Global Laser Enrichment
Environmental Report Supplement 1

Early Construction

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1.0 INTRODUCTION

In a letter dated May 8, 2009, the U.S. Nuclear Regulatory Commission (NRC) approved a request from GE-Hitachi Global Laser Enrichment (GLE), to allow Early Construction on the Wilmington Site prior to receipt of a license application to construct and operate a laser enrichment facility. Under the existing regulations, the commencement of construction cannot begin until after the completion of the NRC's environmental review. Construction is defined to include any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. GLE requested and received the exemption in order to start certain activities that are not directly related to handling of safety equipment and processes, such as paving an access road on the Site, clearing the construction area, and erecting administrative buildings.

1.1 Background

On June 29, 2004, GLE submitted a license application to construct and operate a 6 million separative work unit (MSWU) laser enrichment facility in Wilmington, NC to enrich uranium for subsequent use in commercial nuclear power reactors. In support of this application, an Environmental Report was submitted to the NRC, which analyzed the impacts of the Proposed GLE Facility on the environs. For the purposes of evaluating the impacts, approximately 261 acres of the Wilmington Site (on land already owned by General Electric Company [GE]) was designated as the GLE Study Area (Figure 1-1) and was extensively evaluated. The Proposed GLE Facility is planned to initially occupy approximately 100 acres of the GLE Study Area.

The impacts of the construction activities for the entire GLE project, including these Early Construction activities, were evaluated and the findings documented in the GLE Environmental Report (herein referred to as the GLE ER). The GLE ER was prepared in accordance with the guidance in *NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS (Nuclear Material Safety and Safeguards) Programs*, and was submitted to the NRC on January 31, 2009.

This document, a Supplemental Environmental Report (or ER Supplement 1), is intended to evaluate the impacts from the Early Construction activities, separate from the activities to be performed after receiving an NRC license, assuming that the Early Construction activities are performed prior to the construction of the rest of the GLE facility. ER Supplement 1 is organized in accordance with the guidance in NUREG-1748.

1.2 Purpose and Need

Performing Early Construction activities prior to receiving a license allows GLE to take a phased approach to construction. The first phase is the Early Construction, the next phase would support the initial operation of the enrichment facility, and the final phase would support the ramping up to maximum operation. Performing Early Construction also distributes construction costs, allows for earlier completion of construction, and therefore allows for earlier commencement of operations.

1.3 Proposed Action

The following are the proposed Early Construction activities for GLE to perform prior to receipt of an NRC license:

- Clearing of 100 acres for the Proposed GLE Facility
- Site grading and erosion control
- Installation of storm water retention system
- Construction of main access roadways and guardhouse(s)
- Placement of Utilities (electricity, potable water, process water, water for fire suppression, sanitary sewer, natural gas)
- Construction of parking lots and minor roadways
- Construction of administrative building(s)

Required permits would be obtained prior to the start of Early Construction and pre-operational baseline environmental samples would be collected. In addition, geotechnical investigations would be conducted prior to the construction of roadways, buildings, and water retention systems.

The schedule for construction shown in the GLE ER has the following key dates:

- 2009 – Submittal of license application to the NRC
- 2011 – Anticipated issuance of license by the NRC
- 2011 through 2017 – Construction

Based on current conditions, this estimated schedule is still valid. The Early Construction activities would begin in early 2011 prior to receipt of a license from the NRC (anticipated later in 2011). Commencement of operations would begin in the 2013-2017 timeframe, concurrent with remaining construction activities, as the current plans call for a ramp up to total SWU capacity. Depending on how the construction and design work progress, beginning Early Construction activities might allow GLE to complete construction earlier than the scheduled date of 2017.

The location of the 100 acres to be cleared as part of Early Construction for the Proposed GLE Facility is shown on Figure 1-1 along with the revised entrance roadway. As noted in Figure 1-1, the entrance to the Proposed GLE Facility from Castle Hayne Road is different from what is depicted in the GLE ER. After submitting the GLE ER, the NC Department of Transportation indicated that they prefer the entrance that is depicted on Figure 1-1 rather than the entrance that is depicted in the GLE ER (refer to Figure 1-3 in the GLE ER). Because the entrance shown in Figure 1-1 is outside of the original study area that was analyzed in the GLE ER, GLE is currently performing surveys to include in an impacts analysis. The revised area being surveyed is approximately 34-acres. The environmental impacts of including the new 34-acres in the GLE study area will be analyzed and a second supplement to the GLE ER (ER Supplement 2) will be submitted to the NRC to document those results.

Figure 1-1 also denotes the access road currently proposed to transfer enriched uranium product cylinders from GLE to the existing Fuel Manufacturing Operations (FMO) on the Wilmington Site. The GLE ER analyzed a different access road (referred to as the South Road portion of the GLE Study Area in Figure 1-3 of the GLE ER) that was to be used to transfer product cylinders from GLE to FMO, but that access road is no longer in the current plans.

1.4 Applicable Regulatory Consultations and Authorizations

The following regulatory consultations and authorizations apply to Early Construction activities. Required permits would be obtained prior to beginning the Early Construction phase, as appropriate.

1.4.1 U.S. Army Corps of Engineers

Section 404 of the CWA authorizes the USACE to issue permits for the discharge of dredged or fill material into Waters of the United States. Before an activity occurs, applicable permits must be obtained and any compensatory mitigation must be determined. If the USACE determines that a 404 permit is required because of impacts to wetlands or jurisdictional waters, then a 401 Water Quality Certification is also required. This might be applicable if wetlands are identified in the expanded Study Area.

The EPA has delegated authority to North Carolina to issue a CWA 401 Water Quality Certification for projects that require a 404 permit. A 401 Water Quality Certification is verification by the State that the project will not degrade State Waters or violate water quality standards. A 401 Water Quality Certification is required before the USACE can issue a 404 permit.

An Isolated Wetlands permit is needed if the USACE determines that a wetland that potentially would be impacted is not a 404 jurisdictional wetland.

1.4.2 Occupational Health and Safety Administration

Construction must adhere to general industrial safety standards.

1.4.3 North Carolina Division of Water Quality – National Pollution Discharge Elimination System (NPDES) Individual Permit for Industrial Stormwater

In compliance with Section 402 of the CWA, a permit is required for discharge of stormwater runoff from industrial or commercial facilities to the Waters of the United States. All new and existing point-source industrial stormwater discharges associated with industrial activity require a NPDES Stormwater Permit.

1.4.4 North Carolina Division of Water Quality – NPDES Individual Permit for Construction Stormwater

Prior to commencement of any construction activities, an authorization to construct is required. The issuance of a NPDES permit for construction activities is tied to submission of an Erosion and Sedimentation Control Plan to the North Carolina Division of Land Resources. The conditions of this permit include adherence to the Erosion and Sedimentation Control Plan, regular inspection of best management practices and outfalls, and regular maintenance of structures. An individual NPDES permit for stormwater discharge from construction activities would be required before GLE Facility site preparation and construction activities could begin. Development of a Stormwater Pollution Prevention Plan and filing a Notice of Intent with the EPA at least 2 days prior to the commencement of construction activities is necessary.

1.4.5 North Carolina Division of Land Resources – Erosion and Sedimentation Control Plan

An Erosion and Sedimentation Control Plan needs to be prepared, submitted, and approved prior to the commencement of any land-disturbing activity that affects one or more

acres (.4 or more ha) of land. A land-disturbing activity results in a change in the natural cover or topography that may cause or contribute to sedimentation. This plan is tied to the NPDES Individual Permit for Construction Stormwater, and this program is administered by the New Hanover County Soil and Erosion Control Department.

1.4.6 North Carolina Department of Transportation

The North Carolina Department of Transportation will require a driveway permit for road connections.

1.4.7 New Hanover County Planning Department – New Hanover County Tree Removal Permit

The removal of any regulated tree from public or private property requires a tree removal permit from the County Zoning Administrator. The tree removal permit is required before any clearing, grading, or other authorizations may be issued, including issuance of soil and sedimentation control permits and building permits (New Hanover County Code; Article VI-10, Section 67-9, *Tree Removal* [7/01]).

1.4.8 New Hanover County Planning Department – New Hanover County Noise Ordinance

New Hanover County enforces a Noise Ordinance (New Hanover County Municipal Code, Article III).

1.4.9 New Hanover County Engineering Department – New Hanover County Permit for a Land-Disturbing Activity

All development within New Hanover County is subject to the New Hanover County Erosion and Sedimentation Control Ordinance issued pursuant to the North Carolina Sedimentation Pollution Control Act of 1973. A Land-Disturbing Permit, which includes the submittal of an Erosion and Sedimentation Control Plan, would be required prior to the commencement of any land-disturbing activity that affects one or more acres (.4 or more ha) of land.

1.4.10 New Hanover County Engineering Department – New Hanover County Stormwater Permit

New Hanover County adopted a Stormwater Ordinance in September 2000 (New Hanover County Code; Chapter 23, *Environment*; Article VII, *Stormwater Management*). It is the county policy that all land to be developed within the unincorporated areas of the county shall have sufficient stormwater-management controls to provide adequate protection of life, property, and natural resources. At a minimum, regulated activities shall include sufficient management of post-development runoff from the 2-year, 10- year, and 25-year frequency storms, such that the discharge rates of post-development stormwater runoff do not exceed the pre-developed rates.

1.5 Additional Updates to the GLE ER

While preparing the responses to the NRC questions resulting from meetings with GLE on May 18-20, 2009, it was discovered that a facility located on the Wilmington Site was not fully described in the GLE ER. The Wilmington Field Services Center (WFSC) is located inside the Controlled Access Area, west of the FMO building. This operation cleans and refurbishes contaminated and non-contaminated equipment used at reactor sites. This area is regulated by a North Carolina Division of Radiation Protection license. The impacts of this facility were

evaluated in some of the sections of the GLE ER, but not all. The impacts of this facility are described in the Chapter 4 of this ER Supplement.

The ER states that the Decommissioning of the GLE facility will take approximately 9 years. Since the submittal of the ER, it has been determined that the decommissioning will take approximately 5 years. This new schedule does not impact the results of the analyses in the GLE ER and is not further analyzed in this ER Supplement. The Decommissioning Funding Plan, submitted to the NRC on June 29, 2009, describes the activities to be completed during decommissioning.

And finally, as stated in section 1.3 above, the plans for the road entrance to the Wilmington Site from Castle Hayne Road have been modified. The new entrance is depicted in Figure 1-1. The impacts from this change will be submitted in a separate supplement (ER Supplement 2), as soon as the surveys and subsequent analyses are completed.

2.0 ALTERNATIVES

This section describes the two alternatives to Early Construction activities. The cumulative impacts of the both alternatives and the redress plan are also addressed.

2.1 Description of the Alternatives

The two alternatives to Early Construction activities include:

1. Receive the NRC license for the Proposed GLE Facility before initiating Early Construction activities in which case there would be no environmental impacts beyond those described in the GLE ER (the No Action Alternative), or
2. Initiate Early Construction prior to receipt of an NRC license and before construction of the remainder of the Proposed GLE Facility thereby spreading out the impacts over time (the Proposed Action).

The alternatives are described in more detail in the following sections.

2.1.1 No Action Alternative

Under the No Action Alternative, Early Construction would not be initiated until the NRC issues a license application to construct and operate the Proposed GLE Facility (anticipated in late 2011). The No Action Alternative would not result in any environmental impacts (beyond those described in the GLE ER) from the proposed activities listed in Section 1.3. Current levels and/or projections of land development, transportation, terrain, groundwater, and surface water availability and quality would remain the same. There would be no additional impacts to the ecology, floodplains, wetlands, historical and cultural resources, public and occupational health, waste management, environmental justice, and visual/scenic conditions. Under the No Action Alternative, the area would not benefit from the expected positive impacts of the Proposed Action on local employment, income, and tax revenues, some of which occur during the Early Construction activities. The schedule would remain as originally proposed, and there would be less potential for completing the construction schedule before 2017.

2.1.2 Proposed Action

As described in Section 1.3, the Proposed Action is for GLE to initiate Early Construction activities early in 2011 prior to receipt of an NRC license anticipated later in 2011. These Early Construction activities include:

- Clearing of 100 acres for the Proposed GLE Facility (See Figure 1-1)
- Site grading and erosion control
- Installation of storm water retention system
- Construction of main access roadways and guardhouse(s)
- Placement of Utilities (electricity, potable water, process water, water for fire suppression, sanitary sewer, natural gas)
- Construction of parking lots and minor roadways
- Construction of administrative building(s)

2.1.3 Description of Proposed Action

As described in detail in the GLE ER, the Proposed GLE Facility would be built on land already owned by GE and would be consistent with the Wilmington Site's current I-2 (Heavy Industrial) zoning classification. The location of the 100 acres to be cleared as part of Early Construction for the Proposed GLE Facility is shown on Figure 1-1 along with the currently proposed entrance roadway.

As noted in Figure 1-1, the entrance to the Proposed GLE Facility from Castle Hayne Road is different than that depicted in the GLE ER (see explanation provided in Section 1.3). Because the entrance shown is outside of the original study area that was analyzed in the GLE ER, (GLE is currently performing surveys to include in an impacts analysis. The environmental impacts of including the new 34-acres in the GLE study area will be analyzed and a second supplement to the GLE ER (ER Supplement 2) will be submitted to the NRC to document those results.

Some of the anticipated advantages of this revised entrance road over the previously evaluated entrance include:

- Provides a safer traffic entrance into the Proposed GLE Facility
- Avoids the construction of a new stream crossing to the Unnamed Tributary #1 to Prince George Creek, modifications to a jurisdictional channel, and the potential impacts associated with a new crossing
- Avoids potential impacts to three previously identified wetlands (WB, WC, and WD shown in Figures 4.4-5, 4.4-6. and 4.4-7, respectively in the GLE ER)
- Locates the entrance road on average approximately 1,000 ft south of the north property line increasing the buffer to the nearby subdivision and reducing some of the noise from road construction and subsequent entrance traffic
- Takes advantage of existing roadbeds, to the extent possible, thereby lessening the amount of potential impacts associated with clearing for new roadbeds.

Figure 1-1 also denotes the access road currently proposed to transfer enriched uranium product cylinders from GLE to the existing Fuel Manufacturing Operations (FMO) on the Wilmington Site. The GLE ER analyzed a different access road (referred to as the South Road portion of the GLE Study Area in Figure 1-3 of the GLE ER) that was to be used to transfer product cylinders from GLE to FMO, but that access road is no longer in the current plans. It should be noted that the cylinders would remain on the Wilmington Site when they are transferred from GLE to FMO. The cylinders will travel from the GLE facility on the only road now proposed to go into and out of the GLE facility, then turn onto an existing road on the Wilmington Site in order to reach the FMO facility.

Some of the anticipated advantages of this revised proposed route for product cylinders over the previously evaluated (South Road) route include:

- Avoids the improvements that would have been necessary for the existing stream crossing to the Unnamed Tributary #1 to the Northeast Cape Fear River and associated impacts
- Avoids potential impacts of a previously identified wetland (WE shown in Figure 4.4-8 in the GLE ER) resulting from construction activities related to the improvements necessary for the stream crossing (Unnamed Tributary #1 to the Northeast Cape Fear River)
- Avoids potential impacts in the vicinity of the prehistoric archaeological site 31NHNH801 (shown in Figure 4.8-1 in the GLE ER)
- Takes advantage of existing roadbeds, to the extent possible, thereby lessening the amount of potential impacts associated with clearing for new roadbeds.

Immediately to the east of the 100-acre Proposed GLE Facility and within the GLE Study Area would be the following additional structures that would require several additional acres to be cleared:

- Access driveways connecting the Proposed GLE Facility to the product cylinder route
- Guard houses
- A sanitary wastewater lift station
- A process wastewater lift station
- An 8-acre stormwater wet detention basin.

The stormwater wet detention basin (as defined by the North Carolina Department of Environment and Natural Resources [NCDENR] in 2007) would be designed to capture and treat the runoff from the entire 100-acre Proposed GLE Facility and its supporting facilities for the purposes of removing water pollutants and attenuating peak runoff volumes. The stormwater wet detention basin includes a smaller forebay on the west side. See Section 4.4.2 of the GLE ER, Surface Water Impacts, for more details on how stormwater would be managed for the Proposed Action.

Aboveground electrical utility lines would connect the Proposed GLE Facility to the proposed new electrical substation. Potable and process water supply lines would be run to the Proposed GLE Facility from the existing Wilmington Site water-supply infrastructure. Sanitary waste and process wastewater (including treated liquid radiological wastewater) would be routed in later stages of the project from the Proposed GLE Facility via underground lines to the lift stations installed adjacent to and east of the 100-acre Proposed GLE Facility. The lift stations would deliver the respective wastewaters to the existing Wilmington Site sanitary wastewater treatment facility and final process lagoon treatment facility. The Proposed Action includes placement of new utility lines within existing utility corridors and/or clearings required for the new access roads and driveways, discussed previously. Should additional clearing be required between existing Wilmington Site facilities to accommodate these utility transmission lines, such actions would be conducted in compliance with applicable regulations, regulatory approvals, and current Wilmington Site Environmental Protection Instructions.

2.1.4 Baseline Sampling and Monitoring

Air monitoring would be conducted during Early Construction activities to verify whether dust-suppression practices are sufficiently effective. Stormwater monitoring would be conducted

during Early Construction to verify whether measures prescribed in the Erosion and Sedimentation Control Plan are implemented as required by the National Pollutant Discharge Elimination System (NPDES) permit.

Baseline sampling of groundwater quality would be conducted before the Proposed GLE Facility becomes operational. Baseline soil sampling also would be conducted before the 100 Proposed GLE Facility is constructed. Results from the existing GNF-A Environmental Monitoring Program would serve as pre-GLE baseline measurements for the qualities of air, surface water, sediment, treated sanitary wastewater effluent, and treated process wastewater effluent; therefore, additional activities for pre-operational assessments of baseline conditions would not be required for these media.

Geotechnical borings would be drilled to evaluate foundation conditions for the proposed structures that would be built during the Early Construction phase. Structures that would require a geotechnical investigation include buildings, associated load-bearing structures, basins, and roadways.

2.1.5 Redress Plan

If the NRC license for the Proposed GLE Facility is delayed or not issued, GE would consider using the roadways and administrative building(s) for other purposes (e.g., support to other on site GE operations, relocating other GE business units to the Site, or temporarily leasing the space to other non-GE entities). Potable water, sewer, and electrical services would be available to support other business activities on a temporary or long-term basis.

3.0 DESCRIPTION OF AFFECTED AREA

The affected area remains consistent with what is described in the GLE ER. The following paragraphs summarize the information.

The existing Wilmington Site shown in Figure 1-1 is situated on a 1,621-acre tract of land, located west of NC Highway 133 (NC 133, also known as Castle Hayne Road and, previously, US Highway 117 [US 177]). The Wilmington Site spans between latitudes (North) 34° 19' 4.0"and 34° 20' 28.9" and between longitudes (West) 77° 58' 16.4" and 77° 55' 19.8", and is approximately 6 miles north of the city of Wilmington in New Hanover County, NC. For the purposes of the ER Supplement, the phrase "Wilmington Site" is used to denote the 1,621-acre area.

The existing Wilmington Site operations include the Global Nuclear Fuels-America (GNF-A) Fuel Manufacturing Operation (FMO) facility, the Fuel Components Operation (FCO), the Wilmington Field Services Center (WFSC), and the GE Aircraft Engines/Services Components Operation (AE/SCO) facility. The FMO facility receives enriched uranium hexafluoride (UF_6), converts it into UO2 powder, presses the powder into fuel pellets, loads the pellets in to fuel bundles, and ships the bundles to commercial nuclear power plants. The FCO facility fabricates non-radioactive components for nuclear fuel operations. The WFSC provides service and repair to reactor components and is further described in a letter to the NRC dated June 8, 2009. And finally, the AE/SCO facility fabricates aircraft engine components.

The Proposed GLE facility would be located on the 100-acre area shown on Figure 1-1. The GLE Commercial Facility includes the Operations Building (to be constructed once the NRC license is received) where the enrichment processing systems and enrichment processing support systems would be contained, several administrative and support buildings, a parking lot,

retention basins, UF6 cylinder pads, and connecting roadways. A cleared security buffer would surround the entire GLE Commercial Facility and defines both the Restricted Area and the Protected Area of the facility.

Related GLE facilities to be constructed outside boundary of the 100-acre area would include the access roadways, the stormwater wet detention basin, guard stations, and the clearing of the narrow tracts of land that may be required to install power lines by the electric company (Progress Energy).

4.0 ENVIRONMENTAL IMPACTS

4.1 Land Use

4.1.1 Impacts from Early Construction

Early Construction activities involve clearing and grading of approximately 100 acres of presently undeveloped, forested land in the location of the Proposed GLE Facility (Figure 1-1). This area size is the same area required for operation. Early Construction activities are not expected to require the clearing and temporary use of existing undeveloped land at the Wilmington Site beyond the boundaries of the 100 acres (40 ha), with the exception of the installation of the stormwater wet detention basin, construction of an access road, and the clearing of the land as required by the electric company (Progress Energy) to install power lines.

Construction of the access road on the Wilmington Site property from NC 133 (Castle Hayne Road) to the Proposed GLE Facility would include improvement and extension of the existing north entrance and an existing on-site service road. As part of this road construction, clearing and grading of some additional forested land at the Wilmington Site will be necessary. This on-site access road would be approximately 1.5 miles (2.5 kilometers [km]) in length, with a right-of-way width up to 200 feet (ft; 61 meters [m]) depending on the final road design.

Utilities required for operation of the buildings erected during Early Construction would be electrical power, potable water, process water, natural gas, and sanitary wastewater sewer service. The land use impacts associated with the installation and operation of these utilities would be confined to the Wilmington Site. When possible, placement of new utility lines will be within or along existing utility corridors or roads and/or clearings required for the new access roads and driveways. Should additional clearing be required between existing Wilmington Site facilities to accommodate these utility transmission lines, such actions would be conducted in compliance with applicable regulations, regulatory approvals, and current Wilmington Site Environmental Protection Instructions.

Currently, electric power lines transect the Site through the transmission line corridor easement. The GLE facility electric use will require that a new electric substation, and some new electric transmission lines be placed on-site. The total amount of area on-site to be disturbed as a result of the new transmission corridor is currently estimated to be approximately 10 acres.

Operation of the new buildings would not require connection to municipal water lines or sewer systems. Potable water would be obtained from on-site wells. Sanitary wastewater sewer connections from the new buildings would be routed to the existing sanitary waste treatment plant operated at the Wilmington Site. Process water will also come from on-site wells.

The structures and road to be built as part of Early Construction would be constructed on a GE-owned land parcel currently zoned and used for heavy industrial facilities. No new activities will occur on roads or on other public or private land parcels; therefore, the land use impacts resulting from Early Construction are consistent with the results in the GLE ER and would be SMALL.

4.1.2 Impacts from WFSC

The WFSC does not affect the land use analysis sections (3.1 and 3.2) in the GLE ER. The WFSC is an industrial facility, located on the existing developed portions of the Wilmington Site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment."

4.2 Transportation

4.2.1 Impacts from Early Construction

The Wilmington Site is located adjacent to the I-140 interchange with NC 133 (Castle Hayne Road). Interstate 140 connects to Interstate Highway 40 (I-40) about 3.5 miles (5.6 km) to the east of this interchange, providing continuous interstate highway access from the Wilmington Site to locations throughout the United States (see Figure 3.2-9 in the GLE ER). The City of Wilmington's downtown and port districts can be accessed from the Site by traveling south on NC 133 (Castle Hayne Road). The Wilmington Metropolitan Planning Organization (WMPO) designates the four-lane segment of NC 133 (Castle Hayne Road) south of I-140 as an urban principal arterial and the two-lane segment of NC 133 (Castle Hayne Road) beginning approximately 0.5 miles (0.8 km) north of I-140 as an urban minor arterial.

The number of construction workers at the GLE construction site would vary during the construction period. During this period, traffic impacts would result from the construction workers commuting to and from the GLE construction site. Routes used by these workers to access the Wilmington Site would depend on where the workers reside. Workers living in eastern New Hanover County and Pender County would likely travel westbound on I-140 and exit at the Castle Hayne Road interchange. Workers living in Brunswick County would travel eastbound on I-140 and exit at the Castle Hayne Road interchange. Workers living in communities directly north of the Wilmington Site would likely travel south on NC 133 (Castle Hayne Road). The workers living in southern portions of New Hanover County would likely travel north directly on NC 133 (Castle Hayne Road).

Throughout each day of activity at the GLE construction site, a varying mix of heavy-duty 18-wheeled tractor-trailer trucks, heavy-haul trucks (e.g., dump trucks, concrete mixing trucks), and light-duty delivery trucks would travel to the Wilmington Site to deliver construction materials, supplies, and equipment for the Early Construction activities. In addition, visitors to the Site (e.g., regulatory agency inspectors and GEH staff) and construction contractors would make a relatively small, but variable number of automobile and pickup truck trips on average to and from the GLE construction site during daily business and construction activity hours throughout the construction period.

The transportation impacts associated with construction of the Proposed GLE Facility would be temporary and variable during Early Construction. On a day-to-day basis, the total vehicle trips to the GLE construction site would be expected to vary significantly depending on the type of construction activities being conducted and the number of worker required for those

activities (e.g., clearing and grading the GLE construction site, erecting the building structures, installing utilities, finishing building interiors, installing furniture and equipment inside building). Projections of the daily vehicle trips based on the annual average number of construction workers required for construction of the Proposed GLE Facility are conservatively estimated to be 200 maximum. Because most of the automobile and truck traffic to the GLE construction site is expected to exit off of I-140, the most concentrated traffic impacts would likely to occur along the approximately 0.5 mile (0.8 km) segment of NC 133 (Castle Hayne Road) just north of the I-140 interchange. The most recent available average annual daily traffic (AADT) counts for traffic on NC 133 (Castle Hayne Road) in the vicinity of the Wilmington Site are in the range of 14,000 to 19,000 vehicles per day. The projection of up to 200 average daily trips (ADT) being added to the current AADT levels for the segments of NC 133 (Castle Hayne Road) in the immediate vicinity of the interchange with I-140 might impact the traffic flow on the road, therefore, the local transportation impacts for the Early Construction Activities would be SMALL to MODERATE.

Beyond the NC 133 (Castle Hayne Road) and I-140 interchange, the short access to I-140 would allow truck drivers and many of the GLE employees to use the interstate highway to bypass traveling on surface roadways in the Wilmington Site vicinity; therefore, the transportation impacts for the construction of the Proposed GLE Facility on a regional basis would be SMALL.

4.2.2 Impacts from WFSC

The numbers of radioactive shipments into and out of the WFSC are described in a letter to the NRC dated June 8, 2009. These shipments are performed in accordance with applicable NRC and Department of Transportation regulations. In accordance with current shipping practices, and given that the number of shipments to and from the WFSC are expected to remain constant, the impacts of these shipments combined with those from the GLE facility are SMALL.

4.3 Geology and Soils

4.3.1 Impact from Early Construction

During Early Construction, site preparation and construction of certain facilities and the proposed access road would require clearing and grading of approximately 175 acres of land. Terrain changes would be minimal because the area is very gently sloping (gradients less than 2%). Shallow soils would be disturbed for building footings and excavation of the stormwater wet detention basin. The access road construction may require excavation of shallow soils in some areas, backfilling, compaction, grading, and paving. The volumes of soils that would be impacted depend on the Proposed GLE Facility final design and layout and recommendations of the geotechnical investigation. Any shallow soils disturbed or moved during construction would either be re-used within the GLE construction site or stockpiled for potential use in other areas of the Wilmington Site. The impacts related to soils would be SMALL.

Construction of the administration buildings and associated structures is anticipated to require the placement of shallow foundations. A geotechnical investigation would be performed in advance of construction of structures and access roads, and recommendations will be made relative to impacts on facilities. The shallow geological conditions would not create significant impacts on site preparation and construction of the Proposed GLE Facility or access road, and any anticipated impacts would be mitigated through engineering controls recommended in the geotechnical investigation and therefore would be SMALL.

4.3.2 Impacts from WFSC

The WFSC does not affect the analyses provided in the Geology and Soils sections (3.3 and 4.3) of the GLE ER. The analyses provide information across the Wilmington site, including the area where the WFSC is located. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment".

4.4 Water Resources

4.4.1 Impacts from Early Construction

Sanitary waste at the GLE construction site would be managed using portable toilets. The water needed for site preparation and construction would be provided by tanker truck from existing off-site water sources, and it would be required that those sources be of potable quality. Therefore, there would be no anticipated impact to groundwater quality during Early Construction, and overall impacts would be SMALL.

Modification of the existing stream crossing, if required, for the revised entrance road, would result in SMALL direct impacts on the stream channel (the Unnamed Tributary #1 to Prince George Creek. There would be no direct impacts to surface waters Early Construction activities The impacts from any soil erosion on surface waterbodies from construction of the proposed access road and the Proposed GLE Facility are anticipated to be SMALL due to the use of best management erosion control practices, and this construction would not cause water quality standards or limits to be exceeded. There would not be impacts to navigation, industrial transport, commercial fishing, or recreation uses and therefore these can be described as SMALL.

Construction of the Proposed GLE Facility and proposed access roads would occur outside of the floodplain boundaries. Therefore, impacts to the floodplain would be SMALL.

The main 100-acre (40-ha) area of the Proposed GLE Facility would not directly impact any wetlands. One isolated wetlands (wetland WA as shown in Figure 4.4-4 in the GLE ER) may be removed if modifications are made to the existing access road . Other potential wetlands, if present along the revised route for product cylinders and entrance route, would be identified as part of the survey that is currently underway (and to be reported in ER Supplement 2). Unavoidable temporary impacts to wetlands could result from site preparation and construction activities due to the removal of vegetation, temporary storage of construction materials, and potential sediment runoff. The resulting temporary impacts would be mitigated by restoring the disturbed wetlands areas to pre-existing conditions through the planting of vegetation and removal of excess sediment. Impacts to wetlands would be SMALL.

Water use in the completed new facilities (estimated to be about 200 people) would start earlier than described in the GLE ER and rely on the existing potable water system for the Wilmington Site. The water consumption would be bound by the water resource estimates provided in the GLE ER and impacts on water resources would be SMALL.

4.4.2 Impacts from WFSC

The potable and process water usage estimates provided in the GLE ER included the WFSC (see Table 3.4-17 in the GLE ER). Wastewater produced in the contaminated zones and change rooms is quarantined and processed by evaporators that eliminate the water and collect

the radioactivity as a residue. This process eliminates radioactive water effluent. The impacts to water resources from WFSC when combined with GLE operations are considered SMALL.

4.5 Ecology

4.5.1 Impacts from Early Construction

Construction of the Proposed GLE Facility would displace some local wildlife populations to nearby habitat in the western portion of the Wilmington Site. Human encounters with some wildlife could increase due to disruption of travel corridors and loss of habitat. No direct impacts to rare or unique habitats or commercially or recreationally valuable species would result from Early Construction. Overall, wildlife populations on the Wilmington Site would be altered, but the existence of these species would not be destabilized. Therefore, direct and indirect impacts to wildlife would be MODERATE.

The majority of the vegetation that would be disturbed by Early Construction (100-acres) was planted or regenerated after clear-cutting of the area occurred in the early 1990s. Longleaf and loblolly pines are the dominant tree species. The removal of forested biotic communities would noticeably alter the composition of habitat, but would not destabilize the existence of these communities; therefore, direct and indirect impacts to existing biotic communities would be MODERATE.

The revised entrance road would now take advantage of existing roadbeds, to the extent possible, thereby decreasing the amount of vegetation clearing and habitat loss that would have associated with the prior entrance road location.

4.5.2 Impacts from WFSC

The WFSC does not affect the analyses provided in the Ecological Resources sections (3.5 and 4.5) of the GLE ER. The ecological analysis was performed on the study area, not on existing facilities on the site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment".

4.6 Air Quality

4.6.1 Impacts from Early Construction

Site preparation activities, proposed access road construction, and other construction activities would create temporary localized fugitive dust emissions. Dust-suppression work practices would be used to mitigate these fugitive dust emissions. In addition, constructing the entrance roadway earlier in the project would lessen dust in the later heavy construction stages of the project.

Carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM), sulfur dioxide (SO_2), and volatile organic compound (VOC) emissions would be released from on-site heavy construction equipment and from automobiles and trucks travelling to and from the GLE construction site. Ambient air modeling predicts that the fugitive dust and other air emissions to the atmosphere from the construction activities would not substantially change the ambient air quality in the vicinity of the Early Construction activities. The air emissions are expected to have no measurable impact on regional visibility, and the air quality impacts from Early Construction would be SMALL.

4.6.2 Impacts from WFSC

Air effluents from the WFSC are under the regulatory authority of the NC Division of Radiation Protection. The WFSC has 3 stacks, and these are monitored for gross beta emissions, in accordance with the NC radioactive materials license. The HEPA filtration systems effectively remove the radioactive effluents from these buildings. As an added precaution, the contaminated zone effluent stacks are continuously monitored by isokinetic stack air samplers, filters are collected at intervals not to exceed ten days and analyzed for gross beta activity. Due the low amount of radionuclides and the absence of other chemicals in the air emissions, the WFSC is exempt from an air permit from the NC Division of Air Quality. Three years of air emissions data from the WFSC are provided in the June 8 letter to the NRC. Due to the minimal amount of air emissions, impacts to air quality due to WFSC operations (both direct and combined with GLE emissions) are SMALL.

4.7 Noise

4.7.1 Impacts from Early Construction

Early Construction activities would temporarily generate short duration noises resulting from construction equipment, site preparation, and other activities typical of building construction sites. Sound-level modeling performed for the GLE ER predicted that temporary localized MODERATE noise level impacts would occur for existing residents living in proximity to the northeast Wilmington Site property line (see Chapter 4.7 of the GLE ER). These impacts would result from construction of portion of the proposed access road closet to the north property line and the resulting automobile and truck traffic using the road to access the GLE construction site. The access road has subsequently been revised and is further to the south from the northern property line (on average about 1,000ft) allowing a greater tree buffer. The result is that the noise level impacts are now expected to be SMALL for the most of the adjacent Wooden Shoe subdivision and SMALL to MODERATE to the closest residences. At locations farther off-site, the noise impacts for the Proposed GLE Facility would be SMALL.

4.7.2 Impacts from WFSC

The WFSC does not affect the noise analysis in the GLE ER. This facility was operational when the baseline sound survey was conducted in 2007. Therefore impacts from noise from this facility were included in the survey.

4.8 Historic and Cultural Resources

4.8.1 Impacts from Early Construction

Two archaeological sites were identified within the GLE Study Area. One of the sites was determined not to be historically significant. The second site, located on the edge of a bluff overlooking the Northeast Cape Fear River, was determined to be a prehistoric archaeological site dating to the Middle Woodland period. The location of the archaeological site has been noted on Site facility maps so that it can be protected from potential future development and appropriate signs have been posted. The Wilmington Site EPI will be modified so that notification procedures are in place to help protect signs of other prehistoric archaeological sites (i.e., artifacts) should they be located during construction activities in other areas of the Wilmington Site.

Since the direct transport route for product cylinders has been changed since the submittal of the GLE ER and the earlier route eliminated from consideration, the significant

archaeological site would not be disturbed by the Early Construction activities and the impacts would be SMALL.

The potential for other significant archaeological sites to exist within the revised entrance roadway and product cylinder route is less likely than at the sites near the river bluffs. However, a cultural resource survey is currently planned and will investigate the entrance roadways within the expanded Study Area. The findings will be reported in the GLE ER Supplement 2.

4.8.2 Impacts from WFSC

The WFSC does not affect the historical and cultural analysis in the GLE ER. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment" and there are no historical or cultural sites associated with the location of this facility.

4.9 Visual and Scenic Impacts

4.9.1 Impacts from Early Construction

The construction of the Proposed GLE Facility would require clearing of vegetation from areas in the interior of the Wilmington Site; however, the amount of trees and vegetation cleared would be limited, to the extent practicable, to the land area needed for the Proposed GLE Facility's operational, security, utility, and access requirements. In addition, a greater buffer of vegetation would result from placement of the revised entrance road further south of the northern property line (on average, approximately 1,000 ft further south).

Temporary visual intrusions into the landscape may result from the use of construction cranes at the GLE construction site for erecting some of the building structures and installing equipment. No other visual/scenic resource impacts are expected to result from the activities performed for site preparation and Early Construction activities and the overall visual/scenic impacts would be SMALL.

4.9.2 Impacts from WFSC

The WFSC does not affect the visual and scenic resources analysis in the GLE ER. The facilities associated with the WFSC are similar in size and shape to the other operational facilities currently on-site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the existing visual appearance of the site as described in the GLE ER chapter 3.

4.10 Socioeconomics

4.10.1 Impacts from Early Construction

The annual construction labor force needed for the Proposed GLE Facility would peak at approximately 490 workers. However, Early Construction would enable a smaller workforce to be employed earlier in the schedule (in early 2011). The impact of these workers on social resources and services would depend on how many workers are hired from within the region. If most of the construction workers are obtained from within the region, then social services such as law enforcement and education would experience little increase in demand and, therefore, create no adverse impacts. A large influx of construction workers from outside the region could potentially temporarily affect housing, educational, medical, law enforcement, and fire services.

However, a prior analysis performed for the GLE ER shows that, overall, the socioeconomic impact of the site preparation and construction activities associated with the Proposed GLE Facility is anticipated to be SMALL.

The smaller workforce needed to support Early Construction activities would also indicate that the socioeconomic impact of the initial site preparation and construction activities would be SMALL. In addition, Early Construction provides a positive economic stimulus supporting the workforce (including professional contractors involved in pre-construction activities such as surveying and geotechnical investigations as well as construction labor needed for clearing, grading, and construction of facilities).

4.10.2 Impacts from WFSC

The WFSC does not affect the socioeconomic analysis in the GLE ER. The analysis was performed using information from the region and anticipated GLE estimates, not site-specific information related to existing site facilities.

4.11 Environmental Justice

4.11.1 Impacts from Early Construction

Residential neighborhoods near the Wilmington Site include a mix of minority and non-minority residents, as well as a mix of residents having low incomes and residents having incomes above the low-income or poverty threshold. Because the greatest impact from activities associated with the Proposed GLE Facility is not expected to extend beyond the immediate vicinity of the Wilmington Site, Early Construction activities would not result in any disproportionately adverse impacts on low-income or minority residents, and therefore the impacts can be described as SMALL.

4.11.2 Impacts from WFSC

The WFSC does not affect the environmental justice analysis in the GLE ER. The analysis was performed using information from the region and anticipated GLE estimates, not site-specific information related to existing site facilities.

4.12 Public and Occupational Health

4.12.1 Impacts from Early Construction

During the site preparation and construction phase, worker activities and exposures to any hazardous materials would be controlled and monitored according to Occupational Safety and Health Administration (OSHA) and applicable State of North Carolina requirements governing construction activities at construction sites. Dust suppression techniques would be used during preconstruction activities. No radioactive materials would be on-site during the site preparation and Early Construction. The public and occupational health impacts from Early Construction would be SMALL.

4.12.2 Impacts from WFSC

There are no process wastewater effluents from this facility. Therefore the primary pathway for public exposure from this facility is from air effluents. The air effluents from this facility are minimal, and will not adversely impact the public, as they are below the regulatory limits. The solid wastes from this facility are described in the Waste Management section below.

The worker hazards from this facility are similar to those at the FMO and include industrial accidents and exposure to radioactive materials. This facility does not process UF6, therefore the hazards associated with the UF6 and its hydrolysis products (UO2F2 and HF) are absent. The workers are protected from exposure to radioactive materials through the application of the Radiation Protection program and As Low As Reasonably Achievable (ALARA) principles. Chemical use in the WFSC is minimal and there are no unique hazards due to WFSC chemical use. The public and occupational health impacts from the WFSC are SMALL.

4.13 Waste Management

4.13.1 Impacts from Early Construction

Construction workers would use portable toilets. Stormwater runoff would be contained using BMPs for soil erosion control at construction sites as prescribed in the Erosion and Sedimentation Control Plan required for the NPDES construction permit. Early Construction activities would not generate process wastewater streams.

Initial construction of the Proposed GLE Facility would generate solid waste materials that would need to be collected and transported off-site for recycling or disposal. It is expected that predominately refuse and construction debris typical of industrial construction projects would be generated during Early Construction. Good work practices for construction site waste management would be used to collect and sort the wastes for recycling or disposal at a licensed off-site facility appropriate for the waste type. Any hazardous waste generated throughout the construction phase would be temporarily stored on-site, and then shipped to an off-site facility appropriate for the waste types in accordance with established recycling and hazardous waste management programs. No radioactive wastes would be generated during the Early Construction. Impacts from waste management during Early Construction would be SMALL.

4.13.2 Impacts from WFSC

Liquid waste is stored in holding tanks that feed evaporators. The evaporators operate as necessary and can handle up to 200 gallons per day. The WFSC facilities generate approximately 4800 gallons of liquid waste per year from the ultrasonic cleaning tanks, decontamination sinks and the showers. The evaporator process creates <5 cu. ft./yr. of residue. This material is isolated and stored until sufficient volume is created to warrant a shipment to a licensed waste disposal facility.

Solid waste is of three general types: (1) wash-water treatment residues, (2) unserviceable equipment, i.e. underwater tools, poles, replaced parts, etc. and (3) low level contamination and radiation from discarded plastic, tape, rags, paper suits, etc. Radioactive waste is dried, bagged (with appropriate absorbent as necessary), and placed in a container for shipment to a licensed waste disposal or processing facility as appropriate. Control rod drives and associated contaminated components are returned to the utility if no disposal option is available. The storage containers are designated as radioactive waste and located in the container storage area. The low level radioactive waste is collected in bags and stored in containers within a designated radioactive waste area. The waste is prepared for shipment in accordance with the disposal facility's requirements. This may include solidification; incineration or other methods provided by either a licensed disposal facility or licensed waste processor.

The following practices within the WFSC will be used to keep radioactive waste volume to a minimum:

1. Compressible items are compacted to minimize radioactive waste volume as needed.
2. Unnecessary items are not taken into the contaminated zone.
3. Tools are decontaminated when practical so they can be reused rather than thrown away.

Due to the small amounts of wastes generated at the WFSC, and considering that disposal facilities have adequate capacity to receive these wastes, the impacts from WFSC Waste Management are SMALL.

5.0 MITIGATIVE MEASURES

The mitigative measures described in Chapter 5 of the GLE ER would be implemented where practical for the various life cycles of the Proposed GLE Facility and are not fully repeated herein. Examples of some of the key mitigative measures that pertain specifically to Early Construction are outlined below. These mitigative measures would be implemented when resource impacts can not be avoided and in accordance with proper construction best management best management practices (BMPs).

5.1 Measures to minimize soil and sediment erosion

- Minimizing the construction footprint to the extent possible
- Engineering design plans that minimize soil disturbance during construction activities
- Using soils from on-site borrow pits, if such additional soil is necessary for construction purposes, that are accessible via existing roadbeds to minimize disturbance to other areas of the Site outside of the GLE Study Area
- Managing construction activities so that only designated areas within the GLE Study Area are disturbed and so that no heavy equipment or construction operations are allowed to affect areas outside of the GLE Study Area unless specifically designated, such as potential use of existing on-site borrow areas
- Using adequate containment methods during excavation and/or similar operations
- Using site-stabilization practices (i.e., placing crushed stone on top of disturbed soil in areas of concentrated runoff)
- Using silt berms, dikes, and sediment fences
- Stabilizing drainage culverts and ditches by lining surface with rock aggregate/rip-rap to reduce flow velocity and prohibit scouring
- Re-using and/or appropriately placing excavated materials to decrease exposed soil piles
- Placing gravel construction pads at the entrances/exits of construction acres

5.2 Measures to minimize sediment and accidental releases to receiving waters

- Routing stormwater from the Proposed GLE Facility to a new stormwater wet detention basin
- Limiting cut/fill slopes to a horizontal-vertical ratio of three to one or less
- Using silt fencing and covering of soil stockpiles to prevent sediment runoff
- Suspending general construction activities during storms and impending precipitation

- Constructing stream crossings (i.e., installation of culverts) following at least 48 hours of dry weather
- Diverting stream flow during any stream crossing construction to minimize excavation in flowing water
- Maintaining construction equipment so that equipment is in good repair and without visible leaks of oil, greases, or hydraulic fluids
- Restoring disturbed areas to original surface elevations where possible

5.3 Measures to minimize wetland impacts

- Constructing access roads perpendicular to wetlands to minimize area impacted
- Limiting cut/fill slopes to a horizontal-vertical ration of three to one or less
- Avoiding temporary storage of materials in wetlands during construction
- Maintaining the hydrological connectivity of the wetlands to surface waters
- Placing fencing/barriers and using signs around wetland areas
- Using silt fencing and covering soil stockpiles to prevent sediment runoff
- Restoring disturbed areas to original surface elevations
- Re-vegetating disturbed areas with native plant species

5.4 Measures to minimize impacts to ecological resources

- Minimizing the construction footprint to the extent possible and limiting habitat disruption
- Performing surveys of trees greater than 24 inches (61 centimeters [cm]) in diameter before beginning GLE Facility site preparation and construction activities. The impacts to each tree would be mitigated by the planting of one 24-inch (61-cm) diameter tree, two 12-inch (30.5-cm) diameter trees, or three 8-inch (20.3-cm) diameter trees elsewhere on the Wilmington Site
- Restricting site preparation and the harvesting of trees to periods when the ground is dry
- If trenches are necessary during construction, ensuring that trenches are closed overnight; trenches that are left open overnight would have escape ramps
- Sodding, seeding, and/or landscaping of disturbed areas of the Proposed GLE Facility in accordance with the Sediment and Erosion Control Permit
- Installing animal-friendly fencing around the GLE Facility site so that wildlife cannot be injured by or entangled in the site's security fence

5.5 Measures to mitigate fugitive dust emissions

- Watering the GLE Facility site and unpaved roads to reduce dust
- Removing dirt from truck tires by driving over a gravel pad prior to leaving the GLE Facility site or unpaved access road to avoid spreading sediments on paved roads
- Covering trucks carrying soil and debris to reduce dust emissions from the back of trucks driving on roadways
- Paving access road and parking lots as soon as practicable

5.6 Measures to minimize noise impacts

- Prohibiting the use of heavy truck and earth-moving equipment after twilight and early morning hours
- Keeping noise-suppression systems on construction vehicles in proper operation

- Equipping construction equipment with the manufacturer's noise-control devices, and maintaining these devices in effective operating condition
- When possible, utilizing quiet equipment or methods to minimize noise emissions during the activity
- For equipment with internal combustion engines, operating equipment at the lowest operating speed to minimize noise emissions, when possible and practical
- Closing engine-housing doors during operation of the equipment to reduce noise emissions from the engine
- Avoiding equipment engine idling
- Utilizing quieter, less-tonal devices that comply with all applicable safety restrictions (e.g., Occupational Safety and Health Administration [OSHA] standards) on back-up alarms for construction equipment

5.7 Measures implemented as a result of the Proposed Action

Some of the mitigative measures previously indicated in the GLE ER would now be implemented as a result of the Proposed Action (i.e., changing the location of the entrance road and by altering the access route for product cylinders from GLE to FMO):

- Revising on-site routes to avoid wetlands and archaeological features
- Use of existing service road routes and utility right-of-ways at the Wilmington Site to the fullest extent practicable for the Proposed GLE Facility to minimize the need for clearing additional wooded areas and additional wetlands crossings at the Wilmington Site
- To the fullest width practicable, maintaining the existing tree buffer along the northeast Wilmington Site boundary to limit visibility of the Proposed GLE Facility structures and access road traffic from off-site viewpoints in nearby residential neighborhoods (which also reduces construction noise impacts)

6.0 ENVIRONMENTAL MONITORING

There would not be any radioactive material introduced into the GLE Study Area during construction. Therefore, with the exception of baseline sampling for uranium, there would not be any monitoring of radioactive materials specifically associated with the Proposed GLE Facility until the Facility begins operations.

During Early Construction, worker and public exposure to dust would be monitored in accordance with the EHS Industrial Safety Program. The use of hazardous chemicals during construction would be minimized as much as possible, and PPE would be used when appropriate. In addition, an NPDES General Permit for Construction Stormwater would be in place prior to commencement of any construction activities. The issuance of a NPDES permit for construction activities is tied to submission of an Erosion and Sedimentation Control Plan to the North Carolina Division of Land Resources; this plan would include monitoring requirements that would be implemented throughout site preparation and construction.

The existing GNF-A ambient noise monitoring program would continue throughout the Early Construction phase and would be adjusted or expanded as appropriate. In particular, sound levels would be measured at the Wilmington Site property boundary during GLE Facility site preparation and construction activities to ensure that sound levels are lower than the New Hanover County Noise Ordinance.

7.0 COST BENEFIT ANALYSIS

A cost-benefit analysis (CBA) is provided in Chapter 7 of the GLE ER. The costs of site preparation, construction, production, and decommissioning are considered by GLE to be proprietary and are discussed in Appendix U of the GLE ER (a proprietary document).

Employment at the Proposed GLE Facility would range from 140 to 490 during a 7-year construction period. Payroll at the Proposed GLE Facility is estimated at approximately $11 million during the first year of construction. The Proposed Action (Early Construction) would allow the total construction costs (payroll and contractor support) to be distributed over an extra year. As employment and payroll vary during the construction and start-up periods, sales and income taxes would also vary. Although not all these expenditures will be spent in the Wilmington region, the labor costs would be spent within the region, along with a share of the rest. This would be a MODERATE contribution to the region's economy.

Considering both private and external benefits and costs, it appears that the Proposed GLE Facility would result in positive net benefits. Early Construction allows the benefits and costs to be distributed over time.

8.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The environmental consequences for the Proposed Action (i.e., Early Construction and the WFSC) that cannot be avoided, and for which no practical means of mitigation are available to completely eliminate the impacts, are summarized in Table 1-1. As indicated in Table 1-1, most of the currently known or anticipated environmental impacts from the Proposed Action are considered to be SMALL.[1]

In general, the unavoidable residual adverse impacts for Early Construction after implementation of mitigation measures to control and minimize potential adverse impacts would be SMALL, with the exception of MODERATE impacts for transportation; ecological; and noise resources on a localized basis. On a regional basis, the impacts for these resources also would be SMALL. No LARGE adverse environmental impacts are identified for the Proposed Action.

Identification and description of the currently known environmental impacts for the Proposed Action that would result from the Early Construction are presented in Chapter 4 of this ER Supplement. The mitigation measures that would be incorporated into the Proposed Action to control and minimize potential adverse impacts for Early Construction are summarized in Chapter 5 of this ER Supplement and described in detail for each resource category in Chapter 5 of the GLE ER.

9.0 REFERENCES

Global Laser Enrichment Environmental Report, GE-Hitachi Global Laser Enrichment LLC, Revision 0, December 2008.

[1] Environmental impacts from an action that are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of an applicable environmental resource are assigned the significance level of SMALL. When the environmental impacts from an action are sufficient to alter noticeably, but not to destabilize, important attributes of a resource, a significance level of MODERATE is assigned. Environmental impacts that are clearly noticeable and are sufficient to destabilize important attributes of a resource are assigned the significance level of LARGE.

Global Laser Enrichment Decommissioning Funding Plan, GE-Hitachi Global Laser Enrichment LLC, Revision 0, May 2009.

Global Laser Enrichment Letter to Andrea Kock, June 8, 2009, "GE-HITACHI GLOBAL LASER ENRICHMENT SUBMITTAL OF ADDITIONAL INFORMATION RELATED TO NRC REVIEW OF GLE ENVIRONMENTAL REPORT."

10.0 LIST OF PREPARERS

This ER Supplement was prepared by Julie Olivier (GLE) and Joseph Alexander (RTI International). Other contributions were made by the GLE/RTI team. Credentials of the GLE/RTI team are provided in Chapter 10 of the GLE ER.

Table 1-1. Summary of Unavoidable Short-Term Adverse Environmental Impacts for Proposed Action

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Land Use (see **Section 4.1**)	**EC: SMALL** – Approximately 100 acres of land within the Wilmington Site, which currently is owned by GE, would be initially used for the construction of the administrative building and other support structures. Located to the east of this 100-acre parcel and within the GLE Study Area would be ancillary structures required for operation of the Proposed GLE Facility that cumulatively would require, approximately, an additional 22 acres to be cleared. In addition, the revised entrance route would use an additional 53 acres of land; however, most of this area has already been cleared and is existing roadbed. No additional land outside of the Wilmington Site would need to be acquired for the project. **WFSC: SMALL** – The WFSC does not affect the land use analysis sections (3.1 and 3.2) in the GLE ER. The WFSC is an industrial facility, located on the existing developed portions of the Wilmington Site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment."
Transportation (see **Section 4.2**)	**EC: SMALL to MODERATE** – An estimated 200 average daily trips (ADT) would occur during the site preparation and construction phase. Construction materials would be shipped to the Site by trucks. Adding 200 ADTs to the current annual ADT levels for the affected segments of N.C. Highway 133 (NC 133. also known as Castle Hayne Road) would add to the traffic volumes on the road and might increase the potential for traffic congestion during peak commuting hours; therefore, the transportation impacts on a local basis during construction would be SMALL to MODERATE. The proximity of the Proposed GLE Facility to the NC 133/U.S. Interstate Highway 140 (I-140) interchange and direct connection of I-140 to U.S. Interstate Highway 40 (I-40) would allow truck shipments and workers commuting to and from the GLE construction site (i.e., GLE Facility site) to bypass traveling on surface roadways in the surrounding communities; therefore, the transportation impacts for the Proposed GLE Facility on a regional basis would be SMALL. **WFSC: SMALL** – The numbers of radioactive shipments into and out of the WFSC are described in a letter to the NRC dated June 8, 2009. These shipments are performed in accordance with applicable NRC and Department of Transportation regulations.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Soils (see **Section 4.3.1**)	**EC: SMALL** – Site preparation and construction of the Proposed GLE Facility and the proposed access road would require clearing and grading of approximately 175 acres of land. Terrain changes would be minimal because the area is very gently sloping (gradients less than 2%). Shallow soils would be disturbed for building footings and excavation of stormwater detention ponds. The access road construction may require excavation of shallow soils in some areas, backfilling, compaction, grading, and paving. The volumes of soils that would be impacted depend on the Proposed GLE Facility final design and layout and recommendations of the geotechnical investigation. Any shallow soils disturbed or moved during construction would either be re-used within the GLE construction site or stockpiled for potential use in other areas of the Wilmington Site. No off-site disposal of soil is expected. **WFSC: SMALL** – The WFSC does not affect the analyses provided in the Geology and Soils sections (3.3 and 4.3) of the GLE ER. The analyses provide information across the Wilmington site, including the area where the WFSC is located. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment".
Geology (see **Section 4.3.2**)	**EC: SMALL** – Construction of the administration buildings and associated structures is anticipated to require the placement of shallow foundations. A geotechnical investigation would be performed in advance of construction of structures and access roads, and recommendations will be made relative to impacts on facilities. The shallow geological conditions would not create significant impacts on site preparation and construction of the Proposed GLE Facility or access road, and any anticipated impacts would be mitigated through engineering controls recommended in the geotechnical investigation. **WFSC: SMALL** – The WFSC does not affect the analyses provided in the Geology and Soils sections (3.3 and 4.3) of the GLE ER. The analyses provide information across the Wilmington site, including the area where the WFSC is located. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment".
Groundwater (see **Section 4.4.1**)	**EC: SMALL** – Sanitary waste at the GLE construction site would be managed using portable toilets. The water needed for site preparation and construction would be provided by tanker truck from existing water sources, and it would be required that those sources be of potable quality. Therefore, there would be no anticipated impact to groundwater quality during Early Construction. **WFSC: SMALL** – The potable and process water usage estimates (from groundwater) provided in the GLE ER included the WFSC (see Table 3.4-17 in the GLE ER). The impacts to groundwater are considered SMALL.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Surface Waters (see **Section 4.4.2**) Note: See the *Wastewater Management Resource Category* section of this table for additional details.	**EC: SMALL** – Sanitary waste at the GLE construction site would be managed using portable toilets. The water needed for site preparation and construction would be provided by tanker truck from existing water sources, and it would be required that those sources be of potable quality. Modification of the existing stream crossing, if required, for the revised entrance road, would result in SMALL direct impacts on the stream channel (the Unnamed Tributary #1 to Prince George Creek. Therefore, there would be no anticipated impact to groundwater quality during Early Construction, and overall impacts would be SMALL. There would be no direct impacts to surface waters from construction of the Proposed GLE Facility. The impacts from any soil erosion on surface waterbodies from construction of the proposed access road and the Proposed GLE Facility are anticipated to be SMALL due to the use of best management erosion control practices, and this construction would not cause water quality standards or limits to be exceeded. Impacts to navigation, industrial transport, commercial fishing, or recreation uses would be SMALL. **WFSC: SMALL** – No surface waters are impacted by the WFSC.
Floodplain (see **Section 4.4.3**)	**EC: SMALL** – Construction of the Proposed GLE Facility and proposed access road would occur outside of the floodplain boundaries. Therefore, impacts to the floodplain would be SMALL. **WFSC: SMALL** – No floodplains are impacted by WFSC.
Wetlands (see **Section 4.4.4)**	**EC: SMALL** – The main 100-acre (40-ha) area of the Proposed GLE Facility would not directly impact any wetlands. One isolated wetlands (wetland WA) may be removed if modifications are made to the existing access road. Other potential wetlands, if present along the revised route for product cylinders and entrance route, would be identified as part of the survey that is currently underway. Unavoidable temporary impacts to wetlands could result from site preparation and construction activities due to the removal of vegetation, temporary storage of construction materials, and potential sediment runoff. The resulting temporary impacts would be mitigated by restoring the disturbed wetlands areas to pre-existing conditions through the planting of vegetation and removal of excess sediment. **WFSC: SMALL** – No wetlands are impacted by WFSC.
Water Use (see **Section 4.4.5**)	**EC: SMALL** – Water for construction activities would be provided by tanker truck from existing potable water sources. Water use in the completed new facilities (estimated to be about 200 people) would start earlier than anticipated and rely on the existing potable water system for the Wilmington Site. The water consumption would be bound by the water resource estimates provided in the GLE ER and impacts on water resources would be SMALL. **WFSC: SMALL** – The potable and process water usage estimates provided in the GLE ER included the WFSC (see Table 3.4-17 in the GLE ER). Wastewater produced in the contaminated zones and change rooms is quarantined and processed by evaporators that eliminate the water and collect the radioactivity as a residue. This process eliminates radioactive water effluent. The impacts to water resources are considered SMALL.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Ecological (see **Section 4.5**)	**EC: MODERATE** – Construction of the Proposed GLE Facility and proposed access road would displace some local wildlife populations to nearby habitat in the western portion of the Wilmington Site. Human encounters with some wildlife could increase due to disruption of travel corridors and loss of habitat. No direct impacts to rare or unique habitats or commercially or recreationally valuable species would result from Early Construction. Overall, wildlife populations on the Wilmington Site would be altered, but the existence of these species would not be destabilized. Therefore, direct and indirect impacts to wildlife would be MODERATE. The majority of the vegetation that would be disturbed by Early Construction was planted or regenerated after clear-cutting of the area occurred in the early 1990s. Longleaf and loblolly pines are the dominant tree species. The removal of forested biotic communities would noticeably alter the composition of habitat, but would not destabilize the existence of these communities; therefore, direct and indirect impacts to existing biotic communities would be MODERATE. The revised entrance road would now take advantage of existing roadbeds, to the extent possible, thereby decreasing the amount of vegetation clearing and habitat loss that would have associated with the prior entrance road location. **WFSC: SMALL** – The WFSC does not affect the analyses provided in the Ecological Resources sections (3.5 and 4.5) of the GLE ER. The ecological analysis was performed on the study area, not on existing facilities on the site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment".
Air Quality (see **Section 4.6**)	**EC: SMALL** – Site preparation activities, proposed access road construction, and other construction activities would create temporary localized fugitive dust emissions. Dust-suppression work practices would be used to mitigate these fugitive dust emissions. Carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM), sulfur dioxide (SO_2), and volatile organic compound (VOC) emissions would be released from on-site heavy construction equipment and from automobiles and trucks travelling to and from the GLE construction site. Ambient air modeling predicts that the fugitive dust and other air emissions to the atmosphere from the construction activities would not substantially change the ambient air quality in the vicinity of the Proposed GLE Facility. The air emissions are expected to have no measurable impact on regional visibility, and the air quality impacts from Early Construction would be SMALL. **WFSC: SMALL** – Air effluents from the WFSC are under the regulatory authority of the NC Division of Radiation Protection. The WFSC has 3 stacks, and these are monitored for gross beta emissions, in accordance with the NC radioactive materials license. The HEPA filtration systems effectively remove the radioactive effluents from these buildings. As an added precaution, the contaminated zone effluent stacks are continuously monitored by isokinetic stack air samplers, filters are collected at intervals not to exceed ten days and analyzed for gross beta activity. Due the low amount of radionuclides and the absence of other chemicals in the air emissions, the WFSC is exempt from an air permit from the NC Division of Air Quality.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Noise (see **Section 4.7**)	**EC: SMALL to MODERATE** – Construction of the Proposed GLE Facility and proposed access roads would temporarily generate short duration noises resulting from construction equipment, site preparation, and other activities typical of building construction sites. Sound-level modeling performed for the GLE ER predicted that temporary localized MODERATE noise level impacts would occur for existing residents living in proximity to the northeast Wilmington Site property line. These impacts would result from construction of portion of the proposed access road closet to the north property line and the resulting automobile and truck traffic using the road to access the GLE construction site. The access road has subsequently been revised and is further to the south from the northern property line (on average about 1,000ft) allowing a greater tree buffer. The result is that the noise level impacts are now expected to be SMALL for the most of the adjacent Wooden Shoe subdivision and SMALL to MODERATE to the closest residences. At locations farther off-site, the noise impacts for the Proposed GLE Facility would be SMALL. **WFSC: SMALL** – The WFSC does not affect the noise analysis in the GLE ER. This facility was operational when the baseline sound survey was conducted in 2007. Therefore impacts from noise from this facility were included in the survey.
Historical and Cultural (see **Section 4.8**)	**EC: SMALL** –Two archaeological sites were identified within the GLE Study Area. One of the sites was determined not to be historically significant. The second site, located on the edge of a bluff overlooking the Northeast Cape Fear River, was determined to be a prehistoric archaeological site dating to the Middle Woodland period. The location of the archaeological site has been noted on Site facility maps so that it can be protected from potential future development and appropriate signs have been posted. In addition, since the direct transport route for product cylinders has been changed since the submittal of the GLE ER and the earlier route eliminated from consideration, this archaeological site would not be disturbed by the Early Construction activities and the impacts would be SMALL. The potential for other significant archaeological sites to exist within the revised entrance roadway and product cylinder route is less likely than at the sites near the river bluffs. However, a cultural resource survey is currently planned and will investigate the entrance roadways within the expanded Study Area. The findings will be reported in the GLE ER Supplement 2. **WFSC: SMALL** – The WFSC does not affect the historical and cultural analysis in the GLE ER. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the "Operations Area" in the GLE ER chapter 3 "Description of the Affected Environment" and there are no historical or cultural sites associated with the location of this facility.

(continued)

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Visual/Scenic (see **Section 4.9**)	**EC: SMALL** – The construction of the Proposed GLE Facility would require clearing of vegetation from areas in the interior of the Wilmington Site; however, the amount of trees and vegetation cleared would be limited, to the extent practicable, to the land area needed for the Proposed GLE Facility's operational, security, utility, and access requirements. In addition, a greater buffer of vegetation would result from placement of the revised entrance road further south of the northern property line (on average, approximately 1,000 ft further south). Temporary visual intrusions into the landscape may result from the use of construction cranes at the GLE construction site for erecting building structures and installing equipment. No other visual/scenic resource impacts are expected to result from the activities performed for site preparation and Early Construction activities and the overall visual/scenic impacts would be SMALL. **WFSC: SMALL** – The WFSC does not affect the visual and scenic resources analysis in the GLE ER. The facilities associated with the WFSC are similar in size and shape to the other operational facilities currently on-site. The structures that are currently used for the WFSC were existing structures at the time the GLE ER was prepared and thus were considered as part of the existing visual appearance of the site as described in the GLE ER chapter 3.
Socioeconomic (see **Section 4.10**)	**EC: SMALL** – The annual construction labor force needed for the Proposed GLE Facility would peak at approximately 490 workers. However, Early Construction would enable a smaller workforce to be employed earlier in the schedule (in early 2011). The impact of these workers on social resources and services would depend on how many workers are hired from within the region. If most of the construction workers are obtained from within the region, then social services such as law enforcement and education would experience little increase in demand and, therefore, create no adverse impacts. A large influx of construction workers from outside the region could potentially temporarily affect housing, educational, medical, law enforcement, and fire services. However, a prior analysis based on the estimated number of construction workers required for site preparation and construction shows that, overall, the socioeconomic impact of the site preparation and construction activities associated with the Proposed GLE Facility is anticipated to be SMALL. The smaller workforce needed to support Early Construction activities would also indicate that the socioeconomic impact of the initial site preparation and construction activities would be SMALL. In addition, Early Construction provides a positive economic stimulus supporting the workforce (including professional contractors involved in pre-construction activities such as surveying and geotechnical investigations as well as construction labor needed for clearing, grading, and construction of facilities). **WFSC: SMALL** – The WFSC does not affect the socioeconomic analysis in the GLE ER. The analysis was performed using information from the region and anticipated GLE estimates, not site-specific information related to existing site facilities.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Environmental Justice (see **Section 4.11**)	**EC: SMALL** – Residential neighborhoods near the Wilmington Site include a mix of minority and non-minority residents, as well as a mix of residents having low incomes and residents having incomes above the low-income or poverty threshold. Because the greatest impact from activities associated with the Proposed GLE Facility is not expected to extend beyond the immediate vicinity of the Wilmington Site, Early Construction activities would not result in any disproportionately adverse impacts on low-income or minority residents. **WFSC: SMALL** – The WFSC does not affect the environmental justice analysis in the GLE ER. The analysis was performed using information from the region and anticipated GLE estimates, not site-specific information related to existing site facilities.
Public and Occupational Health (see **Section 4.12**)	**EC: SMALL** –During the site preparation and construction phase, worker activities and exposures to any hazardous materials would be controlled and monitored according to Occupational Safety and Health Administration (OSHA) and applicable State of North Carolina requirements governing construction activities at construction sites. No radioactive materials would be on-site during the site preparation and Early Construction. **WFSC: SMALL** – The workers are protected from exposure to radioactive materials through the application of the Radiation Protection program and As Low As Reasonably Achievable (ALARA) principles. Chemical use in the WFSC is minimal and there are no unique hazards due to WFSC chemical use. The public and occupational health impacts from the WFSC are SMALL.
Wastewater Management (see **Section 4.13.1**)	**EC: SMALL** –Construction workers would use portable toilets. Stormwater runoff would be contained using BMPs for soil erosion control at construction sites as prescribed in the Erosion and Sedimentation Control Plan required for the NPDES construction permit. Early Construction activities would not generate process wastewater streams. **WFSC: SMALL** – The potable and process water usage estimates provided in the GLE ER included the WFSC (see Table 3.4-17 in the GLE ER). Wastewater produced in the contaminated zones and change rooms is quarantined and processed by evaporators that eliminate the water and collect the radioactivity as a residue. This process eliminates radioactive water effluent. The impacts to water resources are considered SMALL.

Resource Category (Refer to Sections Noted in GLE ER)	Unavoidable Short-Term Adverse Environmental Impacts for Early Construction (EC) and the Wilmington Field Services Center (WFSC)
Solid Waste Management (see **Section 4.13.2**)	**EC: SMALL** – Initial construction of the Proposed GLE Facility would generate solid waste materials that would need to be collected and transported off-site for recycling or disposal. It is expected that predominately refuse and construction debris typical of industrial construction projects would be generated during Early Construction. Good work practices for construction site waste management would be used to collect and sort the wastes for recycling or disposal at a licensed off-site facility appropriate for the waste type. Any hazardous waste generated throughout the construction phase would be temporarily stored on-site, and then shipped to an off-site facility appropriate for the waste types in accordance with established recycling and hazardous waste management programs. No radioactive wastes would be generated during the Early Construction. **WFSC: SMALL** – Due to the small amounts of wastes generated at the WFSC, and considering that disposal facilities have adequate capacity to receive these wastes, the impacts from WFSC Waste Management are SMALL.

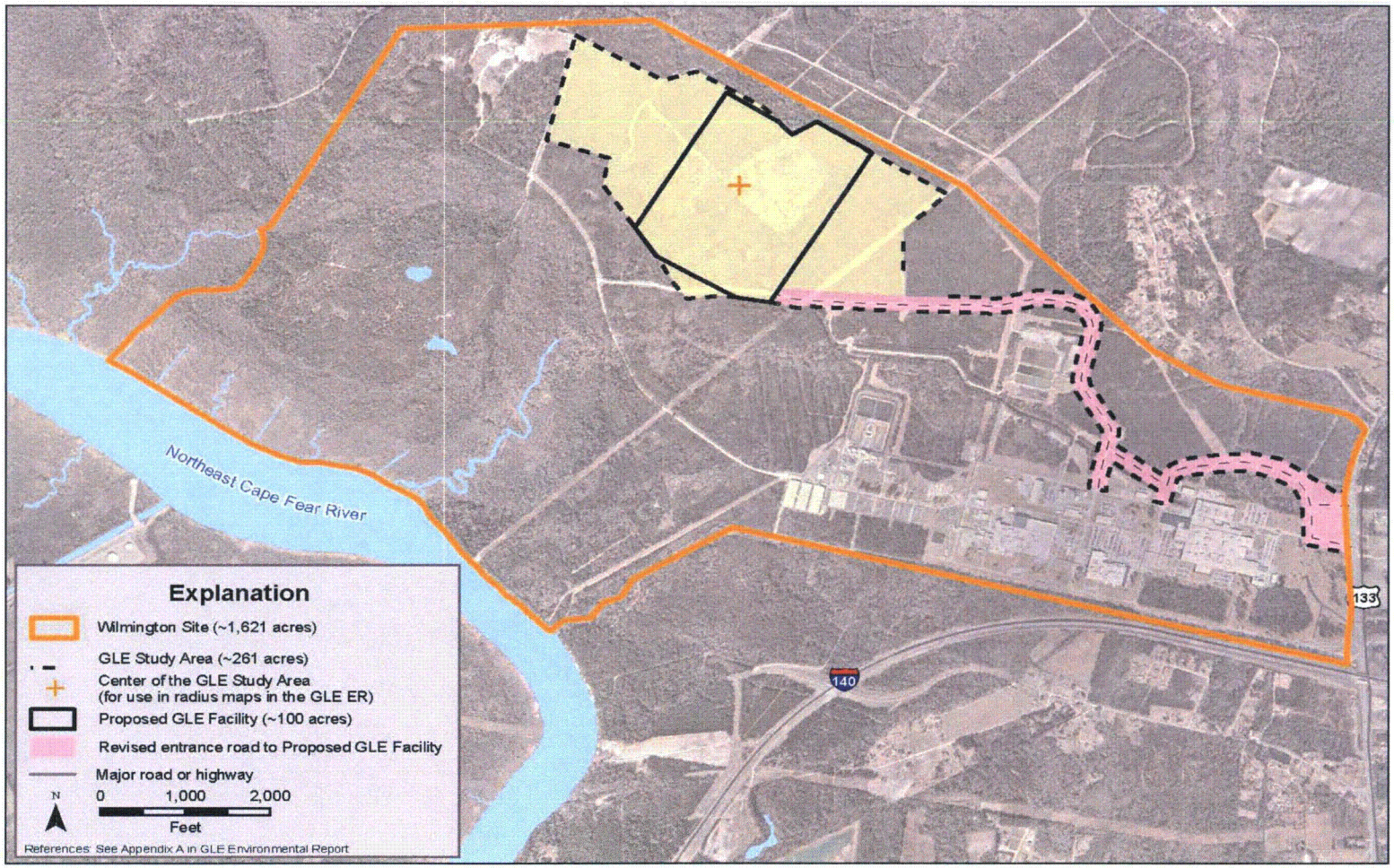

Figure 1-1 Location of Proposed GLE Facility and Revised Entrance Road to the Wilmington Site