

# START

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## MINUTES

### PRE-UNIT MANAGERS MEETING JANUARY 21, 1991

A Pre-Unit Managers meeting was held between Siemens Nuclear Power Corporation (SNP), United States Department of the Interior, and United States Department of the Army Corps of Engineers (USACE) on January 21, 1991 from 1:30 p.m. to 3:45 p.m. at the SNP Richland facility at 2101 Horn Rapid Road, Richland, Washington. An attendance list is attached (Attachment 1). Following is a summary of the topics and action items discussed.

#### 1) SNP Remedial Investigation/Feasibility Study (RI/FS) Scope of Work (SOW)

SNP indicated that more information would be provide for review and comment for the Hazardous Substance Source Evaluation Study, the Phase II Ground-Water Study, and the Risk Assessment tasks in the RI/FS.

USDOE and USACE did not have any major comments on the RI/FS SOW, but were surprised to see so many references to Washington State Model Toxics Control Act (MTCA). They indicated they had deleted MTCA as an applicable or relevant and appropriate requirement (ARAR) for the Hanford site after discussions with SNP's attorneys. That does not necessarily mean that they have determined that MTCA is not an ARAR, but that they are still evaluating MTCA's status. During their study they will try to be consistent in meeting the intent of MTCA but may not officially recognize it.

SNP indicated that the Hazardous Source Evaluation work plan will probably not include a detailed history of the site, as much of that information is privileged and confidential. The work plan would instead focus on sampling locations, constituents to be analyzed, and methodologies.

#### Action Items

Both entities are starting the ground-water modelling process and will work with each other.

USACE volunteered to assist SNP in the ground-water pump test during the Phase II Ground-Water Study.

SNP will release work plans for the hazardous substance source evaluation and the Phase II Ground-Water Studies for review and comment by early March 1992.



**2) USACE Ground-Water Proposal**

USACE has modified the proposal as per the discussion with SNP at the previous Pre-Unit Managers meeting (Attachment 2).

USACE is waiting for the speciation data before they decide whether to do gross-alpha, gross-beta sampling. They assume that technetium will be the major component.

**Action Items**

USACE will add MW-19 to the quarterly sampling at the Horn Rapids Landfill (HRL).

SNP will review the new monitoring proposal to be sure that it reflects the agreements made at the last meeting.

**3) Comparison of Westinghouse and USACE Sampling/Analytical Protocols**

USACE has developed new sampling/analysis protocols since taking over Westinghouse's role in the investigation. The SNP Phase I Ground-Water Study was developed to be consistent with the Westinghouse protocols. USACE indicated that their protocols were essentially the same with the following differences:

- USACE will be using SW-846 analytical methods, rather than contract laboratory program (CLP) methods. This should produce comparable analytical results.
- USACE will be using commercial laboratories.
- USACE will use their own lab, rather than the Office of Sample Management, for quality assurance/quality control (QA/QC).

**4) U.S. Environmental Protection Agency (USEPA) Risk Assessment Feedback**

USEPA has provided feedback (Attachment 3). The agricultural scenario will not be required; industrial and residential scenarios will be required. USEPA has not replied to the letter regarding how the results of the risk assessment will be used.

5) **Monthly Schedule of Activities**

USACE

- Ground-water level measurements will be taken in February.
- Ground-water sampling at the HRL will be undertaken towards the end of February.
- They are selecting a ground-water model.
- The risk assessment will be revised; they will follow the Hanford site baseline risk assessment methodology by modifying it in response to USEPA's comments.
- They are still on schedule, but do not have much leeway.

SNP

- Monthly water-level measurements will be taken in early February.
- Ground-water sampling to be coordinated with USACE schedule.
- Hazardous Substance and Phase II Ground-Water work plans to come out.
- Modeling has been initiated.

6) **USDOE ARAR Activities**

USACE has done a technical evaluation of ARARs using USEPA/Washington State Department of Ecology's (Ecology) comments on the FS I and II draft report.

**Action Item**

Johns Stewart, USDOE, will distribute their ARAR analysis for inclusion in the minutes of this meeting (Attachment 4).

7) **SNP November 1991 Ground-Water Analytical Results**

Geraghty & Miller has received the data and is in the process of validating. A report should be available for distribution in 1 month. The results will be presented at the next meeting.

**Action Item**

Geraghty & Miller will fax the report to USACE as soon as it is available for distribution.

**8) Miscellaneous Topics**

Historical SNP Data: USACE did an evaluation of historical SNP ground-water quality data (Attachment 5). This will be presented at the January 22, 1192 Unit Managers Meeting. They decided not to validate it, but felt it may be useful to determine when a release may have occurred, information that their modelers have requested.

**Action Item**

The modelers for SNP and USACE will work together to ensure that the assumptions made regarding releases and other modelling input parameters are consistent.

Agency for Toxic Substances and Disease Registry (ATSDR): ATSDR will be visiting the site next week with Bob Stewart, USDOE as the host.

USDOE Headquarter Visit: USDOE Headquarters will be visiting Hanford at the end of February to discuss remedial alternatives from a policy perspective. This is an internal meeting; however, if they ask questions regarding SNP, Bob Stewart will refer them to SNP.

February Meeting: The next meeting will be held February 20, 1992 at 1:30 p.m. at the SNP Richland facility.



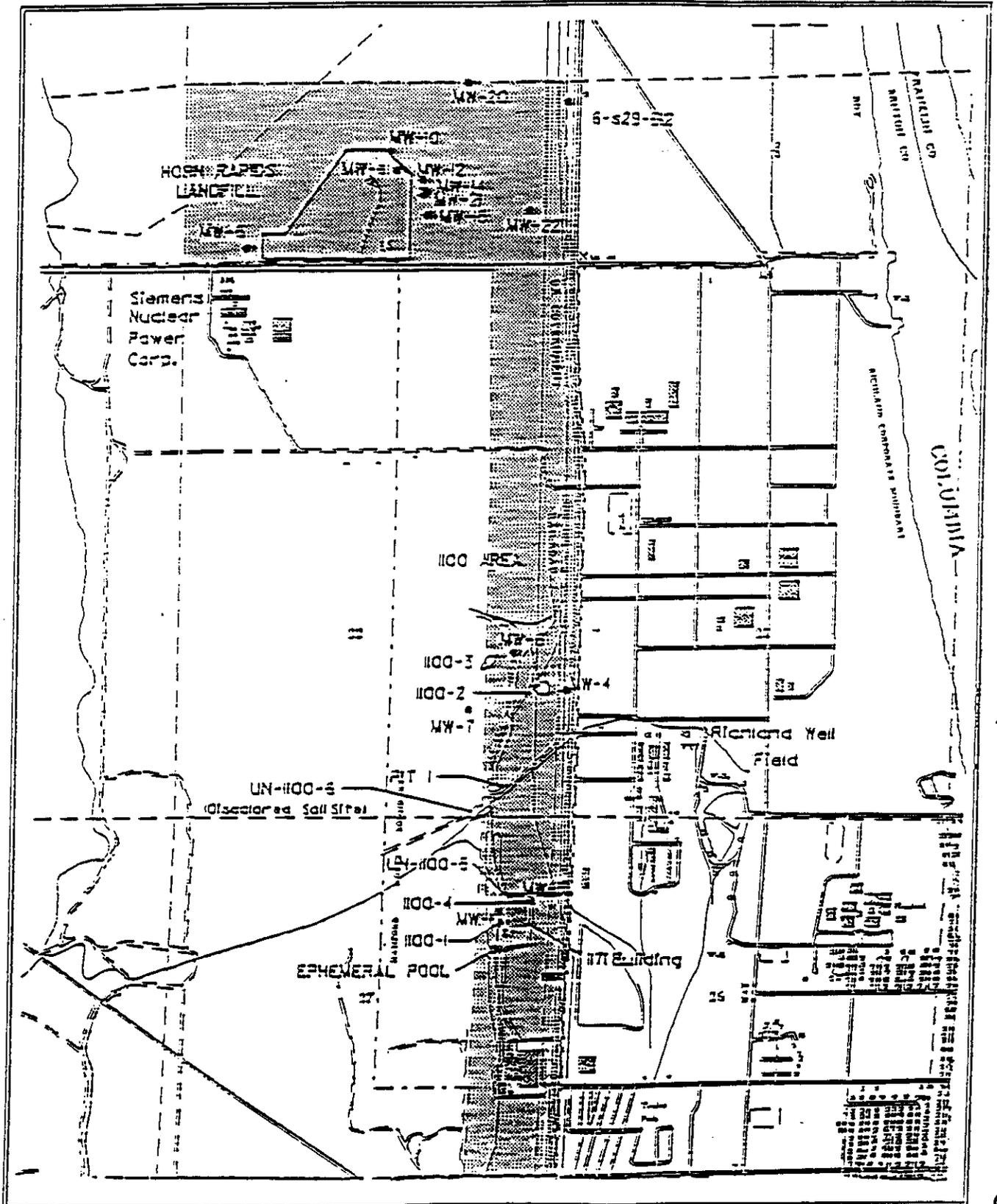


Figure 1. Map Correlating the Operable Subunits with Well Locations.

9 1 2 9 0 1 1 3 6 3

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Revision 2

following paragraphs. The sampling events will be synchronized with those of SNP as projected in their Work Plan, Phase I Groundwater Study. Sampling is scheduled for February, May, and August 1992.

### 3.1 Sampling Locations and Frequency

The approximate location of monitoring wells at the 1100-EM-1 Operable Unit are shown in figure 1. Table 1 identifies those wells which CENPW or its contractors will continue to monitor. Tables 2 and 3 define the chemical analyses corresponding with each location and/or frequency. For those wells listed in table 1, two levels of sampling effort are defined: 1) quarterly (table 2) due to clear evidence of groundwater contamination and synchronized with SNP and 2) annual (table 3).

Table 1. Correlation of Specific Wells with Monitoring Frequency and Chemical Analyses

Well	Nearest Operable Unit	Frequency of Monitoring	Corresponding Table(s)
MU-1	1100-1 & Ephemeral Pool	Annual	3
MU-3	1100-4 & UX-1100-5	Annual	3
MU-4	1100-2	Annual	3
MU-5	1100-3	Annual	3
MU-7	None: samples used as blanks.	whenever needed	as appropriate *
MU-8	HRL	quarterly	2*
MU-10	HRL	quarterly	2*
MU-11	HRL	quarterly	2*
MU-12	HRL	quarterly	2*
MU-14	HRL	quarterly	2*
MU-15	HRL	quarterly	2*
MU-20	HRL	quarterly	2*
MU-22	HRL	quarterly	2*
4-529-E12	downgradient from HRL	quarterly	2*

\* The May quarterly sampling effort requires measurement of analytes indicated in tables 2 and 3.

### 4.0 SAMPLE DESIGNATION

All sampling activities will be documented in a designated field notebook. A Water Sampling Log (figure 2) shall be completed for each sample and will document well evacuation procedures and sampling data.

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Table 2. Quarterly Groundwater Monitoring Indicated by Contamination at ERL:  
Precision, Accuracy, and Completeness Objectives

MEASUREMENT PARAMETER	DETECTION/ QUANTITATION LIMITS <sup>a</sup>	ACCURACY <sup>a</sup>	PRECISION <sup>a</sup>	CONTAINER/PRESERVATION/ HOLDING TIMES <sup>a</sup>	COMPLETENESS <sup>a</sup>	REFERENCE
<b>VOLATILE ORGANICS</b> TCE (trichloroethene) 1,1,1-trichloroethane	.....1 µg/L..... .....1 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	2 X 40 mL glass vials with Teflon™-lined septa; pH < 2 with HCl. Cooled to 4°C and analyzed within 14 days of sampling.	95%	EPA Method 8240 <sup>b</sup> : GC/MS-capillary column (purge-and-trap)
<b>COMMON ANIONS</b> Nitrate..... Nitrite..... Phosphate..... Ammonia.....	.....20 µg/L..... .....10 µg/L..... .....100 µg/L..... .....50 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	1 X 1 L Glass container with Teflon™-lined cap, pH adjusted to < 2 with H <sub>2</sub> SO <sub>4</sub> and cooled to 4°C. Analyze within 28 days.	95%	EPA Method 300.0 or 300 series <sup>c</sup> ; or 9056 <sup>d</sup> . .....EPA Method 350.3 <sup>e</sup> .....
<b>COMMON ANIONS</b> Chloride..... Fluoride..... Sulfate.....	.....1,000 µg/L..... .....50 µg/L..... .....500 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	1 X 1 L Glass container with Teflon™-lined cap, cooled to 4°C. Analyze within 28 days.	95%	EPA Method 300.0 or 300 series <sup>c</sup> .
<b>INORGANICS</b> barium..... calcium..... iron..... magnesium..... manganese..... potassium..... sodium.....	.....2 µg/L..... .....10 µg/L..... .....7 µg/L..... .....50 µg/L..... .....15 µg/L..... .....7 µg/L..... .....20 µg/L.....	75-125% <sup>f</sup>	± 20% <sup>f</sup>	1, 1L double-strength polyethylene bottle with Teflon™-lined cap, metal-free HNO <sub>3</sub> to pH<2; unfiltered samples only, 6 months maximum holding time.	95%	EPA Method 6010 (ICP) <sup>g</sup> : Digestion via 3010 (total metals).
Alkalinity.....	.....10,000 µg/L.....	75-125% <sup>f</sup>	± 20% <sup>f</sup>	1 X 1 L double-strength polyethylene bottle with Teflon™-lined cap; cooled to 4°C; analyze within 14 days.	95%	EPA Method 310.1 <sup>h</sup>
Acidity	.....10,000 µg/L.....	75-125% <sup>f</sup>	± 20% <sup>f</sup>	1 X 1 L double-strength polyethylene bottle with Teflon™-lined cap; cooled to 4°C; analyze within 14 days.	95%	EPA Method 305.1 <sup>h</sup>
<b>PROPERTIES</b> Specific conductance..... Temperature, pH..... water-level.....	..... ± 10% ..... ± 0.2 °C, ± 0.1 pH units .....	NA	NA	Specific conductance, temperature and pH are to be performed immediately, (log environmental conditions).	95%	EPA Method <sup>i</sup> .....9050..... .....9040..... methodology in attached PSP

<sup>a</sup>ic: Special analytical services will be used for samples obtained from MW-11 and MW-12. The specific methodology will be determined after results are obtained from the current radiochemical analyses being performed by Pacific Northwest Laboratories (PNL).

- <sup>a</sup> Values from ER-1110-1-263, Appendix D; metals are reported as nominal instrument detection limits (for SW-846), for organics the values are practical quantitation limits.
- <sup>b</sup> Values for precision and accuracy are specific to media, analyte, and analyte concentration. Attention must be given to analytes close to or above applicable MCL's as described in this document; for these analytes, laboratories must demonstrate that the precision and accuracy of the data is within the limits defined in the specific methodology utilized (i.e., Tables of "Method Accuracy and Precision as a Function of Concentration"), this is a contract requirement.
- <sup>c</sup> Precision is expressed as a relative percent difference between results of duplicate or replicate analyses. Accuracy is expressed as percent recovery of an analyte. These limits apply to sample results greater than five times the quantitation limit and are to be considered requirements in the absence of known analytical interferences.
- <sup>d</sup> Method described in *Text Methods for Evaluating Solid Waste*, 3<sup>rd</sup> Edition, EPA-SW-846, Revision 0, September 1986; (or November 1990, as soon as version is promulgated).
- <sup>e</sup> Method described in *Methods for Chemical Analysis of Water and Waste*, EPA-600/4-79-020, 1979.
- <sup>f</sup> Method described in *Determination of Inorganic Anions in Aqueous and Solid Samples by Ion Chromatography*, EPA-600/4-84-017, 1984.

GC/MS: gas chromatography/mass spectrometry, ICP: inductively coupled plasma atomic emission spectroscopy.

Table 3. Annual Groundwater Monitoring Indicated by Surface and Subsurface Soil Contamination:  
Precision, Accuracy, and Completeness Objectives

MEASUREMENT PARAMETER (* indicates full TAL or TCL)	DETECTION/ QUANTITATION LIMITS*	ACCURACY*	PRECISION*	CONTAINER/PRESERVATION/HOLDING TIMES*	COMPLETENESS*	REFERENCE*
<b>COMMON ANIONS</b>					95%	EPA Method 300.0 or 300 series <sup>1</sup> OR EPA Method 9056 <sup>2</sup>
Fluoride.....	20 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	1 X 1 L Glass container with Teflon™-lined cap, pH adjusted to < 2 with H <sub>2</sub> SO <sub>4</sub> and cooled to 4°C. Analyze within 28 days of sampling.		
Nitrate.....	20 µg/L.....					
Nitrite.....	10 µg/L.....					
Phosphate.....	100 µg/L.....					
<b>VOLATILE ORGANICS*</b>					95%	EPA method 8240 <sup>3</sup> : GC/MS-capillary column (purge-and-trap).
TCE (trichloroethene) 1,1,1-trichloroethane	.....1 µg/L..... .....1 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	2, 40 mL glass vials with Teflon™-lined septa; pH<2 with HCl; cooled to 4°C; analyzed within 14 days of sampling.		
<b>ORGANOCHLORINE PESTICIDES/ POLYCHLORINATED BIPHENYLS*</b>					95%	EPA Method 3510/8080 or 3520/8080 <sup>4</sup> clean-up via method 3620 <sup>5</sup> GC
α-chloro-1243 (PCB).....	.....0.65 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	2 X 1 L amber glass, Teflon™-lined cap, cooled to 4°C. 7 days to extraction, 40 days to analysis.		
α-chloro-1243 (PCB).....	.....0.14 µg/L.....					
4,4'-DDE.....	.....0.11 µg/L.....					
4,4'-DDE.....	.....0.04 µg/L.....					
4,4'-DDT.....	.....0.12 µg/L.....					
Endosulfan II.....	.....0.04 µg/L.....					
Heptachlor.....	.....0.03 µg/L.....					
<b>INORGANICS</b>					95%	EPA Method 6010 (ICP): Digestion via 3010 (total metals) <sup>6</sup> .
barium.....	.....2 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	1, 1L double-strength polyethylene bottle with Teflon™-lined cap, metal-free HNO <sub>3</sub> to pH<2; unfiltered samples only, 6 months maximum holding time.		
beryllium.....	.....0.3 µg/L.....					
cadmium.....	.....4 µg/L.....					
chromium.....	.....7 µg/L.....					
copper.....	.....5 µg/L.....					
nickel.....	.....15 µg/L.....					
silver.....	.....7 µg/L.....					
<b>INORGANICS</b>					95%	EPA Method 3020/(GF-AA) <sup>7</sup>
antimony.....	.....3 µg/L.....	Accuracy confirmed via matrix spikes and blank spikes.	Precision confirmed via field duplicates (sampling and analysis errors) and replicates (analysis error).	1, 1 L double-strength polyethylene container with Teflon™-lined cap adjusted to pH < 2 with metal-free HNO <sub>3</sub> . Unfiltered samples only, 6 months maximum holding time.		.....7041.....
arsenic.....	.....1 µg/L.....					.....7060.....
chromium.....	.....1 µg/L.....					.....7191.....
beryllium.....	.....0.2 µg/L.....					.....7091.....
cadmium.....	.....0.1 µg/L.....					.....7131.....
lead.....	.....1 µg/L.....					.....7421.....
thallium.....	.....1 µg/L.....					.....7841.....
mercury.....	.....0.2 µg/L.....					.....7470 cold-vapor.....
<b>PROPERTIES</b>						NA
Specific conductance.....	..... ± 10% .....					
Temperature, pH.....	..... ± 0.1 °C, ± 0.1 pH units .....					
Water level.....	..... .....					

- \* Indicates that complete TAL or TCL must be included. A contract requirement is that reported data for compounds listed in this table may not include laboratory qualifiers (the exception being "U").
  - ° Values from ER-1110-1-263, Appendix D: metals are reported as nominal instrument detection limits (for SW-846), for organics the values are practical quantitation limits.
  - \* Values for precision and accuracy are specific to media, analyte, and analyte concentration. Attention must be given to analytes close to or above applicable MCL's as described in this document; for these analytes, laboratories must demonstrate that the precision and accuracy of the data is within the limits defined in the specific methodology utilized (i.e., Tables of "Method Accuracy and Precision as a Function of Concentration"), this is a contract requirement.
  - \* Method described in *Test Methods for Evaluating Solid Waste*, 3<sup>rd</sup> Edition, EPA-SW-846, Revision 0, September 1986 (or November 1990, as soon as version is promulgated).
  - ° Method described in *Determination of Inorganic Anions in Aqueous and Solid Samples by Ion Chromatography*, EPA-600/4-84-017, 1984.
- GC/MS: gas chromatography/mass spectrometry, ICP: inductively coupled plasma atomic emission spectroscopy, GF-AA: graphite furnace atomic absorption spectrometry.

## EVALUATION OF DATA FROM SIEMENS NUCLEAR POWER

- DATA QUALITY OBJECTIVES

- To estimate the probability that the source of groundwater plumes at IIRL containing TCE, Nitrate, and gross  $\beta$  originate from Siemens Nuclear Power Corporation.
- To estimate probable time of release of TCE, Nitrate (or ammonia), and gross  $\beta$  for groundwater modeling of plumes.
- To estimate if releases were one time occurrences or continual release both for groundwater modeling and estimation of risk and remedial alternatives.

- PROGRESS IN THE DATA EVALUATION

- Catalogued the available data (see table) which appears in several formats.
- Plotted data (one well) for the analytes total nitrogen and fluoride to observe trends.

- PLANNED FUTURE ACTIVITIES

- Compare graphs of wells hydrogeologically up-gradient and down-gradient relative to the lagoons at Siemens.
- Estimate if these data help to explain the groundwater plumes at IIRL.

SUMMARY OF DATA TRANSFERRED FROM SIEMENS NUCLEAR POWER TO CENPW

ANALYTE LIST	YEARS										
	73	74-80	81	82	83	84	85	86	87	88-89	90
	NUMBER OF SAMPLING EVENTS PER YEAR										
Total Nitrogen	12	12	12	6	*	*	*	*	*	*	NE
Nitrate	ND	ND	4	4	4	2	2	2	2	2	NE
Ammonia	ND	ND	4	4	4	2	1	2	2	2	NE
Fluoride	12	12	12	6	4	4	4	4	3	4	NE
Sulfate	5	12	12	6	ND	ND	ND	ND	ND	ND	NE
Uranium	ND	ND	4	4	4	1	ND	ND	ND	ND	NE
Gross Alpha	ND	ND	ND	ND	ND	3	4	4	4	4	NE
Gross Beta	ND	ND	ND	1	ND	3	4	4	4	4	NE
TCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4

ND = Either not done or not yet obtained by CENPW.

NE = Not evaluated by CENPW as part of data package recieved from Siemens: data may be included with Horn Rapids RI data summary.

\* = Can be calculated from existing data.

FW#	Installed	Size	Materials	Ref. Drawing	Driller	Log	Bottom	Top	Comments
01	73	6" SCH 40	CS	3959-C-12	Hatch		347.7	367.00	
02	73	"	"	"	"		347.7	370.02	
03	73	"	"	"	"		350.6	369.50	
04	73	"	"	"	"		348.2	371.04	
05	74	"	"	3959-C-24	"			371.13	
06	74	"	"	"	"			366.15	
07	74	"	"	"	"			371.15	
08	74	"	"	"	"			372.44	
09	12-77	"	"	"	"		341.8	367.84	Strata Data
10	12-77	Deactivated			"				Deactivated
11	1-78	"	"	3959-C-24	"		347.6	373.12	Strata Data
12	79	"	"	"	"			374.15	
13	79	"	"	"	"			375.07	
14	80	"	"	"	B&H	N/A		370.25	
15	80	"	"	"	"	N/A		370.65	
16	?	"	"	"	"	N/A		376.77	
17	82	3" SCH 40	PVC	not given	"	N/A		379.5	
18	82	3" SCH 40	PVC	not given	"	N/A		377.3	
19	4-90	6" SCH 40	CS	3959-C-24	ON WIGO	X		381.15	Replaced 4" PVC
20	4-90	"	"	"	"	X		381.43	Replaced 4" PVC
21	4-90	"	"	"	"	X		380.47	Replaced 4" PVC
22	4-90	"	"	"	"	X	346.3	374.95	4/91 Extended Case
23	4-90	"	"	"	"	X	346.2	373.25	
24	4-90	"	"	"	"	X	346.9	373.36	
25	4-90	"	"	"	"			371.92	
26	4-90	"	"	"	"			367.70	

**CONCENTRATION OF TOTAL NITROGEN(TPN) AND FLUORIDE(FPM X 10)  
FOLLOWED FOR 1 WELL AT SIEMENS NUCLEAR POWER CORPORATION**

