FH-0500206

0063943

Meeting Minutes Transmittal/Approval
Unit Managers' Meeting
200 Area Groundwater and Source Operable Units
1200 Jadwin Avenue, Richland, Washington
March 18, 2004

APPROVAL: Arlene Tortoso Date: 2/17/05
Arlene Tortoso, Groundwater Unit Manager, DOE/RL

APPROVAL: Larry Romine Date: 2-17-05
Larry Romine, Federal Project Director, 200 Area D4 & Waste Site Remediation, DOE/RL

APPROVAL: Craig Cameron Date: 2/17/05
Craig Cameron, 200 Area Unit Manager, EPA

APPROVAL: John B. Price Date: 2/17/05
John Price, 200 Area Unit Manager, Ecology

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

Attachment 1	--	Agenda
Attachment 2	--	Attendance Record
Attachment 3	--	200 Area UMM Minutes – March 18, 2004
Attachment 4	--	200 Area Current Action Log
Attachment 5	--	Float Table
Attachment 6	--	200-UP-1, 200-ZP-1 and 200-PW-1 Status Report
Attachment 7	--	Comparison of Maximum Carbon Tetrachloride Rebound Concentrations Monitored at 200-PW-1 Soil Vapor Extraction Sites FY 1998- FY 2004
Attachment 8	--	Status of Well Decommissioning
Attachment 9	--	200-BP-5 Sample Collection Results
Attachment 10	--	FY 2004 Vapor Extraction System Operating Plan for the Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit)
Attachment 11	--	Briefing – CP Ecological Scoping Sampling

Prepared by: _____ Date 1-26-05
Linda DeLaMoy, Project Systems & Support (H8-49)

Concurrence by: _____ Date 2/9/05
Mary Todd-Robertson, FH Groundwater Protection Program (E6-35)

DISTRIBUTION
UNIT MANAGERS' MEETING,
200 AREA GROUNDWATER SOURCE OPERABLE UNITS

EPA

Craig Cameron	B5-01

Ecology

John Price	H0-57
Administrative Record (2)	A3-01

UNIT MANAGERS' MEETING AGENDA

1200 Jadwin Avenue
March 18, 2004

9 a.m. – 12 p.m. **200 Area** **Room 1C1**

General (15 minutes)

- Outstanding Action Items
- Open for Regulatory Topics or Action Items

U Plant Area Regional Closure (10 minutes)

- Schedule Review
  - FFS/PP Status
  - Change Request Status
  - Drive casing/Spectra Gamma
  - Path forward

BC Cribs Area Closure (10 minutes)

- Schedule Review
  - Confirmatory DQO and SAP
  - TPA change request to move four LW-1 sites to TW-1

GROUNDWATER OPERABLE UNITS

General (5 minutes)

- Update on Well Decommissioning

200-BP-5 & 200-PO-1 OUs (5 minutes)

- 200-BP-5 Updated Well List
- 200-PO-1 Schedule Status

200-UP-1 OU (5 minutes)

- Remediation Treatment Status
- RI/FS Work Plan Status – Awaiting Ecology Comments
- Completed Drilling of New Monitoring Wells "O", "N", and "S"
- Will begin drilling New Monitoring Wells "K", "P", and "R" Next Week.
- Key Activities Ecology Wants Status On:
  - G2U40195 RL Submits Draft-A RI Report to Regulators - July 12, 2005
  - G2U54160 Issue Draft A FS Report to Regulators - April 5, 2007
- 1,4-Dioxane – Well 299-W22-20 (PNNL)

200-ZP-1 OU (5 minutes)

- Remediation Treatment Status
- RI/FS Work Plan Status – Received EPA Comments on Draft A
- Completing Design Work for Tying-In Extraction Wells #1 and 4

SOURCE OPERABLE UNITS

200-PW-1, 200-PW-3, & 200-PW-6 OUs (15 minutes)

- Schedule Review
  - Remediation Treatment Status
  - Monthly Monitoring
  - Status of Field Work Preparation and Planning
  - Status of RI/FS Work Plan
  - Status of Field Work at 216-Z-9

218-W-4C Burial Ground (5 minutes)

- Remediation Treatment Status

200-CW-1 & 200-CW-3 OUs (5 minutes)

- Schedule Review
  - Status of FS and PP

200-PW-2 & 200-PW-4 OUs (10 minutes)

- Schedule Review
  - Status of Waste Management Activities
  - Status of Work Plan
  - Status of RI Report

200-CS-1 OU (2 minutes)

- Schedule Review
  - Status of RI Report

200-CW-5, CW-2, CW-4, & SC-1 OUs (10 minutes)

- Schedule Review
  - Status of Work Plan
  - Status of RI Report
  - Status of FS

200 Area Ecological Evaluation (10 minutes)

- Schedule Review
  - Status of Eco DQO
  - Status of Eco Evaluation Report
- Overview of Eco Activities
  - Planning for Spring Sampling

200-IS-1 & 200-ST-1 (10 minutes)

- Schedule Review
  - Status of Work Plan
  - Scope Definition

200-LW-1, 200-LW-2 & 200-MW-1 (5 minutes)

- Status of Field Planning

200-TW-1, 200-TW-2, & 200-PW-5 (10 minutes)

- Schedule Review
  - Status of RI Report
  - Status of FS and PP

200-UR-1 (5 minutes)

- Schedule Review
  - Status of DQO and Work Plan
  - Status of BC Control Zone Planning

200-SW-1/2 (5 minutes)

- Schedule Review
  - Status of Work Plan

Groundwater and Source Operable Units Unit Managers' Meeting
Official Attendance Record – 200 Area
March 18, 2004

Please print clearly and use black ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Arlene Tortoso	DOE-RL	200 Area GW	373-9631
Ronald L. Jackson	FH	U Plant	373-3599
Michael J Galgoul	CH2M	U Plant	372-9590
L. Craig Swanson	FH	Tech. Support	373-3807
Mike Goldstein	EPA		376-4919
Beth Rochette	Ecology	200 area common U plant area	736-3020
Mary Todd-Robertson	FH	200 Area RA	373-3920
Brian L. Foley	DOE-RL	200 Area RA	376-7087
John Winterhalder	FH-GRP	ECO	372-8144
Stuart Luttrell	PNNL-GW	GW Mon.	376-6023
John P. McDonald	PNNL	UP-1 GW Mon.	373-0362
Mark E. Byrnes	FH	Task Lead	373-3996
Craig Cameron	EPA	Proj. Mgr.	376-8665
Deb Goswami	Ecology	Sitewide GW Mgr.	736 3015
Zelma Jackson	Ecology	200 Area HG	736-3024
Virginia Rohay	FH	PW-1, SW-2	373-3803
Dave Erb	FH	UP/ZP	373-4457
MIKE HICKEY	FH	CW-143	373-3092
Richard Gurke	FH	Environ Prot.	372-0761
Larry Hulstrom	FH	PW-2/ CW-5	373-3928

Groundwater and Source Operable Units Unit Managers' Meeting
Official Attendance Record – 200 Area
March 18, 2004

Please print clearly and use black ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Dennis Faulk	EPA		
John Price	Ecology	Proj. Mgr	736-3029

MEETING MINUTES
200 AREA UNIT MANAGERS' MEETING -- 200 AREA
March 18, 2004

Agenda: See Attachment #1

Attendees: See Attachment #2

Topics of Discussion:

1. **General**
   - Outstanding Action Items – Maps of the Central Plateau were displayed presenting the current DOE view and the proposed revised definition of Central Plateau. The current view does not work for the ecological documents. The revised definition goes farther out to include the dunes area, Gable Mountain, and Gable Butte. Copies of the maps are available.
   - Open for Regulatory Topics or Action Items – No discussion.
2. **U Plant Area Regional Closure**
   - Schedule Review
   - Status of FFS/PP – The Proposed Plan is being finalized based on comments from Region 10. Additional language will be added on RCRA/CERCLA integration. Ecology was to provide that language; it is hoped that will be received the week of March 22, 2004.
     - Change Request Status – The U Plant Area is composed of seven to nine operable units. The change request combines the sites into one operable unit. The change request is being routed for signature.
     - Drive Casing/Spectral Gamma – Drive casings are being installed to define the foot-print adjacent to 216-U-1, -2, -8, and -12 cribs. Twenty-eight drive casings were installed; spectral gamma logging was completed on 26. The plume is larger than anticipated.
     - Sampling and Analysis Plan – A meeting with Ecology was held to discuss confirmatory sampling. Test pits or boreholes will be installed at analogous sites to confirm the conceptual model with the representative sites.
     - Path Forward –The proposed plan has slipped about one month in order to address regulator comments on the RCRA/CERCLA integration. Consequently the Record of Decision may slip from June to September 2004.

3. BC Cribs Area Closure

- Schedule Review
  - Confirmatory DQO and SAP – The DQO process continues. FH is evaluating strategies to determine the extent of lateral contamination.
  - TPA Change Request to Move Four LW-1 Sites to TW-1 – The change request is on track. It is going through DOE concurrence routing.
  - BC Controlled Area – Some rebaselining has been done and FH has proposed that it be taken out of BC for 2006 and put into the 200-UR-1 Work Plan. The work that has been started will carry on through the DQO. Ecology suggested looking at the well logs associated with the US Ecology burial ground that is located nearby.

GROUNDWATER OPERABLE UNITS

4. General

- Update on Well Decommissioning – A graph was distributed showing the status of the well decommissioning (attached). Ecology stated that Zelma Jackson is now the contact for well decommissioning.

5. 200-BP-5 & 200-PO-1 OUs

- 200-BP-5 Updated Well List – The updated well list, which was distributed during the February UMM, is in the administrative record. A sample was recently collected at well 53-55-B. A handout of the collection results was distributed (attached). The Waste Control Plan was revised to include the new wells to be drilled in the spring of 2004.
- 200-PO-1 Schedule Status – The Waste Control Plan was distributed by DOE. It is in place.

6. 200-UP-1 OU

- Remediation Treatment Status – The average pumping rate for CY04 through March 14 was 45.8 gpm. The system operated at between 50.2 and 65.8 gpm for the month of February through March 14, 2004. The System was shut down for a total 11.5 hours between February 5 and 6, 2004, and for eight hours on March 4, 2004 for an ERDF leachate transfer. The system run time for the month of February through March 14 was 98.1%, for FY 2004 year-to-date was 84.2%, for system inception to date was 92.6%. A handout was distributed (attached).
- RI/FS Work Plan Draft B Status – Transmittal letter and document are in DOE concurrence awaiting management approval.
- Completed Drilling New Monitoring Wells "O", "N", and "S" – A listing of contaminant levels at monitoring wells "O" and "N" was included on the handout distributed (attached). EPA stated that more exploration is needed between well "O" and "G"
- Drilling of New Monitoring Wells "K", "P", and "R" – Drilling of monitoring wells "K", "P" and "R" is scheduled to begin in a few weeks.
- Key Activities Ecology Wants Status On:

- RL Submits Draft A RI Report to Regulators – July 12, 2005
- Issue Draft A FS Report to Regulators – April 5, 2007

- 1,4-Dioxane – Well 299-W22-20 (PNNL) – The January 2004 scheduled sampling event was unsuccessful. The well is filling in with sand. A sample was collected using a bailer rather than a pump. Sampling is scheduled for August 2004. It was requested that a screen be put in the well so that sampling with a pump could succeed.

7. 200-ZP-1 OU

- Remediation Treatment Status – The average pumping rate for FY 2004 through March 1 was 121 gpm. For the month of February through March 7, 2004, the system operated at between 121 and 126 gpm. Extraction well #4 was shut down February 11 to allow a drawdown test to be performed on its replacement well. The majority of the hookup equipment, pumps, and controls for replacement Extraction Wells #1 (299-W15-45) and #4 (299-W15-47) have arrived and are currently being assembled. The final design submittal is almost complete. The system run time for the month of February through March 7, 2004, was 99.6%, FY 2004 year-to-date was 92.7% and system inception to date was 92.2%. A handout was distributed (attached).
- RI/FS Work Plan Status – Currently incorporating EPA comments.
- Completing Design Work for Tying-in Replacement Extraction Wells #1 and #4 – The design work for tying in replacement Extraction Wells #1 and #4 is near complete. Ordered tie-in materials (pumps and lines) have arrived and are ready for installation.

SOURCE OPERABLE UNITS

8. 200-PW-1, 200-PW-3, & 200-PW-6 OUs

- Schedule Review
  - Remediation Treatment Status – The active soil vapor extraction system is shutdown for the winter and is scheduled to be re-started on April 1, 2004. The passive soil vapor extraction system remains operational. The FY 2004 Soil Vapor Extraction system Operating Plan for the Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit) was signed by DOE-RL and EPA on March 29, 2004. The operating plan is included as an attachment to these minutes.
  - Monthly Monitoring – Most of the results are consistent with past monitoring. However, the last seven measurements made on 3/17/04 were all less than detection, which is anomalously low for these monitoring locations. It was determined that the sample pump was causing the problem, and these seven locations were re-sampled on 3/24/04. The handout that was distributed at the meeting has been revised to reflect the new data (attached). Passive well 299-W18-11 is not venting and a sample was not obtained.
  - Status of Field Work Preparation and Planning – Planning for the slant well continues. EPA stated that the draft Waste Control Plans for 200-PW-1 and 200-PW-3 should be combined to include 200-PW-1, 200-PW-3, and 200-PW-6.

- Status of RI/FS Work Plan – The Work Plan is going through RL concurrence for transmittal to EPA. EPA stated that the review cycles have to be in conjunction with the 45-day review period. There is too much time between the review and the comment resolution period to the final. EPA expects DOE to fund the DNAPL effort. Any Phase II DNAPL work should be covered in a Sampling and Analysis Plan. The sampling and analysis plan could be included in the 200-ZP-1 work plan.
- Status of Field Work at 216-Z-9 – Drilling activities were resumed. As of March 17, 2004, the drilling reached a depth of 75 feet. The next sample will be obtained at 90 feet.

9. 218-W-4C Burial Ground

- Remediation Treatment Status – Vapor extraction continues. All the samples show carbon tetrachloride levels less than 10 ppm. EPA stated that EPA no longer considers the carbon tetrachloride at this location to be an environmental threat but that continuing to operate to protect the work force makes sense.

10. 200-CW-1 & 200-CW-3 OUs

- Schedule Review
  - Status of FS and PP – The Proposed Plan is being migrated into a new format. Ecological sampling at Gable Mountain and B Pond is planned to begin in the spring of 2004. FH requested confirmation that Ecology will not be sending any comments on Draft A. Ecology responded that no more comments will be formally submitted. Ecology inquired about Westlake. FH stated that the intention is to keep Westlake in the FS.

11. 200-PW-2 & 200-PW-4 OUs

- Schedule Review
  - Status of Waste Management Activities – Drums from A-10 will be disposed to ERDF on March 21, 2004. Drums from A-36B will be disposed to ERDF in early April.
  - Status of Work Plan – The meeting minutes from the February 23, 2004, meeting were distributed to RL and Ecology, along with a request for comments on the sections of text requested by Ecology, the revised waste control plan, and the new Appendix to address the 216-S-7 Crib investigation.
  - Status of RI Report – FH has provided comments. The RL review is scheduled to begin on May 3, 2004.

12. 200-CS-1 OU

- Schedule Review
  - Status of RI Report – The RI Report is going to RL on March 29, 2004. The TPA Milestone for submittal to Ecology is May 31, 2004.

13. 200-CW-5, CW-2, CW-4, & SC-1 OUs

- Schedule Review
  - Status of Work Plan – The Work Plan is being routed through the clearance and approval processes.
  - Status of RI Report – The RI Report is being finalized for issuance.
  - Status of FS – A first draft of the document is expected to be available for internal review on March 25, 2004.

14. 200 Area Ecological Evaluation

- Schedule Review
  - Status of Eco DQO – The DQO is on track. The second public workshop was held on March 30, 2004. The DQO is being finalized for issuance. A draft SAP is being developed for FH review and comment.
  - Status of Eco Evaluation Report – A draft copy has been provided from the sub-contractor and FH will begin work on it soon.
- Overview of Eco Activities
  - Planning for Spring Sampling – Currently on track to do sampling in the spring to support the Eco DQO. A briefing handout was distributed (attached).

15. 200-IS-1 & 200-ST-1

- Schedule Review
  - Status of Work Plan – Dave Erb (FH) has been assigned as task lead to this activity. A Statement of Work is being prepared for the sub-contractor.
  - Scope Definition – A meeting is scheduled in early April 2004 to discuss the scope.

16. 200-LW-1, 200-LW-2, & 200 MW-1

- Status of Field Planning – The Waste Control Plan has been received. FH will send the Waste Control Plan for MW-1 soon. An integrated field schedule is being worked on.

17. 200-TW-1, 200-TW-2, & 200-PW-5

- Schedule Review
  - Status of RI Report – An approval letter was received on the RI Report. DOE needs to respond to the provisional approval. The plan is to do that through the issuance of the revised RI Report.
  - Status of FS and PP – Significant changes have been made from the Decisional Draft. A partial capping alternative was added. The third alternative is full removal. Because of the major changes to the content of the FS between the decisional draft and Draft A, DOE stated its intent to review and possibly provide comments during the regulator review period. EPA suggested discussing the refinements the week of

March 22, 2004. A meeting will be scheduled. EPA stated that Mike Goldstein will be the lead for the 200-TW-1/200-TW-2/200-PW-5 operable unit grouping.

18. 200-UR-1

- Schedule Review
  - Status of DQO and Work Plan – The DQO is being finalized for issuance as the Rev 0 document. The Work Plan is on schedule. The TPA Milestone is June 30, 2004.
  - Status of BC Control Zone Planning – Ecology requested that the objective of the project be clarified.

19. 200-SW-1/2

- Schedule Review
  - Status of Work Plan – Two DQO decision maker interviews are complete. Issues have been identified, but resolution has not been reached. A project issues meeting will be scheduled to resolve or elevate the issues.

200 Area Unit Managers' Meeting
OPEN ACTION ITEMS & TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Date Complete	Status
34	Provide a clear definition of "Central Plateau"	FH	EPA&Ecology	10/16/03				In progress

200 Area Unit Managers' Meeting
200 Area Remedial Action Float Table
March 2004

Task	Scheduled Date	Float	Comments
200-CS-1			
Deliver Draft A RI Report for Regulator Review	5/31/2004	--	On schedule
Deliver Draft A FS/PP for Regulator Review	11/30/2005	--	On schedule
200-CW-1			
Deliver Draft B FS for Regulator Review	7/3/2003 (original date based on receipt of regulator comments 45 calendar days after submittal (which would be 5/15/2003) with 45 days to revise and reissue)	-225-d	Regulator comments originally due on 5/15/2003; policy level comments received on that date; Ecology indicated additional comments would be coming; to date these comments have not been received; the new schedule date assumes no additional comments will be received from the regulators on Draft A
	9/30/2004 (new target date based on collecting spring samples and incorporating data into the revision)	--	On schedule
200-LW-1			
Deliver Draft A RI Report for Regulator Review	10/31/2005	--	On schedule
200-PW-2			
Deliver Revised Waste Control Plan for regulator review	3/8/2004	--	On schedule. WCP for 200-PW-2 will be revised to include S-7 Crib.
Ecology approve Rev 1 RI/FS work plan	2/14/2003	-400-d	After BCR approval, field work is scheduled for 8/04 and completion of work is forecast to not generate a variance for the FS.
Deliver Draft A RI Report for Regulator Review	6/30/2004	--	Assumes RI can be delivered w/o add'l sampling, per Ecology agreement @ 12/03 UMM
Deliver Draft A FS/PP for Regulator Review	12/31/2005	--	Assumes additional sampling necessary for Ecology request
200-SW-1/200-SW-2			
Regulator DQO Interview	4/27/2004	+41-d	Currently scheduled for 3/17
Deliver Draft DQO to regulators	7/5/2004	--	On schedule
Deliver draft A RI/FS work plan for regulator review	12/31/2004	--	On schedule
Deliver Waste Control Plan for regulator review	4/15/2005	--	On schedule
Start field sampling	7/27/2005	--	On schedule
Deliver Draft A RI Report for Regulator Review	9/19/2007	--	On schedule
200-TW-1 (includes 200-TW-2)			
EPA/Ecology approve RI Report	7/10/2003	-217-d	Need to finalize path forward on modeling revisions; meeting scheduled for 3/17
Deliver Draft A FS/PP for Regulator Review	3/31/2004	--	On schedule

200 Area Unit Managers' Meeting
200 Area Remedial Action Float Table
March 2004

Task	Scheduled Date	Float	Comments
200-UR-1			
Deliver draft A RI/FS work plan for regulator review	6/30/2004	--	On schedule
Deliver Waste Control Plan for regulator review	3/1/2006	--	On schedule
Start field sampling	4/26/2006	--	On schedule
Deliver Draft A RI Report for Regulator Review	5/14/2007	--	On schedule
U Plant Waste Sites			
Ecology approve confirmatory sampling SAP	12/1/2003	-80-d	Remedial decisions were not reached with Ecology and EPA as planned. General consensus has just been developed and the SAP is being finalized.
Start U Plant Confirmatory and Design Sampling	1/5/2004	--	On schedule
Deliver Draft A RD/RA work plan for regulator review (surface barrier RD/RA)	1/18/2005	--	On schedule
Deliver Draft A RD/RA work plan for regulator review (excavation RD/RA)	1/18/2005	--	On schedule
200-IS-1/200-ST-1			
Deliver Rev. 1 RI/FS work plan	10/29/2004		
Deliver Waste Control Plan for regulator review	1/24/2005	--	On schedule
200-PW-1/200-PW-3/200-PW-6			
Deliver Rev. 0 RI/FS work plan	3/31/2004	--	Delivered to RL on 3/8
Deliver PW-3 Waste Control Plan for regulator review	3/29/2004	--	On schedule
Deliver revised PW-1 Waste Control Plan for regulator review	3/29/2004	--	On schedule
200-MW-1			
Deliver Waste Control Plan for regulator review	3/26/2003	--	On schedule
Deliver Draft A RI Report for Regulator Review	12/31/2005	--	On schedule
200-CW-5/200-CW-2/200-CW-4/200-SC-1			
Deliver Rev. 1 RI/FS work plan	M-013-22 met on schedule; Rev. 0 work plan approved 9/28/2002. Consolidation TPA change package approved 6/5/2002. Rev. 1 originally scheduled to be delivered 5/6/2003	-317-d	Consolidation TPA change package approved 6/5/2002; currently planned for 3/31/2004. Revision was delayed pending receipt of Ecology input on ecological evaluation, which was received on 11/18/03. This was followed by a final review with EPA 12/3/03. There were several additional delays, including: EPA's request to reinstate the SAP as part of the Work Plan (previously issued separately to enable field characterization to proceed); Official Use Only (OUO) document driven revisions; and poor figure quality problems associated with the XP-Pro Operating System.

200 Area Unit Managers' Meeting
200 Area Remedial Action Float Table
March 2003/4

Task	Scheduled Date	Float	Comments
Deliver Rev. 0 RI Report	9/1/2003 (original date based on receipt of regulator comments on 7/15/2003 with 45 days for revision)	-199-d	Currently scheduled for 4/30/2004. Because the consolidation logic is provided in the work plan, it was agreed that work plan issuance would precede the RI report.
Deliver Draft A FS/PP for Regulator Review	10/31/2004	--	On schedule

200 Area UMM – March 2004

200-UP-1:

- Average Pumping Rate (counting all outage time as 0 gpm) for CY04 through March 14: 45.8 gpm.
- For the month of February through March 14, the system operated between 50.2 and 65.8 gpm.
- System was shutdown for a total 11.5 hours between February 5 and 6, and for 8 hours on March 4 for an ERDF leachate transfer.
- System Run Time
  - For Month of February through March 14 98.1%
  - FY2004 (Year to date) 84.2%
  - System Inception to date 92.6%

- RI/FS Work Plan Draft B – Awaiting Ecology Comments
- Drilling of New Monitoring Wells "O" (C4236):

Above Lower Mud Unit:					
Depth	Tc-99 pCi/L	Nitrate mg/L	CCL4 ug/L	TCE ug/L	Chloroform ug/L
314'	20	51	63.9	3.4	3.6
349'	73	13	309	5.1	9.6
374'	230	18	311	5.7	9.9
409'	197	21	470	7.9	9.3
439'	114	14.2	427	7.04	22
Below Lower Mud Unit:					
478.5'	28	9	13.5	ND	ND

- Drilling of New Monitoring Well "N" (C4256):

Above Lower Mud Unit:					
Depth	Tc-99 pCi/L	Nitrate mg/L	CCL4 ug/L	TCE ug/L	Chloroform ug/L
329'	1,068	199	25	4.86	2.08
365'	695	153	28	9.09	<2
399'	851	210	32	8.37	2.7
418'	1,130	212	31	6.89	2.7

- Drilling of New Monitoring Wells "K", "P", and "R" are currently scheduled to begin in a few weeks.
- 1,4-Dioxane - 299-W22-20 (downgradient of the 216-S-20 Crib) (PNNL)

200-ZP-1:

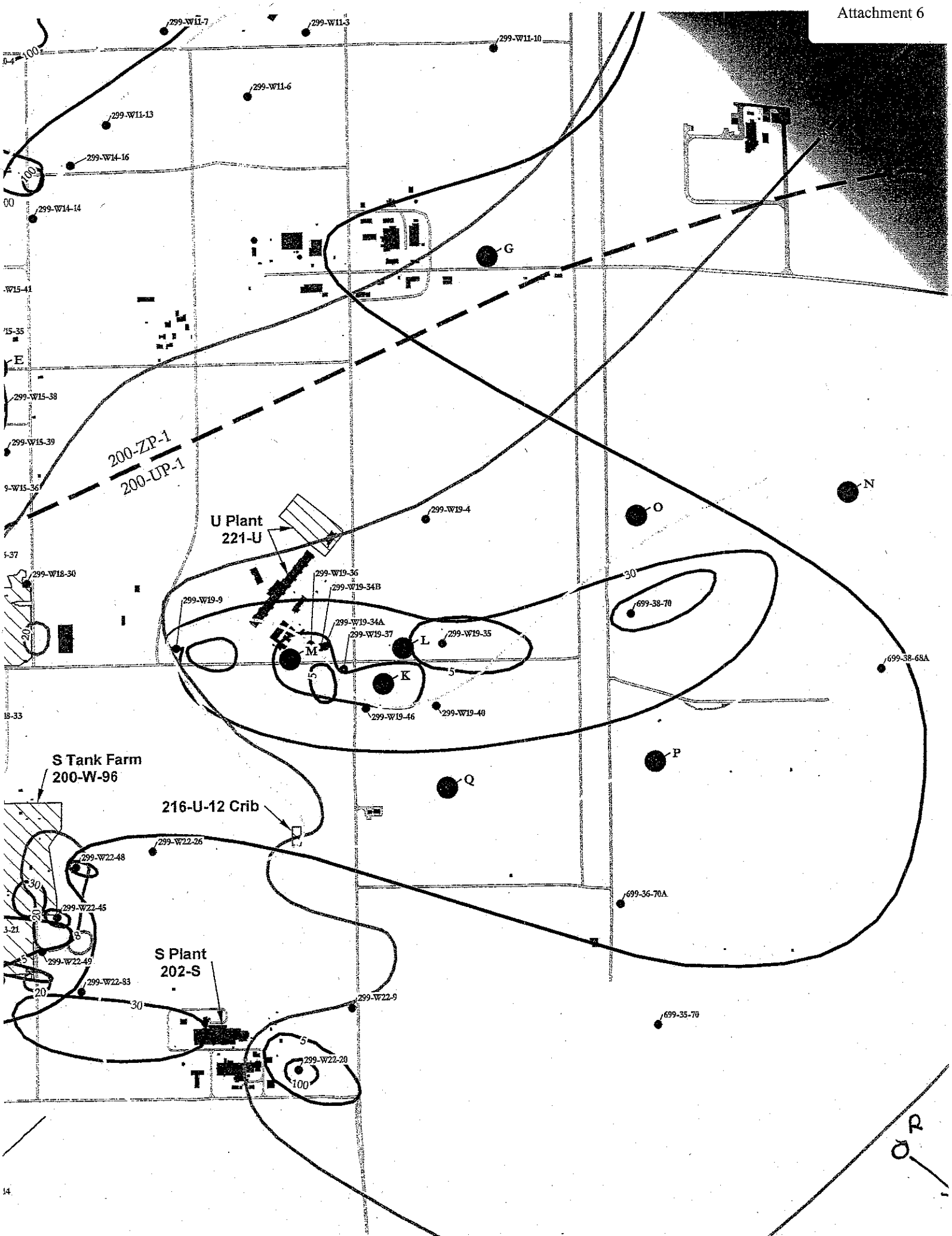
- Average Pumping Rate for FY04 through March 7: 121 gpm

- For the month of February through March 7, the system operated at between 121 and 126 gpm.
- Extraction Well #4 (299-W15-32) was shutdown on February 11 to allow a drawdown test to be performed on its replacement well.
- The majority of the hookup equipment, pumps, and controls for replacement Extraction Wells #1 (299-W15-45) and #4 (299-W15-47) have arrived and are currently being assembled. The final design submittal is almost complete.
- System Run Time
    - For Month of February through March 7 99.6%
    - FY2004 (Year to date) 92.7%
    - System Inception to date 92.2%

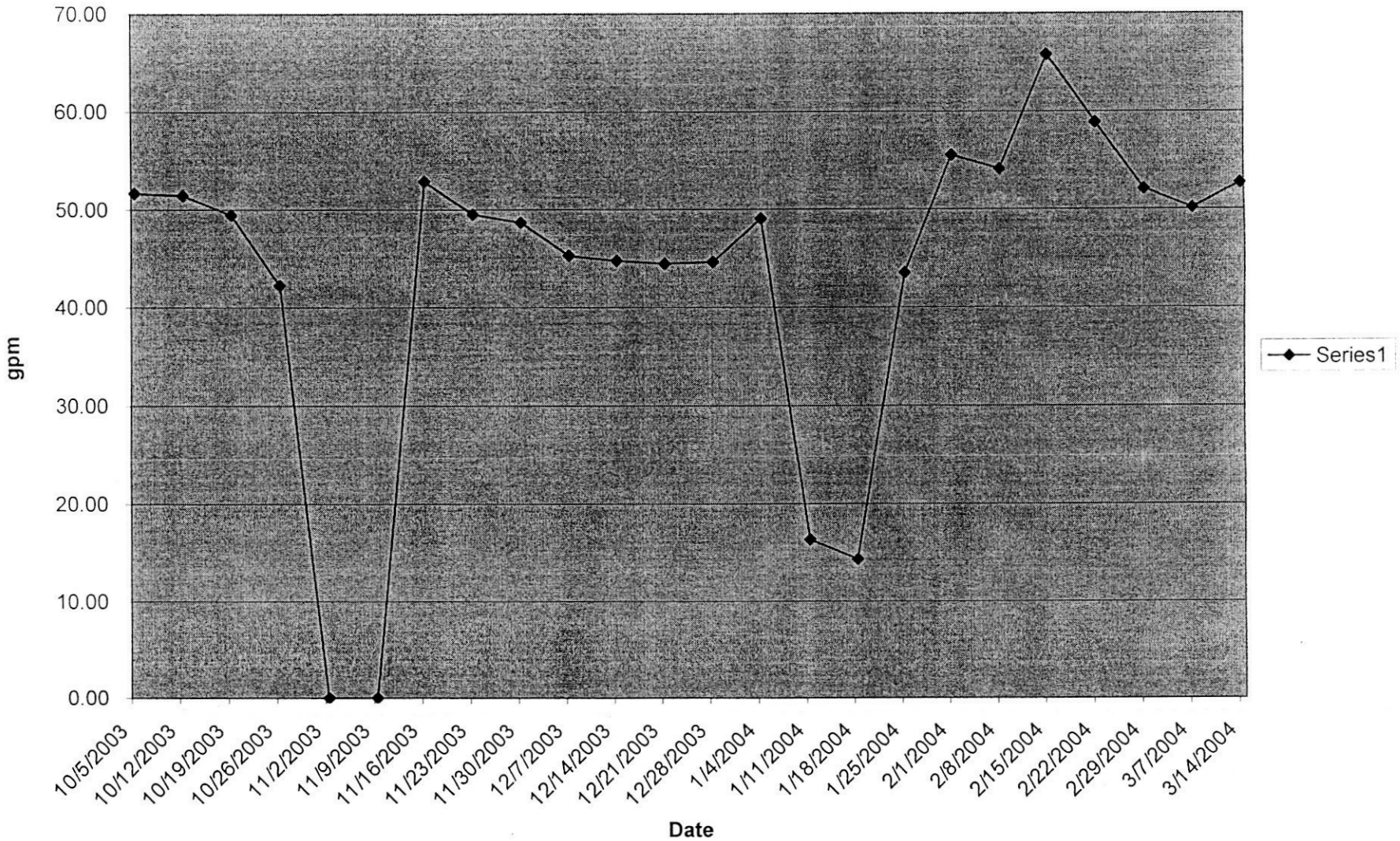
- RI/FS Work Plan Status – Currently incorporating EPA comments

200-PW-1 (200-ZP-2):

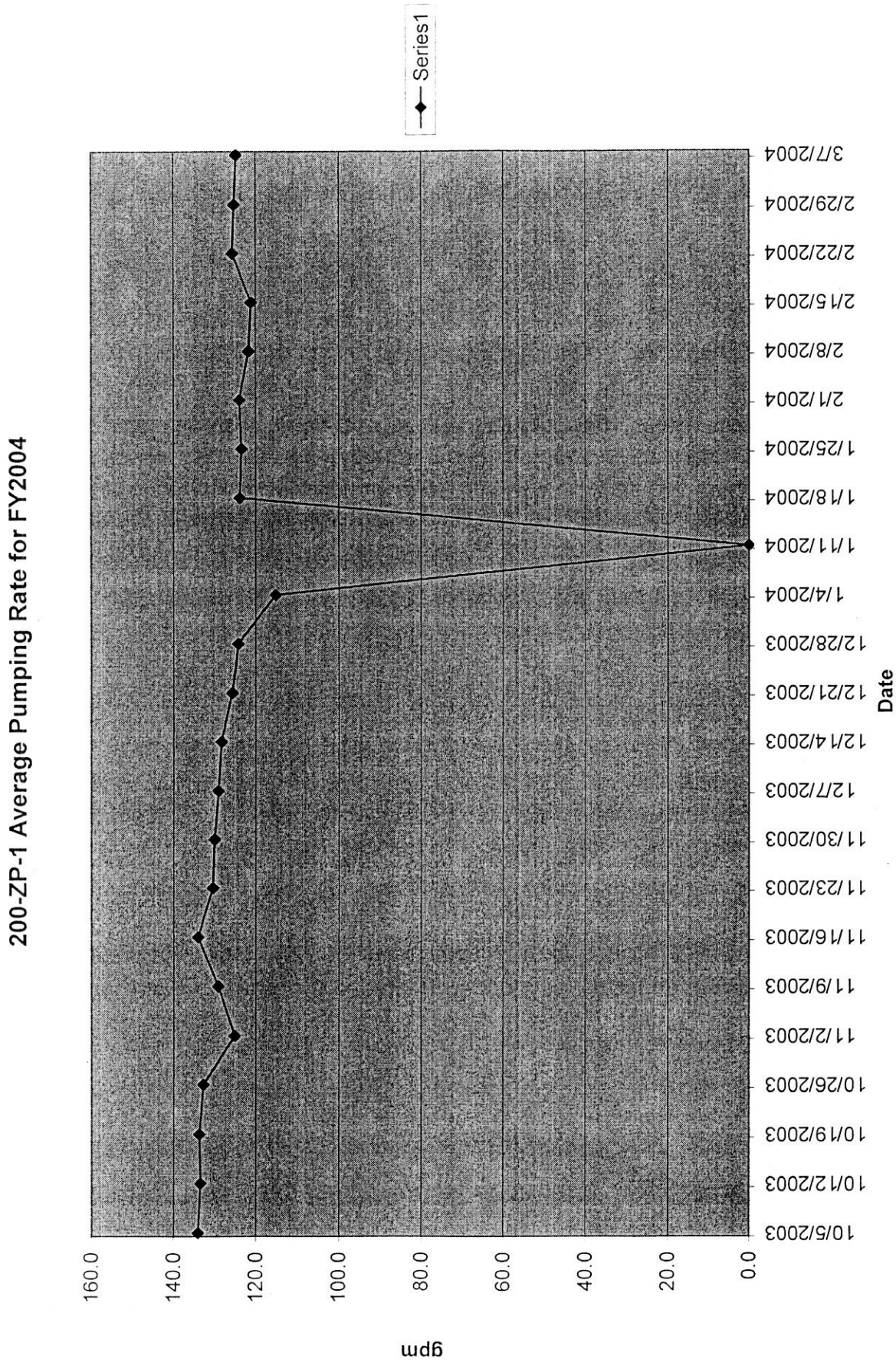
- Active system is shutdown for the winter and is scheduled to be restarted April 1, 2004
- The passive system remains operational.


299-W11-7
299-W11-3
299-W11-10
299-W11-6
299-W11-13
299-W14-16
299-W14-14
299-W15-38
299-W15-39
200-ZP-1
200-UP-1
U Plant
221-U
299-W19-4
299-W18-30
299-W19-36
299-W19-34B
299-W19-9
299-W19-34A
299-W19-37
299-W19-35
299-W19-46
299-W19-40
699-38-70
699-38-68A
699-36-70A
699-35-70
S Tank Farm
200-W-96
216-U-12 Crib
299-W22-26
299-W22-48
299-W22-45
299-W22-49
299-W22-83
299-W22-9
299-W22-20
S Plant
202-S
G
K
L
M
N
O
P
Q
T
100
30
20
5

200-UP-1 Average Pumping Rate for FY2004



Attachment 6


200-ZP-1 Average Pumping Rate for FY2004
Series1
gpm
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Date
10/5/2003
10/12/2003
10/19/2003
10/26/2003
11/2/2003
11/9/2003
11/16/2003
11/23/2003
11/30/2003
12/7/2003
12/14/2003
12/21/2003
12/28/2003
1/4/2004
1/11/2004
1/18/2004
1/25/2004
2/1/2004
2/8/2004
2/15/2004
2/22/2004
2/29/2004
3/7/2004

Comparison of Maximum Carbon Tetrachloride Rebound Concentrations
Monitored at 200-PW-1 Soil Vapor Extraction Sites
FY 1998 - FY 2004

200-PW-1 (200-ZP-2)		October 1997 - September 1998		July 1998 - September 1999		July 1999 - June 2001		July 2001 - June 2002		July 2002 - September 2003		July 2002 (Z-9) or October 2003 (Z-1A) - March 2004	
Location (Well or Probe)	Site	Maximum Rebound Carbon Tetrachloride	months* of	Maximum Rebound Carbon Tetrachloride	months* of	Maximum Rebound Carbon Tetrachloride	months* of	Maximum Rebound Carbon Tetrachloride	months* of	Maximum Rebound Carbon Tetrachloride	months* of	Maximum Rebound Carbon Tetrachloride	months of
/feet bgs		(ppmv)	rebound	(ppmv)	rebound	(ppmv)	rebound	(ppmv)	rebound	(ppmv)	rebound	(ppmv)	rebound
79-03/ 5 ft	Z-18	0	3	0	12								
79-06/ 5 ft	Z-1A	not measured		1.4	12								
79-11/ 5 ft	Z-1A	0	6	2.9	12								
86-05/ 5 ft	Z-9	not measured		0	3								
86-05-01/ 5 ft	Z-9	not measured		0	3								
86-06/ 5 ft	Z-9	0	9	1.9	6								
87-05/ 5 ft	Z-1A	0	3	1.0	12								
87-09/ 5 ft	Z-1A	1.5	3	2.6	12								
94-02/ 5 ft	Z-9	not measured		1.4	3								
95-11/ 5 ft	Z-9	2.1	9	2.5	6								
95-12/ 5 ft	Z-9	1.5	9	1.3	6								
95-14/ 5 ft	Z-9	not measured		0	3								
CPT-13A/ 9 ft	Z-1A	0	6	1.0	12								
CPT-16/ 10 ft	Z-9	0	9	1.5	6								
CPT-17/ 10 ft	Z-9	4.2	9	5.1	6	6.6	24	3.2	6	6.6	15	9.0	21
CPT-18/ 15 ft	Z-9	6.5	9	5.0	6	5.2	24	1.4	6	2.4	15	2.4	21
CPT-4A/ 25 ft	Z-1A	not measured		not measured		3.5	0	3.4	10				
CPT-4E/ 25 ft	Z-1A	not measured		not measured		not measured		2.6	12	1.3	0		
CPT-16/ 25 ft	Z-9	not measured		not measured		1.8	24	1.1	6	2	15	2.6	21
CPT-31/25 ft	Z-1A	0	6	0	12								
CPT-32/ 25 ft	Z-1A	9.1	6	10	12	16.5	18	13.0	12	8.3	6	6	6
CPT-30/ 28 ft	Z-18	not measured		3.2	12	1.4	18	0	12	0	6	0	6
CPT-13A/ 30 ft	Z-1A	not measured		not measured		3.6	18	2.6	12	1.6	6	2	6
CPT-7A/ 32 ft	Z-1A	2.3	6	5.4	12	6.2	18	5.6	12	3.9	6	9.5	6
CPT-27/ 33 ft	Z-9	not measured		not measured		2.6	24	1.5	6	1.7	15	2.7	21
CPT-1A/ 35 ft	Z-12	1.4	3	3.0	12	7.7	18	11.3	12	22.0	15	18.3	6
CPT-28/ 40 ft	Z-9							56.5	6				
CPT-33/ 40 ft	Z-1A	2.0	3	2.6	12			2.3	12				
CPT-34/ 40 ft	Z-18	not measured		1.7	12	1.9	0	2.2	12	1.6	0		
CPT-21A/ 45 ft	Z-9	52.7	9	57	3	127	24	133	6	90.0	15	150.0	21
W15-220ST/ 52 ft	Z-9	not measured		1.6	3	2.5	24			1.5	1		
CPT-28/ 60 ft	Z-9	1.5	0	3.7	3								
CPT-9A/ 60 ft	Z-9	41.1	0	44	3	68	24	45.3	6	35.9	15	35.9	21
CPT-16/ 65 ft	Z-9	not measured		not measured		not measured		not measured		4.2	15		
CPT-1A/ 68 ft	Z-12	not measured		not measured		not measured		5.5	12				
CPT-30/ 68 ft	Z-18	not measured		3.0	12								
CPT-32/ 70 ft	Z-1A							7.7	12				
CPT-13A/ 70 ft	Z-1A	not measured		5.6	12								
CPT-24/70 ft	Z-9	3.2	9	3.6	3					4.7	15		
W15-219SST/ 70 ft	Z-9	not measured		7.6	3	7.8	24			1.9	1		
CPT-18/ 75 ft	Z-9	not measured		not measured		18	24			4.5	15		
CPT-4A/ 75 ft	Z-1A	not measured		not measured		not measured		7.1	3				
CPT-31/ 76 ft	Z-1A	not measured		4.2	12								
CPT-33/ 80 ft	Z-1A	not measured		9.2	12								
W15-82/ 83 ft	Z-9	5.5	9	46	6	55	24	66.7	6	85.8	15	85.8	21
CPT-21A/ 86 ft	Z-9	206	9	148	6	195	24	186	6	206	15	244	21
CPT-34/ 86 ft	Z-18	5.9	3	0	12								
W15-95U/ 86 ft	Z-9	15.3	9	39	6	43	21						
W15-218SST/ 86 ft	Z-9	not measured		0	3					1.6	2		
CPT-28/ 87 ft	Z-9	230	9	203	6	224	24	229	6	235	15	258	21
CPT-4B/ 90 ft	Z-1A							3.2	10				
CPT-1A/ 91 ft	Z-18	not measured		4.2	12			10.7	10				
CPT-4A/ 91 ft	Z-1A	7.7	3	14	12			7.5	2				
CPT-9A/ 91 ft	Z-9	34.5	9	72	3			74.3	6				
W15-85/ 91 ft	Z-9	not measured		not measured		51	24						
W18-252SST/ 100	Z-1A	17.8	3	24	12								
W18-152/ 101 ft	Z-12	11.1	3	33	12	25	18	25.7	12	20.7	6	12.4	6
CPT-4E/ 103 ft	Z-1A	not measured		not measured		not measured		16.1	12				
W18-167/ 106 ft	Z-1A	79.7	3	228	12	243	18	297	12	243	6	266	6
W18-165/ 109 ft	Z-1A	not measured		not measured		not measured		278	12	328	6	205	6
W15-217/ 114 ft	Z-9	630	9	561	6	442	24	93.6	6	444	15	458	21
CPT-24/ 118 ft	Z-9	37.7	9	37	6	35	24			27.8	15		
W15-220SST/ 118	Z-9	not measured		36	3	34	24			27.5	3		
W18-158L/ 120 ft	Z-1A	143	3	492	12	284	18	183	3				
W15-219SST/ 130	Z-9	not measured		47	3	54	24			23.1	1		
W18-249/ 130 ft	Z-18	20.4	3	215	12	176	18	196	12	46.3	6	41.0	6
W18-248/ 131 ft	Z-1A	86.3	3	177	12	214	18	306	12	182	6	180	6
W15-95L/ 144 ft	Z-9	not measured		not measured		not measured		31.8	6	25.1	15	40.3	21
W15-219SST/ 155	Z-9	not measured		24	3	44	24			6.8	1		
W15-220L/ 163 ft	Z-9									----	15		
W15-219L/ 175 ft	Z-9									----	15		
W15-9L/ 176 ft	Z-9	15.0	9	15	6	20	21	16.9	6	13.1	15	13.1	21
W15-84L/ 180 ft	Z-9	not measured		not measured		not measured		not measured		25.9	15	25.9	21
W15-6L/ 182 ft	Z-9	17.8	9	1.3	6								
W15-220SST/ 185	Z-9	not measured		13	3	15	24			----	1		
W18-7/ 197 ft	Z-1A	17.3	3	29	12								
W18-12/ 198 ft	Z-18	3.81	3	19	12								
W18-6L/ 206 ft	Z-1A	31.3	6	15	12								

* - based on location (Z-1A/18A points may be beyond SVE zone of influence during particular operating configurations
- Z-18 and Z-12 wells off-line
- CPT-1A, CPT-9A, and possVE zone of influence in Oct 96 based on differential pressure (BHI-01105, p. 6-1)
- CPT-9A, CPT-21A, CPT-28/ 96 based on CCl4 concentrations and airflow modeling based on measured vacuums (BHI-01105, p. 6-1)

Carbon Tetrachloride Rebound Concentrations
Monitored at 200-PW-1 Soil Vapor Extraction Sites
July 2002 (Z-9) or October 2003 (Z-1A) - March 2004

200-PW-1 (200-ZP-2) Location (Well or Probe) /feet bgs	Site	07/30/2002 CCl4 (ppmv)	08/26/2002 CCl4 (ppmv)	10/04/2002 CCl4 (ppmv)	10/30/2002 CCl4 (ppmv)	11/27/2002 CCl4 (ppmv)	12/31/2002 CCl4 (ppmv)	01/30/2003 CCl4 (ppmv)	02/21/2003 CCl4 (ppmv)	03/20/2003 CCl4 (ppmv)	05/01/2003 CCl4 (ppmv)	05/22/2003 CCl4 (ppmv)	07/01/2003 CCl4 (ppmv)	08/05/2003 CCl4 (ppmv)	08/26/2003 CCl4 (ppmv)	10/31/2003 CCl4 (ppmv)	12/04/2003 CCl4 (ppmv)	12/22/2003 CCl4 (ppmv)	01/20/2004 CCl4 (ppmv)	02/19/2004 CCl4 (ppmv)	03/16/2004 CCl4 (ppmv)	03/24/2004 CCl4 (ppmv)
CPT-17/ 10 ft	Z-9	1.6	1.4	2.0	1.6	1.1	1.0	1.3	1.5	3.1	5.3	6.6	4.5	6.1	5.3	3.2	4.1	2.7	5.8	5.0	--- (c)	9.0
CPT-18/ 15 ft	Z-9	0	0	1.2	0	0	0	0	0	1.7	0	2.0	0	1.8	2.4	0	1.1	1.0	1.5	1.4	--- (c)	1.6
CPT-16/ 25 ft	Z-9	0	0	0	0	0	0	0	0	0	1.0	0	1.2	1.5	1.5	2.6	1.2	1.4	0	1.7	2.2	
CPT-32/ 25 ft	Z-1A															0	0	0	2.4	5.1	5.9	
CPT-30/ 28 ft	Z-1A															0	0	0	0	0	0	
CPT-13A/ 30 ft	Z-1A															0	0	0	0	0	1.8	
CPT-7A/ 32 ft	Z-1A															2.4	3.0	2.7	4.3	3.0	9.5	
CPT-27/ 33 ft	Z-9	0	0	0	0	0	0	0	0	1.1	1.0	1.7	1.1	1.0	1.6	1.1	0	1.1	1.5	2.0	2.7	
CPT-1A/ 35 ft	Z-12															18.3	9.5	13.1	10.8	6.0	9.0	
CPT-21A/ 45 ft	Z-9	60.2	31.6	68.0	61.9	35.7	40.8	45.2	30.4	73.7	72.8	90.0	75.1	85.5	83.0	52.3	89.1	68.5	59.2	71.8	--- (c)	150
CPT-9A/ 60 ft	Z-9	35.1	8.4	27.8	22.2	12.5	7.4	14.8	13.8	35.9	30.1	33.2	30.1	30.0	28.5	25.9	33.1	30.8	24.3	33.8	27.1	
W15-82/ 83 ft	Z-9	85.8	5.6	58.8	35.8	14.7	12.1	8.5	15.4	36.0	50.0	56.2	49.2	44.3	54.4	24.0	34.4	43.1	47.5	45.9	50.5	
CPT-21A/ 86 ft	Z-9	159	55	155	95.0	55.3	46.4	66.9	44.6	140	199	206	153	187	197	91.8	183	171	244	98.1	--- (c)	212
CPT-28/ 87 ft	Z-9	208	54.2	169	130	51.6	48.8	20.3	87.6	139	178	235	150	197	190	155	206	140	58.7	96.1	--- (c)	258
W18-152/ 101 ft	Z-12															5.7	10.5	11.3	10.5	12.4	12.1	
W18-167/ 106 ft	Z-1A															201	223	201	286	201	--- (b)	
W18-165/ 109 ft	Z-1A															94.2	205	193	188	186	94.8	
W15-217/ 114 ft	Z-9	82.1	34.0	214	38.7	80.0	264	324	246	287	74.3	409	89.7	335	444	53.8	80.4	66.4	82.5	62.0	--- (c)	458
W18-249/ 130 ft	Z-18															8.0	31.1	21.4	19.6	22.1	41.0	
W18-248/ 131 ft	Z-1A															78.6	80.4	85.6	90.9	166	180	
W15-95L/ 144 ft	Z-9	13.3	0	16.1	18.5	9.7	9.8	12.6	11.9	21.7	17.2	18.8	25.1	13.7	10.9	19.2	20.3	----- (a)	----- (a)	40.3	23.0	
W15-9L/ 176 ft	Z-9				5.1	2.9	5.2	5.8	5.1	10.5	8.2	11.6	10.3	13.1	12.5	6.1	5.8	----- (a)	----- (a)	9.1	9.6	
W15-84L/ 180 ft	Z-9		5.8	13.1	2.8	7.2	10.6	13.0	10.9	18.8	8.3	25.9	17.9	21.0	23.8	4.7	4.9	4.9	10.7	18.5	--- (c)	19.5

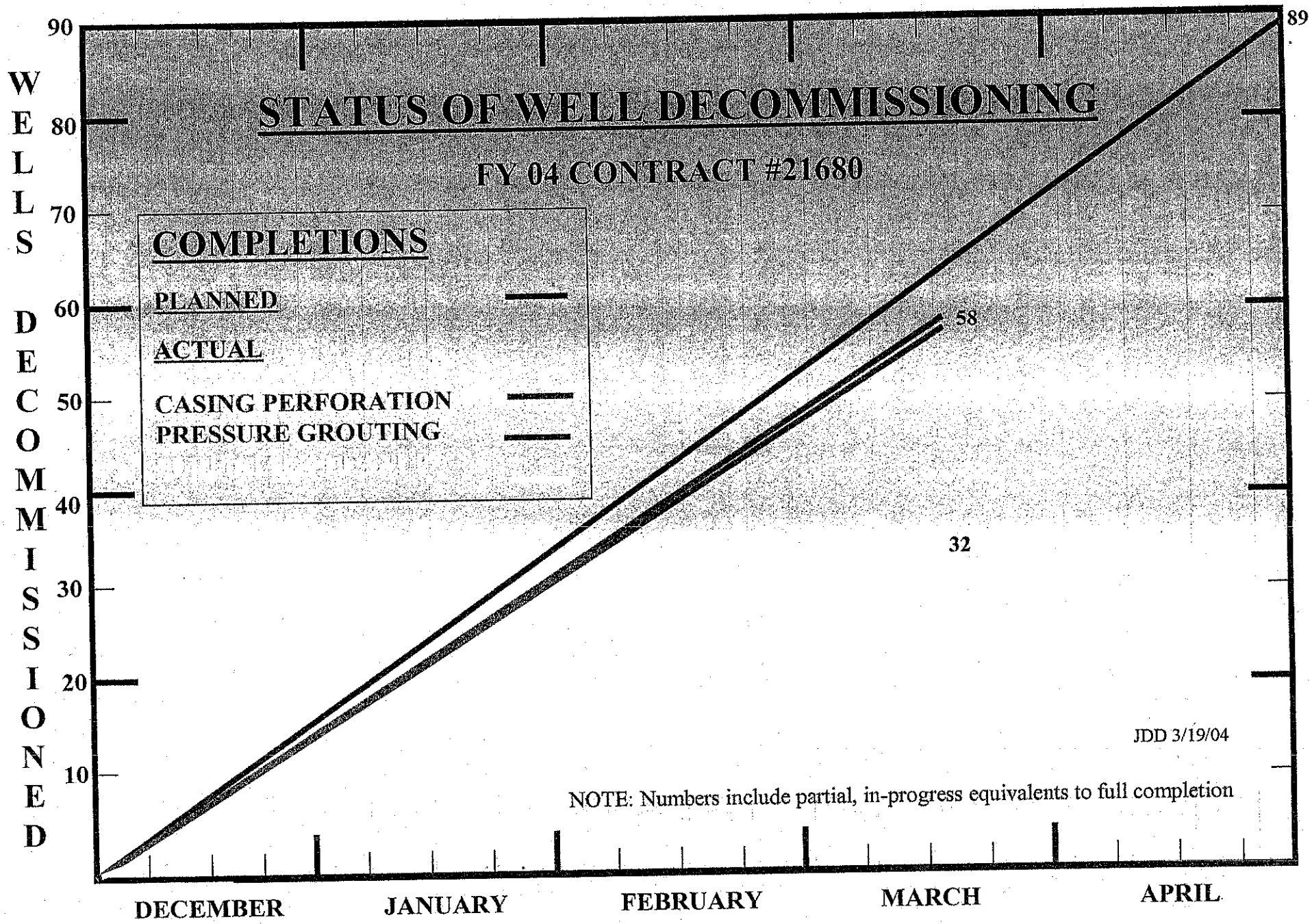
(a) Unable to access because of drilling operations
(b) Unable to sample; tubing will be repaired.
(c) anomalously low due to pump problems; resampled on 3/24/04

Attachment 7

Carbon Tetrachloride Concentrations
Monitored at 200-PW-1 Passive Soil Vapor Extraction Wells

200-PW-1										
(200-ZP-2)			6/1/2001	12/10/2002	01/20/2003	03/04/2003	05/07/2003	09/09/2003	10/29/2003	02/25/2004
Location	Site	Zone								
(Well or Probe)			CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4	CCl4
/feet bgs			(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)
W18-6L/ 208 ft	Z-1A	6	47.4	29.2	19.6	34.8	20.2	----- (a)	22.1	23.4
W18-7/ 197 ft	Z-1A	6	38.5	36.8	28.9	26.4	23.0	----- (a)	23.7	18.6
W18-10L/ 183 ft	Z-18	6	12.8	14.7	11.1	15.1	2.5	2.5	9.1	10.1
W18-11L/ 199 ft	Z-18	6	11.4	7.7	----- (a)	9.9	----- (a)	----- (a)	----- (a)	----- (a)
W18-12/ 198 ft	Z-18	6	30.5	----- (a)	----- (a)	----- (a)	7.9	5.4	13.4	13.0
W18-246L/ 170 ft	Z-18	6	40.9	----- (a)	31.1	33.1	10.3	----- (a)	20.3	29.4
W18-247L/ 167 ft	Z-18	6	7.2	5.7	8.5	8.1	2.4	2.4	2.4	4.3
W18-252L/ 175 ft	Z-18	6	38.1	22.7	----- (a)	24.4	23.1	----- (a)	16.2	37.7
(a) Unable to sample.										

Attachment 7

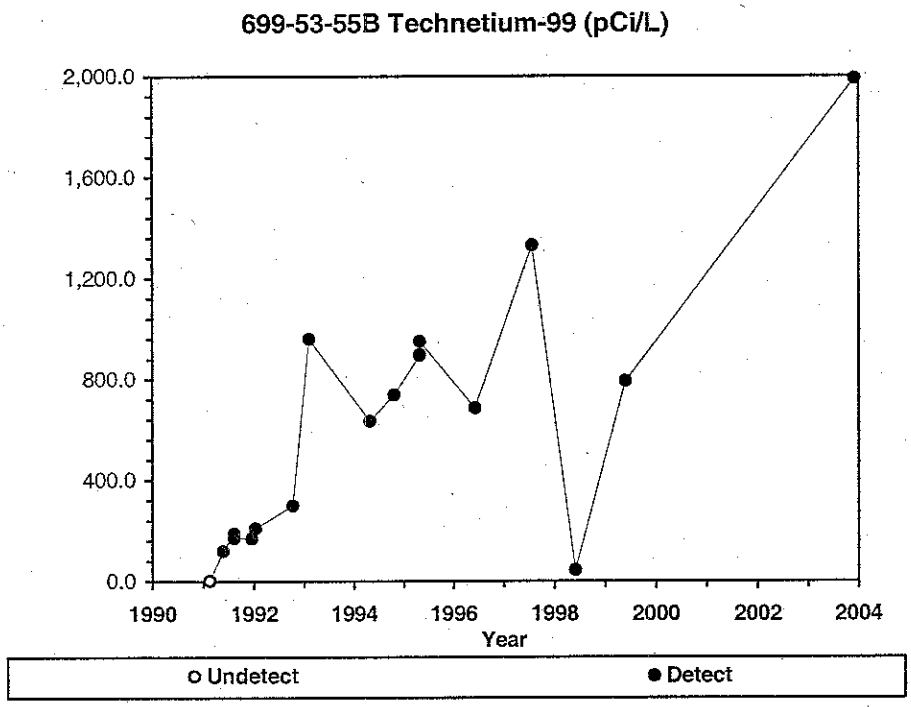


Attachment 8

200 Area Unit Manager's Meeting
March 18, 2004

200-BP-5 sample collection results:

- Value of 1,990 pCi/L technetium-99 reported for well 699-53-55B, sampled 12/2/03
- The well required maintenance after it could not be sampled in September 2003
- Technetium-99 appears to be increasing in this well (see figure)
- Results are consistent with earlier observations that technetium-99 is increasing northwest of 200-East Area



APPROVAL OF THE CARBON TETRACHLORIDE EXPEDITED RESPONSE ACTION SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN FOR FY 2004

The Unit Managers for the Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit) approve the attached FY 2004 Soil Vapor Extraction System Operating Plan.

A. C. Tortoso 3/29/04 3-29-04

A. C. Tortoso
U.S. Department of Energy
Richland Operations Office

Date

D. A. Faulk
U.S. Environmental Protection Agency
Region 10, Hanford Office

Date

FY 2004 SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN FOR THE CARBON TETRACHLORIDE EXPEDITED RESPONSE ACTION (200-PW-1 OPERABLE UNIT)

Soil vapor extraction will be used at the 200-PW-1 Operable Unit (OU) during FY 2004 to remove carbon tetrachloride from the vadose zone. The primary objectives for this remediation are protection of the groundwater and mass removal. Only the 14.2 m^3/min soil vapor extraction (SVE) system will be operated. Two sites will be remediated using SVE: the 216-Z-9 (Z-9) site and the 216-Z-1A/Z-18/Z-12 (Z-1A) site. Specific on-line wells have been selected prior to start-up at each site based on vapor monitoring, previous concentration trends, and location. These site-specific plans are included in this operating plan for approval by the Unit Managers prior to implementation. Based on characterization data collected at on-line wells during operation, the mix of on-line wells may be reconfigured during operations to optimize removal. These adjustments to the mix of on-line wells will not be submitted to the Unit Managers for approval prior to implementation but will be reported at Unit Manager Meetings. Ongoing passive soil vapor extraction will be maintained at Z-1A wells.

Soil vapor monitoring will be conducted at vadose zone locations near the groundwater, the Cold Creek unit (formerly called the Plio-Pleistocene layer), and the ground surface at the Z-1A and Z-9 sites while they are not being actively remediated using SVE. The soil vapor monitoring plan for both sites from April 2004 through September 2004 is included with this operating plan for approval prior to implementation. Monitoring results will be reported at the Unit Manager Meetings. If carbon tetrachloride vapor concentrations increase such that the carbon tetrachloride contamination may impact human health or the environment (including groundwater), the Unit Managers will decide on the appropriate response to mitigate the problem (e.g., relocating the vapor extraction system to address the problem).

Drilling of vertical well C3426 to investigate the presence of dense, nonaqueous-phase liquid (DNAPL) carbon tetrachloride at the Z-9 site is planned to continue in the vadose zone during March and April 2004. During FY 2004, the SVE system will be operated at the Z-1A site during this time to avoid interfering with the characterization sampling to be conducted during drilling.

The anticipated schedule for SVE operations and soil vapor monitoring is:

April 2004 through June 2004:	Operate the SVE system at the Z-1A site Monitor soil vapor concentrations at the Z-9 site
July 2004 through September 2004:	Operate the SVE system at the Z-9 site Monitor soil vapor concentrations at the Z-1A site

SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN AT THE 216-Z-1A, 216-Z-18, AND 216-Z-12 SITE April 2004 – June 2004

Twenty-six wells at the 216-Z-1A, 216-Z-18, and 216-Z-12 site (Z-1A site) are identified for potential soil vapor extraction (Table 1). Selected wells will be prepared for potential hook-up to the soil vapor extraction system during April through June 2004.

The last non-operational soil vapor monitoring at Z-1A prior to SVE restart will take place in mid to late March 2004. At that time, any sampling tubes will be removed from potential on-line wells. The current wellhead assemblies (configured for non-operational soil vapor monitoring) will not be disturbed until the monitoring has been completed and the tubing removed.

Passive soil vapor extraction is being conducted at the following Z-1A wells with lower intervals open between the Cold Creek unit and groundwater: 299-W18-6L, 299-W18-7, 299-W18-10L, 299-W18-11L, 299-W18-12, 299-W18-246L, 299-W18-247L, 299-W18-252L (Table 2).

For initial start-up operations at Z-1A, extraction will be implemented at five planned intervals in the Z-1A tile field: 299-W18-165, 299-W18-166, 299-W18-167, 299-W18-168, and 299-W18-174 (Table 1) (Figure 1). During non-operational monitoring at Z-1A since October 2003, the highest carbon tetrachloride concentrations (maximum 266 ppmv) have been observed at wells associated with the tile field. Start-up operations in FY 2001, FY2002, and FY 2003 were also initiated using these five extraction intervals (a sixth interval selected in FY 2001 produced virtually no flow). Selecting the same set of initial wells will allow comparison of the rebound in FY 2001 after 18 months to that in FY 2002 after 12 months to that in FY 2003 after 6 months to that in FY2004 after 6 months.

These five intervals will be characterized on the first day of operations. During continued operations, all on-line wells will be characterized each week and all off-line wells, if requested, will be characterized during the 2nd, 4th, 6th, 8th, 10th, and final weeks, according to the attached sampling and analysis plan (Table 3). As before, the mix of on-line wells will be periodically changed during operations, based on changing concentrations, extraction interval locations, and operating experience. In general, the initial extraction wells will be nearer the primary carbon tetrachloride source (Z-1A Tile Field) and wells added later will expand operations away from this source.

The 200-PW-1 OU task lead organizes and maintains spreadsheets of the characterization data on a desktop computer. The characterization data are included in the annual performance evaluation report.

SOIL VAPOR EXTRACTION SYSTEM OPERATING PLAN AT THE 216-Z-9 SITE
July 2004 – September 2004

Twenty-two wells at the 216-Z-9 site (Z-9 site) are identified for potential vapor extraction (Table 4). One of these wells is new well C3426 anticipated to be completed as a vapor extraction well during FY2004. Selected wells will be prepared for potential hook-up to the soil vapor extraction system during July through September 2004.

The last non-operational soil vapor monitoring at Z-9 prior to SVE restart will take place in mid to late June 2004. At that time, any sampling tubes will be removed from potential on-line wells. The current wellhead assemblies (configured for non-operational soil vapor monitoring) will not be disturbed until the monitoring has been completed and the tubing removed.

For initial start-up operations at Z-9, extraction will be implemented at four planned intervals: 299-W15-217, 299-W15-82, 299-W15-9U, and 299-W15-9L (Table 4) (Figure 1). During non-operational monitoring at Z-9 since July 2002, the highest carbon tetrachloride concentration observed was 444 ppmv at well 299-W15-217. Start-up operations in FY 1998, FY 1999, FY 2001, and FY 2002 were also initiated using these four extraction intervals. Selecting the same set of initial wells will allow comparison of the rebound in FY 1998 after 9 months to that in FY 1999 after 6 months to that in FY 2001 after 24 months to that in FY 2002 after 6 months to that in FY 2004 after 24 months. (The SVE system was not operated at the Z-9 site during FY2003 to avoid interfering with the characterization sampling to be conducted during drilling of well C3426.)

These four intervals will be characterized on the first day they are placed into operation. During continued operations, all on-line wells will be characterized each week and all off-line wells, if requested, will be characterized during the 2nd, 4th, 6th, 8th, 10th, and final weeks, according to the attached sampling and analysis plan (Table 3). As with Z-1A, the mix of on-line wells will be periodically changed during operations, based on changing concentrations, extraction interval locations, and operating experience. In general, the initial extraction wells will be nearer the carbon tetrachloride source (Z-9 Trench) and wells added later will expand operations away from this source.

The 200-PW-1 OU task lead organizes and maintains spreadsheets of the characterization data on a desktop computer. The characterization data are included in the annual performance evaluation report.

VADOSE ZONE MONITORING PLAN FOR SOIL VAPOR EXTRACTION SITES
April 2004 – September 2004

Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring

This plan describes planned non-operational monitoring and passive soil vapor extraction monitoring to be conducted during April through September 2004 for the 200 West Area Carbon Tetrachloride Expedited Response Action (200-PW-1 Operable Unit). Non-operational monitoring will be conducted at the 216-Z-9 (Z-9) site during April through June 2004 while the soil vapor extraction (SVE) system is operating at the 216-Z-1A/Z-18/Z-12 (Z-1A) site. Non-operational monitoring will be conducted at the Z-1A site during July through September 2004 while the SVE system is operating at the Z-9 site. Passive soil vapor extraction monitoring will be conducted at the Z-1A site from April 2004 through September 2004.

Scope: Monitor carbon tetrachloride soil vapor concentrations at selected probes and wells during non-operation of the soil vapor extraction (SVE) system (Tables 5 and 6). At any particular time, all of the probes and some of the wells will be "non-operational," i.e., they will not be connected to the SVE system. Eight of the non-operational wells have a passive soil vapor extraction system installed at the wellhead.

Passive soil vapor extraction is a remediation technology that uses naturally induced pressure gradients between the subsurface and the surface to drive soil vapor to the surface. In general, falling atmospheric pressure causes subsurface vapor to move to the atmosphere through wells, while rising atmospheric pressure causes atmospheric air to move into the subsurface. The passive soil vapor extraction systems will be used to remove carbon tetrachloride from the vadose zone.

Passive extraction wells will vent through aboveground canisters containing granular activated carbon (GAC). The wells will be monitored monthly using the sampling method used for the non-operational wells. The carbon tetrachloride vapor concentration will be monitored both upstream and downstream of the GAC. The measured vapor concentrations will be used to estimate the amount of carbon tetrachloride extracted through each well during the month.

For monitoring the non-operational probes and wells and the passive extraction wells, the components of this scope are:

- Collect soil vapor samples using the rebound study sampling method and sampling pump (BHI-01105)
- Analyze soil vapor samples for carbon tetrachloride using the B&K in accordance with GPP-EE-05-4.0 at field screening level QC-1 (CP-A-QA-03-5.2)
- Evaluate concentration trends for the Fluor Hanford Waste Disposal/Groundwater Remediation Project
- Report results to 200-PW-1 Operable Unit Managers
- Include results in annual reports

Purpose and Objectives: The purpose of non-operational monitoring is to measure carbon

tetrachloride concentrations in the vadose zone during the shutdown of the SVE system.

The objectives of monitoring the non-operational wells and probes are (1) to measure carbon tetrachloride concentrations and trends near the vadose-atmosphere and vadose-groundwater interfaces to evaluate whether non-operation of the SVE system is negatively impacting the atmosphere or groundwater; and (2) to be cognizant of carbon tetrachloride concentrations and trends near the lower permeability Cold Creek unit to provide an indication of concentrations that can be expected during restart of SVE operations and to support selection of on-line wells.

The objectives of monitoring the passive soil vapor extraction system wells, which are all open near the vadose-groundwater interface, are: (1) to measure carbon tetrachloride concentrations and trends near the vadose-groundwater interface; and (2) to quantify the mass of carbon tetrachloride removed using this technology.

Duration: Non-operational monitoring and passive soil vapor extraction monitoring will be conducted from April 2004 through September 2004 during FY 2004.

Monitoring Frequency: Monitoring will be conducted monthly.

Monitoring Locations: Locations were selected to focus carbon tetrachloride monitoring near the vadose-atmosphere and vadose-groundwater interfaces and near the Cold Creek unit (Table 5). These monitoring locations may be revised by the 200-PW-1 OU task lead based on developing trends, accessibility, and/or recommendations of the sampler. The 200-PW-1 Operable Unit Managers will be advised of any changes to the monitoring locations. Monitoring locations are shown on Figures 2 and 3.

Data Management: The field screening data obtained from non-operational wells and probes and passive extraction wells are entered into a controlled field logbook, which is maintained by Lockheed Martin Services Inc (LMSI) Records Information Management (RIM) department. The 200-PW-1 OU task lead organizes and maintains spreadsheets of the field screening data on a desktop computer. The field screening data are included in the annual performance evaluation report.

References:

CP-A-QA-03-5.2, *Quality Assurance Program Plans*, Procedure 5.2, "Onsite Measurements Quality Assurance Program Plan," Fluor Hanford, Inc., Richland, Washington.

GPP-EE-05-4.0, *Analysis of Volatile Organic Compounds in Vapor Samples Using the Bruel and Kjaer 1301 and Innova 1312 Multi-Gas Analyzers*, Fluor Hanford, Inc., Richland, Washington.

BHI-01105, 1997, *Rebound Study Report for the Carbon Tetrachloride Soil Vapor Extraction Site, Fiscal Year 1997*, Bechtel Hanford, Inc., Richland, Washington.

Table 1. Wells Available for Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, April through June 2004

Potential On-Line Wells	Reason	Initial Wells
299-W18-6U	Mass removal	
299-W18-89	Mass removal	
299-W18-93	Mass removal	
299-W18-94	Mass removal	
299-W18-96	Mass removal	
299-W18-97	Mass removal	
299-W18-98	Mass removal	
299-W18-99	Mass removal	
299-W18-152	Mass removal	
299-W18-153	Mass removal	
299-W18-157	Mass removal	
299-W18-158L	Mass removal	
299-W18-159	Mass removal	
299-W18-163L	Mass removal	
299-W18-165	Mass removal	X
299-W18-166	Mass removal	X
299-W18-167	Mass removal	X
299-W18-168	Mass removal	X
299-W18-169	Mass removal	
299-W18-171L	Mass removal	
299-W18-174	Mass removal	X
299-W18-246U	Mass removal	
299-W18-247U	Mass removal	
299-W18-248	Mass removal	
299-W18-249	Mass removal	
299-W18-252U	Mass removal	

Table 2. Passive Soil Vapor Extraction Wells at the 216-Z-1A/Z-18/Z-12 Site, FY 2004

Passive Soil Vapor Extraction Wells	Reason
299-W18-6L	Groundwater Protection
299-W18-7	Groundwater Protection
299-W18-10L	Groundwater Protection
299-W18-11L	Groundwater Protection
299-W18-12	Groundwater Protection
299-W18-246L	Groundwater Protection
299-W18-247L	Groundwater Protection
299-W18-252L	Groundwater Protection

Table 3. Sampling and Analysis Plan for Soil Vapor Extraction System Operations, April Through September 2004

When to Monitor	on-line wells	off-line wells	vacuum wellhead	flow	CCl4 carbon tetrachloride	CHCl3 chloroform	CH2Cl2 methylene chloride	MEK MEK
first day of operations	X		X	X	X	X	X	X
beginning of 2nd week	X	X	X	X	X	X	X	X
beginning of 3rd week	X		X	X	X	X	X	X
beginning of 4th week	X	X	X	X	X	X	X	X
beginning of 5th week	X		X	X	X	X	X	X
beginning of 6th week	X	X	X	X	X	X	X	X
beginning of 7th week	X		X	X	X	X	X	X
beginning of 8th week	X	X	X	X	X	X	X	X
beginning of 9th week	X		X	X	X	X	X	X
beginning of 10th week	X	X	X	X	X	X	X	X
beginning of 11th week	X		X	X	X	X	X	X
beginning of 12th week	X		X	X	X	X	X	X
last day of operations	X	X	X	X	X	X	X	X
Fax copy of monitoring records to 200-PW-1 OU Task Lead (Virginia Rohay at 373-3974) by close of day following monitoring.								

Table 4. Wells Available for Soil Vapor Extraction System Operations at the 216-Z-9 Site, July through September 2004

Potential On-Line Wells	Reason	Initial Wells
299-W15-6U	Mass removal	
299-W15-6L	Groundwater Protection	
299-W15-9U	Mass removal	X
299-W15-9L	Groundwater Protection	X
299-W15-82	Mass removal	X
299-W15-84U	Mass removal	
299-W15-84L	Mass removal	
299-W15-85	Mass removal	
299-W15-86	Mass removal	
299-W15-95U	Mass removal	
299-W15-95L	Mass removal	
299-W15-46 (C3426)	TBD	
299-W15-216U	Mass removal	
299-W15-216L	Groundwater Protection	
299-W15-217	Mass removal	X
299-W15-218U	Mass removal	
299-W15-218L	Groundwater Protection	
299-W15-219U	Mass removal	
299-W15-219L	Groundwater Protection	
299-W15-220U	Mass removal	
299-W15-220L	Groundwater Protection	
299-W15-223	Mass removal	

TBD = to be determined. The screen depth will be selected based on field screening of soil vapor samples collected during drilling. This well potentially will be completed as a groundwater monitoring well rather than a vapor extraction well, depending on field screening results in the vadose zone and groundwater.

Table 5a. Distribution of Selected Monitoring Locations During Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, April through June 2004

Target Zone	Number of Monitoring Locations		
	Z-1A	Z-9	Total
Near-surface (3-25 m below ground surface)	5	9	14
Cold Creek (25-45 m below ground surface)	0	7	7
Groundwater (50-65 m below ground surface)	8[a]	4	12
Total	13	20	33

[a] Eight available monitoring locations near the vadose/groundwater interface in the Z-1A area are being monitored as part of the passive soil vapor extraction system network.

Table 5b. Distribution of Selected Monitoring Locations During Soil Vapor Extraction System Operations at the 216-Z-9 Site, July through September 2004

Target Zone	Number of Monitoring Locations		
	Z-1A	Z-9	Total
Near-surface (3-25 m below ground surface)	10	3	13
Cold Creek (25-45 m below ground surface)	6	3	9
Groundwater (50-65 m below ground surface)	8[a]	0	8
Total	24	6	30

[a] Eight available monitoring locations near the vadose/groundwater interface in the Z-1A area are being monitored as part of the passive soil vapor extraction system network.

Table 6a. Non-Operational Wells and Probes Selected for Monitoring During Soil Vapor Extraction System Operations at the 216-Z-1A/Z-18/Z-12 Site, April through June 2004

Target Zone	Z-9	Depth (m)	Comment	Z-1A	Depth (m)	Comment
near-surface	CPT-17 10 ft (blue)	3	southwest of Z-9	CPT-4E 25 ft (white)	8	north central in Z-1A/Z-18/Z-12 field
near-surface	CPT-18 15 ft (white)	5	northwest of Z-9	CPT-13A 30 ft (blue)	10	southeast of Z-1A
near-surface	CPT-16 25 ft (blue)	8	east of Z-9	CPT-7A 32 ft (yellow)	10	farfield northeast of Z-1A
near-surface	CPT-27 33 ft (red)	10	southeast of Z-9	CPT-1A 35 ft (black)	11	west of Z-12
near-surface	CPT-21A 45 ft (green)	14	south of Z-9	CPT-34 40 ft (green)	12	west of Z-18
near-surface	CPT-9A 60 ft (blue)	18	farfield north of Z-9			
near-surface	CPT-16 65 ft (red)	20	east of Z-9			
near-surface	CPT-24 70 ft (green)	21	northwest of Z-9			
near-surface	CPT-18 75 ft (red)	23	northwest of Z-9			
Cold Creek	299-W15-82	25	east side of Z-9			
Cold Creek	CPT-21A 86 ft (red)	26	south of Z-9			
Cold Creek	CPT-28 87 ft (red)	27	farfield south of Z-9			
Cold Creek	299-W15-217	35	southwest corner of Z-9			
Cold Creek	CPT-24 118 ft (red)	36	northwest of Z-9			
Cold Creek	299-W15-220 SST/118 ft (red)	36	east of Z-9			
Cold Creek	299-W15-95L	44	north side of Z-9			
ground-water	299-W15-220L 163 ft	50	east of Z-9	299-W18-247L*	51	southeast of Z-18
ground-water	299-W15-219L 175 ft	53	northwest of Z-9	299-W18-246L*	52	west of Z-1A
ground-water	299-W15-84L 180 ft	55	west of Z-9	299-W18-252L*	53	middle of Z-1A/Z-18/Z-12 field
ground-water	299-W15-9L	57	11 m from 299-W15-32 extraction well	299-W18-10L*	55	east side of Z-18
ground-water				299-W18-7*	60	east side of Z-1A
ground-water				299-W18-11L*	60	within Z-18
ground-water				299-W18-12*	60	within Z-18
ground-water				299-W18-6L*	63	west side of Z-1A

* Passive soil vapor extraction wells

Note: Colors refer to the color coding on the soil vapor probe tubing.

Table 6b. Non-Operational Wells and Probes Selected for Monitoring During Soil Vapor Extraction System Operations at the 216-Z-9 Site, July through September 2004

Target Zone	Z-9	Depth (m)	Comment	Z-1A	Depth (m)	Comment
near-surface	CPT-28 40 ft (green)	12	farfield south of Z-9	CPT-32 25 ft (green)	8	west of Z-1A
near-surface	CPT-21A 45 ft (green)	14	south of Z-9	CPT-4E 25 ft (white)	8	north central in Z-1A/Z-18/Z-12 field
near-surface	CPT-9A 60 ft (blue)	18	farfield north of Z-9	CPT-30 28 ft (green)	9	north of Z-18 (middle of Z-1A/Z-18/Z-12 field)
near-surface				CPT-13A 30 ft (blue)	10	southeast of Z-1A
near-surface				CPT-7A 32 ft (yellow)	10	farfield northeast of Z-1A
near-surface				CPT-1A 35 ft (black)	11	west of Z-12
near-surface				CPT-33 40 ft (green)	12	between Z-18 and Z-12
near-surface				CPT-34 40 ft (green)	12	west of Z-18
near-surface				CPT-1A 68 ft (yellow)	21	west of Z-12
near-surface				CPT-32 70 ft (red)	21	west of Z-1A
Cold Creek	CPT-21A 86 ft (red)	26	south of Z-9	299-W18-152	31	northwest corner of Z-12
Cold Creek	CPT-28 87 ft (red)	27	farfield south of Z-9	299-W18-167	32	within Z-1A
Cold Creek	CPT-9A 91 ft (red)	28	farfield north of Z-9	CPT-4F 109 ft (red)	33	north central in Z-1A/Z-18/Z-12 field
Cold Creek				299-W18-165	33	within Z-1A
Cold Creek				299-W18-249	40	northeast corner of Z-18
Cold Creek				299-W18-248	40	east side of Z-1A
ground-water				299-W18-247L*	51	southeast of Z-18
ground-water				299-W18-246L*	52	west of Z-1A
ground-water				299-W18-252L*	53	middle of Z-1A/Z-18/Z-12 field
ground-water				299-W18-10L*	55	east side of Z-18
ground-water				299-W18-7*	60	east side of Z-1A
ground-water				299-W18-11L*	60	within Z-18
ground-water				299-W18-12*	60	within Z-18
ground-water				299-W18-6L*	63	west side of Z-1A

* Passive soil vapor extraction wells

Note: Colors refer to the color coding on the soil vapor probe tubing.

Figure 1. Location of Extraction and Monitoring Wells at the 216-Z-1A/Z-18/Z-12 and 216-Z-9 Sites

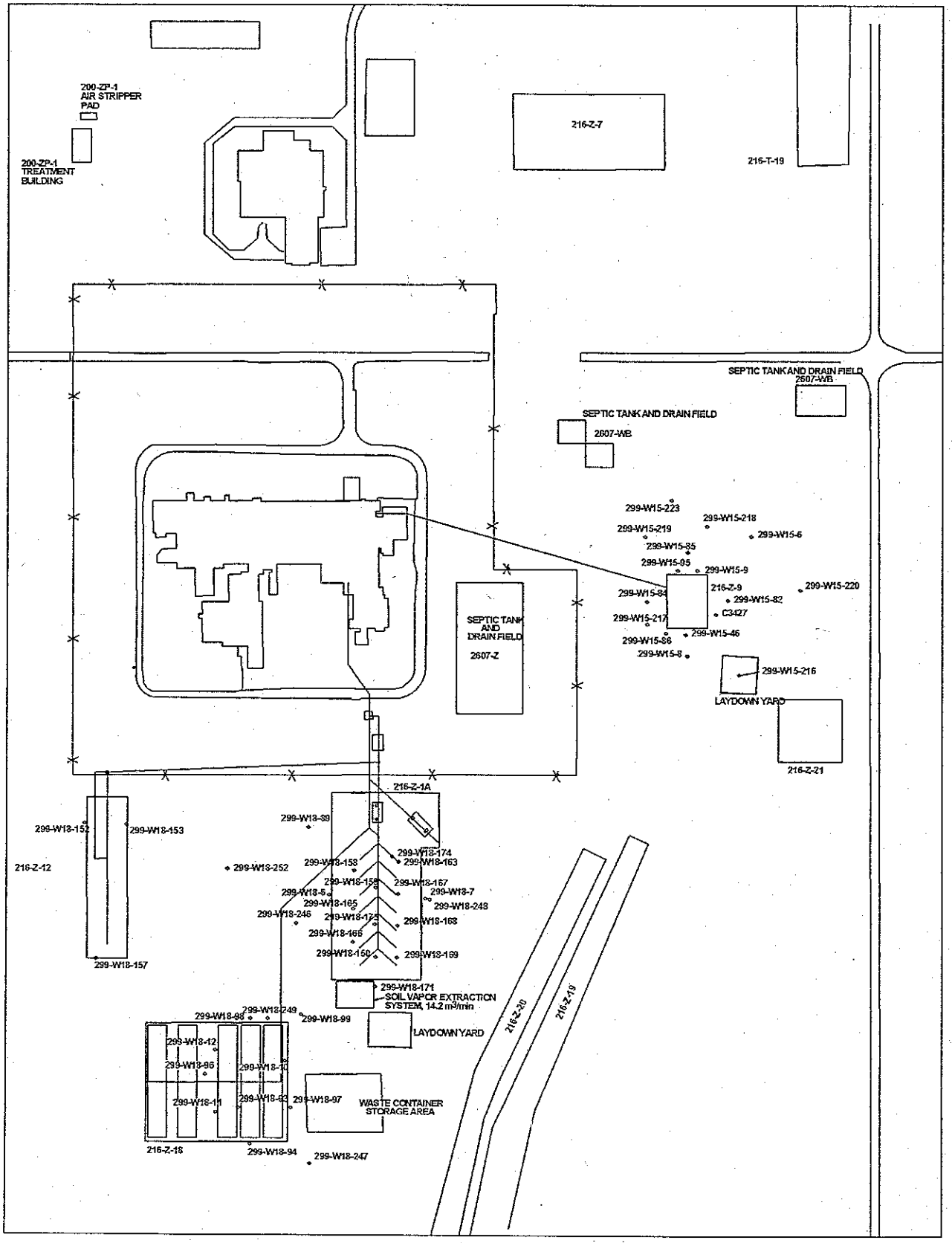
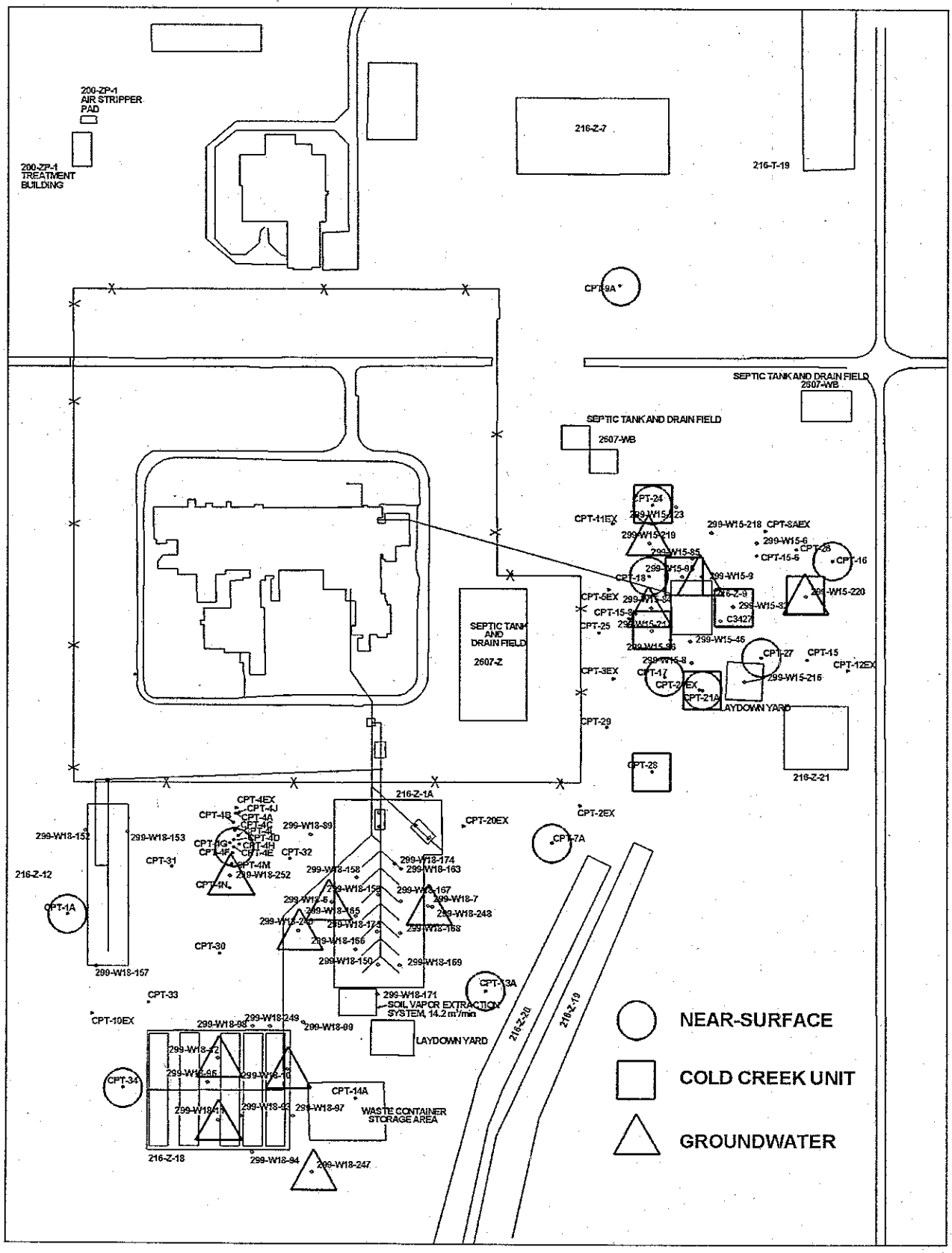
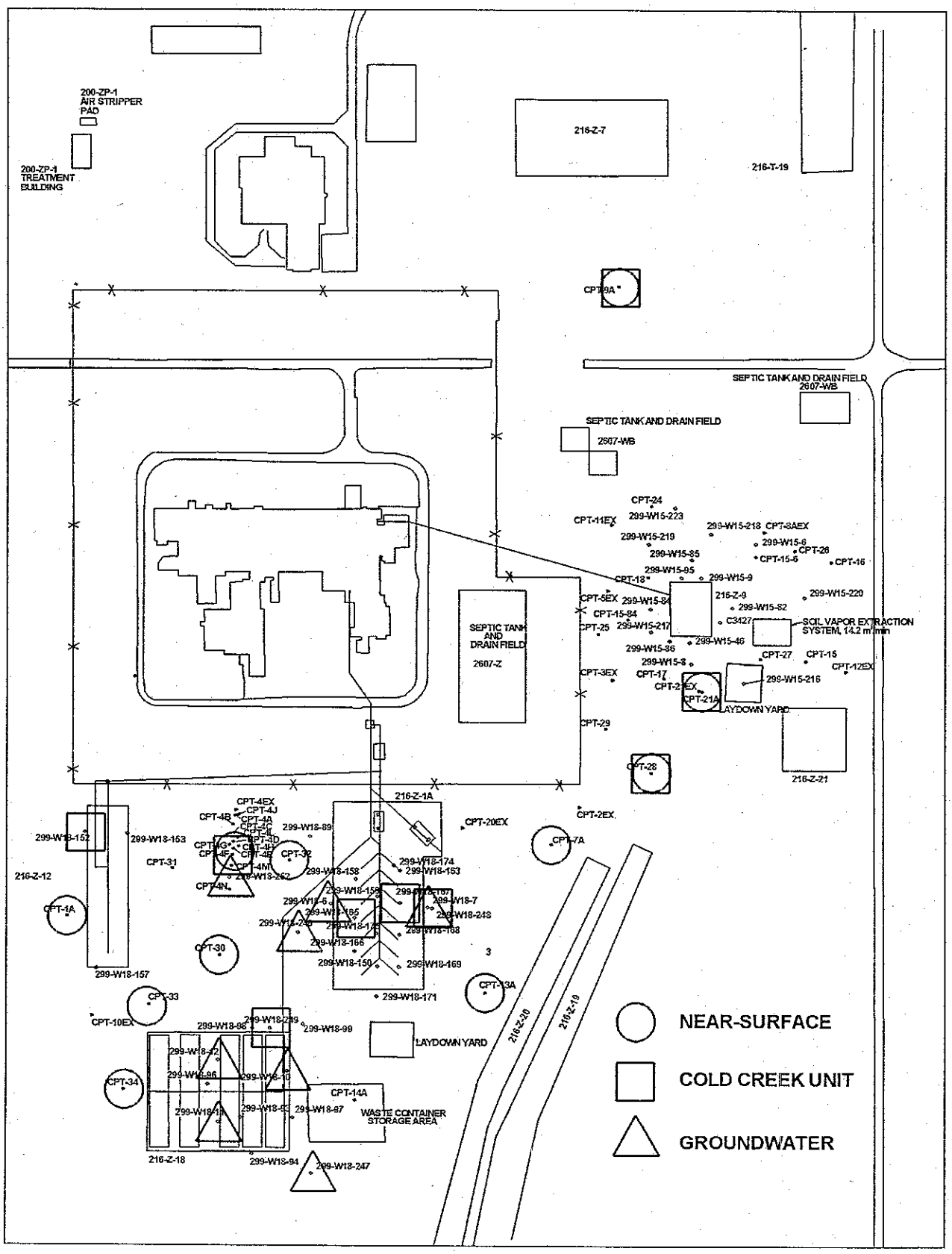


Figure 2. Location of Wells and Probes Selected for Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring, April through June 2004



March 29, 2004

Figure 3. Location of Wells and Probes Selected for Non-Operational Monitoring and Passive Soil Vapor Extraction Monitoring, July through September 2004



March 29, 2004

Briefing - CP Ecological Scoping Sampling

Two Sampling Components

Part I - Eco DQO Reconnaissance Surveys (March – April 04)

- Reconnaissance surveys of CP waste sites and outlying areas for ecological sampling
  - FH has sorted waste sites into categories by facility process, waste concentration, and thickness of stabilizing cover soils. The reconnaissance survey will identify populations suitable for ecological sampling at and adjacent to the identified waste sites. Field observations will be noted.
- Habitat descriptions
- The contractor will also recommend ecological sampling opportunities that may be used to complement the current environmental monitoring program.

Part II - 200-CW-1 OU Ecological Sampling (April - June 04)

Satisfies ecological data needs unique to the 200-CW-1 OU:

- Ecological sampling requirements that have been identified through recent risk assessment and sampling activities.
- Opportunistic sampling of ecological subjects that can fill data gaps, and for which the spring sampling timeframe offers unique sampling opportunities.