

**U.S. NUCLEAR REGULATORY COMMISSION  
INFORMATION COLLECTION PLAN FOR THE  
GENERAL ELECTRIC – HITACHI GLOBAL LASER ENRICHMENT FACILITY (GLE)  
ENVIRONMENTAL SITE VISIT  
(UPDATED TO INCLUDE SUMMARY OF DISCUSSIONS WITH APPLICANT)**

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**GENERAL INFORMATION (GE)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>GE-1</b>	<p>Provide an overall site tour that shows:</p> <ul style="list-style-type: none"> <li>• The proposed GLE Study Area and locations of major proposed project facilities including               <ul style="list-style-type: none"> <li>○ GLE Facility building, electrical substation, wastewater lift stations, access roads, guard houses, water tower, stormwater detention basin, waste management buildings, and depleted uranium hexafluoride (UF<sub>6</sub>) cylinder storage yards.</li> <li>○ Proposed locations of cooling towers, cooling water system intake and discharge points, and points of environmental emissions from the proposed facility.</li> </ul> </li> <li>• Major existing air emission sources and control equipment (e.g., boilers, diesel generators), and their release points on the site.</li> <li>• Existing and proposed locations of major indoor and outdoor noise sources (e.g., pumps, transformers) and control measures on the site.</li> <li>• Existing structures and facilities onsite, including the Wilmington Site final process lagoon, sanitary wastewater treatment facility, and SILEX test loop facility.</li> <li>• Proposed interfaces between the proposed facility and existing infrastructure.</li> <li>• Surrounding areas and features including major roads, and the nearest and other nearby residences.</li> </ul>	Done

<b>GE-2</b>	Provide originals of all Environmental Report Rev. 0, December 2008 (ER) figures in .jpeg, .png or .tif format at a resolution of at least 300 dpi, and sized correctly. (Note: these are not needed at the site visit itself, but could be provided shortly thereafter.)	NRC will specify which figures are requested for inclusion in the draft EIS.
<b>GE-3</b>	Provide separate layers for GIS files given in the attached list as shapefiles. (Note: these are not needed at the site visit itself, but could be provided shortly thereafter.)	Applicant will provide the requested files (stripped of any sensitive information) subsequent to site visit.
<b>GE-4</b>	Provide available ER references in either electronic or hard copy form. For documents that will be regularly used by the EIS team (e.g., the ER and site environmental report), provide both hard copy and electronic versions, and have at least two copies for review. For electronic copies, provide multiple computer terminals (e.g., laptops) for viewing these at the site visit.	NRC/ANL will identify critical references needed for EIS and provide to applicant.
<b>GE-5</b>	Provide or make available copies of environmentally relevant permits related to the existing facilities at the site.	Addressed within relevant technical disciplines. If additional permit reviews are necessary, NRC will request them from the applicant.
<b>GE-6</b>	Provide copies of the input and output files and calculation packages for the major computer codes used in the preparation of the ER, including AERMOD, MOBILE6, NONROAD model, XOQDOQ, COMPLY, GENII, MODFLOW, and RADTRAN. Note, these are also requested in individual topical areas below.	See technical disciplines.

<b>GE-7</b>	<p>Provide a team of knowledgeable experts to discuss the assumptions made, the data and models used and the results presented in the ER in the following disciplines:</p> <ul style="list-style-type: none"> <li>• Accident Analysis</li> <li>• Air Quality, Meteorology, and Noise</li> <li>• Cultural Resources</li> <li>• Cumulative Impacts</li> <li>• Ecology</li> <li>• Human Health – Non Radiological</li> <li>• Human Health – Radiological</li> <li>• Hydrology and Geology</li> <li>• Socioeconomics and Environmental Justice</li> <li>• Transportation</li> <li>• Waste Management</li> </ul>	Done
<b>GE-8</b>	Action developed during site visit.	Applicant will separate impacts of pre-construction and construction activities. Information will be included in supplement to environmental report.
<b>GE-9</b>	Action developed during site visit.	Applicant will separate impacts of the proposed facility from the rest of the site (primarily for radiological and air quality; other resource areas as applicable). Radiological will be submitted as follow-up, air quality will be addressed in a conference call.

## ACCIDENT INFORMATION (AC)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
<b>AC-1</b>	Provide the definitions used for the likelihood categories “not unlikely,” “unlikely,” and “highly unlikely” as they apply to the GLE Facility. Provide descriptions of the accidents considered in the analysis including the likelihood category and time-dependent source terms (releases of radionuclides and chemicals to the environment) for each accident. Identify the bounding accident for each likelihood category. Provide this information for both chemical and radiological accidents.	Definitions are largely consistent with NUREG-1520. Information and details will be included in the Independent Safety Assessment (ISA) summary that will be submitted with the License Application (in June). Applicant described the accidents considered (chemical and radiological), their likelihood categories, and how the bounding accidents were identified.
<b>AC-2</b>	Provide information on how the accident sequences were developed, how the accidents were classified into individual likelihood categories and how the consequences were calculated. Provide the inputs and outputs of the computer models used to calculate the consequences. Provide the consequences and risks of the bounding accidents (both chemical and radiological) in each likelihood category. Provide the consequences to workers (in plant and other workers on site) and the general public.	Applicant provided information on accident sequences, classification into likelihood categories, use of RASCAL code, and consequences. Descriptions of the accident sequences and consequences will be in the ISA summary.  NRC will coordinate need for RASCAL inputs and outputs with license application review team.
<b>AC-3</b>	Provide information on preventive and mitigative measures that would be in place to minimize the impacts of the bounding accidents.	Information will be in License Application. Some information is also in the ER.
<b>AC-4</b>	Provide copies of the Integrated Safety Assessment (ISA) and the Emergency Plan (EP).	Will be provided with the License Application.

## AIR QUALITY, METEOROLOGY, AND NOISE (AQ)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
AQ-1	<p>Provide the Universal Transverse Mercator (UTM) coordinates or latitude and longitude of air emission and noise sources (existing and proposed), and neighboring sensitive receptors (e.g., nearest and nearby residences, schools, hospitals, nursing homes, daycare centers). An electronic file of a map is preferred.</p>	<p>GLE will specify the major non-radiological air emission sources at the site (including any area sources). Radiological dose to maximally exposed individual was modeled as a combination of existing (combined) and proposed emissions; receptors were addressed in the answer to HH/R-9. There were no registered private daycares in adjacent neighborhoods at the time the ER was prepared. Criteria pollutant sources include diesel generators, cooling towers, overhead crane, and forklifts. Applicant will provide locations and qualitative descriptions of these sources as follow-up. Some of this information will be included in the ISA summary with the License Application.</p>
AQ-2	<p>The items to be discussed with the knowledgeable air quality/meteorology expert during the site visit include:</p> <ul style="list-style-type: none"> <li>• The basis of the air quality and meteorology in the ER (Sections 3.6 and 4.6 and related appendices) including general assumptions, emission inventories and emission control measures, air quality modeling, and their impact analysis</li> <li>• General routine activities during the operational period to identify air emission sources</li> <li>• Heat sources and dissipation systems on the site</li> <li>• Existing and future major air emission sources around the facility</li> <li>• General air quality</li> </ul>	<p>Applicant expects cooling tower size to be similar to the FMO tower. Applicant to estimate PM emissions as drift. Applicant will provide total dissolved solids (TDS) and total suspended solids (TSS) of sanitary wastewater that will be used in the cooling towers. NRC and ANL will evaluate if additional information is necessary.</p> <p>Applicant did not model routine hydrogen fluoride (HF) release from operations (accident only). Applicant does not expect significant HF emissions due to the use of dry scrubber system (activated charcoal, high efficiency particulate air (HEPA) filter). Applicant will have an air permit with a limit for fluoride emission (same as for existing operations). <math>UO_2F_2</math> is entrained in HEPA filters. There is not a national emissions standard for hazardous air pollutants (NESHAPS) source category for enrichment operations; the state regulates air toxics. State establishes permit level based on site-specific analysis. Existing permits (ACO, FMO) were provided; a third permit will be necessary for GLE.</p> <p>All needs (as presented) satisfied. Other questions, comments, and clarifications are</p>

<p><b>AQ-2 cont'd</b></p>	<p>conditions around the facility, in New Hanover County, and the region</p> <ul style="list-style-type: none"> <li>• Emissions inventories and air dispersion modeling for Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)</li> <li>• Local and regional meteorological patterns</li> <li>• Variations of meteorological variables and air dispersion patterns resulting from proximity to the Atlantic Ocean.</li> </ul>	<p>provided below:</p> <p>There is an apparent discrepancy in the ER regarding prevailing wind direction (and date of reference). NRC and applicant may address in a subsequent information request. NRC may request original wind rose figures.</p> <p>AERMOD modeling input information was provided. NRC and ANL will determine if additional information is necessary.</p> <p>Meteorological data used in modeling should be representative of the site. If using airport data, the applicant should also use airport site parameters (unless land use is similar).</p> <p>Two values in Table 3.6-24 appear to be overreported.</p> <p>May need technical specifications on cranes, forklifts, etc. (including usage estimates). See AQ-1.</p> <p>Table 4.6-1 should be controlled emissions; applicant will address the control factor in follow-up letter.</p> <p>Emission estimates for annual modeling are worst-case (first year of construction); summary table is average over three years.</p> <p>Impact analysis does not include background particulate concentration. NRC and ANL will determine whether additional information is necessary.</p> <p>There is an apparent discrepancy between values for construction particulates (Sec. 4.12.2.1.1.1 and Table 4.6-2); NRC and ANL will determine whether additional information is necessary.</p> <p>Applicant provided information about GLE stack height. A range was used for accident analysis.</p> <p>Applicant and contractor (RTI) will provide load factor for construction equipment (offroad) in follow-up submission.</p> <p>A conference call will be arranged with the Applicant's modeling specialist to resolve outstanding questions.</p> <p>Stack fluoride emission monitoring data exists for GNF (as required by permit).</p>
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<b>AQ-2 cont'd</b>		Applicant directed ANL to Fig. E-42 in GNF-A ER Supplement; data is within permit limits.
<b>AQ-3</b>	<p>The items to be discussed with the knowledgeable noise expert at the site visit include:</p> <ul style="list-style-type: none"> <li>• The basis of the noise analysis in the ER (Sections 3.7 and 4.7) including general assumptions, noise emission inventories and noise control measures, noise propagation modeling, and their impact analysis.</li> <li>• Existing and future major noise sources around the facility.</li> <li>• Recent noise measurements on the site.</li> <li>• Noise complaints and their resolution if any.</li> </ul>	<p>No noise complaints have been reported.</p> <p>Cooling tower and substation noise was included in the operational analysis.</p>
<b>AQ-4</b>	Provide input and output data (including raw and processed data) and calculation packages for the major computer codes used in the air quality modeling analysis, including AERMOD modeling system (AERMAP/AERMET/AERSURFACE/AERMOD), MOBILE6, NONROAD model, and XOQDOQ; electronic files are preferred.	AERMOD and XOQDOQ inputs and outputs were provided. Applicant used emission factors developed by State for MOBILE6. Applicant calculated emission factors for NONROAD. Applicant did not perform MOBILE6 and NONROAD modeling because of the number of assumptions required. Applicant maintains an Excel spreadsheet with the relevant parameters. Applicant will provide requested information in follow-up letter.
<b>AQ-5</b>	Provide input and output data (including octave-band sound levels, directivity, emission point and height, and receptor grids) used in the noise propagation modeling analysis; electronic files are preferred.	<p>Input file provided.</p> <p>Outputs for nearest residential area will be provided.</p>
<b>AQ-6</b>	If available, provide emissions data for greenhouse gases (e.g., CO <sub>2</sub> ) associated with construction and operation of the GLE facility.	Applicant used a North Carolina Department of Environment and Natural Resources spreadsheet (available on website) to generate emissions for diesel generators. New facility will have two generators. NRC will determine if additional information is needed.



<b>AQ-7</b>	Provide available copies of air permits related to existing facilities on the Wilmington Site.	Permits were reviewed.
<b>AQ-8</b>	Provide sound levels for major interior noise sources and exterior noise sources (e.g., pumps, transformers) during operation.	<p>Noise sources are described in Appendix T of the ER. Noise modeling did not include diesel generator. Applicant assumes that State permit would allow same diesel generator usage as permitted for GNF-A (1,320 hours per year). Information about how many hours operating per year and per day, size, model, location in order to re-run analysis is in Appendix T. NRC and ANL will determine whether additional information is needed.</p> <p>Applicant's analysis assumed 24-hour use for facility operation and included transportation.</p> <p>Applicant made sound measurements in fall. NRC and ANL will determine if additional information is needed about the status of deciduous trees.</p> <p>Data in ER Figure 3.7-10 are 5-min averages.</p>
<b>AQ-9</b>	Provide air emission inventories for PM <sub>2.5</sub> . Air dispersion and deposition behaviors and associated health impacts of PM <sub>2.5</sub> are different from those of PM <sub>10</sub> .	Significant particles in engine exhaust typically are PM <sub>2.5</sub> . NRC and ANL will determine whether additional information is needed.

**CULTURAL RESOURCES INFORMATION (CR)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>CR-1</b>	The ER mentions 22 previously known sites but does not identify what types of sites these are (base camp, village, towns, etc.). Provide copies of the sites forms for these sites.	NRC will obtain necessary site forms from the State Historic Preservation Office (SHPO).
<b>CR-2</b>	Have there been any interactions with the Eastern Band of Cherokee Indians of North Carolina or other Native Americans in the region? Provide copies of any correspondence or interactions with Native Groups.	There have been no interactions with the Eastern Band of Cherokee Indians. NRC interacted with Waccamaw-Siouan Tribe during the GNF license renewal in 2007. NRC obtained a list of State-recognized tribes from SHPO for additional interactions.
<b>CR-3</b>	Does the existing plant maintain Environmental Protective Measures? There is a high potential for archaeological sites to be on the plant grounds. How does the facility operator ensure that cultural resources on the property are protected? Provide a copy of the environmental review and protection procedures that are used to protect resources on the site.	No such measures, reviews, or procedures exist. NRC will determine if additional information is necessary.
<b>CR-4</b>	Provide a copy of the procedures used for unexpected discoveries of human or archaeological remains.	No such procedures exist. NRC will determine if additional information is necessary.

### CUMULATIVE IMPACT INFORMATION (CI)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
<b>CI-1</b>	Provide a description of the region of influence used in bounding the cumulative impacts analysis.	In general, region of influence considered was 8 kilometers (5 miles).
<b>CI-2</b>	Provide a description of the methodology used to identify reasonably foreseeable future actions in the region of influence.	All proposed onsite expansion onsite was considered and database searches were conducted for offsite expansion. NRC will consult with New Hanover County regarding plans for future development.
<b>CI-3</b>	Provide information on the habitats and land cover types that would be affected by developments on site.	ER Sections 3.5 and 4.5 (page 4.5-5) provide needed information.
<b>CI-4</b>	A fairly detailed description of the types of impacts that would result from other facility development on the Wilmington Site is provided in the ER. If available, provide comparable information for offsite developments.	ATC2 and Tooling Center onsite facility and the Carolinas Cement Company Titan plant were considered (Titan recently sponsored a health study that may be publicly available). A detailed map of offsite biota, similar to that provided for onsite, would not be available for an 8 kilometer (5 mile) radius. The US Army Corps of Engineers may be performing an EIS on the Titan facility.
<b>CI-5</b>	To determine the magnitude of cumulative impacts on the Wilmington Site, the cumulative resource use (past, present, and future) should be compared to the existing baseline (total acres of different habitat or land cover types, wastewater treatment capacities, water supply system capacity, electric system capacity). Similarly, a regional comparison to baseline is needed for all projects (offsite and onsite).	Resource use is described in various ER sections (some handled through the permit).  Applicant will address changes to be made to the electrical supply system for the site to meet GLE power demands in a follow-up letter.
<b>CI-6</b>	During the site tour, show the locations of other proposed facilities on the Wilmington Site.	Done

**ECOLOGY INFORMATION (EC)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>EC-1</b>	<p>Have environmental personnel that prepared the wetlands and ecological resources sections of the ER (or that conducted the wetland and ecological field surveys) available to answer questions related to impacts on ecological resources associated with the construction, operation, and mitigation of the GLE Facility. Specific aspects to be discussed include wetland impacts; stream crossings; stormwater detention basin; upland habitat loss, modification and fragmentation; and potential wildlife-human interactions.</p>	<p>Questions arose regarding right-of-way maintenance procedures (Progress Energy), clarification on location of the substation, potential impacts to large animals from site fencing, utility line connection for the proposed GLE facility, alternative connection, and subsequent removal of the existing portions of the utility line. NRC will determine whether additional information is needed.</p> <p>Applicant will address these issues a follow-up letter and in the ER supplement (including confirmation that the substation is within the 100-acre facility footprint). NRC will determine if additional information is necessary.</p> <p>If the proposed location of the north access road changes, NRC would need information about the new location. This information may not be available until late 2009 or later.</p>

<p><b>EC-2</b></p>	<p>Provide a tour of key habitat areas (e.g., areas that would be directly impacted by project construction; and areas that represent the various terrestrial, wetland, and aquatic habitat types present in the project area). These areas should include:</p> <ul style="list-style-type: none"> <li>• Location for the proposed GLE Facility</li> <li>• Possible locations of new road segments and utility lines</li> <li>• Access road crossing areas of Unnamed Tributary #1</li> <li>• Other unnamed tributaries and Northeast Cape Fear River</li> <li>• Wetlands WA, WB, WC, and WD</li> <li>• Process lagoons, detention basins, woodland ponds, and other ponded waters at the Wilmington Site</li> <li>• Other major wetland and terrestrial habitat types within the Wilmington Site boundary</li> <li>• Areas where rare plants have been recorded</li> <li>• Existing facilities at the Wilmington Site (e.g., other buildings, roads)</li> <li>• Areas that typify where vegetation maintenance practices are conducted</li> <li>• Major and significant habitats near the project (this could be done as a driving tour, if time permits).</li> </ul>	<p>Done</p>
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**HUMAN HEALTH – NON RADIOLOGICAL INFORMATION (HH/NR)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<p><b>HH/NR-1</b></p>	<p>The items to be discussed with the knowledgeable human health expert for non-radiological exposures during the site visit include:</p> <ul style="list-style-type: none"> <li>• Current levels of contaminants in air, water, and soil in the vicinity of the plant, including emission rates for uranium compounds, hydrogen fluoride (HF), and criteria air pollutants from the existing Fuel Manufacturing Operation (FMO) plant and contaminant levels in the shallow and principal aquifer under the site.</li> <li>• The availability of any public health studies that have been conducted as a result of concerns for potential health impacts from chemical emissions from the existing FMO facility.</li> <li>• The expected occupational exposure levels to be present in the proposed GLE facility for uranium compounds, HF, and any other process related toxic chemicals and any monitoring, mitigation measures, control devices, and safety procedures that will be employed to control exposures to acceptable levels.</li> <li>• Laser safety as well as general occupational safety programs that will be used in the proposed GLE facility.</li> </ul>	<p>Air emission permitted values are in the ER. ANL is requesting monitoring data for actual emissions of criteria and hazardous air pollutants. Emissions rates for 1995-2005 are in the ER.</p> <p>Contaminated groundwater is not used as a drinking water source and is being treated; actual concentrations are not needed for human health evaluations. No further air or water information needs are identified at this point.</p> <p>A recently available public health study sponsored by Carolinas Cement Co. (Titan Cement) in support of their permit applications for a new plant 10 kilometers (6 miles) away was noted by the applicant. This study has been released to the public.</p> <p>Occupational exposure levels of chemicals would be within occupational safety standards. HF monitors would be placed at locations where a hazard might exist, such as near cylinder connection and disconnection points. Multiple HF monitors (continuous and alarmed) would be placed at all source areas where workers are present.</p> <p>A laser safety program will be in place and administered by a laser safety officer. Laser training will be provided to affected workers. Laser safety is regulated by Occupational Safety and Health Administration (OSHA); EIS should address compliance with OSHA regulations. NRC will write a consultation letter to OSHA.</p>

**HUMAN HEALTH – RADIOLOGICAL INFORMATION (HH/R)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>HH/R-1</b>	Provide information on the radiation protection plan for the existing FMO facility and the proposed GLE facility.	Applicant provided relevant sections (Chapter 4) of GLE and GNF licenses. GNF is publicly available; GLE is not and can only be reviewed during the site visit (will be submitted with License Application).
<b>HH/R-2</b>	Provide the liquid effluent releases for the existing FMO facility and doses from these releases to the maximally exposed individual (MEI) and the public. Section 3.11.2 (page 3.11-2) of the ER mentions gaseous effluent releases but nothing is mentioned about the liquid effluent releases and its contribution to the MEI dose. To demonstrate compliance with the dose limits in 10 CFR 20 and 40 CFR 190, dose contributions from both gaseous and liquid effluents should be included.	Semiannual reports that include liquid effluent releases are submitted to NRC. GEH compares anticipated release concentration to regulatory limit; no calculation of MEI dose is performed by the applicant. Exposure from multiple pathways is not included in MEI dose calculations. Applicant indicates that the river has no known uses other than recreation (i.e., agriculture) because the water is too brackish. The applicant should consider liquid pathway for FMO and all pathways for GLE. NRC and ANL will consider whether additional information is necessary.
<b>HH/R-3</b>	Provide background concentration in the vegetation in the region (e.g., recent reports from the North Carolina Division of Radiation Protection [NCDRP]).  A summary of NCDRP data from analysis of vegetation samples collected from locations approximately one mile north and one mile south of GNF-A Wilmington is shown in Exhibit E-21 (GNF-A ER 2007). This exhibit indicates gross alpha concentration in many vegetation samples. The GLE ER (page 3.11-2) mentions that these analyses “show very low gross alpha activity concentrations, thus indicating no radiological impact from Site operations. Based on these data, no future radiological impact from the FMO facility to cropland and agricultural areas in the vicinity of the site would be expected.”	GNF and NCDRP continue to collect split-sample data (not required by NRC), but the State has not provided a summary report since 1999. GEH data is in raw form. NRC will request the data from the State. After communicating with the State of North Carolina, NRC and ANL will determine whether additional information will be requested from the applicant.

<p><b>HH/R-4</b></p>	<p>Provide information on the uranium isotopic mix found in onsite and offsite soil samples collected on the Wilmington Site. Tables 3.11-6 and 3.11-7 in the GLE ER list average uranium concentrations in soil samples collected onsite and offsite in parts per million (ppm). A different isotopic mix would result in different soil activities. The onsite soil concentration would be used in estimating the dose to the construction worker.</p>	<p>GEH analyzes for gross alpha and beta radiation, but no isotopic analysis is available. None of the locations where GNF-A is currently sampling are located within the GLE study area, but there is a plan to perform background sampling prior to construction. Applicant did not model dose to construction workers. NRC and ANL staff will determine whether additional dose modeling information is necessary. ANL should have the necessary information to independently perform this analysis. The EIS should address the dose to construction workers due to activities at existing nuclear facilities (FMO and GLE during the overlap of construction and operation). Applicant could simply provide justification for belief that soil concentration is at background (based on sampling elsewhere).</p>
<p><b>HH/R-5</b></p>	<p>Provide information about the ongoing and planned radiological environmental monitoring program for FMO and GLE.</p> <p>ER Table 3.11-6 provides uranium concentrations at two locations (20 and 21) up to 1997. These two sample locations had the maximum uranium concentrations. The measurement at these locations was discontinued in 1998 because the use of the storage pad was minimized at that time and the soil concentration at those locations had stabilized. What is the current soil concentration at those locations? Would the construction workers be near these locations? Would these areas be disturbed in any way during GLE operation?</p>	<p>Applicant does not have information for current soil concentration; no additional data has likely been collected in these areas since 1997. Sampling was discontinued when results stabilized.</p> <p>Storage pads in question (west of FMO) are not in the area of expected disturbance for GLE, so these results are not necessary for dose modeling for construction workers.</p> <p>Applicant is preparing a plan to address areas of known contamination site-wide in response to the North Carolina Inactive Hazardous Sites Branch (IHSB). The plan would include the collection of additional data. This will not be completed in time for EIS consideration. NRC needs to coordinate with the North Carolina IHWSB. Applicant may add NRC to distribution on public responses to IHSB .</p>



<p><b>HH/R-6</b></p>	<p>Provide information about existing groundwater and surface water contamination and its impacts to the public.</p> <p>Exhibit E-19 (GNF ER, 2007) lists the surface water concentrations in the samples collected at two onsite and one offsite location (the data are only up to 1999) and in some of the onsite samples concentrations greater than 100 pCi/L were observed. Similarly, Exhibit E-30 in the GNF-A ER (2007) lists concentrations in supply wells. For 2003 and 2004 in supply well #9A Exhibit 30 lists gross alpha and beta concentrations &gt; 500 pCi/L.</p>	<p>Applicant is not aware of any surface water contamination issues at the site. Groundwater from the site is hydraulically contained (groundwater flows back into GE property) and there are no offsite receptors. However, uranium, fluorine, and volatile organic contamination have been identified at the extreme north west corner of the site. The applicant has not performed a dose calculation performed (same as HH/R-2). NRC and ANL will determine if a dose calculation is necessary.</p>
<p><b>HH/R-7</b></p>	<p>Provide input and output data and calculation packages, and a knowledgeable expert who can discuss application of the COMPLY computer code. GLE ER Section 3.11.4.1 (page 3.11-3 and 3.11-4) mentions that EPA's COMPLY code was used to calculate the MEI and population doses.</p>	<p>Applicant models each stack individually. Applicant provided input parameters needed to verify calculations.</p>
<p><b>HH/R-8</b></p>	<p>Provide justification for using 200,000 persons in calculating the population dose. The ER Section 3.11.4.1 (page 3.11-3) does not identify the region of influence.</p>	<p>Used 2000 census data and referenced GNF SER. Applicant has county data, which doesn't necessarily coincide with a given radius. New Hanover county is more populous than the other two. NRC and ANL will determine if additional information is needed regarding how the population of 200,000 used in the ER was calculated.</p>
<p><b>HH/R-9</b></p>	<p>If available, provide more current data on radioactive gaseous emissions, airborne gross alpha and isotopic concentrations in different directions, uranium concentration in soil, radiation dose to nearest resident, and recordable accidents. The latest data provided in Tables 3.11-1 to 3.11-7 and 3.11-10 of the GLE ER is for 2005.</p>	<p>The applicant indicated it used the most complete data they had at the time that the ER was prepared. Newer data could be submitted and compared to older data to see if it would impact dose estimates. Applicant will provide as much information as possible during the site visit, including distances from GLE and FMO centroid stack to nearest resident and distances to site boundary in each sector (and closest resident). Applicant will submit TLD locations and recordable accidents in a follow-up letter.</p>

<b>HH/R-10</b>	Provide any available public health studies that have been conducted in the vicinity of the site for potential health impacts from radioactive effluent (gaseous and liquid) releases from the existing FMO facility. These studies would establish the baseline for the Wilmington area.	Applicant is not aware of any such studies.
<b>HH/R-11</b>	Provide the calculation of doses to workers during site preparation and construction activities. Construction workers would be exposed to onsite soil contamination, direct exposure sources, liquid and gaseous emissions from existing release locations. The ER does not provide construction worker doses. To estimate these doses, one would need different media concentrations to which the workers may be exposed at the locations where the construction activities would occur, number of workers involved in those activities, and the time spent at those locations.	See HH/R-4 and 9.
<b>HH/R-12</b>	Provide information on the distances from the proposed facility to the nearest site boundary for each radial sector, and the distances to the nearest residence, school, and other sensitive receptor locations (such as hospitals, agricultural areas, etc.).	ER Appendix S-3 and the response to HH/R-9 should address this information need.

<b>HH/R-13</b>	Provide estimated doses to the occupational workers from the proposed facility. The workers would be exposed to radiation during the normal operation of the proposed facility. The ER does not provide estimation of the occupational dose.	<p>For a natural uranium cylinders the contact dose rate is 0.01 to 0.03 milliSievert (mSv)/ hour (h) (1 to 3 millirem (mrem/h) and the dose rate at 30 centimeters (12 inches) is less than 0.0025 mSv/h (0.25 mrem/h).</p> <p>For depleted uranium cylinders, dose rate 0.01 to 0.02 mSv/h (1 to 2 mrem/h).</p> <p>For enriched uranium cylinders the contact dose rate 0.02 to 0.05 mSv/h (2 to 5 mrem/h) and the dose at 30 centimeters (12 inches) is 0.01 to 0.02 mSv/hr (1 to 2 mrem/h).</p> <p>The estimated dose due to handling empty heels cylinders is 0.4 to 0.8 mSv/h (40 to 80 mrem/h) on contact and 0.03 to 0.07 mSv/h (3 to 7 mrem/h) at 30 cm.</p> <p>Applicant has a publicly-available presentation on doses (specific to job function) that will be submitted.</p>
<b>HH/R-14</b>	ER Section 4.12.2.2.2.2 (page 4.12-10) mentions that GENII (version 2.06) code was used to calculate doses. Provide information on exposure pathways and the calculation of doses to the public and populations. Provide input and output data and calculation packages, and a knowledgeable expert who can discuss application of the GENII computer code.	Input and output files were provided electronically. Information on assumptions used in the analysis was provided in a 10/8/2008 memo to file.

<p><b>HH/R-15</b></p>	<p>Different sample types (continuous film badges, TLDs, pocket dosimeters, continuous air particulate filter, grab samples, sample of liquid effluent, storm water grab samples) in different media (direct radiation, air, surface water, treated process wastewater effluent, treated sanitary wastewater effluent, groundwater, storm water, soil, and sediment) are collected under the GLE environmental monitoring program.</p> <p>Provide the latest measurement results from the environmental monitoring program. ER Table 6-1 provides the summary of the GLE environmental monitoring program, but the results of these measurements are not provided. This would help in defining the baseline of the site and also the adequacy of the sampling plan for the proposed facility. The ER does have some data from previous years (for example Tables 3.4-3 and 3.4-4 show groundwater data from 2002-2006; Table 3.4-8 shows surface water data from 1997 – 2006; Table 3.4-11 provides uranium content in storm water for 2003)</p>	<p>Monitoring is not yet performed for the proposed GLE facility. Environmental monitoring data for FMO will be submitted in response to specific information needs regarding air, soil, and TLD data. NRC and ANL will determine whether additional information is necessary.</p>
<p><b>HH/R-16</b></p>	<p>Provide information on the public and occupational health impacts from Decontamination and Decommissioning (D &amp; D) activities.</p>	<p>Applicant has done some D &amp; D activities and could use this experience to extrapolate to future activities. D &amp; D Plan that will be submitted with License Application does not include data. NRC may need descriptions of activities and estimated doses (based on historical D&amp;D projects) and other environmental impacts (e.g., waste, air quality). Descriptions of activities will be submitted with the License Application. Impacts (including doses) may be provided separately. NRC and ANL will determine whether additional information is necessary.</p>

<b>HH/R-17</b>	Action developed during site visit.	See GE-9. ER provides cumulative dose calculations from the GLE stack and existing FMO stacks. The applicant will provide separate dose calculations from the GLE facility operations to estimate the dose from the proposed action. Dose estimates should include all relevant pathways. Applicant will provide dose from GLE air emissions (no other pathways).
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## HYDROLOGY AND GEOLOGY INFORMATION (HY)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
HY-1	Provide the current NPDES permit for the Wilmington Site, and information on past and proposed future pollutant discharges.	Permits, including water re-use were provided. Applicant will provide 10-year history of NPDES violations. Two Notices of Violation were provided. Submitted. Any additional information will be submitted with follow-up letter.  Information on discharges was provided good.
HY-2	Provide documentation on the groundwater monitoring plan (well locations, sampling frequency, well construction, drilling logs, and cross sections).	No independent document exists at this time. A plan summary is provided in ER.
HY-3	Provide MODFLOW input files (general, non-proprietary format) used in work in Appendix P, and documentation and input files for any modeling updates, including transport of trichloroethylene (TCE).	Information reviewed.
HY-4	Provide a copy of the facility Stormwater Pollution Prevention Plan (SPPP).	The SPPP includes a plan, permit, and inspections. Information is largely covered in permit (an item in HY-1).
HY-5	Provide a tour of current site facilities, present and proposed outfalls, surface water features, wetlands, production wells, remediation systems, and the stormwater system.	Accomplished through site tour.
HY-6	Provide information regarding outfall dimensions, elevations, receiving surface waters' velocity distributions and cross sectional areas, and bathymetry near outfalls	Discussed; no further information needed.
HY-7	Provide historical site groundwater monitoring reports (reports for the previous 10 years are of interest).	Some information obtained by ANL prior to site visit. The applicant will submit information about site TCE monitoring, site-specific monitoring, and hydrogeologic reports in a follow-up letter.

<b>HY-8</b>	Provide permits for surface water use and groundwater use.	Groundwater use requires registration with the state but does not require a permit. GEH makes annual reports of withdrawals to the State. No surface water is used.
<b>HY-9</b>	<p>The items to be discussed with the knowledgeable hydrology expert during the site visit include:</p> <ul style="list-style-type: none"> <li>• Water flow rates or use rates for cooling, service, blowdown, potable, sewage, discharges, and remedial system</li> <li>• Additives to water systems</li> <li>• Documentation regarding any notices of violation</li> <li>• Any radioactivity releases or general contaminant releases to groundwater, including TCE</li> <li>• Past or potential future dredging operations</li> <li>• Groundwater quality issues</li> </ul>	<p>Information needs were addressed during discussions.</p> <p>The anticipated 7% increase in waste process water is based on GLE facility design estimates. GLE is not aware of any recent design changes.</p> <p>The design and construction plan for storage pads and stormwater retention basins is not available at this time. The design would include a runoff route for overflow. The applicant would prefer to maintain routing of runoff upstream of site dam. A clay liner is likely to be used for stormwater detention.</p> <p>Final process lagoons are clay-lined.</p> <p>No specific stormwater monitoring plan is available at this time for GLE. The plan for GLE is likely to be similar to the existing plan for GNF-A.</p> <p>Some soil test boring records (1980, 2007) were summarized in Appendix G of the ER. A more detailed geotechnical investigation is planned, but not until final design of facility is settled.</p> <p>Notices of Violations are being processed by GEH (see HY-1).</p> <p>The applicant provided a letter from the State describing a switch from regulation by the North Carolina Aquifer Protection Branch to the Inactive Hazardous Waste Sites Branch.</p>

**LAND USE (LU)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>LU-1</b>	Action developed during site visit.	There is an apparent inconsistency between the local coastal management plan (ER Fig 3.1-7) and State response regarding Areas of Environmental Concern (see App B). NRC will follow up with New Hanover County through a consultation letter.



**SOCIOECONOMICS/ENVIRONMENTAL JUSTICE INFORMATION (SE)**

<b>ITEM NO.</b>	<b>ORIGINAL INFORMATION NEED</b>	<b>REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT</b>
<b>SE-1</b>	Provide copies of any correspondence and communications with local and regional officials and citizens confirming that there are no additional areas with minority and low-income populations within 6 kilometers (4 miles) of the GLE site, beyond those identified in the ER.	The applicant does not have any additional correspondence. Applicant used publicly available information and viewed local neighborhoods.
<b>SE-2</b>	Provide copies of any correspondence and communications with local and regional officials and citizens confirming that areas within 6 kilometers (4 miles) of the GLE site are not used for subsistence purposes by low income or minority groups.	The applicant did not correspond with local or regional officials. The applicant did not perform a specific inventory for backyard gardens but assumes there are some, based on rural land use.
<b>SE-3</b>	Provide copies of any correspondence and communications with local public officials to determine the significance of the impact of GLE construction and operation on the provision of local public and educational services.	The applicant has three records of correspondence to provide; two with the fire marshals by phone, and one with the school superintendent (Bill Hance) by E-mail with relevant data.
<b>SE-4</b>	Provide any correspondence and communications with local public officials to determine significance of impact of GLE construction and operation on housing availability in the region, and any conflicts with proposed housing developments in the vicinity of the site.	<p>Correspondence exists with Scott Satterfield (President/CEO, Wilmington Industrial Development, Inc.) and Connie Majur-Rhett (President/CEO, Greater Wilmington Chamber of Commerce). Focus of correspondence seems to be on filling vacancies. The applicant did not provide any correspondence to address potential impacts on housing availability and impacts and amenities for migrant workers.</p> <p>GEH recently met with residents of the nearby Wooden Shoe community. The applicant also held a public information session at the University of North Carolina at Wilmington, but no transcript of summary is available.</p> <p>The applicant did not contact Castle Hayne and other counties because of the high vacancy rate in New Hanover County.</p>

<b>SE-5</b>	<p>For the region of influence, provide data on indirect economic impacts of facility pre-construction, construction, operation, and decommissioning, estimated using input-output multipliers, including:</p> <ul style="list-style-type: none"> <li>• Impacts on labor income</li> <li>• Impacts on employment</li> </ul>	<p>The applicant has not modeled indirect economic impacts. The applicant should consider sector-specific impacts. Revised cost information is likely to be necessary. ANL will perform the analysis using the revised cost information. NRC and ANL will determine if additional information is needed.</p>
<b>SE-6</b>	<p>Information need developed during site visit.</p>	<p>Revised Decommissioning Funding Plan (May 2009) will be in the ISA submittal. Applicant will provide total decommissioning cost, facility decommissioning cost, and depleted tails disposal cost in follow-up letter.</p>

### TRANSPORTATION INFORMATION (TR)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
TR-1	<p>Provide information about the assumptions and input parameters used for the RADTRAN calculations performed in support of the radioactive transportation risk analysis. Relevant input parameters include external dose rates for shipments, shipment dimensions, crew distance, and stops information. Provide the RADTRAN input and output files from the incident-free analysis for all material types (UF<sub>6</sub> feed, UF<sub>6</sub> product, UF<sub>6</sub> tails, empty cylinders with heels, and Low Level Waste (LLW)).</p>	<p>The applicant provided RADTRAN input and output files. Inputs assume source length is truck length, which is an overestimate for a 48Y cylinder. Inventory values for LLW (and possibly other shipment types) should be reviewed. Crew view for LLW is only 1.2 meters (3.9 feet) (two 55-gal drums), which is unlikely.</p> <p>Used 12.2 meter (40 feet) vehicle length instead of the dimension of the cylinder. Applicant does not need to re-run the code if the assumptions are consistently conservative. EIS would need to explain the reasons for any differences in the outputs.</p> <p>The applicant used single container dose rate for feed (48Y), but input appears to be using a combined dose number for 30B shipments (i.e., ER doesn't match RADTRAN input).</p> <p>Additional information may be necessary to justify the external dose rate assumed for enriched uranium cylinders (0.0095 mSv/h [0.95 mrem/h]) and heels cylinders (0.02 mSv/hr [2 mrem/h]).</p> <p>Additional information may be needed regarding the collective dose rate from the shipment. The applicant indicates operational experience suggests no dose to crew.</p> <p>On-site product shipments required some atypical assumptions (e.g., one driver, 15 mph, one cylinder).</p>
TR-2	<p>Provide additional information necessary to perform a RADTRAN accident risk analysis. Such information includes the radionuclide inventory (Ci content) for shipments of each material</p>	<p>Radionuclide inventories were included in RADTRAN input files, but no accident analysis was performed. The ER cites NUREG/CR-4829, which applies to nuclear reactors, not all nuclear facilities. Additional information may be</p>

	<p>type (UF<sub>6</sub> feed, UF<sub>6</sub> product, UF<sub>6</sub> tails, empty cylinders with heels, and low-level radioactive waste).</p>	<p>required to justify package isotopic inventories in the input files. Additionally, no release fractions are included in the input files.</p> <p>Package inventories provided in a follow-up letter. NRC will determine if additional accident analyses are necessary. ANL will perform an independent accident analysis once the necessary information is received from the applicant as follow-up (see WM-2).</p>
<p><b>TR-3</b></p>	<p>Provide information on the number of radioactive material shipments and types that currently take place at the Wilmington Site. The number of these types of shipments is relevant to a proper discussion of cumulative impacts in the EIS and is relevant to potential exposures to a maximally exposed individual near the site entrance.</p> <p>This information could be discussed in more detail with the transportation expert during the site visit.</p>	<p>The applicant will provide the number of onsite shipments for each type on a weekly and annual basis, destination, and actual dose rate in a follow-up letter.</p> <p>An onsite accident analysis is not required by Department of Transportation regulations, but is required by ISA. Items Relied on for Safety (IROFS) will be in place for onsite shipments.</p>

## WASTE MANAGEMENT INFORMATION (WM)

ITEM NO.	ORIGINAL INFORMATION NEED	REMAINING DOCUMENTS AND INFORMATION REQUESTED DURING THE SITE VISIT
<b>WM-1</b>	<p>Provide information on the types and quantities (e.g., mass and volume) of waste that might be expected to be generated from the construction of the GLE facility and where they may be taken for disposal.</p>	<p>ER has only a qualitative discussion of waste. The applicant proposed using the Louisiana Energy Services (LES) license submittal estimates as a bound, since the facility is larger than the proposed facility. The applicant will provide the information and justification in a follow-up letter.</p> <p>The applicant also will separate waste estimates from pre-construction activities and construction of the proposed facility.</p>
<b>WM-2</b>	<p>The items to be discussed with the knowledgeable waste management expert during the site visit include:</p> <ul style="list-style-type: none"> <li>• The basis for the estimated waste volumes provided in the ER for operations of the GLE facility. A discussion of the sources of the waste (e.g., the industrial processes used) is needed to understand the types and quantities of wastes generated</li> <li>• The radionuclide inventory of the wastes generated. Such information is required for the transportation analysis (See TR-2).</li> </ul>	<p>Dose rates from shipping containers are included in the dose information provided for HH/R.</p> <p>The isotopic inventory of each type of radioactive shipment (see TR-2) will be provided in a follow-up letter. GLE isotopic inventories will differ from other enrichment technologies because U-234 is selective removed from the enriched stream.</p> <p>Quantities of LLW per typical truck shipment, along with packaging assumptions will be provided in a follow-up letter. The applicant will base estimates on FMO experience.</p> <p>Applicant will provide the maximum capacity of the process waste lagoon facility with a follow-up letter.</p> <p>Fluorine precipitate solids from process waste will be sampled for radioactive contamination. The applicant will provide quantitative information regarding the volume of this waste stream or how it will be handled in a follow-up letter. This waste stream is not included in the LLW estimate in ER.</p> <p>Waste estimates in ER are bounding numbers, based on pre-conceptual</p>

		design, experience from other enrichment facilities, and verified through internal safety analysis. The applicant used lessons learned from under-designing FMO facility.
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