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Summary Report of Hanford Site Well Remediation and Decommissioning Activities for Fiscal Year 1994

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management



Westinghouse
Hanford Company Richland, Washington

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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<p>7. Abstract</p> <p>This document summarizes well remediation and decommissioning activities completed by Westinghouse Hanford Company on the Hanford Site for the period October 1, 1993 through September 30, 1994. The report also is intended to provide a background on past activities and status of current efforts.</p> <p>This report was prepared by K. D. Reynolds and staff of the Well Services Support Group, Westinghouse Hanford Company.</p>		
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EXECUTIVE SUMMARY

Remediation and decommissioning of Hanford Site wells has become an integral part of Hanford Site Environmental Restoration (ER) and *Resource Conservation and Recovery Act of 1976* (RCRA) groundwater monitoring programs. A well remediation and decommissioning program was funded and implemented in fiscal year (FY) 1993 under the RCRA and Operational Monitoring (ROM) Program. Funding for this work increased in FY 1994. The program is projected to continue over the next several years with increased emphasis from regulatory agencies, although funding for identified work scope remains uncertain.

In FY 1994 well decommissioning activities conducted for the ROM program were centered around the 200 West Area; activities for the ER program were centered in the Fitzner/Eberhart Arid Land Ecology (ALE) (Reserve) unit and the Wahluke Slope (North Slope) area. A total of 116 wells and test borings were decommissioned between the two programs during FY 1994. Additionally, five wells were identified as in need of remediation and were successfully brought into compliance with regulatory requirements.

As Hanford Site restoration and remediation efforts increase in scope, the well decommissioning program will remain dynamic. The program will aggressively seek to fulfill the needs of the various environmental cleanup and groundwater/vadose monitoring programs. Wells that do not meet regulatory requirements for preservation will continually be identified and remediated or decommissioned accordingly.

The well remediation/decommissioning program continues to meet with success and is evolving. The following is a tabulation of FY 1994 accomplishments:

- Completed preliminary fitness-for-intended-use evaluations for 550 wells in the 600 Area, consisting of as-built and construction summaries.
- Completed 194 field inspection reports for individual wells.
- Approved fitness-for-intended-use evaluation recommendations for 101 wells.
- Issued summaries of construction and field observations for 244 wells in the 200 East Area.
- Documented remediation, rehabilitation, and decommissioning activities for 26 wells in the 300-FF-5 operable unit, and verified construction information for 19 wells drilled during Phase I of the remedial investigation of the 300-FF-5 operable unit.
- Completed remediation for six wells in the 300 and 600 Areas.
- Completed decommissioning for 116 wells, characterization borings/probes, and test array borings.

- Completed comprehensive maintenance for 82 wells.
- Issued closeout report for the ALE and North Slope decommissioning in October 1994.

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ACKNOWLEDGEMENTS

This report was supported by the Westinghouse Hanford Company RCRA Operational Monitoring Program, Office of Waste Management. The Hanford Site well status data were obtained from the database maintained by the Well Services Group, of the Earth and Environmental Technical Services Function, Westinghouse Hanford Company.

The authors wish to thank the numerous technical and administrative staff who have contributed to this work from Pacific Northwest Laboratory, Westinghouse Hanford Company, and ICF Kaiser Hanford Company.

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TERMS

ALE	Fitzner/Eberhart Arid Land Ecology
BWIP	Basalt Waste Isolation Project
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
COE	U.S. Army Corps of Engineers
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EII	Environmental Investigations Instructions
ER	Environmental Restoration
FY	fiscal year
HWDS	Hanford Well Custodian Database System
NS	North Slope (Wahluke Slope)
PNL	Pacific Northwest Laboratory
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RCW	<i>Revised Code of Washington</i>
ROM	RCRA and Operational Monitoring
WHC	Westinghouse Hanford Company

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1.0 INTRODUCTION

Maintenance, rehabilitation, remediation, and decommissioning of Hanford Site wells will be required through final closure of the site, with well decommissioning being the last field activity performed. The Well Services Group of Westinghouse Hanford Company (WHC) is chartered to carry out and complete those activities.

Approximately 4,511 wells that have been drilled by many different entities for varying purposes on the Hanford Site during the last 100 years are presently documented. Of those wells, 3,281 are known to exist at the end of this reporting period with 2,364 documented as in use for water quality sampling, water level monitoring, or detection screening wells. Joint users were identified for 1,671 of the wells in use. Another 1,094 wells had been abandoned or decommissioned. There are 1,064 orphan and undetermined wells, as well as approximately 136 wells that cannot be located, either because of poor information or inadequately documented abandonment actions performed in the past.

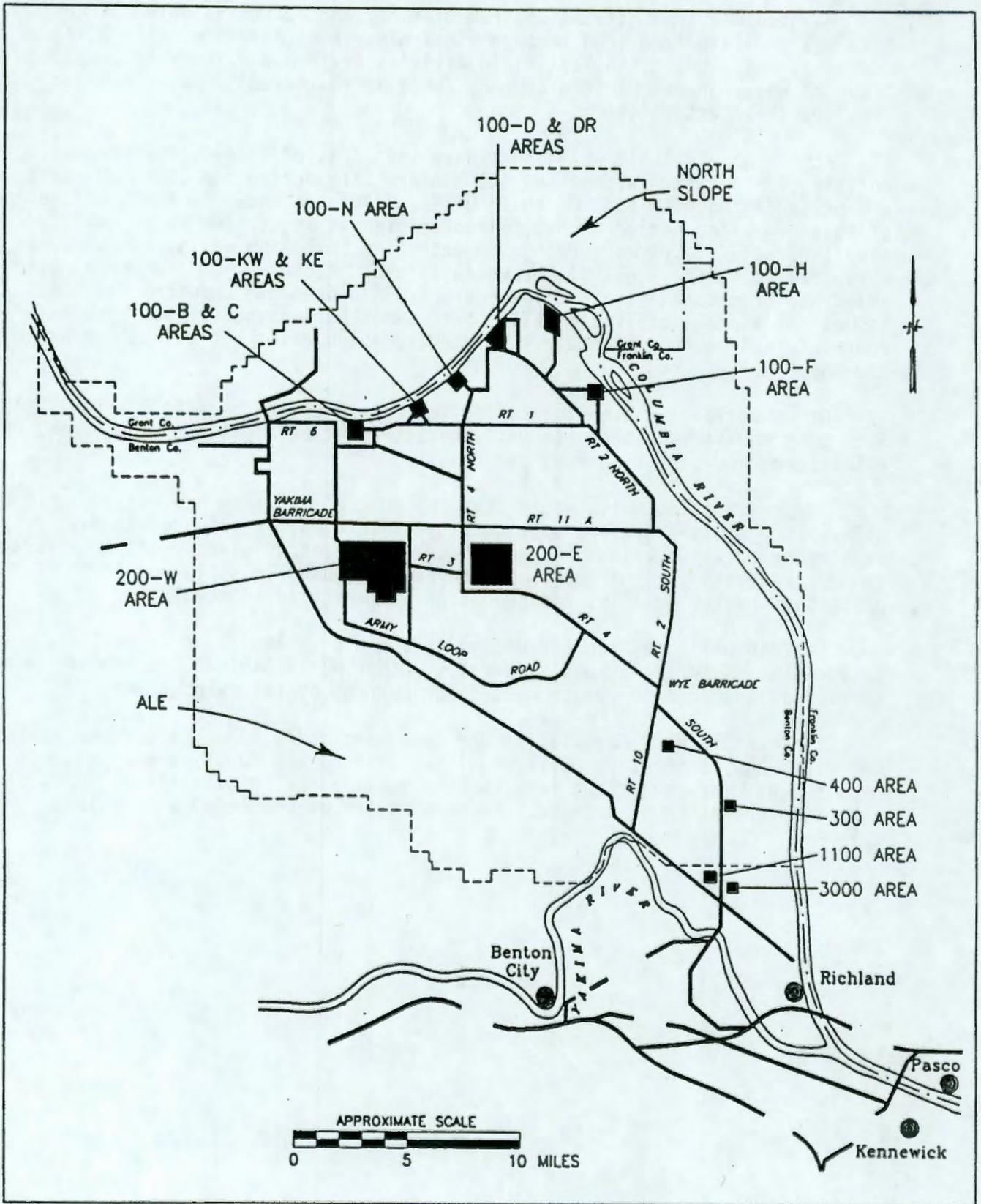
Other wells have been identified for possible future uses (DOE-RL 1994). Such uses may include operable unit characterization and monitoring, vapor extraction, and soil treatment processes.

Using existing wells would save the cost of drilling new wells. However, to achieve desired data quality objectives, existing wells may require remediation before they are used. Remediation also is often necessary to meet regulatory requirements for surface and annular seals, surface protection, water quality, and reduction of monitored intervals.

Certain wells may require decommissioning or remediation to protect groundwater resources or public safety. Other wells may require removal from service if they are no longer needed for current or future programs.

The *Hanford Well Remediation and Decommissioning Plan* (Ledgerwood 1993a) describes how to identify wells requiring action, and contains the requirements for conducting remediation/decommissioning activities. That plan directs preparation of an annual summary report of completed activities.

Figure 1. Hanford Site Map.



2.0 CONDUCT OF OPERATIONS

2.1 REGULATORY REQUIREMENTS

The *Revised Code of Washington* ([RCW] 18.104), as amended, states that the drilling, making, or constructing of wells within the state is a business and activity of vital interest to the public, and requires well owners to repair or decommission any well that (1) is abandoned, unusable, or not intended for future use; or (2) is an environmental or public health hazard. The RCW further states that to protect the public health, welfare, and safety, it is necessary that provisions be made for the regulation and licensing of well contractors and operators and for the regulation of well design and construction.

RCW 18.104 empowers the Washington State Department of Ecology (Ecology) to adopt rules regulating those activities. These rules and regulations are contained in *Washington Administrative Code* (WAC) 173-160, "Minimum Standards for Construction and Maintenance of Wells," and WAC 173-162, "Regulations and Licensing of Well Contractors and Operators," issued by Ecology.

WAC 173-160-050 requires that every well contractor submit a complete record on the construction, alteration, or abandonment of the well to Ecology within 30 days after completion (or alteration) of that well. WAC 173-060-055 and RCW 18.104.048 require that a well construction notification (start card) be submitted to Ecology by the land owner for all wells before beginning modification or decommissioning. WHC ensures that those records for the Hanford Site are submitted to Ecology.

WAC 173-162-040 requires well remediation or decommissioning to be performed by, or under the supervision of, a licensed well driller. WHC ensures that supervising field personnel or operators performing remediation or decommissioning activities are Washington State-licensed well drillers.

The WAC also provides a process of requesting variances to code requirements. During fiscal year (FY) 1993, two letters clarifying interpretations of certain WAC 173-160 sections were received. In addition, one variance was granted to allow installation of sand plugs in lieu of backfill across the confined and unconfined aquifers during well abandonment/decommissioning and remediation activities. Use of sand plugs instead of cement or bentonite fill reduces the potential effect on water quality samples taken from nearby wells.

The provisions of the Dangerous Waste section of the *Resource Conservation and Recovery Act of 1976 Permit for the Treatment, Storage, and Disposal of Dangerous Waste at the Hanford Site* (Ecology 1994) are controlled by the "State of Washington Hazardous Waste Management Act of 1976," RCW 70.105. Part II.F.2.a of Ecology (1994) requires a 5-year schedule for integrity inspections for all resource protection wells on the Hanford Site. Part II.F.2.b of Ecology (1994) requires that all resource protection wells to which the permit applies be evaluated for potential use and that all unusable wells be abandoned or remediated according to applicable RCW and WAC requirements.

Additionally, the Second Responsiveness Summary section from Ecology (1994) regarding interpretation of the permit (Parts II.F.2.a and II.F.2.b, p. 102) notes that it is Ecology's intention that all applicable WAC 173-160 standards be enforced for all wells on the Hanford Site.

2.2 TECHNICAL REQUIREMENTS

A generic engineering specification containing technical requirements for remediation of groundwater wells was prepared by WHC to allow more flexibility in field operations. The specification, in Construction Specifications Institute format, was issued in FY 1992 and revised in FY 1993.

General technical requirements for borehole abandonment or decommissioning are contained in WAC 173-160-415, "Abandonment of Wells." General:

- (1) *Any well which is unusable, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be abandoned. The abandonment procedure (as prescribed by these regulations) must be recorded and reported as required by the department.*
- (2) *Wells that were not constructed in accordance with these regulations, or wells which are abandoned to allow the placement of potential sources of contamination within one hundred feet of the well, shall be abandoned in one of two ways:*
 - (a) *The casing shall be perforated from the bottom to within five feet of the land surface and pressure grouted. Perforations shall be at least four equidistant cuts per row, and one row per foot. Each cut shall be at least one and one-half inches long.*
 - (b) *Withdraw the casing and fill the bore hole with grout, puddled clay, or bentonite as the casing is being withdrawn.*
- (3) *Piping of sealing materials directly to the point of application or placement by means of a dump bailer or tremie tube is recommended. If cement grout, neat cement, or puddled clay is used as a sealing material below the static-water level in the well, it should be placed from the bottom up by methods that avoid segregation or dilution of the material. When used to place grout, the discharge end of the tremie tube shall be submerged in the grout to avoid breaking the seal while filling the annular space.*

- (4) *If it can be verified that a water supply well was constructed in accordance with these regulations, and it is not being abandoned to allow siting of potential sources of contamination within one hundred feet of the well, it shall be abandoned in accordance with WAC 173-160-420 through 173-160-465, whichever applies.*

Additional specific requirements for borehole abandonment are contained in WAC 173-160-420, -425, -435, -445, -455, -465, and -560.

2.3 GOVERNING PROCEDURES

WHC conducts well characterization, fitness-for-use assessments, remediation/decommissioning field operations, and activity documentation according to Environmental Investigations Instructions (EII) contained in the *Environmental Investigations and Site Characterization Manual* (WHC-CM-7-7).

Characterization of existing conditions including well site visits, photographs, depth measurements, television surveys, and wellbore cleaning are performed in accordance with EII 6.4, "Resource Protection Well Services (WHC-CM-7-7)". Revision 3, a total rewrite of EII 6.4, was completed and issued in FY 1994.

Fitness-for-intended use assessment of identified wells is performed in accordance with EII 6.6, "Resource Protection Well Characterization and Evaluation" (WHC-CM-7-7). This EII also provides the mechanism for obtaining review and approval of proposed remediation or decommissioning methods. The review and approval process involves all potential users and involved programs. Revision 2 of EII 6.6 was completed and issued in FY 1994.

Decommissioning procedures are contained in EII 6.10, "Abandoning/Decommissioning Groundwater Wells" (WHC-CM-7-7). The EII implements the technical and regulatory requirements of WAC 173-160 for borehole decommissioning.

Remediation field activities are controlled by EII 8.3, "Remediation of Groundwater Wells" (WHC-CM-7-7). Field activities include overdrilling casing and installing of surface seals, casing perforating and installing liners to provide annular seals, and other modifications of a well structure to achieve specific data quality objectives. Revision 2 of EII 8.3 was completed and issued during FY 1994.

2.4 EFFLUENT MONITORING AND WASTE MANAGEMENT

Specifications and applicable EIIs address the effluent monitoring and waste management requirements of *Environmental Compliance* (WHC-CM-7-5), and provide for control and disposition of fluids and waste produced during maintenance, remediation, or decommissioning of wells.

2.5 HEALTH AND SAFETY

Specifications and instructions for all well maintenance, remediation, and decommissioning activities contain applicable health and safety requirements. These requirements may include special training, field safety, radiological safety, and hazardous waste safety. Excavation and/or hazardous work permits are obtained as needed using existing procedures and forms.

2.6 PLANNING AND BUDGETING

Work within this activity is controlled under the WHC Management Control System as defined in the *Management Control System* (WHC-CM-2-5).

2.7 ACTIVITY DOCUMENTATION

Well remediation and decommissioning field activities are documented as required by applicable EIs. Documentation consists of daily field activity reports in addition to WAC 173-160 required reports. Reports are transmitted to the Environmental Division Records Center with copies also maintained in the Well Services Group field file and applicable databases.

2.8 ANNUAL REPORT

An annual report summarizing remediation and decommissioning activities is prepared and issued for clearance within 90 days after the end of each fiscal year. This report is the second of that series.

3.0 HANFORD SITE WELL STATUS AND CUSTODIANSHIP DATABASE

In FY 1994, a Well Administration Team was established under the auspices of the *Hanford Site Groundwater Management Program* (DOE-RL 1994). This team is comprised of representatives from all Hanford Site contractors with organizations/programs using wells. The purpose of the team is to provide cooperation and coordination between all well use programs. The first order of business for the team was the establishment of a well custodian database to identify responsible parties (custodians) for the use, maintenance, remediation, and decommissioning of wells on the Hanford Site. The Hanford Well Custodian Database System (HWDS) is available on the Hanford Local Area Network and contains a total of 4,511 wells that have been evaluated for custodianship determination. Wells in use by more than one program were assigned custodianship based on a specific priority. Wells not in use nor claimed by any program are classed as "orphan" wells. These "orphan" wells become candidates for decommissioning activities. Table 1 lists a breakdown of the total wells assigned to each program and the total "orphan" wells.

Summaries of reviewed remediation, decommissioning, and maintenance field activity reports are entered into the WHC-maintained HWDS. The HWDS continues to grow and change as existing wells previously undocumented are added, existing data are corrected, new wells are drilled, and wells are remediated or decommissioned.

Well status characterization data, including results of field inspection reports, digitized site photographs, and downhole camera inspections are included in the database system. Well service requests for 1,290 individual wells and 194 field inspection reports were completed, documented, and filed on the HWDS in FY 1994.

Table 1. Hanford Site Well Custodians.

Hanford Site well custodian	Total wells
Sitewide Surveillance--Pacific Northwest Laboratory	588
RCRA and Operational Monitoring--Westinghouse Hanford Company	2,264
CERCLA--Bechtel Hanford, Inc.	340
U.S. Army Corps. of Engineers--1100 Area & Arid Land Ecology (Reserve)/North Slope	92
ICF Kaiser Hanford Company	7
Water supply wells--city wells	12
Washington Public Power Supply System	139
U.S. Ecology	5
Orphan wells	610
Not determined	454
Total	4,511

4.0 FITNESS-FOR-USE ACTIVITIES

The following activities were completed in FY 1994 as a part of the fitness-for-use characterization and evaluation.

- Preliminary fitness-for-use evaluations were completed for 550 wells in the 600 Area. These evaluations were based on available data and generic data quality objectives.
- Ninety-five fitness-for-use evaluations were approved for the Fitzner/Eberhart Arid Land Ecology (ALE) (Reserve), Hanford North Slope and an array of vadose test wells in the 200 West Area.
- More than 1,450 individual well construction summary computer files have been generated and made accessible to well users on the Hanford Local Area Network.
- Construction documentation and field observations were conducted for 244 wells in the 200 East Area.
- Construction information for 19 wells drilled for Phase I of the 300-FF-5 Operable Unit Remedial Investigation (Ledgerwood 1994) have been completed.

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5.0 REMEDIATION AND DECOMMISSIONING ACTIVITIES

5.1 IDENTIFICATION OF WELL REQUIREMENTS

Representatives of well custodians, or joint users, may identify existing wells within, or associated with, areas of their responsibility for potential use or decommissioning. Additionally, federal or state regulators may identify areas to be evaluated or well structures of concern, and request remediation or decommissioning of boreholes or groups of boreholes.

Each well proposed for use or decommissioning is evaluated and placed into action categories based on applicable present and future use, degree of environmental impact, location, and construction characteristics. Such criteria include:

- Potential or present use:
 - Groundwater quality analysis
 - Water level measurements
 - Geophysical logging or monitoring
 - Water supply
 - Groundwater or soil remediation
 - Soil characteristics
 - No known use.
- Environmental affect:
 - Potential affect on groundwater resources, particularly the Columbia River, confined aquifers and groundwater not presently contaminated
 - Demonstrated contamination migration or aquifer interconnection
 - Category list.
- Location and construction:
 - Spatial location with respect to permitted facilities or RCRA site requirements
 - Well configuration
 - Well construction materials
 - Available construction and maintenance records.

The action categories include:

- No action required, well is acceptable for defined data quality objective
- Rehabilitation to original condition required to attain data quality objective and fulfill criteria for intended use

- Remediation required to protect groundwater resources or to attain required data quality objective
- Decommissioning required, the well cannot be remediated or has no documented present or future use.

Wells within each action category are assigned priorities and scheduled for remediation or abandonment. Hanford Site well custodians and applicable regulatory groups are required to concur before remedial or decommissioning actions are started.

Several programs have constructed and/or use existing wells to provide characterization and groundwater monitoring data (DOE-RL 1994 and WHC 1993). Appendices A and B tabulate wells remediated and decommissioned by WHC during this reporting period.

5.2 SITEWIDE SURVEILLANCE

The independent sitewide surveillance program for the Hanford Site is conducted by Pacific Northwest Laboratory (PNL). This program monitors the effects, if any, of U.S. Department of Energy (DOE) activities at the Hanford Site upon onsite and offsite environmental and natural resources. Two wells in the 600 Area in use by PNL for data gathering were remediated in FY 1994 by PNL.

5.3 OPERATIONAL MONITORING

WHC conducts an operational groundwater monitoring program for reactor and chemical processing operations in the 100, 200, 300, 400, and 1100 Areas.

Between 1976 and 1985, WHC and previous contractors installed surface and annular seals in several hundred operational monitoring groundwater wells in the 200 Areas. The seal installation was intended to stop or preclude migration of contaminants down the exterior of the well casing. Construction details of the remediation activities are given in Ledgerwood (1993b, 1993c), which contain construction data summaries for 200 Areas groundwater wells.

5.4 RCRA PERMIT CHARACTERIZATION AND MONITORING

The RCRA groundwater monitoring program conducted by WHC currently involves site-specific monitoring and/or well installation at 20 facilities under the U.S. Environmental Protection Agency interim-status regulations.

RCRA facility 300 Area monitoring well, 399-1-16C, was remediated by WHC during FY 1994 because of vertical interconnection of the confined and unconfined aquifers caused by annular seal failure in the Ringold lower mud unit confining interval. A single-use engineering specification was issued and subsequently modified to meet the conditions encountered in the field during the completion of this activity. Remediation consisted of perforating

the well casing through this zone, pressure grouting with cement to effect a seal, and placing a liner in the well. Present water level data indicate that the seal placement was successful.

Well 399-1-9, another RCRA confined aquifer groundwater monitoring well in the 300 Area, is also exhibiting signs of annular seal failure, and preliminary activities have been conducted in FY 1994 for remediation of the seals. Preliminary field investigation, downhole camera survey, and chemical sampling have been completed and work plan/design documentation is in preparation for release.

5.5 CERCLA MONITORING AND SITE CHARACTERIZATION

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) "groundwater operable units" that are identified at the Hanford Site generally include use of data from existing wells as a part of a specific groundwater operable unit work plan. Wells selected often must be remediated to allow use. Other existing wells within the operable unit may be identified for remediation or decommissioning.

WHC was responsible for the 100, 200, 300, and 400 Areas and for 600 Area wells associated with those monitoring programs until June 30, 1994. At that time Bechtel Hanford Inc. assumed the role as the responsible party for the majority of the CERCLA activities.

The U.S. Army Corps of Engineers (COE) has responsibility for the 1100 Area, the ALE study area, and the Hanford Site North Slope CERCLA projects. During FY 1994, 33 COE wells were decommissioned (1 in the 1100 Area, 16 in the ALE, and 12 on the North Slope).

5.5.1 200-BP-1 Operable Unit

Six characterization probe holes were placed and subsequently decommissioned in FY 1994.

5.5.2 200-UP-2 Operable Unit

Four wells were decommissioned in the 200-UP-2 operable unit in FY 1994.

5.5.3 300-FF-5 Operable Unit

Field characterization and construction summaries were completed for 19 wells drilled during the Phase 1 300-FF-5 Operable Unit Remedial Investigation (Ledgerwood 1994). Fitness-for-use evaluations and remediation recommendations were completed for 26 wells in the operable unit. The summary packages and remediation recommendations were compiled and released in Ledgerwood (1994). Two wells were remediated for continued use and two wells were decommissioned under this program.

Remediation of three wells and decommissioning of one well were completed during FY 1994. Additionally, comprehensive well maintenance activities were conducted on eight wells within the operational unit during FY 1994.

5.5.4 100 Aggregate Area Operable Unit

Four wells in the 100 Areas underwent comprehensive well maintenance in FY 1994, and no decommissioning or remediation activities were conducted in this unit.

5.5.5 200 Aggregate Area Management Study

Characterization and fitness-for-use evaluations were requested during 1992 and 1993 on 38 wells in or near the 200 East Area, and 41 wells in and near the 200 West Area. The wells were to be incorporated into the 200-BP-1 groundwater sampling networks. Activities were limited to scrubbing and cleaning the wells, shortening monitored intervals, redeveloping, and installing locking well caps and sampling pumps. This work scope was completed in FY 1994, and summaries for wells in the 200 Areas are contained in Ledgerwood (1993b, 1993c).

5.5.6 Environmental Restoration and Disposal Facility

Eight characterization borings and five vadose soil gas permeability test borings were drilled, tested, and decommissioned in FY 1994.

5.5.7 1100 Area Well Remediation and Decommissioning

The COE has cleanup responsibility for the 1100 Area. Three 1100 Area wells used for groundwater monitoring did not comply with RCRA requirements and were identified for decommissioning.

Two of the wells were decommissioned in FY 1993 and one well was decommissioned in FY 1994.

5.5.8 Characterization Boreholes

Forty-eight vadose zone test array boreholes in the 200 West Area were decommissioned in 1994. This work was planned and conducted under the *Hanford Well Decommissioning Activity Plan for the 200 West Area*, WHC-SD-EN-AP-163 (Havenor 1994).

5.6 VADOSE ZONE CHARACTERIZATION AND MONITORING

Several hundred Tank Waste Remediation System vadose zone wells are used by WHC to monitor subsurface waste storage and disposal sites to provide early warning of potential waste movement that could signal potential or future groundwater contamination problems. Many of these wells may require remediation or decommissioning to preclude groundwater resource contamination caused by well construction inadequacies. No remediation or decommissioning activities took place for this program area in FY 1994.

5.7 WATER SUPPLY WELLS

A few water supply wells are present on the Hanford Site. The wells are used for water supply at isolated facilities or as emergency facility backup water supplies. These wells may require rehabilitation or remediation as determined by the users. Of the 12 wells decommissioned on the North Slope in FY 1994, 7 were water supply wells for former U.S. Army installations.

5.8 RESEARCH OR SPECIAL PURPOSE WELLS

Many research or special purpose wells have been drilled on the Hanford Site. The wells include stratigraphic and hydrologic investigation boreholes, reactor siting study boreholes, and destroyed seismic test holes. Selected wells may require rehabilitation, reconfiguration, remediation, or decommissioning. No remediation or decommissioning activities took place for this program area in FY 1994.

5.8.1 Basalt Waste Isolation Project Boreholes

From 1977 through 1987, the Basalt Waste Isolation Project (BWIP) drilled or reconfigured 98 boreholes at approximately 50 drill sites on or near the Hanford Site. The BWIP was terminated in late 1987 and the wells were decommissioned or custodianship was transferred to other well use organizations. No remediation or decommissioning activities took place on BWIP-designated wells in FY 1994.

5.9 ORPHAN WELLS

Thirty-four wells or borings, which were not in use and had no identified custodian, were decommissioned by the RCRA and Operational Monitoring-funded decommissioning program during FY 1994.

5.10 NON-DOE CONTRACTOR WELLS

Non-DOE contractors, such as the Skagit Power, Washington Public Power Supply System, Siemens Nuclear, and U.S. Ecology have constructed characterization and facility monitoring wells. Although no decommissioning or remediation activities took place in these areas during FY 1994, some of these wells may be selected for characterization, remediation, or decommissioning in the future.

5.10.1 Skagit/Hanford Nuclear Project

Approximately 100 boreholes were drilled from 1979 through 1980 by Golder Associates, Inc. for the Puget Sound Power & Light Company Skagit/Hanford Nuclear Project siting studies. Most of those boreholes were decommissioned after site studies were cancelled. Some have been retained by PNL for reconfiguration or use as 600 Area screening wells.

5.10.2 Washington Public Power Supply System

The Washington Public Power Supply System drilled two series of site characterization boreholes. One borehole in that series (BH-17) was reconfigured by BWIP. Another borehole, BH-18, is in the North Slope area and may be a candidate for decommissioning in FY 1995.

6.0 REFERENCES

- Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601 et seq.
- DOE-RL, 1994, *Hanford Site Groundwater Management Program*, DOE/RL-89-12, Rev. 2, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- Ecology, 1994, *Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste at the Hanford Site*, Permit Number WA780008967, Washington State Department of Ecology, Olympia, Washington.
- Havenor, R. C., 1994, *Hanford Well Decommissioning Activity Plan for the 200 West Area* WHC-SD-EN-AP-163, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Ledgerwood, R. K., 1993a, *Hanford Well Remediation and Decommissioning Plan*, WHC-SD-EN-AP-122, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Ledgerwood, R. K., 1993b, *Summaries of Well Construction Data and Field Observations for Existing 200 East Resource Protection Wells*, WHC-SD-ER-TI-007, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Ledgerwood, R. K., 1993c, *Summaries of Well Construction Data and Field Observations for Existing 200 West Resource Protection Wells*, WHC-SD-ER-TI-005, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Ledgerwood, R. K., 1994, *Summaries of Well Construction Data and Field Observations for Existing 300-FF-5 Operable Unit Resource Protection Wells*, WHC-SD-ER-TI-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington.
- Resource Conservation and Recovery Act of 1976*, 42 USC 6901 et seq.
- RCW 18.104, "Well Construction," *Revised Code of Washington*, as amended.
- RCW 70.105, "State of Washington Hazardous Waste Management Act of 1976," *Revised Code of Washington*, as amended.
- WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.
- WAC 173-162, "Regulations and Licensing of Well Contractors and Operators," *Washington Administrative Code*, as amended.
- WHC-CM-2-5, *Management Control System*, Westinghouse Hanford Company, Richland, Washington.

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

WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual*, Vol. 1, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A
REMEDiated WELLS

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REMEDIATED WELLS

Well ID number	Well name	Well status	Change description	Effective date	Custodian	Program ID
A5038	3-1-5	IN USE	Installed 20 ft surface seal, surface pad, and barrier posts	11/02/93	WHC	ER
A5027	3-1-16C	IN USE	Perforated casing and pressure grouted to establish anular seal	09/23/93	WHC	ER
A8091	3-5-2	IN USE	Installed 20 ft surface seal, surface pad, and barrier posts	10/19/93	WHC	ER
A5145	6-36-93	IN USE	Shortened monitoring interval	05/15/94	PNL	STWD
A5172	6-43-104	IN USE	Removed piezoner, grouted through basalt and installed a well packer	05/15/94	PNL	STWD

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APPENDIX B
DECOMMISSIONED WELLS

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DECOMMISSIONED WELLS (4 sheets)

Well ID number	Well name	Effective date	Custodian	Program ID
A9796	2-W19-94	01/27/94	BHI	200-UP-2 (ER)
A7791	2-W19-95	11/18/93	BHI	200-UP-2 (ER)
A9797	2-W19-96	01/31/94	BHI	200-UP-2 (ER)
A9798	2-W19-98	03/29/94	BHI	200-UP-2 (ER)
A7793	2-W21-51	04/29/94	ORPHAN	ROM
A7794	2-W21-52	04/18/94	ORPHAN	ROM
A7795	2-W21-53	04/18/94	ORPHAN	ROM
A7796	2-W21-54	04/18/94	ORPHAN	ROM
A7797	2-W21-55	04/29/94	ORPHAN	ROM
A7798	2-W21-56	04/29/94	ORPHAN	ROM
A7799	2-W21-57	04/29/94	ORPHAN	ROM
A7800	2-W21-58	04/29/94	ORPHAN	ROM
A7801	2-W21-59	04/29/94	ORPHAN	ROM
A7802	2-W21-60	04/29/94	ORPHAN	ROM
A7803	2-W21-61	04/18/94	ORPHAN	ROM
A7804	2-W21-62	04/18/94	ORPHAN	ROM
A7805	2-W21-63	04/18/94	ORPHAN	ROM
A7806	2-W21-64	04/18/94	ORPHAN	ROM
A7807	2-W21-65	04/18/94	ORPHAN	ROM
A7808	2-W21-66	04/18/94	ORPHAN	ROM
A7809	2-W21-67	04/18/94	ORPHAN	ROM
A7810	2-W21-68	04/18/94	ORPHAN	ROM
A7811	2-W21-69	04/29/94	ORPHAN	ROM
A7812	2-W21-70	04/29/94	ORPHAN	ROM
A7813	2-W21-71	04/29/94	ORPHAN	ROM
A7814	2-W21-72	04/18/94	ORPHAN	ROM
A7815	2-W21-73	04/18/94	ORPHAN	ROM
A7816	2-W21-74	04/18/94	ORPHAN	ROM
A7817	2-W21-75	04/18/94	ORPHAN	ROM

DECOMMISSIONED WELLS (4 sheets)

Well ID number	Well name	Effective date	Custodian	Program ID
A7818	2-W21-76	04/18/94	ORPHAN	ROM
A7819	2-W21-77	04/29/94	ORPHAN	ROM
A7820	2-W21-78	04/29/94	ORPHAN	ROM
A7821	2-W21-79	04/29/94	ORPHAN	ROM
A7822	2-W21-80	04/18/94	ORPHAN	ROM
A7823	2-W21-81	04/18/94	ORPHAN	ROM
A7824	2-W21-82	04/18/94	ORPHAN	ROM
A7825	2-W21-83	04/18/94	ORPHAN	ROM
A7826	2-W21-84	04/18/94	ORPHAN	ROM
A7882	2-W22-78	11/18/93	BHI	200-UP-2 (ER)
A5050	3-3-7	10/07/93	WHC	300-FF-S (ER)
A8181	6-10-99	07/17/94	ACOE	ALE/NS (ER)
A8425	6-20-82	07/11/94	ACOE	ALE/NS (ER)
A5451	6-35-69A	03/23/94	BHI	ERDF (ER)
A5452	6-35-68A	03/02/94	BHI	ERDF (ER)
A5453	6-35-66B	03/02/94	BHI	ERDF (ER)
A5454	6-35-65A	01/14/94	BHI	ERDF (ER)
A5455	6-36-63A	12/30/93	BHI	ERDF (ER)
A5456	6-35-61A	05/19/94	BHI	ERDF (ER)
A9823	6-35-68B	04/26/94	BHI	ERDF (ER)
A9824	6-35-69B	04/25/94	BHI	ERDF (ER)
A9837	6-48-77E	01/01/94	WHC	ROM
A9838	6-48-77F	01/01/94	WHC	ROM
A9899	6-49-53	08/15/94	BHI	200-BP-5 (ER)
A9900	6-50-54A	08/15/94	BHI	200-BP-5 (ER)
	6-48-54	08/15/94	BHI	200-BP-5 (ER)
	6-48-52	08/15/94	BHI	200-BP-5 (ER)
	6-49-54	08/15/94	BHI	200-BP-5 (ER)
	6-49-51	08/15/94	BHI	200-BP-5 (ER)

DECOMMISSIONED WELLS (4 sheets)

Well ID number	Well name	Effective date	Custodian	Program ID
A9902	6-35-68C	09/23/94	WHC	ERDF (ER)
A9903	6-35-68D	09/23/94	WHC	ROM
A9904	6-35-68E	09/23/94	WHC	ROM
A9905	6-35-68F	09/23/94	WHC	ROM
A9906	6-35-68G	09/23/94	WHC	ROM
A8586	6-37-92	07/14/94	ACOE	ALE/NS (ER)
A8617	6-39-103	08/01/94	ACOE	ALE/NS (ER)
A8820	6-51-7	08/29/94	ACOE	200-BP-5 (ER)
A8927	6-61-16A	09/06/94	ACOE	200-BP-5 (ER)
A8928	6-61-16B	09/13/94	ACOE	200-BP-5 (ER)
A8987	6-79-104	07/11/94	ACOE	ALE/NS (ER)
A9061	6-86-95	08/31/94	ACOE	ALR/NS (ER)
A9082	6-92-14	09/22/94	ACOE	ALE/NS (ER)
A9109	6-108-20	06/26/94	ACOE	ALE/NS (ER)
A9110	6-111-24	08/15/94	ACOE	ALE/NS (ER)
A9114	6-115-7	06/26/94	ACOE	ALE/NS (ER)
A9115	6-115-61	09/27/94	ACOE	ALE/NS (ER)
A9131	6-S1-67	08/01/94	ACOE	ALE/NS (ER)
A9140	6-S2-61	07/26/94	ACOE	ALE/NS (ER)
A9144	6-S3-67	07/28/94	ACOE	ALE/NS (ER)
A9145	6-S4-57	08/01/94	ACOE	ALE/NS (ER)
A9151	6-S6-64	07/26/94	ACOE	ALE/NS (ER)
A9165	6-S7-62A	07/25/94	ACOE	ALE/NS (ER)
A9166	6-S7-62B	07/26/94	ACOE	ALE/NS (ER)
A9167	6-S7-62C	07/25/94	ACOE	ALE/NS (ER)
A9168	6-S7-62D	08/01/94	ACOE	ALE/NS (ER)
A9170	6-S8-61	07/27/94	ACOE	ALE/NS (ER)
A9171	6-S8-65	08/01/94	ACOE	ALE/NS (ER)
A9172	6-S9-54	07/20/94	ACOE	ALE/NS (ER)

DECOMMISSIONED WELLS (4 sheets)

Well ID number	Well name	Effective date	Custodian	Program ID
A9173	6-S9-56	06/01/94	ACOE	ALE/NS (ER)
A9174	6-S9-62A	07/25/94	ACOE	ALE/NS (ER)
A9175	6-S9-62B	08/01/94	ACOE	ALE/NS (ER)
A9176	6-S9-63B	07/17/94	ACOE	ALE/NS (ER)
A9177	6-S9-65	07/25/94	ACOE	ALE/NS (ER)
A9178	6-S10-62	07/20/94	ACOE	ALE/NS (ER)
A9179	6-S10-66	08/01/94	ACOE	ALE/NS (ER)
A9180	6-S11-60	08/01/94	ACOE	ALE/NS (ER)
A9183	6-S12-60	06/12/94	ACOE	ALE/NS (ER)
A9184	6-S13-61	06/12/94	ACOE	ALE/NS (ER)
A9188	6-S15-62	08/01/94	ACOE	ALE/NS (ER)
A9197	6-S17-56	08/01/94	ACOE	ALE/NS (ER)
A4722	11-34-13	04/29/94	WHC	ROM
A9799	DTTS-S-07V	04/04/94	WHC	ROM
A9800	DTTS-S-08V	04/07/94	WHC	ROM
A9801	DTTS-S-09V	04/07/94	WHC	ROM
A9497	A9497	04/18/94	WHC	ROM
A9498	A9498	04/18/94	WHC	ROM
A9499	A9499	04/18/94	WHC	ROM
A9500	A9500	04/18/94	WHC	ROM
A9501	A9501	04/18/94	WHC	ROM
A9502	A9502	04/18/94	WHC	ROM
A9506	A9506	04/29/94	WHC	ROM
A9507	A9507	04/29/94	WHC	ROM
A9508	A9508	04/29/94	WHC	ROM
A9509	A9509	04/29/94	WHC	ROM
A9510	A9510	04/29/94	WHC	ROM
A9511	A9511	04/18/94	WHC	ROM
A9512	A9512	04/18/94	WHC	ROM

DECOMMISSIONED WELLS (4 sheets)

Well ID number	Well name	Effective date	Custodian	Program ID
A9820	A9820	04/18/94	WHC	ROM
A9821	A9821	04/18/94	WHC	ROM
A9822	A9822	04/18/94	WHC	ROM

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Summary Report of Hanford Site Well Remediation and Decommissioning Activities
For Fiscal Year 1994 WHC-SD-EN-PRS-002, Rev. 0

EDT No.: 160006

ECN No.: NA

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
M. A. Adams	H6-01	X		
R. W. Bryce	K6-96	X		
J. W. Cammann	H6-06	X		
M. A. Chamness	K9-48	X		
J. W. Fassett	H6-06	X		
K. R. Fecht	H4-85	X		
M. J. Furman	R3-81	X		
M. G. Gardner (25)	N3-06	X		
J. D. Goodenough	H4-83	X		
C. H. Gunion	H4-83	X		
R. D. Hildebrand	A5-55	X		
J. M. Hennig	S7-55	X		
D. G. Horton	H6-06	X		
M. P. Johansen	A5-20	X		
S. P. Luttrell	K6-96	X		
K. D. Reynolds	H6-06	X		
A. L. Schatz	N3-05	X		
J. S. Schmid	H6-06	X		
R. K. Stewart	H4-83	X		
W. R. Thackaberry	H4-16	X		
K. M. Thompson	H4-83	X		
R. R. Thompson	H6-32	X		
M. T. York	H6-32	X		
WS Records Center	N3-05	X		
EDMC (2)	H4-22	X	H6-08	
OSTI (2)	L8-07	X		
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