the proposed corrective action are minor and become inconsequential with the implementation of Best Management Practices, the Best

Management Practices will become part of the corrective action and no additional environmental review would be needed.

Implementing Corrective Measures for Reducing Identified Traffic Hazards

When feasible, the Public Notice will be given a week or more in advance if it is becomes necessary to temporarily close a road for more than 3 ten hour work days. The roles and responsibilities for public notification are listed in Table B-1

Signs used to reroute traffic or close a road shall be in accordance with the latest version of the Manual for Uniform Traffic Control Devices (MUTCD). Available at the link below

http://mutcd.fhwa.dot.gov/pdfs/2009/pdf_index.htm

Table B-1. Contacts, Roles, and Responsibilities for Resolving Blue Ridge Dam Rehabilitation Project Traffic Concerns

Contact	Agency	Role/Responsibility
Jeff Brown	TVA Project Management Team	Coordinate with GDOT and Fannin County Road Department
Laura D. Smith	TVA Communications	Post Potential Road Closings on TVA's Website
Travis Scott Brickey	TVA Communications	Notify local news media of potential road closings
Lieutenant Keith Mills	TVA Police	Coordinate with Local Law Enforcement.
Wesley King	Georgia DOT District 6, Area 2	Identify whether the road involved is a state or county road.
Charles Collins, Fannin County Road Superintendent	Fannin County Road Department	Would most likely implement road closings or speed limit reductions.
Benny Long	Fannin County School System Transportation Department	Identify whether the road involved is used by School Buses.
Bill Simonds	Fannin County Commissioner	Needs to be notified.
Jim Hakala	GA DNR	Will need to be informed if North River Road Traffic impacts ability to reach River Access at Blue Ridge Dam Reservation