

ENGINEERING CHANGE NOTICE	Page 1 of <u>2</u>	1. ECN 633780 ----- Proj. ECN N/A
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2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. J. W. Lindberg, HTS, H6-06, 376-5005	3a. USQ Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Date July 12, 1996
	5. Project Title/No./Work Order No. RCRA and Operational Monitoring	6. Bldg./Sys./Fac. No. 2440 STVCN	7. Approval Designator Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-EN-AP-189, Rev. 0	9. Related ECN No(s). NA	10. Related PD No. NA

11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. NA	11c. Modification Work Complete NA _____ Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) NA _____ Cog. Engineer Signature & Date
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12. Description of Change
 The second and third paragraphs in Section 5.1 are changed to add detail about proposed well for drilling.

13a. Justification (mark one)

Criteria Change <input type="checkbox"/>	Design Improvement <input type="checkbox"/>	Environmental <input checked="" type="checkbox"/>	Facility Deactivation <input type="checkbox"/>
As-Found <input type="checkbox"/>	Facilitate Const <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>

13b. Justification Details
 Washington State Department of Ecology concurred with Rev. 0 about combining the three PUREX cribs into one RCRA groundwater monitoring site. Therefore, Rev. 0 temporarily fulfills the requirements for the approved design until the groundwater monitoring plan is released. However, Rev. 0 needs more detail in the description of the new well.

14. Distribution (include name, MSIN, and no. of copies)

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DATE:		ID:
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34		

Combination of RCRA Groundwater Monitoring Activities for the 216-A-36B, 216-A-10, 216-A-37-1 Cribs

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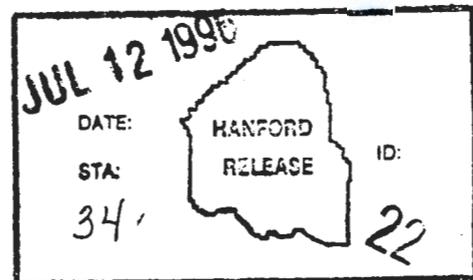
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B&R Code: EW3120100 Total Pages: 35

Key Words: Aquifer, geology, hydrogeology, groundwater sampling, water table, RCRA, groundwater contamination, groundwater chemistry.

Abstract: This paper proposes to combine and integrate RCRA groundwater monitoring activities for the 216-A-36B, 216-A-10, and 216-A-37-1 Cribs in the 200 East Area south of the Plutonium-Uranium Extraction (PUREX) Plant. The primary reasons for this position paper are: (1) to address RCRA groundwater monitoring requirements at the 216-A-37-1 Crib; and (2) to propose an alternative groundwater program that deviates from the current unit-specific approach. An assessment-level monitoring program using 10 existing wells and one new well is proposed.

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Chris Killenhand 7-12-96
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Nitrate, arsenic ^{90}Sr , ^{129}I , and tritium exceed the primary drinking water standards in at least some of the wells near the cribs. The A-37-1 Crib has not been monitored as a RCRA site in the past, but data from wells adjacent to the crib show that it also has affected groundwater (see Section 4). An assessment monitoring program, which will determine the nature, extent, and rate of groundwater contamination, is appropriate for the A-10, A-36B, and A-37-1 Cribs. The proposed monitoring program is technically supported and meets the intent of the regulations more closely than individual TSD unit-specific detection monitoring programs.

5.1 MONITORING NETWORK

The proposed monitoring network will include approximately 10 existing monitoring wells and 1 new well. Figure 2 and Table 3 show preliminary choices for the network. Figure 11 shows the existing wells in the area. The wells were chosen for their location, well design, and concentration history. The selection of appropriate monitoring well locations (new and existing) will depend on adequate spacial coverage to define the existing contaminant plumes. Well design and condition must be evaluated to ensure that the well yields representative data (e.g., casing materials, screened depth, and annular seals may affect groundwater data). Wells with historical chemistry data will be evaluated and selected over those with less data so that trending analysis can be used to delineate contaminant migration and determine appropriate sampling frequencies. Wells with greater data variability will be considered over wells with unchanging or minimal data.

The information gathered from the new well will fill the data gaps. The well will be drilled to basalt (approximately 525 ft of drill depth) at the proposed location (Figure 2) and sampled for both groundwater and soil samples to characterize the uppermost aquifer system. Groundwater samples will be collected at the water table (approximately 320 ft of drill depth) and at a 20 to 30 ft spacing until total depth (TD) is reached. The groundwater samples will be screened in the field for the most likely contaminants including nitrate and tritium. Soil samples will be collected at sediment changes below the water table in order to characterize the physical characteristics of the aquifers and aquitards. Analyses on the soil samples will include grain size, effective porosity, and saturated hydraulic conductivity. Clays from a sample collected from the Ringold Formation lower mud unit will be identified by X-Ray diffraction (XRD), and the specific basalt member at TD verified by X-Ray Fluorescence (XRF) of a basalt core. After installing each string of temporary casing, the well will be logged geophysically using the spectral gamma tool.

After drilling to basalt, the new borehole will be backfilled to within 20 ft of the water table and the 20 ft well screen installed across the water table to subsequently sample groundwater at the top of the aquifer. To maximize well life in an area with a receding water table, approximately 19 ft of the well screen will be installed below the water table. Upon well completion the well will be developed and a slug test performed to estimate hydraulic conductivity of the completed well.