

Final

Meeting Minutes Transmittal/Approval
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
2440 Stevens Center Place, Room 1200, Richland, Washington
November 17, 1994

FROM/APPROVAL: Donna Wanek Date 2/16/95
Donna Wanek, 200 Aggregate Area Unit Manager, RL (H4-83)

APPROVAL: Paul R. Beaver Date 2/16/95
Paul R. Beaver, 200 Aggregate Area Unit Manager, EPA (B5-01)

APPROVAL: Dib Goswami Date 4/24/95
Dib Goswami, 200 Aggregate Area Unit Manager, WA Dept of Ecology

Meeting Minutes are attached. Minutes are comprised of the following:

- Attachment #1 - Meeting Summary
- Attachment #2 - Attendance Sheet
- Attachment #3 - Agenda
- Attachment #4 - Action Item Status List
- Attachment #5 - 200-UP-1 Operable Unit NPL Agreement
- Attachment #6 - Project Status of 200-UP-1 Groundwater Operable Unit
- Attachment #7 - Project Status of 200-BP-5 Groundwater Operable Unit
- Attachment #8 - 200-BP-5 Operable Unit NPL Agreement
- Attachment #9 - Project Status of 200 West Carbon Tetrachloride ERA
- Attachment #10 - Project Status of 200-ZP-1 Operable Unit
- Attachment #11 - 200-ZP-1 Operable Unit NPL Agreement



Prepared by: Kay Kimmel Date: 2/16/95
Jim Consort, Kay Kimmel, GSSC (B1-42)

Concurrence by: Joseph Zoghbi Date: 2/16/95
for Joseph Zoghbi, BHI Project Manager - 200 Areas, ~~(H4-79)~~
H4-07

Attachment #1
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
 November 17, 1994

Meeting and Summary of Commitments and Agreements

1. **SIGNING OF THE SEPTEMBER 200 AREA UNIT MANAGER'S MEETING MINUTES:**
 Meeting minutes were not available. The October 1994 UMM was canceled.

2. **ACTION ITEM UPDATE. See Attachment 4 for status:**

2AAMS.13 Open. Pending formal transmittal of the groundwater model study.
 2AAMS.16 Open.
 2BP5.1 Open.
 2UP1.2 Open.
 2BP5.2 Open.
 2UP1.3 Open.

3. **NEW ACTION ITEMS (INITIATED November 17, 1994):**

2ZP1.1 Provide to EPA (Paul Beaver) data on the Iron Filing Pilot Scale treatability test performed by Waterloo. Action: Donna Wanek

4. **INFORMATION ITEMS:**

- Status 200-BP-5 Operable Unit - Dave Erb provided the status of BP-5 activities (Attachment #7). Sampling difficulties moved sampling activities from September to October. Mercury samples came from the influent and effluent tanks since well data well indicated that the mercury did not come from the groundwater. Untreated water is being stored in drums. BHI is pursuing options for disposition and regulator concurrence will be obtained.

Attachment #8 (200 NPL agreement/change control form BHI-00203) was provided to the regulators.

216-BY System

216-BY Crib system restarted 25 October 1994 and shut down 14 November 1994 (found elemental mercury in system) after extracting 9600 gallons and treating 4800 gallons. Samples were collected November 16 to determine mercury levels in the tanks; results expected between November 23 and November 28. New influent and effluent tanks have been ordered. A meeting may be scheduled in order to give Paul Beaver (EPA) and Dib Goswami (Ecology) recommendations on how to treat the water contaminated with mercury.

216-B-5 Reverse Well System

216-B-5 system will restart when determined clean based upon baseline sample results expected by 17 November. Samples taken on 16 November to determine mercury levels in the tanks; results expected by 28 November. Well 699-55-57 was found not to be perforated; cost estimate in NPL agreement.

- Status 200-UP-1 Operable Unit

Characterization

Curt Wittreich indicated that the fourth quarter monitoring is scheduled in December and that third quarter monitoring has been completed. He proposed dropping the fourth quarter monitoring round since only three quarters will be in the Proposed plan. Has a draft NPL agreement (attachment #5) that would allow dropping of the last quarter of monitoring from the IRM proposed plan. Also, the LFI plumes that exceed Maximum Contaminant Levels will require quarterly monitoring. Uranium and technetium-99 plume geometry has become more refined and generally are smaller in area than previously expected based upon recent well data. EPA would like to know the vertical distribution of Tc-99. Six wells are scheduled to be installed during FY95.

Treatability Tests

Breakthrough of Tc-99 of 1000 pCi/L occurred in the primary column after treating approximately one million gallons of water. Will use column until reaching 2500 pCi/L or approximately 3,000 to 4,000 column volumes before switching the polishing column with the primary column. The primary extraction well (W19-24) will have to be chemically cleaned with chlorine, hydrogen peroxide, or sodium hypochlorite due to a problem with iron-bacteria.

Initiated bench-scale column tests to provide more breakthrough data and started the bench-scale biodegradation test in Knoxville (Attachment #6). The NPL agreement was signed regarding the biodegradation BHI-00206

Ms. Wanek is providing preliminary information to the regulators on the total volumes of contaminants removed from groundwater as of last week. Approximately five kilograms of uranium have been removed. She will provide this information via cc:mail since not all interested parties are present.

- Status 200-ZP-2 Operable Unit, ERA Activity - Sean Driggers provided update on the carbon tetrachloride plume ERA (Attachment # 9); all systems are operating 24 hours per day. The Z-18 crib is tied to Tunable Hybrid Plasma -to be tested in about two weeks; prefer to use the NPL change form in lieu of review and approval of test plans. Wellfield Strategy and Recommendations Report (BHI-00041) issued 7 October 1994.
- Status of 200-ZP-1 - Dan Parker provided the update for activities at the 200-ZP-1 operable unit (Attachment #10). Liner repair in one tank should be completed by the end of the week. Dan Parker will head the DNAPL investigation; Jhivaun Freeman-Pollard will be the Operable Unit Manager. Ms. Freeman-Pollard presented the NPL agreement form (Donna Wanek distributed BHI-00202, Attachment #11). Paul Beaver requested a detailed message be provided to the

regulators regarding the use of the NPL agreement forms to approve the plans. The treatability test has currently treated and injected 417,000 gallons and is currently under repair.

2ZP1.1 Provide to EPA (Paul Beaver) data on the Iron Filing Pilot Scale treatability test performed by Waterloo. Action: Donna Wanek

200 Aggregate Area Unit Manager's Meeting
 Official Attendance Record
 November 17, 1993

Please print clearly and use black ink

PRINTED NAME

ORGANIZATION

O.U. ROLE

TELEPHONE

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Donna Waneik	DOE-RL	Unit Manager	376-5778
Bryan Foley	DOE-RL		376-7087
George Cleneburg III	BHI	200 Area Asst Reg. Manager	376-1994
Diana Sietle	BHI	Support	375-9422
Paul Beaver	EPA	Unit Mgr	376-8665
James Consort	Dames & Moore/GSSC	support	7463694
Amoret Bunn	Dames & Moore/GSSC	support	946-3695
Michael J GARGOUL	ITH	200-UP-2 OU TASK LEAD	376-2038
Jim Hanson	DOE RL/TOD/ER	ER Cost Acct Mgr	372-4503
Scott Adams	ITH	Reg Analysis	372-3714
Nancy Uziemblo	Ecology	OU Support	7363014
William E. Lum III	USGS	EPA Support	2065936510
Kenneth R Porter	ITH	200 Area Task Lead	376-4650
Suzanne Clarke	PAI	RL Support	373-6165
MIKE BAKER	ITH	BP5 ASST. MGR.	373-6862
George L. Kasza	ITH	BP5 Geosci Lead	376-0763
Darrell B. Elb	ITH	Task Lead 200-BP5 O.U.	372-1402
John Shanahan	PAI	RL Support	3763938
KAY KIMMEL	MACTEC/D&M	RL SUPPORT	946-3692
Sean Diggers	ITH	200-ZP-2	372-3493
Jim Pankanin	PRC	EPA support	2066242692
DAN PARKER	ITH	200-ZP-1	372-1031
Shirvan FREE Man-Risk	ITH	200-ZP-1	376-1882
JEFF JAMES	BHI	REG. SUPPORT	372-9105

**Attachment #3
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
November 17, 1994**

Agenda

200 Area Activities

200-BP-5 - D. Erb

- * Action Item Status
- * General Status

200-UP-1 - Curtis Wittreich

- * Action Item Status
- * Characterization Program
- * Treatability Test Program

200-ZP-2 - Sean Driggers

- * Carbon Tetrachloride ERA

200-ZP-1 - D. Parker

- * Action Item Status
- * General Status

200-ZP-2 - Sean Driggers

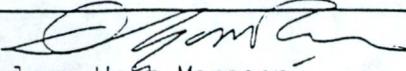
- * Carbon Tetrachloride ERA

Attachment #4

Action Item Status List
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
November 17, 1994

ITEM NO.	ACTION	STATUS
2AAMS.13	Transmit the 200-UP-1 and 200-ZP-1 Treatability Test Plans and Mike Connelly's groundwater modeling studies for pump and treat to the regulators. Action: Paul Pak.	Open 03/31/94.
2AAMS.16	Provide a schedule describing activities that are required prior to initiating pilot scale studies in the 200-BP-5 Operable Unit by August 1994. Action: Dave Erb.	Open 03/31/94. Activities are ongoing.
2UP1.2	Develop a treatability test plan for denitrification of 200-UP-1 groundwater at laboratory and bench scales, based on the 100 Area Treatability Test Plan for Nitrate. Action: Paul Pak.	Open 05/26/94.
2UP1.3	Provide regulators with laboratory results on sample point WL5 on October 14, 1994. Action: Bruce Ford.	Opened 09/28/94.
2BP5.1	Revise the existing Description of Work to include the use of the cone penetrometer prior to installation of new wells to better locate extraction and recovery wells. Action: David Erb.	Open 05/26/94.
2BP5.2	Provide date on streamlining the groundwater sampling effort. Action: Joe Zoghbi	Opened 09/28/94.
2ZP1.1	Provide to EPA (Paul Beaver) data on the Iron Filing Pilot Scale treatability test performed by Waterloo. Action: Donna Wanek	Open 11/17/94.

Control Number: BHI-00206	200 NPL Agreement/Change Control Form ___ Change ___ X Agreement ___ Information Operable Unit(: 200-UP-1	Date Submitted: October 20, 1994 Date Approved:				
Document Number/Title: 200-UP-1 Groundwater Operable Unit IRM Proposed Plan Schedule		Date Document Last Issued: N/A				
Originator: C. D. Wittreich		Phone: 376-1862				
<p>Ecology, EPA, and DOE Unit Managers agree to modify the submittal date of the IRM Proposed Plan to the regulators from February 15, 1995 to March 31, 1995. Furthermore, Ecology, EPA, and DOE Unit Managers agree to conduct a Bench-Scale Biotenitrification Treatability Study that will fulfill nitrate laboratory/bench-scale test commitments identified in the 200-UP-1 Work Plan and the Hanford Federal Facility Agreement and Consent Order, Fourth Amendment, M-13-93-03.</p> <p>The IRM Proposed Plan will address the uranium, technetium and nitrate IRM plume and will be supported by the following reports:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right; border: none;"><u>Submittal Date</u></td> </tr> <tr> <td style="border: none;"> <ul style="list-style-type: none"> • Ion exchange treatability test report • Bench-scale biotenitrification report </td> <td style="border: none; text-align: right;"> 1/16/95 3/14/95 </td> </tr> </table>				<u>Submittal Date</u>	<ul style="list-style-type: none"> • Ion exchange treatability test report • Bench-scale biotenitrification report 	1/16/95 3/14/95
	<u>Submittal Date</u>					
<ul style="list-style-type: none"> • Ion exchange treatability test report • Bench-scale biotenitrification report 	1/16/95 3/14/95					
Justification and Impact of Change: This modification will enable to involved parties to issue the IRM Proposed Plan with pilot-scale and laboratory/bench-scale treatability test results. This agreement will require modifications to the schedule contained in the Remedial Investigation/Feasibility Study Work Plan for the 200-UP-1 Groundwater Operable Unit, Hanford Site, Richland, Washington, DOE/RL-92-76, Revision 0.						
ERC 200 Area Project Manager <i>Robert Fogler</i>		Date <i>11/14/94</i>				
DOE Unit Manager <i>Donna Wank</i>		Date <i>11/14/94</i>				

 Ecology Unit Manager	Date 11/14/94
 Env. Protection Agency Unit Manager	Date 14 Nov 94
Per Action Plan for Implementation of the Hanford Consent Order and Compliance Agreement Section 9.3.	

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Attachment #6

Page 1 of 2

**200-UP-1 GROUNDWATER OPERABLE UNIT
UNIT MANAGERS MEETING
NOVEMBER 17, 1994**

AGENDA

- CHARACTERIZATION

- GROUNDWATER MONITORING STATUS

- Completed Third Quarter IRM set
- Recommend Deleting Fourth Quarter IRM set
- Planning First Quarter LFI set

- WELL INSTALLATION STATUS

- Completed drilling of 4 FY 94 wells
- Planning FY 95 Drilling Program of 6 new wells
 - Drafted Description of Work
 - Preparing procurement package for drilling subcontractor

- TREATABILITY TEST

- PILOT-SCALE TEST STATUS

- Processed ~1,000,000 gallons
- Observing technetium breakthrough

- LAB-SCALE TEST STATUS

- Initiated Bench-Scale Column Testing
- Kicked-off Bench-Scale Bionitrification Test (Knoxville)

UNIT MANAGERS MEETING

200-BP-5 OPERABLE UNIT

D. B. ERB

November 17, 1994

PL513 - CHARACTERIZATION

- * 2nd ROUND OF FY 94 GROUNDWATER SAMPLING AT BY CRIBS PLUME COMPLETED OCTOBER 31.**

- * 45 DAY LABORATORY ANALYSIS CLOCK BEGAN ON OCTOBER 31. RESULTS DUE BACK FROM LAB ON ~DECEMBER 15.**

PL515 - TREATMENT**216-BY SYSTEM**

- * **BASELINE SYSTEM SAMPLES TAKEN ON OCTOBER 24.**
- * **216-BY CRIBS SYSTEM RESTARTED OCTOBER 25, 1994.**
- * **9600 GALLONS EXTRACTED & 4800 GALLONS TREATED IN NEXT 5 DAYS.**
- * **SYSTEM SHUT DOWN ON NOVEMBER 14 WITH DETECTION OF MERCURY IN SYSTEM.**
- * **OCCURRENCE REPORT PREPARED NOV 16.**
- * **MERCURY SAMPLES TAKEN ON NOV 16, RESULTS EXPECTED NOV 23-28.**
- * **FIELD TEST SYSTEMS UNDER INVESTIGATION.**
- * **NEW TANKS ARE ON ORDER. IF NEEDED, INSTALLATION WILL TAKE 2-3 WEEKS.**
- * **LOW Hg RESULTS WILL FAVOR RESTARTING SYSTEM WITH MERCURY ADDED AS A PROCESS CONTROL ANALYTE.**

PL515 - TREATMENT**216-B-5 REVERSE WELL SYSTEM**

- * **BASELINE SYSTEM SAMPLES TAKEN ON OCTOBER 31 & SYSTEM RESTARTED NOVEMBER 1.**
- * **5030 GALLONS EXTRACTED AND 4360 GALLONS TREATED IN NEXT 4 DAYS.**
- * **TRACER TEST AT 299-E28-23 IS READY. LiBr IN EFFLUENT TANK.**
- * **SYSTEM WILL OPERATE WHEN DETERMINED TO BE CLEAN. DECISION TO BE BASED ON BASELINE SAMPLE RESULTS EXPECTED ON NOV 17.**
- * **Hg SAMPLES TAKEN ON NOV 16, RESULTS EXPECTED BY NOV 28.**
- * **IF DECISION IS TO RUN, TRACER TEST WILL START ON FRIDAY AND RUN THROUGH WEDNESDAY.**
- * **MINI-COLUMN TEST PLAN IN PREPARATION & MATERIALS ARE BEING PROCURED.**
- * **ISOTOPIC DILUTION USING SrCl TO INCREASE ZEOLITE EFFICIENCY IS FAVORED BASED ON IT LAB TEST RESULTS.**

PL526 - REMEDIATION**GEOHYDROLOGIC CHARACTERIZATION****216-B-5 REVERSE WELL PLUME**

- * **A 2nd TRACER TEST, POSSIBLY USING FLUORESCENT DYE, AT 299-E28-25 WELL IS PLANNED AFTER PUMPING ~80,000 GAL.**
- * **WELL CAPTURE ZONE ANALYSIS - ESTIMATED 2-5 DAY TRAVEL TIME UNDER PUMPING CONDITIONS.**

216-BY CRIBS PLUME

- * **AQUIFER TESTS AT 699-55-57 WELL**
 - **CAMERA SURVEY INDICATES WELL CONSTRUCTED WITH THICK-WALLED CASING, NOT PERFORATED DURING WELL CONSTRUCTION (per video inspection). WELL PENETRATES ~10 ft INTO BASALT.**
 - **EXISTING WELL FLOW IS PRIMARILY THROUGH FRACTURE FLOW**
 - **THICK-WALLED CASING REQUIRES OFF-SITE CONTRACTOR FOR EXPLOSIVE PERFORATION**
 - **COST ESTIMATES BEING PREPARED.**

PL526 - REMEDIATION**216-BY CRIBS PLUME***** SYSTEM RELOCATION ENGINEERING STUDY**

- PRELIMINARY DRAFT IN INTERNAL REVIEW.
- BREAK-EVEN POINT FOR SYSTEM MOVE OCCURS ~60 WEEKS AFTER RELOCATION.
- REPORT EVALUATES COST OF:
 - * TRUCK WATER FROM 699-55-57 TO EXISTING TREATMENT SYSTEM.
 - * ABOVE-GROUND PIPELINE CONSTRUCTION FROM 55-57 TO EXISTING SITE.
 - * RELOCATE 216-BY SYSTEM TO 55-57 WELL & DRILL INJECTION WELL.

*** SONIC PUSH (CRADA)**

- NEW ROD DESIGN TO BE TESTED AT 3 HOLES WHERE REFUSAL ABOVE GWT OCCURRED DURING JULY-AUG FIELD PROGRAM.
- 2 ADDITIONAL HOLES AT RECOMMENDED NEW LOCATIONS TO BE NEGOTIATED.

PL526 - REMEDIATION*** GROUNDWATER SAMPLING AT WELLS 699-55-60A & -60B**

- 2 - 14" WATER SUPPLY WELLS AT 200-NORTH AREA LOCATED INSIDE WELL-HOUSES.
- HEALTH & SAFETY AND RAD CON SURVEYS COMPLETED.
- HOUSEKEEPING PROBLEM WITH RESPECT TO 30 YEARS OF ACCUMULATED PIGEON GUANO.
- WELLS HAVE BEEN INSPECTED WITH TV CAMERA.
- WELL 699-55-60B WILL NOT BE SAMPLED - DEBRIS IN WELL + WELL APPEARS TO BE PLUGGED ABOVE PERFORATIONS.
- WELL 699-55-60A WILL BE SAMPLED FOR Tc-99, Co-60, CYANIDE, NITRATES, METALS AND ANIONS.
- SAMPLING EXPECTED DURING WEEK OF 11/28-12/2/94

PL526 - REMEDIATION

- * QUARTERLY GWT MEASUREMENTS TO BE CONDUCTED IN DECEMBER.**

- * WHC HIGH RESOLUTION SEISMIC REFLECTION SURVEY DEMONSTRATION TESTING IN 200 WEST ON SCHEDULE FOR SUMMER 1995.**

- * GROUNDWATER VELOCITY/DIRECTION MEASUREMENTS ON HOLD - EQUIPMENT CALIBRATION AND AVAILABILITY ISSUE.**

- * COST ESTIMATES OF NPL AGREEMENT ACTIVITIES ARE BEING PREPARED AND FUNDING SOURCES/TRADEOFFS WILL BE ASSESSED.**

Control Number: BHI-00203	200 NPL Agreement/Change Control Form __ Change __X Agreement __ Information Operable Unit(s): 200-BP-5	Date Submitted: November 9, 1994 Date Approved:
Document Number/Title: Pilot Scale Treatability Test for the 200-BP-5 Operable Unit, DOE/RL-93-98		Date Document Last Issued: August, 1994
Originator: D. B. Erb		Phone: 372-1402
Summary Discussion: 1.) A meeting held on October 21, 1994 between DOE, EPA, Ecology and BHI/ITH discussed methods to improve overall understanding of groundwater and contaminant distribution for the 200-BP-5's two treatment systems. It was reported that injection testing at the 299-E28-7 well was successful for injection rates of 20 and 55 gpm where a maximum increase of 1.5 ft was observed. (Continued on next page.)		
Justification and Impact of Change: 1.) The activities described in Para 2 above will provide additional information on aquifer properties at the 216-B-5 Reverse Well site needed to assess the effectiveness of isotope removal from the saturated sediments. The activities described in Para 3 and 4 for the 216-BY Cribs plume site will provide information on the distribution of contaminants and local aquifer properties. This information will be used to support decisions for the 200-BP-5 Interim Remedial Measures Proposed Plan. (Continued on next page)		
J. G. Zoghbi 200 Areas Project Manager	<i>J. G. Zoghbi</i>	Date 11/9/94
D. M. Wanek DOE Unit Manager	<i>D. M. Wanek</i>	Date 11/9/94
D. N. Goswami Ecology Unit Manager	<i>D. N. Goswami</i>	Date 11/10/94
P. R. Beaver Env. Protection Agency Unit Manager	<i>P. R. Beaver</i>	Date 11/9/94
Per Action Plan for Implementation of the Hanford Consent Order and Compliance Agreement Section 9.3.		

Total pages 4

BHI-DIS JE 11-14-94

Summary Discussion (cont.)

2.) A series of steps for proceeding with aquifer testing at the B-5 unit was recommended and accepted. These include: 1.) Performing a tracer test using Lithium Bromide when reinjecting at the 299-E28-7 well, 2.) moving the injection apparatus to 299-E28-25 after pumping ~80,000 gallons into E28-7 and performing another tracer test using a to-be-determined tracer, and 3.) moving to the 299-E28-1 well for the final phase of operation, if removal of Sr-90 to less than 8 pCi/L is achieved. This would result in large scale measurements of hydraulic conductivity, porosity, effective porosity, storativity, aquifer anisotropy, etc., under a moderate gradient induced by pumping at 15-20 gpm.

3.) The 699-50-53A well at the BY Cribs plume can only supply groundwater at 3-4 gpm on a steady basis. Further, the plumes' concentrations at 50-53A are declining and increasing at wells further to the Northwest. The lack of water and declining contaminants suggests that the system is poorly located. The options of moving the site vs trucking or piping water to the site are to be considered in an engineering study. Other activities supporting resolution of the two options are: 1.) examine well useability and aquifer properties at well 699-55-57 where above-MCL levels of Tc-99 are reported, 2.) perform a capture zone analysis at 699-55-57, 3.) determine in-well groundwater flow velocity, and 4.) expand the BY plume monitoring/sampling to include two water supply wells, 699-55-60A and 699-55-60B in the 200-North Area.

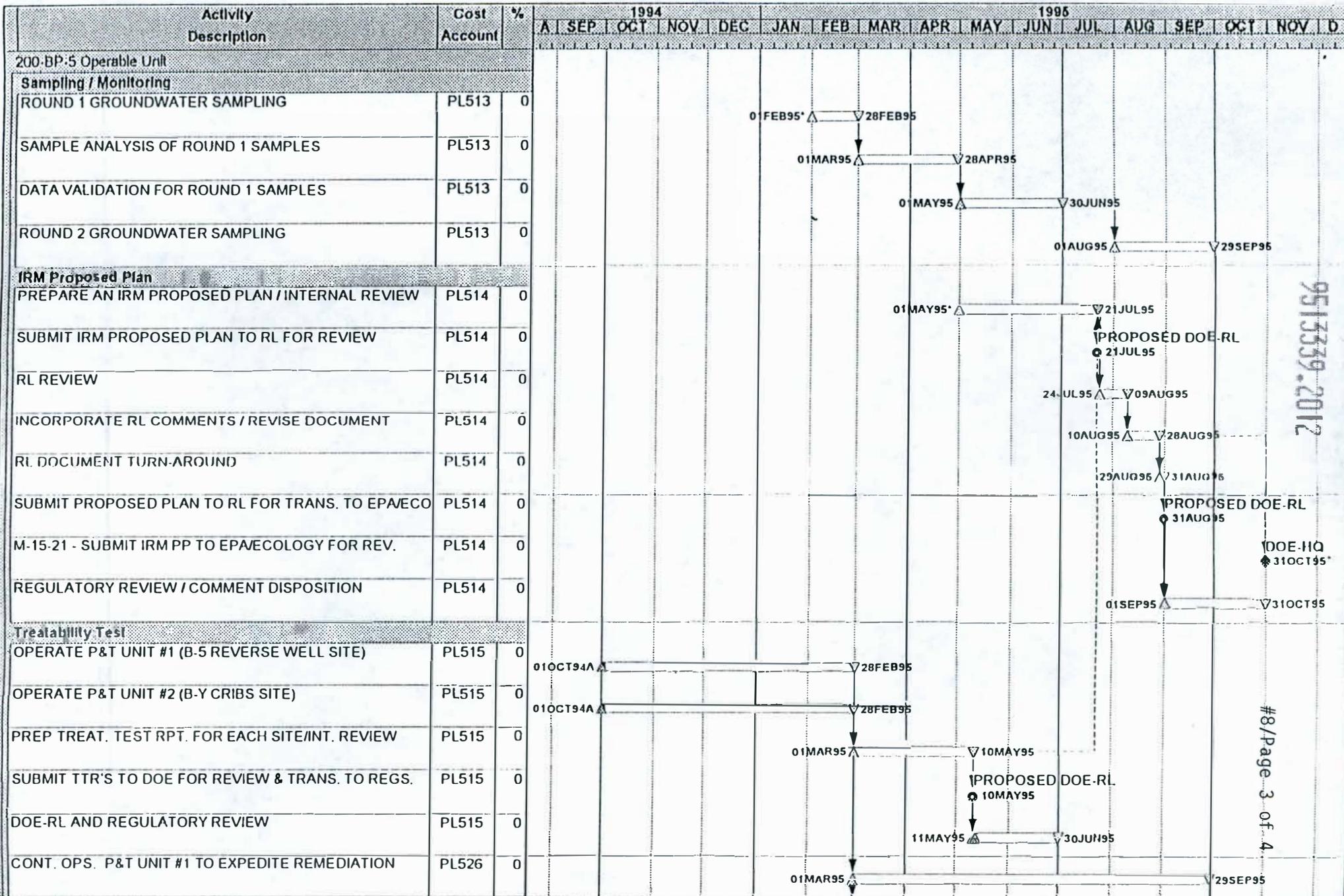
4.) Drilling activities supporting operations are still being considered and a new injection well will be necessary if the system is moved to the 699-55-57 wellsite. Geophysical surveys using seismic reflection to locate zones of potentially greater aquifer thickness are still desired to locate new wellsites but are not funded.

5.) The meeting concluded with approval for the activities described in paragraphs 2 and 3, above. The EPA and Ecology requested a status on activities and results at the November 1994 Unit Managers Meeting.

Justification and Impact of Change (cont.)

2.) Impact of change for BY system depends upon alternative chosen. Moving the system or trucking will have significant cost increases currently not covered with existing budget. Moving the system may be a less expensive alternative if long-term operations can be justified. Shutdown of the system while moving would halt treatment for 1-2 months. The remaining activities will not affect treatment system but will add to total project cost.

3.) Minor schedule impacts to operation of the B-5 system can be expected when the injection well location is changed. Tracer sampling and testing during operations will not impact system performance. Cost of testing at B-5 will increase somewhat.



9513339.2012

#8/Page 3 of 4

Project Start	01OCT94	Δ ———— ∇ Early Bar
Project Finish	22APR96	Δ ———— ∇ Progress Bar
Start Date	01OCT94	Δ Critical Activity
End Date	09NOV94	

FANG

BECHTEL HANFORD, INC.
FY1995 DETAIL SCHEDULES

Sheet 1 of 2

11/94 - PRINTED (G.S. JONES)

Date	Revision	Checked	Approved

**November 17, 1994 Unit Managers Meeting
Project Status of the 200 West Area Carbon Tetrachloride ERA**

STATUS

- ERA has removed 45,168 kgs (99,369 lbs) as of 11/9/94
- Began 24 hour-per-day operations with the 1500 cfm Vapor Extraction System at the 216-Z-9 Trench on 10/17/94
- Issued Wellfield Strategy and Recommendations Report, BHI-00041, on 10/7/94
- Issued Decisional Draft of 200-ZP-2 IRM Proposed Plan for DOE review on 10/7/94

November 17, 1994 Unit Managers Meeting
Project Status of the 200 West Area Carbon Tetrachloride ERA

ISSUES

- Soil Moisture Condensate
 - 40 drums in inventory, generating 8 drums per week
 - NPL Change Agreement for processing at 200-ZP-1 Pump and Treat

- Technology Demonstrations
 - Tunable Hybrid Plasma
 - PURUS Padre
 - NPL Change Agreements in lieu of review and approval of test plans

9513339.2016

STATUS OF THE 200-ZP-1 OPERABLE UNIT

NOVEMBER 17, 1994

D. Parker/J. Freeman-Pollard

- o General Status of Treatability Test**
 - Treated and Injected 417,000 Gallons**
 - Currently performing repairs**

- o Technology Demonstrations**
 - NPL Agreement Form**

Control Number: BHI-00202	200 NPL Agreement/Change Control Form __ Change <input checked="" type="checkbox"/> Agreement __ Information Operable Unit(s): 200-ZP-1	Date Submitted: 11/9/94 Date Approved:
Document Number/Title: WHC-SD-EN-WP-011, <i>In-Situ Bioremediation Drilling and Characterization Work Plan</i>		Date Document Last Issued: 6/14/94
Originator: J. G. Zoghbi		Phone: (509)376-0940
<p>This Change Control Form documents resolution of regulatory issues related to characterization activities for the In Situ Bioremediation Demonstration which will be conducted as part of the VOC-Arid Integrated Demonstration. The planned characterization activities include circulation of groundwater between two or more of the following wells: 299-W11-29, 299-W11-30, and 299-W11-32. A description of the tracer test associated with these characterization activities was forwarded October 11, 1994, to the Environmental Protection Agency and Washington State Department of Ecology. (Attachment).</p> <p>These activities are in support of a proposed interim remedial measure under the Comprehensive Environmental Recovery, Compensation and Liability Act of 1980 (CERCLA)(40 CFR §300.430) and will be conducted in compliance with the substantive requirements regarding RD&D activities under the Resource Conservation and Recovery Act (RCRA) (40 CFR §270.65). CERCLA Section 121(f) requires no federal, state, or local permit be obtained for the portion of any removal or remedial action conducted entirely onsite. However, these activities will comply with the substantive portions of applicable environmental laws. (Continued on next page)</p>		
Justification and Impact of Change: This form documents the resolution of all regulatory issues related to the characterization tracer test and confirms that the existing plans and proposed operations provide adequate protection for human health and the environment.		
BHI 200 Area Project Manager <i>Joseph Zoghbi</i>		Date <i>11/9/94</i>
DOE Unit Manager <i>Donna Wanel</i>		Date <i>11/9/94</i>
Ecology Unit Manager <i>[Signature]</i>		Date <i>11/10/94</i>
Env. Protection Agency Unit Manager <i>[Signature]</i>		Date <i>11-9-94</i>
Per Action Plan for Implementation of the Hanford Consent Order and Compliance Agreement Section 9.3.		

Total pages 5

1

BHI-DIS *JS* 11-14-94

November 9, 1994
Control No:

The RCRA RD&D regulations allow flexibility within the substantive provisions of RCRA so that innovative technologies may be tested and developed.

DOE/RL will conduct these operations in a manner which will be protective of human health and the environment. This includes constructing the conduit between the wells with galvanized piping and threaded joints sealed with teflon tape. The system operates under very low pressure (less than 5 psig). The potential for significant leaks in this type of piping is very low. The recirculation tracer test equipment uses a computer control system for unattended 24-hour operation. The system automatically telephones on-call staff in the event of a deviation from set-point pressures and flow. To ensure protection of the environment during these initial studies, a secondary containment system will be installed on the above-ground piping, at those locations where a leak could potentially occur (e.g., valves, fittings, joints). This will provide for collection of groundwater, especially during off-shift hours, in the unlikely event that a leak in the piping does occur. A contingency plan has been developed which includes having spill response kits on-site as well as a list of emergency response contacts in case a release should occur.

All applicable, or relevant and appropriate requirements (ARARs) are not anticipated to be met at this time in the RD&D effort. However, the recirculation tracer test is part of an interim remedial measure and overall attainment of ARARs is expected to be addressed in the final remedy decision. It is agreed that recirculation activities may proceed as planned and the groundwater may be reinjected without treatment within the area of contamination at the designated site. Any investigation-derived waste, to include extracted groundwater which is not part of the test itself, will be handled in accordance with applicable regulations.

Attachment:
Test Description: 2-Well Tracer Test and 2-Well Test Without Tracer
Bioremediation Project - VOC-Arid ID

In the recent characterization effort at the in situ bioremediation test site, the hydraulic properties of the site were investigated. Two primary layers of high permeability and one primary layer of low permeability were found at depths between the water table (247 feet) and 310 feet (total depth drilled) below land surface. In addition, a 7-foot-thick caliche-type layer (cemented-low permeability) was found at the capillary fringe from 238 feet to 245 feet deep. The two high permeability hydraulic units at the site, one at the water table (about 10 feet thick) and one in the depth interval from 285 to 305 feet, are the primary zones where active recirculation can be used. These high permeability units are separated by the low permeability unit. The design for the bioremediation demonstration will require a groundwater recirculation system that is compatible with these site properties.

There are currently three wells at the site; 299-W11-29, -30, and -32. Wells -29 and -30 are 4-inch diameter single-screened wells. Well -32 is an 8-inch diameter multi-screened well. In these wells, there are three screened intervals in the permeable unit at the water table (-29, -30, and -32) and one screen in the deep permeable unit (-32).

The current data used to determine the site properties have been collected from tests including sediment core analyses, constant-discharge and step-drawdown pumping tests, geophysical logs, and single-well point dilution tracer tests. While these data have provided a means to determine the general distribution of layers of permeability at the site, more data is needed to better characterize the individual high permeability layers since they will be used as the recirculation zones. Only one screen is present in the deep permeable layer so that no further testing to better characterize this layer can be performed with the current wells. However, there are three wells with screens in the permeable unit at the water table. These wells can be utilized to obtain valuable hydraulic information about this zone to determine how a recirculation system can be employed in this unit.

We propose to conduct a well-to-well recirculation test using a bromide tracer to analyze the hydraulic flow in this layer of the aquifer near the water table. This test would require groundwater to be extracted from well -30 and injected into well -29. Well -32 would be used as a monitoring well. To determine hydraulic interaction between the wells, it is necessary to induce a gradient by pumping rather than relying on the natural groundwater gradient. An outline of the procedures that would be used to conduct this test are included in this communication.

The data obtained in the well-to-well tracer test would be used to demonstrate hydraulic interaction between wells, and establish pumping rates in this hydraulic unit. Tracer responses in each well will be compared to a comprehensive transport model to calibrate the model parameters, assess potential heterogeneities, and provide a baseline for simulations of the bioremediation process. These data cannot be collected without an evaluation of well-to-well interaction at the site. Thus, we believe it is necessary for the bioremediation design effort to conduct this test.

In addition to this tracer test, we believe a longer-term well-to-well test without the use of a tracer is necessary to provide a detailed time-series of information on aquifer characteristics under recirculation. This test would use the same configuration and procedure as the first test, but would operate without the addition of any tracer. Specific test objectives of this second test include performing additional hydraulic characterization of the test site by monitoring pressures and flow rates during recirculation, as well as performing equipment shake-down to ensure proper functioning.

The test configuration for both tests, as well as details in test procedures for each test, are as follows.

Well-to-Well Recirculation Procedure Outline

In support of the In Situ Bioremediation Integrated Demonstration, two cross-well recirculation tests will be conducted at the bioremediation test site. Ground water will be extracted from well 299-W11-30, brought to ground surface, and reinjected into well 299-W11-29, all within a closed system. Well 299-W11-32, which is located between the extraction and reinjection wells, will be used as a monitoring point.

Test Configuration:

- Well 299-W11-30, which penetrates the upper 30 ft of the unconfined aquifer with a nominal 4-in diameter stainless steel 10-slot wire-wrap screen, will serve as the extraction well. Characterization activities at the site indicate that about 10 ft of the aquifer near the water table is most transmissive. A 5 Hp submersible pump will be installed at an approximate depth of 275 ft on 1.5-in diameter tubing. Pressure within the wellbore will be monitored using a Keller Series 169 pressure transducer. Two ion selective probes (located approximately 5 ft and 10 ft below the pre-test static water-level) will be installed to monitor tracer concentration in the extraction well.
- Well 299-W11-29, which is located a radial distance of 26 ft from 299-W11-30 and has the same completion design and depth, will serve as the reinjection well. A packer will be installed just above the screen on 1.5-in tubing and will prevent tracer from mounding above the screen in the wellbore. A Keller Series 169 pressure transducer and ion selective probe will be used to monitor wellbore pressures and tracer concentration respectively. The reinjection tubing will be equipped with a tracer injection line.
- Well 299-W11-32, which is located directly between wells 299-W11-29 and 299-W11-30 at a radial distance of 14.8 ft from well 299-W11-30, will be used as an observation well. The upper screen of well W11-32 penetrates the upper 10 ft of the unconfined aquifer with a nominal 8-in diameter stainless steel 10-slot wire-wrap screen; a packer will be used to isolate this zone from the middle and lower screened intervals. Pressure within the wellbore will be monitored using a Keller Series 169 pressure transducer. Two ion selective probes (located approximately 3 ft and 8 ft below the pre-test static water-level) will be installed to monitor tracer concentration in the observation well.
- The pump discharge tubing installed in well 299-W11-30 will be connected to the reinjection tubing installed in 299-W11-29 via a wellhead assembly. The wellhead assembly will be a closed system consisting of a flow meter, flow control valve, sampling port, and sufficient pipe to connect the extraction and reinjection tubing.

2-Well Tracer Test Procedure:

- After fines have been removed from the extraction well, well to well flow will be initiated at a rate of 10 gpm and increased in a step-wise fashion until the maximum recirculation flow rate is achieved. Hydrologic characterization activities at the site indicate this maximum should be between 20 and 30 gpm. This flow rate will be maintained until quasi steady-state conditions have been established. It is expected that this steady-state condition will be reached in 24 to 48 hours.
- Once this quasi steady-state condition has been established, a one-hour pulse of tracer will be injected into the reinjection tubing installed in well 299-W11-29. A total of

3400 g of lithium bromide will be injected during the one-hour pulse to provide a pulse concentration of 500 mg/L. The tracer will be carried to the screened test interval via the reinjection tubing.

Lithium bromide was selected as a tracer because at the concentration being injected it will neither affect the microbes in the test area nor will it react with the contaminants present (carbon tetrachloride, nitrate, chloroform, etc.).

- Tracer concentration will be monitored at the extraction well (299-W11-30) and monitoring point (299-W11-32) at two discrete depths. Tracer concentration will be logged continuously to ensure the tracer concentration profile at the extraction well and monitoring point is adequately described.
- Downhole tracer concentrations at the extraction well measured with the ion selective probe will be verified with laboratory analysis of samples drawn from the recirculation tubing via the sampling port.
- The cross-well recirculation test will be discontinued when the tracer pulse injected into well 299-W11-29 has arrived at well 299-W11-30 and the shape of the tracer input has been fully described. It is anticipated that this will occur within one week of the start of tracer injection. Total amount of groundwater to be recirculated is on the order of 300,000 gallons (30 gpm for 7 days = 302,400 gallons).

2-Well Recirculation Test Without Tracer:

- This test will be conducted in a similar manner as the 2-well tracer test. Well to well flow will be maintained at the maximum recirculation flow rate determined by the first test, which is anticipated to be between 20 and 30 gpm. This flow rate will be maintained for a period of several weeks (up to 90 days). Total amount of groundwater to be recirculated is on the order of 4 million gallons.
- During the continuous flow, aquifer characteristics will be monitored at the extraction well (299-W11-30) and monitoring point (299-W11-32).

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