

START

9513360.2259

0041823

019109 17

Meeting Minutes Transmittal

**Unit Managers' Meeting
183-H Solar Evaporation Basins
2440 Stevens Center, Conference Room 2519
Richland, Washington**

**Meeting Held January 26, 1995
From 1:00 to 4:00 p.m.**

The undersigned indicate by their signatures that these meeting minutes reflect the actual occurrences of the above dated Unit Managers' Meeting.

file Jeffrey M. Baugzeman DATE: 10 Aug 95
Nancy A. Werdel, Unit Manager, RL

Robert E Cordts DATE: 6 Jun 95
Robert E. Cordts, Unit Manager, Washington State Department of Ecology

183-H Solar Evaporation Basins Closure. Contractor Concurrence:

[Signature] DATE: 26 JAN 1995
Contractor Representative, ERC
7 JUNE, 1995

Purpose: Discuss Permitting Process

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

- Attachment 1 - Agenda
- Attachment 2 - Summary of Discussion and Commitments / Agreements
- Attachment 3 - Attendance List
- Attachment 4 - Action Items



Attachment 1**Unit Manager's Meeting
183-H Solar Evaporation Basins
2440 Stevens Center, Conference Room 2519
Richland, Washington****Meeting Held January 26, 1995
From 1:00 to 4:00 p.m.****Agenda****1. Approval of Past UMM Minutes**

- The December 1994 UMM minutes was approved by the Unit Managers during the January 26, 1995 UMM.
- The January 1995 UMM minutes are presented for approval.

2. Status Open Action Items

- 09-20-94:2 Nitrate Cleanup Level
- 09-20-94:3 Hanford RCRA Permit Compliance Letter(s); conditions V.1.B.j and V.1.B.k
- 12-15-94:1 WAC 173-340-740(7)(d) applicable to MTCA cleanup levels
- 12-15-94:2 Method A versus Method B for arsenic cleanup
- 12-15-94:3 Comment on closure proposal
- 12-15-94:4 Review the nitrate cleanup level and propose direct soil cleanup level
- 12-15-94:5 Finalize Data Evaluation Report and submit by March 28
- 12-15-94:6 Continue developing closure proposal
- 12-15-94:7 Compare statistical guidance of Ecology's Toxics cleanup program to our current MTCA-based method
- 12-15-94:8 Cleanup level/extent method consistent with CERCLA

3. Closure Activities / Planning

- Vadose zone data validation
- Status of modeling
- RCRA/CERCLA coordination
 - i. Soil cleanup levels that address groundwater protection
 - ii. Groundwater monitoring under CERCLA

- Discuss Closure Proposal
 - i. Schedule for completion
 - ii. Progress: arsenic, lead, new table, text development, "restricted groundwater usage"
 - iii. Ecology draft groundwater usage
 - iv. Comments from Ecology
- 4. New Business
 - New groundwater monitoring plan
 - Equipment decontamination
- 5. Set Next Meeting Date

Attachment 2

**Unit Manager's Meeting
183-H Solar Evaporation Basins
2440 Stevens Center, Conference Room 2519
Richland, Washington**

**Meeting Held January 26, 1995
From 1:00 to 4:00 p.m.**

Summary of Discussion and Commitments / Agreements

1. The December UMM minutes were approved by the Unit Managers.
2. Status Action Items
 - 09-20-94:2 Nitrate Cleanup Level
[Don Butcher discussed the closure proposals strategy of a nitrate cleanup level based on direct soil exposure. A memorandum written by the ERC Toxicologist addressing nitrate toxicity, remediation goals for nitrate, was passed out at the meeting (see attached). The memo was based off a 57 percent weight. The memo reflects that HSBRAM level that is proposed, given the exposure assumptions in the equations provided in the regulation are protective of human health for direct exposure. B. Cordts accepted this information for review and determination.]
 - 09-20-94:3 Hanford RCRA Permit Compliance Letter(s)
[Conditions V.I.B.j and k require submittal of data, data validation package, and narrative description of data. ERC has requested that these conditions be satisfied by submittal of the Data Evaluation Report for 183-H (WHC-SD-DD-TI-075). R. Miller stated that the Data Evaluation Report will be submitted no later than March 28, 1995.]
 - 09-20-94:4 Review of Data Evaluation Report
[See previous item.]
 - 12-15-94:1 WAC 173-340-740(7)(d) Applicable to MTCA Cleanup Levels
[D. Butcher stated that the ERC has conducted research and determined that compliance monitoring by definition in MTCA does include looking at cleanup thresholds, comparing site data with cleanup thresholds. This item is considered closed.]

- 12-15-94:2 Method A vs. Method B for Arsenic Cleanup
[D. Butcher provided insight subject to the statistical guidance, Section 4.3.2. When method A or method B cleanup standards are below area background levels, method C can be used to establish the cleanup standard. That cleanup standard may be equal to the area background value if it is within allowable range for method C standards. The standard may not be greater than the maximum concentration allowable under Method C calculations. Section 4.3.4 states in case of area background comparison, method A or method B cleanup standard that is greater than area background will still be used as the cleanup standard. If, on the other hand, area background is greater than the standard--which in the case at 183-H--then a method C cleanup standard can be derived and used. B. Cordts will review.]
- 12-15-94:3 Comment on Closure Proposal
[B. Cordts has not been able to review the draft Closure Proposal submitted on December 16, 1994. R. Miller stated that the Closure Proposal would be submitted to DOE as a "living document" no later than February 10, 1995.]
- 12-15-94:4 Review the Nitrate Cleanup Level and Proposal Soil Cleanup Level
[see 09-20-94:2. This item is closed.]
- 12-15-94:5 Finalize Data Evaluation Report and Submit by March 28, 1995
[Acknowledged. See 09-20-94:3. This item is closed.]
- 12-15-94:6 Continue developing Closure Proposal
[Acknowledged.]
- 12-15-94:7 Compare Statistical Guidance of Ecology's Toxics Cleanup Program to our Current MTCA-based Method
[B. Cordts had requested that the ERC team evaluate the above references. D. Butcher submitted a revised Table 1 (seen attached) from the draft closure proposal. The revised table has calculated the three values for all the site data for any given zone, broke it up into the following four zones: (1) shallow soil (1989), (2) perimeter soil, (3) vadose zone, and (4) shallow soil (1991), broken up into the two phases of analysis and took the maximum of those and compared it with the threshold. The revised table did not change the previously proposed cleanup concerns. B. Cordts reviewed the table and had no questions at this time.]
- 12-15-94:8 Cleanup level /Extent Method Consistent with CERCLA
[D. Butcher stated that our goal is to make sure that the CERCLA and RCRA cleanup levels are consistent. The Closure Proposal assumes a recreational scenario. MTCA doesn't account for different site usages. This causes different cleanup levels. N. Werdel stated that CERCLA is working towards a recreational surface use with restricted groundwater use by 2018, then allow for radioactive decay for a hundred years from 2018. The Record of Decision is expected in June or July 1995. R. Miller stated that the proposed closure schedule indicates that the basin floor slab would not

be removed until after the ROD was issued in July and a final soil cleanup level could be determined for 183-H basins. R. Miller stated the reason for submitting the Closure Proposal as a living document is so that items that all parties agree upon, such as decontamination, can proceed while soil cleanup is still being addressed. D. Butcher submitted a draft table for review subject to CERCLA/RCRA cleanup levels (see attached).]

3. Status Closure Activities / Planning

- Vadose Zone Data Evaluation

[Will be incorporated in the Data Evaluation Report to be submitted no later than March 28, 1995.]

- Status of Modeling

[The ERC has reviewed the site data and it has been determined that the Summers model is unrealistically conservative. It has been suggested to pursue a weighted average scenario. This item remains open and continues to be researched.]

- RCRA/CERCLA Coordination

i. Soil water cleanup level that address groundwater protection.

[Clean closure under RCRA does not require groundwater monitoring. J. Nickels stated that the post-closure plan attached to the permit requires groundwater monitoring after it is clean closed. The ERC Team is pursuing that groundwater monitoring be deferred to CERCLA and the Operable Unit at 100-H. The closure proposal will address clean closure based off these groundwater monitoring assumptions but can be changed to a modified closure if necessary. B. Cordts concurred that this was the proper direction to go.]

- Discuss Closure Proposal

i. Schedule for Completion

[R. Miller introduced a proposed schedule that identified activities to complete closure by the end of February 1996. It shows decisions that must be made at specific time frames in order to complete work. It was agreed to attempt to follow the schedule as close as possible. B. Cordts requested that we forward him information at the same time we submit documents to DOE.]

ii. Progress: Arsenic, lead, new table, text development "restricted groundwater usage."

[D. Butcher requested concurrence to arsenic at 59 milligrams per kilogram. Method A for lead was agreed to. Text development is being finalized. The document will attempt to stay consistent with the operable unit subject to restricted groundwater usage. N. Werdel stated she would get a copy of the issue paper that Phil Stats and Kevin Oates wrote on the cleanup strategy for the 100 Area Operable Units. N. Werdel will give copies to the ERC and B. Cordts.]

4. New Business

- New Groundwater Plan

[M. Hartman of Westinghouse was introduced. Mary is the responsible person for groundwater monitoring in all the 100 Areas. Mary made a presentation of groundwater monitoring in the 100-H Area. A revised monitoring plan is being used other than what is described in the permit. The modified plan proposed by Westinghouse differs from the one in the Closure Plan in three basic areas: (1) The well list, (2) sampling frequency, and (3) a constituent list. Mary presented a revised plan that would be incorporated by June or July 1995. B. Cordts will review the plan with others and decide at a later date. He requested a copy of the draft plan.]

- Equipment decontamination

[J. Badden discussed that the ERC would propose decontamination of equipment by an alternate method rather than decontamination of equipment by the debris rule. The closure proposal will outline the same decontamination criteria as would be used for rad release. After discussion, B. Cordts felt that was reasonable.]

-Rain water

[R. Miller discussed the accumulation of rain water in the basins, approximately 50,000 gallons. Emphasized the importance of concurring with the forthcoming listed waste letter. The removal of the water will be done through surveillance and maintenance but if it is treated as listed waste, could have \$500,000 impact.]

5. Set Next Meeting Date

[The next meeting is tentatively planned for March 6, 1995, 1:00 to 4:00 p.m., at the Federal Building, Teleconferencing Room, Richland, Washington.]

Attachment 3

Unit Manager's Meeting
 183-H Solar Evaporation Basins
 2440 Stevens Center, Conference Room 2200
 Richland, Washington

Meeting Held January 26, 1995
 From 1:00 to 4:00 p.m.

Attendance List

NAME	ORGANIZATION	PHONE #
Rex Miller	ERC	373-9592
Don Butcher	ERC	378-2606
Paul Griffin	D&D Projects	373-3916
Ron Hollenbeck	ICFKH	376-0513
Björk CURTIS	ECOLOGIST	360 407 7142
Kathy Knox	ICFKH	372-3546
Wendy Curtis	ICFKH	372-5500
Mike Mihalic	DEO Projects	509 373 1382
Jr	ERC	
Mary Hartman	WHR	372-9924
Brian Mathis	ERC	373-7253
Yvonne	ERC	372-9637

Attachment 4

**Unit Manager's Meeting
183-H Solar Evaporation Basins
2440 Stevens Center, Conference Room 2519
Richland, Washington**

**Meeting Held January 26, 1995
From 1:00 to 4:00 p.m.**

Open Action Items

<u>Action Item #</u>	<u>Description</u>
09-20-94:2	Ecology will provide means to produce a direct soil exposure nitrate cleanup level, assuming that the value calculated from WAC 173-340-740(3)(a)(ii) is unacceptable. - B. Cordts to review and comment.
09-20-94:3	ERC will provide letter(s) addressing compliance with the Hanford Facility RCRA Permit conditions (V.1.B.g, V.1.B.j, and V.1.B.k). Status: The letter addressing condition V.1.B.k was received by Ecology. V.1.B.g and V.1.B.j will be addressed in the Data Evaluation Report.
12-15-94:2	Ecology: Since the MTCA method B arsenic cleanup level is less than background, can we use the Method A, which is based on state background? -B. Cordts to review and comments.
12-15-94:6	ERC: Continue development of closure proposal.
12-15-94:7	ERC: Compare statistical guidance of Ecology, from Toxics Cleanup Program with our current MTCA-based method. B. Cordts to review and comment.
12-15-94:8	ERC: Make sure that our cleanup level / extent method is consistent with CERCLA.
01-26-95:1	Groundwater monitoring compliance. J. Badden/R. Miller We are not presently in compliance with the permit. Working with Mary Hartman and Legal for immediate compliance and proposing a new monitoring plan.

- 01-26-95:2 Cleanup level for arsenic. B. Cordts to concur.
- 01-26-95:3 Cleanup strategy for operable units. N. Werdel to issue copies.
- 01-26-95:4 Listed Waste Letter. Ecology/EPA need concurrence.
- 01-26-95:5 Disposal of Basin rainwater. Concurrence of the listed waste letter. J. Badden is working with Dan Duncan for concurrence. Water has been analyzed and the data is being reviewed by ERC for recommendation.

Closed Action Items

<u>Action Item #</u>	<u>Description</u>
03-02-93:1	WHC will make a proposal for closure of the 183-H basins that will include a new closure date. As a result of contractor change, this action is conferred to ERC.
08-18-94:1	ERC will issue a letter requesting that the concrete be released from consideration as listed waste. Due September 1, 1994.
09-20-94:1	Ecology will evaluate debris rule compliance of 6 mm basin concrete removal with a fractional area of resistant aggregate protruding above the 6 mm level. This Action Item is CLOSED (November 1, 1994).
09-20-94:4	Ecology will review the 183-H Data Evaluation Report.
12-15-94:1	Ecology: Are the statistics of WAC 173-340-740(7)(d) applicable to MTCA cleanup levels?
12-15-94:3	Ecology: Comment on existing stage of closure proposal, with particular focus on our recommendations for cleanup levels / strategy for constituents without MTCA method B cleanup levels.
12-15-94:4	ERC: Have staff toxicologist review the nitrate cleanup level produced by WAC 173-340-740(3)(a)(iii) and propose direct soil cleanup level and rationale.
12-15-94:5	ERC: Finalize Data Evaluation Report and submit final by March 28, in order to satisfy the Hanford RCRA Permit condition V.I.B.g and V.I.B.j. Closed. See 09-20-94:3

RESOLVED ISSUES

- An appropriate oral RFD for silver is 0.005 mg/(kg*day).
- The Debris Rule will be applied to 183-H basin concrete.
- It is appropriate to use the MTCA method A for cleanup level for lead.

OPEN ISSUES

- Action Items in Unit Managers Meeting minutes
- RCRA/CERCLA integration of soil closure activities
- Re-validation of vadose zone data
- Listed Waste Letter: Dangerous waste designation of concrete surface zone, and soil?
- Cleanup level for nitrate (pending, Ecology)
- Finalization/approval of closure proposal will address:
 - i. Selection of closure option (modified or clean)
 - ii. Use of existing data to support closure options
 - Concrete: Remediation relies on Debris Rule, not data
 - Vadose Zone Data: Has been validated (some adjustments possible)
 - Shallow Soil Data
 - iii. Soil Closure
 - Cleanup level for sulfate, arsenic
 - Confirmatory sampling requirements
- It is tentatively assumed that groundwater in the 100 Areas will not be used for direct human consumption. This is the basis for the proposed soil-ingestion based cleanup levels. Remediation based on these levels will not preclude further remedial action that may follow if site usage accommodates groundwater usage.

CH2M HILL Hanford, Inc.TSD:
ERA:

Memorandum Job No.

To:
Don ButcherCopies:
File

From Jim Hulla 1/25/92

OU:

Written Response Required?
Who Owes Action?
Due Date:
N/A**SUBJECT: Nitrate toxicity, remediation goals for nitrate**

This memo is written at the request of Don Butcher. Don is working to establish a RCRA closure for a site at which nitrate has been detected in the soil. Regulators have expressed concern that the MTCA-B level for nitrate and the level computed using HSRAM is not adequately protective of human health. Both the MTCA-B nitrate concentration and the HSRAM concentration are based on a reference dose provided by the EPA and available in the IRIS data base. The most recent RfDo (oral reference dose) for nitrate is 1.6 mg nitrate-nitrogen/kg/day. This dose is based on a NOAEL (no observable adverse effect level) of 10 mg/L of drinking water. The associated uncertainty factor is 1 meaning the RfDo has a high level of confidence. The RfDo is reliable since there is adequate information from humans to define the NOAEL. The NOAEL was established by studies of the toxicity observed in the most sensitive sub population. Methemoglobinemia (which is associated with a decreased capacity of the blood to transport oxygen) has been observed in infants fed formula made with nitrate contaminated drinking water. Infants, less than 5 months of age, are the most sensitive sub populations since they are most susceptible to the second risk factor associated with nitrate toxicity. The second risk factor is nitrate-reducing bacteria residing in the stomach and intestine. The groundwater on which the NOAEL was based was, in many cases, found to be contaminated with coliform bacteria. Other susceptible populations are adults having disease-associated high stomach pH. Infants and adults who have high stomach pH may harbor the nitrate reducing organisms that mediate methemoglobinemia. The presence of nitrate reducing bacteria is an important co-risk factor because they reduce nitrate to nitrite. Nitrite oxidizes Fe+2 hemoglobin to methemoglobin (+3). Both factors, nitrate contamination and bacteria-contaminated drinking water are important to the toxicological mechanism.

From this discussion it should be clear that there is a very well defined mechanism of nitrate toxicity. The RfDo for nitrate is reliable and sufficiently protective of the most susceptible population. Extrapolation of the RfDo to routes of exposure or populations other than those defined as the most sensitive will not result in a less protective scenario. Since the window of susceptibility is narrow (infants less than 5 months old and disease compromised adults who drink nitrate and coliform contaminated water) application of the RfDo to the general population is conservative. It should be noted that nitrate is a normal component of the human diet. A typical intake is about 75 mg/day which corresponds to 0.2-0.3 mg nitrate-nitrogen/kg/day. Vegetarians may exceed 250 mg/day (0.8 mg nitrate-nitrogen/kg/day). The MTCA-B and HSRAM soil concentrations are based on an appropriate RfD and are sufficiently protective of human health.

Health-Based (Human, Ingestion) Cleanup Levels (mg/kg)													
Baseline Risk Assessment Methodology (mg/kg)						Model Toxics Control Act (mg/kg unless noted)							
Industrial		Agricultural		Recreational		Method A		Method B		Method C		Method C-Ind.	
Non-Cncr	Cancer	Non-Cncr	Cancer	Non-Cncr	Cancer	Soil	Ind. Soil	Non-Cncr	Cancer	Non-Cncr	Cancer	Non-Cncr	Cancer
2.1E+4	-	4.8E+2	-	25,000	-			4,800	-	1.9E+4	-	2.1E+5	-
3.5E+4	-	8.0E+2	-	42,000	-			8,000	-	3.2E+4	-	3.5E+5	-
5.6E+5	-	1.3E+4	-	100,000 ¹	-			130,000	-	5.1E+5	-	5.6E+6	-
2.5E+6	-	5.7E+4	-	100,000 ²	-			570,000	-	2.3E+6	-	2.5E+7	-
				130	1.9	20	h	200	h	5,600	1.5	5.9E+1	1.9E+2
2.5E+4	-	5.6E+2	-	29,000	-			400	0.2	1.6E+3	9.3E+0	1.8E+4	3.1E+1
1.8E+3	-	4.0E+1	-	2,100	7.7			80		3.2E+2		3.5E+3	
3.5E+2	-	8.0E+0	-	420	1,360		h	10	h				
							h	500	h				
3.5E+5	-	8.0E+3	-	100,000 ³	-			80,000	-	3.2E+5	-	3.5E+6	-
1.8E+3	-	4.0E+1	-	2,100	204			400		1.6E+3		1.8E+4	
1.3E+4	-	3.0E+2	-	25,000	-			3,000	-	1.2E+4	-	1.3E+5	-
1.1E+2	-	2.4E+0	-	130	-	250	h	1,000	h				
7.0E+3	-	1.6E+2	-	8,300	10,175	1	h	1	h	24		9.6E+1	1.1E+3
1.8E+3	-	4.0E+1	-	2,100	-			1,600	-	6.4E+3	-	7.0E+4	-
1.8E+3	-	4.0E+1	-	2,100	-			400	-	1.6E+3	-	1.8E+4	-
1.8E+3	-	4.0E+1	-	2,100	-			400	-	1.6E+3	-	1.8E+4	-
2.5E+3	-	5.6E+1	-	2,900	-			560	-	2.2E+3	-	2.5E+4	-
1.1E+5	-	2.4E+3	-	100,000 ⁴	-			24,000	-	9.6E+4	-	1.1E+6	-

Calculated Values below default to a maximum allowable 100,000 mg/kg:

- (1) 670,000
- (2) exceeds unity
- (3) 420,000
- (4) 130,000

04

18314

Abbreviations

C.A.S. - Chemical Abstract Service Registry Numbers, Chemical Abstract Service is a division of the American Chemical Society
 Cncr: Based on cancer effects to health
 EPA: U.S. Environmental Protection Agency
 MTCA: Model Toxics Control Act (WAC 173-340)
 Non-Cncr: Based on health effects other than cancer
 ppm: parts per million
 RIC: Reference Concentration
 RID: Oral Reference Dose (EPA 1989)
 UR: Under Review
 WAC: Washington Administrative Code

Footnotes

- (f) EPA, (updated periodically) Integrated Risk Information System (IRIS database), U.S. Environmental Protection Agency, Washington, D.C.
- (g) EPA (latest annual update) Health Effects Assessment Summary Tables, (HEAST), Environmental Protection Agency, Washington, D.C.
- (h) Model Toxics Control Act (WAC 173-340)
- (k) Federal Register/Vol. 55, No. 145, Friday, July 27, 1990/ Proposed Rules
- (l) Washington State Department of Ecology, Toxics Cleanup Program, Cleanup Levels

053360-2272

019109

EXPOSURES, NONRADIOACTIVE CONSTITUENTS

DRAFT

- and Risk Calculation database (CLARC II), July 9, 1993
- (m) Model Toxics Control Act (WAC 173-340-740) Method C
 - (n) Model Toxics Control Act (WAC 173-340-745) Method C for industrial sites
 - (o) DOE/RL-92-24, Revision 1, 4/93, Table 1-1
 - (s) EPA (1989) Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.
 - (t) EPA (1990) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 1990 Supplement, U. S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.
 - (u) Superfund Technical Support Center, Environmental Protection Agency, Environmental Criteria Assessment Office, Washington, D.C.

019100

951360.2273

12-15-94:7

Table 1. Summary of 183-H Soil Analytical Results and Performance Standards.

SOIL STATISTICS FROM 183-H SITE (data of shaded zones are indistinguishable from site-wide background)					THRESHOLDS (allowable residual concentrations)		EFFECTS OF MULTIPLE CONSTITUENTS		REMAINING CONSTITUENTS OF CONCERN	
Chemical Name (mg/kg)	[b]				WAC 173-340-740 [3][a][iii] (Method B Equations)	HSBRAM Cancer Method (radionuclides)	WAC 173-340-740 [2] (Method A)	Hazard Quotient (90th % rank data, excluding background)	Cancer Risk (90th % rank data)	
	1989 Sampling, Shallow Sub-concrete	1991 Sampling, Shallow Sub-concrete	1991 Sampling, Shallow Perimeter	Vadose Zone, Shallow 1 to 55 foot depth						
Arsenic	8.3	4.9	24.9	6.4	59 Method C default		20.0		3.2E-07	
Barium	118.0	110.0	99.6	144.0	5,600				3.4E-06	
Beryllium	1.3	0.4	0.4	1.1	0.2					
Cadmium	5.8	2.0	1.5	2.3	40		2.0			
Chromium	26.0	25.0	21.3	22.5	compare Cr VI		100.0	0.065		
Chromium III	not analyzed	not analyzed	not analyzed	not analyzed	80,000					
Chromium VI	not analyzed	not analyzed	not analyzed	not analyzed	400					
Copper	570.0	47.5	25.8	407.5	2,960			0.011		
Lead	64.0	17.2	117.0	15.2			250.0			
Mercury	0.5	0.1	0.4	0.5	24					
Nickel	32.1	21.7	21.0	14.2	1,600			0.018		
Selenium	0.3	0.5	0.4	1.3	400					
Silver	0.8	1.4	1.3	8.5	400					
Vanadium	44.5	41.6	54.1	55.2	560					
Zinc	51.4	53.2	149.5	46.9	24,000					
Fluoride	124.5	2,770.0	13.0	111.5	4,800			0.040		
Nitrite	5.5	140.0	10.0	7.8	8,000					
Nitrate	59,500.0	173,000.0	925.0	3,100.0	568,000			0.039		Nitrate, all zones
Sulfate	1,320.0	1,280.5	1,780.0	3,782.0						Sulfate, all zones
Uranium (chem analy)	25.0				240					
Radionuclide										
(pCi/g, unless noted)										
Technetium Tc-99	147	65.6	31.2	176	compare Tc-99 28,900				5.1E-09	
U-234				7.8	165				1.5E-08	
U-235		1.4		16	23.6				1.4E-08	
U-236				5.7	177.6					
U-238					58.4				3.4E-08	
Uranium (alpha analysis)		51.4	0.7		compare U-238					

(a) Data are reported and described in 'RCRA Closure Data Evaluation Report: 183-H Solar Evaporation Basins Soil and Concrete' (WHC-SD-DD-TI-075, 1993, draft). Consistent with WAC 173-340-740(7)(e), non-radiological data are summarized by the greater of: (1) a near-maximum value of the data set, such that less than 10 % of the samples exceed this value, (2) half of the maximum value of the data set, and (3) the 95 % upper confidence level for the mean of the data set, based on an assumption of lognormality. Maximum data are reported for radiologic constituents.

(b) Combined set of east and west berms, trench (NE corner of basins), and basin southern margin samples.

(c) Toxicity value sources, equations and parameters are given in the 'RCRA Closure Data Evaluation Report: 183-H Solar Evaporation Basins', Appendix A. These values are based on direct soil exposure. Values that are based on known or suspected cancer effects are noted.

(d) 'Hanford Site Baseline Risk Assessment Methodology' (DOE/RL-91-45, 1992, Rev. 2). These values are based on direct soil exposure.

(e) Cancer-effect values are based on a life time excess cancer risk of one in one million. Toxicity values (slope factors) for radioactive constituents are from the 'Health Effects Assessment Summary Tables' (HEAST, 1993), US Environmental Protection Agency.

(f) Hazard quotients for background constituents and analytes without toxicity values are not calculated. The Hazard Index (HI) at the base of this column is the sum of the hazard quotients shown and accounts for the global maximum of data for all soil zones. The hazard quotient and HSBRAM cleanup level for Chromium is based on the most-toxic-case assumption that the Chromium is hexavalent.

(g) Risk is calculated for all known or suspected carcinogens (via ingestion). The total risk (TR) at the base of this column is the sum of the risk for each carcinogen, and accounts for the global maximum of data for all soil zones.

(h) List of constituents and zones that are not eliminated from concern by (1) background evaluation, (2) comparison to the WAC 173-340-740 Method B and HSBRAM levels in this table, or (3) comparison with WAC 173-340-740 method A, where applicable. These constituents will be further addressed in the text of this proposal.

(i) A lesser value is being developed by the State Department of Ecology (personal communication, Unit Manager Meeting).

(j) 98.9 weight percent of the Uranium disposed of in the 183-H basins was U-238. However, in terms of activity, the relative amounts are calculated as follows: U-238 (40%), U-234 (53%), U-236 (4.8%), U-235 (2.6%). Based on these proportions and the cleanup levels above, U-238 is the dominant agent of Uranium toxicity at 183-H. Of the Uranium isotopes at 183-H, U-236 is least abundant and least toxic, U-234 has similar concentrations to U-238, but is less toxic; U-235 has the lowest cleanup level, about half of the U-238 cleanup level, but is expected to occur at one-tenth of the U-238 concentration.

(k) Technetium-99 is the only Technetium isotope disposed of at the basins, it is acceptable to compare total Technetium values to the Technetium-99 cleanup level.

(l) This cleanup level is based on copper cyanide. Copper cyanide has the lowest (indicating relatively high toxicity) oral reference dose of the cyanides disposed of at the 183-H Basins.

HI = 0.172 TR = 3.8E-06

95260227

010109

DISTRIBUTION

J. W. Badden	BHI	H4-86
J. K. Bartz	GSSC	R3-82
R. E. Cordts	Ecology - Lacey	
L. D. Dillon	BHI	H6-29
D. L. Duncan	EPA - Seattle	HW-106
P. W. Griffin	CHI	X5-53
C. W. Hedel	BHI	H4-79
R. G. Hollenbeck	ICF KH	G3-17
P. K. Jackson	BHI	X5-53
M. Jaraysi	Ecology - Kennewick	
E. M. Mattlin	RL	A5-15
B. W. Mathis	CHI	X5-53
M. A. Mihalic	BHI	X5-53
L. A. Mihalik	CHI	H4-79
L. R. Miller	CHI	X5-53
N. A. Werdel	RL	H4-83

ADMINISTRATIVE RECORD: 183-H Solar Evaporation Basins Closure, T-1-4 [Care of EDMC, WHC (H6-08)]

BHI Document Control Center; Mail Stop H4-79

Washington State Department of Ecology Nuclear and Mixed Waste Hanford Files,
P. O. Box 47600, Olympia, Washington 98504-7600

Environmental Protection Agency Region 10, Seattle, Washington 98101,
(Record Center) - Mail Stop HW-074

Please send comments on distribution list to Rex Miller (X5-53), 373-9592.