0037497

13

JUL 11 1994 (11) START

Station #11

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 606937

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) ER	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.:	6. Cog. Engr.: G. J. Jackson	7. Purchase Order No.: N/A
8. Originator Remarks: Release to record file		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date:

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-AP-176		0	Description of Work for N Springs Expedited Response Action Barrier Characterization	N/A	1/2	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)	
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1/2	1	Cog.Eng. G. J. Jackson	GJJ		H6-01	ERC			H6-07	3	
1/2	1	Cog. Mgr. M. J. Lauterbach	[signature]		H6-01	EPIC ~~(2)~~ 1 EDMC (1)			H6-08	3	
		QA				Central Files (2)			L8-04	3	
		Safety									
		Env.									

18.	19.	20.	21. DOE APPROVAL (if required)
G. J. Jackson [signature] 7/8/94 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	M. J. Lauterbach [signature] 7/8/94 Cognizant/Project Engineer's Manager / Date	Ltr. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

JUL 1994 RECEIVED EDMC

9413290.1564

BD-7400-172-1 (07/91)

100-NR-1-ERA-1

Date Received: 6/23/94

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

[] Speech or Presentation
- [] Full Paper
- [] Summary
- [] Abstract
- [] Visual Aid

(Check only one suffix)

[] Speakers Bureau
[] Poster Session
[] Videotape

[] Reference
[X] Technical Report
[] Thesis or Dissertation
[] Manual
[] Brochure/Flier
[] Software/Database
[] Controlled Document
[] Other

ID Number (include revision, volume, etc.)
WHC-SD-EN-AP-176, Rev. 0

List attachments.

Date Release Required
June 30, 1994

Title: Description of Work for N Springs Expedited Response Action Barrier Characterization

Unclassified Category
UC-

Impact Level N/A

New or novel (patentable) subject matter? [X] No [] Yes If "Yes", has disclosure been submitted by WHC or other company?
[X] No [] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [] Yes (Identify)

Copyrights? [X] No [] Yes
If "Yes", has written permission been granted?
[] No [] Yes (Attach Permission)

Trademarks?
[X] No [] Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting
N/A

Group or Society Sponsoring

Date(s) of Conference or Meeting
N/A

City/State

Will proceedings be published? [] Yes [] No
Will material be handed out? [] Yes [] No

Title of Journal
N/A

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval Name (printed)	Signature	Date
Classification/Unclassified Controlled Nuclear Information	[]	[X]			
Patent - General Counsel	[]	[X]			
Legal - General Counsel	[]	[X]			
Applied Technology/Export Controlled Information or International Program	[]	[X]			
WHC Program/Project	[X]	[]	J. K. Patterson	[signature]	6/24/94
Communications	[]	[X]			
RL Program/Project	[X]	[]	B. L. Foley	B. L. Foley [signature]	6/29/94
Publication Services	[X]	[]	L. S. Hermann	L S Hermann [signature]	6/29/94
Other Program/Project	[]	[X]			

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[]	[X]

Author/Requestor (Printed/Signature) Date
G. J. Jackson George J Jackson [signature] 6/21/94

Intended Audience

[] Internal [] Sponsor [X] External

Responsible Manager (Printed/Signature) Date
M. J. Lauterbach [signature] 6/21/94

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE
OFFICIAL DOCUMENT
DS
Date 6/30/94

Date Cancelled

Date Disapproved

9413290.1565

SUPPORTING DOCUMENT

1. Total Pages 11

2. Title

Description of Work for N Springs Expedited Response Action Barrier Characterization

3. Number

WHC-SD-EN-AP-176

4. Rev No.

0

5. Key Words

N Springs, strontium, groundwater

APPROVED FOR PUBLIC RELEASE

6/30/94 N. Dolis

6. Author

Name: G. J. Jackson

George J Jackson

Signature

Organization/Charge Code

85A00/PG22A

7. Abstract

Jackson, G. J., 1994, *Description of Work for N Springs Expedited Response Action Barrier Characterization*, WHC-SD-EN-AP-176, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

9. Impact Level N/A

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)

DATE JUL 11 1994

Station #12

CONTENTS

FIGURES:

TABLES:

1.0 PURPOSE

This description of work details the field activities associated with the characterization boreholes and monitoring wells to be drilled in the 100 N Area in support of the N Springs Expedited Response Action (ERA). It will be used in conjunction with the *N Springs Expedited Response Action Proposal* (DOE-RL 1993). Current characterization information associated with the N Springs ERA site is incomplete. These efforts will yield characterization information vital to the successful implementation of the N Springs ERA.

2.0 OBJECTIVES

Seven boreholes and three monitoring wells will be drilled at locations along the site where a steel sheet pile barrier will be installed. These locations are shown in Figure 1. The objectives of the work are as follows:

1. Verify the existence and determine the depth profile of an impermeable geologic layer believed to be at approximately a 50 ft depth

2. Obtain blow counts for well installation every five ft in order to determine the difficulty in driving piles through the geologic formations along the proposed barrier route

3. Collect groundwater chemistry data from the barrier route

4. Collect geologic and hydrologic data along the barrier route to support analytical modeling efforts.

3.0 BACKGROUND

Past-practices in the 100 N Area have resulted in contamination of soils and underlying groundwater in the reactor vicinity. The release of large volumes of water to the 1301-N and 1325-N liquid waste disposal facilities (LWDF) at the 100 N Area caused contaminants, particularly strontium-90, to be carried toward the Columbia River through the groundwater. Since the shutdown of N Reactor, the releases to the LWDF have been discontinued. The contamination, which is largely situated in the vadose zone, leaches into the aquifer and is transported to the river as a result of the natural movement of the groundwater. The contaminated groundwater at N Springs flows into the river through seeps and springs along the river's edge and is rapidly diluted to very low levels. N Springs represents a significant pathway for strontium-90 release into the river. Figure 1 shows the N Springs ERA site.

9413290.1569

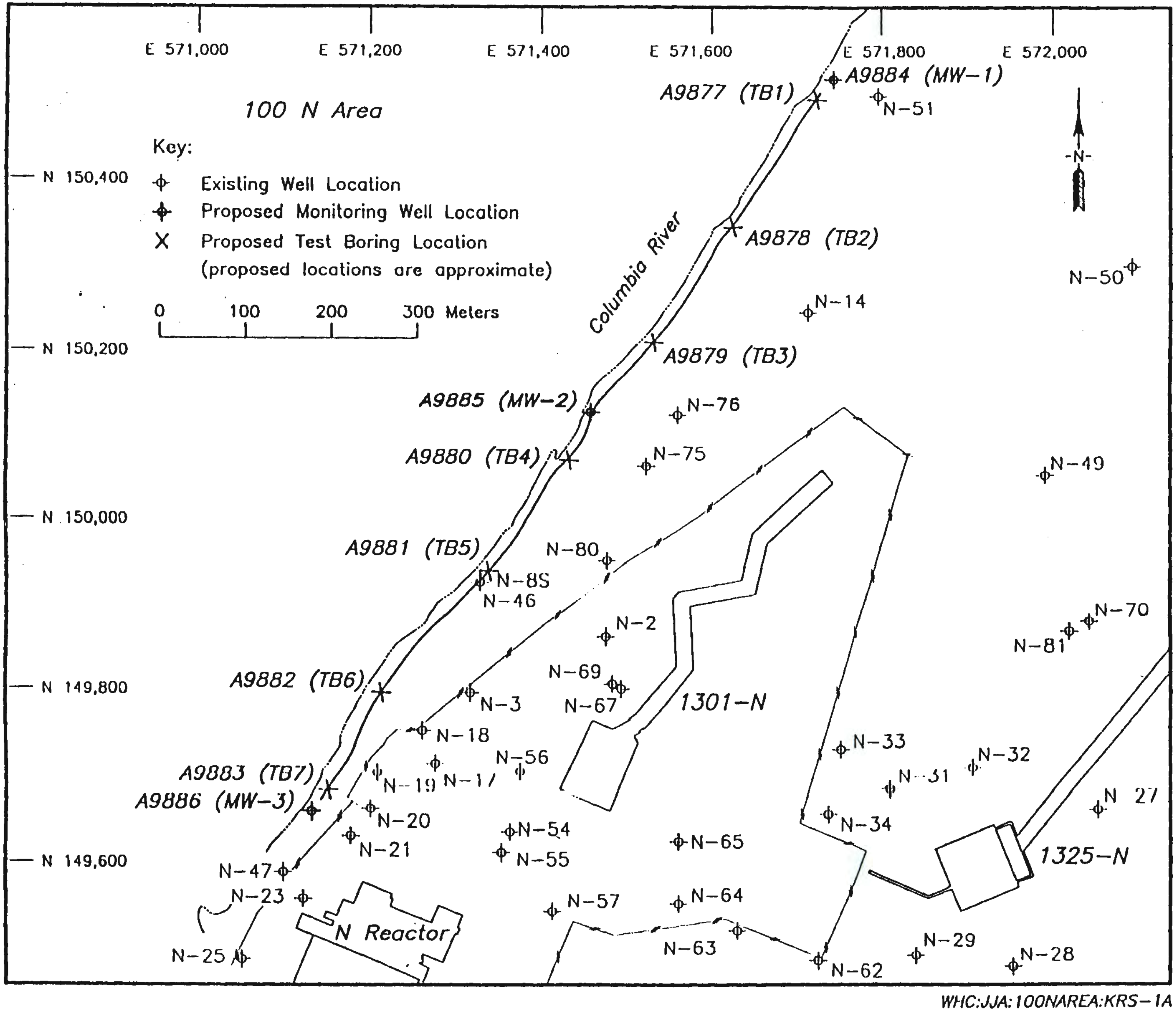


Figure 1. Location Map of Geotech Borings and Monitoring Wells.

4.0 SCOPE OF WORK

Seven boreholes and three monitoring wells will be drilled using a cable tool rig at the locations shown in Figure 1. The boreholes will be drilled to approximately a 60 ft depth, and the monitoring wells will be constructed to a 30 ft depth with 20 ft screens. Table 1 shows the activities which will occur during each geotech boring:

Table 1. Schedule of Activities for Each Geotech Boring.

Water Sample 1	Drill 5 ft into water table	Purge volume and method will be determined by the project geologist	Obtain water sample
Slug Test 1	Drill 10 ft into water table	Set temporary screen and bail water until clear or at project geologist's discretion	Perform slug test
Water Sample 2	Drill 20 ft in to water table	Purge volume and method will be determined by the project geologist	Take water sample
Water Sample 3 & Soil Sample 1	Drill to top of lower mud unit	Purge volume and method will be determined by the project geologist	Take water sample and soil sample of the top 2 ft of the lower mud unit
Slug Test 2	Drill 10 ft into top of lower mud unit	Set temporary screen and bail water until clear or at project geologist's discretion	Perform slug test

5.0 GENERAL REQUIREMENTS

5.1 HANFORD SITE GENERAL REQUIREMENTS

All personnel working to this Description of Work will have completed the 40-Hr Hazardous Waste Site Worker Training Program and will perform all work in accordance with the following:

- WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual* (EII) (WHC 1988d).
- WHC-CM-7-5, *Environmental Compliance Manual* (WHC 1988c)
- WHC-CM-1-6, *Radiological Control Manual* (WHC 1993)
- WHC-IP-0692, *Health Physics procedures Manual* (WHC 1991)

- WHC-CM-4-11, *ALARA Program* (WHC 1988a)
- WHC-EP-0383, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan* (WHC 1990)
- WHC-CM-4-3, *Industrial Safety Manual*, Vol. 1 through 4 (WHC 1987)
- WHC-CM-7-8, Vol 2, *Engineering and Geotechnology Functions and Procedures*, Rev. 1 (WHC 1988b)
- Site-specific health and safety plan/radiation work permits/job safety analysis

5.2 N SPRINGS ERA GENERAL REQUIREMENTS

The requirements and procedures applicable to the N Springs ERA field activities are specified in the Environmental Investigations and Site Characterization Manual (WHC 1988d). Applicable EIIs include:

EII 1.1	"Hazardous Waste Site Entrance Requirements"
EII 1.5	"Field Logbooks"
EII 1.13	"Readiness Review"
EII 2.1	"Preparation of Hazardous Waste Operations Permit"
EII 3.2	"Calibration and Control of Monitoring Instruments"
EII 3.4	"Field Screening"
EII 4.3	"Control of CERCLA and Other Past-Practice Investigation Derived Waste"
EII 5.1	"Chain of Custody"
EII 5.2	"Soil and Sediment Sampling"
EII 5.4	"Field Decontamination of Drilling, Well Development, and Sampling Equipment"
EII 5.5	"1706 KE Laboratory Decontamination of RCRA/CERCLA Sampling Equipment"
EII 5.10	"Obtaining Sample Identification Numbers and Accessing HEIS Data"
EII 5.11	"Sample Packaging and Shipping"
EII 6.1	"Activity Reports of Field Operations"

Additional requirements and procedures applicable to work associated with the N Springs ERA can be found in *Engineering and Geotechnology Functions and Procedures*, Vol. 2, specifically EII.1, "Test Pit Excavation in Radiological Areas" (WHC 1988b).

Each item on the checklist for tasks requiring no readiness review (EII 1.13, "Engineering and Geotechnology Readiness Review" [WHC 1988d]) will be signed and dated by the cognizant engineer or field team lead leader prior to the start of work.

6.0 SAMPLING AND FIELD ACTIVITIES

Task 1--Preparatory Activities

The access road to the barrier route has been poorly maintained and is radiologically contaminated. The road will be stabilized by placing clean soil on top of it such that heavy equipment may access the barrier route along the road safely and without the possibility of equipment contamination from using it.

The field team leader will hold a pre-job safety meeting prior to the initiation of work each day.

Task 2--Geotech Borings

Seven boreholes and three monitoring wells will be drilled as shown in Figures 2 and 3. A cable tool rig will be used to drill each geotech boring. Borehole cuttings will be continuously screened for radionuclides by Health Physics. All contaminated cuttings collected during the drilling of the monitoring wells will be placed in a drum and disposed of as radioactive waste.

During the excavation of each borehole, three activities will occur--obtaining groundwater samples, performing slug tests, and obtaining soil samples.

A small pump will be installed in the well at the depth where the groundwater sample will be taken. In order to insure that the sample contains groundwater from the desired sample depth, the hole will be cleared by purging. Water will be pumped through the hole until the project geologist determines that a sample can be drawn. A groundwater sample will then be collected, and the pump is removed.

A slug test will provide information for measuring the hydraulic conductivity of the aquifer, or how well water moves through the saturated geologic zone. A column of water will be inserted into the well to a particular depth and released, and the project geologist will measure the rate at which the water level of the column rises or declines.

Soil samples will be taken by the split-spoon method. At the desired depth of the soil sample, a split-spoon will be driven into the soil at the bottom of the borehole, collecting a sample within it.

The boreholes will be backfilled with clean soil upon the completion of the scheduled activities. The three monitoring wells will be constructed and have a 20 ft screen installed in them, so that groundwater samples may be taken at regular intervals.

Figure 2. Schematic of the geotech borings.

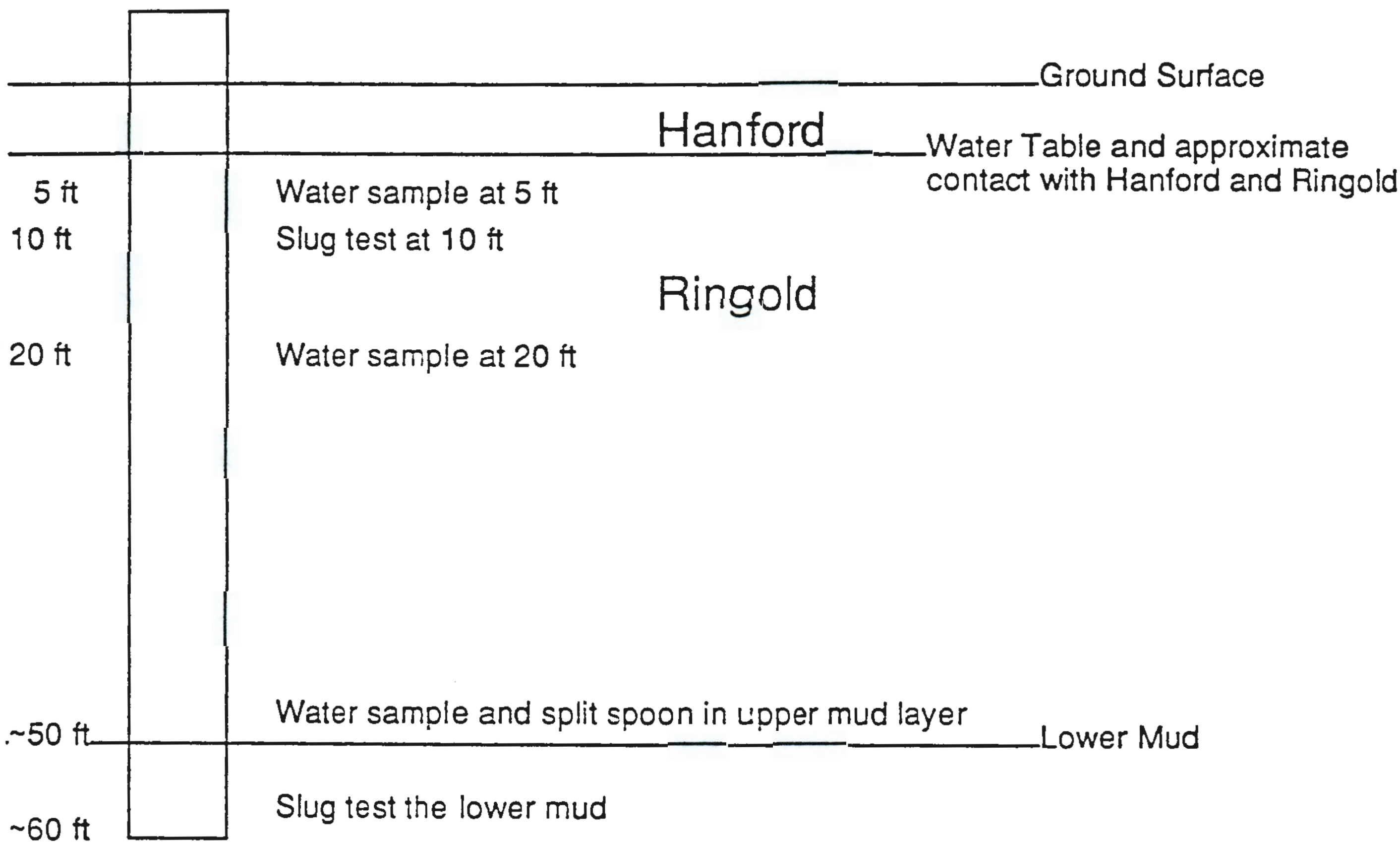
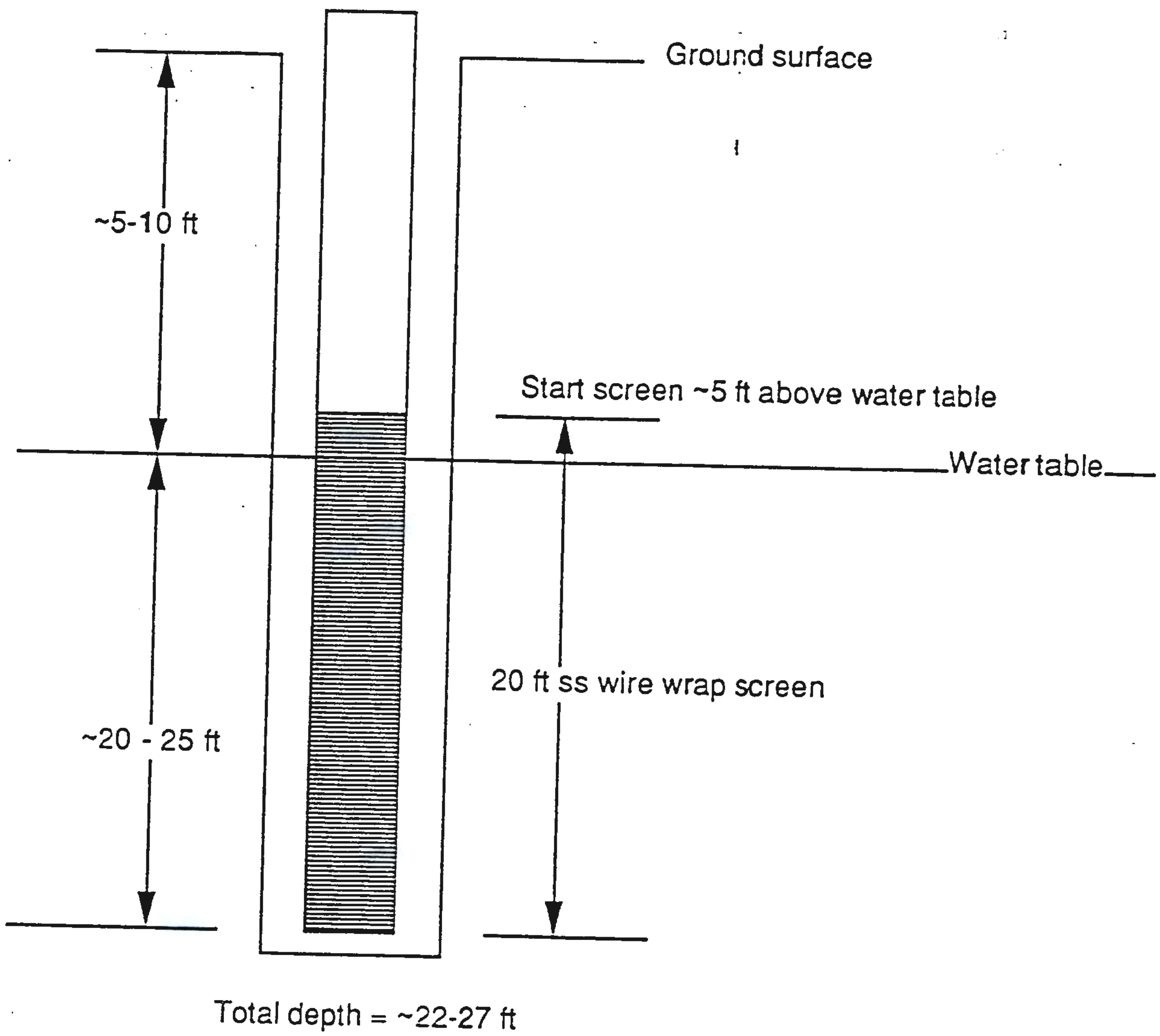


Figure 3. Schematic of the monitoring wells.



7.0 LABORATORY ANALYSIS

Samples collected for chemical analysis will be analyzed for target compound list and target analyte list components by Pacific Northwest Laboratories (PNL). To test for the presence of specific anions, EPA (1986) method SW-846 will be used for all analytes except radionuclides, which will be analyzed using standard methods defined in the laboratory statement of work. PNL will use their own testing methods for all analytes.

8.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

Internal quality control samples shall be collected at each facility by the sampling scientist as specified in *Quality Assurance Project Plan*, (DOE-RL 1993, Appendix A) with the revisions as outlined below. The sampling shall be documented in the sampling logbook per EII 1.5, "Field Logbooks," (WHC 1988a).

- Field Duplicate Samples--A minimum of one duplicate per set of samples or one duplicate every 20 samples, whichever is greater, shall be collected. Duplicate samples shall be retrieved from the same sampling location using the same equipment and sampling technique and shall be placed in two sets of identically prepared and preserved containers. All field duplicates shall be analyzed independently to provide an indication of the reproducibility of sampling and/or analysis techniques.

- Split Samples--At the direction of the cognizant engineer, and if a laboratory is designated, split samples shall be collected at the same frequency as duplicate samples.

- Field Blanks--Field blanks shall consist of silica sand transferred into clean sample containers at the site. Field blanks are used as a check on environmental contamination and shall be collected for each borehole, or one for every 20 samples, whichever is greater.

- Equipment Rinsate Blanks--Equipment rinsate blanks consist of pure deionized distilled water or silicon sand (depending on the media being collected) that is run through decontaminated sampling equipment and placed in clean sample containers. Equipment blanks are used to verify the adequacy of sampling equipment decontamination procedures and shall be collected at the same frequency as field duplicate samples, where applicable.

- Volatile Organic Analysis Trip Blanks--The volatile organic analysis trip blanks consist of silica sand added to clean sample containers accompanying each batch of coolers shipped to the analytical facility. Trip blanks shall be returned unopened to the laboratory and are prepared as a check of possible contamination originating from the container preparation methods, shipment, handling, storage, or site conditions. The trip blank shall be analyzed for volatile organic compounds (EPA's target compound list).

9.0 SCHEDULE

TASK	START DATE	END DATE
Stabilize access road	7/1/94	7/31/94
Drill geotech borings	8/1/94	9/30/94

10.0 REFERENCES

DOE/RL, 1993, *N Springs Expedited Response Action Proposal*, DOE/RL-93-23, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

EPA, 1986, *Test Methods for Evaluating Solid Waste, Physical and Chemical Methods*, SW-846, U.S. Environmental Protection Agency, Richland, Washington.

WHC, 1987, *Industrial Safety Manual*, Vol. 1 - 4, WHC-CM-4-3, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988a, *ALARA Program*, WHC-CM-4-11, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988b, *Engineering and Geotechnology Functions and Procedures*, Vol. 2, WHC-CM-7-8, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988c, *Environmental Compliance Manual*, WHC-CM-7-5, Westinghouse Hanford Company, Richland, Washington.

WHC, 1988d, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990, *Environmental Engineering, Technology, and Permitting Function Quality Assurance Program Plan*, WHC-EP-0383, Westinghouse Hanford Company, Richland, Washington.

WHC, 1991, *Health Physics Procedures Manual*, WHC-IP-0692, Westinghouse Hanford Company, Richland, Washington.

WHC, 1993, *Radiological Control Manual*, WHC-CM-1-6, Westinghouse Hanford Company, Richland, Washington.