Attachment 2

Site Environmental Report Supplement for the period 1995 – 2005.

GNF-A WILMINGTON

ENVIRONMENTAL REPORT

SUPPLEMENT

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SECTION A - INTRODUCTION

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SECTION A - INTRODUCTION

Global Nuclear Fuels – Americas (GNF-A) [formerly known as GE Wilmington] has updated the appropriate Tables, Figures, and explanatory narrative of the Wilmington site Environmental Report document, "1996 Supplement to Environmental Report" dated May, 1996 for SNM-1097 to include the 1995 through 2005 environmental data. This report is titled, "Environmental Report Supplement, March 30, 2007". The format of the Supplement is the same as the 1996 Environmental Report Supplement with six sections. Exhibits consisting of updated Tables and Figures for the time period 1995-2005 are located in Sections B through E.

An updated, brief chronology for the GNF-A Wilmington site is shown in Exhibit A-1.

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SECTION B - DESCRIPTION OF SITE ENVIRONMENT

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B.1 Site Location

The GNF-A Wilmington facility is situated on a 1,664-acre tract of land, located on NC Highway 133 (also known as Castle Hayne Road) and is approximately six miles north of the City of Wilmington in New Hanover County. New Hanover County is situated in the coastal plains section of southeastern North Carolina with the Atlantic Ocean on the east, Cape Fear River on the west, and Pender County on the north (Exhibits B-1 and B-2). Due to the curvature of the coastline in this area, the ocean lies approximately 10 miles east and 26.4 miles south of the GNF-A Wilmington site. The surrounding terrain is typical for coastal Carolina. It has an average elevation of less than 40 feet above mean sea level and is characterized by gently rolling land, with rivers, creeks including; swamps and/or marshlands adjoining them. Approximately 182 acres of the southwest portion of the GNF-A Wilmington property are classified as swamp forest.

The region around the site is lightly settled with large areas of heavily timbered tracts, occasionally penetrated by short roads. Farms, single-family dwellings, and light commercial activities are located along NC Highway 133.

Castle Hayne, the nearest community, is approximately three miles north of GNF-A Wilmington. Jacksonville, North Carolina and Camp Lejeune (U.S. Marine Corps base) is located approximately 60 miles to the northeast of the GNF-A Wilmington site.

The major portion of the site is bordered on the east by NC Highway 133, on the southwesterly perimeter by the Northeast Cape Fear River; and on the north, and for most of the south property line, by undeveloped forestlands. Approximately 24 acres are east of NC Highway 133 and contain an employee recreation area, a future railroad right-of-way, potable water supply wells (3), and temporary truck parking. The south property line for ~3,000 ft. is bordered by a new highway (Wilmington Bypass I-140). Due to road construction and the new Bypass I-140, US Highway 117 is now NC Highway 133.

The property and topographical details showing five-foot contour intervals of elevation as well as the 100-year and 500-year flood plains are shown in Exhibits B-3 and B-4, respectively.

According to the United States Forest Service, the ecological location for this facility is within the Atlantic Coastal Flatlands Section. Endangered species such as the red-cockaded woodpecker inhabit this Section. However, no federally threatened or endangered species have been identified at the GNF-A Wilmington facility.

The only historical artifact on the plant site is an old cemetery dating back to the 1800s when this property was a rice plantation known as the Rose Hill Plantation. No other historical artifacts have been found on this site.

B.2 Groundwater

The GNF-A Wilmington site has a shallow aquifer, also called the water table of surficial aquifer, and a deeper aquifer known as the principal aquifer. Typically, the shallow aquifer is 5 to 20 feet below the land surface. The shallow aquifer is recharged by rainfall and is not used for drinking water supplies. A generalized potentiometric surface map for the water table aquifer is shown in Exhibit B-5. This map was developed based upon water depth data from GNF-A site monitoring wells.

The principal aquifer lies under the water table aquifer separated by a semi-confining layer of silt and clayey soils. The principal aquifer typically starts at 30-40 feet below the land surface and extends to a depth of 50-90 feet below the ground. Both the site potable water system and the process water system are provided via wells in the principal aquifer. A generalized potentiometric surface map for the principal aquifer is shown in Exhibit B-6. The map was developed using site monitoring well water depth data from GNF-A site monitoring wells.

B.3 Wind Conditions

A wind rose figure, provided by Exhibit B-7, indicates frequency of wind in a given direction during the years 1994-2005. The branches are divided into segments of different thickness and color, which represent wind speed ranges from that direction. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

The calm wind conditions are represented by 14.4 percent. The mean hourly wind speed in the vicinity of the site is 9.3 mph (8.1 knots) (Source: NOAA National Climatic Data Center, Asheville, NC). In 2005, April was the windiest month with an average wind speed of 9.4 mph (10.8 knots), while August was the calmest month with an average wind speed of 5.3 mph (4.6 knots) (Source: State Climate Office of North Carolina, New Hanover County Airport data).

Exhibit B-8 measures the relative frequency distribution of wind direction and speed classes in knots. Exhibit B-9 provides a graph indicating the relative frequency distribution of wind speed classes in knots. Frequency distribution wind speed class 8-13 knots is highest at 32.6 percent.

B.4 Atmospheric Dispersion

Historical baseline data was collected and presented in the 1996 Supplement to the Environmental Report. The average dispersion factors and the average deposition factors calculated for the sixteen major compass sectors were used to estimate the population dose within a 50-mile radius. The results showed no impact to the surrounding population when compared to natural background. Since the actual stack emissions have declined during 1995-2005 time period, it can be assumed that there is no impact due to population dose. See Narrative Description D.3 for the conservative approach used in this Report to further support this conclusion.

B.5 Background Radiological Characteristics

The North Carolina Radiation Protection (NCRP) Section routinely collects samples at and near the GNF-A Wilmington facility. Exhibit B-10 (sampling for soil, vegetation, surface water, sediment, and ambient air) identifies each sampling location and the type of samples collected for the environmental surveillance program. The NCRP data analyzed for the 1995-1999 time period are presented in Sections B and E Exhibits. The data from 2000-2005 are not available from NCRP.

B.6 Atmospheric

Exhibit B-11 presents the results of air sampling data obtained by NCRP during 1995-1999 at the Horticultural Crops Research Station (Sampling Location number 11).

The data are representative of background concentrations since this sampling location is approximately 1 mile east from the Fuel Manufacturing Operation (FMO) building. The data is summarized as quarterly averages.

B.7 Surface Water

The NCRP routinely samples the surface water in the Northeast Cape Fear River 16 miles upstream from the GNF-A Wilmington facility at the Castle Hayne Boat Landing (See Exhibit B-10). These samples are indicative of the background concentrations in the Northeast Cape Fear River. The gross alpha activity concentration data for the 1995-1999 period are presented in Exhibit B-12. Surface water samples collected at this location between 1995 and 1999 were below the gross alpha screening level of 5 pCi/l.

B.8 Principal Aquifer

The NCRP routinely samples groundwater near the process lagoons. Data from analyses of these samples collected during 1995 through 1999 are presented in Exhibit B-13 (Refer to Exhibit B-10 for sample location). The samples are taken from Well 9, which is a deep supply well.

B.9 Soil

The NCRP samples soil semi-annually in the environs of GNF-A Wilmington (refer to Exhibit B-10). Exhibit B-14 provides a summary of the gross alpha activity concentration from 1995 through 1999. These values are considered to be representative of background.

B.10 Sediments

The NCRP collected sediment samples in the Northeast Cape Fear River upstream of the GNF-A facility at the Castle Hayne Boat Landing during the 1995 to 1999 period. Samples were also collected for upstream of the site dam) and at the GE Dock. Refer to Exhibit E-12 for sampling locations and Exhibit E-20 for the sampling results.

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SECTION C - THE FACILITY

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C.1 Dry Conversion Process

A Dry Conversion Process (DCP) for direct conversion of Uranium Hexafluoride (UF_6) to Uranium Dioxide (UO_2) was installed at GNF-A Wilmington in 1997. The conversion is based on a direct chemical reaction between vaporized UF_6 and superheated steam, followed by a pyrohydrolysis and reduction in a hydrogen atmosphere. This conversion offers an environmental advantage over the Ammonium Diuranate (ADU) process due to the elimination of liquid waste other than a small stream of dilute hydrofluoric acid (typically 1-2%), which can be neutralized through the site's National Pollution Discharge Elimination System (NPDES) permitted waste treatment operations. More concentrated aqueous hydrofluoric acid (< 50%) co-product is generated as part of the conversion process, which can be sold commercially.

There are seven basic processing steps involved in the conversion operations (shown in Exhibit C-1). These steps are:

1. UF_6 Vaporization
2. Conversion to UO_2
3. Powder cooling
4. Sieving and Homogenization
5. Blending
6. Pre-compaction and Granulation
7. Spheroidizing and Lubrication

The UF_6 in its 30B cylinder is electrically heated in a pressure rated, nitrogen atmosphere autoclave to a temperature, which causes the UF_6 to flow from the autoclave to the conversion kiln.

The initial hydrolysis reaction takes place in the reactor. The second pyro-hydrolysis reaction takes place in the rotating tube. The UO_2 powder produced is directed to an output cooling hopper while the Hydrofluoric Acid (HF) gas formed is evacuated out of the reactor and is filtered prior to being further processed.

Nitrogen sweeping avoids pyrophoric reactions during powder cooling and transfer into containers. The powder is sifted as it is fed into the blender and oversized agglomerates sifted out will be reprocessed. Both the sifting and homogenization operations are carried out in a nitrogen atmosphere.

UO_2 powders from the conversion are blended with: (1) U_3O_8 from dry scrap recycle processes, (2) UO_2 from dry scrap recycle process, (3) pore former to reach specific density, and (4) some die lubricant to assist the pre-compaction step. The pre-compacts formed fall directly into an oscillating granulator, forced through a screen, and discharged into bi-cone containers, which will feed the pellet pressing operations.

The location of the DCP facility is shown in Exhibit C-2.

C.2 Utilities

Several energy sources are available at the plant. The two major sources are electrical and natural gas. Electrical power is used for lighting, equipment operation, air conditioning, and heating. Natural gas is used for steam generating and product manufacturing.

Low sulfur fuel oil has been used as an alternate for natural gas and as a fuel for emergency and peak shaving generators.

C.3 Chemical Use

A variety of chemicals and gases are used in manufacturing operations across the site. The locations of the storage facilities for these materials are identified in Exhibit C-2.

C.4 Process Liquid Effluent Collection and Final Treatment System

A process waste drain system services the site including the three manufacturing buildings and other specific site locations. Exhibits C-3A (1996) and C-3B (2005) contains a description of the building effluents and treatment prior to discharge. This is a dedicated system for collection and transport of treated process wastewater, non-treated process wastewater, and non-contact water to the final process basins. A diagram of the process drain system is shown in Exhibit C-4.

Exhibits C-3A and C-3B:
As shown in the 1996 and 2005 diagrams, pollution prevention projects have been pursued to enable the site to reduce the liquid waste stream. Significant changes include:

- Dry Conversion Process (DCP) replaced Ammonium Diuranate (ADU): Eliminated Ammonia and Fluoride waste streams.
- Uranium Recovery Unit (URU) placed in standby: Eliminated Nitrate waste stream.
- Offsite disposal of Fuel Components Operation (FCO) Etch Acid: Nitrate Basins not needed.

- Services Components Operation (SCO) and Aircraft Engines (AE) Waste Streams: Eliminated.
- RadWaste System: Replaced with improved system.

C.5 Storm Water System

In January 1995, this site obtained a State of North Carolina Individual Stormwater Discharge Permit (NPDES Permit number NCS000022). The GNF-A Wilmington individual stormwater permit with an effective date of January 1, 2000 expired December 31, 2004. GNF-A submitted the site Individual Stormwater Discharge permit renewal application to North Carolina Department of Environment, & Natural Resources (NC DENR), Division of Water Quality on July 8, 2004. GNF-A is currently under a Timely Renewal as NC DENR processes the submitted application.

The storm drainage system was installed as part of the original site grade development. The developed areas of the site direct Stormwater runoff to an effluent channel that is also used for treated process and sanitary wastes to the Northeast Cape Fear River. The dam installed in this channel can be utilized to contain the runoff from the developed areas. A small area on the east end of the site drains to Prince George Creek. Exhibit C-5 displays the GNF-A Wilmington site storm drain system.

C.6 Sanitary Effluent System

Wastes originating in bathrooms, cafeteria, and other sanitary facilities are routed through the sanitary waste system to an extended activated sludge aeration plant, consisting of collection drains, lift stations, and a treatment facility. The plant achieves biochemical oxygen demand (BOD5) reductions typical of such systems. Normally, discharged water is in the range of 5 to 30 mg/l BOD5, which is a typical daily output of approximately 2 pounds of BOD5 (using typical flow). The treated effluent mixes with Stormwater and treated process wastewater before flowing to the Northeast Cape Fear River. A diagram of the sanitary drain system is shown in Exhibit C-6.

C.7 Solid Wastes

Various solid wastes are generated from the manufacturing processes. These wastes range in form and type from packaging and construction materials, worn-out tools and equipment, spent process chemicals and oils to uranium sludges.

The GNF-A Wilmington waste management program is very comprehensive and provides the capability to select the most suitable management technique for a specific waste. The management concepts employed include; waste elimination, volume reduction achieved by source separation, compaction and incineration;

recycle of wastes and beneficial reuse, and sale of used sodium hydroxide and aqueous hydrofluoric acid (<50%).

Waste materials are collected according to the following two primary classifications: uranium contaminated or contamination-free.

Exhibit C-7 represents the GNF-A Wilmington waste management program by primary classification and end use or disposal method.

C.8 Hazardous Wastes

Exhibit C-8 lists the Resource Conservation and Recovery Act (RCRA) hazardous wastes generated on site, the appropriate hazard code, and the basis for the hazard classification. In most cases, the classification is based on known characteristics of the wastes, such as ignitability, reactivity, corrosively, or extraction procedure toxicity analyses.

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SECTION D - ENVIRONMENTAL IMPACTS OF FACILITY OPERATIONS

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The GNF-A Wilmington operations have had insignificant effects on the environment in the past, and have maintained comprehensive control procedures to ensure continuing insignificant effects in the future. The following section of the Supplement evaluates effects of the GNF-A Wilmington operations on the local environment.

The Fuel Manufacturing Operations (FMO) involve the processing of low-enriched uranium. Accordingly, this material receives principal emphasis in the following discussion.

The radiological impacts are discussed separately from the non-radiological impacts in the following paragraphs.

D.1 Radiological Impacts

The potential exposure pathways for radioactive materials to reach humans are shown in Exhibit D-1. As indicated, there are three general pathways that could have an effect on the general public: direct irradiation, airborne effluents (direct inhalation and deposition/consumption which is the terrestrial pathway), and liquid effluents (aquatic and groundwater pathway).

The GNF-A Wilmington sources of radioactive liquid and airborne effluents are extensively controlled and monitored. Monitoring data have verified that the controls are effective in limiting radioactive releases to levels well below regulatory limits.

D.2 Direct Irradiation and Air Submersion Dose

Direct irradiation radiation of the public is not a significant pathway from GNF-A Wilmington. The gamma radiation exposure levels measured at the site boundary are at background levels.

Gross alpha ambient airborne concentrations are measured routinely at the southern fence line and are typically on the order of 4×10^{-15} µCi/cc. The air submersion dose for this concentration of mixtures of uranium isotopes is insignificant.

D.3 Direct Inhalation

Direct inhalation of airborne releases is the most likely intake pathway. The off-site population dose estimates were calculated using EPA's COMPLY code.

An individual dose of 8.5 $\times 10^{-4}$ mrem was calculated using the nearest population center 2 miles south of the facility and 2005 air Stack releases. All releases were assumed to be U-234 (Class Y insoluble). When direct data were not available, conservative assumptions were made. Thus, there is a high degree of confidence that dose equivalent values are not underestimated. A conservative assumption was made to apply the individual dose at this population center to the entire 200,000 persons (2000 census) in the surrounding area. The estimated 0.17 person-rems for the surrounding population can be compared to the annual average 60,000 person-rems received by this population due to natural background. Therefore, the average annual dose received by an individual in the surrounding population from releases at this facility are several orders of magnitude less than one millirem and very insignificant. There are no potential health effects which might be predicted from such doses.

The annual natural background radiation dose for the average individual in the surrounding area is typical of that received from natural background radiation in this location or elsewhere in the U.S. Other historical data supporting this conclusion can also be found in the 1996 Supplement to the Environmental Report.

The annual radiation dose to the nearest (potentially most highly exposed) resident using EPA's COMPLY code are shown in Exhibit D-2 for the 1995-2005 period. Relative to the 10 CFR 20.1301 NRC off-site individual exposure limit of 100 mrem per year, the annual dose during 1995-2005, ranging from 0.03 mrem to 0.4 mrem, is insignificant. In 2005, the dose was 0.03% of the NRC limit. The dose has been decreasing over the years which is consistent with the ALARA philosophy. Considering background levels of exposure to the public, this data demonstrate no impact to the public from minimal releases of radionuclides from the GNF-A Wilmington site.

D.4 Terrestrial Pathway Impact

The dose via the terrestrial pathway of consumption of milk and locally grown vegetables is considered to be much less significant than inhalation. Based on the data presented in the 1996 Environmental Report Supplement, the off-site deposition rate of uranium on soil were non-distinguishable from natural background. Since actual plant air emissions during 1995-2005 were lower than those presented in the 1996 Environmental Report Supplement, it can be assumed that the off-site uranium deposition rate is insignificant.

Agricultural areas surrounding the site are limited as discussed in Section B. Soil sampling and analysis performed to detect uranium, has shown no impact from the GNF-A Wilmington operations.

D.5 Aquatic Pathway Impact

The aqueous effluent containing trace amounts of uranium originates within the Fuel Manufacturing Operations (FMO) or in the Waste Treatment (WT) facilities. Each aqueous effluent, such as fluorides and radiological liquid, is subjected to successive treatment steps to remove uranium compounds before release. The treated process wastewaters are discharged to the Northeast Cape Fear River. The treated nitrate wastewater was being transported to a paper manufacturer for use in their biological waste treatment process in a nearby county. However, the shipments to the paper manufacturer were discontinued in 2001. Due to process changes, the nitrate waste stream (from FMO) is no longer generated and the FCO spent etch acid containing nitrates is shipped offsite for disposal.

The uranium concentration and gross alpha activity concentration of the discharge to the Northeast Cape Fear River are determined from analysis of the samples collected at the final process basin outfalls.

The final process basin outfall was sampled for gross alpha concentrations during the 1995-2005 period. As shown in Exhibit E-22, the highest average concentration during that period was 1.23×10^{-7} μCi/cc in 2005.

Compared with the 10 CFR 20 Appendix B limit, the 2005 site discharge was 41% of the limit. Therefore, there is no significant impact to the river.

Based on the less than detectable level of radioactivity above background levels in the Northeast Cape Fear River, the discharge from the site is not expected to cause an increase in radioactivity in edible fish, nor would there be a radiation dose incurred by persons swimming in the river. There are no communities or individuals downstream of the GNF-A Wilmington site that is known to use the river for a fresh water supply. No significant impact is likely to occur from process effluent via the aquatic pathway.

The gross alpha activity concentration and uranium concentration were determined on samples of the treated nitrate wastewaters before they were transported to a local paper company. The volume of the shipments was less than 0.1% of the daily treated wastewater volume discharged into the Cape Fear River from this paper company. The monitoring data do not indicate any buildup of uranium or gross alpha activity in the local paper company's treatment system. Gross alpha activity concentrations at the system outfall to the river consistently indicate this activity to have no detectable negative impact on the environs. As noted earlier, no nitrate waste containing trace amounts of uranium has been shipped since 2001.

D.6 Groundwater Pathway Impact - Principal Aquifer

There has been no radiological impact to the principal aquifer. In 1993, GNF-A Wilmington installed a separate potable water system. All monitoring data from the principal aquifer show uranium concentrations to be less than or at the minimum detectable level. Reference Exhibit E-7. Similarly, gross alpha activity concentration data from three process water supply wells continue to be at natural background levels (at or near the detection limit).

D.7 Non-Radiological Impact

Non-radiological discharges and any related impacts are regulated by the State of North Carolina for this facility.

The generalized pathways for exposure to non-radiological materials are similar to those shown in Exhibit D-1. The two pathways of interest are liquid effluents (aquatic and groundwater pathways) and airborne effluents (direct inhalation, and deposition/consumption, which is the terrestrial pathway).

D.8 Terrestrial Pathway Impact

The anticipated pathway for a terrestrial impact from the operations would be via airborne discharges.

The planned composition of the air discharge from each process stack was reviewed by the State of North Carolina Department of Environment & Natural Resources / Division of Air Quality (NCDENR/DAQ) personnel before the issuance of an air permit to construct and operate the air pollution control equipment associated with the discharge. The discharge levels are also reviewed by State of North Carolina personnel when permits are renewed. For NC Toxic Air Pollutants (TAPs), the site submits Emissions Inventory Reports every five years.

For the purpose of discussion, the terrestrial impacts have been divided into the categories of health effects and biota effects.

D.9 Health Effects Impact From Airborne Contaminants

Airborne contaminants resulting from site operations are not expected to have health effect impacts. The calculated concentrations of airborne contaminants at the site's property line are minimal.

D.10 Biota Impact From Airborne Contaminants

The off-site effects of airborne contaminants results, from site operations are not expected to have an impact on the biota.

D.11 Aquatic Impact

GNF-A Wilmington operates permitted wastewater treatment facilities for both process and sanitary wastewaters. The permit limits consider potential impact to the receiving water body (the Northeast Cape Fear River) and are established by the North Carolina Department of Environment and Natural Resources / Division of Water Quality (NCDENR/DWQ) to preclude any significant impact. The treated process wastewater volume flow into the river is negligible with respect to the typical volume flow of river water. The relatively small flow of < 30K gallons per day of treated sanitary wastewater minimizes any chance of potential impact. Prior studies have shown that the tidal effects and physical features of the river provide excellent mixing both vertically and horizontally in the river.

There are no discernible thermal impacts from the GNF-A Wilmington discharges to the river since (1) the discharge temperature is primarily a function of the weather and (2) no particularly high or low (relative to river ambient) temperatures are present in the discharges.

D.12 Impact of Liquid Effluents on Groundwater

GNF-A Wilmington has a comprehensive groundwater monitoring program for chemical constituents in both the shallow aquifer (referred to as the water table aquifer) and the principal aquifer. Routine monitoring for primary chemical constituents, such as nitrates and fluorides, are supplemented by periodic special groundwater studies.

D.13 Final Process Basin and Adjacent Calcium Fluoride Sludge Storage Basins

Material storage in the final process basin and calcium fluoride sludge storage basins do not indicate an impact on shallow conditions in the surficial aquifer. Sampling demonstrated consistent levels for ammonia, fluoride, and pH. Nitrate levels remain relatively low relative to applicable standards. Selected PL wells were replaced or added in 1995 with new PL-A Series monitoring wells so that samples could be obtained from the shallow groundwater in case dry conditions occur. A localized condition (trace U in shallow groundwater) around one shallow monitoring well PL-11A was monitored and current data is approaching background. Reference Exhibit E-31. Calcium fluoride sludge removal has occurred in the last few years. Sludge was transferred to indoor storage and has been shipped for off-site burial.

D.14 Calcium Fluoride Storage Area

Material was removed and the area was granted free release status by the NRC. Based on historical data, Wells CaF-1, CaF-3, and CaF-4 were sealed and removed in 1996 whereas Well CaF-2 was sealed and removed in 1997.

D.15 Waste Treatment Area

Concentrations of fluorides, nitrates, ammonia, and pH in surrounding shallow wells were not elevated significantly above background levels during the 1995 - 2005 period. Due to an external contamination event in 1986 (Reference page 4-28 of 1989 Environmental Report), well data for WT-1 has stabilized at higher than background levels. Reference Exhibit E-33. The fluoride basins were emptied of liquid and solids in the late 1990's, early 2000's. The east and west nitrate basin liquids and solids have been removed. The nitrate basins currently contain primarily rainwater.

D.16 Zirconium Sludge Storage Area

The zirconium sludge material was removed in 1982. No unfavorable trends have been observed in this area through 1997 for the shallow groundwater in proximity of this former storage location. These Wells were sealed and removed as of 1998.

D.17 Sound Assessment

Overall, there is a general site wide decrease in sound levels with time. Refer to Exhibit D-4 for the data and Exhibit D-3 for the locations map.

Only one location (19) rose between 1995 and 2005 without the contribution of sound from a one-time project-highway construction using heavy equipment within the sampling area (sections 21 and 22).

Location 19 has consistently risen in sound level since 1989. The 2002 value is 59 decibels, which remains quite low relative to the Occupational Safety and Health Administration (OSHA) individual noise construction value of 85 decibels.

Most decreases brought sound levels near or below the sound levels from 1989. In many cases there has been substantial sound reduction since 1995 (example: location 14 decreased by 18.7 decibels). This is consistent with the rural nature of the site surroundings and the fact that the manufacturing generated noises are well contained within the manufacturing buildings.

All samples over the past three site tests have been below OSHA Standard 1910.95, which requires a hearing conservation program at sound levels above 85 decibels.

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SECTION E - ENVIRONMENTAL MONITORING PROGRAM

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The GNF-A Wilmington Environmental Monitoring Program is based upon measurements at the points of release as well as controls at the potential source of contaminants. The low or non-detectable concentration of uranium and non-radiological contaminants in plant effluents and the known effects of transient external influences, e.g., agrarian fertilizer adding nitrate in the soil and water, are factors which support the source-point monitoring concept. The primary program depends, therefore, upon monitoring at the points of release from control systems. Airborne effluents are sampled in the exhaust stacks, liquids are sampled at the outfalls, and groundwater is sampled immediately adjacent to potential contamination sources. The validity of the source-point monitoring program is verified by additional measurements taken away from the release points.

The GNF-A Wilmington environmental monitoring program is revised as appropriate to accommodate changes in (1) operations, (2) the emergence of newly found information, (3) removal of legacy materials (calcium fluoride or other materials) and/or (4) regulatory agency permits and other authorizations. The key consideration for program change is to assess the change so that the effectiveness of environmental program is not impacted.

The Environmental Monitoring Program is summarized in Exhibit E-1 (Radiological) and Exhibit E-2 (Non-Radiological), which list the current program components during the 1995-2005 period. These components are discussed below.

E.1 Radiological - Air Monitoring

All airborne discharges to the atmosphere from the controlled area stacks are sampled continuously to determine the uranium concentration in the exhaust air. The collection filter in the sample system is removed on either a daily or a weekly schedule and analyzed for gross alpha activity concentration.

The stacks that are sampled daily rather than weekly are selected on the basis of their past contribution to the total discharge. The daily stack sampling concept provides the basis for timely corrective actions where appropriate and is one of the program control elements used to maintain overall airborne emissions at a low level.

E.2 Radiological - Surface Water Monitoring

Process liquid streams are collected, treated, and discharged from the final process basins to the Northeast Cape Fear River via the effluent channel. Flow proportional composite samplers are used to collect effluent samples. Analyses include uranium, gross alpha, and gross beta. Treated sanitary effluent is also sampled for uranium. Finally, the Northeast Cape Fear River is sampled both upstream and downstream of the GNF-A Wilmington site discharge (i.e., effluent channel).

E.3 Radiological - Nitrate Solutions

Shipments of nitrate solutions were sent to a local paper company by truck to be used in their waste treatment system. A check for trace uranium concentration was determined for process control purposes on each truckload and the results were compared against the internal procedural requirements before the truck was released. A composite of the samples from each truckload shipped during a day was then analyzed for uranium content to provide the basis for determining the quantity released in these shipments. A composite of samples from each shipment made during a week was also analyzed for gross alpha and gross beta activity concentration.

Additional data pertaining to the nitrate shipments are obtained from analyzing samples of water and sediment from selected locations, as shown in Exhibit E-4, in the local paper company's waste treatment system and in the Cape Fear River upstream and downstream from the treatment system outfall. These samples were analyzed for gross alpha concentration, gross beta activity concentration, and uranium content. These results are shown in Exhibit E-41. No adverse trends were found in reviewing the data in Exhibit E-41.

Since GNF-A placed the URU process in standby and began shipping spent etch acid from the FCO tubing process for off-site treatment and disposal, nitrate liquid is no longer processed. Therefore, nitrate solution is no longer shipped to the local paper company and shipments are not planned in the future. The nitrate shipments to the local paper company have been discontinued since August 2001.

E.4 Radiological - Co-product Hydrofluoric Acid (HF)

Hydrofluoric acid produced by the Dry Conversion Process (DCP) is offered as a commercial product. This material is analyzed for uranium content and the results are compared to the requirement, three (3) parts per million (ppm). The average, minimum, and maximum uranium concentrations are measured in ppm and the results are provided in Exhibit E-24. Sampling for uranium concentration began the same year as the DCP process in 1997.

E.5 Radiological - Groundwater Monitoring

The ongoing, extensive hydrogeological studies that were initiated in 1978 continue to provide information on the subsurface soil conditions, the water table aquifer, and the principal aquifer beneath the site. The hydraulic gradients for the water-table aquifer and principal aquifer (reference Exhibits E-5 and E-6) are examples of the types of the information provided. Hydraulic gradient information is used to determine the upgradient and downgradient conditions surrounding an area, such as a process basin system.

E.6 Radiological - Principal Aquifer Monitoring - Program Objective: Assure Quality of Process and Potable Supply Water

The process and potable water for the site is supplied by separate well systems, which draw from the principal aquifer. Samples are collected periodically from both supply and monitoring wells. Well and sample point locations are shown in Exhibit E-7 through E-10.

E.7 Radiological - Individual Principal Aquifer Monitoring - Program Objective: Early Warning of Water Quality Degradation

Three individual process water supply wells (WW-9A, WW-11, and WW-14) were selected for individual sampling because of their downgradient location from potential contamination sources, i.e., basins and effluent channel. The location of these wells is shown in Exhibit E-7. Grab samples are collected periodically from each of these wells and analyzed for uranium concentration and gross alpha and gross beta activity concentration.

Other monitoring wells, which is located in the principal aquifer downgradient from several site area, have been selected for individual sampling. The location of these wells are shown in Exhibit E-8. Wells are utilized for monitoring and for reviewing hydraulic gradients. Grab samples from such wells are collected on a designated frequency and analyzed for uranium concentration. Other monitoring wells in the principal aquifer may be sampled periodically as part of routine or special hydrogeological studies.

E.8 Radiological - Water-Table Aquifer Well Water Monitoring - Program Objective: Provide Early Warning of Containment Failure

Wells have been placed in the water-table aquifer immediately adjacent to potential sources of contamination, such as basins and sludge storage areas. The immediate proximity location is chosen to provide early warning of containment failure. The locations of these wells are shown in Exhibit E-7 through E-10. These wells are monitored on a frequency consistent with relative risk potential presented by the contained material. The Process Basins continue to be used for NPDES Process wastewater treatment. The fluoride basins at waste treatment (WT) were emptied of solids and liquids. The former zirconium storage was emptied in the 1980's and has no indication of remaining trace contaminates. The former northwest calcium fluoride has been granted unconditional release by NRC. Periodic groundwater monitoring is conducted for the above active areas.

E.9 Radiological - Sediment Monitoring - Program Objective: Evaluate Uranium Deposition in Effluent Channel

Sediment samples are collected semiannually in the effluent channel downstream from the final process basins. The sample locations are shown in Exhibit E-12. The samples are analyzed for uranium concentration.

E.10 Radiological - Soil Monitoring - Program Objective: Determine If There Is Ascertainable Deposition From Stack Discharges or Other Potential Releases

Soil samples are collected on a quarterly basis from selected areas on and off site. The location of these sample sites is shown in Exhibit E-13. The samples are analyzed for uranium concentration. The sample results are shown in Exhibit E-39.

E.11 North Carolina Surveillance Program Description

The North Carolina Division of Radiation Protection Section (NCRP), a part of the North Carolina Department of Environment and Natural Resources (NCDENR), conducts an area surveillance program consisting of the following sampling and analysis:

- Low volume air samplers
- Vegetation [1]
- Sediment [1]
- Soil [1]
- Surface Water [1]
- Ground Water [1]

[1] Grab Sample

The location of these sampling points is shown in Exhibit B-10. The ambient air stations operate continuously with samples pulled weekly or twice per month. The balance of the program is conducted at frequencies such as quarterly or semi-annually. This program is in accordance with a monitoring contract between North Carolina Radiation Protection Section (NCRP) and the U.S. Nuclear Regulatory Commission (NRC) (1996-1999). Since 1999, this program continues with NCRP, but the NRC contract has been discontinued. The NCRP data analyzed for the 1995-1999 time period are presented in Sections B and E Exhibits. The data from 2000-2005 are not available from NCRP.

E.12 Non-Radiological - Atmospheric Monitoring

The four discharge stacks from the chemical conversion operations, the exhaust stack from uranium recycle, the two laboratory exhaust stacks, and the exhaust stack from the incinerator are sampled continuously to provide a basis for determination of fluoride releases. Fluoride monitoring is also provided for the Dry Conversion facility (main building and HF building).

The collection filter in the stack sampling system is a Whatman 41 filter paper impregnated with calcium carbonate or equivalent. The filter is removed either daily or weekly and analyzed for fluoride content. The quantity of fluoride released from the stack is then calculated using the analytical results and the total daily or weekly exhaust volume of the stack and the associated stack sampler volume (in ratio).

E.13 Non-Radiological - Water Monitoring - Final Process Basin Sampling - Program Objective: Provide Release Data at the Discharge Point

The same sample collection system for the final process basins is used to provide samples for analysis of non-radiological parameters (Exhibit E-2). The composite samples are analyzed for fluoride, ammonia, nitrite, nitrate, copper, nickel, chromium, silver, zinc, total suspended solids, cadmium, lead, nickel, phosphate, and biochemical oxygen demand (BOD5) on a prescribed frequency based upon the NPDES permit.

Separate grab samples are collected for pH, oil/grease, cyanide, trichloroethylene (TCE), and dissolved oxygen for analyses. Temperature is also taken on a daily basis at the basin outfall. Other parameters may be analyzed for as shown in Exhibit E-2 as needs develop. Sampling parameters and frequency may vary with NPDES permit or operational changes. The daily volume reading is used in conjunction with the analytical results to calculate quantities of material released. The quantities released are used both for comparison with NPDES permit requirements and for evaluation of the effectiveness of the treatment systems.

E.14 Non-Radiological - Sanitary Treatment System Monitoring - Program Objective: Provide Release Data at Discharge Point

The data obtained from sampling and analyzing the outfall (No. 2 for the sanitary system) of the treatment facility are compared to the NPDES permit requirements for compliance purposes and are used in the operation of the sanitary treatment facility. The discharge volume data are generated from a vee-notch weir system similar to that on the final process basin outfall. Discharge temperature is determined daily on a grab sample and pH is determined weekly on a grab sample. BOD5 are determined on a weekly basis from a 24-hour composite sample collected at the outfall. The other parameters of concern on this type of system, i.e., total suspended solids and nitrogen are weekly composite samples. Weekly grab samples are taken for fecal coliform and dissolved oxygen. Grab samples are collected twice per week for Total residual chlorine. Sampling is determined on a weekly basis from a 24-hour composite sample collected at the outfall. Such sampling parameters and frequency may vary with NPDES permit or operational changes.

E.15 Non-Radiological - Water Monitoring - Site Dam Sampling - Program Objective: Provide Audit on Control Systems

Drainage from the active areas of the site and treated process and sanitary wastes pass through the site dam before reaching the Northeast Cape Fear River. The dam provides an excellent point for sampling on an audit basis for assurance that certain control systems are functioning properly. A grab sample is collected at this point and analyzed for pH, ammonia, fluoride, and nitrate. Location of this sampling point is shown in Exhibit E-12.

The performance of the sanitary waste system is confirmed by samples taken at the sanitary waste treatment system outfall versus at the site dam.

E.16 Non-Radiological - Water Monitoring - Northeast Cape Fear River Sampling - Program Objective: Confirm Source Point and Provide Measure of Effluent Control Effectiveness

The Northeast Cape Fear River is sampled upstream and downstream from the site at locations shown in Exhibit E-14. The parameters and frequencies are reviewed and approved as part of the NPDES permit system or other suitable arrangements. Samples collected are analyzed for pH, dissolved oxygen (DO), ammonia, nitrate, nitrite, temperature, and conductivity. The sampling frequencies are specified in the NPDES permit and vary from weekly to quarterly. The GE dock is used as the downstream location (except for uranium at Hilton Park). The renewed NPDES permit, effective 4/1/2004, provides for waiver of river monitoring if GNF-A continues as a member of the Lower Cape Fear River Basin Monitoring Coalition (which takes river samples and reports to NC DENR).

The location of the site river dock is shown in Exhibits E-12 and E-14.

The results are reviewed for indications of any impact on the receiving stream from the site discharges. If there are any adverse indications, the applicable individuals are notified and actions are taken to minimize them.

E.17 Non-Radiological - Off-Site Liquid Shipments Monitoring - Program Objective: Provide Release Data Monitor Process Control Effectiveness

This sampling program was designed to address shipments of nitrate solutions to a local paper company for use in their waste treatment system. The ammonia and nitrate content of these nitrate solutions were of primary interest in this program because of their nutrient value for the biological treatment process to which they are added. Their residual concentrations as determined at selected locations in the treatment process also gave an indication of the viability of the basic treatment operation. For these reasons ammonia and nitrate values were obtained daily on the composite of the grab samples for each truck. Similarly, ammonia and nitrate concentrations were obtained part way through and at the discharge of the biological treatment facility. The location of these sampling points is shown in Exhibit E-4.

A secondary set of information on the shipments was collected to assure that the quality of the material shipped does not change. For this purpose, the pH of the daily truck composite was determined and the weekly composite of the truck samples was analyzed for chromium, copper, nickel, and fluoride content.

As noted earlier, these shipments were terminated in 2001.

E.18 Non-Radiological - Groundwater Monitoring

The concept used to design the groundwater monitoring program is similar to that used for the air and surface water programs. The primary purpose of the program is to provide early warning of any containment failure or migration of material by installing monitoring systems in the immediate proximity of potential sources, such as basins or selected waste storage areas. The groundwater monitoring program is also designed to function in an audit capacity for the early warning system.

The primary monitoring systems are located in the water table aquifer - the first saturated zone immediately below the surface. The part of the program devoted to sampling the principal aquifer, which is the deeper aquifer separated for the most part from the water table aquifer by a semi-confining layer, serves as an audit of the primary monitoring system as well as provides information on the quality of the supply water for both the process and potable uses.

In this program, particular attention is given to nitrates that are common to the bulk of the treated effluent streams and are not as subject to attenuation in the subsurface strata as are some of the other potential contaminants.

E.19 Non-Radiological - Principal Aquifer Monitoring - Program Objective: Assure Quality of Process and Potable Supply Water

The process and potable water for the site is supplied by separate well systems, which draws from the principal aquifer. A grab sample is collected periodically on the process well system and analyzed for chloride, phosphate, ammonia, nitrate, total suspended solids, alkalinity, BOD5, COD, total solids and total dissolved solids. The results provide information on the quality of the incoming process supply water. Also, State required samples are taken on the potable water system and a monthly report is transmitted to the State with the sample results.

E.20 Non-Radiological - Individual Principal Aquifer Well Monitoring - Program Objectives: Provide Early Warning of Water Quality Degradation

Three individual supply wells (Nos. WW-9A, WW-11, and WW-14) were selected for individual sampling because of their downgradient location from potential contamination sources, i.e., basins and effluent channel. The locations of these wells are shown in Exhibit E-7.

A grab sample is collected monthly from each of these wells and analyzed for nitrates, fluorides, ammonia, pH, and total dissolved solids. In addition, WW-9A sample is analyzed for fluoride since it is downgradient from the former calcium fluoride sludge storage area.

E.21 Non-Radiological - Water-Table Aquifer Well Monitoring - Program Objective: Provide Early Warning of Containment Failure

Wells have been placed in the water-table aquifer immediately adjacent to potential sources of contamination such as basins and sludge storage areas. The immediate proximity location is chosen to provide early warning of containment failure.

Wells are sampled either monthly or quarterly or another frequency as justified by the relative potential of the risk presented from the contained material. Calcium fluoride storage area wells were sampled on a quarterly basis, however, calcium fluoride was removed from basins and potential source material was eliminated. The final process basin wells (formerly PL-1, PL-3, PL-5, PL-8, and PL-11 with replacement wells PL-1A, PL-3A, PL-5A, PL-8A, and PL-11A) in Exhibit E-9 are sampled on a quarterly or other basis due to the relatively low concentrations of contaminants in the basins. Wells in other areas such as the basins at the waste treatment facility (WT-1, WT-2, WT-3, WT-4, WT-5, WT-6, WT-7 and WT-9) as shown in Exhibit E-10 were sampled monthly, however, with liquid and material removed, the sampling frequency was adjusted.

Surficial water-table aquifer monitoring well locations are shown in Exhibit E-5. The monitoring well locations surround each of the areas of interest and thus provide both upgradient and downgradient information. In the event the storage area or basin is a high point in the water table aquifer, the wells also provide sampling capability on multiple sides of the area.

E.22 Non-Radiological - WT Series Well Monitoring

These wells surround the waste treatment facility and associated basins (See Exhibit E-10). The samples from these wells were collected monthly and are analyzed for potential contaminants such as fluoride, ammonia, and nitrate. Also, the pH and total dissolved solids are determined to provide an additional check. As indicated above, calcium fluoride liquid and solids were removed from the basins. Solids and liquids were also removed from the nitrate basins.

E.23 Non-Radiological - CaF Series Well Monitoring

These wells surrounded an isolated former calcium fluoride storage area and were sampled on a quarterly basis. The samples were analyzed only for fluoride since it was the non-radiological potential contaminant present of concern. An analysis for total dissolved solids was also performed as an audit function. Calcium fluoride solids removal and relocation was initiated in 1996. This area has been given unconditional release status by NRC. Based on historical data, Wells CaF-1, CaF-3, and CaF-4 were sealed and removed in 1996 whereas Well CaF-2 was sealed and removed in 1997.

E.24 Non-Radiological - Z Series Well Monitoring (Until 1997)

These wells that surrounded an area formerly (1976 to 1982) used for storage of fixed zirconium sludge was removed from this area and disposed of off-site in the mid 1980's. The wells were sampled on a monthly basis. The samples were analyzed for potential contaminants, which are ammonia, nitrate, fluorides and zirconium. The pH and total dissolved solids were determined also for audit purposes. The wells were sealed and removed as of 1998. There has been no detectable contaminants observed from 1989 - 1997. The removal of the wells will not have a negative affect on the environmental program.

E.25 Non-Radiological - PL Series Well Monitoring

These wells surround the final process basin system, the former treated sanitary sludge land application area and selected former calcium fluoride sludge storage areas. The PL wells are sampled quarterly or twice per year. The analytical parameters of interest for this system are fluoride, nitrate, ammonia, pH, and total dissolved solids. The pH and total dissolved solids are also analyzed as typical groundwater parameters indicative of groundwater conditions.

E.26 Non-Radiological - Sanitary Treatment Facility and Other Site Well Monitoring

These wells surround the extended aeration facility utilized for treatment of sanitary wastes. The samples collected quarterly from these wells are analyzed for fecal coliform to provide an indication of containment failure.

A number of other wells exist on site either in the surficial water-table aquifer or in the principal aquifer and are shown in Exhibits E-5 and E-6, respectively. These wells are not necessarily used in the routine environmental monitoring program but are available for special studies, as needed, such as a hydraulic gradient determination, or special chemical species testing, or groundwater conditions indication.

E.27 Non-Radiological - Surface and Groundwater Monitoring

The pathway of concern for chemical contaminants to off-site water is via surface or groundwater. Area surface water monitoring has been conducted as part of the GNF-A Wilmington monitoring programs for the Northeast Cape Fear River and the local paper company. GNF-A either takes Northeast Cape Fear River samples or has the Lower Cape Fear River Program (administrated by University of North Carolina - Wilmington (UNCW) take samples under a NPDES permit condition for the permitee to perform or through a river coalition group.

Hydrogeological studies have established the hydraulic gradients for the water table and principal aquifers. Based upon several studies, the present on-site groundwater monitoring program is adequate to detect abnormal or adverse conditions. Such water-table aquifer and principal aquifer sampling programs provide sufficient information to give an early indication of the possibility of on-site migration prior to any potential movement toward off-site. Site boundary monitoring wells were added in the early 1990's as other conditions are studied or assessed.

E.28 Summary of Effluent and Environmental Monitoring Data and Interpretation

The data collected from the environmental monitoring programs for the 1995 - 2005 period are summarized in this section by the categories of radiological and non-radiological. The data and discussion are also subdivided into effluent monitoring (i.e. discharges) and environmental monitoring (i.e. local site geographical area) categories.

The bulk of the analytical data is summarized in a format that lists the annual average and the corresponding minimum and maximum values for each year. Less than values (e.g. < 0.02 ppm) were treated as a real number (i.e. 0.02 ppm) for averaging purposes. This procedure tends to bias averages in a conservative fashion (i.e. high). The effect of this conservative bias is amplified when conditions occur that interfere with an analysis and result in a higher detection limit for that particular sample (e.g. 1.2 ppm instead of 0.12 ppm). Such conditions could include the presence of a chemical that produces an analytical interference or the age of a sample in the case of a radiological analysis.

E.29 Radiological - Effluent Monitoring Results - To Atmosphere

The total gross alpha activity released during the period of 1995 – 2005 has ranged from 15 to ~200 microcuries per year. For reference purposes, 40 CFR 190 requires written reporting if gaseous effluent exceeds 1,250 microcuries per quarter (i.e. 5,000 microcuries per year). The highest value in the past 5 years was 23 microcuries per year which represents 0.5% of the reporting trigger value. The average gross alpha concentrations have varied from 0.004×10^{-12} to 0.057×10^{-12} μCi/cc. A conservative dilution factor of 100 at the site boundary decreases these values to well below the most conservative regulatory limit of 5×10^{-14} μCi/cc for U-234 (Class Y). (Reference Exhibit E-15 for data summary).

E.30 Radiological - Environmental Monitoring Results

All airborne discharges to the atmosphere from the controlled area stacks are sampled continuously to determine the uranium concentration in the exhaust air. The collection filter in the sample system is removed on either a daily or a weekly schedule and analyzed for gross alpha activity concentration.

The stacks that are sampled daily rather than weekly are selected on the basis of their past contribution to the total discharge. The daily stack sampling concept provides the basis for timely corrective actions where appropriate and is one of the program control elements used to maintain overall airborne emissions at a low level.

Results of the ambient air samples can be seen in Exhibit E-16. The Gross Alpha and uranium concentrations have remained at low levels.

E.31 Radiological - North Carolina Surveillance Program Results

The gross alpha activity concentration data from the GE Dock and the average of four (4) on-site ambient air sampling stations on the GNF-A Wilmington site are graphically presented in Exhibit E-17. The Exhibit shows that the average of on-site sampling data at GNF-A Wilmington is generally in the same range as the data obtained by State of North Carolina personnel at the GE Dock.

Activities at GNF-A Wilmington do not influence ambient air concentrations. Natural background levels and the data measured at the GE dock are similar.

Gross alpha activity concentration data from the State ambient air sampling station no. 11 (approximately one mile east of the fuel manufacturing facility) are summarized in graphic form in Exhibit E-18 to compare with the average data for the four on-site sampling stations. The data from these two locations are generally in the same range.

A summary of NCRP data from the analysis of surface water samples collected in the effluent channel and in the Northeast Cape Fear River is shown in Exhibit E-19.

A summary of NCRP data from the analysis of bottom sediment samples collected from the effluent channel and the Northeast Cape Fear River is shown in Exhibit E-20.

A summary of NCRP 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. Typical background levels reflect no impact for site operations.

E.32 Radiological - Effluent Monitoring - Final Process Basin Outfall

The total uranium concentration in the treated process wastewater ranged from < 0.02 ppm to a maximum of < 1.00 ppm during the 1995-2005 period. The average values were typically slightly above the detection level of 0.02 ppm Uranium. No adverse trend is observed relative to the 10 CFR 20 Appendix B annual average gross alpha value of 300 pCi/l or 3×10^{-7} μCi/cc. Reference Exhibit E-22 for summary of uranium, gross alpha and gross beta results. Non-detectable or trace concentrations of uranium in the treated liquid indicate no impact on the receiving river.

E.33 Radiological - Nitrate Shipment to Paper Manufacturer

The average uranium content in the nitrate shipments from 1995-2001 increased as nitrate liquid was not added and the residual liquid picked up some uranium from the bottom solids. The uranium concentrations, however, remained at relatively low levels. The alpha and beta activity has remained as low values and have fluctuated relative to the uranium concentrations. The activity has no significance in relation to any negative impact to the environment. Reference Exhibit E-23. As noted earlier, due to process changes, no shipments have occurred since 2001. There are no plans to resume shipments.

E.34 Radiological - Hydrofluoric Acid Shipments

Hydrofluoric acid has been shipped in the 1997- 2005 time period. Uranium concentrations in the shipments during this time period ranged from 0.21 ppm to 1.98 ppm which is well below the SNM License limit of 3 ppm. Reference Exhibit E-24 for data summary.

E.35 Radiological - Sanitary Waste Treatment Facility: Treated Effluent and Sludge to Land Application

The uranium concentration was less than the detection level of 0.02 ppm in the treated sanitary effluent during the 1995-2005 time period. The control program is considered adequate. Reference Exhibit E-25 for data summary.

The uranium concentrations in samples of the treated sanitary sludge applied to the soil in the land application area are summarized in Exhibit E-26. Sludge application to the soil in the land application area ceased February 17, 1995 with the addition of sludge drying capacity to the Sanitary Waste Treatment Facility. Sludge is now dried and shipped off-site. Monitoring for uranium is no longer necessary in this sanitary sludge area and has been discontinued as of 1997.

E.36 Radiological - Site Dam

The average uranium concentrations in the daily grab samples collected at the site dam have remained low. Recent values have been at or near the lower level of detection limit of 0.02 ppm. Low concentrations similar to the treated process wastewater effluent results confirm that there is not an impact from the liquids discharging from the site dam. Reference Exhibit E-27.

E.37 Radiological - Northeast Cape Fear River

A review of the data from upstream and downstream sampling locations indicates that no detectable uranium is in the river. One downstream value in 1995 is attributed to a sampling anomaly. Sampling for downstream after 1997 was conducted at the GE dock, which is located downstream, but closer to the site effluent channel than the prior Hilton Dock location which is further downstream. The change was for the revised SNM License and provided an easier to access and just as effective location. There have been no detectable results for the river. Therefore, there is no impact to the river from GNF-A operations. Reference Exhibit E-28.

E.38 Radiological - Groundwater Radiological Monitoring - Principal Aquifer: Uranium Concentrations and Gross Alpha and Gross Beta Activity Concentrations

Uranium was not detected in the inlet process supply water, process supply water wells WW-9A, WW-11, and WW-14, and the deep monitoring well MW-5C as shown in Exhibit E-29 in the 1995-2005 time period. Therefore, there is no indication of impact from ongoing operations.

Exhibit E-30 shows a summary of the data for process supply water wells in the principal aquifer. The gross alpha and beta values are at background levels and do not indicate any impact from ongoing operations. As of 1997, wells WW-11 and WW-14 are no longer required to be tested for gross alpha or gross beta if Uranium values at those locations are <0.02 ppm. Ongoing operations have not impacted the process water supply system.

E.39 Radiological - Water Table Aquifer: Final Process Basin (PL Series Wells): Uranium Concentrations and Gross Alpha and Gross Beta Activity Concentrations

Reference Exhibit E-31 for data summary. The Uranium concentrations of PL-1, PL-3, PL-5, PL-8, PL-13, PL-14, PL-15 and PL-1A, PL-3A, PL-5A, PL-8A, PL-11A, PL-13A, PL-14A, PL-15A ranged from less than detectable to a maximum of 10.8 ppm (PL-11A, 1995). From 1995 to 2005, the majority of the data reflects less than detectable values. PL-11A has values slightly above the detection level. Down gradient of PL-11A are wells CW-8A and PL-15A, which show no Uranium detections. Material with some Uranium was removed in the 1990's from this area.

Refer to Exhibit E-32 for data summary. The gross alpha and gross beta data remained low throughout the period with exception of PL-11A. Please see above narrative.

Wells PL-#A have been used to replace the old PL-# wells. The PL-# wells have been discontinued after 1996.

E.40 Radiological - Water Table Aquifer Waste Treatment Facility (WT Series Wells): Uranium Concentrations and Gross Alpha and Gross Beta Activity Concentrations

All results for the WT series wells were near or less than the detection level. Reference Exhibit E-33 for data summary. Uranium concentrations in well WT-1 continued a consistent trend from previous years. This consistent trend indicates a very limited rate of movement in the water table aquifer at this point. WT-1 is the only well with a consistently detectable level of uranium. The majority of the readings for the other wells were undetectable. With removal of liquids and solids from the fluoride and nitrate basins in the late 1990's, there is no source material near WT-1 except residual material from a spill in 1989 (previously documented in 1995 report).

The gross alpha and gross beta data remained low throughout the period. Reference Exhibit E-34 for data summary.

E.41 Radiological - Water Table Aquifer Former Zirconium Storage Area: Uranium Concentrations and Gross Alpha and Gross Beta Activity Concentrations

Wells ZC, ZD, ZE, ZG have been sealed and removed as of 1998. There have been no Uranium detectable levels found in these wells since 1986. This area was once used to store Zirconium Sludge. The material was removed, however, that practice was phased out and the area had 12 years without a detectable level before the wells where sealed and removed. This area does not contain any material, showed no continuing contamination, and is not considered a site requiring monitoring nor is it an area of any environmental concern. Reference Exhibits E-35 and E-36.

E.42 Radiological - Water Table Aquifer Calcium Fluoride Sludge Storage Area (CaF Series Wells): Uranium Concentrations and Gross Alpha and Gross Beta Activity Concentrations

Reference Exhibits E-37 and E-38. The removal and relocation of the solids from the former CaF_2 Sludge Storage Area initiated in 1996. This area has been given unconditional release status by NRC. Based on historical data, Wells CaF-1, CaF-3, and CaF-4 were sealed and removed in 1996 whereas Well CaF-2 was sealed and removed in 1997.

E.43 Radiological Area Monitoring: Soil Sampling: GNF-A Wilmington Site & Environs

Data summary is shown in Exhibit E-39 and sampling locations are shown in Exhibit E-13. Data for uranium concentrations in soil at off-site locations for the 1995-2005 period are consistent with prior years. These data represent background levels. During re-licensing in 1996, the locations to be sampled were reduced due to a consistent pattern of non-detectable values.

Samples from location 1A are from the sediment in the storm water channel draining the controlled access Fuel Manufacturing Operation area.

Sample site locations No. 20 and 21 were in the waste box storage pad areas. The corrective actions implemented in the storage pad areas since 1995 have maintained the level of Uranium concentrations. The volume of stored material has been reduced in the 1995 to 2005 time period and residual contamination in the area is from historic activity and has remained constant.

E.44 Radiological - Area Monitoring - Sediment Sampling in Effluent Channel

Reference Exhibit E-40 for data summary. During the time period from 1995 to 2005, the monitoring data have been relatively consistent with a range of 0.4 ppm through 5.9 ppm Uranium with relatively lower numbers toward the latter years. Included in the data from this time period are spike values, typical of particulate analysis associated with sampling of soils and/or sediment. The monitoring time periods following these spikes returned to the aforementioned relative consistent range. Monitoring from a location downstream of the dam (DD07), show one potential spike value with no correlation to the spike values at the dam. As shown in Exhibit E-27, the process effluent was not impacted by these events.

E.45 Radiological - Paper Manufacturer Waste Treatment Facility

The uranium concentrations in the sludge from four locations in the paper manufacturer waste treatment facility varied from 0.06 to 2.2 ppm. A lack of pattern is also evident in the variations in the gross alpha and gross beta activity concentrations both for the sludge samples and for the liquid samples. This is an expected operating range with no indication of an adverse trend being exhibited. Reference Exhibit E-41 for data summary. Sampling was discontinued after 2001 since nitrate liquid shipments were eliminated.

E.46 Non-Radiological Monitoring - Data Summary and Interpretation - Fluoride Discharges to Atmosphere

Fluoride releases from FMO are shown in Exhibit E-42 for the 1995-2005 time period. As a measure of material released from the FMO stacks, in 1995, the total amount discharged equates to about one sixth of an ounce per day. This amount is insignificant. Therefore, the FMO operations can be considered to have no adverse impact due to the fluoride discharge. It should be noted that ADU was shut down in 1996 & DCP started up. Also, the 2005 amount of Fluoride discharged was lower than the 1995 amount, which was deemed to be insignificant.

E.47 Non-Radiological Monitoring - Liquid Effluent - Final Process Basin Discharge

Reference Exhibit E-43 for data summary. The chemical constituents in the treated process wastewater during the period 1995-2005 are at concentrations equivalent to those previously reported for the 1983-1995 period. The moderate range of the fluctuations observed demonstrates the treatment process capability for producing uniform effluent quality.

The downward trend, in 2002 and 2003, for ammonia is due to the ADU to DCP process change, the improvements in process control in the manufacturing buildings and in the waste treatment facility, and improved environmental awareness throughout the site.

Exhibit E-44 shows the year-by-year test results. Effluent bio-monitoring has been conducted periodically at GNF-A Wilmington in past years, initially by the United States Environmental Protection Agency, in later years by the State of North Carolina, and then by GNF-A under the NPDES permit. Bio-monitoring is used to evaluate the effect of the effluent on standard test organisms. Such monitoring is useful in determining the effect of trace quantities of one material or the additive effect of two or more materials that could have a toxic effect on test organisms. "Pass" indicates acceptable effluent conditions and no toxicity in the discharge to the river. Chronic tests @ 9% concentration (Ceria Daphnia) are also conducted for internal process control purposes. Test results are favorable.

E.48 Non-Radiological - Liquid Effluent - Sanitary Waste Treatment Facility

Reference Exhibit E-45 for data summary. The data from treated sanitary waste samples fall within a range of values that indicates a stable, acceptable operation from 1995-2005. In 1995, two significant changes were implemented in the facility. One was the addition of sludge drying and the other was the addition of chlorination/dechlorination capability. These changes resulted in a BOD effluent discharge limit exceedence (daily maximum) in 4th quarter 1995 during the startup phase. Corrective actions were taken and improvements in process control with augmented sampling were completed. Results since 1995 have been declining and well within limits to the receiving waters.

E.49 Non-Radiological - Compliance with NPDES Permit Conditions

The effluent data for the treated process wastewater outfall and treated sanitary wastewater outfall are summarized to show effluent quality in terms of permit conditions (Reference Exhibits E-46 and 47). The treated process wastewater was within NPDES permit limits during the 1995-2005 time period with one exception in 2004. The one exception (2nd quarter, 2004) was failure of a whole effluent toxicity (WET) test on fathead minnows. The cause was abnormally elevated level of un-ionized ammonia in combination with pH. Process control improvements were initiated to minimize chances of reoccurrence. Tests conducted after this failure received acceptable "pass" results.

The sanitary plant has operated within permit limits consistently in the 1995-2005 time frame except for three instances. During 1995, an excursion of BOD occurred during the installation and startup of new disinfection equipment. During 1996, an upset condition due to a maintenance activity caused a slight excursion of the TSS value. Finally, during 2003, a grab pH sample was slightly below the minimum limit for less than one hour. In all three cases, corrective actions were implemented and parameters returned to lower, acceptable values (less than permit limits). No adverse environmental impact was observed due to these three events.

E.50 Non-Radiological - Nitrate Shipments to Local Paper Company

The reported values show that the trace constituents transferred to the local paper company are relatively constant. The ammonia present in the solution was of value as a nutrient in their biological treatment system and their system maintained the ability to utilize the nitrates in the solution. Shipments were discontinued as of September 2001. Reference Exhibit E-48.

E.51 Non-Radiological - Site Dam Outfall

The average concentrations at the site dam are similar to or slightly less than those at the final process basin outfall. Because the values at the dam are subject to other influence, e.g., runoff from rainwater and decay residues from humic materials in the soil, a one for one correlation with the basin outfall values is not expected. Concentration levels in the 1995-2005 period are similar to those levels from previous periods. Reference Exhibit E-49 for data summary.

E.52 Non-Radiological - Northeast Cape Fear River

Comparison of upstream and downstream concentrations for any parameter shows no impact in the river due to site activities. Data for various parameters tend to show typical characteristics of the river. Data variations are linked to tidal flows and other physical conditions of the river. Data is presented for the upstream, GE Dock, and downstream sampling locations in Exhibits E-50, E-51, and E-52, respectively.

After 1990, GE dock was used as the downstream location. The dock is located downstream and changing the location will not lessen the effectiveness of the sampling. A Six Sigma project was completed in 2002. Statistical analysis demonstrated no difference in upstream and downstream parameter levels and therefore, no impact of site effluent on the river.

E.53 Non-Radiological - Local Paper Company Treatment System

As shown in Exhibit E-4, the ammonia and nitrate concentrations are determined within (New Bay) and at the outfall (North Basin) of the local paper company's treatment system. These values were utilized by the paper company as one indication of the effectiveness of their system. The values in the summary reflects the good performance of the system and are as expected. The sampling program was discontinued since 1998. Reference Exhibit E-53 for data summary.

E.54 Non-Radiological - Site Forage (Grass)

Sampling for fluoride analysis for the amount in grass on site land continues. The two locations are at the Southeast and Northeast ambient air stations shown in Exhibit E-54. No fluoride accumulation is indicated in the data (Reference Exhibit E-55) since the results are at typical background levels.

E.55 Non-Radiological - Principal Aquifer

The data for the composition of the water in the principal aquifer are obtained by analyzing samples of the combined incoming flow from the supply wells. Reference Exhibit E-56 for data summary. The concentrations of impurities vary within expected ranges. Sampling from the combined inlet for the process supply wells for several parameters was eliminated due to dilution effects and due to the fact that process and potable water systems were divided into two separate systems.

Individual well sampling is conducted since it is more appropriate.

Water supply in wells WW-9A, WW-11, and WW-14, are closer in proximity to liquid storage and so these wells are sampled individually. Reference Exhibit E-57. The concentrations remain consistent and low throughout the 1995-2005 period. The most notable fluctuation occurred in WW-14 in 1999 at which time the maximum nitrate concentration was 24.15 ppm. The average concentration was 2.09 ppm during that year. The maximum nitrate concentration in the following year (2000) was much lower (0.20 ppm) and consistent with the rest of the time period.

E.56 Non-Radiological - Water-Table Aquifer - Waste Treatment Facility - WT Series Wells

Reference Exhibit E-58 for the data and Exhibit E-10 for the sampling locations map. The fluorides, pH, nitrate, and ammonia data in the WT wells were essentially at or near background levels during the 1995-2005 period except for WT-1 and in 2001, 2002 for WT-5. For WT-1, average Ammonia levels decreased to below detection levels during the later years. The average Nitrate levels also declined to near background levels for WT-1. This is attributed to the process change from ADU to DCP where the nitrate liquid wastestream was eliminated. The concentration of these constituents was at background for WT-1 until 1986. WT-1 apparently received external contamination in 1986 thus accounting for the high concentrations in that year. The contamination is thought to have occurred from ammonium fluoride wastewater entering the well as a result of a leak in an overhead pipe. Levels remain elevated as soil to groundwater ion exchange continues. Nitrate and Ammonia levels where found to be higher than normal in WT-5 in 2001 and 2002. In the years following 2002, the nitrate and ammonia concentration levels in these wells have returned to normal values. The fluoride basins were emptied of liquid and solids in the late 1990's, early 2000's. The east and west nitrate basin liquids and solids have been removed. The nitrate basins currently contain primarily rainwater.

It is noted that Well WT-9 was damaged by a hurricane, which occurred in 2001. WT-9 was abandoned and sealed, therefore no data is available after 2001.

E.57 Non-Radiological - Water Table Aquifer - Calcium Fluoride Storage Area – CaF Series Wells

As shown in Exhibit E-59, fluoride data results were not detectable. Relocation of the calcium fluoride solids from this area started in 1996. Based on historical data, Wells CaF-1, CaF-3, and CaF-4 were sealed and removed in 1996 whereas Well CaF-2 was sealed and removed in 1997.

E.58 Non-Radiological - Water-Table Aquifer - Former Zirconium Sludge Storage Area - Z Series Wells

Wells ZC, ZD, ZE, ZG were sealed and removed as of 1998. As shown in Exhibit E-60, there were no detectable fluoride levels found in these Wells. This area was formerly used to store Zirconium Sludge.

This area does not contain any material, showed no continuing contamination, and is not considered a site requiring monitoring nor is it an area of any environmental concern.

E.59 Non-Radiological - Water Table Aquifer - Final Process Basin Area - PL Series Wells

Reference Exhibit E-61. Nitrate concentrations in the PL series wells remain low. The PL series wells are within 50′ of the process basins as compared to a 500′ compliance boundary. Natural attenuation tends to reduce the nitrate levels.

Fluoride values in the PL series wells remain relatively stable and low in wells PL-1A, 3A, and 5A. Based upon the typically more mobile nitrate ions (relative to fluoride ions) in shallow groundwater as applied to site soil and hydrogeological conditions, fluoride levels are localized and don't represent a significant impact. For comparison purposes, fluoridated drinking water contains approximately 1 ppm fluoride. In 1995 and 1996 the PL# series wells were phased out and replaced by the PL#A wells. PL#A wells, as were the original monitoring wells, remain within the compliance exclusionary 500' boundary.

E.60 Non-Radiological - Water Table Aquifer - Sanitary Waste Treatment Facility - S Series Wells

Reference Exhibit E-62 for data summary. The monitoring data from the wells around this facility continue to show little or no continuous fecal coliform concentrations. Periodic spikes in the SW wells monitoring data have been associated with inadvertent sample contamination, due to the fact that the following wells sampling typically showed no significant colonies. During this period a repair was performed to the clarifier basin that potentially could be assigned to a higher than normal result. Overall, results are acceptable as no continuing unfavorable results are observed.

E.61 Radiological and Non-Radiological FX Series Wells

In addition to monitoring wells described in this supplement and in the 1989 Environmental Report, FX series monitoring wells were installed in an area just outside the Northwest part of the FMO/FMOX building. These wells are shown in Exhibit E-63.

The wells were installed after discovery of shallow groundwater contamination (uranium, nitrates, and fluorides) underneath a portion of the building in 1991. Liquids had seeped through a seam in the concrete floor in the 1970s and 1980s. The floor seams were fixed and soil was removed and shipped off-site for disposal. A horizontal shallow groundwater collection system was installed to contain contaminated groundwater to a localized area under the building. The horizontal collection system continues to collect shallow groundwater that was routed to the Uranium Recovery Unit until 2001 and thereafter to the Rad Waste System for processing. The contaminants were found to migrate little both horizontally and vertically due to the solid composition, i.e. clay. The contaminants were present only in the upper portion of the surficial (water table) aquifer. The aquifer conditions were determined by sampling the FX monitoring wells. FX wells in the lower portion of the surficial aquifer, as well as the principal aquifer, were found to have (and continue to show) only background levels of uranium, nitrates, and fluorides. Data demonstrating the above observations (for the upper surficial, lower surficial, and principal aquifer FX wells) are shown in Exhibits E-64, E-65, and E-66, respectively.

E.62 Radiological and Non-Radiological FW Series Wells

FW series monitoring wells were installed around the FMO & FCO buildings as shown in Exhibit E-67. Reference Exhibit E-69 for data summary. Results for uranium and fluorides were non-detectable during 1995-2005. Data for gross alpha, gross beta, nitrates, pH, ammonia, and total dissolved solids were within acceptable ranges.

E.63 Radiological and Non-Radiological CW Series Wells

CW series monitoring wells were installed at the 500' compliance boundary around the process basins and the Waste Treatment facility as shown in Exhibit E-68. Reference E-70 for data summary. During the 1995-2005 time period, uranium results remained below the detection limit with the exception of one result of 0.03 ppm in 3rd quarter 2002 for Well CW-7B that was slightly above the detection limit of 0.02 ppm. All subsequent results were below the detection limit. Data for gross alpha, gross beta, fluorides, nitrates, pH, and total dissolved solids were within acceptable ranges.

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SECTION F - EVALUATION OF POTENTIAL INCIDENTS

SECTION F - EVALUATION OF POTENTIAL INCIDENTS

No new potential incident scenarios have been introduced to the GNF-A Wilmington facility during the 1995-2005 time period different from those described in the 1996 Supplement to the Environmental Report. The environmental impact of a groundwater condition discovered in 1991 is discussed in Section E.61.

No chemical incidents related to special nuclear material have occurred at GNF-A Wilmington during the 1995-2005 time period that have adversely impacted the environment or human health.

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APPENDIX A

Exhibit A-1

History – GNF-A Wilmington

History of GNF-A Wilmington

1966	•	Wilmington Location Selected.
1967	•	Site Preparation Startup
1968	•	First Machining Operations - Zircalloy And Stainless Steel
1969	•	SNM License No. 1097 Issued
1973	•	Fuel Manufacturing Building Expansion
1976	•	SNM License No. 1097 Renewal
1981	•	Manufacture Of Aircraft Engine Components Initiated
1984	•	SNM License No. 1097 Renewal
1985	•	Additional Capability For Uranium Recovery From Wastes Operational
1989	•	SNM License No. 1097 Renewal
1994	•	Nuclear Fuel Engineering On-Site
1997	•	Dry Conversion Process (DCP) Started Up In Place Of Ammonium Diuranate (ADU) Process
1998	•	Liquid Waste Streams Reduced/Eliminated
2000	•	GE Joint Venture With Hitachi and Toshiba (Global Nuclear Fuel – Americas (GNF-A))
2003	•	GE Nuclear Energy (GENE) Headquarters Moved To Site
2005	•	Nuclear Parts Distribution Center From Vineland, NJ Moved To Site

GNF-A WILMINGTON

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APPENDIX B

Exhibit B-1
Plant Site-State & County Locations

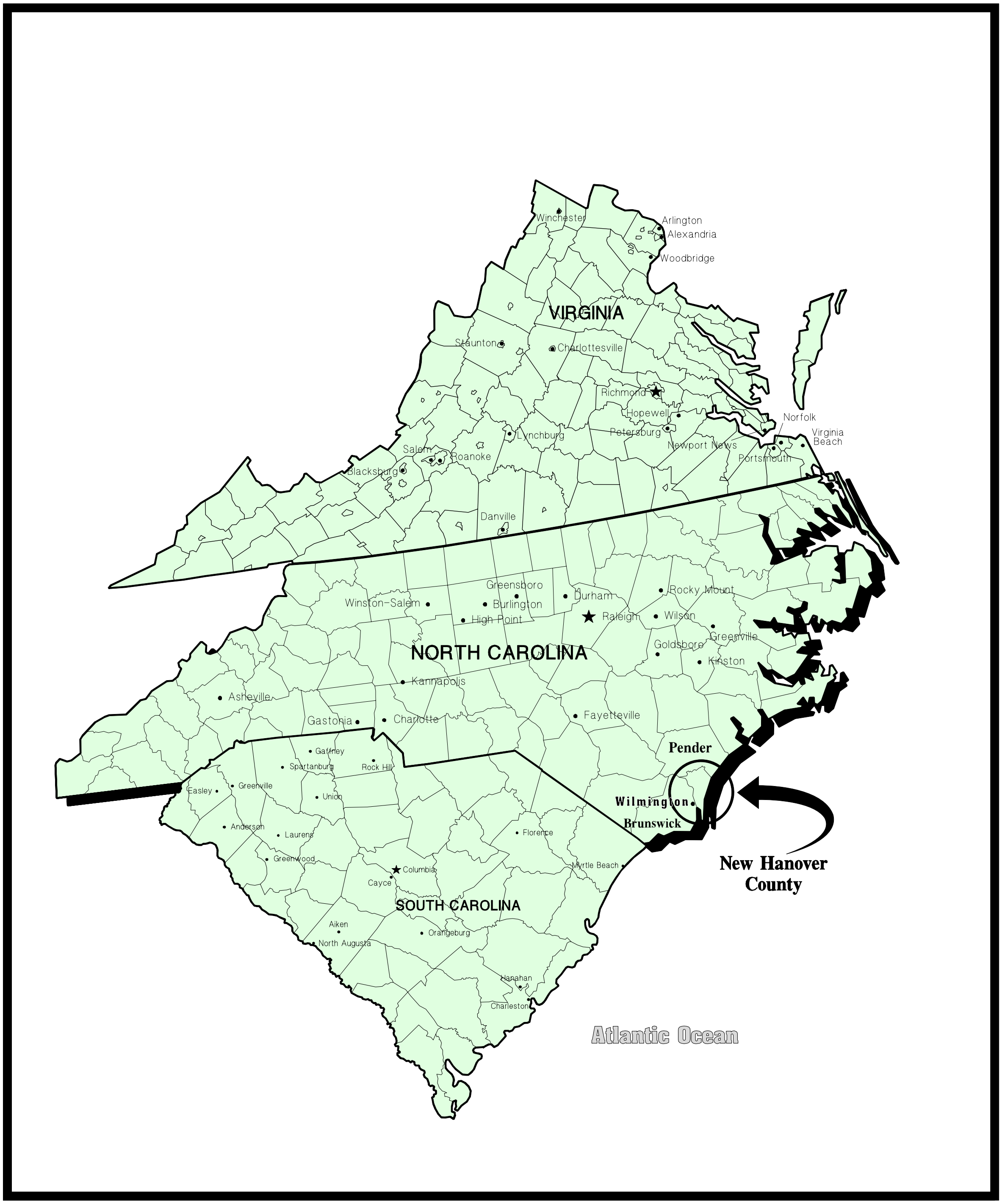


Exhibit B-2
Location of GNF-A Wilmington
New Hanover County
North Carolina

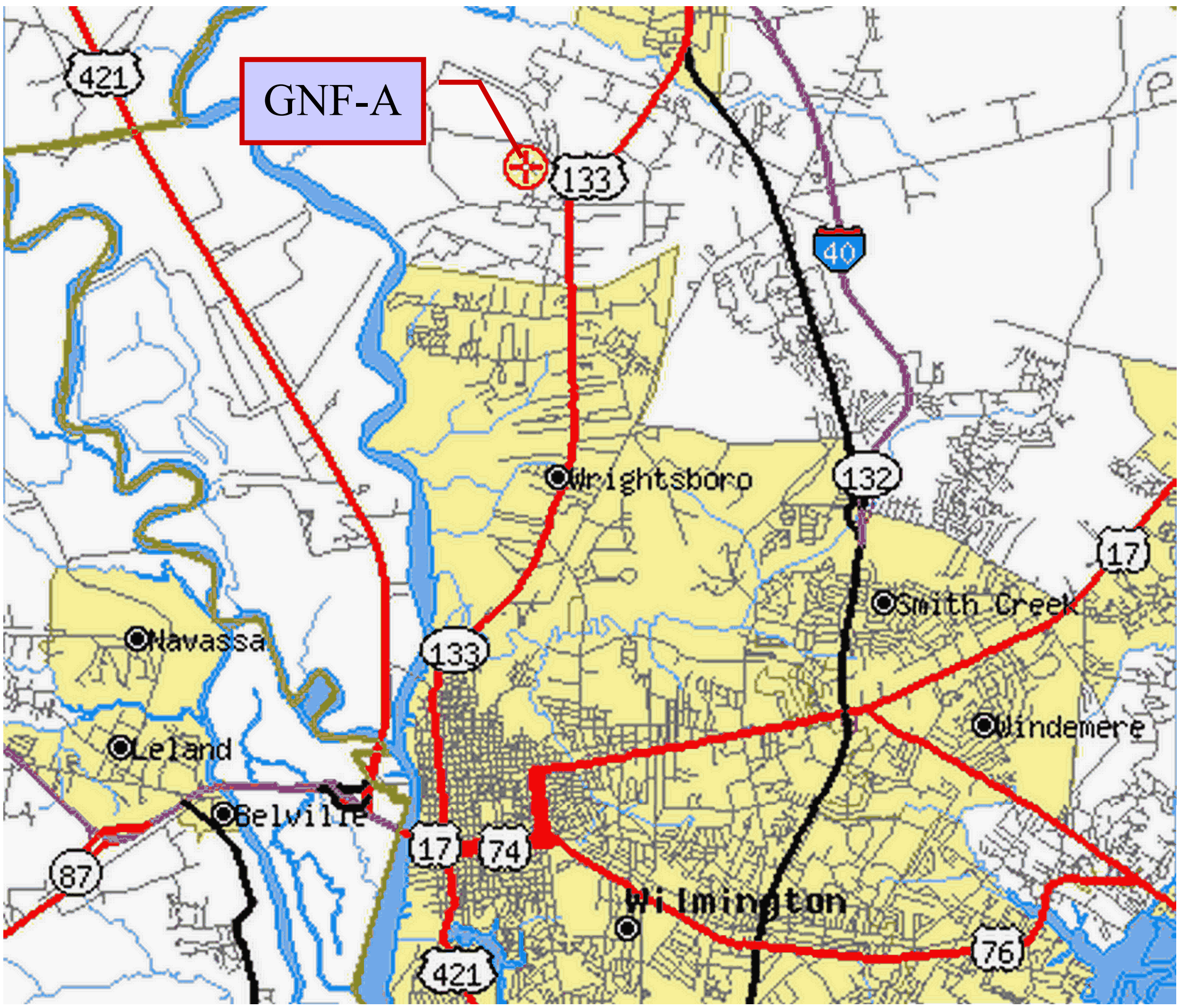
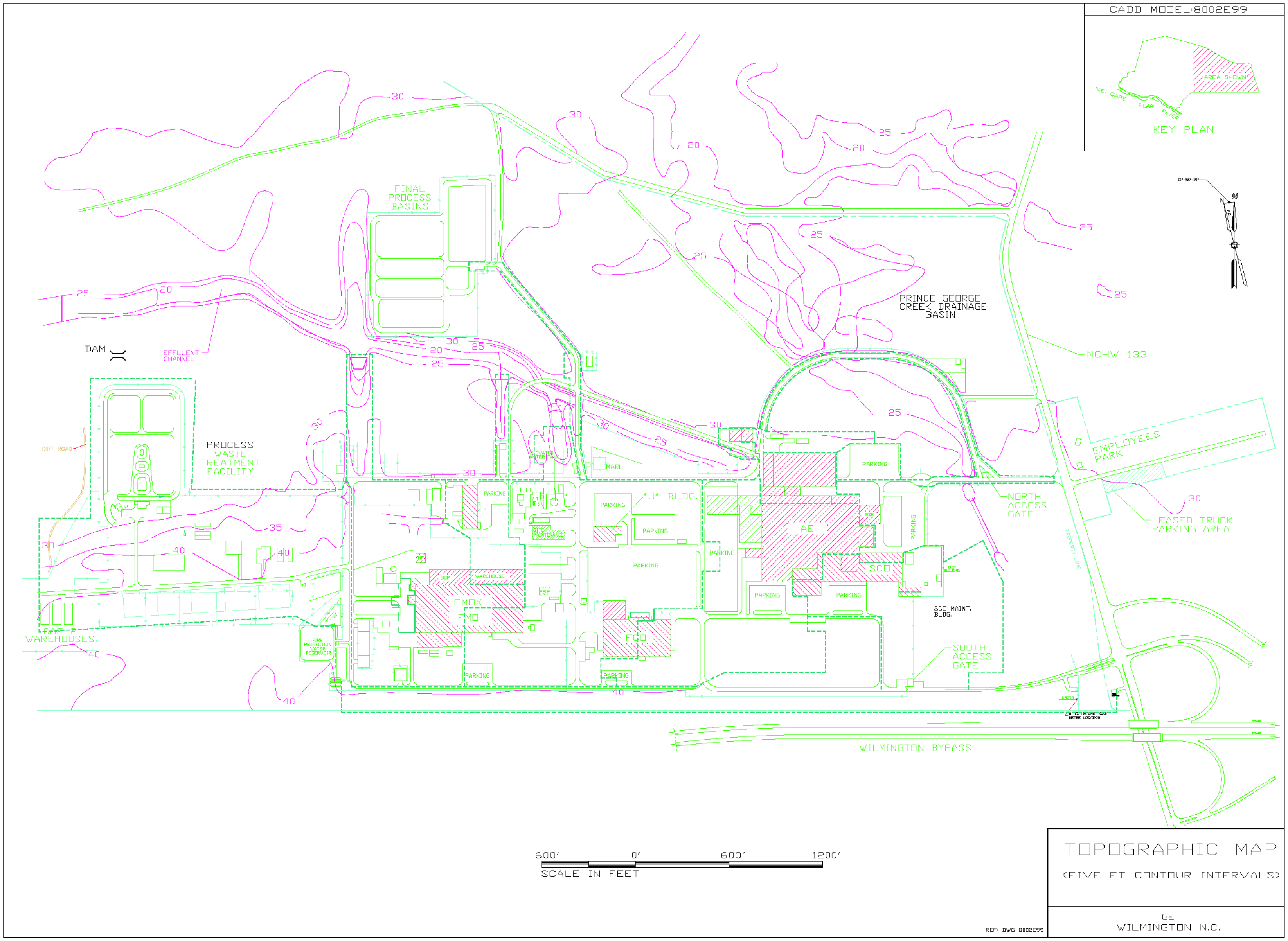
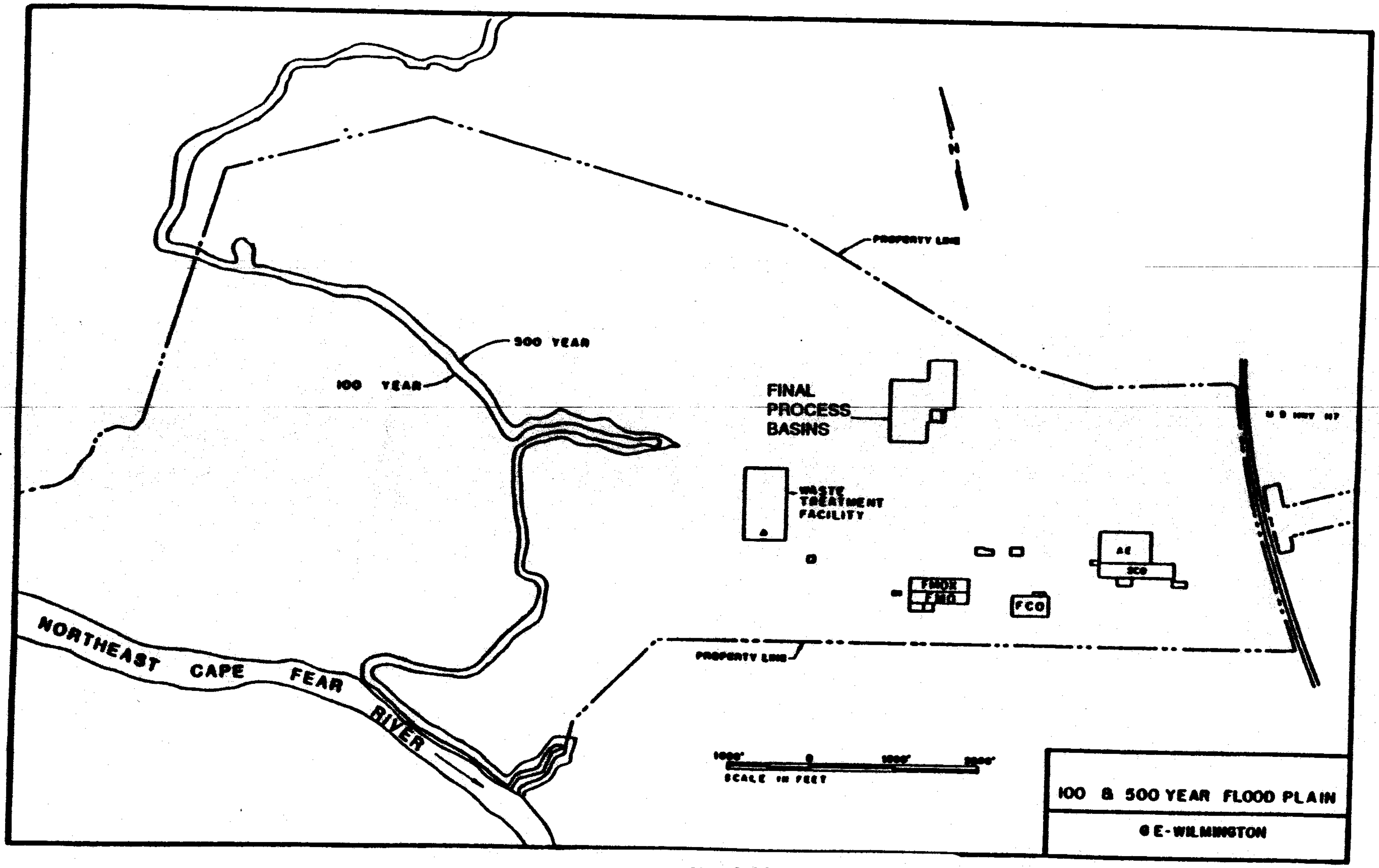


Exhibit B-3

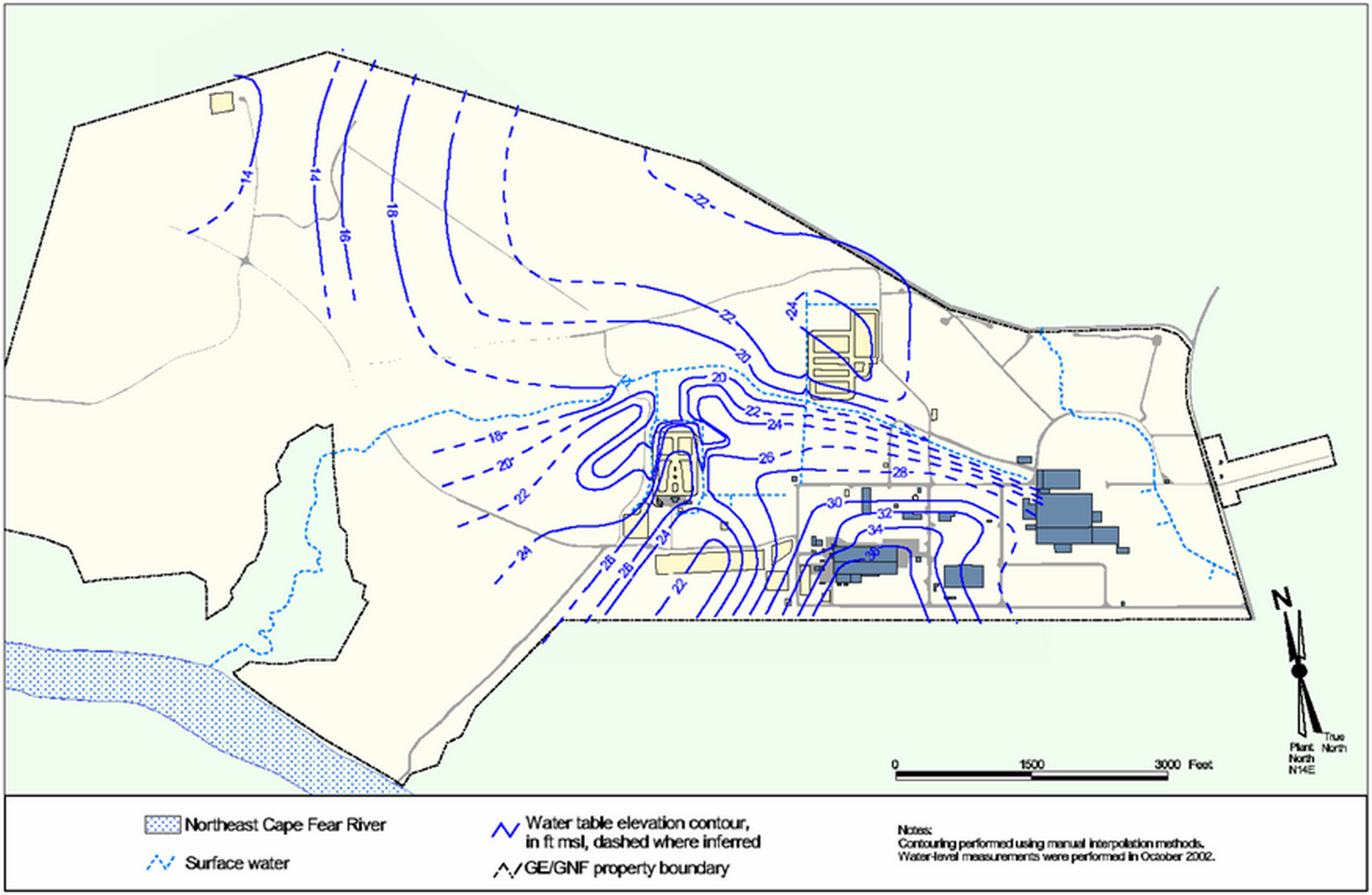

CADD MODEL:8002E99
KEY PLAN
AREA SHOWN
FINAL PROCESS BASINS
PRINCE GEORGE CREEK DRAINAGE BASIN
NCHW 133
EMPLOYEES PARK
LEASED TRUCK PARKING AREA
NORTH ACCESS GATE
DAM
EFFLUENT CHANNEL
PROCESS WASTE TREATMENT FACILITY
DIRT ROAD
WAREHOUSES
"J" BLDG
PARKING
AE
SCO
FMOX
FMO
FCO
SCO MAINT. BLDG.
SOUTH ACCESS GATE
WILMINGTON BYPASS
600' 0' 600' 1200'
SCALE IN FEET
TOPOGRAPHIC MAP
(FIVE FT CONTOUR INTERVALS)
GE
WILMINGTON N.C.
REF: DWG 8002E99



N
PROPERTY LINE
500 YEAR
100 YEAR
FINAL
PROCESS
BASINS
WASTE
TREATMENT
FACILITY
FCO
PROPERTY LINE
NORTHEAST CAPE FEAR RIVER
SCALE IN FEET
100 & 500 YEAR FLOOD PLAIN
G E-WILMINGTON

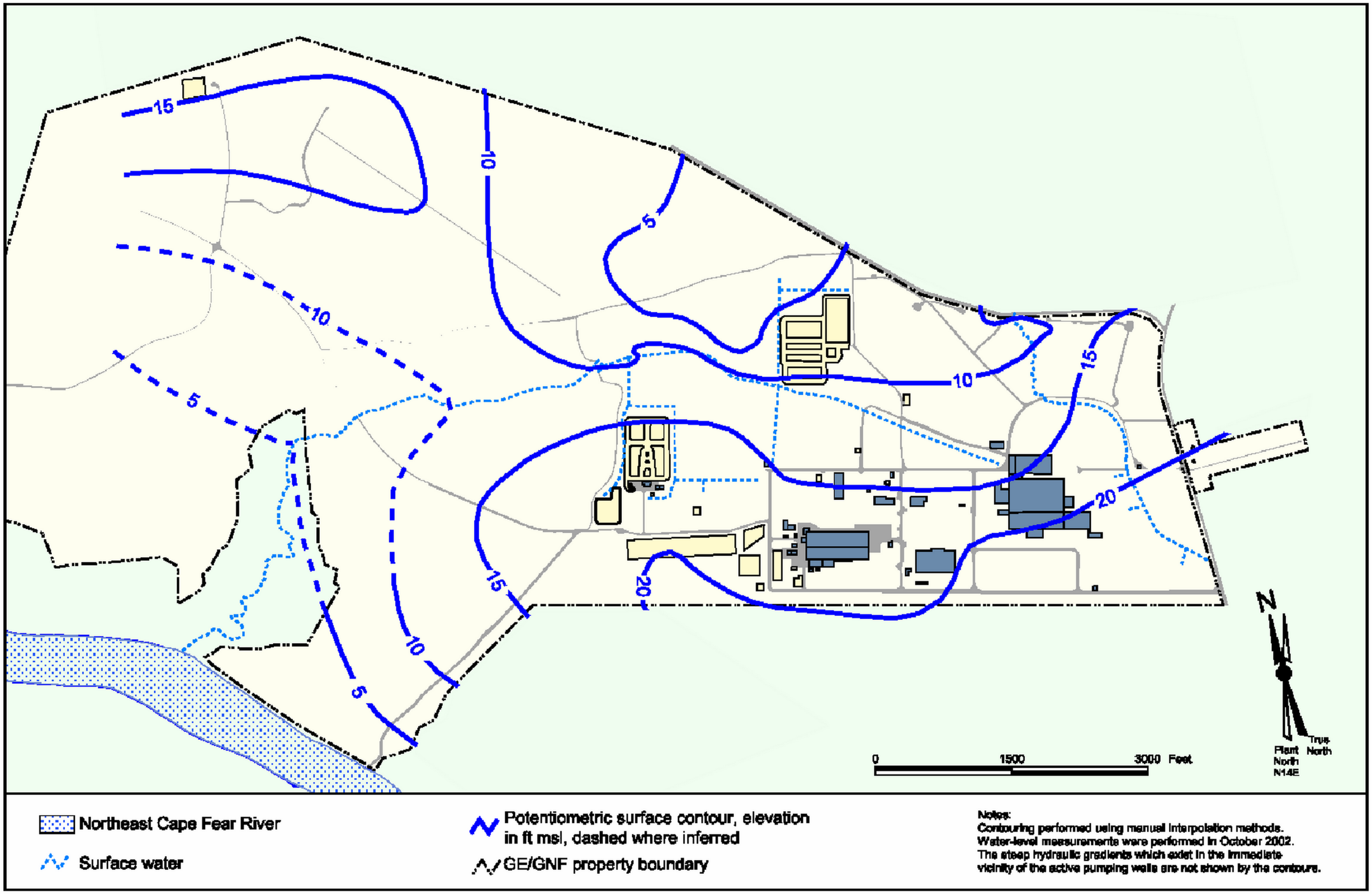
Exhibit B-4

Exhibit B-5



Generalized Water Table of Surficial Aquifer

Exhibit B-6



Generalized Potentiometric Surface of Principal Aquifer

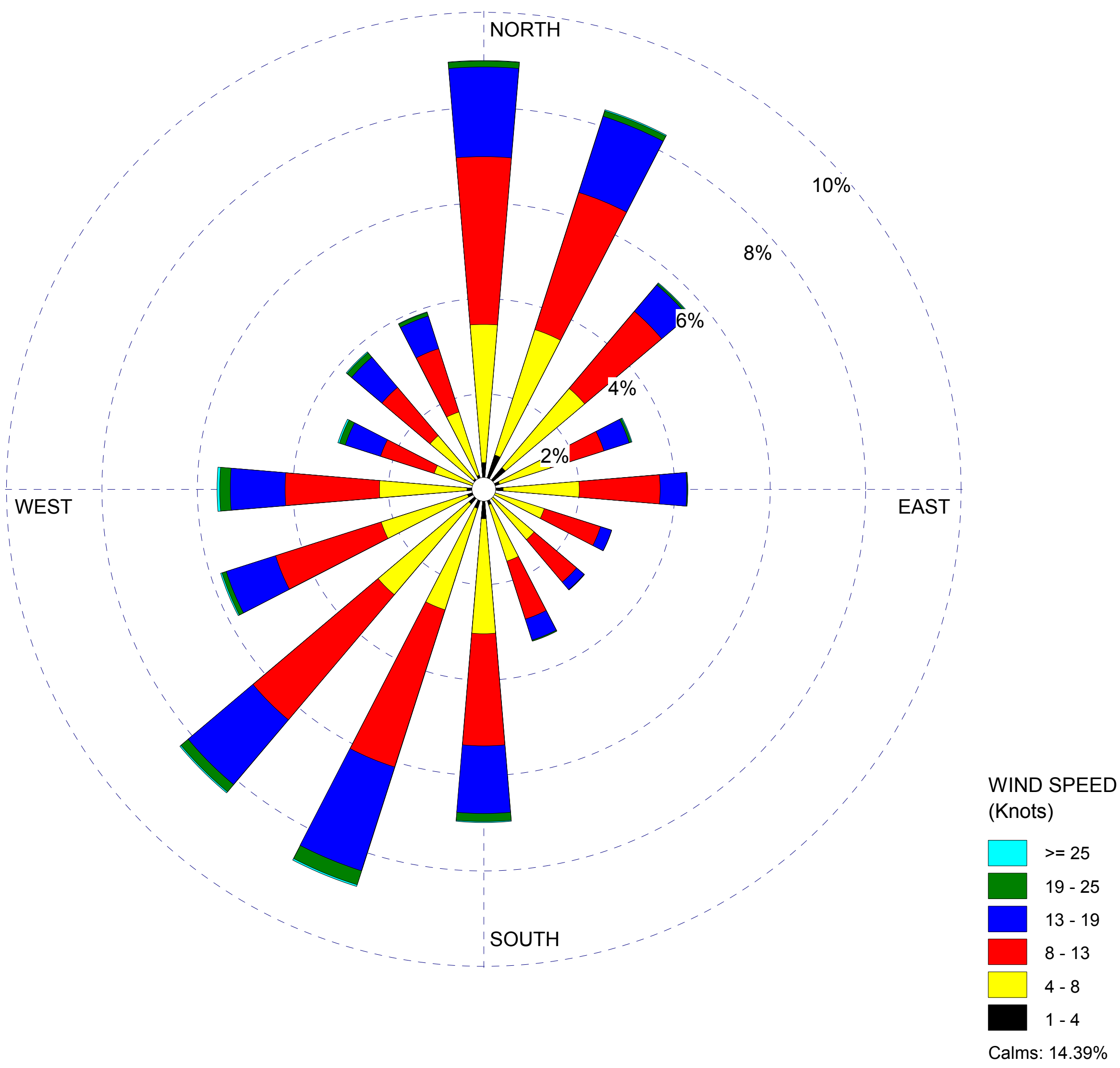
Exhibit B-7

WIND ROSE PLOT:

Station #13748 - WILMINGTON/NEW HANOVER COUNTY, NC

DISPLAY:

Wind Speed
Direction (blowing from)

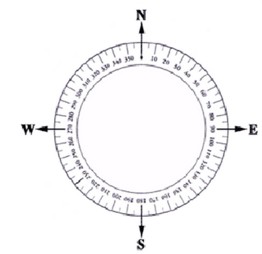


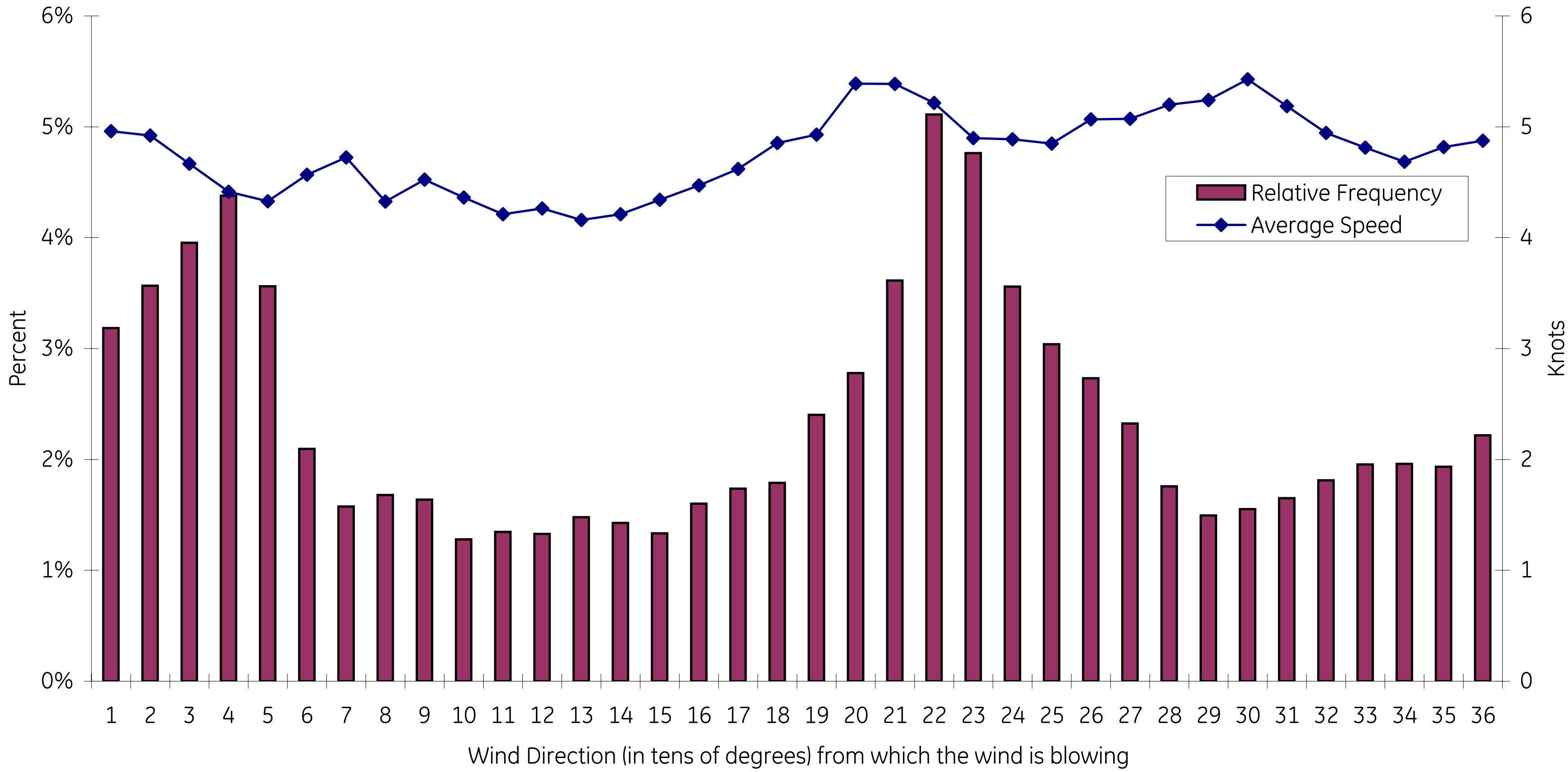
DATA PERIOD: **1994-2005** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME: **Global Nuclear Fuel Americas, LLC.**
CALM WINDS: **14.39%**	
AVG. WIND SPEED: **8.06 Knots**	DATE: **2/15/2007**

WRPLOT View - Lakes Environmental Software

Exhibit B-8

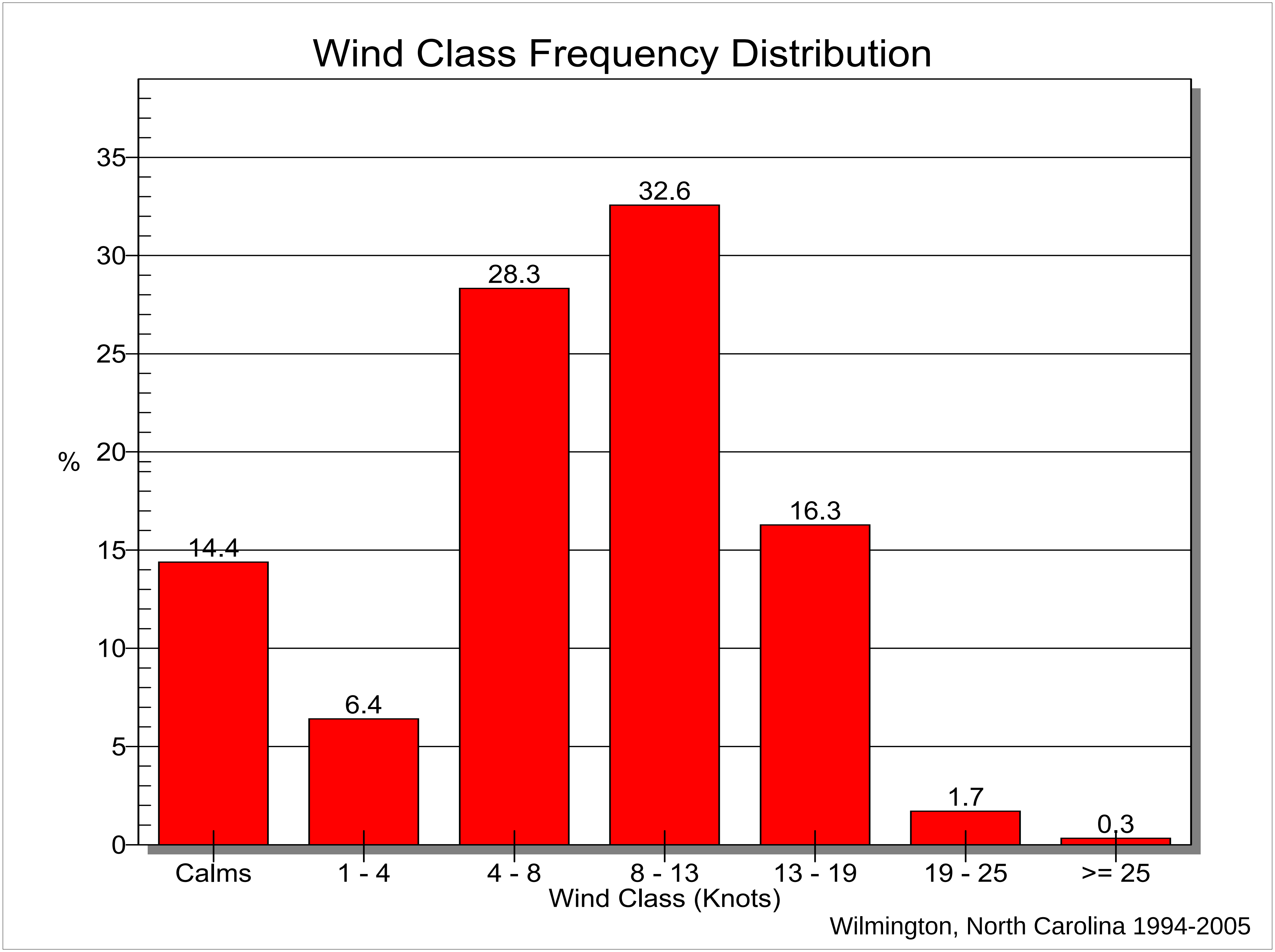
Relative Frequency Distribution of Wind Direction and Speed at Wilmington, North Carolina (1994-2005)





Source: NOAA National Climatic Data Center - Asheville, North Carolina

Exhibit B-9



WRPLOT View - Lakes Environmental Software

Exhibit B-10

Soil Sampling Locations

Soil Samples	
SL01	On Site. South Side of FMO Building. Sample Between Parking Lot and Building.
SL01A	On Site. Approximately 100' east of CP&L substation and 10' north of perimeter fence. Collect sample from bottom of stormwater ditch at a location within reaching distance from concrete retaining wall.
SL02	On Site. Entering the plant from the north highway entrance, the first road on the right. Sample east of the road near gate at the scrap yard. General vicinity of well #5.
SL03	On Site. East side of unpaved roadway to process lagoons at #1 water well. Sample near intersection with Thomas Edison.
SL04	Off-Site. Across NC Hwy 133 from GE Plant. North Carolina Horticulture Research Farm, edge of field east of office building.
*SL06	Off-Site. Go to end of Marathon Ave. that intersects with NC Hwy 133 at the location of St. Stainislaus Catholic Church, approximately 2.5 miles north of GE. Sample at the end of the paved road.
*SL11	Off-Site. South From GE take Rock Hill Road to Walnut Hill Development. Go to intersection of Rockhill Road and Reminisce Road. Turn left on Reminisce Road. Sample approximately 50 feet from the intersection on the east side of Reminisce Road

* State split samples

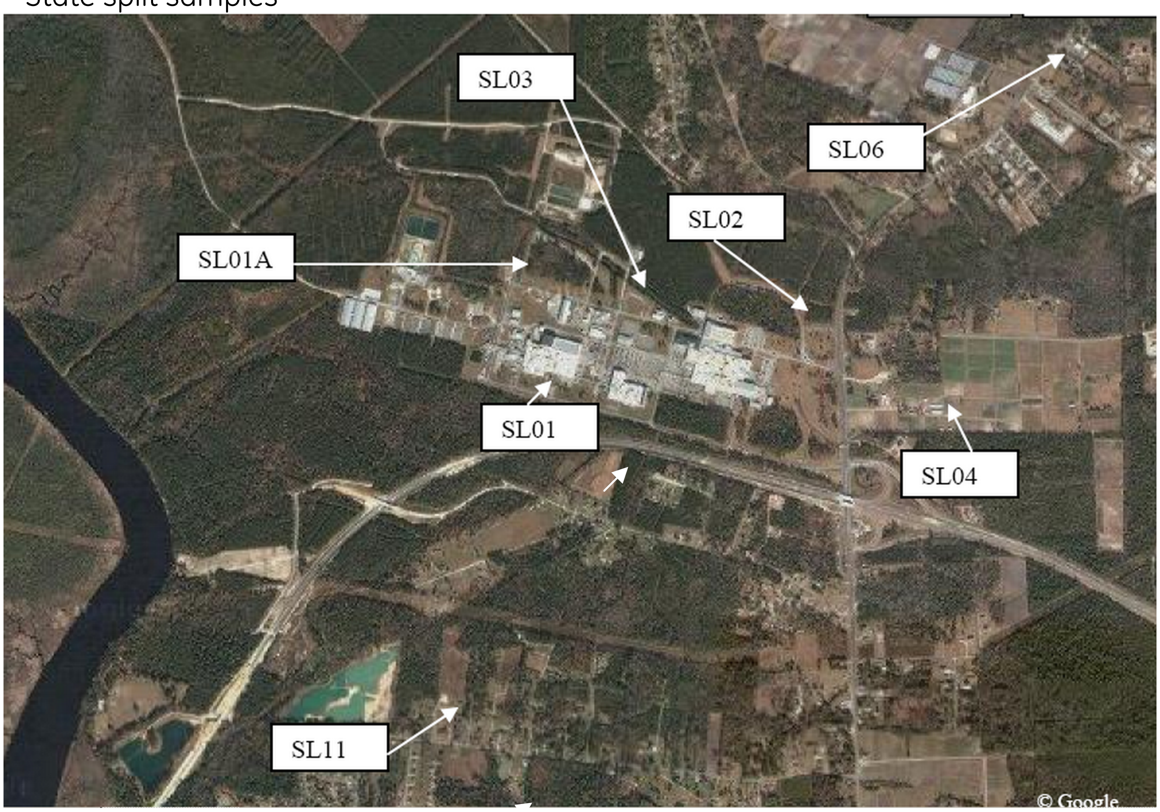


Exhibit B-10

(Page 2 of 3)

Locations of Ditch, Vegetation, Surface Water, and Sediment Sampling Sites

Ditch Samples	
DD05	On Site 10' Upstream of Site Dam, South Side
DD07	On Site Entrance to tidal swamp at bottom of stairs
Vegetation Samples	
*VG06	Off Site Go to end of Marathon Ave. that intersects with NC Hwy 133 at the location of St. Stainislaus Catholic Church, ~2.5 mi. north of GE. Sample at end of paved road.
*VG07	North end of Blue Clay Rd. area
*VG11	Off Site South from GE take Rockhill Road to Walnut Hill Development. Go to intersection of Rockhill Road and Reminisce Road. Turn left on Reminisce. Sample ~50 feet from the intersection on east side of Reminisce Road.
VG98	On Site At GE Ambient Air Station – AANE
VG99	On Site At GE Ambient Air Station – AASW
Surface Water Samples	
*UPST	Off Site Castle Hayne Boat Landing
*SDAM	On Site Downstream ~10ft of the Site Dam
*GEDK	On Site GE Dock –NE Cape Fear River
Sediment Samples	
*SD02	On Site 10' Upstream of Site Dam, South Side
*SD03	On Site GE Dock – NE Cape Fear River
*SD04	Off Site Castle Hayne Boat Landing

*State split sampling

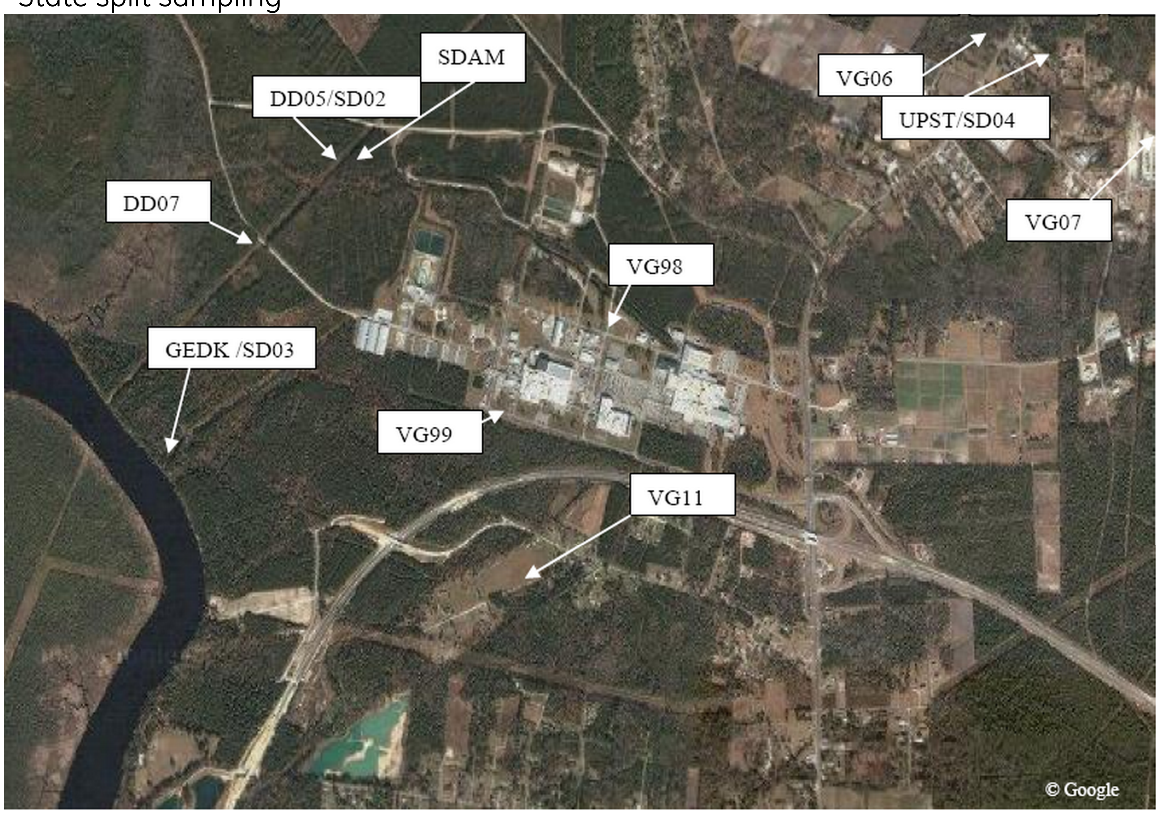


Exhibit B-10

(Page 3 of 3)

Ambient Air Sampling Sites

Ambient Air Samples		
1	AANE	On Site NE of FMO
2	AASE	On Site SE of FMO
*3	AASS	On Site South of FMO
4	AASW	On Site SW of FMO
*5	AADK	On Site GE dock on NE Cape Fear River
6	AAFE	On Site NE of FET

*State split sampling

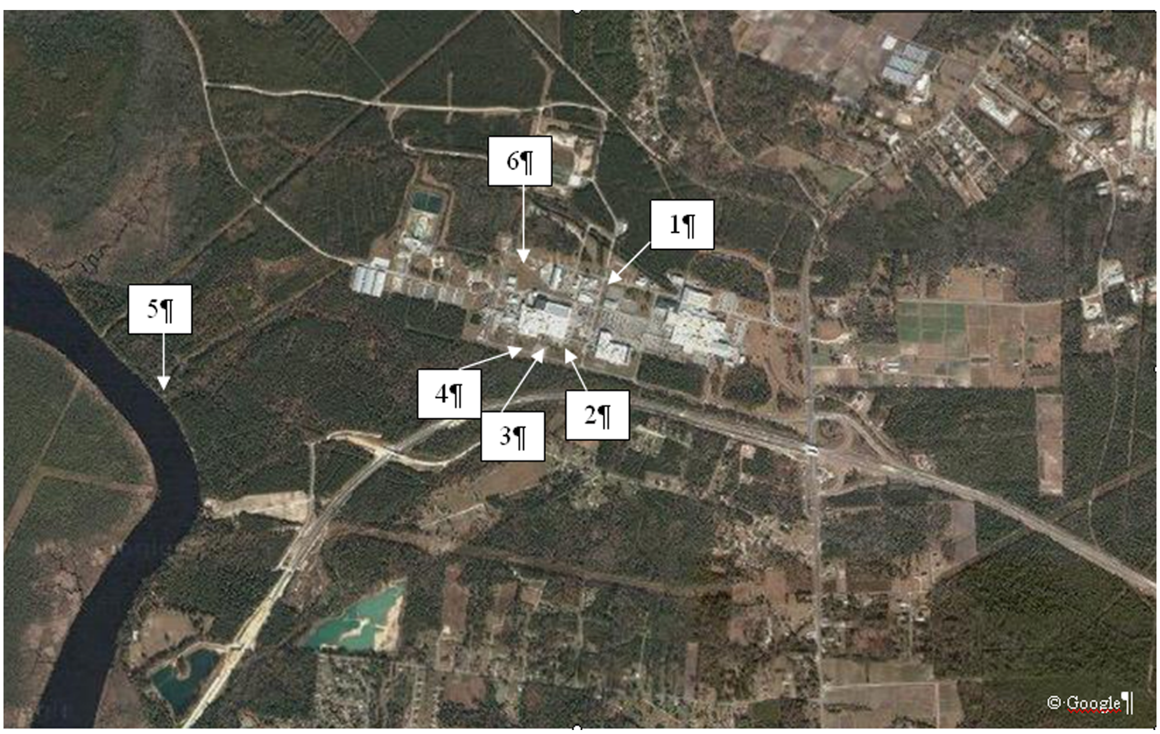
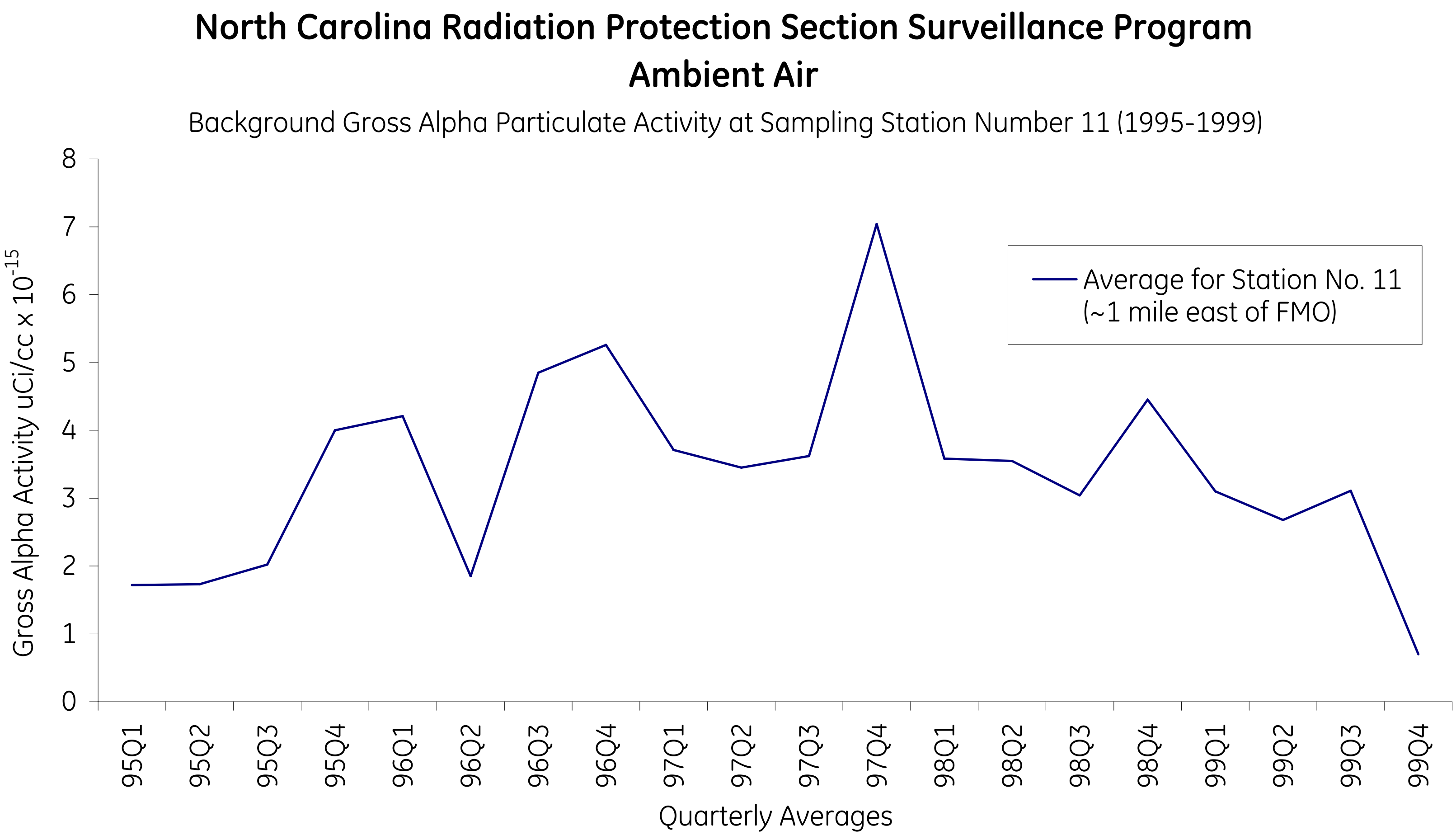


Exhibit B-11



Note: 2000-2005 data not provided by the State

Exhibit B-12

North Carolina Radiation Protection Section
Environmental Surveillance Program

Surface Water 16 Miles Upstream on NE Cape Fear River from GNF-A Wilmington
(Representative of Background)

Gross Alpha Activity Concentration (pCi/l)

Sample Date	Sampling Location UPST (Castle Hayne Boat Landing) See Exhibit B-12		
2-Mar-95	2.1	±	1.3
8-Jun-95	3.2	±	1.4
14-Sep-95	1.0	±	2.5
7-Dec-95	1.0	±	1.2
14-Mar-96	0.5	±	1.1
5-Jun-96	3.5	±	1.5
1-Aug-96	2.5	±	1.3
7-Nov-96	0.5	±	1.2
27-Mar-97	2.0	±	1.2
19-Jun-97	1.7	±	0.8
31-Jul-97	0.7	±	0.8
6-Nov-97	1.6	±	1.3
26-Mar-98	2.4	±	0.8
19-Jun-98	0.0	±	0.7
24-Jul-98	0.6	±	1.1
	0.5	±	0.8
15-Mar-99	1.0	±	1.1
7-Jun-99	0.5	±	1.4
2-Aug-99	0.8	±	0.6
8-Nov-99	2.6	±	0.9

Note: 2000-2005 Data not provided by the State

Exhibit B-13

North Carolina Radiation Protection Section
Environmental Surveillance Program

Groundwater

Gross Alpha Activity Concentration (pCi/l)

Sample Date	Process Supply Well 9
11-May-95	0.6 ± 1.1
7-Dec-95	0.0 ± 0.9
20-Jun-96	1.5 ± 0.9
26-Sep-96	0.5 ± 1.0
19-Jun-97	0.3 ± 1.0
11-Sep-97	0.8 ± 0.8
7-May-98	1.4 ± 1.1
22-Oct-98	0.6 ± 0.9
11-May-99	0.6 ± 1.1

Note: 2000-2005 Data not proveded by the State

Exhibit B-14

North Carolina Radiation Protection Section
Environmental Surveillance Program
(Representative of Background)

Soil Data

Gross Alpha Activity Concentration (pCi/gm-dry weight)

	Sampling Location Number (See Exhibit B-12)		
Sample Date	**SL11** Rockhill Rd	**SL06** Marathon Ave	**SL07** Blue Clay Rd. (East of GNF-A facility)
27-Apr-95	2.5 ± 3.4	6.7 ± 3.8	2.8 ± 1.5
12-Oct-95	7.7 ± 0.4	2.6 ± 1.9	9.7 ± 3.2
25-Apr-96	7.2 ± 1.8	2.3 ± 1.9	10.2 ± 2.2
29-Aug-96	8.9 ± 2.5	2.9 ± 1.4	11.6 ± 2.8
10-Apr-97	11.0 ± 2.0	2.1 ± 1.5	3.38 ± 1.7
27-Aug-97	7.3 ± 2.5	0.9 ± 1.4	0.0 ± 2.1
24-Apr-98	4.9 ± 2.5	0.7 ± 1.1	5.03 ± 1.5
13-Aug-98	13.0 ± 3.0	4.9 ± 2.1	3.49 ± 1.9
26-Apr-99	4.7 ± 2.1	0.0 ± 1.7	5.16 ± 1.8
16-Aug-99	2.9 ± 1.5	0.7 ± 0.7	5.54 ± 1.8

Note: 2000-2005 Data not provided by the State

GNF-A WILMINGTON

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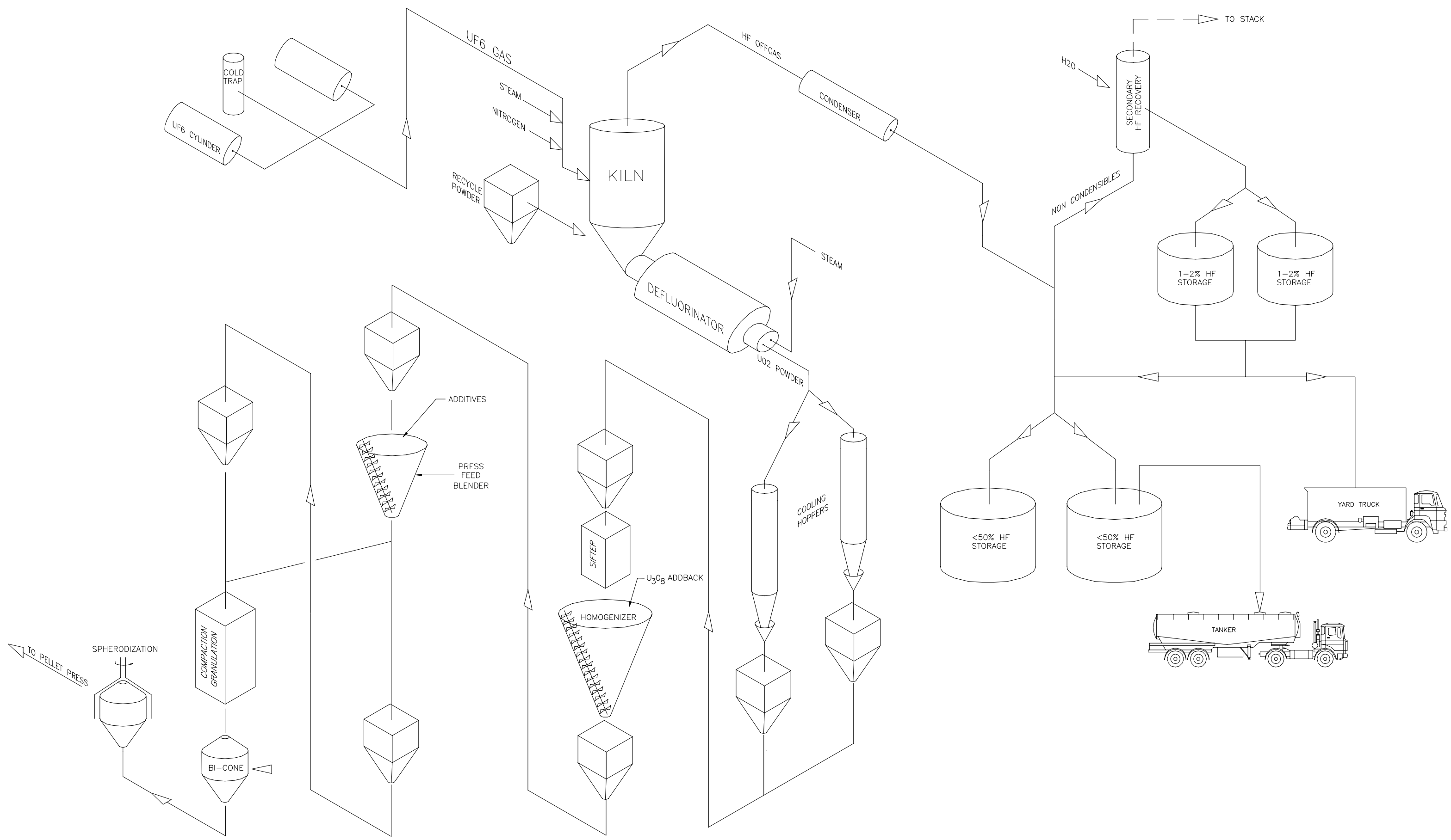
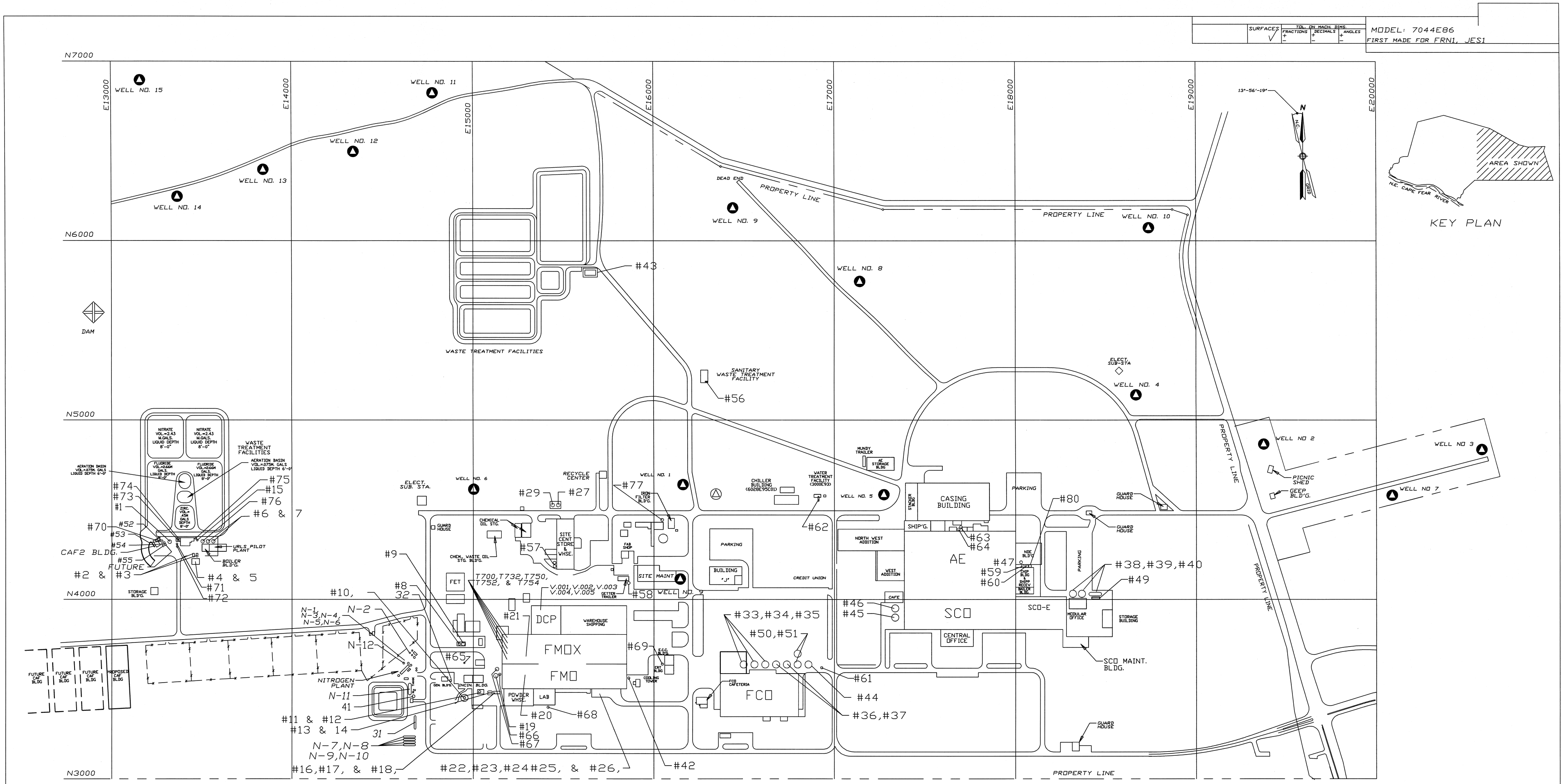
APPENDIX C

Exhibit C-1

DRY CONVERSION PROCESS SCHEMATIC





TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION	TANK NO#	TANK ID#	DESCRIPTION
1	-	CALCIUM HYDROXIDE TANK 150 TON VOL. (WASTE TREATMENT)	16	-	NITRIC ACID TK. 4,000 GAL. CAP. (12 NORMAL ACID) (WEST OF FMO)	31	-	LIQUID HYDROGEN TANK 14,000 GAL. CAP.I SOUTH EAST FIRE POND	46	-	ETCH ACID WASTE TK. 12,000 GAL. CAP. (WEST OF SCO BLD'G.) **NOT IN USE**	61	-	WASTE COOLANT TANK 6,000 GAL. NORTH OF FCO BADG	76	V-108	FLUORIDE WASTE TANK 100,000 GAL. WASTE TREATMENT **NOT IN USE**	91	N-6	LIQUID NITROGEN TANK 9,300 GAL NITROGEN PLANT
2	-	KEROSENE TANK 265 GAL. CAP. (WASTE TREATMENT **REMOVED**	17	-	NITRIC ACID TK. 1,000 GAL. CAP. (12 NORMAL ACID) (WEST OF FMO) **NOT IN USE**	32	-	#@ FUEL OIL SCAT TANK 1,000 GAL. CAP. [WASTE OIL] EAST PEAK GEN. BLD'G.	47	-	WASTE OIL/COOLANT TANK 5,000 GAL. CAP. (EAST OF SCO BLD'G.)	62	-	WATER TANK 6,000 GAL. (WATER TREATMENT)	77	-	SURGE TANK-FOR IRON FILTERS WEST OF IRON FILTER BLDG	92	N-7	GASEOUS NITROGEN TANK 30,000 GAL. NITROGEN PLANT
3	-	KEROSENE TANK 265 GAL. CAP. (WASTE TREATMEN **REMOVED**	18	-	NITRIC ACID TK. 1,000 GAL. CAP. (2 NORMAL ACID) (WEST OF FMO) **NOT IN USE**	33	-	DEGREASER TANK (NaOH) 2,255 GAL. CAP (NORTH FCO BLD'G.)	48	T-9961	(2) NaOH 120 GAL (FMO LOAD DOCK)	63	-	ETHYLENE GLYCOL TANK 3,550 GAL. NORTH OF AE BLDG	78	-	HNO/HF WASTE ACID TANK 8,400 GAL CAP. (NORTH OF FCO) (FUTURE)	93	N-8	GASEOUS NITROGEN TANK 30,000 GAL. NITROGEN PLANT
4	-	FUEL OIL TANK 20,000 GAL. CAP. (WASTE TREATMENT **REMOVED**	19	-	SALT BRINETANK 8,500 GAL. CAP. (WEST OF FMO)	34	-	SODIUM HYDROXIDE TANK 2,255 GAL. CAP. (NORTH FCO BLD'G.)	49	-	HELIUM TANK (SKID) 48,000 SCF (SCO EAST @ MODULAR OFFICE)	64	-	ETHYLENE GLYCOL TANK 3,550 GAL. NORTH OF AE BLDG	79	-	HNO/HF WASTE ACID TANK 8,400 GAL CAP. (NORTH OF FCO) (FUTURE)	94	N-9	GASEOUS NITROGEN TANK 30,000 GAL. NITROGEN PLANT
5	-	FUEL OIL TANK 20,000 GAL. CAP. (WASTE TREATMENT **REMOVED**	20	-	CAUSTIC TANK 7,500 GAL. CAP. (WEST OF FMO BLD'G.)	35	-	SODIUM HYDROXIDE TANK 5,700 GAL. CAP. (NORTH FCO BLD'G.)	50	-	HNO /HF WASTE ACID TANK 4,800 GAL. CAP. (NORTH OF FCO)	65	-	FUEL OIL DOUBLE WALLED TANK 500 GAL.,FEED TO DIESEL GEN. WEST OF FMO BLDG	80	V.001	HF TANK 5,284 GAL CAP FMO / DCP	95	N-10	GASEOUS NITROGEN TANK 30,000 GAL. NITROGEN PLANT
6	-	AMMONIA RECOVERY TANK 10,000 GAL. CAP. (AQUEOUS AMMONIA, WASTE TREAT.) **NOT IN USE**	21	-	(1) 150 GAL TK. OF HYPERSPERSE (ANTI-BACTERIAL AGENT) DIW FMO BLDG **REMOVED**	36	-	NITRIC ACID TANK 5,500 GAL. CAP. (NORTH FCO BLD'G.)	51	-	HNO /HF WASTE ACID TANK 4,800 GAL. CAP. (NORTH OF FCO)	66	V-106	FLUORIDE WASTE TANK 65,000 GAL. WEST OF FMO BLDG **NOT IN USE**	81	V.002	HF TANK 5,284 GAL CAP FMO / DCP	96	N-11	GASEOUS NITROGEN TANK 80,000 GAL. NITROGEN PLANT **REMOVED**
7	-	AMMONIA RECOVERY TANK 10,000 GAL. CAP. (AQUEOUS AMMONIA, WASTE TREAT.) **NOT IN USE**	22	-	(1) 150 GAL NAOH TANK PH ADJUSTMENT DIW FMO BLDG	37	-	HYDROFLUORIC ACID TANK 6,700 GAL. CAP. (NORTH FCO BLD'G.)	52	-	FLOURIDE WASTE TANK, 15,000 GAL (WASTE TREAT)	67	V-103	FLUORIDE WASTE TANK 20,000 GAL. WEST OF FMO BLDG	82	V.003	HF TANK 5,284 GAL CAP FMO / DCP	97	N-12	LIQUID OXYGEN TANK 1,500 GAL. NITROGEN PLANT
8	-	KEROSENE TANK 565 GAL. CAP. (WEST OF FMOX)	23	-	HELIUM TANK 50,000 SCF, (SOUTH EAST CORNER OF FMO) (SKID)	38	-	ARGON TANK 1,500 GAL. CAP. (SCO EAST)	53	V-700	ETCH ACID TANK, 10,300 GAL. CAP. (WASTE TREAT.) **NOT IN USE**	68	-	LIQUID NITROGEN TANK 150 GAL. SOUTH OF FMO	83	V.004	HF TANK 5,284 GAL CAP FMO / DCP	98	T-700	ALUMINUM NITRATE MAKE UP TANK 688 GAL. CAP. (FMOX UPMP AREA) **NOT IN USE**
9	-	#2 FUEL OIL TANK 20,000 GAL. CAP. (WEST OF FMOX)	24	-	ARGON TK. 9,000 GAL. CAP. (SOUTH EAST CORNER OF FMO)	39	-	NITROGEN TANK 1,600 GAL. CAP. (SCO EAST)	54	V-900	HF NEUTRALIZATION TANK, 12,000 GAL. CAP. (WASTE TREAT.)	69	-	LIQUID NITROGEN TANK 150 GAL. EAST OF FMO	84	V.005	HF TANK 500L CAP FMO / DCP	99	T-732	AMMONIUM BICARBONATE MAKE UP TANK 1,873 GAL. CAP. (FMOX UPMP AREA) **NOT IN USE**
10	-	AQUA AMMONIA TANK 23,210 GAL. CAP. (WEST OF FMO)	25	-	HELIUM TANK 175,000 SCF (SOUTH EAST CORNER OF FMO) (TRAILER)	40	-	ANHYDROUS AMMONIA TANK 500 GAL. CAP. (SCO EAST)	55	V-800	HF RECEIVING TANK, 5,000 GAL. CAP. (WASTE TREAT.)	70	V-501	CLARIFIEING TANK-FLUORIDE WASTE 18,000 GAL. WASTE TREATMENT	85		WASTE OIL / COOLANT TANK 10,000 GAL. DOUBLE WALLED EAST OF AE BLDG	100	T-750	SOLVENT SPIKE TANK 25 GAL. CAP. (FMOX UPMP ARE **NOT IN USE**
11	-	HYDROFLUORIC WASTE ACID TANK 17,000 GAL. CAP. (WEST OF FMO) **NOT IN USE**	26	-	HYDROGEN TK. 50,000 SCF (SOUTH EAST CORNER OF FMO/DCP)	41	-	DIESEL FUEL TANK 285 GAL. CAP. (FIRE POND)	56	-	PROPANE GAS TANK 500 GAL. CAP. (SANITARY WASTE TREATMENT) **REMOVED**	71	V-113	ETCH ACID TANK 8,000 GAL. WASTE TREATMENT **NOT IN USE**	86	N-1	GASEOUS NITROGEN TANK 102,000 GAL. NITROGEN PLANT **NOT IN USE**	101	T-752	SOLVENT STORAGE TANK-A 600 GAL. CAP. (FMOX UPMP ARE **NOT IN USE**
12	-	HYDROFLUORIC PROCESS ACID TANK 2,200 GAL. CAP. (WEST OF FMO) **NOT IN USE**	27	-	DIESEL FUEL 550 GAL. CAP. ABOVE GRADE CONTAINED (WAREHOUSE)	42	-	DIESEL FUEL 500 GAL. CAP. ABOVE GRADE (EAST END FMO) CONTAINED	57 A/B	-	PROPANE GAS TANKS (2) 150 GAL. CAP. EACH (WEST WAREHOUSE #79)	72	V-115	ETCH ACID TANK 10,000 GAL. WASTE TREATMENT **NOT IN USE**	87	N-2	GASEOUS NITROGEN RECEIVER 3,500 SCF NITROGEN PLANT **NOT IN USE**	102	T-754	SOLVENT STORAGE TANK-B 600 GAL. CAP. (FMOX UPMP ARE **NOT IN USE**
13	-	ANHYDROUS AMMONIA TANK 12,500 GAL. CAP. (WEST OF FMO) **NOT IN USE**	28	-	ALUMINUN SULFATE 2000 GAL. CAP. WASTE TREATMENT **NOT IN USE**	43	-	SULFURIC ACID TK. 8,500 GAL. CAP. (NORTH WASTE TREATMENT),CONTAINED	58	-	LIQUID ARGON TANK 500 GAL. CAP. (SOUTH SIDE GETTER SHOP)	73	V-109A	FLUORIDE WASTE TANK 20,000 GAL. **NOT IN USE** WASTE TREATMENT	88	N-3	GASEOUS NITROGEN 11,000 GAL NITROGEN PLANT **REMOVED**	103	-	
14	-	ANHYDROUS AMMONIA TANK 12,500 GAL. CAP. (WEST OF FMO) **NOT IN USE**	29	-	NO-LEAD GASOLINE TANK 4,000 GAL. CAP., ABOVE GRADE, (WHSE),CONTAINED	44	-	WASTE COOLANT TANK 14,000 GAL. CAP. (NORTH FCO BLD'G.)	59	-	WASTE OIL / COOLANT TANK 6,000 GAL. DOUBLE WALLED EAST OF AE BLDG	74	V-109B	FLUORIDE WASTE TANK 20,000 GAL. **NOT IN USE** WASTE TREATMENT	89	N-4	GASEOUS NITROGEN TANK 30,000 GAL NITROGEN PLANT **REMOVED**	104	-	
15	-	H_2O STORAGE TANK 1,140 GAL. CAP. (WASTE TREAT.)	30	-	SULFURIC ACID 2050 GAL. CAP. WASTE TREATMENT	45	-	PENETRANT WASTE TANK 20,000 GAL. CAP. (WEST OF SCO BLD'G.)	60	-	WASTE OIL /COOLANT TANK 5,000 GAL. EAST OF AE BLDG	75	V-104	NITRIC WASTE TANK 20,000 GAL. WASTE TREATMENT	90	N-5	LIQUID NITROGEN TANK 9,300 GAL. NITROGEN PLANT	105	-	

EXHIBIT C-2

SYM	DESCRIPTION	BY	FOR	DATE
16	ADDED TANK ID	GSG	H.S.	2/10/05
15	UPDATED SITE TANK STATUS	GSG	H.S.	1/31/05
14	REVISED LAGOONS TO AS BUILT	GSG	H.S.	5/10/04
13	GENERAL REVISION	JFM	M.A.	1/23/01
12	GENERAL REVISION	V.S.M.	D.B.	5/28/98
11	ADDED ITEMS #49,56,57,58	V.S.M.	T.G.B.	2/24/98
10	GENERAL REVISION	JFM	IK	4/23/97
9	PLANT SITE LAYOUT AS BUILT	JFM	JFM	9/3/96
8	ENLARGED DESCRIPTION CHARTS	JFM	G.S.	4/19/96
7	REMOVE TANKS N-11,N-12 REMOVE WELL LOCATIONS	AD	G.S.	3/7/96
6	UPDATED TO AS-BUILT	JFM	T.B.	10/7/92
5	UPDATED TO AS-BUILT	AD	HS	5/1/91
4	GENERAL REVISION	JFM	T.B.	4/11/90
3	GENERAL REVISION	RKW	T.B.	12/22/87

REVISIONS

PLANT SITE
BULK STORAGE TANK
LOCATION'S

WMD- SITE DIV.OR DEPT. 7044E86C01
MADE BY JESSE MINTZ
CONT ON SHEET SH NO.

Exhibit C-3A

GEAE / GNF-A Wilmington Site Liquid Effluent Flow

1996

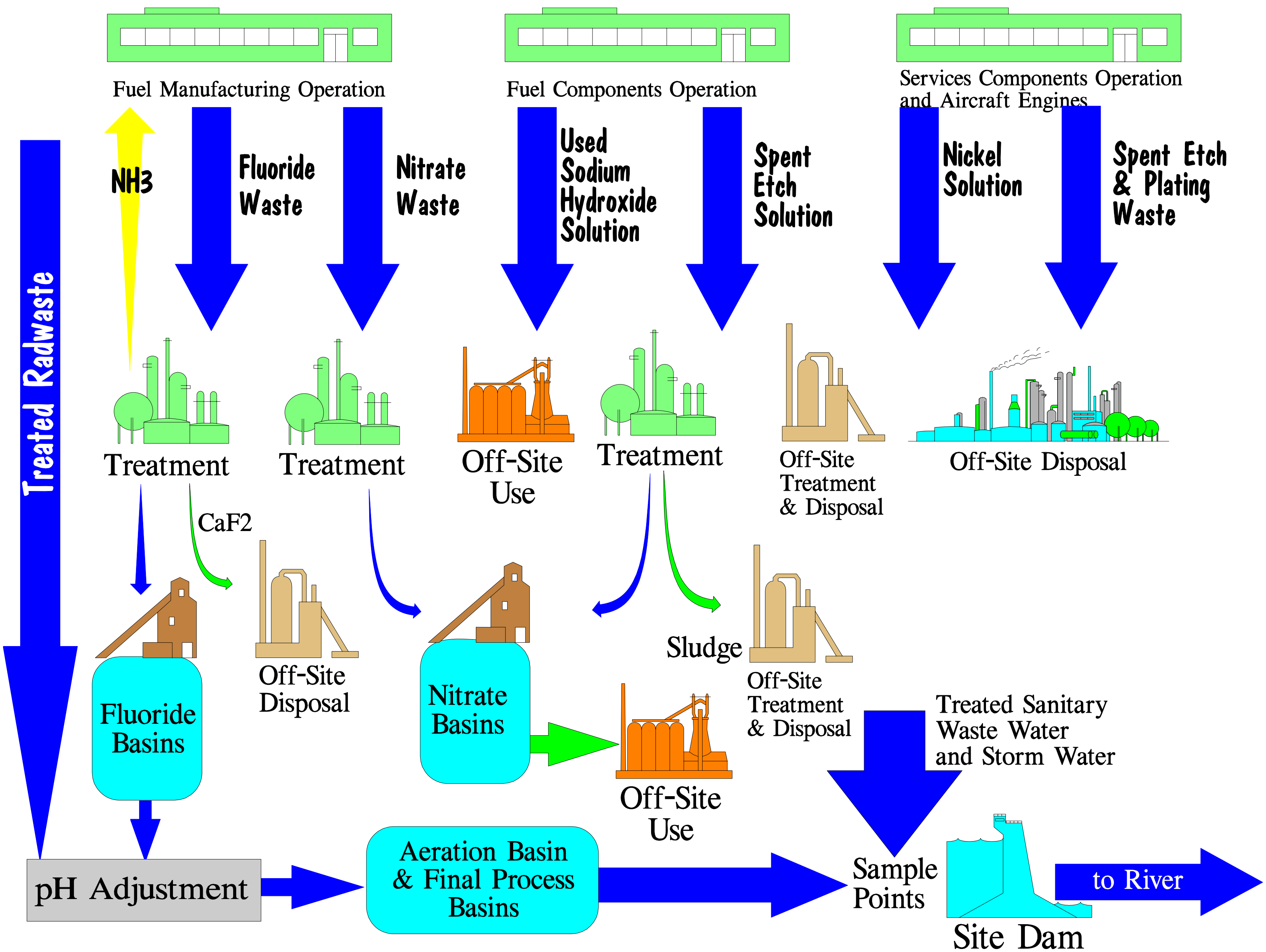


Exhibit C-3B GEAE / GNF-A Wilmington Site 2005

Liquid Effluent Flow

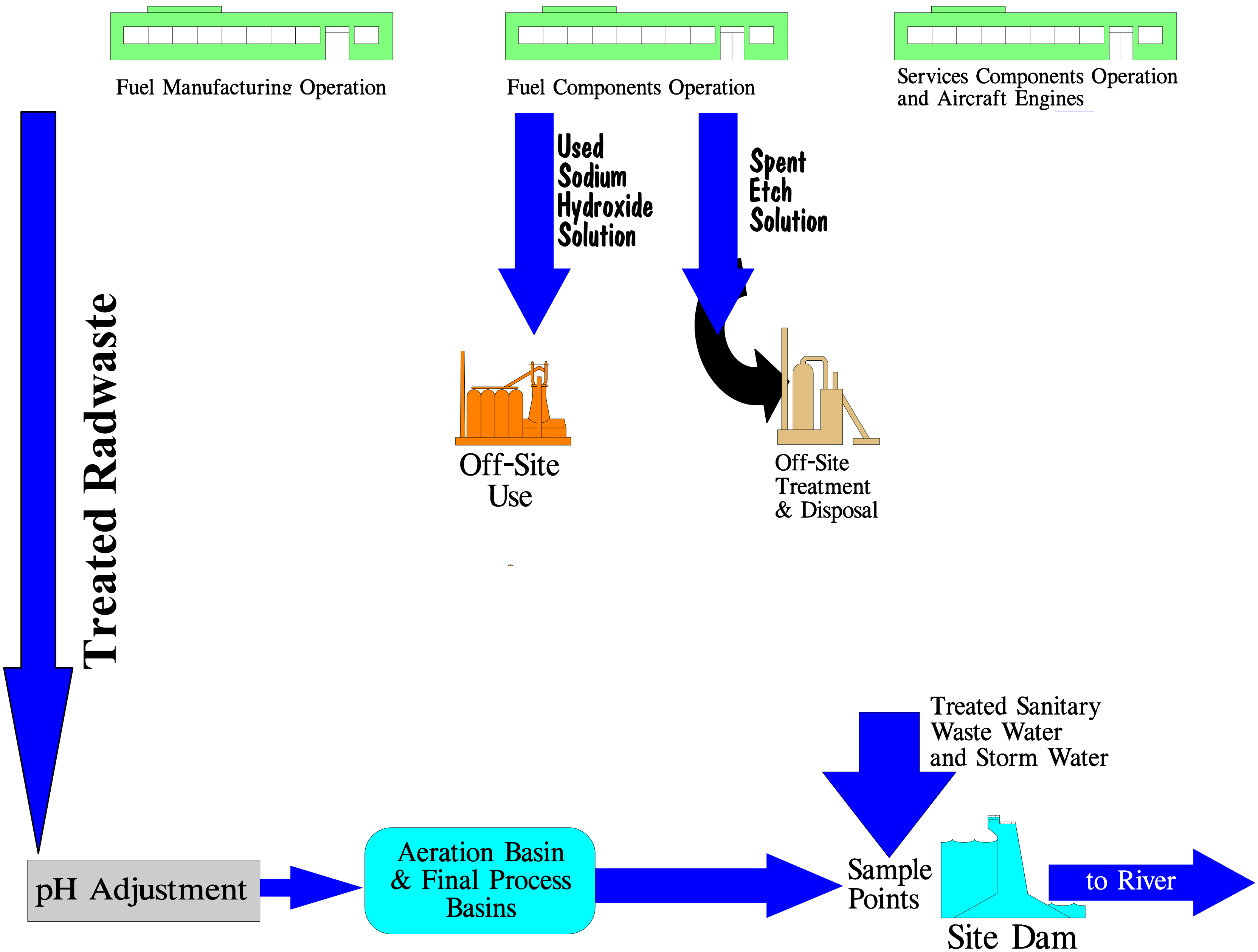


Exhibit C-4

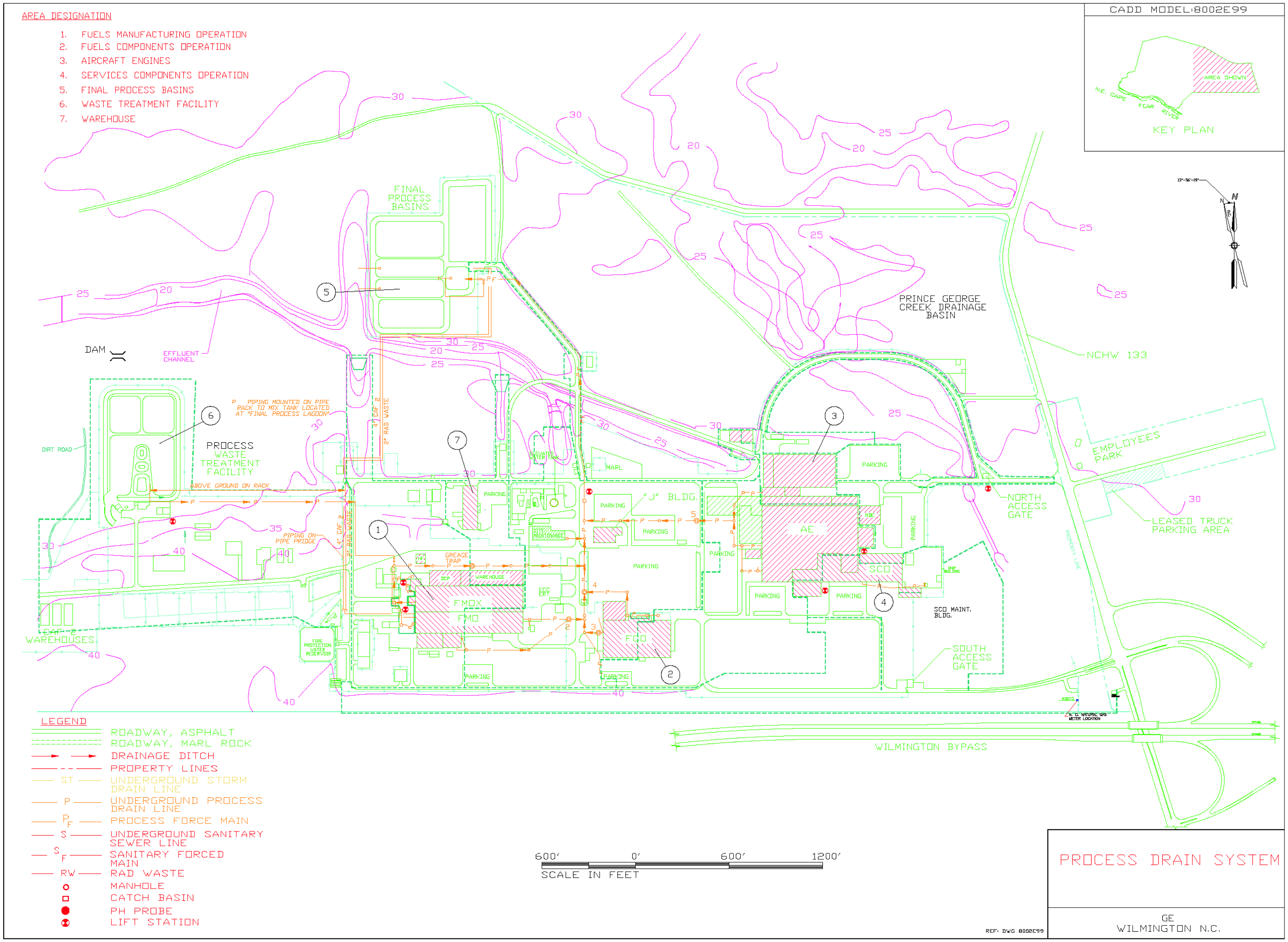
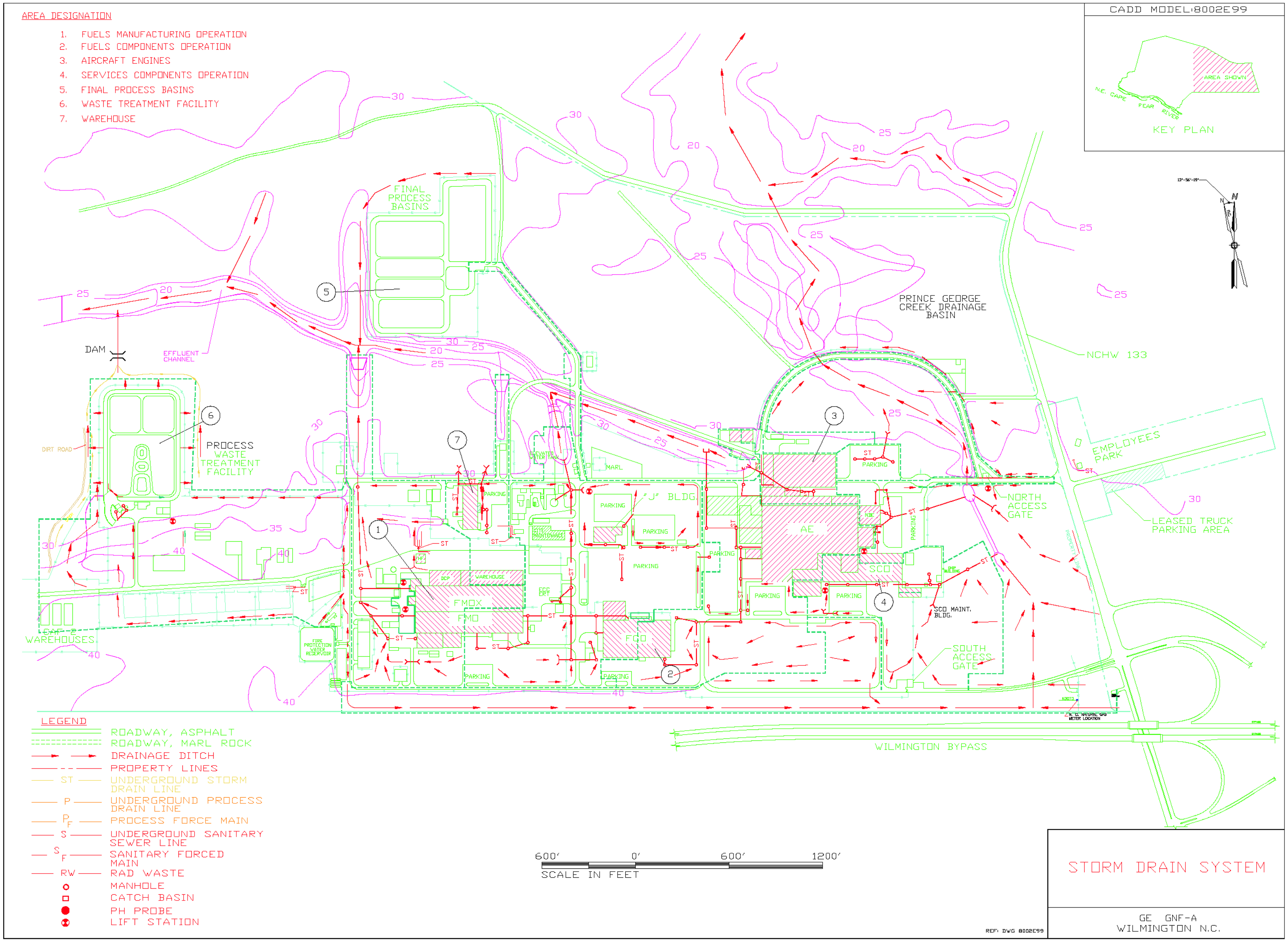
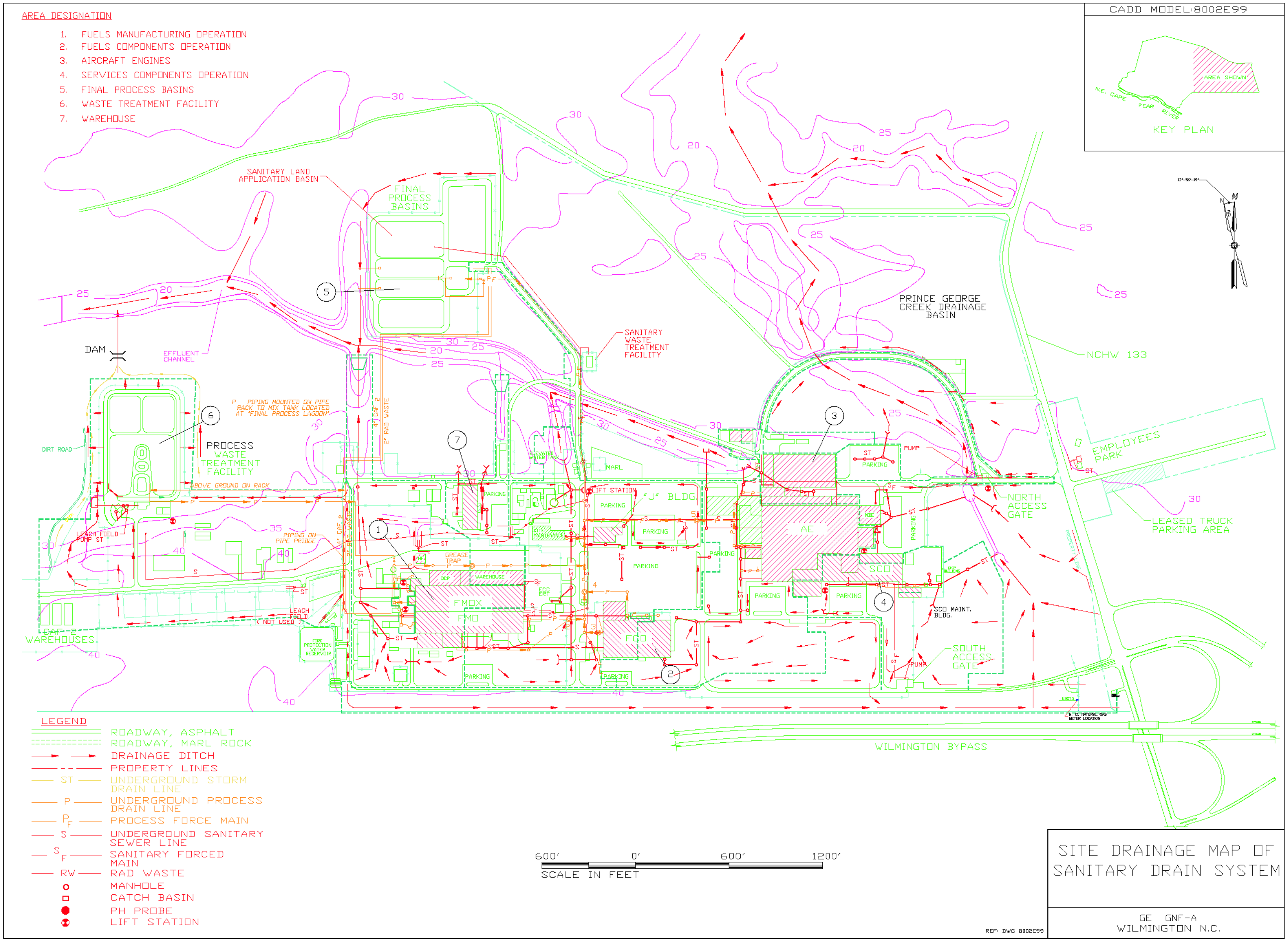

AREA DESIGNATION
1. FUELS MANUFACTURING OPERATION
2. FUELS COMPONENTS OPERATION
3. AIRCRAFT ENGINES
4. SERVICES COMPONENTS OPERATION
5. FINAL PROCESS BASINS
6. WASTE TREATMENT FACILITY
7. WAREHOUSE
CADD MODEL:8002E99
KEY PLAN
AREA SHOWN
FINAL PROCESS BASINS
PRINCE GEORGE CREEK DRAINAGE BASIN
NCHW 133
DAM
EFFLUENT CHANNEL
PROCESS WASTE TREATMENT FACILITY
DIRT ROAD
ABOVE GROUND ON RACK
PIPING ON PIPE BRIDGE
GREASE TRAP
"J" BLDG.
AE
SCO
FMOX
FMO
FCO
SCO MAINT. BLDG.
NORTH ACCESS GATE
SOUTH ACCESS GATE
EMPLOYEES PARK
LEASED TRUCK PARKING AREA
WAREHOUSES
WILMINGTON BYPASS
PARKING
LEGEND
ROADWAY, ASPHALT
ROADWAY, MARL ROCK
DRAINAGE DITCH
PROPERTY LINES
UNDERGROUND STORM DRAIN LINE
UNDERGROUND PROCESS DRAIN LINE
PROCESS FORCE MAIN
UNDERGROUND SANITARY SEWER LINE
SANITARY FORCED MAIN
RAD WASTE
MANHOLE
CATCH BASIN
PH PROBE
LIFT STATION
600' 0' 600' 1200'
SCALE IN FEET
PROCESS DRAIN SYSTEM
GE
WILMINGTON N.C.

Exhibit C-5



AREA DESIGNATION
1. FUELS MANUFACTURING OPERATION
2. FUELS COMPONENTS OPERATION
3. AIRCRAFT ENGINES
4. SERVICES COMPONENTS OPERATION
5. FINAL PROCESS BASINS
6. WASTE TREATMENT FACILITY
7. WAREHOUSE
CADD MODEL:8002E99
KEY PLAN
FINAL PROCESS BASINS
PRINCE GEORGE CREEK DRAINAGE BASIN
DAM
EFFLUENT CHANNEL
PROCESS WASTE TREATMENT FACILITY
NCHW 133
EMPLOYEES PARK
NORTH ACCESS GATE
LEASED TRUCK PARKING AREA
"J" BLDG
AE
SCO
FMOX
FMO
FCO
SCO MAINT. BLDG.
SOUTH ACCESS GATE
WAREHOUSES
WILMINGTON BYPASS
LEGEND
ROADWAY, ASPHALT
ROADWAY, MARL ROCK
DRAINAGE DITCH
PROPERTY LINES
UNDERGROUND STORM DRAIN LINE
UNDERGROUND PROCESS DRAIN LINE
PROCESS FORCE MAIN
UNDERGROUND SANITARY SEWER LINE
SANITARY FORCED MAIN
RAD WASTE
MANHOLE
CATCH BASIN
PH PROBE
LIFT STATION
600' 0' 600' 1200'
SCALE IN FEET
STORM DRAIN SYSTEM
GE GNF-A
WILMINGTON N.C.

Exhibit C-6



AREA DESIGNATION
1. FUELS MANUFACTURING OPERATION
2. FUELS COMPONENTS OPERATION
3. AIRCRAFT ENGINES
4. SERVICES COMPONENTS OPERATION
5. FINAL PROCESS BASINS
6. WASTE TREATMENT FACILITY
7. WAREHOUSE
CADD MODEL:8002E99
KEY PLAN
SANITARY LAND APPLICATION BASIN
FINAL PROCESS BASINS
PRINCE GEORGE CREEK DRAINAGE BASIN
SANITARY WASTE TREATMENT FACILITY
DAM
EFFLUENT CHANNEL
PROCESS WASTE TREATMENT FACILITY
NCHW 133
EMPLOYEES PARK
NORTH ACCESS GATE
LEASED TRUCK PARKING AREA
"J" BLDG
AE
SCO
FMOX
FMO
FCO
SOUTH ACCESS GATE
SCO MAINT. BLDG.
WAREHOUSES
WILMINGTON BYPASS
LEGEND
ROADWAY, ASPHALT
ROADWAY, MARL ROCK
DRAINAGE DITCH
PROPERTY LINES
UNDERGROUND STORM DRAIN LINE
UNDERGROUND PROCESS DRAIN LINE
PROCESS FORCE MAIN
UNDERGROUND SANITARY SEWER LINE
SANITARY FORCED MAIN
RAD WASTE
MANHOLE
CATCH BASIN
PH PROBE
LIFT STATION
600' 0' 600' 1200'
SCALE IN FEET
SITE DRAINAGE MAP OF SANITARY DRAIN SYSTEM
GE GNF-A
WILMINGTON N.C.
REF: DWG 8002E99

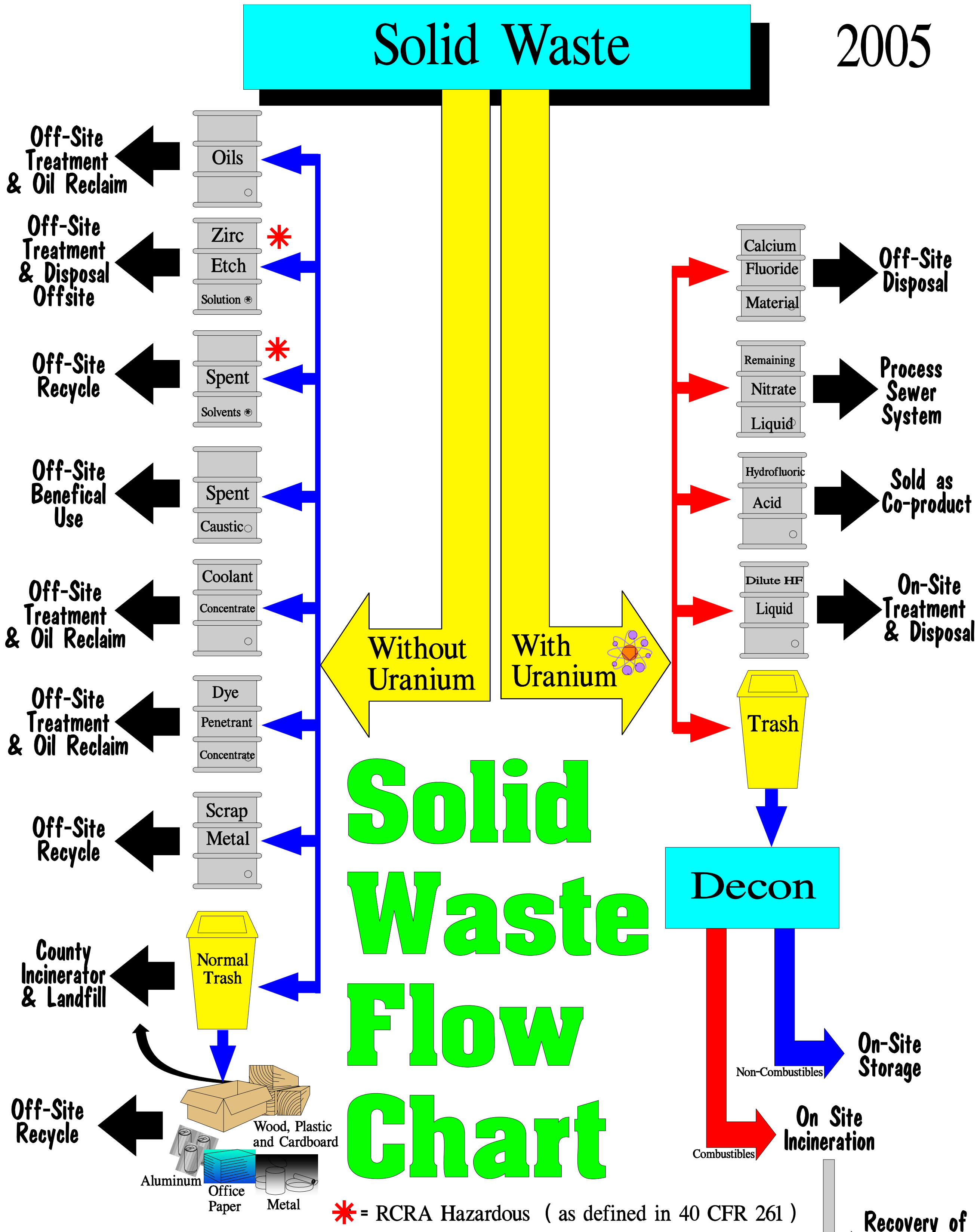


Exhibit C-7

HRS March 2005

Exhibit C-8

Process Generating Hazardous Listed Wastes

(RCRA)

EPA Waste <u>No.</u>	**<u>Chemical Waste</u>**	**<u>Hazard Code</u>**	**<u>Waste Characteristic</u>**
F003	Non-halogenated solvents	Ignitable	Used in cleaning operations. The waste may be acetone or any F003 waste.
D001	Ignitable mixture	Ignitable	Primary mineral spirits in the D001 category.
D002	Spent HF/HNO_3 etch acid	Corrosive	pH is $\leq$ 2.0
D002	Alkaline cleaner	Corrosive	pH is $\geq$ 12.5

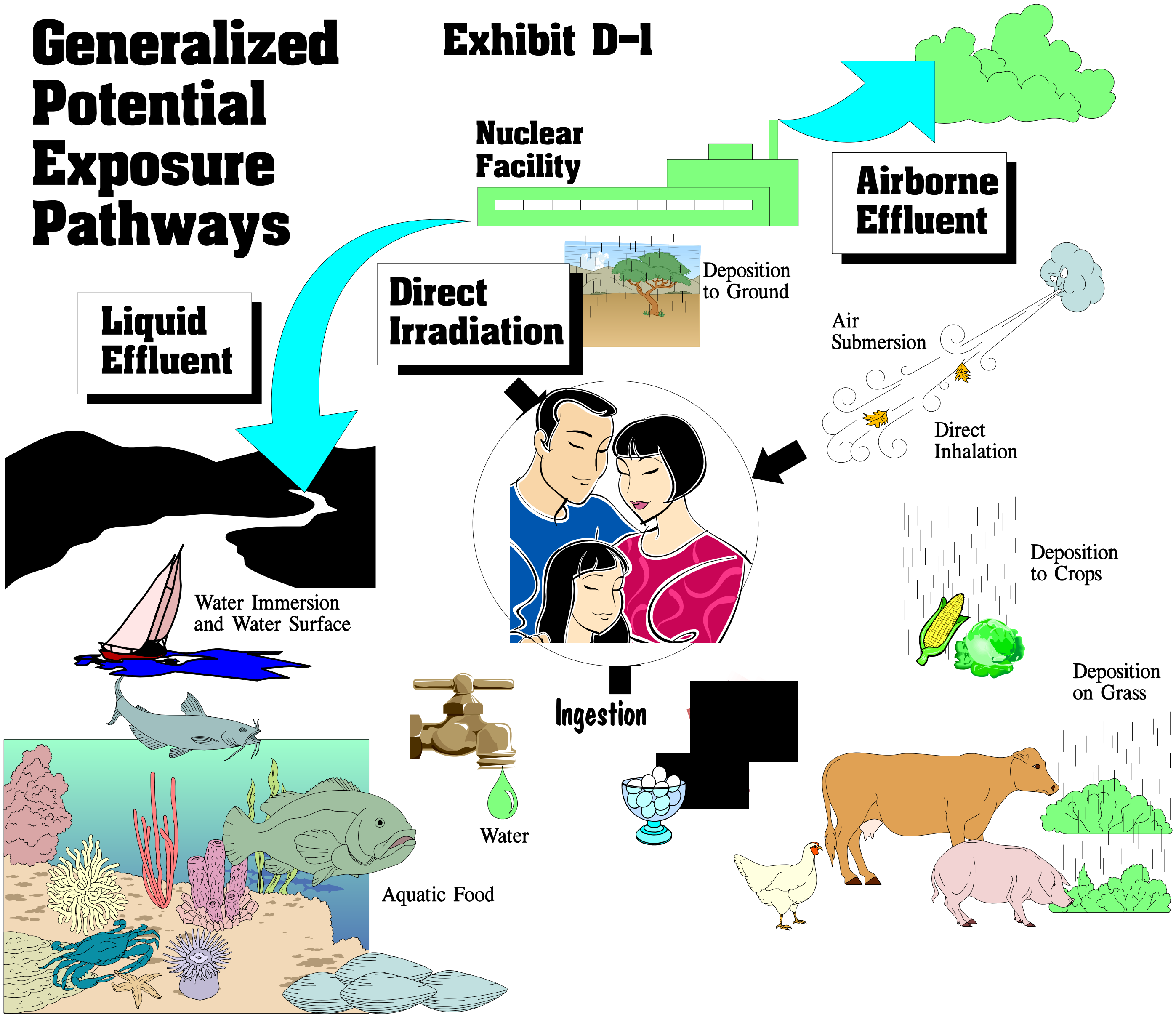
GNF-A WILMINGTON

ENVIRONMENTAL REPORT

SUPPLEMENT

March 30, 2007

APPENDIX D



Generalized Potential Exposure Pathways
Exhibit D-1
Nuclear Facility
Airborne Effluent
Liquid Effluent
Direct Irradiation
Deposition to Ground
Air Submersion
Direct Inhalation
Deposition to Crops
Deposition on Grass
Water Immersion and Water Surface
Ingestion
Water
Aquatic Food

EXHIBIT D-2

ANNUAL RADIATION DOSE TO NEAREST RESIDENT[1]

YEAR	COMMITTED EFFECTIVE DOSE EQUIVALENT[2] (mrems)
1995	0.06
1996	0.2
1997	0.4
1998	0.2
1999	0.064
2000	0.056
2001	0.039
2002	0.027
2003	0.029
2004	0.031
2005	0.033

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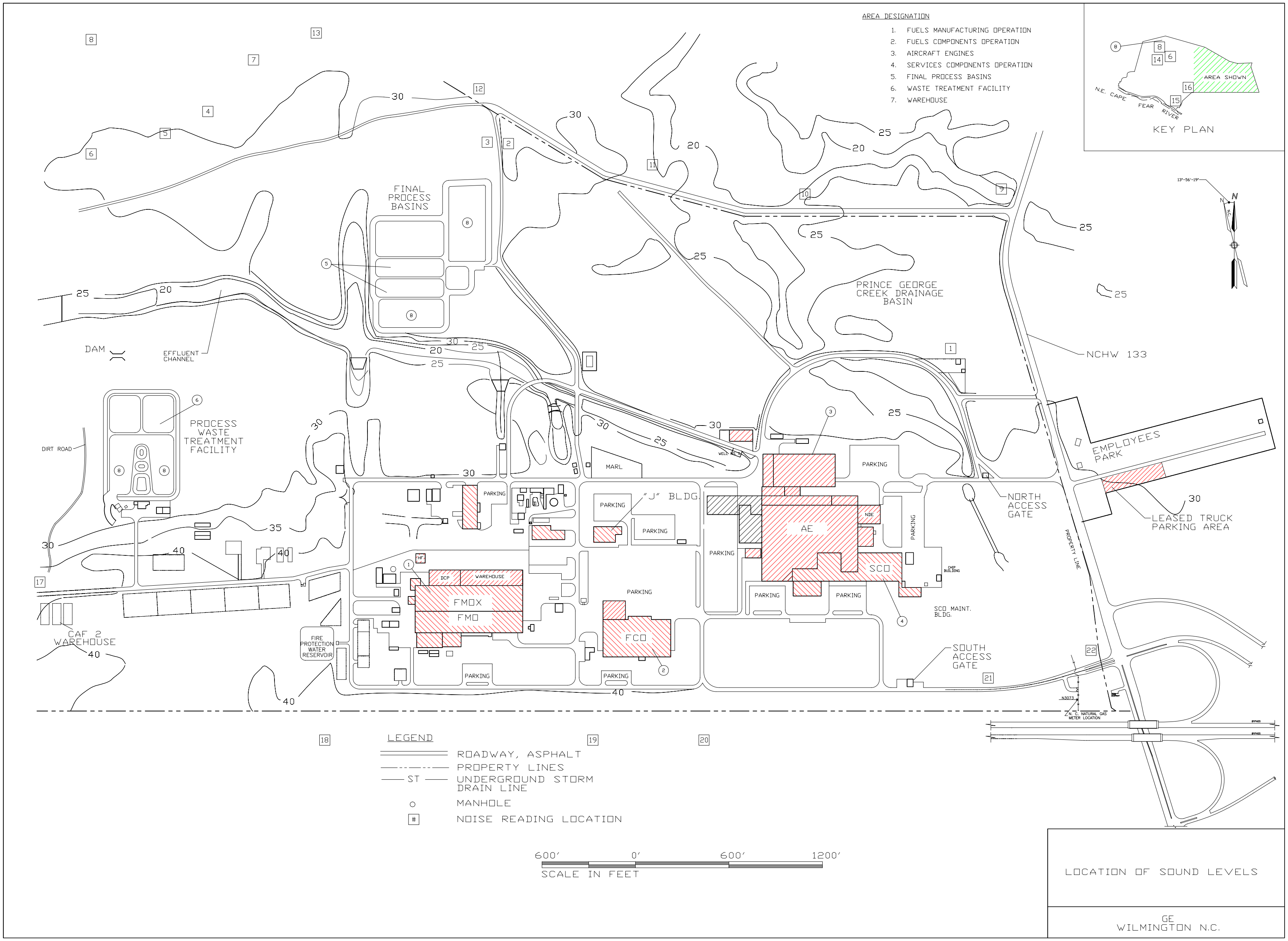
[1] Assumed to live 130 to 384 meters south of each release point.

[2] The committed effective dose equivalent values in the table can be compared to the NRC off-site individual exposure limit of 100 mrem per year.

Exhibit D-3



AREA DESIGNATION
1. FUELS MANUFACTURING OPERATION
2. FUELS COMPONENTS OPERATION
3. AIRCRAFT ENGINES
4. SERVICES COMPONENTS OPERATION
5. FINAL PROCESS BASINS
6. WASTE TREATMENT FACILITY
7. WAREHOUSE
KEY PLAN
AREA SHOWN
N.E. CAPE FEAR RIVER
FINAL PROCESS BASINS
PRINCE GEORGE CREEK DRAINAGE BASIN
NCHW 133
EMPLOYEES PARK
LEASED TRUCK PARKING AREA
NORTH ACCESS GATE
SOUTH ACCESS GATE
PROPERTY LINE
DAM
EFFLUENT CHANNEL
PROCESS WASTE TREATMENT FACILITY
DIRT ROAD
MARL
"J" BLDG.
AE
SCO
FMOX
FMO
FCO
DCP
WAREHOUSE
PARKING
SCO MAINT. BLDG.
FIRE PROTECTION WATER RESERVOIR
CAF 2 WAREHOUSE
LEGEND
ROADWAY, ASPHALT
PROPERTY LINES
ST UNDERGROUND STORM DRAIN LINE
MANHOLE
NOISE READING LOCATION
600' 0' 600' 1200'
SCALE IN FEET
LOCATION OF SOUND LEVELS
GE
WILMINGTON N.C.

Exhibit D-4

Sound Levels

Site Location	Sound Level (Decibels[1] on the "A" Scale)		
	03/17/89	**08/24/95**	**01/22/02**
1	50	52	50.0
*2	45	50	46.2
*3	45	50	41.5
*4	42	50	39.5
*5	40	57.5	38.2
*6	40	52.5	38.0
*7	50	52	38.2
*8	42	<50	40.0
9	41	54.5	46.4
10	41	51	40.1
11	40	58	40.2
12	41	60	41.5
13	41	53	38.2
14	40	58	39.3
15	40	52.5	49.5
16	40	50	38.4
17	45	57	52.6
18	50	50	52.0
19	51	55	59.0
20	50	50	49.0
21	41	50	**64.5**
22	50	<50	**57.0**

* Indicates a change in sampling location since 1989.

Note: Bold sound recordings of year 2002 indicate government highway construction using heavy equipment, within sampling area.

[1] OSHA Standard 1910.95 requires a hearing conservation program at sound levels above 85 decibels.