

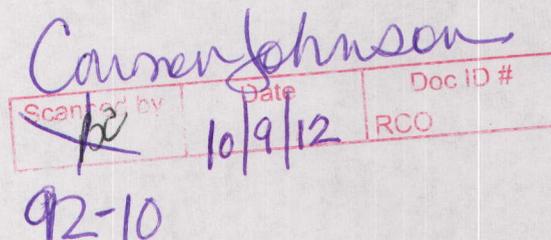
North Carolina
Department of Environment and Natural Resources
Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director



April 1, 2004

Mr. Robert Wilson
Progress Energy
Harris Nuclear Plant
3932 New Hill – Holleman Road
New Hill, NC 27562



Subject: Modification of Monitoring Plan
Harris Nuclear Plant Industrial Landfill, Wake County, Permit No. 92-10

Dear Mr. Wilson,

I have received your letter regarding the modifications proposed by G. N. Richardson and Associates regarding the geophysical study and the proposed monitoring plan changes. I concur with the proposed monitoring network. Please submit to me a monitoring plan according to 15A NCAC 13B Section .0600. Surface water monitoring should be addressed, as well as ground water monitoring. The monitoring plan document should incorporate all necessary information as discussed in our *Groundwater Analysis Guidance Document* which can be referenced from our website <http://www.wastenotnc.org/swhome/Gwhmpg.htm>. The map view of the monitoring plan should include the edge of waste, compliance boundary, and any property lines in vicinity. Please also include a map of the property with the location of the landfill shown.

The Section will need 4 copies in order to distribute (file room, SWS Compliance Branch, SWS Raleigh field office, Progress Energy) after it is stamped approved. At this time only one copy is needed for review.

Please feel free to contact me at 919-733-0692 ext 345, or by email at ellen.lorscheider@ncmail.net if you have questions or comments regarding this letter.

Sincerely,

Ellen Lorscheider
SWS Permitting Hydrogeologist

CC: Joan Smyth, GNR
Larry Rose, SWS
B. C. Waldrep, Progress Energy

NO - DATE

DRAFT GROUND WATER MONITORING PLAN

PROGRESS ENERGY CAROLINAS, INC.

HARRIS NUCLEAR PLANT

Table of Contents

Introduction.....	2
Monitoring Wells.....	2
Well Construction.....	2
Portable Monitoring.....	3
Purging Methods.....	3
Sample Collection.....	4
Transportation and Storage of Samples.....	6
Quality Assurance/Quality Control.....	6
Surface Water Sampling.....	6

INTRODUCTION

During the construction of the Shearon Harris Nuclear Plant (HNP) several landfills were permitted, utilized and closed. The current landfill was permitted as a Construction and Demolition landfill under Permit #92-A in 1983. The landfill consisted of 3 areas of varying sizes, Area #1 was 6.71 acres, Area #2 was 9.47 acres and Area #3 was 17.2 acres. In 1986 HNP received approval under permit #92-10 convert Areas #2 and #3 to a sanitary landfill which allowed for the disposal of solid waste. Approximately 25% of Area #3 was used for waste disposal. Areas #1 and #2 were never used for waste disposal. Area #3 was divided into 3 cells. Cell #1 ceased to accept waste in the fall of 1989. Cell #2 was never utilized for waste disposal, and Cell #3 was capped in the fall of 2003. Presently sampling is conducted by Progress Energy employees, however in the future the sampling may be contracted to a certified laboratory.

MONITORING WELLS

HNP has monitored groundwater around the landfill since 1987. The sampling program has involved routine (semi-annual) sampling and analysis of five monitoring wells that were installed in December 1986. Monitoring wells MW-1, MW-2, and MW-3 (Figure 1) are located within ¼ mile of the landfill. Monitoring wells MW-4 and MW-5 are located greater than ¼ mile from the landfill. Since monitoring wells MW-4 and MW-5 are not useful for groundwater monitoring, they have been abandoned. A geophysical study was conducted for HNP by G.N. Richardson and Associates to evaluate the location of waste in the landfill and to identify any potential water bearing fractures in the vicinity of the landfill for the potential location of additional groundwater monitoring wells. The study identified the location for two additional wells MW-6 and MW-7 (Figure 1). HNP owns all the land within approximately 0.7 miles of the landfill (Figure 2).

WELL CONSTRUCTION

Monitoring wells MW-1, MW-2, and MW-3, were constructed in December 1986. The well screen depths range from 35 to 97 feet below ground surface and groundwater levels at the time of installation ranged from 19 to 52 feet below ground surface. The low permeability of Triassic soils at the site cause groundwater recovery rates to be very slow. During sampling events the wells are bailed dry. It is then necessary to wait two or three days before enough groundwater is available in each well to obtain a sufficient sample. Monitoring wells MW-6 and MW-7 were constructed in December 2003, to replace monitoring wells MW-4 and MW-5 which were abandoned. These wells were constructed in accordance with 15A NCAC 2C, Well Construction Standards (See Attached Well Construction Log).

Attach all well construction records

PORTABLE MONITORING

HNP will use Teflon portable bailers to conduct purging and monitoring of groundwater. Each bailer will be equipped with either nylon rope, Teflon coated wire, single stranded stainless steel wire, or another monofilament line. New line will be used for each well sampled and all unused line will be protected from contamination.

Equipment Cleaning Procedures

All equipment coming into contact with samples or ground water inside a monitoring well will be cleaned within an established and properly maintained laboratory. No field cleaning of bailers will be permitted. A Teflon bailer will be assigned to each well, as to further eliminate the possibility of contamination. All Teflon bailers will be cleaned as follows:

- 1) Phosphate free soap and tap water wash
- 2) Tap water rinse
- 3) 10% nitric or hydrochloric acid soak
- 4) De-ionized or Distilled water rinse
- 5) Isopropyl alcohol rinse
- 6) De-ionized or Distilled water rinse
- 7) Air dry
- 8) Aluminum foil wrap with shiny side out

The water level indicator will also be cleaned between the sampling of monitoring wells. Water level indicator cables and probes will be decontaminated before and between well usage and transported in a manner to prevent contamination.

The plant may purchase preconditioned ^{Teflon} disposable bailers from a laboratory supplier instead of following the above cleaning procedure.

PURGING METHODS

The HNP landfill is located on the Harris Plant Lands within the Triassic basin. The protocol for purging these wells is somewhat different from the standard purging method used at most sites. The low permeability of soils in this basin cause very slow groundwater recovery rates. During sampling events wells will be bailed dry and then

one well (MW-8) artesian.

allowed two to three days to recharge. After, sufficient recharging a representative sample of the ground water in the vicinity of the well will be collected.

All water levels in the wells will be measured and recorded with an electronic indicator prior to purging any of the wells.

SAMPLE COLLECTION

Representative samples will be taken from all ground water wells. All sampling equipment will be properly decontaminated. Proper sampling and sample handling technique will be used. Nothing will be placed inside the well casing that has not been decontaminated. To further eliminate the possibility of contamination during sampling there will be frequent glove changes.

Once the well cap is removed from the casing all equipment and sampling procedures will be performed while wearing gloves. Care will be taken to ensure bailers and other sampling equipment do not come into contact with anything other than the well contents.

Each monitoring well will be treated as a separate entity. Therefore there will be enough decontaminated sampling equipment for each well; no sampling equipment will be used between sampling wells.

HNP will conduct semi-annual sampling of the five monitoring wells around the landfill (MW-1, MW-2, MW-3, MW-6, and MW-7) for a minimum of 5 years post closure (or as directed by the North Carolina Department of Natural Resources). HNP may petition the Solid Waste Section for either reduction or cessation of groundwater monitoring after the five year period.

Sampling Containers

There will be several different types of containers used for sampling purposes because of the wide array of parameters that must be analyzed. All sampling containers will be properly decontaminated before use. The number of containers used for sampling collection and the use of acid preservation will follow the rules established by the laboratory analyzing the samples.

Sampling Order

Samples will be collected in the following order at each well: Volatile Organic Compounds (VOC's), Extractable Organic Compounds, total metals, and cations and anions.

HNP will monitor the groundwater wells for the following parameters based on Tables 1 and 2 in NC Solid Waste Section's Groundwater Monitoring Guidance Document and the

current parameters being required by the Solid Waste Management Section. The following is the list of parameters for which the ground water wells will be monitored:

Arsenic	T-1,3-Dichloropropene	T-1, 2-Dichloroethene
Barium	Ethylbenzene	Propylene Dichloride
Cadmium	Methyl Butyl Ketone	CIS-1,3-Dichloropropene
Chromium	Methyl Bromide (Methylene Bromide)	1, 1, 1 - Trichloroethane
Lead	Methyl Chloride	1, 1, 2 - Trichloroethane
Selenium	MEK; 2-Butanone	Trichloroethylene
Silver	Methyl Iodide	CFC-11
Acetone	Methyl Isobutyl Ketone	1, 2, 3 - Trichloropropane
Acrylonitrile	Styrene	Vinyl Acetate
Benezene	1, 1, 1, 2 Tetrachloroethane	Vinyl Chloride
Bromochloromethane	1, 1, 2, 2 Tetrachloroethane	Xylenes
Bromoform (Carbon Disulfide)	Tetrachloroethylene	
Carbon Tetrachloride	Toluene	
Chlorobenzene	P-Dichlorobenzene	
Chloroethane (Chloroform)	T-1, 4-Dichloro-2-butene	
Chlorodibromomethane	1, 1 - Dichloroethane	
DBCP	Ethylene Dichloride	
Ethylene Dibromide	Vinylidene Chloride	
O- Dichlorobenzene	CIS-1, 2-Dichloroethene	

8 RCRA metals
 App I VOCs
 * No sulfide

TRANSPORTATION AND STORAGE OF SAMPLES

Upon completion of sample collection, all samples will be stored on ice or in a refrigerator until the samples are transported to a certified state laboratory for analysis. Samples will be stored in such a manner as to prevent breakage or accidental spillage. Unless circumstances prevent otherwise, all samples collected will be delivered to the laboratory on the same day as collected. There will be no field filtering of samples.

Chain of Custody

A chain of Custody form will be completed and accompany each sample to the laboratory. The chain-of-custody form will contain the following: Sample number, signature of collector, date and time of collection, sample time, well identification, total number of containers, signature(s) of person involved in chain-of-possession and inclusive dates of possession.

QUALITY ASSURANCE/QUALITY CONTROL

Since all wells have been established at the Landfill site and we have many years of data, sampling will be conducted on a semi-annual basis. Each well sampling event will include the following field parameters: pH, and specific conductivity.

Monitoring data, quality assurance/quality control data, chain of custody records and any other required information will be submitted to the Solid Waste Section within 15 days of receipt by the facility.

All monitoring samples will be analyzed by a laboratory certified under the Division of Environmental Management (DEM) certification program.

SURFACE WATER MONITORING

The landfill site does not border any surface water. The closest surface water to the landfill site is Harris Lake which is approximately 800 feet away. Therefore no surface water sampling is part of this monitoring plan.

*Equipment
TAP
Blank*