

Meeting Minutes Transmittal/Approval
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
2440 Stevens Center, Room 1200 Richland, Washington
April 28, 1994

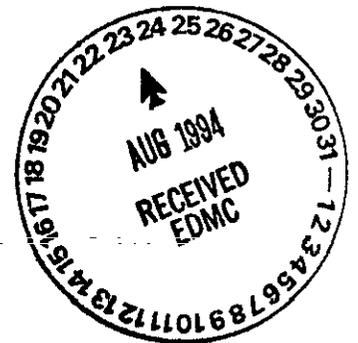
FROM/APPROVAL: *Paul M. Pak* Date 5/26/94
Paul M. Pak, 200 Aggregate Area Unit Manager, RL (A5-19)

APPROVAL: *Paul R. Beaver* Date 5/26/94
Paul R. Beaver, 200 Aggregate Area Unit Manager, EPA (B5-01)

APPROVAL: *Dib Goswami* Date 5/26/94
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 Groundwater Operable Unit
- Attachment #6 - 200-ZP-1 Operable Unit IRM Sampling and Analysis Plan
- Attachment #7 - 200-BP-5 Operable Unit Status
- Attachment #8 - Geohydrology Activities to Support the 200-BP-5 Pilot Scale Treatability Test
- Attachment #9 - Monthly CCl₄ Extraction Summary



Prepared by: *Kay Kimmel* Date: 5/31/94
Kay Kimmel, Jim Consort GSSC (B1-42)

Concurrence by: *Curt Wittreich* Date: 5/26/94
Curt Wittreich, WHC Coordinator (H6-03)

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Attachment #1
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
April 28, 1994

Meeting and Summary of Commitments and Agreements

1. SIGNING OF THE MARCH 200 AREA UNIT MANAGER'S MEETING MINUTES: Meeting minutes were reviewed and approved with no changes.

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

2AAMS.13 Open. Mike Connelly's groundwater modeling studies for pump and treat will be transmitted to the regulators in the near future.
Paul Pak

2AAMS.14 Open. Provide to the regulators a map identifying RCRA and CERCLA wells for the 200 East and 200 West areas. Action: Paul Pak.
Paul Pak

2AAMS.15 Open. Draft dispositions to regulator comments on the 200-BP-5 Treatability Test Plan are still undergoing revision.
Paul Pak

2AAMS.16 Open. Schedule describing activities that are required prior to initiating pilot scale studies in the 200-BP-5 Operable Unit is in progress.
Dave Erb

2AAMS.17 Closed 03/31/94.

3. NEW ACTION ITEMS (INITIATED April 28, 1994):

2AAMS.18 Provide to the regulators a map identifying RCRA and CERCLA wells at 200 West area. Action: Curt Wittreich.

2UP1.1 Provide a letter within one week to EPA and Ecology regarding the temporary suspension of treatment activities of the 200-UP-1 Operable Unit pilot-scale treatability test. Action: Paul Pak.

4. INFORMATION ITEMS:

- Status 200-UP-1 Operable Unit - Curt Wittreich provided an update on the field activities for the 200-UP-1 Operable Unit (see Attachment #5). Action Item 2AAMS.14 regarding a well map for the 200 Areas was discussed. C. Wittreich took the action to provide a map which will include RCRA wells and current CERCLA wells for the 200 West Area. George Henckel led a discussion on the temporary suspension of treatment activities at the pilot-scale plant. The regulators requested a formal letter from RL regarding this temporary suspension of work (see Action Item 2UP1.1).

Dib Goswami requested that samples be withdrawn from the tank holding the extracted groundwater and analyzed for carbon tetrachloride. He indicated that if there is no carbon tetrachloride present then the water could be processed to remove uranium and technetium.

- Status of 200-ZP-1 - Dan Parker provided the status of the 200-ZP-1 Operable Unit. He noted that the well useability test is undergoing review by RL. The regulators noted that comments on the treatability test plan will be provided on May 9 instead of May 2. The regulators requested that the IRM Proposed Plan be placed on hold pending resolution of the carbon tetrachloride issue. EPA indicated that the regional administrator must be briefed before Proposed Plans are issued for public comment.

Bruce Ford presented the proposed strategy for groundwater sampling (see Attachment #6). He indicated that the points of compliance and the compliance limits will be negotiated. A meeting is scheduled for Tuesday afternoon, May 3, to finalize the strategy. B. Ford requested that a page in the handout titled "Treatability Test Monitoring Wells" be read prior to the May 3 meeting.

Paul Beaver indicated that tests using iron filings were being performed on ²⁰⁰100 Area groundwater which may be applicable to remediating the carbon tetrachloride in this Operable Unit. D. Parker agreed to explore that issue and report his findings at the next UMM.

- Status 200-BP-5 Operable Unit - Dave Erb provided the status of the 200-BP-5 Operable Unit Treatability Test (see Attachment #7). He indicated that comment resolution is proceeding on the treatability test plan. A discussion on the schedule of the 216-BY Crib Plume Treatment Test was held. The regulators noted they would require further information before authorizing a schedule change.

Greg Kasza provided the status of the geohydrology activities in support of the 200-BP-5 pilot scale treatability test (see Attachment #8). He indicated that a camera survey will be conducted in three 600 Area wells within the 216-BY Cribs Plume. Two new wells are required for pump and treat activities being planned for this plume. The regulators agreed that one well should be drilled before the location of the second well is determined.

- ERA Activity - George Henckel provided the status of the carbon tetrachloride extraction activities (see Attachment #9). He noted that unanticipated field and contract problems have delayed the use of the 500 scfm unit. A discussion pertaining to the canisters of GAC and cost of disposal was held. G. Henckel indicated WHC has forwarded a position paper to Mike Thompson noting the issues to be resolved and a proposed remedy.
- Next Meetings: The next meetings are scheduled for May 25 and 26, and tentatively June 22 and 23, 1994.

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Attachment #2
 200-UP-1 & 200-BP-5
 200 Aggregate Area Unit Manager's Meeting
 Official Attendance Record
 April 28, 1994

Please print clearly and use black ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Kay Kimmel	MACTEC/D&M	RL Support	946-3692
Nancy Kzernold	Ecol.	OU Support	736-3014
Jeff Ross	PREMINT	EPA Support	206/624-2692
Alena Faulk	EPA	Visitor	
Dennis Faulk	EPA	UW	376-8631
James Conser	GSSC	RL Support	9463694
Richard Carlson	WHC ERE	Mgr. 200 G.W.	376-9027
George C Henckel III	WHC	Mgr 200 Solene Renew Leach/Mod. Reg.	376-1994
Danny L. Parker	WHC	200-2P-1 OU Coordinator	372-1031
Bruce H. Ford	WHC	200-2P-1 OU Hydrochemistry	376-6465
George Kelly	WHC	200-UP-1 Project Geo	376-6341
Brian Innis	WHC	200 UP1 Charact. Coordinator	522-3670
Brian Prost	USGS	EPA Support	206-593-6510
Diana Suckie	WHC	ER Support	372-3141
CAREY KASZA	WHC	200 BP 5 HYDRO GEO T. U	376 0763
Dave Erb	WHC	200-BP-5 O.U. Coord	372-1402
Mike Frank	WHC	Treat. Test Lab. Eng.	376-2731
LURT WITTEBICH	WHC	20-UP-1	6-1862
Paul Beaver	ERA	Support	376-8665
D Goswami	Ecology -	OUM	8736-3015

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Attachment #3
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
April 28, 1994

Agenda

200 Area Activities

200-ZP-1 - D. Parker
* Status

200-BP-5 - D. Erb

ERA Activity - G. Henckel
* Carbon Tetrachloride

200-UP-1 - C. Wittreich
* Activities

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Attachment #4

Action Item Status List
Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
April 28, 1994

Item No.	Action/Source of Action	Status
2AAMS.9	Provide to Bill Lum any data to compare these slug tests to other tests. Action: Craig Swanson	On 03/22/94 Bill Lum indicated he had no current need for this data. CLOSE 03/31/94.
2AAMS.10	Present to EPA and Ecology the groundwater sampling strategy, and the hydrogeological implications of pump and treat operations at the 200-ZP-1 Operable Unit next Wednesday, March 2, 1994. Action: Dan Parker.	Closed 03/31/94.
2AAMS.11	Provide a schedule for the issuance of an Interim Record of Decision for 200-ZP-1. Action: Dennis Faulk.	Closed 03/31/94. The Proposed Plan goes out for public review by the end of April, the ROD to be issued by July.
2AAMS.12	Within two weeks of receipt, evaluate RL's proposed overall strategy for the 200-ZP-1 Operable Unit, if not acceptable, write a letter with EPA's strategy, indicating all changes EPA will require. Action: Dennis Faulk.	Closed 03/31/94.
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.14	Provide to the regulators a map identifying RCRA wells and CERCLA wells for the 200 East and 200 West areas. Action: Paul Pak.	Open 03/31/94.
2AAMS.15	Submit draft dispositions to regulator comments on the 200-BP-5 Treatability Test Plan by April 6. 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	Open 03/31/94. Activities are ongoing.

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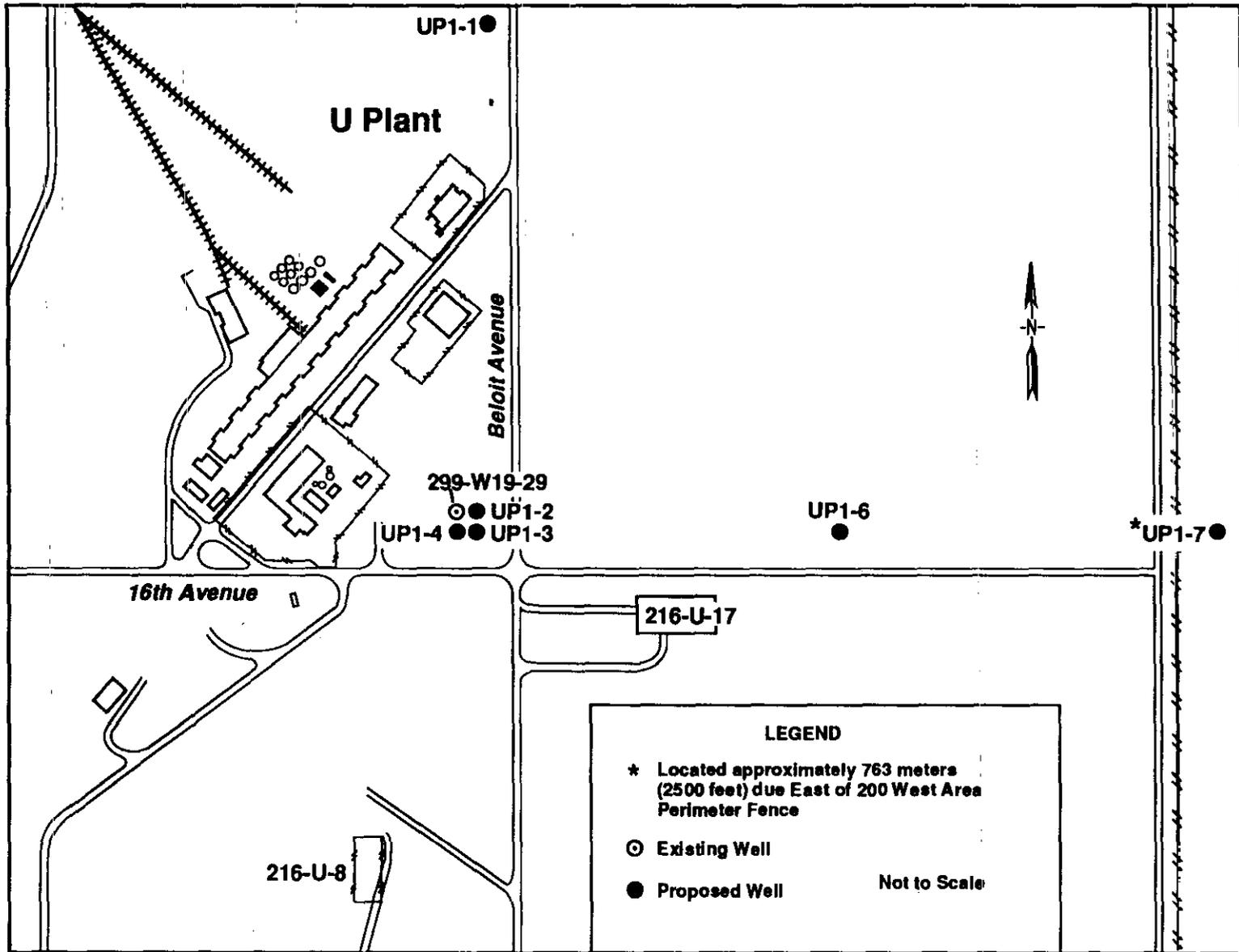
Item No.	Action/Source of Action	Status
	Unit by August 1994. Action: Dave Erb.	
2AAMS.17	Notify attendees of the time and place for the April 6th meeting to discuss the groundwater strategy for the 200-ZP-1 and 200-BP-5 Operable Units. Action: Paul Pak.	Closed 04/28/94.
2AAMS.18	Provide to the regulators a map identifying RCRA and CERCLA wells at 200 West area. Action: Curt Wittreich.	Open 04/28/94.
2UP1.1	Provide a letter within one week to EPA and Ecology regarding the 200-UP-1 Operable Unit pilot-scale treatability test temporary suspension of treatment activities. Action: Paul Pak.	Open 04/28/94.

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**200-UP-1 GROUNDWATER OPERABLE UNIT
UNIT MANAGERS MEETING, MARCH 28, 1994**

AGENDA

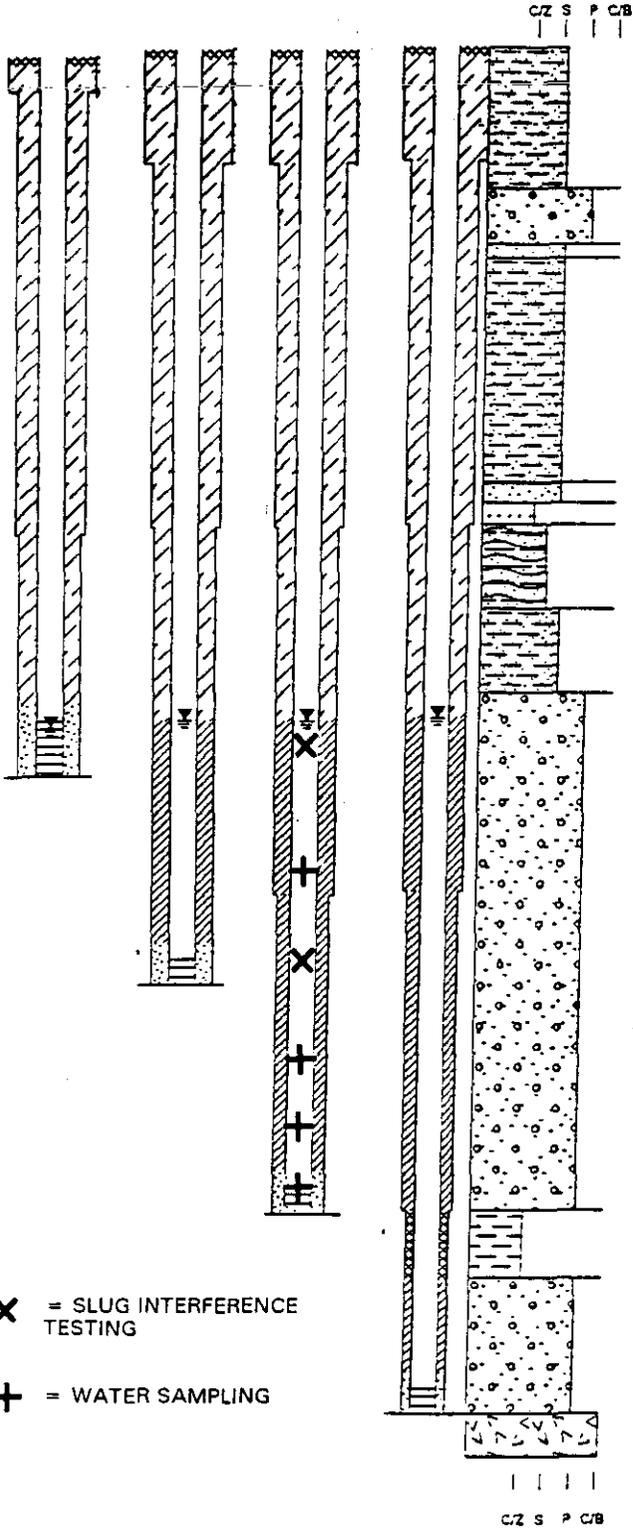
- LIMITED FIELD INVESTIGATION
 - GROUNDWATER MONITORING STATUS
 - WELL INSTALLATION STATUS
- PILOT-SCALE TREATABILITY TEST
 - OPERATIONAL STATUS



Slug interference and water sampling intervals.

299-W19-29 UP1-2 UP1-3 UP1-4

Feet
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400
425
450
475
500



- 0-50' Silty SAND.
- HANFORD COARSE UNIT: interbedded gravel, sand and silt.
- 50-70' Sandy GRAVEL.
- 70-75' SAND
- 75-155' Silty SAND
- HANFORD FINE UNIT: Sand and interbedded silt
- 155-160' SAND
- 162-170' Sandy SILT
- EARLY PALOUSE SOIL
- 170-195' SAND
- PLIO-PLESTOCENE UNIT: sand, silt and local gravel, may contain caliche
- 195-200' Sandy SILT
- 200-230' Silty SAND
- UPPER RINGOLD FORMATION: sands and silts
- 230-413' Sandy GRAVEL
- 239' static water level
- RINGOLD FORMATION UNIT "E": Gravel with interbedded sand and silt
- 413-437' SILT
- RINGOLD FORMATION, LOWER MUD SEQUENCE
- 437-485' Sandy GRAVEL
- RINGOLD FORMATION, UNIT "A": Gravel with interbedded sand and silt
- 485-500' BASALT
- Elephant Mountain Member basalt

X = SLUG INTERFERENCE TESTING
+ = WATER SAMPLING

CZ S P C/B

9413205.0772

**200-ZP-1 OPERABLE UNIT IRM
SAMPLING AND ANALYSIS PLAN****1.0 INTRODUCTION****1.1 MONITORING NETWORK RATIONALE****1.2 MONITORING NETWORK GENERAL OBJECTIVES****1.3 DATA QUALITY OBJECTIVES****2.0 GROUNDWATER MONITORING****2.1 REQUIREMENTS****2.2 TREATABILITY TEST SAMPLING PLAN****2.2.1 Well Locations****2.2.2 Schedule****2.2.3 Analytes****2.2.4 Quality Assurance/Quality Control Requirements****2.3 REMEDIAL ACTION ASSESSMENT SAMPLING PLAN****2.3.1 Well Locations****2.3.2 Schedule****2.3.3 Analytes****2.3.4 Quality Assurance/Quality Control Requirements****2.4 PLUME PERIPHERY SAMPLING PLAN****2.4.1 Well Locations****2.4.2 Sampling Schedule****2.4.3 Analytes****2.4.4 Quality Assurance/Quality Control Requirements****2.5 POINT OF COMPLIANCE SAMPLING PLAN****2.5.1 Well Locations****2.5.2 Sampling Schedule****2.5.3 Analytes****2.5.4 Quality Assurance/Quality Control Requirements****2.6 HEALTH AND SAFETY****3.0 SUPPORTING WORK**

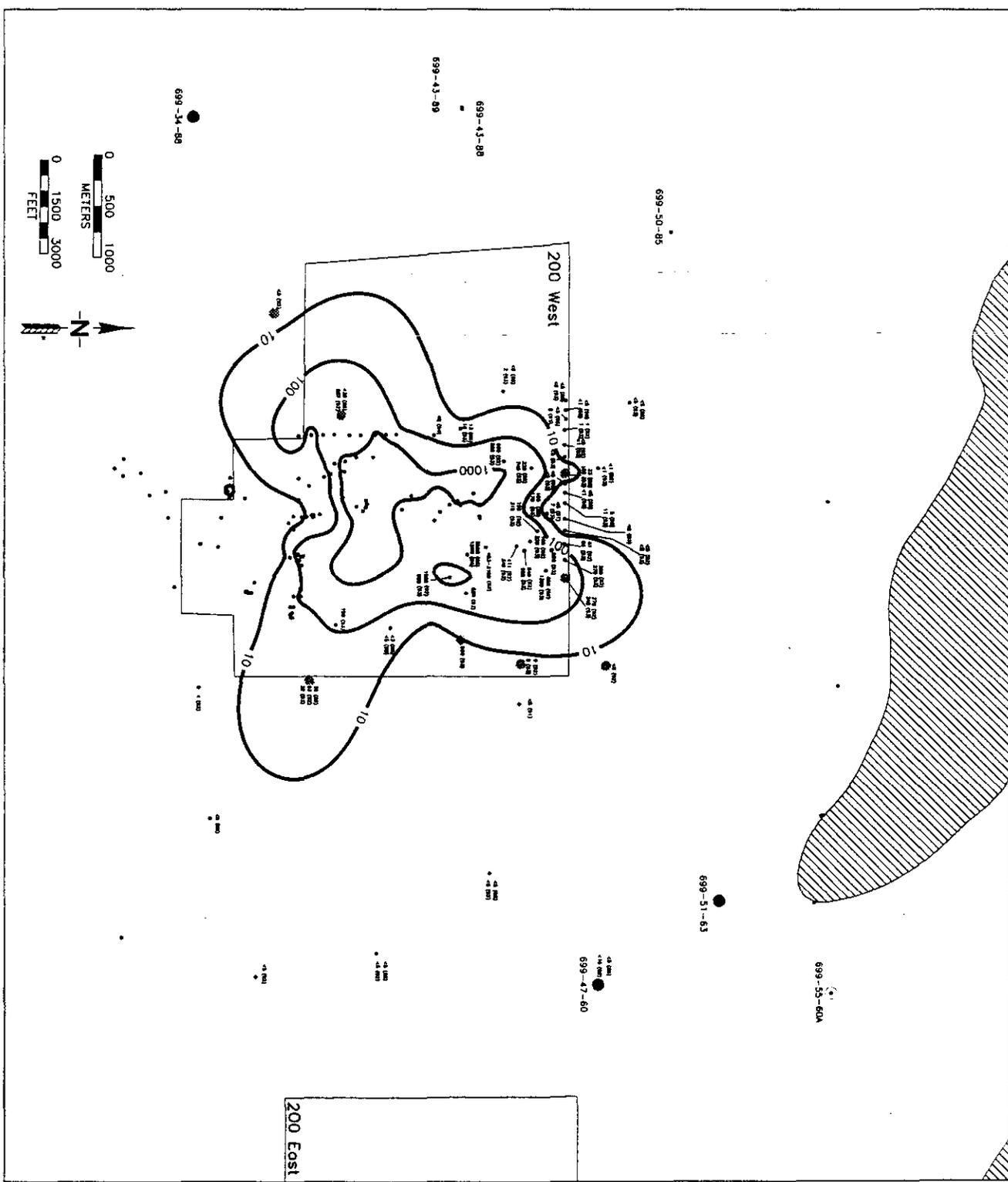
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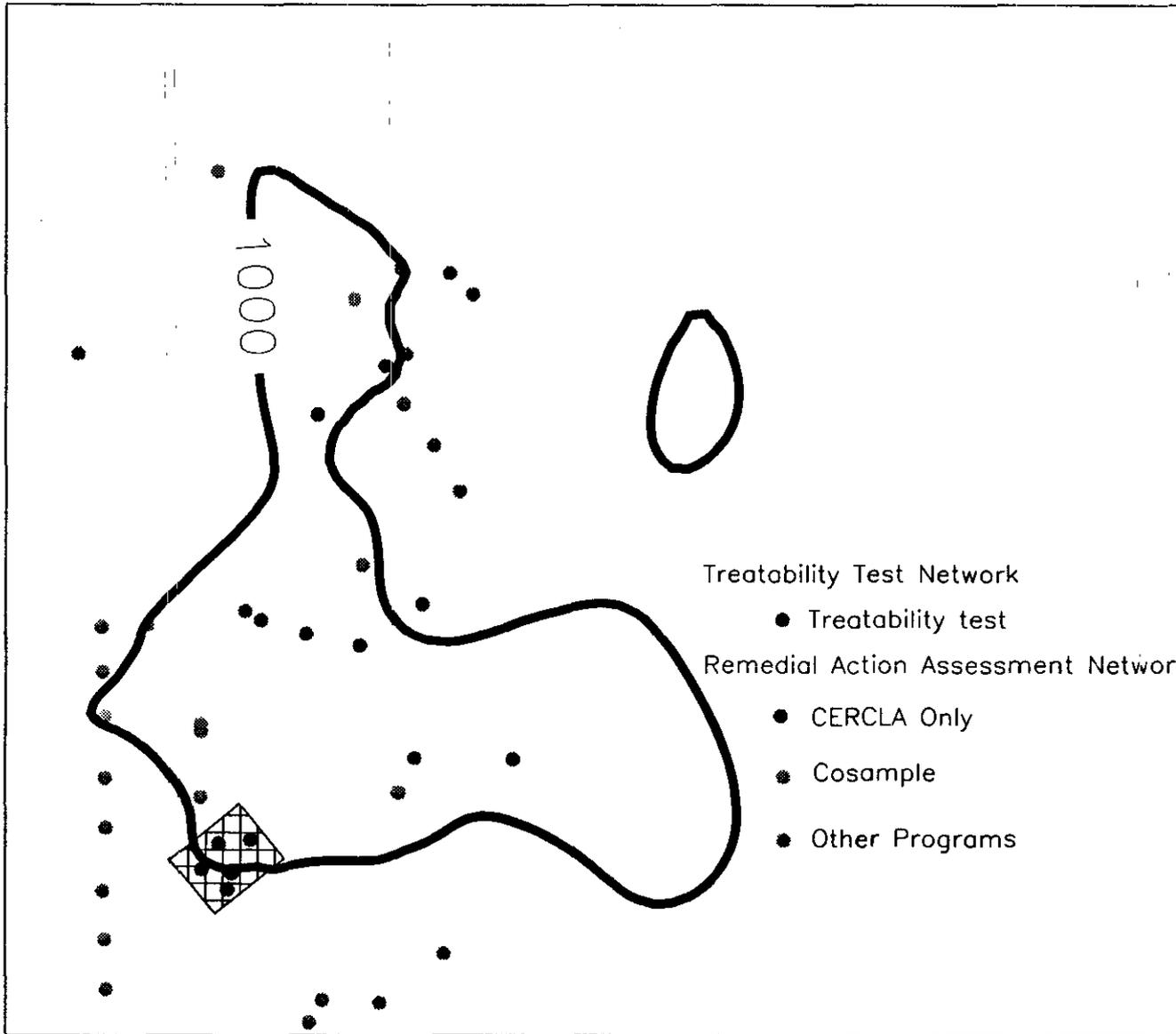
General Objectives for 200-ZP-1 Monitoring Network Categories.

CATEGORY	GENERAL OBJECTIVES
TREATABILITY TEST MONITORING WELLS	<ol style="list-style-type: none">1. Determine the effects of groundwater extraction and injection on volatile organic constituents (VOCs) and geochemical parameters/constituents in the area of influence of the test.2. Monitor hydraulic impacts in the area of influence of the test.3. Refine contaminant and co-contaminant concentration information.
REMEDIAL ACTION ASSESSMENT WELLS	<ol style="list-style-type: none">1. Provide baseline information on VOC, co-contaminant, and geochemical parameters in high concentration areas of the CCl4 plume.2. Monitor the impacts of remediation on contaminant concentrations and geochemical parameters in high concentration areas of the CCl4 plume.3. Monitor hydraulic impacts of remediation.
PLUME PERIPHERY MONITORING WELLS	<ol style="list-style-type: none">1. Monitor the movement of VOC contamination out of the 200 West area.
POINT OF COMPLIANCE MONITORING WELLS	<ol style="list-style-type: none">1. Monitor for the exceedance of negotiated VOC compliance limits at the "point" of compliance.

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Treatability Test Network:

2-W18-1 2-W18-2 2-W18-4 2-W18-5 2-W18-24

Remedial Action Assessment Network:

CERCLA Only:

2-W18-1 2-W18-5 2-W15-1 2-W15-7 2-W15-6

2-W15-10 2-W15-11 2-W15-4 2-W14-9 2-W10-4 2-W10-5

Cosample:

2-W18-23 2-W18-24 2-W15-15 2-W15-16 2-W15-17

2-W15-18 2-W15-22 2-W10-1 2-W10-15 2-W10-16

2-W10-18 2-W10-19

Other Sampling:

2-W18-20 2-W18-26 2-W18-27 2-W18-28 2-W18-29

2-W18-30 2-W15-8 2-W15-20 2-W15-23 2-W15-24

2-W14-12 2-W11-24 2-W11-23 2-W11-24 2-W10-13

2-W10-17

Plume Periphery Network:

2-W7-5 2-W6-5 2-W12-1 2-W11-10 6-37-82A 6-38-70 6-39-79
6-48-71

Point-of-Compliance Network:

6-34-88 6-47-60 6-51-63

Treatability Test Monitoring Wells

Objectives

Assess the effects of groundwater extraction and injection on volatile organic compounds (VOCs), geochemical parameters, and hydraulic impacts in the area of influence of the test.

Refine contaminant and co-contaminant concentration information.

Prioritized Data Uses

To support treatability test feed water requirements and to evaluate aquifer and contaminant parameter properties to provide information to be used in numeric model calibration and remedial action design.

Parameters to be Obtained

Chemical/radionuclide:

- Concentration of primary contaminants (CCl₄, Chloroform, and TCE) and interfering non-target groundwater constituents before, during, and after treatment testing.
- General groundwater quality parameters to include pH, temperature, conductivity, and ORP.
- Tracer concentrations necessary in hydraulic parameter testing.

Hydraulic:

- Water levels in wells expected to be affected by the zone of influence of either the extraction or injection well.
- Porosity.
- Hydraulic conductivity (if possible).

Appropriate Analytical Level or Implementation Guidelines

Primary contaminants will be determined by field screening (Level II) with offsite laboratory verification (Level IV) at a minimum of 1 in every 20 well trips. All other parameters will be measured using field methodologies (Level II).

Schedule/Critical Samples

Primary contaminants should be measured throughout the testing, especially during varying pumping regimes, to evaluate contaminant response under varying extraction regimes.

Constraints

- Representative groundwater samples are required.
- Tracer testing should be conducted during steady-state pumping.

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Remedial Action Assessment Monitoring Wells

Objectives

To baseline the primary contaminants, co-contaminants, and general groundwater parameters-of-interest in high contaminant mass areas.

Monitor the impacts of remediation activities on primary contaminants, co-contaminants, and general groundwater parameters-of-interest in high contaminant mass areas.

Monitor hydraulic impacts of remediation.

Prioritized Data Uses

Establish baseline concentration and hydraulic parameter information and to detect changes in baseline conditions which reflect the effects of remedial action activities.

Parameters to be Obtained

Chemical/radionuclide:

- Concentration of primary contaminants (CCl4, Chloroform, and TCE) and potential interfering non-target groundwater constituents.
- General groundwater quality parameters to include gross alpha, gross beta, tritium, pH, temperature, conductivity, and ORP.

Hydraulic:

- Baseline water levels in wells in the area of high contaminant mass concentration and water levels in wells expected to be affected by zones of influence of remedial actions.
- Velocity flowmeter measurements in select wells in the vicinity of extraction wells.

Appropriate Analytical Level or Implementation Guidelines

Primary contaminants will be determined by offsite laboratory analysis (Level IV). All other parameters will be measured in the field (Level II) or onsite laboratory (Level III) as appropriate.

Schedule/Critical Samples

Chemical/radionuclide parameters and water level measurements will be taken at least semiannually during baseline monitoring. When concentration changes are noted, or if a well falls within a predicted zone of influence of an extraction well, the frequency should be increased.

Velocity flowmeter measurements should be considered in select wells that fall within a predicted zone of influence of an extraction well.

Sampling for vertical contaminant distribution and hydraulic properties is to be evaluated and conducted.

Constraints

- Representative groundwater samples are required.

9413285-0780

Plume Periphery Monitoring Wells

Objectives

Monitor the movement of VOC contamination from areas of highest concentration out of the 200 West area.

Prioritized Data Uses

Detection and trending of the movement of VOCs from areas of highest concentration to provide early warning of movement trends.

Parameters to be Obtained

Chemical:

- Concentration of primary contaminants (CCl4, Chloroform, and TCE).

Hydraulic:

- Water levels.

Appropriate Analytical Level or Implementation Guidelines

Primary contaminants will be determined by offsite laboratory analysis (Level IV). Water levels will be measured in the field (Level II).

Schedule/Critical Samples

Chemical parameters and water level measurements will be taken at least semiannually. When significant concentration changes are noted the frequency should be increased.

Constraints

- Representative groundwater samples are required.

9113285-0781

Point of Compliance Monitoring Wells

Objectives

Monitor for exceedance of VOC standards.

Prioritized Data Uses

Evaluation of VOC concentration data to detect regulatory standard exceedances that would initiate compliance actions.

Parameters to be Obtained

Chemical:

- Concentration of primary contaminants (CCl₄, Chloroform, and TCE).

Appropriate Analytical Level or Implementation Guidelines

Primary contaminants will be determined by offsite laboratory analysis (Level IV).

Schedule/Critical Samples

Chemical parameters and water level measurements will be taken quarterly. When significant concentration changes are noted the frequency may be increased.

Constraints

- Representative groundwater samples are required.

9443295-0782

200-BP-5 OPERABLE UNIT STATUS
April 28, 1994
D. B. Erb

*** Geosciences Activities Status**

- **Well Fitness-for-Use Activities**
- **Drilling DOW and Well Siting.**

*** Groundwater Monitoring Status**

*** Treatability Test Equipment Status**

*** Treatability Test Plan Completion**

- **Comments Resolution**

*** 216-BY Cribs Plume Slip to Start of Treatment Testing**

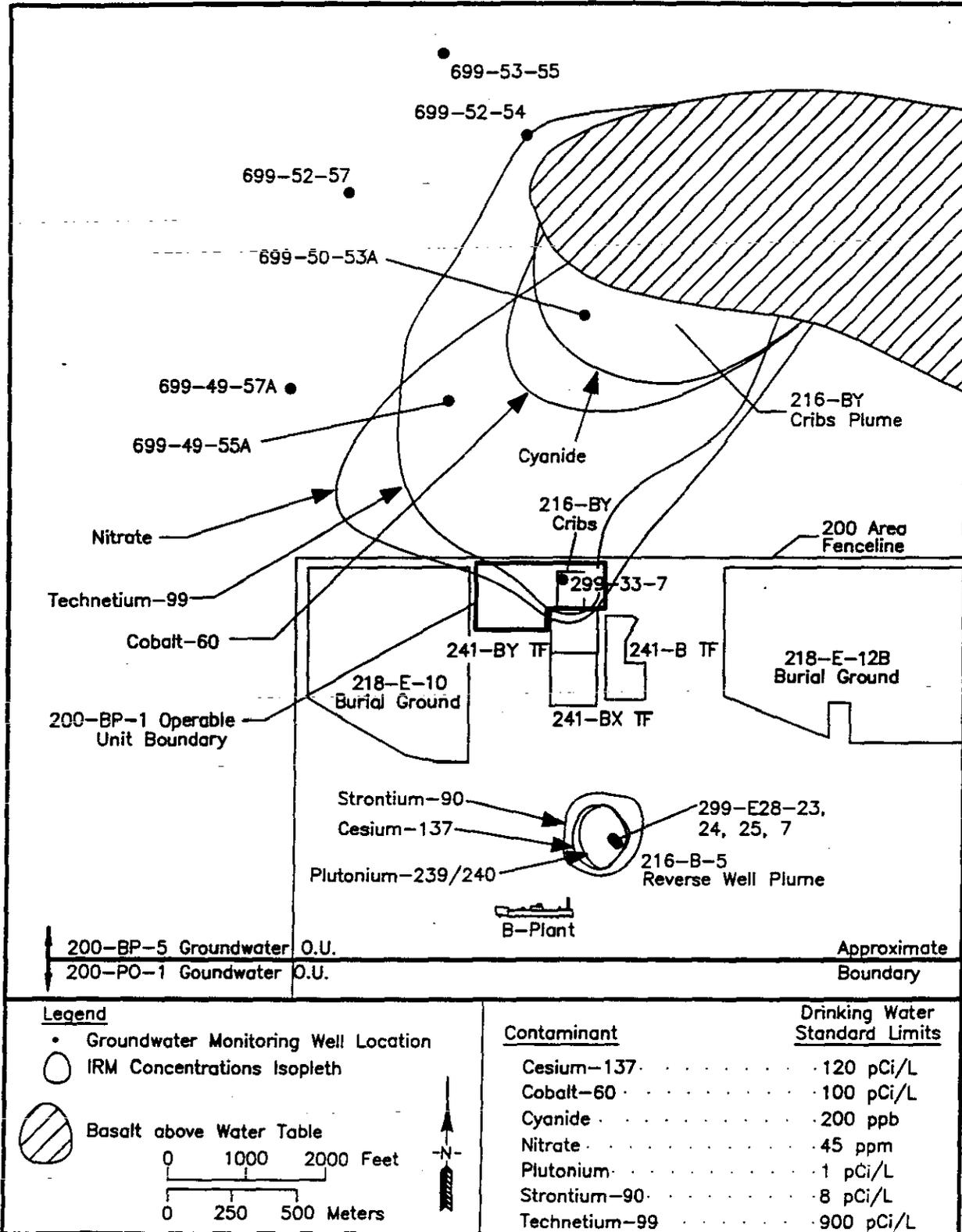
- **Equipment Fabrication Constraint**
- **Drilling Results/Site Preparation Constraint**

9413285-0793

GEOHYDROLOGY ACTIVITIES
TO SUPPORT THE
200-BP-5 PILOT SCALE TREATABILITY TEST

G. L. KASZA
UNIT MANAGERS MEETING
APRIL 28, 1994

9413285-0785



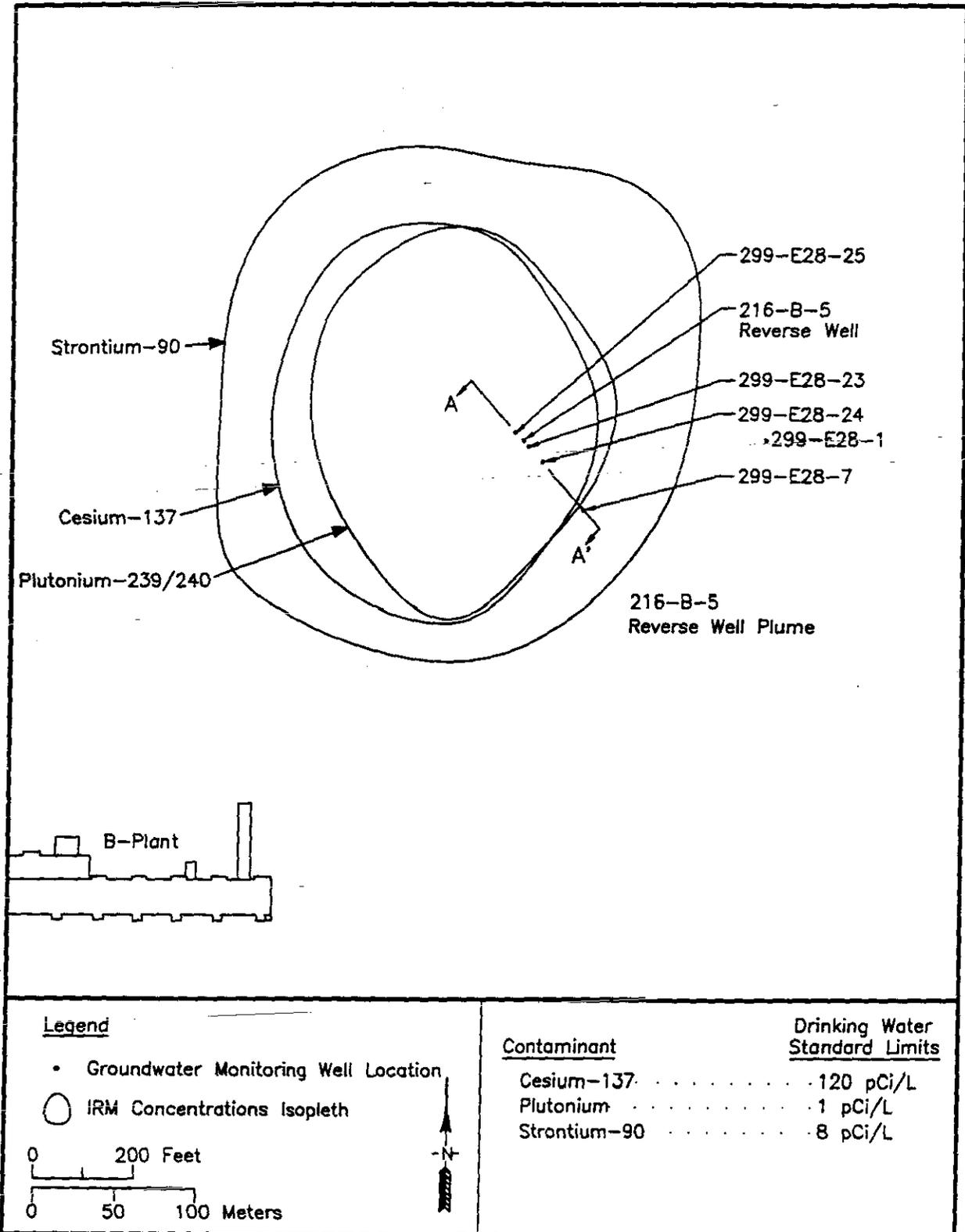
Source: Ford, (1993)

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B-5 REVERSE WELL PLUME

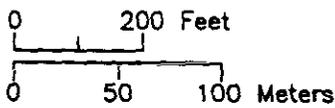
- **GROUNDWATER SAMPLING COMPLETED**
- **SAMPLING PUMPS TO BE REMOVED, WELLS INSPECTED, AND SERVICED IF NEEDED**
- **PLANNING FOR WELL PRODUCTIVITY TESTS**
 - **6 HOUR PUMPING FROM POTENTIAL EXTRACTION AND INJECTION WELLS TO ASSURE THAT WELLS CAN PRODUCE/ACCEPT REQUIRED VOLUME FOR PUMP AND TREAT OPERATION**
 - **ASSIST SELECTION OF EXTRACTION WELL**
- **CAPTURE ZONE ANALYSIS INITIATED**

9413285.0787



Legend

- Groundwater Monitoring Well Location
- IRM Concentrations Isopleth



Contaminant

Drinking Water Standard Limits

Cesium-137	120 pCi/L
Plutonium	1 pCi/L
Strontium-90	8 pCi/L

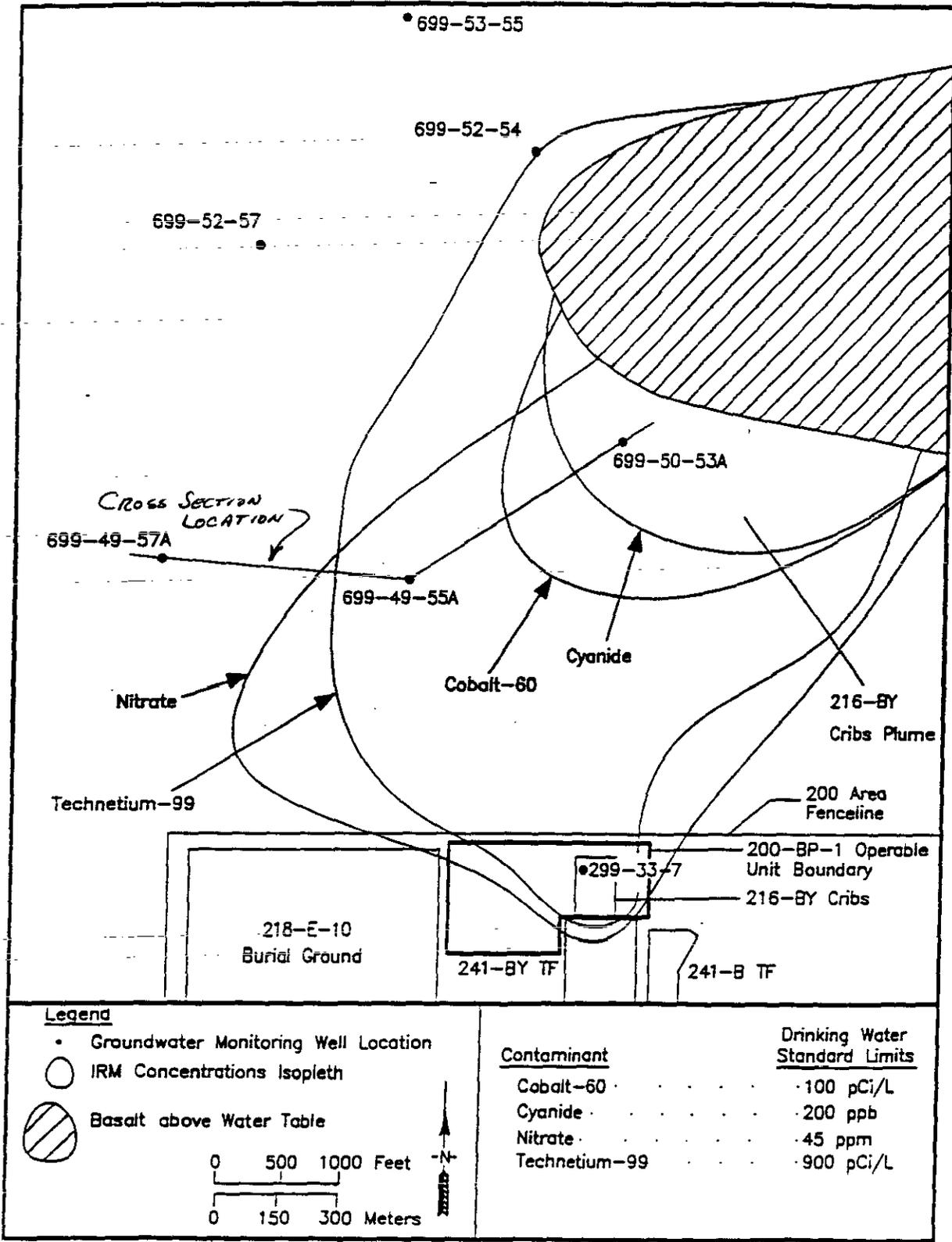
Source: Ford, (1993)

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BY CRIBS PLUME

- **INTERNAL REVIEW OF DRILLING DOW COMPLETED. REQUEST SIMULTANEOUS REVIEW FROM DOE AND REGULATORS**
- **COMPLETED GROUNDWATER SAMPLING WITH SIMULTANEOUS DRAWDOWN MEASUREMENT (DETAILS FOLLOW)**
- **SAMPLING PUMPS REMOVED AND WELLS CLEANED AND INSPECTED**
- **PLUG REMOVED FROM WELL 699-50-53A. CAMERA SURVEY TO BE RUN**
- **PLANNING FOR WELL PRODUCTIVITY TESTS**
- **CAPTURE ZONE ANALYSIS SCOPING STARTED**

9413295-0789



Source: Ford, (1993)

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**WATER LEVEL MONITORING DURING SAMPLING
BY Crib Wells**

Wells sampled: 699-49-55A
 on 4/11/94 ~~699-49-57A~~ ^{kl} 699-49-57A
 699-50-53A

Monitored water levels in sampled well and associated "B" wells.

Water level in "B" wells did not change during sampling.

Summary of Monitoring

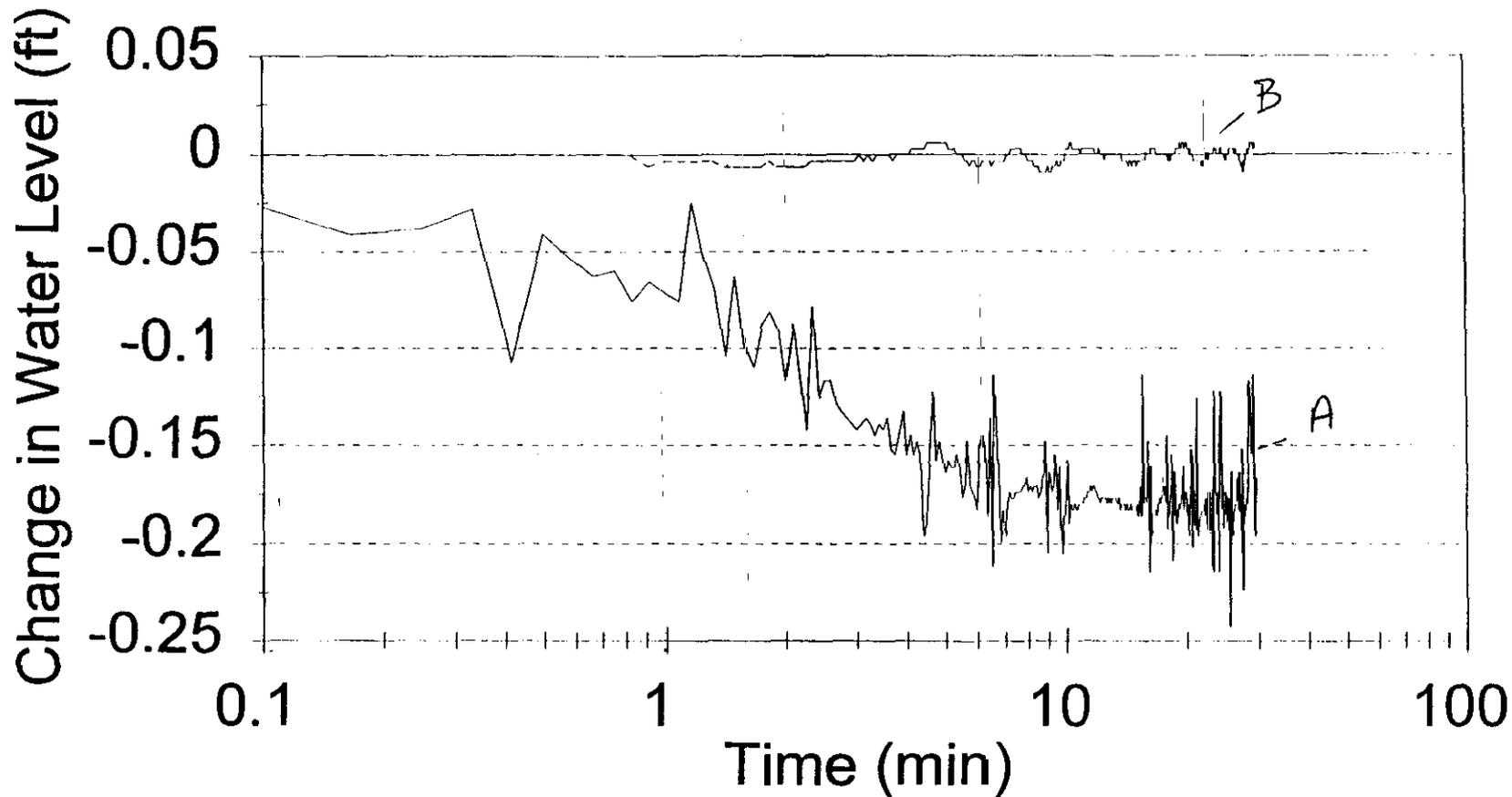
Well Number	Discharge Rate (gpm)	Drawdown (ft)	Pump Type	Comments
699-50-53A	2.5	.018	hydrostar	rate did not stress aquifer, well will be reopened another 20 ft in basalt
699-49-55A	2.3	9	Hydrostar	drawdown did not stabilize
699-49-57A	6.1	.02	submersible	rate did not stress aquifer

Note: Because of the 9 ft of drawdown expressed in well 699-49-55A with a low pump rate it is questionable that this well could be used as an extraction well. However cleaning of this well may change it's response.

0670 5870 146

Wells 699-50-53A&B

Monitoring during Sampling



Inc # = 1224

Q = 2.5 gpm

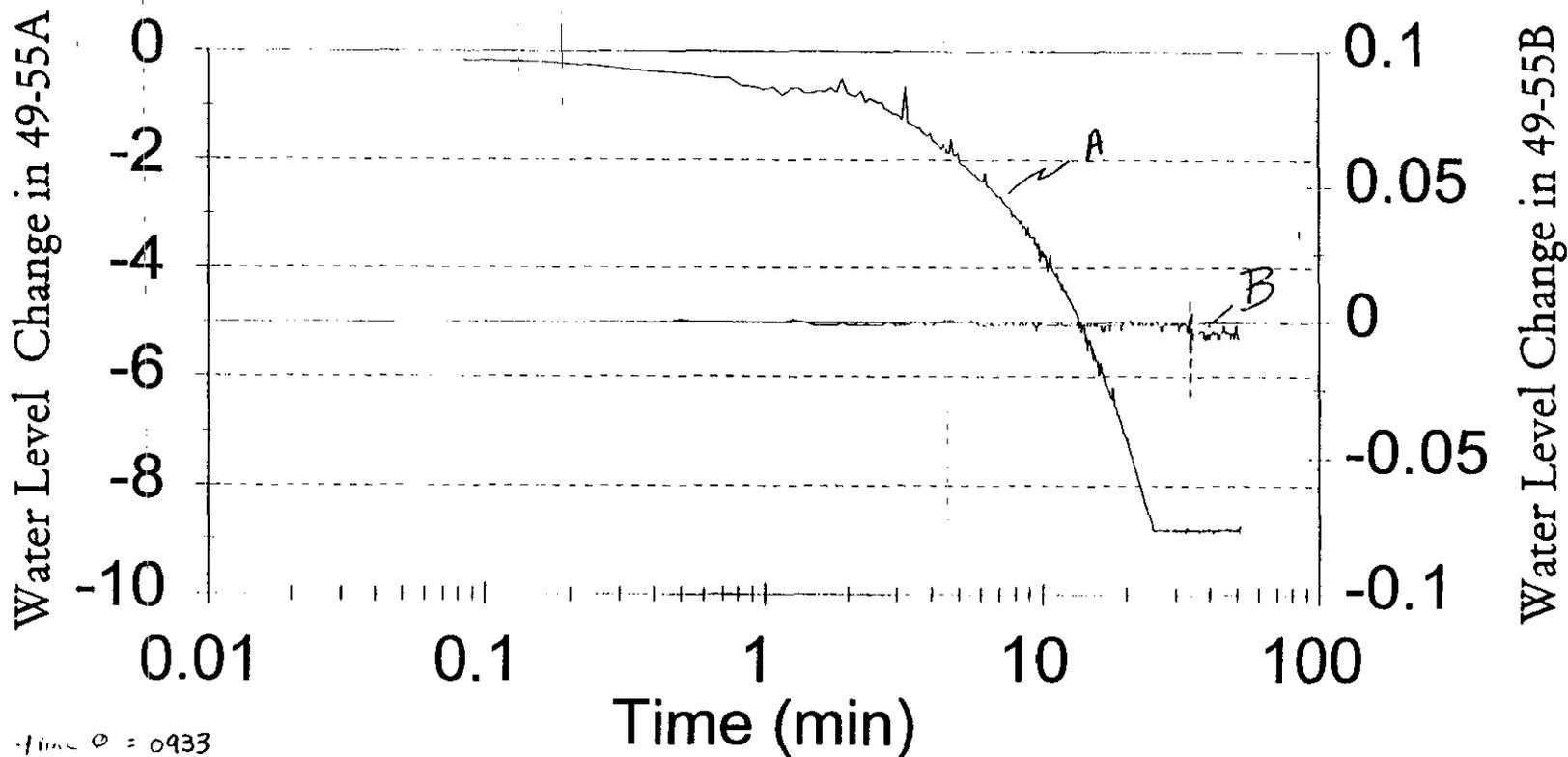
Time stopped 1251

Length of pumping 27 minutes

--- 50-53A ---
50-53B

Wells 699-49-55A&B

Monitoring during Sampling



Time 0 = 0933

Q = 2.3 gpm

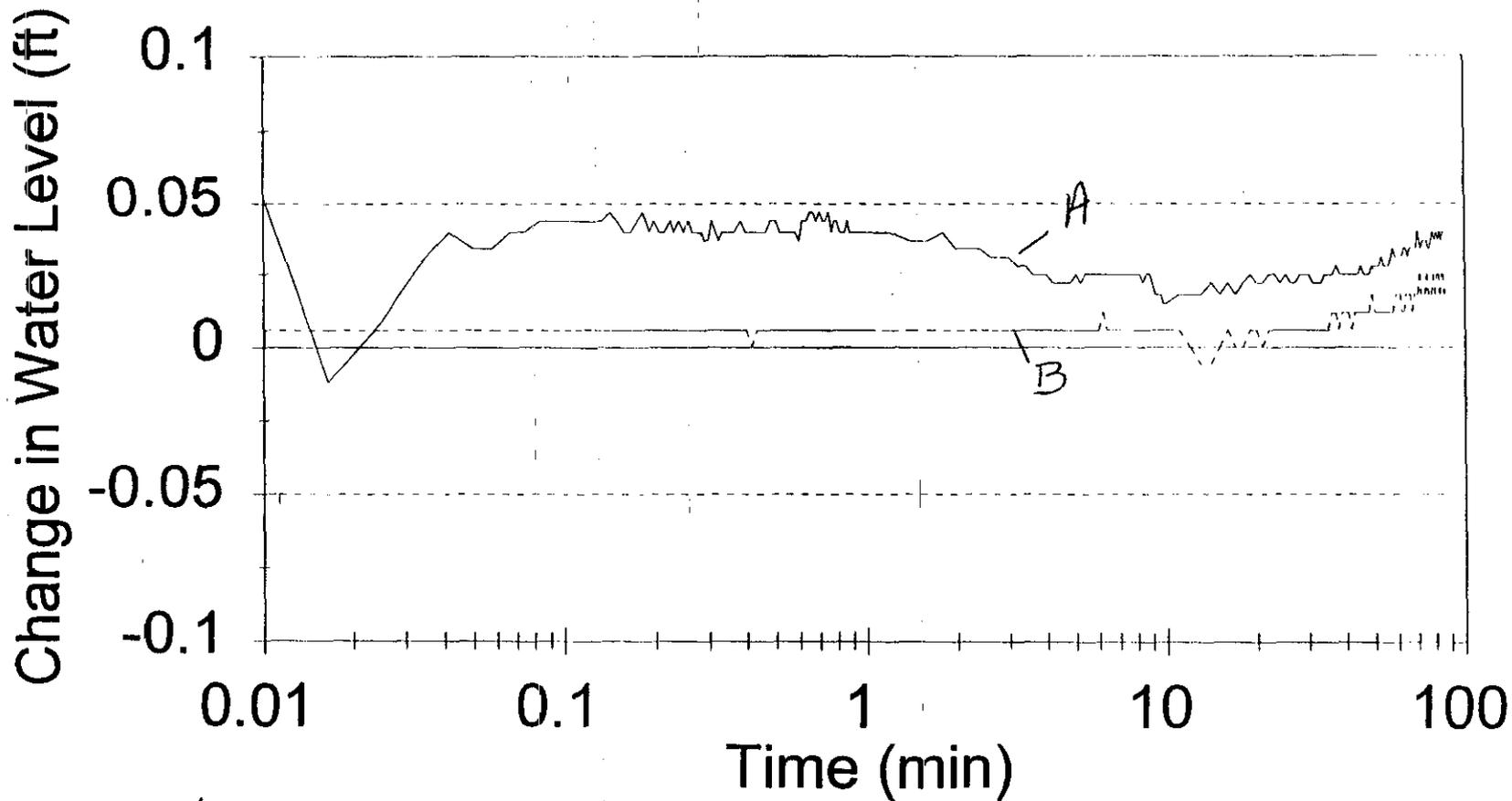
pumping started 1025

pumping rate Δ @ 0955

49-55A 49-55B

Wells 699-49-57A&B

Monitoring during Sampling



time 0 = 1126
 Q = 6.1 gpm
 pump off @ = 1158

49-57A 49-57B

SELECTION OF WELL SITES FOR BY CRIBS PLUMES

SELECTION CRITERIA:

**EXTRACTION WELL LOCATED IN HIGHEST CONTAMINANT
CONCENTRATION**

EXTRACTION RATE 15 GPM CONTINUOUS

**TREATED WATER INJECTED WHERE IT WILL NOT CAUSE FUTURE
PROBLEMS**

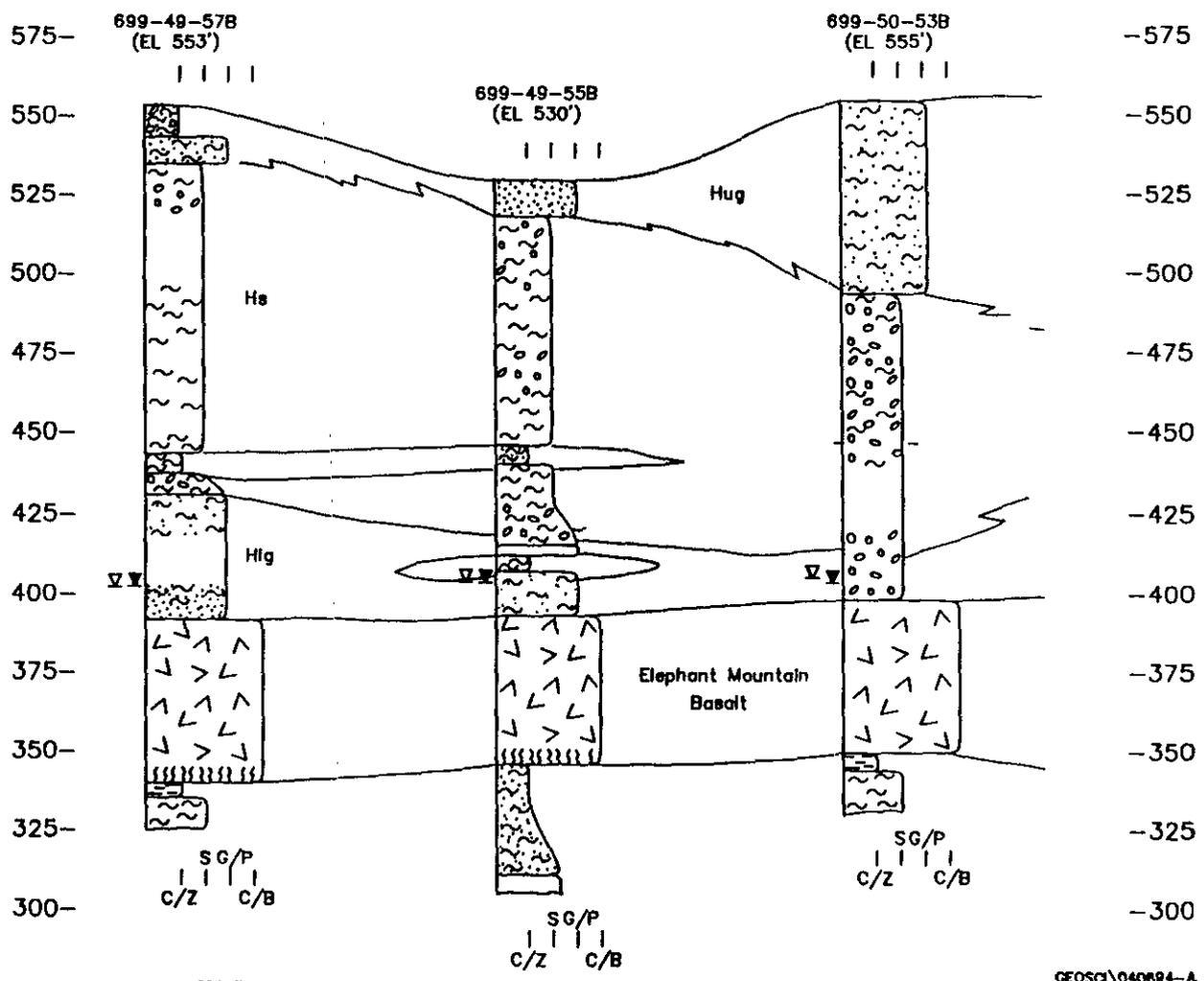
**500 FEET OPTIMUM SPACING BETWEEN WELLS FOR PLANT
EFFICIENCY**

POTENTIAL WELL SITES ARE LOCATED BETWEEN:

**WELLS 699-46-55A AND 699-50-53A
OR
WELLS 299-33-7 AND 699-50-53A**

AREA BETWEEN 699-49-55A AND 699-50-53A SELECTED

- 1. EXTRACTION/INJECTION WELLS ORIENTED PERPENDICULAR TO GROUNDWATER FLOW**
- 2. TOPOGRAPHY CONSIDERATIONS**
- 3. WELLS WILL BE ~550 FEET APART**



GEOSCI\040894-A

Grain Size Scale, Indicates
Dominant Grain Size in an Interval

	<p>C/Z Clay and silt S Sand P Pebble Gravel C/B Cobble and boulder gravel</p>
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Additional Lithologic Symbols,
Includes Subordinate Lithologies

- Clay rich
- Silt rich
- Sandy
- Pebbly to cobbly
- Bouldery
- Basalt

Other Symbols

- Formational contact, ? where inferred
- Unit or sequence contact, ? where inferred
- Confined Water Table
- Unconfined Water Table

Stratigraphic Abbreviations

- Hun - Undifferentiated Hanford formation
- Hug - Upper gravel sequence, Hanford formation
- Hs - Sandy Sequence, Hanford formation
- Hig - Lower gravel sequence, Hanford formation
- EM - Elephant Mountain Member
- RR1 - Rattlesnake Ridge Interbed
- P - Pomona Member

9413205.0797

**FIRST MULTIPURPOSE WELL PLACED
EQUIDISTANT BETWEEN
699-50-53A AND 699-49-55A**

BECAUSE:

699-50-53A

- **HIGHEST CONTAMINANT
CONCENTRATIONS**
- **HIGH AQUIFER
PRODUCTIVITY**
- **THIN AQUIFER
(< 2 FEET)**

699-49-55A

- **IRM CONCENTRATIONS OF
Tc99 AND NITRATE AQUIFER**
- **LOW IN PRODUCTIVITY**
- **9 FEET THICK AQUIFER**

**SECOND MULTIPURPOSE WELL TO BE
LOCATED DEPENDING ON**

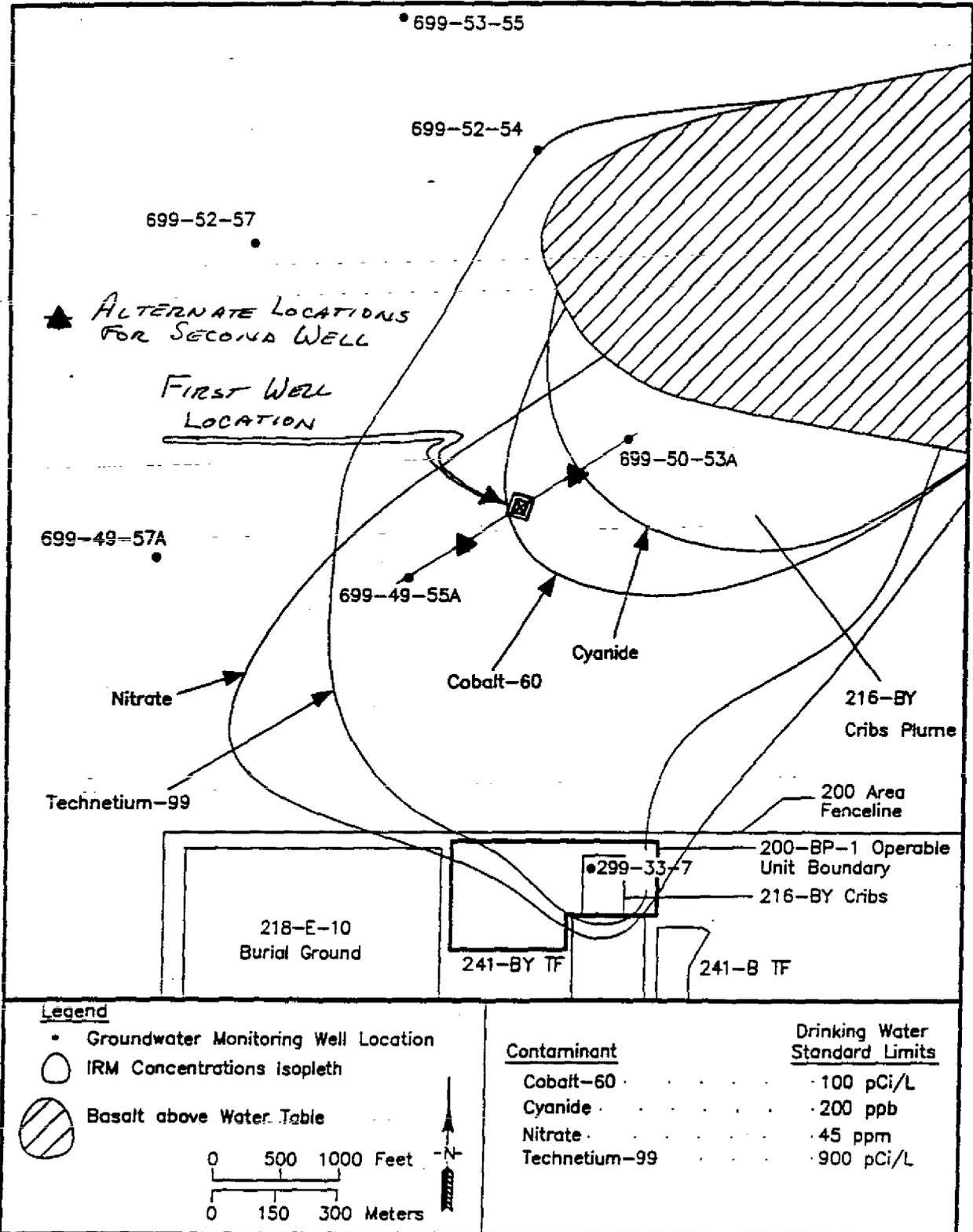
CONTAMINANT CONCENTRATIONS

AQUIFER PRODUCTIVITY

AQUIFER THICKNESS

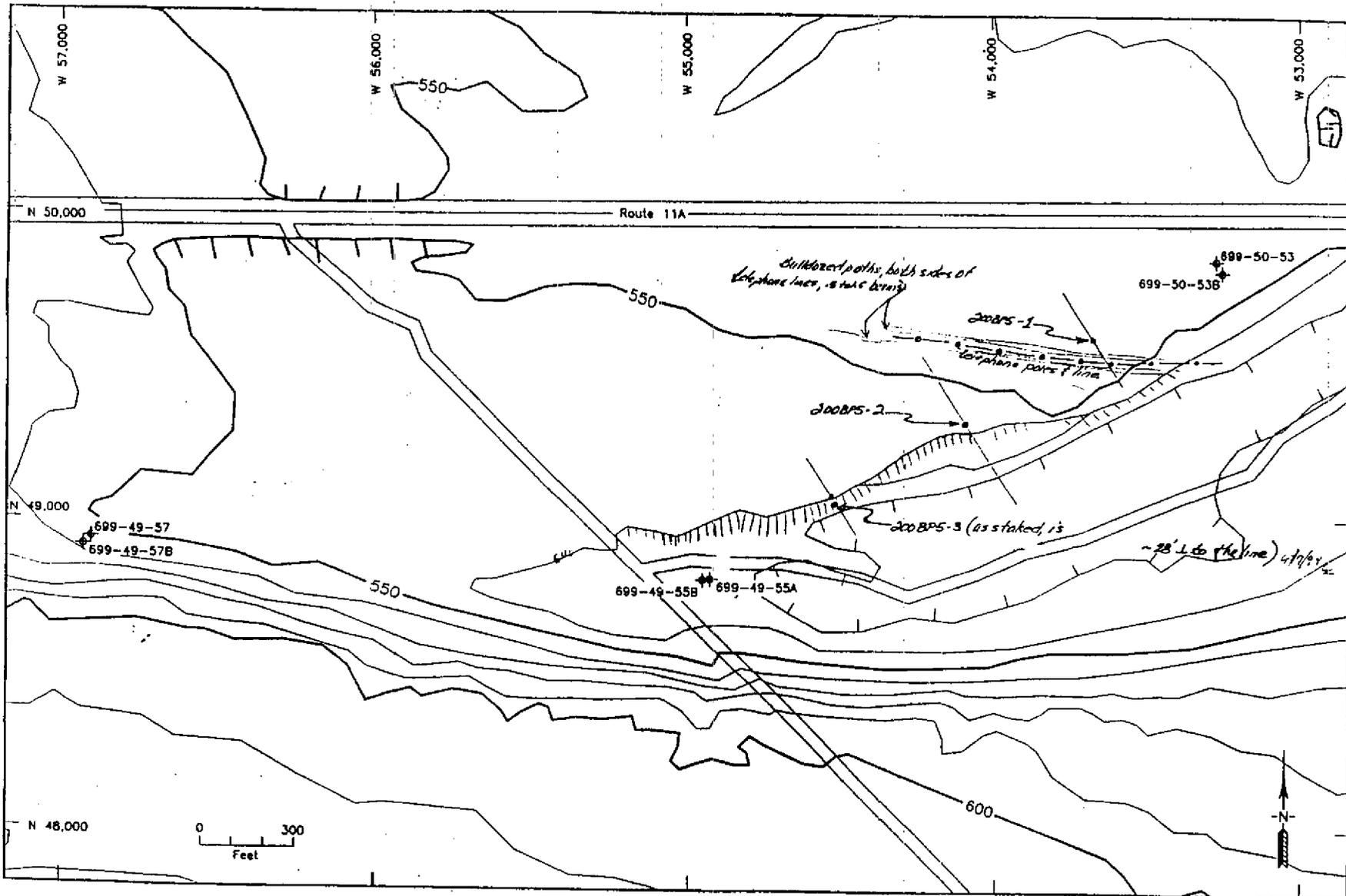
FOUND AT FIRST MULTIPURPOSE WELL

9413285.0800



Source: Ford, (1993)

GEOSCI\011994-B



WHC:UA:GLK2E-3

699-52-57
699-51-56

699-52-54

699-52-52

699-52-48

699-50-53
699-50-53B

699-50-48A
699-50-48B

PUMP & TREAT
WELLS IN THIS
AREA

699-49-57
699-49-57B
699-49-55B
699-49-55A

699-48-50

699-48-49
699-48-48A
699-48-48B

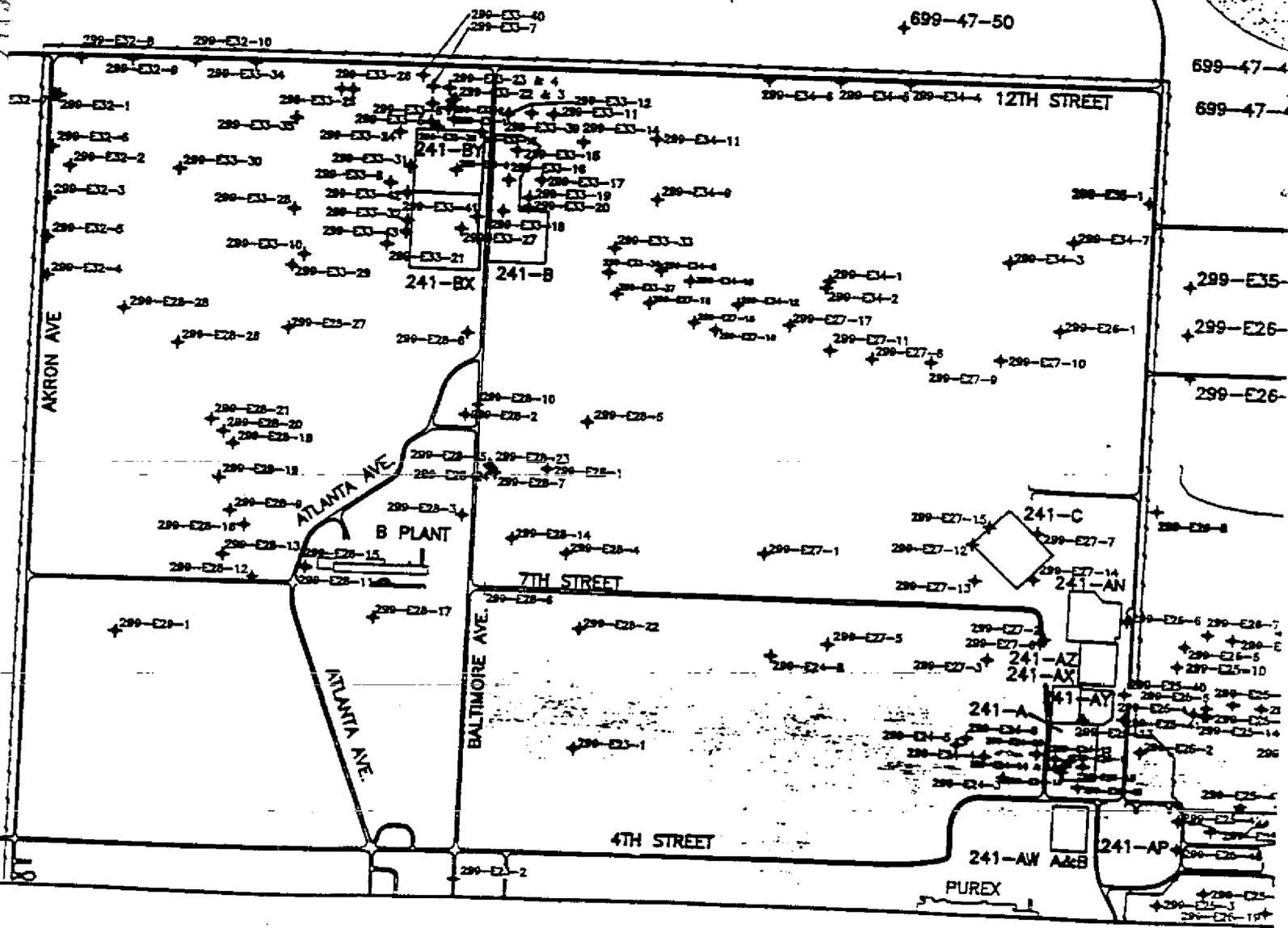
699-47-51

699-47-50

699-47-4

699-47-1

200905.0602



MONTHLY CCL ₄ EXTRACTION SUMMARY					
Operational Period	VES System	Avg. Flow (scfm)	Avg. Conc. (ppmv)	Time (hrs)	CCl ₄ Extracted lbs/(kg)
4/15 - 4/22	500 cfm	--	--	--	--
	1000 cfm*	204	147	26.6	16 (7)
	1500 cfm**	426	8,910	12.5	1,105 (502)
1994 Total					10,707 (4,866)
1993 Total					7,932 (3,605)
1992 Total					2,111 (958)
GRAND TOTAL					20,750 (9,429)

* - 1000 cfm system performing quarterly characterization tests on all available extraction wells in the 216-Z-1A tile field.

** - 1500 cfm system out of service two days for maintenance and upgrades to the process control system.

9417295.0005

Distribution

**Unit Manager's Meeting: 200 Aggregate Area/200 Area Operable Units
April 28, 1994**

Paul Pak DOE-RL, ERD (A5-19)
Diane Clark DOE-RL, TSD/SSB (A5-55)
Mary Harmon DOE-HQ (EM-442)

Paul Beaver 200 Aggregate Area Manager, EPA (B5-01)
Brian Drost USGS, Support to EPA
Audree DeAngeles PRC, Support to EPA

Dib Goswami WDOE (Kennewick)
Larry Goldstein WDOE (Lacey)

Lynn Albin Washington Dept. of Health

Curt Wittreich WHC (H6-03)
Mel Adams (Please route to:) WHC (H6-01)
 Rich Carlson WHC (H6-03)
 M.J. Galgoul WHC (H6-03)
L.D. Arnold WHC (B2-35)
Diana Sickle WHC (H6-27)
Chris Widrig (Please route to:) PNL (K1-21)
 Wayne Martin PNL (K1-19)
 Mark Hanson PNL (K1-51)
 Roy Gephart PNL (K1-22)
 Steve Slate PNL (K1-19)
 Joan Keller PNL (K1-21)
 Ben Johnson PNL (K1-78)

Original Sent To: ADMINISTRATIVE RECORD: 200 AAMS Care of EPIC, WHC
(H6-08)

Please inform Kay Kimmel (946-3692) of Mactec/Dames & Moore (B1-42) of deletions or additions to the distribution list.

9463285-0804