

# ATTACHMENT A

## Tech Memo Approval Form

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<b>Tech Memo Title:</b> HAR Project Timber-Related Activities			
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# 1.0 Introduction

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This description of timber-related activities has been developed to support Progress Energy Carolinas, Inc.'s (PEC's) application to the U.S. Nuclear Regulatory Commission (NRC) for the addition of two nuclear reactors at the Shearon Harris Nuclear Power Plant Unit 1 (HNP). The proposed project includes the construction of the new nuclear units: Shearon Harris Nuclear Power Plant Units 2 and 3 (HAR). As part of the HAR project, the water level in Harris Lake will be raised to provide the water needed to meet HAR operation objectives and to allow for flexibility in meeting water requirements during drought conditions when withdrawal from the Cape Fear River may be curtailed. Therefore, the proposed project will also require the harvest and removal of timber and non-merchantable vegetation for the HAR project (which includes raising of Harris Lake, construction activities related to the nuclear units, and associated transmission lines). The purpose of this document is to describe in general terms the timbering activities that are expected to occur as part of clearing for HAR project activities, including best management practices (BMPs) used with normal timbering operations. For a full description of project elements, please see Subsections 1.1.2, 1.1.4, and 1.1.5 of the HAR Environmental Report, which was which was submitted to the NRC in February 2008.

## 1.1 Project Description

PEC has submitted a Combined License Application (COLA) to build and operate two AP1000 reactors, collocated with the existing Shearon Harris Nuclear Power Plant Unit 1 (HNP) in North Carolina. The HAR site is located in southwest Wake County and southeast Chatham County. The proposed lake expansion would raise the normal pool elevation of Harris Lake from 220 feet (ft.) to 240 ft. to provide the anticipated needed water volume. Currently, Harris Lake covers approximately 3970 ac. (main body of Harris Lake and the Auxiliary reservoir) and the increase in pool elevation of Harris Reservoir would result in the inundation of approximately an additional 3570 ac. Timber located in the project area, including any additional transmission corridors, will be harvested and non-merchantable vegetation will be cleared to support the project activities. For any transmission corridors, the width of the harvest zone will vary depending on the topography of the site but will generally average approximately 305 meters (m) (1000 ft.) and be less than 457 m (1500 ft.) (PEC 2008).

The objective of the harvest operation is to remove vegetation from the site to support the HAR project and, therefore, the harvest is not an ongoing silvicultural operation. Harvesting, road construction, maintenance, and other activities will be managed to comply with North Carolina BMPs for forest operations. One notable exception to these BMPs, however, will be the removal of Streamside Management Zones (SMZs) as part of the site clearing activities. Other exceptions to normal BMP compliance will be the removal of vegetation in wetlands and the need for multiple temporary stream crossings that will be required to manage the harvest and clearing operations. The Sedimentation Pollution Control Act of 1973 states that the Act does not apply to "Activities undertaken on forestland for the production and harvesting of timber and timber products and conducted in accordance with best management practices set out in Forest Practice Guidelines Related to Water Quality, as adopted by the Department." (North Carolina General Statutes Chapter 113A-52). However, timber activities are required to be conducted in

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accordance with Forest Practices Guidelines (15 NCAC 11.0101 - .0209). Ongoing coordination with the North Carolina Department of Environment and Natural Resources (NCDENR) is occurring to establish the regulatory and permit requirements for the HAR project, including timbering activities.

## 1.2 Timber Resources

Currently a forest inventory is being conducted to estimate the timber resources found in the area that is to be cleared for the Harris Reservoir expansion. This inventory should be completed by mid-year 2009. Estimates of the timber resources in the area to be cleared for the HAR project show approximately 227,606 tons of forest products, worth approximately \$3.5 million (see Table 1). These estimates are based on average timber volumes per acre and current forest product values (Timber Mart South 2008). It is assumed that the majority of merchantable timber in the strip of land to be cleared will be harvested. The ability to market products and the resulting values are dependent on market conditions at the time of the timber harvest. It is expected that the harvest and removal of vegetation in this area will take up to 36 months. While the actual time to remove the vegetation will vary according to many factors, this estimate is based on the amount of time it took for clearing activities during the original construction of Harris Lake. Factors influencing timing could include, but are not limited to, the following: weather (hurricanes and tropical storms often interrupt the timber supply markets from decreasing operability on certain sites and flooding the markets with storm salvaged wood), equipment breakdowns and availability.

**TABLE 1. ESTIMATED FOREST PRODUCT VOLUME AND VALUE ESTIMATES FOR THE POTENTIAL HAR PROJECT FOREST PRODUCTS**

	<b>Estimated Tons<sup>1</sup></b>	<b>Stumpage Values (\$/Ton)<sup>2</sup></b>	<b>Total Value (In 1,000's)</b>
Hardwood Saw Timber	64,843	\$17.86	\$1,158
Pine Saw Timber	31,756	\$27.94	\$887
Pine Chipping Saw	46,644	\$18.81	\$877
Hardwood Pulpwood	40,546	\$7.03	\$285
Pine Pulpwood	43,817	\$6.66	\$292
<b>Total</b>	<b>227,606</b>		<b>\$3,500</b>

**Notes:**

<sup>1</sup> Source: Russell Hardee, Personal Communication and PEC response to FRC RAI question 4.4.2-1.

<sup>2</sup> Timber Mart South, North Carolina Stumpage Prices, 4<sup>th</sup> Quarter 2008. (Timber Mart South 2008)

Exceptions to the total removal of vegetation are possible, for example, to provide important habitat for either fisheries or waterfowl. The design and location of these areas will be coordinated with the U.S. Fish and Wildlife Service (USFWS) and North Carolina Wildlife Resources Commission (NCWRC) to maximize recreational opportunities and wildlife benefits.

The intensity of the logging operations required to remove resources from the site in the estimated time period will be approximately 12 to 13 trucks per day. These estimates are based on fully loaded trucks (80,000 pound weight limit due to Federal Bridge Gross Weight limits)

and 150 operating days per year and they are subject to change due to markets, weather, or other factors. (227,606 tons of timber/40 ton weight limit of trucks = 5690 truckloads required; 150 operating days/year\*3 years=450 operating days; 5690 truckloads/450 days = 12.6 truckloads per day).

## 2.0 Site Description

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The majority of the area surrounding Harris Reservoir is forested and managed for timber production (PEC 2006a). The perimeter of Harris Reservoir and the surrounding area is heavily wooded. A recent land use coverage analysis of the project site, including potential transmission corridors, indicates that approximately 70 percent of the land contained in the watershed is forested (NCDENR 2004).

The portion of the HAR site expected to be harvested is an irregularly shaped area surrounding Harris Reservoir that is located in Wake and Chatham Counties, North Carolina. The U.S. Geological Survey (USGS) (1998) land use classifications for the HAR site are primarily water body, southern yellow pine, high intensity developed, managed herbaceous cover, and bottomland forest/hardwood swamp.

### 2.1 Forest Habitat Description

Vegetation at most of the HAR site is typical of the eastern Piedmont province of North Carolina (Carolina Power & Light Company [CPL] 1982). According to the U.S. Nuclear Regulatory Commission's (NRC's) Final Environmental Statement related to the operation of Shearon Harris Nuclear Power Plant Units 1 and 2, forests at the HAR site are in various stages of ecological succession and consist of pine forest, hardwood forest, or pine-hardwood mixtures. Loblolly pine (*Pinus taeda*) dominates the pine forests, but longleaf pine (*P. palustris*), shortleaf pine (*P. echinata*), and Virginia pine (*P. virginiana*) are also found on-site. Mesic hardwood forests within the HAR site are found primarily in lowland areas along streams. Dominant lowland forest species include American elm (*Ulmus americana*), American sycamore (*Platanus occidentalis*), red maple (*Acer rubrum*), river birch (*Betula nigra*), and sweet gum (*Liquidambar styraciflua*). The majority of upland forests within the HAR site are a mixture of hickories (*Carya* spp.), oaks (*Quercus* spp.), and pines.

The forests surrounding Harris Reservoir consist of hardwood re-growth forest and loblolly pine plantation. Bottomland hardwood or alluvial forests occur where streams with relatively broad valleys extend away from Harris Reservoir (CH2M HILL 2006).

The topography near the Main Dam is steep on both sides of the dam. The area to the south and west of Main Dam is forested and an old roadbed cuts through this area, creating very steep slopes to either side of the roadbed. Forests are typically mixed pine-hardwood, giving way to sub-xeric (partially dry habitat) hardwoods on upper slope positions. To the east and north of the Main Dam, the vegetation is similar to the vegetation on the other side of the dam, but this area was burned in early 2006, so the forest is more open, except where overgrown with fireweed (*Erechtites hieracifolia*) (CH2M HILL 2006).

The forested sections of the HAR site have been managed for timber resources since the early 1980s and timber sales, site preparation, and regeneration to suitable forest species have all been a part of the management program administered by PEC's Land Management Division. A timber inventory conducted in 2004 identified 1962 ha (4849 ac.) of land at the HAR site and vicinity suitable for thinning and harvest (Kiker 2004). During forest management activities,

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PEC follows BMPs recommended by the NCDENR, Division of Forest Resources. The BMPs implemented at the HAR site include the establishment of SMZs; buffer strips of vegetation adjacent to perennial and intermittent streams and water bodies (at least 15.2 m [50 ft.] wide on each side of the stream); sediment capture and management during harvest activities and planning; and construction and management of any roads constructed to support forest management activities.

### 2.1.1 Hardwood Forests

Hardwood forests on the HAR site and in the vicinity are in various stages, ranging from recently clear-cut areas (lacking almost all vegetation except for scattered seed trees and herbaceous plants), early successional (historical clear-cut areas that have regenerated with dense stands of shrubs, saplings, and herbaceous plants), early re-growth (relatively small trees with diameters averaging from 20.3 to 30.4 centimeters [cm] [8 to 12 inches (in.)]) at breast height [DBH] with closed canopy), and mature re-growth (large trees with diameters greater than 30.4 cm [12 in.] DBH). Early and mature re-growth areas contain similar woody species, but the younger stands typically have a more vigorous groundcover. No areas surrounding Harris Reservoir appear to contain virgin timber and all appear to have historically been harvested or cleared (CH2M HILL 2006).

Hardwood forests of three types occur around Harris Reservoir: Mesic Mixed Hardwood Forest–Piedmont Subtype; Dry-Mesic Oak-Hickory Forest; and Dry Oak-Hickory Forest. These hardwood forest types are common in North Carolina and throughout the region (Schafale and Weakley 1990).

On the HAR site, the Piedmont Subtype of Mesic Mixed Hardwood Forest is dominated by American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), tulip poplar (*Liriodendron tulipifera*), and red maple. The understory is composed of flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), hophornbeam (*Ostrya virginiana*), and young trees of the overstory. Ground cover includes strawberry bush (*Euonymus americana*), Christmas fern (*Polystichum acrostichoides*), little brown jugs (*Hexastylis arifolia*), and scattered grasses (*Dichanthelium* sp.) (CH2M HILL 2006).

Dry-Mesic Oak-Hickory Forest is dominated by white oak (*Quercus alba*), northern red oak, black oak (*Quercus velutina*), sweet pignut hickory (*Carya ovalis*), and mockernut hickory (*Carya alba*). Loblolly pine, sweetgum, and tulip poplar are also common components of the overstory, although these species are not typically dominant in mature or late re-growth stands. Flowering dogwood and sourwood (*Oxydendrum arboreum*) are the major understory species. Blueberries (*Vaccinium* sp.), spotted wintergreen (*Chimaphila maculata*), rattlesnake plantain (*Goodyera pubescens*), poison ivy (*Toxicodendron radicans*), and grapes (*Vitis* sp.) are the primary ground cover species (CH2M HILL 2006).

Dry Oak-Hickory Forest is limited to the northwestern portion of the HAR site and is dominated by white oak, southern red oak (*Quercus falcata*), and mockernut hickory. Loblolly pine and sweetgum occur frequently but are not dominant species. Flowering dogwood and sourwood are the major understory species. Blueberries, spotted wintergreen, goat rue (*Tephrosia virginiana*), poison ivy, and grapes compose much of the ground cover (CH2M HILL 2006).

Early successional areas are primarily dominated by dense growths of sapling sweetgum, tulip poplar, red maple, and black cherry (*Prunus serotina*). Blackberries (*Rubus* spp.), wingstem (*Verbesina alternifolia*), horseweed (*Conyza canadensis*), and common and giant ragweed (*Ambrosia artemisiifolia* and *tridentata*) are also abundant within these areas (CH2M HILL 2006).

### **2.1.2 Loblolly Pine Plantations**

Loblolly pine has been planted at the HAR site and in the vicinity in stands that have been site prepared and regenerated for intensive forest management and timber production (PEC 2006a). Overstory communities of loblolly pine as a monoculture do not occur naturally in North Carolina, but loblolly can occur naturally as a component of other forest types (Schafale and Weakley 1990). Loblolly plantations range from those planted within the past 5 years to those greater than 25 years of age. Loblolly pine is the only dominant tree in these areas, but in areas where intensive timber management has not been implemented, young hardwood species including sweetgum, tulip poplar, red maple, and American sycamore have begun to regenerate beneath the pines. In young pine stands, blackberries and cat-briers (*Smilax* sp.) are frequently encountered. Occasionally small clusters of longleaf pine are found among the loblolly pines, either remnants of historical Piedmont longleaf pine communities or the result of seedling identification error at the tree nursery (North Carolina Natural Heritage Program [NCNHP] 2008). Typically, pine plantation areas do not extend to the edge of Harris Reservoir; a strip of hardwood forest or pine/hardwood forest separates them from the water's edge (CH2M HILL 2006).

### **2.1.3 Alluvial Forests**

Forests have developed in the alluvial floodplain in the vicinity of the HAR along some of the larger drainages that experience frequent flood events. These forests are classified as Piedmont/Mountain alluvial forest. This forest type is common in North Carolina and throughout the region (Schafale and Weakley 1990).

These forests contain open understories and extensive deposits of sand extending well beyond the stream channel. Typical overstory species include red maple, river birch (*Betula nigra*), tulip poplar, sweetgum, green ash (*Fraxinus pennsylvanica*), and bitternut hickory (*Carya cordiformis*). Sycamores typically occur only along the channel. Understory species include saplings of the overstory components and also boxelder (*Acer negundo*), American holly, and inland American hornbeam (*Carpinus caroliniana* var. *virginianum*). Ground cover includes the shrubs pawpaw (*Asimina triloba*), hazelnut (*Corylus cornuta*), and spicebush (*Lindera benzoin*), as well as herbaceous plants and vines, such as wood oats (*Chasmanthium latifolium* and *C. laxum*), false nettle (*Boehmeria cylindrica*), Christmas fern, orange jewelweed (*Impatiens capensis*), cat-briers, poison ivy, Virginia creeper (*Parthenocissus quinquefolia*), and various grapes (CH2M HILL 2006).

## **2.2 Wildlife Management**

PEC actively engages in wildlife habitat enhancement at the HAR site and in the vicinity through its forest management practices. In addition to its active forest management program, PEC has enrolled its lands in the National Wild Turkey Federation's (NWTf's) "Energy for Wildlife" program to integrate wildlife management activities into PEC's land management program. For example, fire lanes and temporary open areas are planted in a mix of vegetation

species, such as millet, lespedeza sp., and clover, to provide forage opportunities for wildlife, and blue bird nest boxes have been erected throughout the area (PEC 2006a).

## 2.3 Wild Game Areas

In cooperation with the NCWRC, PEC has enrolled 5353 ha (13,227 ac.) within the region around the HAR site in the North Carolina Game Lands Program. These properties are known collectively as the Shearon Harris Game Lands. Approximately 4200 ac. were required to be enrolled by the HNP license, according to the *Shearon Harris Wildlife Management Implementation Plan* (December 1984), but the remaining land was included voluntarily at PEC's request and is non-binding. The Shearon Harris Game Lands offer a variety of opportunities to the public for hunting deer, turkey, small game, and waterfowl. The Game Lands are open to hunting 6 days a week during hunting seasons for most species (NCWRC 2008). Additionally, waterfowl may be hunted 3 days a week on Harris Lake and surrounding Game Lands, except for the Green Tree impoundment, which is posted as a "No Hunting/Safety Zone."

## 2.4 Rare and Endangered Species

PEC contacted the USFWS and NCNHP regarding the occurrence of federally or state-listed species within the area. The NCWRC identified the presence of two bald eagle nests. One is located near Avent Ferry Road along the White Oak Creek arm of the reservoir and one is located on the southwest side of the Cape Fear River across from Buckhorn Dam. NCWRC did not identify any additional federally or state-listed terrestrial species (NCWRC 2007). The response from the USFWS identified the bald eagle (*Haliaeetus leucocephalus*), red-cockaded woodpecker (*Picoides borealis*), and Michaux's sumac as federally listed terrestrial species with the potential to occur within the area (USFWS 2007). The bald eagle was removed from the federal list of threatened species in August 2007 (see discussion of the species below); however, the bald eagle will remain protected under the Endangered Species Act (ESA) and the Bald and Golden Eagle Protection Act through management guidelines for at least the next 5 years.

An eagle nest was discovered near the HAR project site approximately 2 years ago by PEC forest personnel (Hardee, personal communication). The location was reported to the NCWRC for inclusion in their eagle tracking program. The tree where this nest is found will be inundated during the raising of water levels in Harris Reservoir and will eventually be non-suitable for eagle nesting due to the tree's resulting mortality and decay. PEC, NCWRC, and other appropriate agency personnel will identify nearby suitable nesting locations and will discuss plans to facilitate relocation of the nest by the eagle pair to a more suitable and permanent location.

In 1998, PEC conducted a self-assessment that evaluated more than 50 sensitive plant and animal species that could occur in the vicinity of the HAR site (based on studies prepared by Pacific Northwest National Laboratory for the NRC and lists prepared by the USFWS and NCNHP) and evaluated potential threats to these species from activities at the HAR site (PEC 2006a).

The self-assessment identified only one federally listed endangered species, the red-cockaded woodpecker (RCW), that could potentially be affected by HAR site operations, future facility expansion, or other activities. RCWs are found in mature pine forests (generally longleaf pine) with sparse understory vegetation. They typically do not forage more than 0.8 kilometer (km)

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(0.5 miles [mi.]) from their nest. Available habitat for red-cockaded woodpeckers within Wake County is low and will not likely increase due to their restrictive habitat requirements (CH2M HILL 2007). An active RCW colony was located in the HAR site in the 1980s, but it was abandoned around 1987 (PEC 2006a). No evidence of RCW or suitable habitats in the area that will be inundated was found during surveys (CH2M HILL 2006). It is unlikely that RCW will re-colonize the area because no active clusters exist within 48.3 km (30 mi.) (NCDENR 2006). The Natural Heritage Program of North Carolina considers the RCW to be a historic species in Wake County.

## 3.0 Tree Harvest and Removal

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### 3.1 Method of Harvest

During the HAR project harvest, the logging systems will vary from tractor-mounted harvesting equipment to skidders or other gathering equipment to bring logs to central loading sites. The type of harvest equipment can affect the design and layout of access roads, skid trails, and decks. Skid trails are used to transport trees, logs, and other forest products from the woods to a logging deck, landing, or roadside. Skid trails are temporary and are the primary route for removal of timber products during harvest. Roads and skid trails used during logging are the most common sources for sediment in non-point source pollution contributed by forestry activities (North Carolina Division of Forest Resources [NCDFR] 2006).

#### **BMPs for Logging Systems**

North Carolina's BMPs recognize the need for careful planning and adaptation of logging systems to match site conditions and make recommendations designed to maximize water quality protection. Among the site-specific actions that will be implemented at the HAR site are the following:

- Harvest planning will consider the volume of timber to be removed and the site conditions. These considerations will determine the type of equipment that will be used on the site.
- If a single pass with the equipment produces significant rutting, alternatives will be used that will protect water quality.
- Timber will be harvested in a manner that minimizes significant changes to soil structure or organic matter.
- During periods of inclement weather or when conditions within the harvest area are wet, operations will be suspended in that area until harvesting can be done without impacting soil conditions or water quality.

### 3.2 Logging Decks

Logging decks are the temporary storage locations for trees, logs, or other forest products that have been removed and are waiting to be loaded onto trucks for transportation off the site. The area being cleared for the HAR project is relatively narrow, less than 1500 ft. Logging decks will be built within this area, wherever possible. The following BMPs provide guidelines for the design, development, and management of logging decks during the HAR project harvest (NCDFR 2006):

#### **BMPs for Decks and Landings**

- Minimize the number and size of logging decks.
- Locate decks in areas where soil disturbance is minimized.

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- Design logging decks as follows, if conditions allow:
  - Outside of ephemeral drainages
  - On flat terrain or gentle slopes
  - Upon stable soils
- Control runoff and/or capture sediment that flows off the deck site.
- Use existing logging slash and debris piles.
- Maintain or, if necessary, establish groundcover materials (for example, temporary seasonal grasses or other vegetation) on exposed bare soil areas during deck use and once logging is completed.

### 3.3 Forest and Access Roads

Forest and site management activities have been ongoing at the HAR site since the 1980s. During this time, established roads have been maintained and new roads have been constructed to gain access to portions of the site where roads did not exist prior to PEC ownership. During the HAR project harvest, existing roads on the HAR site will be used to the extent possible. If new roads are required, they will be constructed in accordance with the BMP recommendations described in North Carolina’s BMP Manual (NCDFR 2006). Likewise, skid trails will be constructed and maintained in accordance with North Carolina’s BMPs (NCDFR 2006).

The following BMPs will be considered for planning, constructing, and maintaining roads during harvest operations:

#### **BMPs for Planning Roads**

- Use resources such as maps, aerial photos, and site examination to determine where roads should be placed.
- If feasible, construct new roads at least 1 year before usage and close them to unnecessary traffic to allow the roadbed to stabilize and settle prior to use.
- Avoid stream crossings, if possible, or minimize the number.
- Minimize soil disturbance and road placement within ephemeral drainages.
- If roads are needed within an ephemeral drainage, control runoff and capture sediment.
- Locate roads along land contours when conditions allow.
- Minimize the amount of cut and fill needed.
- Design with adequate right-of-way widths to provide ample sunlight for drying the road surface.

#### **BMPs for Constructing Roads**

- Construct roads at the minimum width (10 to 14 ft. for lightly traveled roads and 14 to 20 ft. for high-traffic roads) to meet safety and traffic needs while protecting water quality and allowing adequate runoff control.

- Design grade slopes to be 10 percent or less when conditions allow.
- For steeper grade slopes, limit road-segment lengths to 200 ft. or less when possible.
- Where unavoidable, minimize soil disturbance and the amount of road at any stream crossing. Implement BMPs for stream crossings.
- Manage bare soil areas by establishing suitable groundcover.
- Provide adequate cross drainage when fill material is needed.
- Use insloping, outsloping and crowning techniques, as appropriate, to provide drainage from the road surface and control runoff.
- Control runoff from the road surface using ditching, water bars, broad-based dips or similar structures.

### **BMPs for Maintaining Roads**

- Rehabilitate and stabilize road and side/cut banks.
- Monitor road conditions and BMPs to assure that runoff is being controlled and captured as intended. Take prompt remedial action to protect water quality if BMPs are not functioning properly.
- Maintain open daylight corridor to provide suitable drying for the road surface.
- Maintain road surfaces to provide good runoff control, water quality protection, and vehicle access.
- Close roads to unauthorized access, when suitable, to minimize unnecessary use.

### **BMPs for Skid Trails**

- Concentrate skidding on as few skid trails as possible.
- Limit primary skid trails to 10 percent of the total working area.
- Avoid widespread or random skidding patterns with repeated passes.
- Minimize placement and use of skid trails in ephemeral drainages. If skid trails must be located within or cross an ephemeral drainage, use additional BMPs.
- Construct skid trails to be only as wide as necessary to safely operate equipment and conduct the forestry operation.
- Minimize the extent of gouges or trenches upon the ground surface that are created by the skidding of trees or logs.
- Construct skid trails to follow land contours and keep to a 25 percent grade or less when practical.
- Install waterbars, brush barriers, turnouts, and other methods to control and capture runoff, if necessary.

# 4.0 Equipment Fluids and Solid Waste Management

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Solid waste, oils, and other fluids can be potential risks to surface water and groundwater quality if not managed properly. Waste includes containers, equipment parts, hoses, tires, batteries, trash, and other leftover man-made debris. The main methods for managing fluids and solid waste are as follows:

1. Prevent fluids from entering surface water and groundwater by maintaining equipment, being adequately prepared for spills, and properly disposing of used materials. If a spill occurs, follow NCFDR's rules for notification (see Table 2).
2. Collect and dispose of trash and other wastes properly. This prevents waste from being washed into the water if left on the job site.

**Table 2. Rules for Notification of a Petroleum Spill\***

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Notify NCDENR / DWQ within 24 hours of discharge or spill if:

- Amount is 25 gallons or more, or
- Spill causes a sheen on nearby surface water, or
- Spill occurs within 100 ft of any surface water.

No notification is needed, but cleanup must still occur if:

- Amount is less than 25 gallons, and
- No sheen is produced on nearby surface water, and
- The spill is located more than 100 ft from surface water.

Notify NCDENR / DWQ immediately if:

- Amount is less than 25 gallons, and
  - You cannot effectively clean it up within 24 hours of spill, or
  - Spill causes sheen on surface water.
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\*Petroleum spill notification rules are taken from N.C.G.S. Ch.143-215.85(b) (NCDFR 2006)

Practices will be implemented during harvest operations to manage fluids and solid wastes to protect the integrity of the site and adjacent water bodies. These practices include the following (NCDFR 2006):

### **BMPs for Managing Fluids**

- Frequently inspect equipment for leaks. Repair leaks promptly or prevent the fluid from entering the ground and water.
- If equipment is washed while inspecting for leaks, use only plain water. Do not use degreasers or detergents.

- Designate specific areas for equipment maintenance and fueling. Level ground away from waterbodies (at least 100 ft.) provides the best location to minimize potential spill impacts.
- Maintain tools and materials to contain and clean up spills and leaks.
- At a minimum, have the following items on hand:
  - A variety of plugs and clamps to control a hose leak.
  - Containers to catch and contain leaking fluid.
  - Shovels and absorbent material or pads (booms) to stop fluid from running across the ground.
  - Plastic sheeting or tarp to create a barrier on top of the soil.
- Keep used oil and other fluids in separate, labeled containers to prevent mishandling and allow for easier fluid disposal or recycling.
- Store oils, fuels, and other fluids in suitable containers that control or minimize leakage and spillage. Keep this material away from streams and waterbodies.

### **BMPS for Solid Waste Management**

- Dispose of waste properly.
- Use a suitable container to collect all trash for proper disposal.
- Empty waste containers once they are full.
- Secure the waste bin after work hours to prevent accidental tipping or vandalism.
- Do not bury or burn waste and trash on the job site.

## 5.0 Site Rehabilitation and Stabilization

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During forestry operations, the construction of roads, skid trails, and logging decks will be managed to minimize erosion. The Mining Act of 1971 requires the installation and maintenance of sufficient erosion control measures to retain sediment within the boundaries of the site (NCDLR 2006). Additionally, disturbed surfaces must be non-erosive and stable within 15 working days or 90 calendar days after completion of the land-disturbing activity. Seeding bare areas disturbed by logging equipment is common in forest practices guidelines and forestry BMPS. As with the original construction of the reservoir, ground cover will likely establish itself in areas to be inundated after clearing has taken place and prior to inundation. Available safeguards, such as sediment basins, silting areas, and revegetation of disturbed areas will be implemented to minimize ecological effects to small animal populations. Specific monitoring requirements will be determined by the appropriate permits. The detailed practices and procedures that will be used to accomplish these goals can be found in the guidelines adopted by Carolina Power & Light Company and PEC's Transmission Construction General Specifications (PEC 2005, PEC 2006b, CPL 1989 and CPL 1998). Ongoing coordination with NCDENR will establish the regulatory and permit requirements for the HAR project, including specific sediment and erosion control requirements.

## 6.0 References

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Carolina Power & Light Company (CPL). 1982. "Shearon Harris Nuclear Power Plant Units 1, 2, 3, & 4, Environmental Report Operating License Stage."

Carolina Power & Light Company (CPL). 1984. *Shearon Harris Wildlife Management Implementation Plan*.

Carolina Power and Light, Inc. (CPL). 1989. Transmission Department, Construction Specifications. Part 2, Erosion Control Regulations.

Carolina Power and Light, Inc. (CPL). 1998. Transmission Department, Construction Specifications. Part 3, Right-of-Way Seeding.

CH2M HILL. 2005. "Secondary and Cumulative Impacts Master Mitigation Plan: Apex, North Carolina." October.

CH2M HILL. 2006. "Ecological Field Observations: Harris Nuclear Plant," August.

Hardee, Russell. 2009. PEC Forester. Personal communication, January 9, 2009.

Kiker Forestry & Realty, Inc. 2004. "Forest Management." Prepared for Progress Energy. June.

North Carolina Department of Environment and Natural Resources (NCDENR). 2004. "Basinwide Assessment Report: Cape Fear River Basin," NCDENR, Division of Water Quality, August.

North Carolina Department of Environment and Natural Resources (NCDENR). 2006. Letter from Harry E. LeGrand, Jr., NCDENR Natural Heritage Program, to Dave Corlett, Progress Energy Carolinas, Inc., responding to request for information on listed.

North Carolina Division of Land Resources (NCDLR). 2006. North Carolina Erosion and Sediment Control Planning and Design Manual

North Carolina Division of Forest Resources (NCDFR). 2006. North Carolina Forestry Best Management Practices Manual to Protect Water quality. Publication number FM-08-01.

North Carolina Natural Heritage Program (NCHNP). 2008. Website, [www.ncnhp.org/Pages/heritagedata.html](http://www.ncnhp.org/Pages/heritagedata.html).

North Carolina Wildlife Resources Commission (NCWRC). 2007. "Response to Information Request," Letter to Bob Kitchen, Progress Energy Carolinas, Inc., February 27.

North Carolina Wildlife Resources Commission (NCWRC). 2008. "Guide to North Carolina Game Lands," Website, [www.ncwildlife.org](http://www.ncwildlife.org).

Nuclear Regulatory Commission (NRC). 1983. Final Environmental Statement related to the operation of Shearon Harris Nuclear Power Plant, Units 1 and 2. Docket Nos. STN 50-400 and STN50-401.



Progress Energy Carolinas, Inc. (PEC). 2005. Land Disturbing Activities. Document Number EVC-SUBS-00022.

Progress Energy Carolinas, Inc. (PEC). 2006a. "Applicant's Environmental Report - License Renewal Operating Stage Shearon Harris Nuclear Plant, Unit 1, Docket No. 50-400, License No. NPF-63, Final" November.

Progress Energy Carolinas, Inc. (PEC). 2006b. Transmission Department, Construction Specifications. Part 1, Right-of-Way Clearing.

Progress Energy Carolinas, Inc. (PEC). 2008. Shearon Harris Nuclear Power Plant Units 2 and 3 COL Application, Part 3, *Environmental Report*. Chapter 2, Environmental Description.

Schafale, Michael P. and Alan S. Weakley. 1990. "Classification of the Natural Communities of North Carolina, Third Approximation," Website [www.ils.unc.edu/parkproject/nhp/publication.html](http://www.ils.unc.edu/parkproject/nhp/publication.html).

Timber Mart-South. 2008. North Carolina Stumpage Prices, 4<sup>th</sup> Quarter, 2008. The Warnell School of Forestry and Natural Resources, The University of Georgia, Athens, Georgia.

U.S. Fish and Wildlife Service (USFWS). 2007. "Response to Information Request," Letter to Bob Kitchen, Progress Energy Carolinas, Inc., January 29.