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Meeting Minutes Transmittal and Approval
RCRA Groundwater Monitoring Program
Ecology's Office, Conference Room
Kennewick, Washington
December 17, 1991

Approval: M. J. Furman Date: 1/31/92
M. J. Furman, U.S. Department of Energy
Field Office, Richland

Approval: K. Kowalik Date: 1/30/92
K. Kowalik, State of Washington
Department of Ecology

Attendees

Distribution

U.S. Department of Energy-Field
Office, Richland

M. J. Furman A5-60

State of Washington Department of Ecology

K. Kowalik
T. M. Michelena

Westinghouse Hanford Company

K. R. Fecht H4-56
R. L. Jackson H4-56
J. F. Keller L4-78
A. J. Knepp H4-56
L. L. Powers B2-35
J. S. Schmid H4-56
R. R. Thompson L4-88
B. A. Williams H4-56

Attendees
M. R. Adams H4-55
L. C. Brown H4-51
D. G. Horton H4-56
M. Marratt H4-56
S. M. Price H4-57
W. H. Price N3-05
F. A. Ruck III H4-57
D. S. Takasumi L4-78
R. D. Wojtasek L4-92
EDMC H4-22

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

- Attachment 1 - Summary Meeting Minutes
- Attachment 2 - Agenda
- Attachment 3 - RCRA Drilling Status
- Attachment 4 - Strategy for Completing Tri-Party Agreement Milestone M-24-00

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SUMMARY MEETING MINUTES

1. **Agenda** - Refer to Attachment 2 for the agenda of the meeting. The primary purpose of this meeting was to discuss the number of wells needed to fulfill the interim milestone for 1992 and to discuss the proposed strategy and criteria for closeout of Milestone M-24-00.
2. **Calendar Year (CY) 1991 Drilling Status** - Mr. Rex Thompson provided the drilling status. The following progress has been made towards RCRA monitoring well installation (see Attachment 3).

CY 1991 RCRA drilling milestone status (as of December 17, 1991):

- o Forty-five of the fifty wells required to fulfill the TPA Milestone M-24-00 have been completed, as of the date of this meeting.
- o Two of the fifty wells are in the development stage and should be completed shortly.
- o Three wells are in various stages of back-pulling the temporary casing. One of the Low-Level Burial Ground wells (W6-5) is experiencing difficulty in the back-pulling process, which may not be completed by the end of CY 1991. The DOE has commenced contingency drilling of a CY 1992 well (E34-12 in Low Level Burial Grounds) as a substitution well per Ecology's approval to ensure that 50 wells are drilled in CY 1991 per the TPA milestone.

Ecology noted that most troubles that occur during well installation are during the back-pulling activity. They requested that this matter be investigated and a solution be implemented to minimize the occurrences of these problems. Mr. Thompson indicated that a Lesson Learned report will be prepared by Westinghouse Hanford Company (WHC) to address Ms. Kowalik's concerns.

DOE-RL: WJT 1/31/92
Ecology: K.L. 1/31/92

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3. **Calendar Year 1992 Well Drilling Plans** - A change request consolidating the change requests M-24-91-4 and M-24-91-5 into one request (M-24-91-6) establishes the calendar year program for 30 wells without effect on the later requirements of the Major Milestone. This discussion was deferred until the afternoon.

Ecology requested a letter addressed to Mr. Timothy Nord stating the change from 50 wells in 1992 to 30 wells.

4. **Strategy for Completing TPA Milestone M-24-00** - Mr. Karl Fecht gave the strategy for completing TPA milestone M-24-00. This presentation is included as attachment 4, and focuses on the point that the RCRA shallow groundwater monitoring detection networks are nearly complete. Therefore, technical justification for that rate of drilling should be revised. The presentation was prefaced with the idea that a "rate driven" program (i.e., 50 wells installed per year) is not the most efficient use of resources.

The current emphasis within the TPA is to write permit applications and install groundwater monitoring wells. Now is the appropriate time to assess what information has been gathered before continuing a rate driven program.

5. **Ecology Response to the Strategy for Completing TPA Milestone M-24-00** - Mr. Toby Michelena stated that Ecology is not willing to close milestone M-24-00 at the present time. Ecology believes that this milestone assures funding for future site investigations. Areas regarded as being deficient are the deep zones of the aquifer as well as vadose zone monitoring. Mr. Michelena was in favor of a modification to the wording of the milestone. As a first step, the DOE proposes an action to modify the wording in Milestone M-24-00 to allow for more flexibility in the number of wells to be drilled per year, e.g. change wording to indicate up to 50 wells per year rather than 50 wells per year.

DOE-RL: 1/31/92
Ecology: R.K. 1/31/92

2 2 1 2 4 6 3 0 7 7 2

Ecology provided a brief description of their perspective on an integrated monitoring program for the Hanford Site. The program would involve shallow wells, deep wells, vadose zone wells and a sitewide network for regional assessment. The regulatory basis for this approach is not clearly understood nor is the mechanism by which to implement the program.

6. **Sampling and Analysis** - A brief discussion of the sampling and analysis program was held. Ecology indicated that they will be requesting a letter that provides the current status of sample collection and results returned.

A question of when Ecology will be acquiring oversight samples and surveillance of sampling activities was posed. Ecology indicated that this is a high priority and the program will be scrutinized carefully by the regulators throughout this year.

7. **Past Action Items**

- o Prepare and submit formal approval of the October 3, 1991 change request by November, 13, 1991 (Assigned to K. Kowalik - **COMPLETED**).
- o Complete and formally submit the final change request for 27 wells (Assigned to R. R. Thompson/R.L. Jackson - **COMPLETED**).
- o Working meeting on establishing criteria for closing milestone M-24-00 to be held on November 14, 1991 (Ecology, Kennewick Office - **COMPLETED**).

8. **Action Items This Meeting**

- o Submit a final change request indicating 30 wells for calendar year 1992; 27 locations identified, 3 locations to be determined. (Assigned to M. J. Furman and R. R. Thompson).

DOE-RL: 1/31/92
Ecology: K.K. 1/30/92

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- o Submit a change request to modify language so that 1992 wells can be substituted for the 1991 milestone. (Assigned to M. J. Furman and R. R. Thompson).
 - o Propose a change request to TPA milestone M-24-00 that provides more flexibility in the number of well installations required. This not be an immediate change. (Assigned to R. R. Thompson and M. J. Furman).
8. **Next Meeting and Agenda** - The next monthly meeting will be held at Ecology's Kennewick office on January 28, 1992.

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DOE-RL: 1/31/92
Ecology: _____

12/9/91

AGENDA

RCRA GROUNDWATER MONITORING PROJECT

**U. S. Department of Energy-Richland Operations Office
Washington State Department of Ecology
Westinghouse Hanford Company**

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December 17, 1991, 08:00A

**Ecology's Office, Conference Room
Kennewick, Washington**

- o Purpose-M. J. Furman/Krystyna Kowalik**
 - o Finalize Calendar Year 1992 Well Drilling-M. Furman/K. Kowalik/T. M. Michelena**
 - o Strategy for Completing TPA Milestone M-24-00-K. R. Fecht/R. L. Jackson**
 - o Ecology's Position on Completing TPA Milestone M-24-00-T. M. Michelena**
 - o Status of TPA M-24-00 Drilling Milestones and Drilling Schedules-R. R. Thompson**
 - o Ecology's Position on Sampling and Analysis Protocols-K. Kowalik**
 - o Action Items-R. L. Jackson**
 - o Schedule/Agenda for Next Meeting-M. J. Furman/K. Kowalik**
- =====

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1992 RCRA DRILLING STATUS
Hanford Federal Facility Agreement
And Consent Order
(DECEMBER 16, 1991)

1992 DRILL STATUS

<u>Milestone Number</u>	<u>Facility</u>	<u>Proposed Wells</u>	<u>Status*</u>
M-24-19	LLBG	10	8ND, 1D, 1TD
M-24-23	S-10	1	1ND
M-24-27	100-D	1	1ND
M-24-29	SST	2	2ND
M-24-28	B-POND	2	2ND
M-24-21	100-N	2	2ND
M-24-22	100-N	1	1ND
M-24-25	A-29	2	2ND
M-24-24	B-63	2	2ND
M-24-20	GTF	2	2ND
M-24-26	NRDWL	2	2ND
	TOTAL	<u>27</u>	<u> </u>

* ND = Not Drilling
D = Drilling in Progress
TD = At Total Depth

CI = Casing/Screen Installed
DV = Developed
R = Ready for Sampling
AC = Milestone completed-Accepted
sample ready

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1991 RCRA DRILLING STATUS
 Hanford Federal Facility Agreement
 And Consent Order
 (DECEMBER 16, 1991)

1991 DRILL STATUS

<u>Milestone Number</u>	<u>Facility</u>	<u>Proposed Wells</u>	<u>Status*</u>
M-24-12	LLBG	18	1TD, 2CI, 15R
M-24-13	S-10	3	3AC
M-24-14	100-D	4	1TD, 3R
M-24-15	SST	10	2CI, 8R
M-24-16	B-POND	7	7R
M-24-17	100-N	4	4R
M-24-18	A-29	4	4R
	TOTAL	<u>50</u>	<u>44</u> Sample ready 3 AC

FORTY FOUR 1991 WELLS ARE SAMPLE READY

- * ND = Not Drilling
- D = Drilling in Progress
- TD = At Total Depth
- CI = Casing/Screen Installed
- DV = Developed
- R = Ready for Sampling
- AC = Milestone completed-Accepted and sample ready

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1991 RCRA DRILLING ACTIVITY

CY 1991 Wells

DECEMBER 16, 1991

KEY TO ACTIVITY

K = KAISER RIG

A = ACTIVE

R = REMEDIATION NECESSARY

C = COMPLETED OPERATION

* - ACCEPTED DURING FINAL WALKTHROUGH

— @TD Scrn/Csg
Installed Developed Pump Set/Tested SMPLD LAB/FG

S-10 POND AND DITCH

W26-7	C	C	C	C*	8/21/91
W26-10	C	C	C	C*	8/21/91
W26-12	C	C	C	C*	8/28/91

No. Wells = 3

LL BURIAL GROUNDS

LLWMA1

E32-6	C	C	C	C
E32-7	C	C	C	C
E32-8	C	C	C	C
E32-9	C	C	C	C

LLWMA2

E34-9	C	C	C	C
E34-10	C	C	C	C
E27-17	C	C	C	C

LLWMA3

W7-11	C	C	C	C
W7-12	C	C	C	C

LLWMA4

W18-27	C	C	C	C
W18-28	C	C	C	C
W18-29	C	C	C	C

LLWMA5

W6-3	C	A		
W6-4	C	C	C	C
W6-5	C	C		
W6-6	C	C	A	A
W6-7	C	C	C	C
W6-8	C	C	C	C

No. Wells = 18

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@TD Scrn/Csg
Installed Developed Pump Set/Tested SMPLD LAB/FG

A-29 DITCH

E25-42	C	C	C	C
E25-43	C	C	C	C
E26-12	C	C	C	C
E26-13	C	C	C	C

No. Wells = 4

100-N

199-N-71	C	C	C	C
199-N-72	C	C	C	C
199-N-73	C	C	C	C
199-N-74	C	C	C	C

No. Wells = 4

B-POND

699-43-41G	C	C	C	C
(BP91-2)	C	C	C	C
(BP91-3)	C	C	C	C
699-40-40A	C	C	C	C
699-40-40B	C	C	C	C
699-42-41	C	C	C	C
699-43-40	C	C	C	C

No. Wells = 7

SST

B-BX-BY

E33-42	C	C	C	C
E33-43	C	C	C	C

S-SX

W22-44	C	C	A	A
W22-45	WILL NOT DRILL IN 1992			
W22-46	C	C	C	C
W23-15	C	C	C	C

I

W11-27	C	C	C	C
W11-28	C	C	R	

0 2 1 2 3 6 3 7 7 9

Scrn/Csg
@TD Installed Developed Pump Set/Tested SMPLD LAB/FG

SST CONTINUED

TX-TY
 W14-12 C C C C

U
 W18-30 C C C C
 W18-31 C C C C

No. Wells = 11

100-D

D8-4 C C C C
 D8-5 C C C C
 D8-6 C A C C
 D5-13 C C C C

No. Wells = 4

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1992 RCRA DRILLING ACTIVITY

CY 1992 Wells

DECEMBER 16, 1991

KEY TO ACTIVITY

K = KAISER RIG

A = ACTIVE

R = REMEDIATION NECESSARY

C = COMPLETED OPERATION

* - ACCEPTED DURING FINAL WALKTHROUGH

— Scrn/Csg
@TD Installed Developed Pump Set/Tested SMPLD LAB/FG

LL BURIAL GROUNDS

LLWMA1

E32-10

LLWMA2

E34-11

E34-12

C

A

LLWMA3

W10-19

LLWMA4

W18-32

LLWMA5

W6-9

W6-10

W6-11

W6-12

W11-31

0 2 1 2 1 3 3 1 7 3 1

2 1 2 4 6 3 0 7 8 2

**STRATEGY FOR COMPLETING TRI-PARTY AGREEMENT
MILESTONE M-24-00**

**INSTALLATION OF RCRA GROUNDWATER
MONITORING WELLS**

K. R. Fecht/R. L. Jackson

December 17, 1991

TPA MILESTONE M-24-00

M-24-00

Install RCRA groundwater monitoring wells at the rate of 29 in CY 1989, 30 in CY 1990, and 50 per year thereafter until all land disposal units and single-shell tanks are determined to have RCRA compliant monitoring systems

U.S. DOE will install groundwater monitoring wells around RCRA land disposal units and the single-shell tanks at the rate described above until Ecology determines that all such groundwater monitoring systems meet the requirements of WAC 173-303-645

TPA MILESTONE M-24-00 (Cont.)

Installation of groundwater wells shall mean that wells have been drilled, adequately sealed, and screened over no more than 15 feet of the aquifer unless otherwise approved by Ecology, that all pumps and associated sampling equipment have been installed, and that such wells have been developed sufficiently to provide satisfactory samples for all parameters to be analyzed

Specific units to receive groundwater wells and the number of wells to be installed at each unit will be identified in Appendix D in two-year intervals (i.e., CY 1989 and CY 1990 now, CY 1990 and CY 1991 at the next annual update, etc.). Such schedules will be enforceable as interim milestones.

REQUIREMENTS

WAC-173-303-645(8)(a)

General ground water monitoring requirements.

The owner or operator must comply with the requirements of this subsection for any ground water monitoring program developed to satisfy subsections (9), (10), or (11) of this section.

(a) The ground water monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer that:

(i) Represent the quality of background water that has not been affected by leakage from a regulated unit; and

(ii) Represent the quality of ground water passing the point of compliance.

REQUIREMENTS (Cont.)

WAC-173-303-645(8)(c)

All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must allow collection of representative ground water samples. Wells must be constructed in such a manner as to prevent contamination of the samples, the sampled strata, and between aquifers and water bearing strata.

WAC-173-303-645(9)(b)

The owner or operator must install a ground water monitoring system at the compliance point, as specified under subsection (6) of this section. The ground water monitoring system must comply with subsection (8)(a)(ii), (b), and (c) of this section.

BASIS FOR COMPLIANCE

Requirements

Compliance Actions

Appropriate Locations -

Shallow detection monitoring system is compliant with ~90% monitoring efficiency using MEMO and professional judgement

Depths -

Shallow monitoring system is adequate for initial groundwater detection system

Quality of Background Water -

RCRA facility or waste management area must have at least one "immediately" upgradient well

BASIS FOR COMPLIANCE (Cont.)

Requirements

Compliance Actions

**Quality of groundwater
passing point of
compliance**

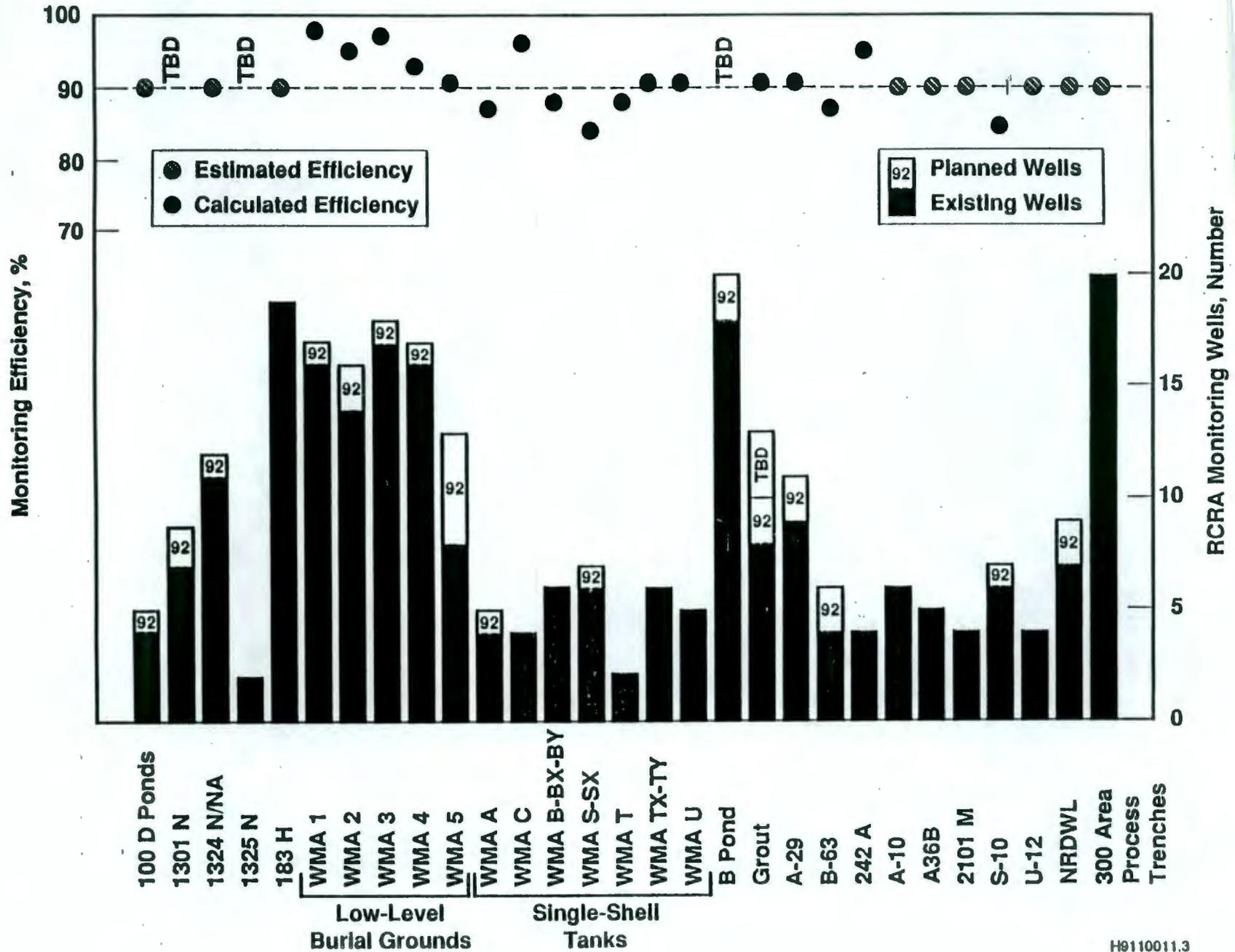
**Location of downgradient
detection wells are installed at point
of compliance and documented in
groundwater monitoring plans**

**For water quality see monitoring
well construction**

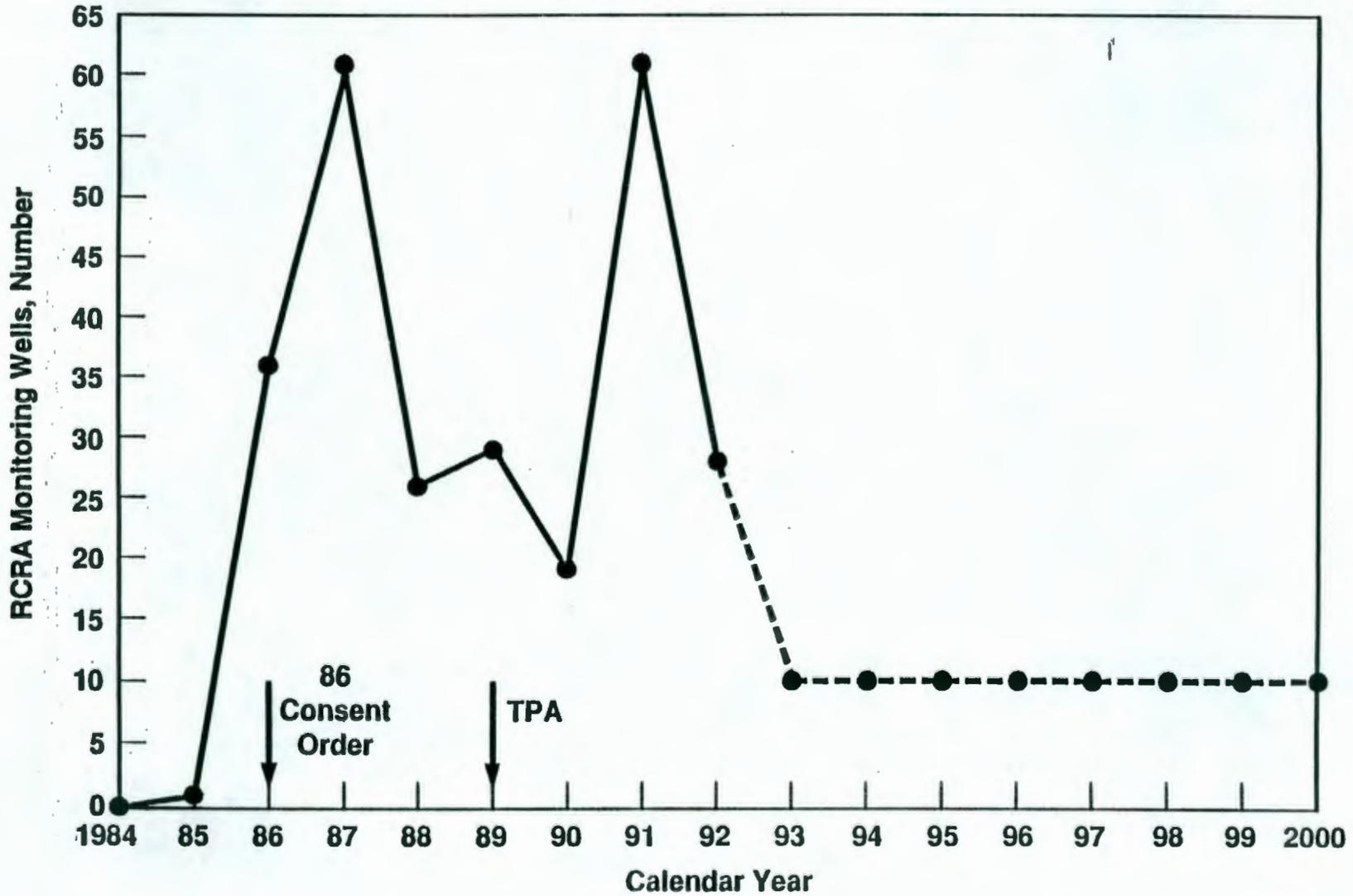
Monitoring Well Construction -

**Wells constructed to WAC 173-160
requirements and documented in
groundwater monitoring plans, and
borehole completion data packages**

RCRA Monitoring System Status



RCRA Well Installation Chronology by Year



H9110011.1

PLAN

- o **Negotiate about 30 wells in CY 1992 for M-24-00**
- o **Develop compliance criteria for completing initial facility groundwater detection system**
- o **Notify Ecology as criteria are met for individual facility(s) at Waste Management Areas (Documents completion of initial monitoring system and references supporting borehole completion reports and other supporting information)**
- o **Milestone M-24-00 completed when last notification is submitted to and approved by Ecology**
- o **Negotiate additional RCRA characterization, assessment/compliance/site wide monitoring with Ecology as separate commitment(s)**

INITIAL RCRA COMPLIANCE GROUND WATER MONITORING STATUS							
FACILITY	COMPLIANCE						COMPLETE
	90% MONITORING EFFICIENCY	UPGRADIENT WELL (MINIMUM 1)	DOWN GRADIENT WELL (MINIMUM 3)	CONSTRUCTION STANDARDS	TURBIDITY (<5NTU)	1 YEAR BACKGROUND	
100D							
1301N							
1324N/NA							
1325N							
183H							
LLBG WMA 1							
LLBG WMA 2							
LLBG WMA 3							
LLBG WMA 4							
LLBG WMA 5							
SST WMA A							
SST WMA B-BX-BY							
SST WMA C							
SST WMA S-SX							
SST WMA T							
SST WMA TX-TY							
SST WMA W							

INITIAL RCRA COMPLIANCE GROUND WATER MONITORING STATUS							
FACILITY	COMPLIANCE						COMPLETE
	90% MONITORING EFFICIENCY	UPGRADIENT WELL (MINIMUM 1)	DOWN GRADIENT WELL (MINIMUM 3)	CONSTRUCTION STANDARDS	TURBIDITY (<5NTU)	1 YEAR BACKGROUND	
B-POND							
GROUT							
A-29							
B-63							
242 A							
A-10							
A36B							
2101M							
S-10							
U-12							
NRDWL							
300PT							
TOTAL							

PROPOSED CRITERIA FOR CLOSE OUT OF TPA

MILESTONE M-24-00

PRESENTATION FORMAT

Requirement/Criterion	Compliance Action	Documented Evidence
WAC Key words WAC reference Criterion	Action needed	<ul style="list-style-type: none"> - Measure - Where documented - Method of depiction <ul style="list-style-type: none"> * Tracked with 2 forms (1) Status (2) Document reference/with page number

PROPOSED CRITERIA FOR CLOSE OUT OF TPA MILESTONE M-24-00

Requirement/Criterion	Compliance Action	Documented Evidence
<p>Appropriate locations WAC-173-303-645(8)(a).</p> <p>The groundwater wells must be located to immediately detect a release of dangerous waste from the facility</p>	<p>Shallow detection monitoring system is adequate with ~90% monitoring efficiency using MEMO and professional judgement</p>	<ul style="list-style-type: none"> o ~90% monitoring efficiency o Permitting document and/or groundwater monitoring plan o Map with accompanying text

PROPOSED CRITERIA FOR CLOSE OUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evidence
<p>Depths WAC-173-303-645(8)(a)</p> <p>The monitoring interval must be placed at appropriate depths(s) to immediately detect a release of dangerous waste from the facility</p>	<p>Shallow monitoring system is adequate for initial groundwater detection system</p>	<ul style="list-style-type: none"> o Contaminant characteristics o Permitting document and/or groundwater monitoring plan o Text o Geologic cross sections o Permitting document and/or groundwater monitoring plan o Figures with accompanying text o Monitoring/screen intervals o Borehole completion data package o Well as-built drawings

PROPOSED CRITERIA FOR CLOSE OUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evidence
<p>Quality of Background Water WAC-173-303-645(8)(a)(i)</p> <p>Upgradient groundwater wells must yield groundwater samples that are representative of the upgradient groundwater quality</p>	<p>RCRA facility or waste management area must have at least one "immediately" upgradient well</p>	<ul style="list-style-type: none"> o Borehole locations relative to facility o Permitting document and/or groundwater monitoring plan o Map o Geologic cross-sections o Permitting document and/or groundwater monitoring plan o Figure with accompanying text o Flow direction o Permitting document and/or groundwater monitoring plan o Water table map

PROPOSED CRITERIA FOR CLOSE OUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evident
Quality of Background Water (Cont.)		<ul style="list-style-type: none"> o Borehole construction o Borehole completion data package o Variety of information o Background water quality o Quarterly groundwater reports o Text o Well development to <5 NTU o Borehole completion data package (Well summary report since ~1989) o Laboratory turbidity (prior to 1989, only as indicator) o Table

PROPOSED CRITERIA FOR CLOSEOUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evidence
<p>Quality of Groundwater Passing Point of Compliance WAC-173-303-645(8)(a)(ii)</p> <p>Groundwater must yield groundwater samples that are representative of groundwater quality immediately downgradient of the facility</p>	<p>Location of downgradient detection wells are installed at point of compliance</p>	<ul style="list-style-type: none"> o Borehole locations relative to facility o Permitting document and/or groundwater monitoring plan o Map o Geologic cross sections o Permitting document and/or groundwater monitoring plan o Figure with accompanying text o Flow direction o Permitting document and/or groundwater monitoring plan o Water table map

PROPOSED CRITERIA FOR CLOSE OUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evidence
Quality of Groundwater Passing Point of Compliance (Cont.)		<ul style="list-style-type: none"> o Borehole construction o Borehole completion data package o Variety of information o Background water quality o Quarterly groundwater reports o Text o Well development to <5 NTU o Borehole completion data package (Well summary report since ~1989) o Laboratory Turbidity (prior to 1989, only as indicator) o Table

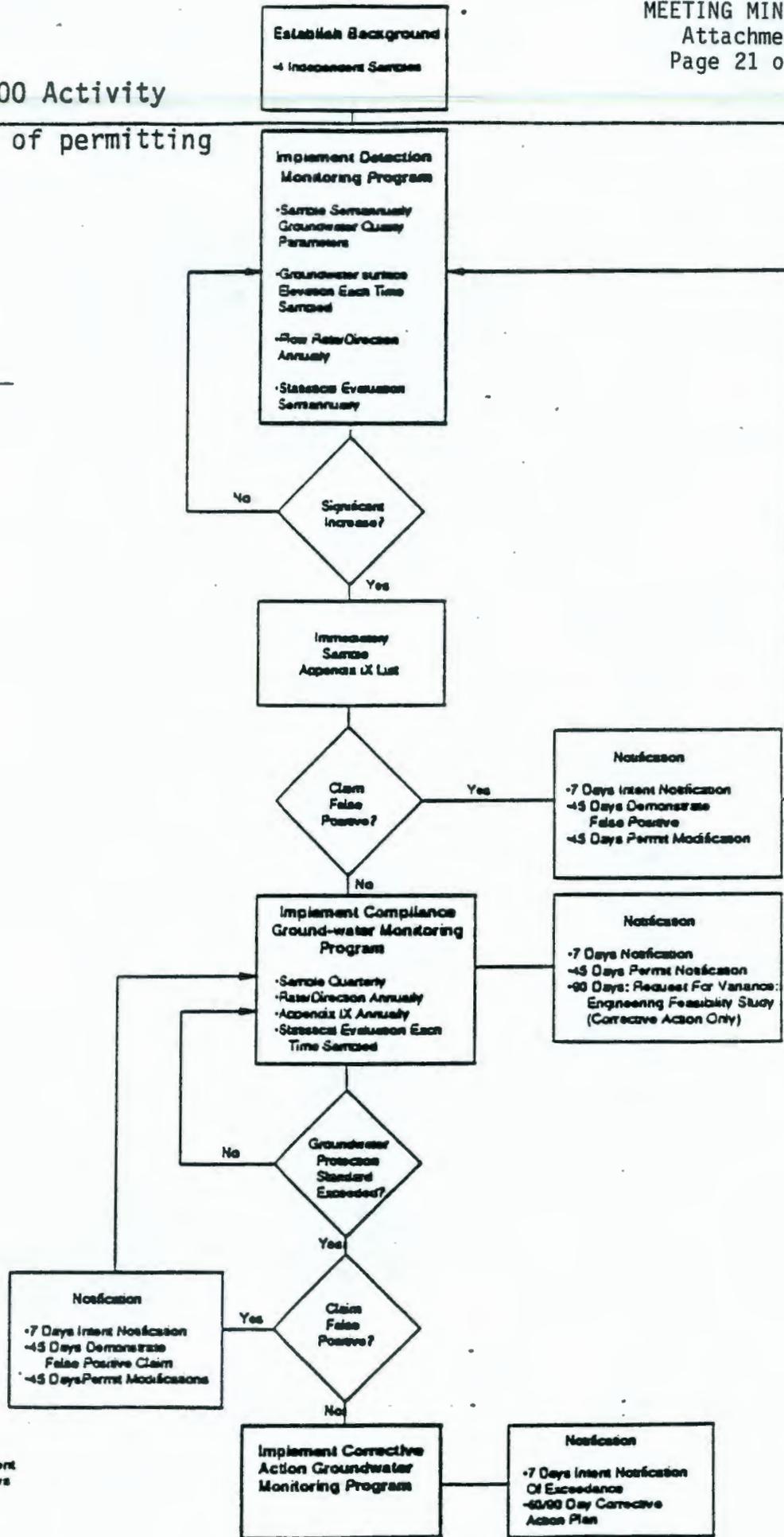
PROPOSED CRITERIA FOR CLOSEOUT OF TPA MILESTONE M-24-00 (Cont.)

Requirement/Criterion	Compliance Action	Documented Evidence
<p>Monitoring Well Construction WAC-173-303-645(8)(c)</p> <p>Groundwater monitoring wells must be constructed to yield representative groundwater samples and to prevent groundwater contamination</p>	<p>Wells constructed to WAC 173-160 requirements are adequate</p>	<ul style="list-style-type: none"> o Well Construction Information - geologic logs with description - geophysical logs - well development data - analytical sample results - decontamination information - variance information - survey data o Borehole completion data package o Forms, drawings, tables and text

End of M-24-00 Activity

Continuation of permitting process

2124630802



Per 40 CFR 264 Which Requires 4 Independent Samples Per Sampling Event And Which Allows More Latitude On Frequency of Sampling