Data Base Management Plan for the Remedial Investigation of
Waste Area Grouping 5 at Oak Ridge National Laboratory,
Oak Ridge, Tennessee

Date Issued—July 1992

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DATA BASE MANAGEMENT PLAN

FOR THE

REMEDIAL INVESTIGATION OF WASTE AREA GROUPING 5 AT

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

Bechtel Job 19118

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<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>NHF</td>
<td>New Hydrofracture Facility</td>
</tr>
<tr>
<td>OHF</td>
<td>Old Hydrofracture Facility</td>
</tr>
<tr>
<td>OREIS</td>
<td>Oak Ridge Environmental Information System</td>
</tr>
<tr>
<td>ORNL</td>
<td>Oak Ridge National Laboratory</td>
</tr>
<tr>
<td>PDCC</td>
<td>Project Document Control Center</td>
</tr>
<tr>
<td>PP</td>
<td>BNI project procedure</td>
</tr>
<tr>
<td>RI/FS</td>
<td>Remedial investigation/feasibility study</td>
</tr>
<tr>
<td>SWSA</td>
<td>Solid waste storage area</td>
</tr>
<tr>
<td>TRU</td>
<td>Transuranic</td>
</tr>
<tr>
<td>USRADS</td>
<td>Ultrasonic Ranging and Data Systems</td>
</tr>
<tr>
<td>WAG</td>
<td>Waste area grouping</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

This Data Base Management Plan describes the gathering, verifying, analyzing, reporting, and archiving of data generated during Bechtel's remedial investigation of Waste Area Grouping 5. This investigation will produce data documenting surficial surveys, geophysical surveys, geologic and hydrologic logs, aquifer tests, water level measurements, geophysical logs, and stream and seep flow measurements. Also, laboratory analyses will be performed on soil, surface water, groundwater, and sediment samples.

The 1500 series of Bechtel project procedures, "Data Base Management," and the project Data Base Management Plan will be used to ensure that data are handled properly.
1. INTRODUCTION

1.1 PURPOSE

The remedial investigation (RI) for Waste Area Grouping (WAG) 5 will involve gathering, verifying, analyzing, reporting, and archiving numerous types of field and analytical data. Field investigations will produce data documenting surficial and geophysical surveys, geologic and hydrogeologic logs, aquifer tests, water level measurements, geophysical logs, and stream and seepage flow measurements. Laboratory analyses will be performed on soil, surface water, groundwater, and sediment samples collected during field investigations. All data resulting from these activities will be contained in the Bechtel RI/feasibility study (FS) project data base and will be managed in accordance with the RI/FS Data Base Management Plan and this WAG-specific plan.

1.2 BACKGROUND

During the 40 years of production, operation, and research activities at Oak Ridge National Laboratory (ORNL), various radioactive and hazardous wastes have been generated and disposed of both on site and off site. Waste disposal methods have included shallow land burial in selected areas in Solid Waste Storage Area (SWSA) 5 using trenches and auger holes, above- and below-ground retrievable storage of transuranic (TRU) waste in the TRU Waste Storage Area, and hydraulic fracturing of subsurface geologic formations for liquid and sludge waste disposal at the Old and New Hydrofracture Facilities (OHF and NHF). WAG 5 facilities have been involved in the progressive development of disposal operations at ORNL.

WAG 5 is composed of four main areas: SWSA 5, TRU Waste Storage Area, OHF, and NHF (Fig. 1.1). SWSA 5 and selected areas within the TRU Waste Storage Area were used as waste burial areas from 1959 to 1973. The TRU Waste Storage Area has also been used for the retrievable storage of TRU waste since 1970. In addition to SWSA 5, WAG 5 contains surface facilities, buildings, tanks, sludge basins, and leak sites associated with OHF and NHF.
Fig. 1.1. Map showing l
CONS OF SWMUs IN WAG 5.
be documented on the hard copy, and appropriate qualification and validation codes will be entered into the electronic file. Complete, validated data packages and data files will be verified by comparing the electronic results file against the hard copy containing validation codes. Validated files will replace the original, unvalidated data in the comprehensive analytical results Oracle table (CON101 in PP 1501.1). Validated data packages will also be retained in the Project Document Control Center (PDCC). Error checking and completeness verification will be performed on all data replacements.

2.3 HISTORICAL DATA

Data transferred to Bechtel’s data base from ORNL’s existing data base will be verified according to PP 1502 and stored in an Oracle table prior to use by project personnel. Merging of ORNL and Bechtel data will be performed as necessary and according to appropriate data types defined in PP 1501.1. This merging will be done whenever combined data are to be used in producing technical documents or their associated risk assessments, characterization summaries, models, etc. Merged files will be supplied to the Oak Ridge Environmental Information System (OREIS) according to WAG-specific schedules (i.e., during submittal of technical memorandums).
3. DATA BASE CONTENT

Anticipated sources of data associated with WAG 5 field and laboratory activities are listed by data type code in Table 3.1. Full data base content and format listing for each data type can be found in PP 1501.1; master tables defining coded values for various data fields are given in PP 1501.

Engineering applications using the data base, particularly figures generated for reports, will use data resident in project data base tables. Data will be transferred to graphics workstations either in ASCII or Oracle format.

Bechtel's drawing 99-SK-01, "Overall Sampling Task Process Flowchart," illustrates data collection and transfer throughout RI/FS activities. Table 3.1 lists specific data types associated with anticipated field investigations relevant to scheduled WAG 5 activities.
Table 3.1. WAG 5 data base contents

<table>
<thead>
<tr>
<th>Data type</th>
<th>Data type code</th>
<th>Responsible group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topographic maps</td>
<td>SSV101</td>
<td>Engineering</td>
</tr>
<tr>
<td>Structures and foundations</td>
<td>SSV103</td>
<td></td>
</tr>
<tr>
<td>Well/piezometer location and elevation</td>
<td>SSV104</td>
<td></td>
</tr>
<tr>
<td>Sampling point location</td>
<td>SSV105</td>
<td></td>
</tr>
<tr>
<td>Surface radiation and dose rates</td>
<td>SSV403</td>
<td>Engineering</td>
</tr>
<tr>
<td>USRADS</td>
<td></td>
<td></td>
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<tr>
<td>Geophysical surveys</td>
<td>SSV201/201A</td>
<td>Geotechnical</td>
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<tr>
<td>Electromagnetic ground conductivity</td>
<td>SSV202/202A</td>
<td></td>
</tr>
<tr>
<td>Magnetometer</td>
<td>SSV203</td>
<td></td>
</tr>
<tr>
<td>Pipe location</td>
<td>SSV301</td>
<td></td>
</tr>
<tr>
<td>Seismic refraction</td>
<td></td>
<td></td>
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<tr>
<td>Boring and well data</td>
<td></td>
<td></td>
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<tr>
<td>Geologic/drilling log</td>
<td>HYG101</td>
<td>Geotechnical</td>
</tr>
<tr>
<td>Well construction log</td>
<td>HYG102/102A</td>
<td></td>
</tr>
<tr>
<td>Well development log</td>
<td>HYG103</td>
<td></td>
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<tr>
<td>Geophysical well log</td>
<td>HYG105</td>
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<td>Aquifer tests</td>
<td>HYG201</td>
<td>Geotechnical</td>
</tr>
<tr>
<td>Field water level measurements</td>
<td>HYG301/301A</td>
<td>Geotechnical</td>
</tr>
<tr>
<td>Groundwater sampling record</td>
<td>HYG701</td>
<td>Geotechnical</td>
</tr>
<tr>
<td>Stream flow</td>
<td>HYL101</td>
<td>Modeling</td>
</tr>
<tr>
<td>Seepage flow</td>
<td>HYL201</td>
<td>Modeling</td>
</tr>
<tr>
<td>Radionuclide and chemical data</td>
<td>CON101</td>
<td>Analytical</td>
</tr>
</tbody>
</table>
4. DATA MANAGEMENT PROCEDURES

Bechtel's RI/FS data base for WAG 5 will be compatible with OREIS. All environmental data will be stored in Oracle tables and will be converted to SAS or Oracle export formats as necessary for transfer to OREIS. Supporting documentation to provide an audit trail for tracking environmental data base content will be stored in PDCC. Documentation will include data collection, transfer, change request, and validation forms. Raw data can be in a number of formats, including bar code reader files, laboratory and field instrumentation log files, spreadsheets, and a variety of encrypted (software-dependent) coded files. Project personnel health and safety information, document control, laboratory sample analysis tracking, engineering, and project management data bases are maintained by the respective functional departments and are explained in individual project procedures and in the project Data Base Management Plan. Data received from ORNL will be tracked by PDCC and included in project data base tables as explained in Sect. 2.3.

Access to data is controlled by procedures found in PP 1501.Verified data can be changed (and changes tracked and approved) by use of "Data Base Change Request" forms. The individual making the request will not make the change. Similarly, data can be output only when approved "Data Base Request for Services" forms are submitted and processed.

Field sample collection and handling are controlled by PPs 1603, 1603.1, and 1637. Intermec bar code readers and printers are used to provide electronic chain of custody and sampling event information. Logbook entries and "Request for Analysis" forms (maintained in accordance with separate project procedures) are used to verify bar code information. Bar code reader contents are uploaded daily to the RI/FS Field Operations Facility computer system and into Oracle tables. Data gatherers are required to verify reader contents frequently, and necessary changes are authorized and controlled by use of "Data Base Change Request" forms submitted to the Data Base Manager.

Bechtel's VAX cluster is the centralized storage location for project data; PDCC houses all supportive documentation. Daily backup on all data is performed by the Automation Technology Department, which is responsible for system management. Weekly, all data are copied to magnetic tape and stored off site. System access is controlled by user name/password and by specific directory and file protection levels determined by project staff. Backup and system access control are explained in "Automation Technology Procedures and Standards." Oracle use requires another level of user name/password and specific privileges for table access, again determined by project staff. Training for each data base management position is defined, administered, and documented according to PP 1120. The Data Base Manager will identify and control the personnel who have received the proper training and demonstrated competence to modify or make additions to data base tables.
REFERENCES AND PERTINENT PROJECT PROCEDURES


BNI Project Procedure 1120, "Administration of RI/FS Training"

BNI Project Procedure 1501, "Data Collection, Encoding, and Entry"

BNI Project Procedure 1501.1, "Characterization Data Base"

BNI Project Procedure 1502, "Verification of Existing Data"

BNI Project Procedure 1603, "Sample Information Management System"

BNI Project Procedure 1603.1, "Intermec 9460 Bar Code Reader User's Procedure"

BNI Project Procedure 1637, "Field Data Acquisition Documentation"
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