

# START

9 0019486

## ENGINEERING CHANGE NOTICE

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|           |        |
|-----------|--------|
| 1. ECN    | 166756 |
| Proj. ECN |        |

|   |  |  |                                     |  |
|---|--|--|-------------------------------------|--|
| 2. ECN Category (mark one)                                      |  | Supplemental <input checked="" type="checkbox"/> | Change ECN <input type="checkbox"/> | Supersedure <input type="checkbox"/>       |
| Cancel/Void <input type="checkbox"/>                            | Direct Revision <input type="checkbox"/> | Temporary <input type="checkbox"/>               | Discovery <input type="checkbox"/>  |  |
| 3. Originator's Name, Organization, MSIN, and Telephone No.     |  |  | 4. Date                             |  |
| C. D. Delaney, Geosciences Group, H4-56, 6-9235                 |  |  | 2/28/92                             |  |
| 5. Project Title/No./Work Order No.                             |  | 6. Bldg./Sys./Fac. No.                           |                                     | 7. Impact Level                            |
| 216-B-3 Pond/R41AB  |  | 216-B-3 Pond System                              |                                     | 2  |
| 8. Document Number Affected (include rev. and sheet no.)        |  | 9. Related ECN No(s).                            |                                     | 10. Related PO No.                         |
| WHC-SD-EN-AP-030, Rev. 0 9533                                   |  | N/A  |                                     | N/A  |
| 11a. Modification Work  | 11b. Work Package Doc. No.               | 11c. Complete Installation Work                  |                                     | 11d. Complete Restoration (Temp. ECN only) |
| <input type="checkbox"/> Yes (fill out Blk. 11b)                | N/A                                      | N/A  |                                     | N/A  |
| <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d) |  | _____<br>Cog. Engineer Signature & Date          |                                     | _____<br>Cog. Engineer Signature & Date    |

12. Description of Change  
 This supplement to the 216-B-3 Pond System groundwater quality assessment plan addresses placement of two monitoring wells to be installed in 1992 under the RCRA program per M-24-27.



|  |   |  |   |  |
|--|---|--|---|--|
| 13a. Justification (mark one)                    |   | Criteria Change <input type="checkbox"/> | Environmental <input checked="" type="checkbox"/> | Facilitate Const. <input type="checkbox"/> |
| Design Error/Omission <input type="checkbox"/>   | Design Improvement <input type="checkbox"/> | As-Found <input type="checkbox"/>        | Const. Error/Omission <input type="checkbox"/>    |  |
| 13b. Justification Details<br>See attached text. |   |  |   |  |

|  |               |
|--|---------------|
| 14. Distribution (include name, MSIN, and no. of copies) | RELEASE STAMP |
| EXTERNAL LIMITS  |               |

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|  |  |                                     |  |                                     |  |
|--|--|-------------------------------------|--|-------------------------------------|--|
| 15. Design Verification Required<br><input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No | 16. Cost Impact                        |                                     |  |                                     | 17. Schedule Impact (days)<br>Improvement <input type="checkbox"/><br>Delay <input type="checkbox"/> |
|  | ENGINEERING                            |                                     | CONSTRUCTION                           |                                     |  |
|  | Additional <input type="checkbox"/> \$ | Savings <input type="checkbox"/> \$ | Additional <input type="checkbox"/> \$ | Savings <input type="checkbox"/> \$ |  |

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

|   |   |  |
|---|---|--|
| SDD/DD <input type="checkbox"/>                         | Seismic/Stress Analysis <input type="checkbox"/>          | Tank Calibration Manual <input type="checkbox"/>       |
| Functional Design Criteria <input type="checkbox"/>     | Stress/Design Report <input type="checkbox"/>             | Health Physics Procedure <input type="checkbox"/>      |
| Operating Specification <input type="checkbox"/>        | Interface Control Drawing <input type="checkbox"/>        | Spares Multiple Unit Listing <input type="checkbox"/>  |
| Criticality Specification <input type="checkbox"/>      | Calibration Procedure <input type="checkbox"/>            | Test Procedures/Specification <input type="checkbox"/> |
| Conceptual Design Report <input type="checkbox"/>       | Installation Procedure <input type="checkbox"/>           | Component Index <input type="checkbox"/>               |
| Equipment Spec. <input type="checkbox"/>                | Maintenance Procedure <input type="checkbox"/>            | ASME Coded Item <input type="checkbox"/>               |
| Const. Spec. <input type="checkbox"/>                   | Engineering Procedure <input type="checkbox"/>            | Human Factor Consideration <input type="checkbox"/>    |
| Procurement Spec. <input type="checkbox"/>              | Operating Instruction <input type="checkbox"/>            | Computer Software <input type="checkbox"/>             |
| Vendor Information <input type="checkbox"/>             | Operating Procedure <input type="checkbox"/>              | Electric Circuit Schedule <input type="checkbox"/>     |
| OM Manual <input type="checkbox"/>                      | Operational Safety Requirement <input type="checkbox"/>   | ICRS Procedure <input type="checkbox"/>                |
| FSAR/SAR <input type="checkbox"/>                       | IEFD Drawing <input type="checkbox"/>                     | Process Control Manual/Plan <input type="checkbox"/>   |
| Safety Equipment List <input type="checkbox"/>          | Cell Arrangement Drawing <input type="checkbox"/>         | Process Flow Chart <input type="checkbox"/>            |
| Radiation Work Permit <input type="checkbox"/>          | Essential Material Specification <input type="checkbox"/> | Purchase Requisition <input type="checkbox"/>          |
| Environmental Impact Statement <input type="checkbox"/> | Fac. Proc. Samp. Schedule <input type="checkbox"/>        |  |
| Environmental Report <input type="checkbox"/>           | Inspection Plan <input type="checkbox"/>                  |  |
| Environmental Permit <input type="checkbox"/>           | Inventory Adjustment Request <input type="checkbox"/>     |  |

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

| Document Number/Revision | Document Number/Revision | Document Number/Revision |
|--------------------------|--------------------------|--------------------------|
| N/A                      |                          |                          |

20. Approvals

| Signature   | Date            | Signature            | Date  |
|---|-----------------|----------------------|-------|
| OPERATIONS AND ENGINEERING                                |                 | ARCHITECT-ENGINEER   |       |
| Cog./Project Engineer B. A. Williams <i>B.A. Williams</i> | <u>2/28/92</u>  | PE                   | _____ |
| Cog./Project Engr. Mgr. A.J. Knepp <i>A.J. Knepp</i>      | <u>2/28/92</u>  | QA                   | _____ |
| QA L. W. Vance  | _____           | Safety               | _____ |
| Safety D. J. Alexander                                    | _____           | Design               | _____ |
| Security  | _____           | Other                | _____ |
| Proj. Prog./Dept. Mgr.                                    | _____           |                      | _____ |
| Def. React. Div.  | _____           |                      | _____ |
| Chem. Proc. Div.  | _____           |                      | _____ |
| Def. Wst. Mgmt. Div.                                      | _____           | DEPARTMENT OF ENERGY | _____ |
| Adv. React. Dev. Div.                                     | _____           |                      | _____ |
| Proj. Dept.   | _____           |                      | _____ |
| Environ. Div.   | _____           | ADDITIONAL           | _____ |
| IRM Dept.   | _____           |                      | _____ |
| Facility Rep. (Ops.)                                      | _____           |                      | _____ |
| RCRA Coordinate R. L. Jackson <i>R. Jackson</i>           | <u>02/28/92</u> |                      | _____ |

## 12. DESCRIPTION OF CHANGE

### Available Background Information

This ECN is a supplement to the existing groundwater quality assessment plan and addresses the placement of two additional groundwater monitoring wells at the 216-B-3 Pond system (B Pond system). Reference to the original plan and to other existing documents may be useful and are summarized here. The interim-status groundwater monitoring plan outlines a groundwater monitoring plan for the B Pond system (WHC 1989). The interim characterization report contains the most up-to-date summary of site hydrology and geology, and a description of the detection monitoring system (WHC 1990). The 1991 RCRA annual report is a summary of activities and events at the B Pond system during 1991 (DOE/RL 1992). The 1991 RCRA quarterly reports contain the most recent chemistry data gathered during monitoring of the B Pond system (DOE/RL 1991a, b, and c). The assessment plan contains the first phase of the planned activities to investigate the possibility of groundwater contamination at the B Pond system (Harris 1990). The closure plan contains the strategy for closure of the B Pond system and a description and listing of the effluent sources (DOE/RL 1989).

### General Objectives for the 1992 Drilling Program at the B Pond System

This supplement addresses placement of two monitoring wells to be drilled at the B Pond system in 1992. This phase of the drilling program is planned as part of the effort to establish an adequate assessment level monitoring well network for the B Pond system. The B Pond system transitioned from a detection level to an assessment level monitoring program during 1990. This drilling phase will provide additional information on the possible presence and extent of contamination in the groundwater underlying the B Pond system. In general, the wells will be located 1,750 ft away from the line of compliance, downgradient of the ponds, and screened in the top of the uppermost aquifer. The uppermost aquifer in the area of the B Pond system ranges from unconfined to confined because of a confining clay layer. Consideration has been given to the possible changes in the shape and positioning of the groundwater mound in the future to ensure the wells will have the longest useful lifetime. Details on the well placement strategy used to locate two monitoring wells for the B Pond system are discussed in the following sections.

### Strategy for Locating Wells

The configuration of the ponds and the locations of the current groundwater monitoring wells for the B Pond system are shown in Figure 1. The main pond and three lobes are considered to have adequate shallow monitoring well coverage with a total of 18 wells located around the main pond and lobe boundaries. The main lobe has five wells located around its perimeter (699-44-43B, 699-44-42, 699-43-43, 699-43-42J, and 699-42-42B). The 3A and 3B ponds have monitoring well coverage on the northern, eastern, and southern boundaries (699-44-42, 699-43-41E, 699-43-41F, 699-43-41G, 699-42-40A, and 699-42-41). The 3C pond has seven wells located around the perimeter (699-40-39, 699-40-40A, 699-40-40B, 699-41-40, 699-42-39A, 699-42-39B, and 699-42-40A).

The presence of two confining layers of silt and clay underlying the B Pond system area results in a more complex hydrologic system due to their influence over groundwater velocity and flow directions. The confining units are likely to control the vertical extent of the aquifer receiving recharge and affect vertical communication and head and chemistry distribution within the aquifer. Cluster wells screened in different vertically separated intervals within the aquifer have been installed to better define conditions beneath the ponds. Cluster wells have been constructed in separate but adjacent boreholes. The B Pond system wells monitor the top of the unconfined aquifer, the top of the semiconfined aquifer, or a lower portion of the semiconfined aquifer (Table 1).

The primary objectives of the assessment program as required in 40 CFR 265.92 (d)(3) and as contained in the RCRA Technical Enforcement Guidance Document (EPA 1986) are to determine the concentrations and extent of possible contamination in the aquifer and the rate of contaminant migration. "The water table contour map of the B Pond system area for June 1991 is shown in Figure 2. The area downgradient of the cluster 699-43-41E, 699-43-41F, and 699-43-41G is significant to the assessment program because of the elevated concentrations of TOC and TOX found in 699-43-41E and 699-43-41F. In addition, elevated levels of TOC have been detected in 699-42-40A, 699-42-42B, and 699-43-42J. Two wells will be installed 1,750 ft downgradient from these wells (southwest and northeast) to assess the horizontal extent of possible contamination in the uppermost portion of the aquifer. The extent of a confining layer will be assessed to determine the influence on groundwater velocity and flow directions. The groundwater velocity and flow directions in turn, influence contaminant distribution within the aquifer.

### Well Locations

Wells will be constructed as detailed in the groundwater monitoring plan (WHC 1989). The wells are located to monitor the upper portion of the confined aquifer (the uppermost aquifer in the B Pond system area) and will be installed using 10 ft of screen positioned in saturated material below a confining clay or silt layer. Both wells will be overdrilled to basalt to determine the saturated thickness of the aquifer and to determine the basalt flow that occurs beneath the B Pond system area. Details of the stratigraphy of this area can be seen on the fence diagram in Chapter 5.0 of the Closure/Post-Closure Plan (Figure 5-14). The well designations used in this ECN are temporary and will be assigned permanent numbers after surveying is completed. Well installation locations are shown in Figure 3 and discussed in the following paragraphs.

- BP92-1--This well will be placed approximately 1,750 ft to the southwest of the 3B pond to provide monitoring well coverage downgradient from the monitoring wells with elevated levels of TOC and TOX and to assess the possible horizontal extent of contamination in the aquifer. Available stratigraphic information indicates the aquifer may be confined beneath a clay and silt layer at this location. The well will be overdrilled approximately 84 ft to basalt and then backfilled to the depth of the screened interval with bentonite (pellets, hole plug, or slurry). The well will be screened in the first saturated unit beneath the confining layer.

- BP92-2--This well will be placed approximately 1,750 ft northeast of 699-43-41E, 699-43-41F, and 699-43-41G to provide monitoring well coverage downgradient from these wells and to assess the possible horizontal extent of contamination in the aquifer. Little data is available to assess the configuration of the groundwater mound in this area. Data will be used to close the groundwater table contour lines on this side of the mound and to gather stratigraphic information. Aquifer conditions in this area are expected to be confined because of a clay or silt layer. The well will be overdrilled approximately 58 ft to basalt and then backfilled to the depth of the screened interval with bentonite (pellets, hole plug, or slurry). The well will be screened in the first saturated unit beneath the confining layer.

### 13b. Justification

Two additional groundwater monitoring wells are needed at the B Pond system in order to continue RCRA assessment activities as required in WAC 173-30-645. This requirement must be satisfied to maintain regulatory compliance for this interim status facility.

### References

- DOE/RL, 1989, *216-B-3 Pond System Closure/Postclosure Plan*, DOE/RL 89-28, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- DOE/RL, 1991a, *Quarterly Report of RCRA Groundwater Monitoring Data for Period January 1, 1991 through March 31, 1991*, DOE/RL-91-26, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- DOE/RL, 1991b, *Quarterly Report of RCRA Groundwater Monitoring Data for Period April 1, 1991 through June 30, 1991*, DOE/RL-91-47, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- DOE/RL, 1991c, *Quarterly Report of RCRA Groundwater Monitoring Data for Period July 1, 1991 Through September 30, 1991*, DOE/RL-91-57, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- DOE/RL, 1992, *Annual Report for RCRA Groundwater Monitoring Projects at Hanford Facilities for 1991*, DOE/RL-92-03, U.S. Department of Energy-Richland Field Office, Richland, Washington.
- EPA, 1986, *Resource Conservation and Recovery Act (RCRA) Ground-Water Monitoring Technical Enforcement Guidance Document*, OWSER-9950.1, U.S. Environmental Protection Agency, Washington, D.C.
- Harris, S. F., 1990, *Groundwater Quality Assessment Plan for the 216-B-3 Pond System*, WHC-SD-EN-AP-030, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1989, *Interim-Status Ground-Water Monitoring Plan for the 216-B-3 Pond*, WHC-SD-EN-AP-013, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990, *Interim Hydrogeologic Characterization Report for the 216-B-3 Pond*, WHC-SD-EN-EV-002, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Table 1. 216-B-3 Pond Groundwater Monitoring Network.

| Well                   | Year of installation | Aquifer                   | Sampling | Water levels | Well standard | Other networks |
|------------------------|----------------------|---------------------------|----------|--------------|---------------|----------------|
| 299-E18-1 <sup>1</sup> | 1988                 | top of unconfined         | SA       | M            | RCRA          | 2101-M         |
| 299-E32-4 <sup>1</sup> | 1987                 | top of unconfined         | SA       | M            | RCRA          | LLWMA-2        |
| 699-40-39              | 1989                 | top of semiconfined       | Q        | M            | RCRA          | none           |
| 699-40-40A             | 1991                 | lower semiconfined        | Q        | M            | RCRA          | none           |
| 699-40-40B             | 1991                 | top of semiconfined       | Q        | M            | RCRA          | none           |
| 699-41-40              | 1989                 | top of semiconfined       | Q        | M            | RCRA          | none           |
| 699-42-39A             | 1991                 | top of semiconfined       | Q        | M            | RCRA          | none           |
| 699-42-39B             | 1991                 | lower semiconfined        | Q        | M            | RCRA          | none           |
| 699-42-40A             | 1981                 | top of semiconfined       | SA       | M            | RCRA          | none           |
| 699-42-41              | 1991                 | top of unconfined         | Q        | M            | RCRA          | none           |
| 699-42-42B             | 1988                 | top of unconfined         | SA       | M            | RCRA          | none           |
| 699-43-40              | 1991                 | top of unconfined         | Q        | M            | RCRA          | none           |
| 699-43-41E             | 1989                 | top of semiconfined       | Q        | M            | RCRA          | none           |
| 699-43-41F             | 1989                 | lower semiconfined        | Q        | M            | RCRA          | none           |
| 699-43-41G             | 1991                 | top of lower semiconfined | Q        | M            | RCRA          | none           |
| 699-43-42J             | 1988                 | lower unconfined          | SA       | M            | RCRA          | none           |
| 699-43-43              | 1988                 | top of unconfined         | Q        | M            | RCRA          | A-29           |
| 699-43-45              | 1989                 | top of unconfined         | Q        | M            | RCRA          | A-29           |
| 699-44-42              | 1988                 | top of unconfined         | SA       | M            | RCRA          | none           |
| 699-44-43B             | 1989                 | top of unconfined         | Q        | M            | RCRA          | none           |

<sup>1</sup>upgradient well.

LLWMA= low level waste management area.

M = frequency on a monthly basis.

Q = frequency on a quarterly basis.

RCRA = constructed to RCRA specified standards.

SA = frequency on a semiannual basis.

Figure 1. Current Groundwater Monitoring Network for the B Pond System.

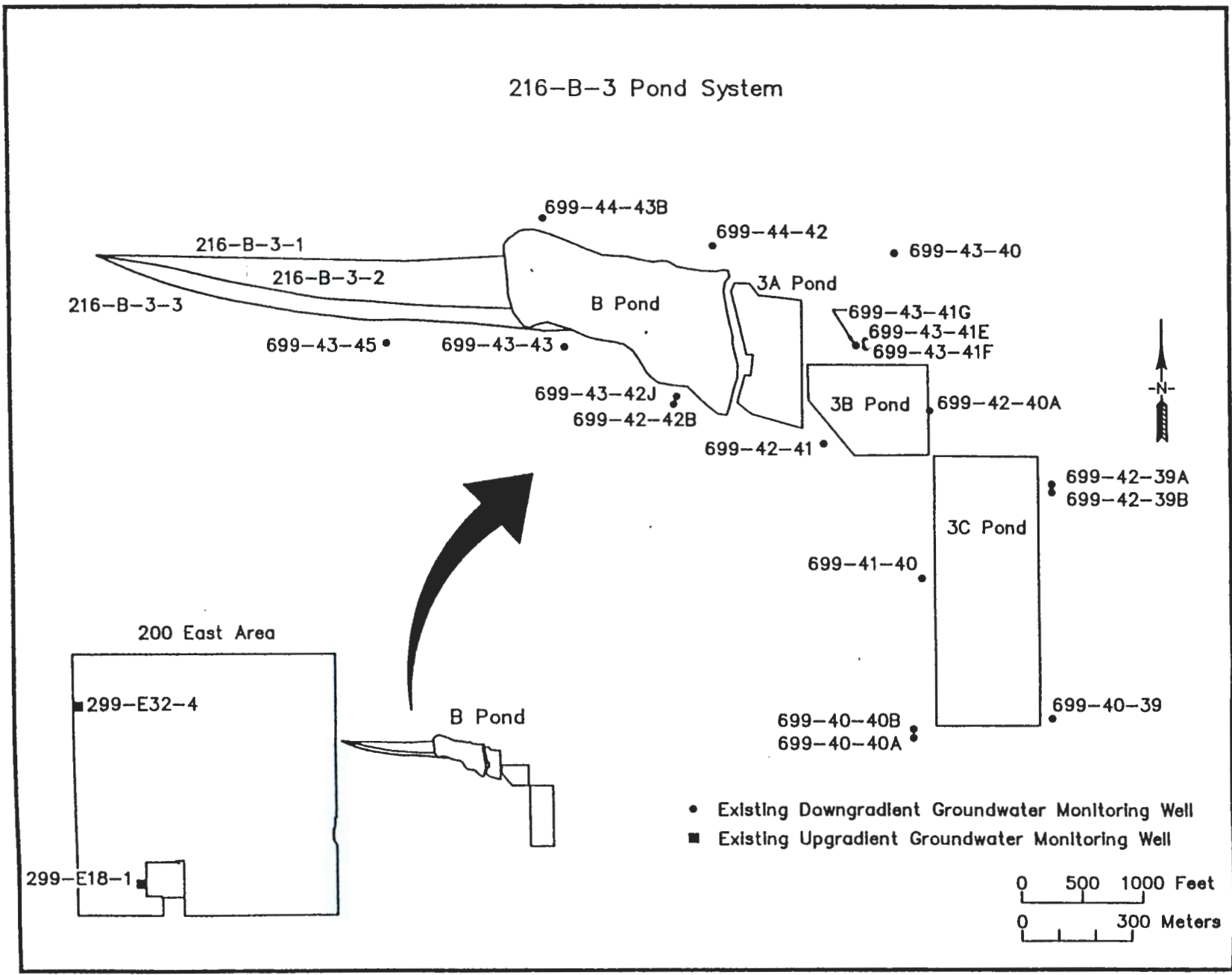
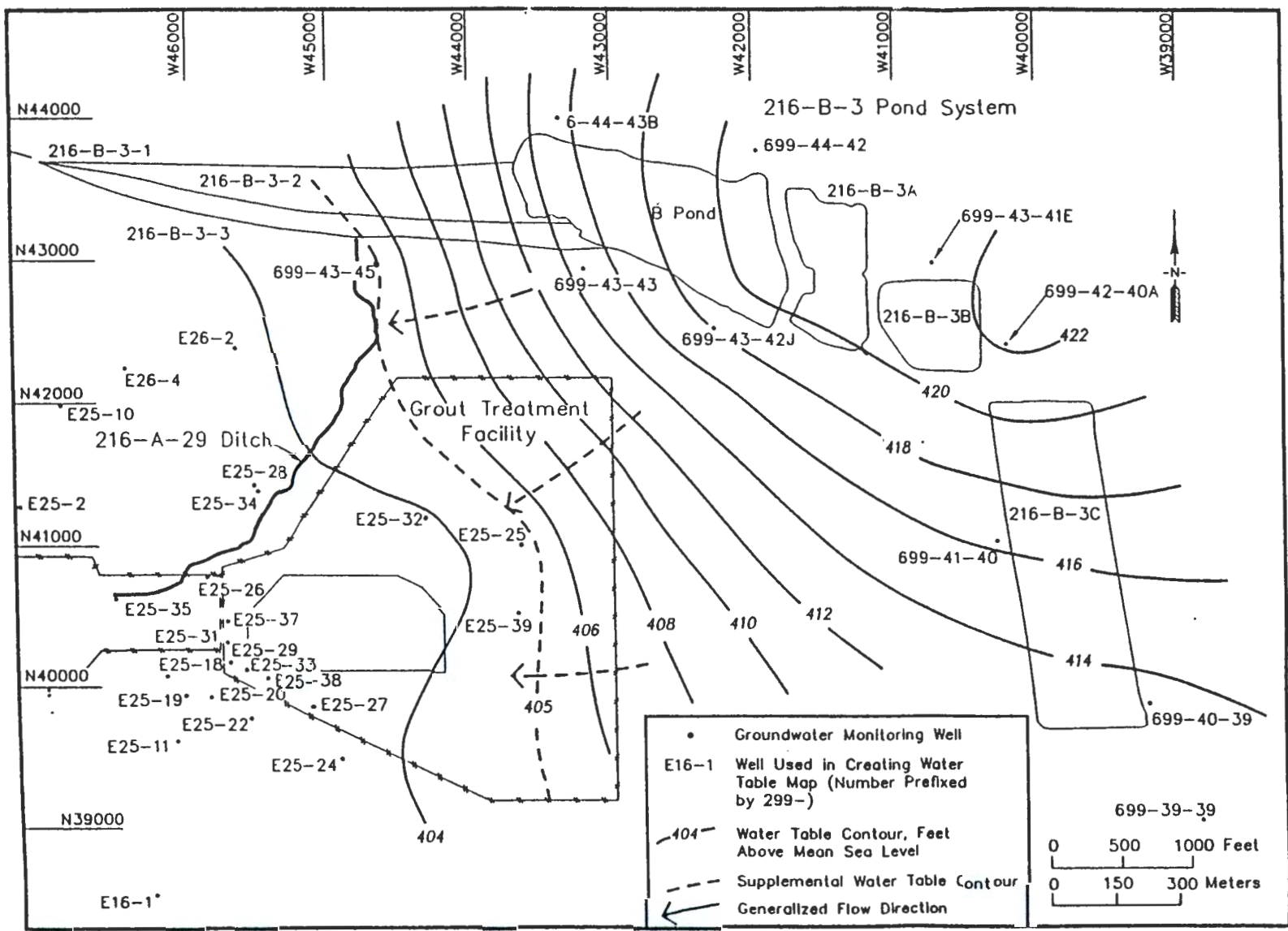


Figure 2. June 1991 Water Table Contour Map of the B Pond System.





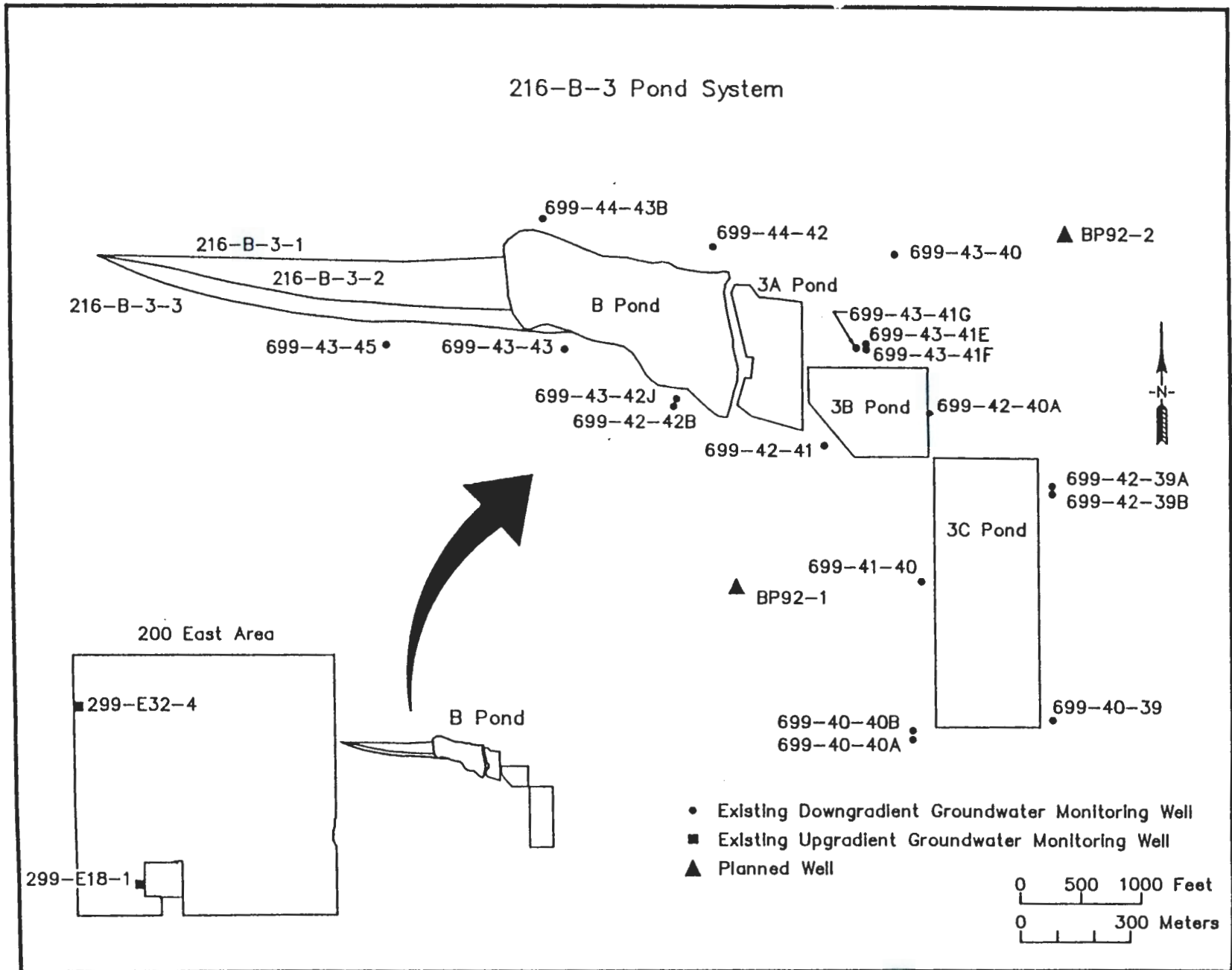


Figure 3. Planned Groundwater Monitoring Well Locations for Installation During 1992 at the B Pond System.