Savannah River Site

ESH-EMS-93-0541

October 5, 1993

Environmental Release Prevention and Control Plan (ERP & CP) Annual Review and Update for 1993 (U)

Compiled by:

G.T. Jannik.... EPD/EMS

ESH-EMS-93-0541

Environmental Release Prevention and Control Plan (ERP & CP) Annual Review and Update for 1993

by

A. Mamatey (Contact)

Westinghouse Savannah River Company
Savannah River Site
Aiken, South Carolina 29808

M. Arnett

DOE Contract No. **DE-AC09-89SR18035**

DISCLAIMER

Westinghouse
Savannah River Company

P.O. Box 616
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October 5, 1993 ESH–93–0157

To: U. S. Department of Energy – Savannah River Field Office
Assistant Manager Distribution
Aiken, SC 29802

ANNUAL RE-EVALUATION OF THE SRS ENVIRONMENTAL RELEASE PREVENTION AND CONTROL PLAN (U)

Ref. Environmental Release Prevention and Control Plan (U), WSR-920067, 6/30/92

In the referenced Environmental Release Prevention and Control Plan (ERP & CP), WSRC made a commitment to conduct the following follow-up activities and actions:

1. Complete the action items developed in response to the findings and recommendation of the Environmental Release Prevention Taskteam (WSRC–RP–92–356).
   (As documented in Attachment I, of the 113 original action items, 100 are now complete)
2. Complete all batch and continuous release procedure revisions to incorporate the attributes that WSRC senior management required of each procedure.
   (As documented in Attachment II, all required procedure revisions are now complete)
3. DOE–SR Assistant Managers and WSRC counterparts to reach consensus and closure on the identified engineered solutions documented in the ERP & CP. Develop and drive implementation of facility changes per the agreements.
   (DOE–SR AMs and WSRC counterparts reached agreement on initiatives. Attachment III documents the current status of these items as well as the newly identified initiatives)
4. Continue to analyze releases and monitor performance in accordance with the ERP & CP, and utilize the ALARA Release Guides Committee to drive improvements.
   (The 8/93 revision to the SRS Environmental ALARA Guides is presented in Attachment IV. Also presented is the 1992 annual average concentration comparison to DOE DCGs)
5. Conduct annual re-evaluations of the cost benefit analyses of the identified engineered solutions, and identify new options and alternatives for each outfall in response to site mission and facility changes.
   (Attachment V documents in matrix form all open and newly identified initiatives)

The attached "Environmental Release Prevention and Control Plan – Annual Review and Update for 1993" documents the efforts that have been completed over the past year in response to these commitments. Each numbered Attachment (I through V) in this report corresponds to an above numbered (1 through 5) commitment.

Included in this report (Attachment V) is a compilation of all open and newly identified WSRC recommended initiatives that could reduce the size of releases from each monitored outfall. It is suggested that DOE–SR and WSRC establish a mutual objective of having the DOE–SR Assistant Managers and their WSRC counterparts reach agreement on these recommended initiatives by November 1, 1993. To ensure timely closure, the progress of the agreed upon initiatives will be reviewed by WSRC senior staff at least every four months.

Yours very truly,

J.F. Jordan
Vice President and General Manager
ESH & QA Division

To: DOE–SR Assistant Managers
L.C. Sjostrom, Assistant Manager for ER & SW, 703–A
S.D. Richardson, Assistant Manager for HLW, 703–A
C.C. Mason, Assistant Manager for NMP, 703–A
T.F. Heenan, Assistant Manager for ESH & QA, 703–47A
F.R. McCoy, Assistant Manager for RO, 703–A

cc: WSRC Environmental ALARA Management Steering Committee –
D. Woodward, ESH & QA, 703–A
R. Maher, NMPD, 703–A
C. Peckinpaugh, HLW, 719–4A
B. Rankin, RD, 704–C
C. Hardin, SRTC, 703–A
N. Boyter, SW & ER, 704–A

cc: WSRC Environmental ALARA Release Guides Committee –
T. Jannik, 735–11A
A. Fishburne, 773–43A
W. Wilmarth, 773–A
W. Wierzbicki, 707–F
S. Bellamy, 707–F
R. Benson, 303–M
P. Rowan, Jr., 235–H
C. Stevens, 703–H
M. Hagenbarth, 703–H
D. Ratchford, 703–F

cc: Others –
R. Peterson, DOE/ECD, 703–47A
G. Whitney, DOE/ECD, 703–47A
D. Bignell, 719–4A
J. Roberts, 742–A
J. Heffner, 735–A
J. Dickenson, 703–A
R. Lorenz, 735–16A
H.L. Davis, DOE/ECD, 703–47A

N. Hawerson, 773-43A

Savannah River Site

ESH–EMS–93–0541

October 5, 1993

Environmental Release Prevention and Control Plan (ERP & CP) Annual Review and Update for 1993 (U)

Compiled by:

G.T. Jannik .... EPD/EMS

ATTACHMENT I

ERP & CP Action Item Listing Completion Status

This section presents the remaining open action items that were generated from the findings and recommendations of the Environmental Release Prevention Taskforce (ERPT).

Of the 113 original action items, 100 have been completed as of September, 1993.

ERP & CP– Action Items for Liquid Releases

- Waste Management ..... 30 Total, 25–Complete, 4–Open 1–TBD,
- Separations ..... 19 Total, 14–Complete, 4–Open, 1–TBD
  ..... (Item 10-D is SRTC (C. W. Jenkins) responsibility)
- Human Resources ..... 6 Total, 6–Complete
- RRD ..... 30 Total, 30–Complete
- Tritium ..... 3 Total, 3–Complete
- SRTC ..... 15 Total, 15–Complete
- Environmental Restoration ..... 3 Total, 3–Complete
- EPD ..... 3 Total, 2–Complete, 1–TBD (Awaiting EPA approval)
- DWPF ..... 1 Total, 1–Complete
- Site Services ..... 3 Total, 1–Complete, 2–Open

- **Totals ..... 113 Total, 100–Complete, 10–Open, 3–TBD**
  ..... (Since 7/1, 2–TBD items were changed to 10/1/93 comp. date)

Updated September 10, 1993

Waste Management and Environmental Restoration

ACTION ITEM # and BASIS	RESPONSIBILITY	COMPLETION DATE	STATUS & COMMENTS
WM #19 (WM self–evaluation) Complete design and installation of a drain collection system for the Tank Farm H–East and H–WEst cooling water pumphouses.	H. Abodishish (HLWE)	12/31/92 Rev. 1 – 1/31/95	FPR is routing for approval. Ref. Project #S–4846. Estimated completion date of the project is 12/95.
WM #20 (WM self–evaluation) Complete design and installation of containment dikes around waste tanks 13–15 in order to reduce the probability of releasing contamination to 4H SWM zone.	H. Abodishish (HLWE)	4/30/93 Rev. 1 – TBD	This project has not been funded.
WM #23 (ERPT Rec. #52) Design, procure and install 241–8F/H retention basin inlet radiation monitors.	C. Polson E. Saldivar (HLWO)	10/93 Rev. 1 – 9/30/95	Preauthorization not funded in 1993 AOP
WM #24 (WM self–evaluation) Complete installation and checkout of inlet monitors	C. Polson E. Saldivar (HLWO)	12/31/94 Rev.1 12/31/95	Dependent on authorization
WM #25 (ERPT Rec. #52) Develop procedures and startup monitors	C. Polson E. Saldivar (HLWO)	1/31/95 Rev. 1 – 1/31/96	Dependent on installation

NOTE: ITEMS 23, 24, & 25 ARE JUST DIFFERENT ASPECTS OF THE SAME ACTION ITEM. ITEM 13 WAS COMPLETED ON 6/21/93 AND HAS BEEN REMOVED FROM THIS TO GO LISTING.

Separations

ACTION ITEM # and BASIS	RESPONSIBILITY	COMPLETION DATE	STATUS & COMMENTS
ERPT Recommendation # 10D Document technical basis for FH cooling water monitor design.	SRTC/ADS/HPT C. Jenkins D. Ratchford	9/30/92 Rev. 1 – 3/31/93 Rev.2–12/15/93	Additional lab testing required. Alpha testing nearly complete, gamma testing awaiting procurement.
ERPT Recommendation # 13 Make additional and redundant F–Area cooling water monitors fully operational.	F–Canyon T.C. Robinson	4/30/92 Rev. 1 7/31/92 Rev. 2 12/31/92 Rev. 3 9/30/93 Rev. 4 4/30/93 Rev. 5 6/30/93 Rev. 6 9/15/93	Partial Complete Redundant cooling water monitors were made operational on 4/30/93. Additional Cooling water monitors scheduled for 9/15/93 completion.
ERPT Recommendation # 20 Correct path for potential overflow from 211–H R1–6 sump to Uranyl Nitrate trailer loadout sump to outfall H–006.	H–Canyon M.J. Green	6/30/92 Rev. 1 – 7/31/92 Rev 2 – 2/28/93 Rev. 3 – TBD	Sump and pump to be installed within 1 month of receiving NEPA approval from DOE–SR. Design is complete and material is on hand.
ERPT Recommendation # 22 Make additional and redundant H–Area cooling water monitors fully operational by 1/94.	H–Canyon M.J. Green	6 months after F–Area (#13) Rev 1–10/30/93 Rev. 2 – 1/94	In process Installing hardware and checking electronic systems.

Separations

ACTION ITEM # and BASIS	RESPONSIBILITY	COMPLETION DATE	STATUS & COMMENTS
ERPT Recommendation #24 Resume (and possibly accelerate) relocation of depleted uranium trioxide from Central Shops, B–Area and R–Area to F–Area. Revised action item: Approximately 36,000 drums of depleted uranium oxide are stored in 9 location at SRS. The non–centralized storage of these drums may present a risk to the environment in the long term. This concern should be addressed in a formal program to reduce this risk.	Outside Facilities J. Britt NMPD	FY–95 Rev. 1 – 6/30/93 Rev. 2 – 7/15/93 Rev. 3 – 9/15/93	Plan and schedule has been completed and is being reviewed by NMPD management. Letter to DOE–SR AM scheduled to issued by 9/15.

Environmental Protection Department

ACTION ITEM # and BASIS	RESPONSIBILITY	COMPLETION DATE	STATUS & COMMENTS
ERPT Recommendation #24 Changes to the groundwater purge and sampling procedures and controls	EPD/ER & GP J.W. Cook	7/1/92 Rev. 1 – 5/1/93 Rev. 2 – TBD	Awaiting EPA and DHEC approval of the Purge Water Management Plan WSRC–RP–90–208, which was issued 6/91.

Site Services Department

ACTION ITEM # and BASIS	RESPONSIBILITY	COMPLETION DATE	STATUS & COMMENTS
ERPT Recommendation #46 Perform risk assessment of contributing sources to the cooling water system	HLWM/ SRTC/ SSD P. Fisk / A. Edenfield M. Ceravolo B. Silas	9/30/92 Rev. 1 – 12/1/93 Rev. 2 – 10/1/93	Risk Assessment not complete due to higher priority work and personnel changes. Power Operations and HLWM will be working together on this item. Path forward to be determined by 10/1/93.
ERPT Recommendation #46 Recommend design changes and changes to monitoring system based on risk assessment.	HLWM/ SRTC/ SSD P. Fisk / A. Edenfield M. Ceravolo B. Silas	12/1/92 Rev. 1 – 10/1/93	Risk Assessment not complete due to higher priority work and personnel changes. Power Operations and HLWM will be working together on this item. Path forward to be determined by 10/1/93.

ATTACHMENT II

PROCEDURAL CONTROL OF LIQUID RADIOACTIVE RELEASES

This section documents the procedures that were revised as part of the upgraded authorization program for liquid releases. Also included is a listing of the attributes that WSRC senior management required of each liquid release procedure.

All required procedure revisions and upgrades that were not completed at the time of issuance of the Final ERP & CP are now complete.

Attachment 2

ATTRIBUTES OF PROCEDURES FOR RELEASE OF POTENTIALLY RADIOACTIVE LIQUID EFFLUENTS

Procedures for Batch Releases:

1. **The procedure must be category 1.**

2. **The procedure must describe the point at which the batch is sampled to determine its radioactive content.**

3. **The procedure must describe the type of analysis to be performed (i.e. alpha, beta-gamma, tritium, etc.)**

4. **The procedure must state who is responsible for performing the analysis. Signature of this individual is required to confirm analytical results.**

5. **The procedure must state who is responsible for communication of sample results to operations and to whom in operations the sample results are communicated.**

6. **The responsibilities of Analytical Labs and Health Protection must be clearly defined.**

7. **The procedure must state the authorized release limit(s).**

8. **The procedure must state who is responsible for comparing the sample results against the release limits. Signature of this individual is required to confirm this comparison.**

9. **The procedure must state the required response to radioactivity levels below limits (i.e. release of the batch) and above limits and who is required to authorize the release. Management authorization is required for all releases and the responsibility for approval of the release must be consistent with the risk associated with the amount of the release. Signature of this individual is required to confirm authorization of the release.**

Procedures for Continuous Releases:

1. **The procedure must be category 1.**

2. **The procedure must describe the point at which the stream is monitored and/or sampled to determine whether radioactivity is present.**

3. **The procedure must describe the type of analysis to be performed (i.e. alpha, beta-gamma, tritium, etc.) and whether by on-line monitoring or sampling.**

4. The procedure must describe how calibration and reliability of monitoring instrumentation is ensured (i.e. through the M&TE Control program or other required surveillance).

5. The procedure must state who is responsible for performing the analysis. Signature of this individual is required to confirm analytical results.

6. The procedure must state who is responsible for communication of sample results to operations and to whom in operations the sample results are communicated.

7. The procedure must state the required frequency of sampling.

8. The procedure must state the required turnaround time for sample analysis and reporting of results.

9. The responsibilities of Analytical Labs and Health Protection must be clearly defined.

10. The procedure must define action levels, state the required actions for each level, and state who is responsible for each action. Responsibility for action must be consistent with the risk associated with the potential amount of the release. Signature of this individual is required to confirm completion of required actions.

AUTHORIZATION FOR LIQUID RADIOACTIVE RELEASES

BATCH RELEASES OF LIQUID EFFLUENTS

AREA (Footnote ref.)	RELEASE POINT	OUTFALL	ANALYSIS	ANALYZED BY	REQUIRED	RELEASE LIMIT	RESPONSE	AUTHORITY OF RELEASE	APPLICABLE PROCEDURE
100	Process Sewer	Canal	alpha beta/gamma tritium	HP Anal. Lab	Prior to Release	1 d/m/ml 2 c/m/ml 0.001 uCi/ml (1 Ci Total)	< Release > Report	RRD Shift Mgr., Purif. Supv., & HPO Shift Mgr.	105–2308
			alpha beta/gamma tritium	HP Anal Lab	Prior to Release	3 d/m/ml 10 c/m/ml 0.01 uCi/ml (10 Ci Total)	< Release > Retain	RRD Area Mgr., RRD Env. Coord., HPO Mgr.	
KLP	Basin Purge	Seepage Basin	Per procedure 105–3729C	Analytical LAb	Prior to Release	Per procedure 105–3729C	Per procedure 105–3729C	RRD Shift Mgr., Area Env. Coord., HPO Rep., & Notify DOE	105–3729C 5Q1.2–302U
D	Rework Distillate Tanks	Beaver Dam Creek	Tritium	Analytical Lab	Prior to Release	10 uCi/ml (5 Curie Total)	< Release > Retain	HWO Mgr. Lab Analyst	DPSOL 420–227 OSR–7–320
D	DW Plant Distillate Tanks	Beaver Dam Creek	Tritium	Analytical Lab	Prior to Release	1 uCi/ml (5 Curie Total)	< Release > Retain	HWO Mgr. Lab Analyst	DPSOL 420–67C OSR–7–320A
D	Drum Wash Tanks	Beaver Dam Creek	Tritium	Analytical Lab	Prior to Release	Monthly Guide	< Release > Timed Release	HWO Mgr. HPO Mgr.	DPSOL 421–2D–166 OSR–7–687
H	ETF Treated Water	U3R–2A	alpha beta/gamma tritium	HP HP	Prior to Release	3 d/m/ml 10 d/m/ml 0.1 uCi.ml 3 d/m/ml 10 d/m/ml 0.2 uCi.ml	< Release > Report < Timed Release > Retain	WMO Supv. "A" WW Opr. HPO Supv. WMO Supv. "A" WW Opr. HPO Supv. ETF Fac. Mgr. WMER and ESH&QA VP	241–FH–ETF–903A 241–H–ETF–199B 5Q1.2–302U

AUTHORIZATION FOR LIQUID RADIOACTIVE RELEASES

BATCH RELEASES OF LIQUID EFFLUENTS (continued)

AREA (Footnote ref.)	RELEASE POINT	OUTFALL	ANALYSIS	ANALYZED BY	REQUIRED	RELEASE LIMIT	RESPONSE	AUTHORITY OF RELEASE	APPLICABLE PROCEDURE
F/H	ETF Basins	F–012/013 and H–017/018	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Treat	WM OPs Mgr. WM Tech Mgr HP Mgr.	241–F–ETF–201A, –208,–208A. 241–H–ETF–201A, –208,–208A. 241–F–ETF–202A, –202B. 241–H–ETF–202A, –202B.
H	OF RCA slab	FM–1C	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Retain	Sep Oper. HPO Supv.	SOP–211–H–1445
E	Solvent Tanks sumps	4M–2B and U3R–3	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Retain	WMO Oper. HPO Supv.	643–E–2005 643–G–2005A
E	643–29G sump	4M–2B and U3R–3	alpha beta/gamma tritium	HP	Prior to Release	1 c/m/ml 1 d/m/ml 50 uCi/ml	< Release > Retain	WMO Oper. HPO Supv.	643–29G–2
E	709–2G sump	4M–2B and U3R–3	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Retain	WMO Oper. HPO Supv.	709–G–9
E	ELLT #4 sump	4M–2B and U3R–3	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Retain	WMO Oper. HPO Supv.	643–E–2058
E	TRU pad sumps	4M–2B and U3R–3	alpha beta/gamma	HP	Prior to Release	3 d/m/ml 10 d/m/ml	< Release > Retain	WMO Oper. HPO Supv.	643–E–2024 643–G–2024A
M	LETF Treated water	TB–3	Uranium	320–M	Prior to Release	1.0 mg/l/day 0.5 mg/l/day (monthly avg.)	< Release > Retain	RMP Supv. RMET Supv. "B WW Oper.	SOP–341–502
A	735–A LLW Tank dike	TB–2	alpha beta/gamma tritium	SRTC	Prior to Release	3 d/m/ml 10 d/m/ml .00005 uCi/ml	< Release > Retain	SRTC Supv. HPO Supv.	DPSTOM–32–18

AUTHORIZATION FOR LIQUID RADIOACTIVE RELEASES
CONTINUOUS RELEASES OF LIQUID EFFLUENTS

AREA	RELEASE POINT	OUTFALL	ANALYSIS	ANALYZED BY	REQUIRED FREQUENCY AND TURN-AROUND TIME	RELEASE LEVEL	RESPONSE	RESPONSI-BILITY FOR RELEASE	APPLICABLE PROCEDURE
K	Heat Exchanger Cooling Water	Canal	tritium	on–line monitor	Continuous / Immediate action	0.00005 uCi/ml	< None > Isolate Source	RRD Shift Mgr., and CCR Operator	RP 2.3001 5Q1.2 302U
KLP	HX Cooling Water and Process Sewer	Canal	alpha beta/gamma tritium	HP Analytical Labs	12 hours / 4 hours turn-around	1 d/m/ml 8 d/m/ml 0.00005 uCi/ml	< None > Isolate Source	Purification Supervisor & Area HPO Supervisor	RP 2.3001 5Q1.2 302U
C	Process Sewer	Canal	alpha beta/gamma tritium	HP Analytical Lab	Daily (M–F) / 4 hours turn-around	1 d/m/ml 8 d/m/ml 0.00005 uCi/ml	< None > Isolate Source	Purification Supervisor & Area HPO Supervisor	RP 2.3001 5Q1.2 302U
C	Cooling Water	Canal	alpha beta/gamma tritium	HP Analytical Lab	Weekly / 4 hours turn-around	1 d/m/ml 8 d/m/ml 0.00005 uCi/ml	< None > Isolate Source	Purification Supervisor & Area HPO Supervisor	RP 2.3001 5Q1.2 302U
D	Process Sewer	Beaver Dam Creek	tritium alpha beta/gamma	Analytical Lab HP	8 hours / 1 hour turn-around 12 hours / 1 hour turn-around	0.00005 uCi/ml 1 d/m/ml 8 d/m/ml	< None > Isolate Source < None > Isolate Source	CCR Operator and Lab Analyst RRD Shift Mgr. and HPO Supv.	RP 2.3001 5Q1.2 302U

AUTHORIZATION FOR LIQUID RADIOACTIVE RELEASES

CONTINUOUS RELEASES OF LIQUID EFFLUENTS (continued)

AREA	RELEASE POINT	OUTFALL	ANALYSIS	ANALYZED BY	REQUIRED FREQUENCY AND TURN-AROUND TIME	RELEASE LEVEL	RESPONSE	RESPONSI-BILITY FOR RELEASE	APPLICABLE PROCEDURE
F	Outside facil-ity Runoff	U3R–2	beta/gamma	HP	Daily / Immediate	> background	< None > Report	CCR Supv. HPO Supv.	5Q1.4 303
			alpha beta/gamma	HP	Daily / 2 hour turn-around	3 d/m/ml 10 d/m/ml	< None > Isolate Source	CCR Supv. HPO Supv.	
F	Segregated Cooling Water	FM–3	beta/gamma	HP	8 hours / Immediate	> Background	< None > Report	CCR Supv. HPO Supv.	SOP 221–F–OF–F90111 5Q1.2 312
			alpha beta/gamma	HP	8 hours / 2 hour turn-around	3 d/m/ml 10 d/m/ml	< None > Divert Flow	CCR Supv. HPO Supv.	
H	Segregated Cooling Water	FM–1C	beta/gamma	HP	Prior to Release / Immediate	> Background	< None > Report	CCR Supv. HPO Supv.	SOP 221–H–9406 5Q1.2 312
			alpha beta/gamma	HP	Prior to Re-lease / 2 hour turnaround	3 d/m/ml 10 d/m/ml	< None > Divert Flow	Sep. Oper. HPO Supv.	
F/H	Tankfarm Runoff	HP–52	gamma	in–field monitor	Continuous	10 d/m/ml	< None > Divert Flow	CCR Operator	241 FH–740AQ
H	Tritium Facili-ties	HP–15 and HP–50	tritium	Analytical Lab	12 hours / 3 hour turn-around	20 pCi/ml	< Release > Retain	CCR Operator AL Technician	Special Proce-dure

ATTACHMENT III

Outfall Analysis Sheets

OPTIONS AND ALTERNATIVES FOR ELIMINATION OR MINIMIZATION OF LIQUID RADIOACTIVE RELEASES

During September 1992, following the issuance of the Final–ERP & CP, DOE–SR Assistant Managers and their WSRC counterparts reached agreement on the options and alternatives that were identified in the Final–ERP & CP for the elimination or minimization of releases from each of the site's radioactive liquid release points.

This section presents, by responsible operating division, an updated status of these initiatives. The attached outfall analysis sheets also include any new initiatives and recommendations identified during the recently completed annual re-evaluation of the engineered solutions.

In order to facilitate tracking, and to aid in driving the implementation of facility changes, all newly identified and all incomplete recommendations have been listed in Attachment V in a matrix format. To ensure timely closure, the status of these open recommendations will now be reviewed (along with the Attachment I action items) by WSRC senior staff at least every four months.

SRTC
Outfall Analyses
Initiatives and
Recommendations

1993 Review and Update

A–Area

A) Release Points – ..... 700 Area Labs, Air Stripper, Process Water and Stormwater

Outfall – ..... Tims Branch–2 (TB–2)

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2
U/Pu	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

C) Impact of Operational Considerations –

1. None

D) Initiatives that would reduce production of this waste –

1. Decontaminate all Area roofs and facilities.
2. Move the EMS and HP Internal Dosimetry labs to the F or H Area.

WSRC Recommendations – Continue to operate and decon facilities as per the site mission. Relocation of labs is not justifiable on a cost/radioactive effluent reduction benefit basis. However, due to needed improvements and updating of existing labs, preliminary work on a new Health Physics Technology Center project is being performed at this time. This new facility, if constructed, would be located in B–Area. Most of the HP lab (and possibly EMS lab) work performed in 735–A would move to B–Area. This would eliminate one source of minute quantities of radioactive spikes to the A–001 outfall.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Reconfigure all laboratory drains to become Low–Activity Drains at 776–A. This would be against waste minimization. ..... Capital $3.3M
   Operating $5M/yr
2. Reconfigure all drains within SRTC and build an ETF to treat the waste. Capital $43M

WSRC Recommendations – Continue to operate facilities as planned. The cost/benefit ratio is too high for each initiative, especially when considering the high operating costs of storing and shipping low level waste.

TNX–Area

A) Release Points – ..... TNX Process Sewer

Outfall – TNX–1

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	<0.1	<0.08	<0.1	<0.1	<0.1	<0.1
U/Pu	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

C) Impact of Operational Considerations –

1. TNX will continue to have a research mission with small associated releases.

D) Initiatives that would reduce production of this waste –

1. Reduce operations at the TNX facility.

WSRC Recommendations – Continue with operations at TNX as per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Reinvestigate closure of the old TNX Seepage Basin in accordance with the waste site remediation schedule and program agreed to by the regulatory agencies. ..... unreviewed

WSRC Recommendations – Reinvestigate closure of the old TNX Seepage Basin in accordance with the waste site remediation schedule and program agreed to by the regulatory agencies. The actual closure project has not yet been funded.

WESTINGHOUSE SAVANNAH RIVER COMPANY SRT-ALARA-93-0231

INTER-OFFICE MEMORANDUM

August 3, 1993

To: Tim Jannik, 735-A

From: Nancy Halverson, 773-43A

RE-EVALUATION OF INITIATIVES IDENTIFIED IN THE FINAL ENVIRONMENTAL RELEASE PREVENTION AND CONTROL PLAN (U)

SRTC personnel conducted a review of the applicability and cost-effectiveness of the initiatives identified in the Final Release Prevention and Control Plan.

For the A Area outfalls, the recommendation for reducing the size of a release remains the same: Continue operating facilities as they exist now. Reconfiguring the drains is an extremely expensive option that would result in negligible reductions in releases.

The recommendation for reducing production of the waste also remains the same for A Area. Relocating laboratories is not justifiable based on the cost/benefit ratio. However, preliminary work on a new Health Physics Technology Center project actually is being done. This new facility, if constructed, would be located in B Area. Most of the HP Technology work currently done in 735-A would move to B Area. This would eliminate one source of minute quantities of radioactive spikes to the A-001 outfall.

For the TNX outfalls, the recommendation for reducing production of the waste remains the same: continue with TNX operations per the site mission.

The recommendation for reducing the size of a release from TNX needs to be reworded. According to the Environmental Restoration (ER) Department, reclosure of the Old TNX Seepage Basin has not been funded. Under the current schedule, site investigation work will not begin until FY 96 and a Record of Decision on how to proceed would be expected in FY 2000. ER is responsible for this potential project. The initiative and the recommendation should be reworded to say "Reinvestigate closure of the

Old TNX Seepage Basin in accordance with the waste site remediation schedule and program agreed to by the regulatory agencies."

XC C. G. Hardin, 773-A
W. R. Wilmarth, 773-43A
G. F. Hayford, 704-T
N. L. Turner, 679-T
R. A. Runnels, 773-43A

RRD
Outfall Analyses Initiatives and Recommendations

1993 Review and Update

C–Area

A) Release Points – ..... Process Sewer

Outfall – ..... C–Canal

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	57	32	4	11	17	2	13	28	<20	5	1

C) Impact of Operational Considerations –

1. C–Area continues to have an equipment maintenance mission, therefore chillers still need to be operated.
2. Tritiated moderator is still stored in the tanks within the Reactor Building.

D) Initiatives that would reduce production of this waste –

1. Stop performing maintenance work in C–Area.
2. Remove all tritiated moderator from area.
3. Route outfall to seepage basin.

WSRC Recommendations – Continue performing maintenance in C–Area and continue storing tritiated moderator in C–Area.

E) Initiatives that would reduce the size of the release – ..... Cost

1. All drains in decon facility have been plugged. ..... Comp.
2. All sumps have been diverted to the Disassembly Basin ..... Comp.

WSRC Recommendations – Continue performing equipment maintenance, as needed, and continue storing tritiated moderator in C–Area. Moderator will continue to be stored in C–Area until the site "Moderator Management Plan" is executed. Implementation date has not yet been finalized.

D–Area

A) Release Point – ..... Process Sewer 772–D

Outfall – ..... Beaver Dam Creek

B) Past, Present and Projected Releases Based on Current Initiatives –

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	210	400	140	170	60	40	70	70	70	50	50

Note – These totals are included in the 400–D totals

C) Impact of Operational Considerations –

1. **772–D process sewer radioactive effluents are approximately 7% of the total amount released to the Beaver Dam Creek.**

D) Initiatives that would reduce production of this waste –

1. **Relocate D–Area Analytical Lab to K–Area.**

WSRC Recommendation – Continue Analytical Lab operations in D–Area.

E) Initiatives that would reduce the size of the release – ..... Cost

1. **Reactors and Heavy Water Operations reevaluate the number and volume of samples currently being requested for analysis to see if they can be reduced. ..... Comp.**
2. **Collecting and transporting the 772–D effluent to a different site location for processing would only transfer the point of tritium release to the environment. Accordingly, the only initiative that would reduce the size of the release is to drum the effluent and store until tritium removal technology is available on site. To accommodate 3 years storage $2M**

WSRC Recommendations – Initiative #2 is not justifiable on a cost/benefit basis. Item #1 has been completed and DPSOL 105–6101 was revised to reflect the changes and reductions in lab analyses.

D–Area

A) Release Points – ..... Process Sewer for 420–D, 421–D & 772–D

Outfall – ..... Beaver Dam Creek

B) Past, Present and Projected Releases Based on Current Initiatives –

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	2100	4000	1400	1700	600	400	700	600	<600	500	500

Note – These totals include the 772–D Process Sewer, which makes up 7–10% of the releases.

C) Impact of Operational Considerations –

1. D–Area continues to have a heavy water rework and Analytical Lab mission, which will continue regardless of reactor status.
2. The site need for clean moderator drums will continue indefinitely, regardless of reactor status. Clean drums are needed in the 100–Areas for clean–up and decon activities.

D) Initiatives that would reduce production of this waste –

1. Reduce the Rework Unit overhead concentration control point from 0.40 Mol % D20 to a lower value, this would decrease production capability.
2. Discontinue moderator rework activities.

WSRC Recommendations – Reactor Engineering to further study the benefit of reducing the Rework overhead concentration drawoff point from 0.40 Mol % D2O to 0.20 Mol % D2O. This study has not yet been performed. Item #2 is not justifiable on a cost basis, it is more economical to clean up and reconcentrate the moderator now, than it is to wait and have to reconcentrate it at a later time.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Design and construct a percolation field/seepage basin. $10M
2. Design and construct an evaporator. $20M
3. Reactors and Heavy Water Operations reevaluate the number and volume of samples currently being requested for analysis to see if they can be reduced. ..... Comp
4. Collecting and transporting the 772–D effluent to a different site location for processing would only transfer the point of tritium release to the environment. Accordingly, the only initiative that would reduce the size of the release is to drum the effluent and store until tritium removal technology is available on site. To accommodate 3 years storage $2M

WSRC Recommendations – Items #1, 2 & 4 are not justifiable on a cost/benefit basis. Item #3 has been completed and DPSOL 105–6101 was revised to reflect the changes and reductions in lab analyses.

K–Area

A) Release Points – ..... 107–K HX Cooling Water
Outfall – ..... K – Canal

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	2300	1800	1400	2500	100	20	800 (a)	120	<20	<10	<10

(a) Does not include non–routine 5700 Ci Tritium release in December, 1991.

Note: Projected releases do not reflect the substantial potential releases that exist with the HX CW System.

C) Impact of Operational Considerations –

1. The K–Area Heat Exchanger Cooling Water releases are dependent on time at full cooling water flow, the tritium concentration in the moderator, and the integrity of the 12 Heat Exchangers.
2. Revised operating procedures and an additional online monitoring system have reduced the potential for a large moderator loss to the environment.

D) Initiatives that would reduce production of this waste –

1. Place and maintain K–Reactor in cold standby.

WSRC Recommendation – Place and maintain K–Reactor in cold standby.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Bring the K–Cooling Tower on–line, this will control and reduce the volume of liquid discharges to the environment. ..... N/A
2. Sample each Heat Exchanger effluent daily, during downtime and sample the 107–K effluent every 2 hours in the non–alarmed state. ..... N/A
3. Replace the existing 9 Ci/L moderator with virgin moderator. ..... N/A
4. Replace the existing 9 Ci/L moderator with less concentrated moderator from the site inventory. ..... N/A
5. Replace all Heat Exchangers (10 of 12 are planned for replacement) with new design type Heat Exchangers. ..... Comp.
6. Design and install a moderator de–tritiation facility. $100M

WSRC Recommendations – Place and maintain K–Reactor in cold standby. Item #5 was completed prior to mission change. Items #1 through #4 are currently not applicable due to the K–Reactor mission change. Item #6 is not justifiable on a cost/benefit basis or ALARA basis.

K–Area

A) Release Point – ..... Process Sewer

Outfall – ..... K – Canal

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	400	400	300	300	100	200	100	<10	<5	<5	<5
Sr–90	0	0.01	0	0	<<0.01	0.01	<0.01	<0.01	<0.01	<<0.01	0

C) Impact of Operational Considerations –

1. K–Process Sewer releases do not change (volume wise) with operations, they do change with the H–3 concentration in the moderator.

D) Initiatives that would reduce production of this waste –

1. Place and maintain K–Reactor in cold standby.

WSRC Recommendation – Place and maintain K–Reactor in cold standby.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Reroute the Process Sewer discharge to the existing percolation field, or construct a field that is designed to handle the Process Sewer flowrate. $15M
2. Replace the existing 9 Ci/L moderator with virgin moderator. ..... N/A (There is not sufficient virgin moderator in stock for complete change–out)
3. Replace the existing 9 Ci/L moderator with less concentrated moderator from the site inventory. ..... N/A
4. Design and construct an Evaporator that would change the Process Sewer discharge into an airborne effluent. $20M
5. Bring the K–Cooling Tower on–line, this will control and reduce the volume of liquid discharges to the environment. ..... N/A
6. Drain moderator and change out with Light Water after completion of mission in 1994. Perform testing and training operations using the untritiated Light Water. ..... N/A

WSRC Recommendations – Items #1 through #4 are not justifiable on a cost/benefit or ALARA basis. Items #2, #3, #5, and #6 are no longer applicable due to the K–Reactor mission change to cold standby. All process water will be drained and systems dried as part of the current standby plan.

K–Area

A) Release Point – ..... K– Disassembly Basin Purge

Outfall – ..... K – Percolation Field

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	6700	2100	4200	100	200	10	0	1600	2000	200	100
Sr–90	<<0.01	0	<0.01	<0.01	<<0.01	<<0.01	0	<0.01	<0.01	<0.01	<<0.01
Cs–134	<<0.01	<<0.01	<0.01	<<0.01	<<0.01	0	0	<0.01	<0.01	0	0
Cs–137	0.01	0.01	0.04	0.02	<0.01	<<0.01	0	0.01	0.01	<0.01	<<0.01

C) Impact of Operational Considerations –

1. K–Disassembly Basin releases are dependent on the number of fuel changes and the H–3 concentration of the Moderator.
2. The concentration of tritium in the basin is minimized by flushing the fuel rods.

D) Initiatives that would reduce production of this waste –

1. Place and maintain K–Reactor in cold standby.

WSRC Recommendation – Place and maintain K–Reactor in cold standby.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Replace the existing 9 Ci/L moderator with virgin moderator. ..... N/A
2. Replace the existing 9 Ci/L moderator with less concentrated moderator from the site inventory. ..... N/A
3. Cover the basin to avoid required purges for reducing tritium concentrations. ..... Funded

WSRC Recommendation – Continue to discharge to the percolation field on an as required basis, only. Items #1 and #2 are not justified on a cost/benefit or ALARA basis. Implement Item #3, as planned. The monomolecular film study is to be completed as planned. However, the reactor has been drained of moderator, therefore, any discharges from the reactor to the disassembly basin should not increase the tritium level.

L–Area

A) Release Point – ..... 107–L HX Cooling Water

Outfall – ..... L – 007

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	190	180	140	100	70	110	10	0	0	0

C) Impact of Operational Considerations –

1. Non–operating status of L–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. Lay–up of the L–Reactor has eliminated the production source of waste.

WSRC Recommendations – Continue to lay–up L–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Defuel and drain process water from L–Area systems. ..... Funded

WSRC Recommendations – Continue to lay–up L–Area in accordance with the site mission, as planned.

L–Area

A) Release Point – ..... Process Sewer

Outfall – ..... L – 007 (L–Canal)

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	8	11	20	25	24	27	11	50	12	10	<10
Sr–90	0	0	0	0	0.002	0.003	<0.001	<0.001	<0.001	<<0.001	0

C) Impact of Operational Considerations –

1. Non–operating status of L–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. As part of the overall lay–up plan, divert all building sumps directly to the Disassembly Basin once all cooling water lines are drained.

WSRC Recommendations – Continue to lay–up L–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Divert all building sumps to 106 Building and send to 211F for evaporation. $0.30/gal
2. Divert sumps to Disassembly Basin, as per lay–up plan. ..... Funded

WSRC Recommendations – Perform Initiative #2 as part of the overall lay–up plan. Initiative #1 is not justifiable due to low levels of contamination.

L–Area

A) Release Point – ..... L Disassembly Basin

Outfall – ..... L – Seepage Basin

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	2	25	53	65	46	0	14	0	0	0	0

C) Impact of Operational Considerations –

1. Non–operating status of L–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. Lay–up of the L–Reactor has eliminated the production source of waste.

WSRC Recommendations – Continue to lay–up L–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. No purges for either tritium or level control are anticipated. Should inleakage occur and necessitate a purge, the effluent could be sent to 211–F evaporator. $0.30/gal

WSRC Recommendations – Continue to lay–up L–Area in accordance with the site mission, as planned. Initiative #1 is not justifiable due to the low levels of contamination.

P–Area

A) Release Point – ..... 107–P HX Cooling Water

Outfall – ..... P–Canal (P–019)

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	1120	675	780	335	465	125	88	<1	0	0	0

C) Impact of Operational Considerations –

1. Non–operating status of P–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. Lay–up of the P–Reactor has eliminated the production source of waste.

WSRC Recommendations – Continue to lay–up P–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Maintain P–Reactor in lay–up status. ..... Funded

WSRC Recommendations – Continue to lay–up P–Area in accordance with the site mission, as planned.

P–Area

A) Release Point – ..... Process Sewer

Outfall – ..... P–Canal (P–019)

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	200	120	160	57	165	67	43	8	<5	<5	<5
Sr–90	N/A	N/A	N/A	N/A	0.002	0.0006	<0.0005	<0.0001	0	0	0

C) Impact of Operational Considerations –

1. Non–operating status of P–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. As part of the overall lay–up plan, divert all building sumps directly to the Disassembly Basin once all cooling water lines are drained.

WSRC Recommendations – Continue to lay–up P–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Divert all building sumps to 106 Building and send to 211F for evaporation. $0.30/gal
2. Divert sumps to Disassembly Basin, as per lay–up plan. ..... Comp.

WSRC Recommendations – Initiative #2 has been completed as part of the overall lay–up plan. Initiative #1 is not justifiable due to low levels of contamination.

P–Area

A) Release Point – ..... P Disassembly Basin

Outfall – ..... P– Seepage Basin

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	5900	4400	1900	203	20	0	48	0	0	0	0
Cs	0.051	0.008	0.028	0.005	0.0005	0	0.0002	0	0	0	0

C) Impact of Operational Considerations –

1. Non–operating status of P–Reactor will continue to reduce releases.

D) Initiatives that would reduce production of this waste –

1. Lay–up of the P–Reactor has eliminated the production source of waste.

WSRC Recommendations – Continue to lay–up P–Area in accordance with the site mission, as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. No purges for either tritium or level control are anticipated. Should inleakage occur and necessitate a purge, the effluent could be sent to 211–F evaporator. $0.30/gal

WSRC Recommendations – Continue to lay–up P–Area in accordance with the site mission, as planned. Initiative #1 is not justifiable due to low levels of contamination.

WESTINGHOUSE SAVANNAH RIVER COMPANY

INTER-OFFICE MEMORANDUM

RRD-RES-930177

August 18, 1993

TO: G.T. JANNIK, 735-11A

FROM: J. J. SHAKE, 707-C

REVIEW OF REACTOR OUTFALL ANALYSIS SHEETS (U)

The *Environmental Release Prevention and Control Plan* (ERP&CP) outfall analysis sheets for the Reactor Division have been reviewed. Attached is a table for each outfall that lists the initiatives and WSRC recommendations from the ERP&CP and the current status of the initiatives. New initiatives for the reactor division outfalls are not anticipated due to the current mission. If there are any questions or comments, contact me at 7-9445.

JJS:jjs
Att

CC: J. N. Dewes, 707-C
D. P. Skiff, 707-C

Outfall:C-Area - C Canal		
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Stop performing maintenance work in C-Area	Continue maintenance work	Maintenance work will continue at C-Area until transition to EM.
2. Remove all tritiated moderator from area	Continue storing tritiated moderator in C-Area	Moderator will continue to be stored in C-Area until the "Moderator Management Plan" is executed.
3. Route outfall to seepage basin	Not recommended	No change
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. All drains in decon facility have been plugged		Complete
2. All sumps have been diverted to the disassembly basin.		Building sumps are pumped to the Disassembly basin as applicable.

Outfall:D-Area - Beaver Dam Creek		
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Reduce the Rework Unit overhead concentration control point from 0.40 Mol % D2O to a lower value	Reactor Engineering to study the benefit of reducing the Rework Unit overhead concentration drawoff point from 0.40 Mol % D2O to 0.20 Mol % D2O.	No change
2. Discontinue moderator rework activities	Not justifiable. It is more economical to cleanup and re-concentrate the moderator now.	No change
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Design and construct percolation field seepage basin.	Not justified on a cost/benefit basis	No change.
2. Design and construct an evaporator	Not justified on a cost/benefit basis	No change.
3. Reactors and Heavy Water re-evaluate the number and volume of samples currently being requested for analysis.	Perform	The sample program was evaluated and the number of required samples was reduced. DPSOL 105-6101 was revised to reflect the changes.
4. Drum and store effluent until tritium removal technology is available on site.	Not justified on a cost/benefit basis	No change.

Outfall:K-Area - K Canal	Process Sewer	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Limited operation of K Reactor will reduce the production source of waste.	Operate the K-Reactor in accordance with the site mission, as planned, through 1994 and beyond.	The mission for K-Reactor has changed to cold standby.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Re-route the process sewer discharge to the percolation field or construct a new field.	Not justified on a cost/benefit or ALARA basis	No change.
2. Replace moderator with virgin moderator	Not justified on a cost/benefit or ALARA basis	No change.
3. Replace moderator with less concentrated moderator	Not justified on a cost/benefit or ALARA basis	No change.
4. Design and construct an evaporator that would change the process sewer into an airborne effluent.	Not justified on a cost/benefit or ALARA basis	No change.
5. Bring K-Cooling Tower on-line.	Perform as planned.	No longer applicable due to mission change.
6. Drain moderator and replace with light water after completion of mission in 1994.	Perform as planned.	No longer applicable due to mission change. All process water to be drained and systems dried as part of the standby plan.

Outfall:K-Area - K Percolation Field		
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Limited operation of K Reactor will reduce the production source of waste.	Operate the K-Reactor in accordance with the site mission, as planned, through 1994 and beyond.	The mission for K-Reactor has changed to cold standby.
2. Removal of all fuel and target rods would eliminate the leakage of fission and activation products in the basin water.	Operate the K-Reactor in accordance with the site mission, as planned, through 1994 and beyond.	The mission for K-Reactor has changed to cold standby.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Replace moderator with virgin moderator	Not justified on a cost/benefit or ALARA basis	No change.
2. Replace moderator with less concentrated moderator	Not justified on a cost/benefit or ALARA basis	No change.
3. Cover the basin to avoid required purges for reducing tritium concentrations.	Implement as planned	The monomolecular film study will be completed as planned. The reactor has been drained, therefore any discharges from the reactor to the disassembly basin should not increase the tritium level.

Outfall:K-Area - K Canal	Heat Exchanger Cooling Water	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Limited operation of K Reactor will reduce the production source of waste.	Operate the K-Reactor in accordance with the site mission, as planned, through 1994 and beyond.	The mission for K-Reactor has changed to cold standby.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Bring K-Cooling Tower on-line.	Perform as planned.	No longer applicable due to mission change.
2. Sample each heat exchanger effluent daily	Implement as planned.	No longer applicable due to mission change. Process water has been drained from heat exchangers.
3. Replace moderator with virgin moderator	Not justified on a cost/benefit or ALARA basis	No change. Moderator has been drained from system for standby.
4. Replace moderator with less concentrated moderator	Not justified on a cost/benefit or ALARA basis	No change. Moderator has been drained from system for standby.
5. Replace heat exchangers with new design type heat exchangers.	Implement as planned.	Heat exchangers were replaced prior to the mission change.
6. Install moderator de-tritiation facility.	Not justified on a cost/benefit or ALARA basis	No change.

Outfall:L-Area - L-007	Process Sewer	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. As part of the overall lay-up plan, divert all building sumps to the disassembly basin once all cooling water lines are drained.	Operate L-Reactor in accordance with the site mission, as planned.	L-Reactor is being placed in cold shutdown.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Divert all building sumps to 106 building and send to 211-F for evaporation.	Not justified due to low levels of contamination.	No change.
2. Divert sumps to the disassembly basin as per the lay-up plan.	Perform as part of the lay-up plan.	No change.

Outfall:L-Area - L-007	Heat Exchanger Cooling Water	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Lay-up of the L-Reactor has eliminated the production source of waste.	Operate the L-Reactor in accordance with the site mission, as planned.	The mission for L-Reactor has changed to cold shutdown.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Defuel and drain process water from L-Area systems	Operate the L-Reactor in accordance with the site mission, as planned.	Defueling complete and draining in progress.

Outfall:L-Area - L Seepage Basin		
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Lay-up of the L-Reactor has eliminated the production source of waste.	Operate the L-Reactor in accordance with the site mission, as planned.	The mission for L-Reactor has changed to cold shutdown.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. If a purge is required, the effluent could be sent to 211-F evaporator.	Not justified due to low levels of contamination.	No change.

Outfall:P-Area - P-Canal	Process Sewer	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. As part of the overall lay-up plan, divert all building sumps to the disassembly basin once all cooling water lines are drained.	Operate P-Reactor in accordance with the site mission, as planned.	No change.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Divert all building sumps to 106 building and send to 211-F for evaporation.	Not justified due to low levels of contamination.	No change.
2. Divert sumps to the disassembly basin as per the lay-up plan.	Perform as part of the lay-up plan.	Building sumps are pumped to the Disassembly basin as applicable.

Outfall:P-Area - P-Canal	Heat Exchanger Cooling Water	
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Lay-up of P-Reactor has eliminated the production source of waste.	Operate P-Area in accordance with the site mission, as planned.	No change.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. Maintain P-Reactor in lay-up status.	Operate P-Area in accordance with the site mission, as planned.	No change.

Outfall:P-Area - P Seepage Basin		
Waste Reduction Initiative	**WSRC Recommendation**	**Status**
1. Lay-up of the P-Reactor has eliminated the production source of waste.	Operate the P-Area in accordance with the site mission, as planned.	No change.
Release Size Reduction Initiative	**WSRC Recommendation**	**Status**
1. If a purge is required, the effluent could be sent to 211-F evaporator.	Not justified due to low levels of contamination.	No change.

NMPD
Outfall Analyses
Initiatives and
Recommendations

1993 Review and Update

F–Area

A) Release Points – ..... F–Area Cooling Water, Stormwater and F–Area Effluents

Outfall – FM–3

B) Past, Present and Projected Releases Based on Current Initiatives – (Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	13	14	13	a	8	33	6	5	5	5	5
Sr	0.013	0.011	0.008		0.003	0.004	0.004	0.0006	0.0005	<0.0005	<0.0005
Cs	0.019	0.022	N/A	N/A	0.006	0.002	0.002	0.0008	0.0005	<0.001	<0.001
Pm	N/A	N/A	N/A	N/A	0.015	0.020	0.003	0.00008	0.002	<0.001	<0.001

Note: Projected releases do not reflect the substantial potential releases that exist with the Seg. CW System.

C) Impact of Operational Considerations –

1. **F–Canyon will process Pu–239 to support inventory stabilization and begin the conversion of assorted material now in inventory to a form suitable for long term storage. During FY92, Separations will begin the transition from a production mode to an inventory stabilization mode (FY92–96) and then clean out (FY97–98). Following completion of clean-out, the potential for an accidental release will be reduced greatly.**
2. **F–Area Segregated Cooling Water Effluent is the primary consideration for a substantial potential release to the environment in regard to this outfall and the condition of this effluent is dependent upon process leaks (coil leaks), and the presence of residual activity from past leaks.**

D) Initiatives that would reduce production of this waste –

1. **If current long term operating plans are not revised, the reduction of radioactive material processing and process inventories in F–Canyon will reduce the source for potential accidental NMPD releases.**
2. **Completion of F–Canyon clean out, which is scheduled for FY97–FY98, will eliminate the primary source of potential radioactive releases. This will also reduce the production of waste from cooling water diversions.**
3. **Complete installation of new stormwater monitor/source holders in all stormwater monitor systems.**
4. **Complete program to develop geometry specific calibrations for each stormwater monitor system.**
5. **Design, fabricate, test and implement a prototype sediment removal system.**
6. **Continue program to identify, track, reduce, and prevent fixed and transferrable contamination within the F/H Tank Farm Boundaries.**

WSRC Recommendations – F–Area processes will be operated in an environmentally sound manner and will be in a position to take on new production initiatives, if assigned. The current strategic plan for operations will reduce and ultimately eliminate the risk associated with new radioactive material processing and process storage. Past contaminations and residual materials will continue to require active management. Continue with all initiatives as planned.

Outfall – FM–3

E) Initiatives that would reduce the size of the release – ..... Cost

1. Install additional instrumentation and modify existing cooling water monitoring equipment to enhance reliability, sensitivity and trouble–shooting capability. ..... Comp.
2. Consolidate and upgrade UO3 Storage facilities to provide satisfactory storage criteria and satisfy findings by DOE–SR and Tiger Team findings. $20M
3. Provide batch release system to match the H–Area system. This approach would reduce the potential for releases by increasing reaction time. $15M
4. Modify segregated cooling water system to provide closed loop cooling. $40M
5. Improve the sensitivity of the stormwater monitors (Dependent on sediment removal system). ..... <$10K
6. Test/Install new Beta/Gamma inline probe assembly $60K
7. Route all diverted stormwater through ETF. ..... Capital $2M
   Operating $3M
8. Collect all stormwater runoff from F–Tank Farm. $6.1M

WSRC Recommendations – Implement Item #2. There has been no movement of drums during the past year and funding is not available from the FY93/FY94 budgets.
Items #3 and #4 are not recommended due to the high cost/benefit ratio when related to plans for canyon clean out in FY97–98.
Continue with Items #5 and #6 as planned.
Items #7 and #8 are not justifiable on a cost/benefit basis.

F–Area

A) Release Points – ..... F–Area Storm Sewer

Outfall – U3R–2

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	0.5	0.05	0.08	<1	<1	<1	<1
Sr	N/A	N/A	N/A	N/A	0.003	<<0.001	<<0.001	0	0	0	0
Cs	N/A	N/A	N/A	N/A	0.006	<<0.001	<<0.001	0	0	0	0
Pm	N/A	N/A	N/A	N/A	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

C) Impact of Operational Considerations –

1. F–Canyon FB–Line will process Pu–239 to support inventory stabilization and begin the conversion of assorted material now in inventory to a form suitable for long term storage. During FY92–96, Separations will begin the transition from production to an inventory stabilization mode and then clean out (FY97–98). Upon completion of cleanout, the potential for an accidental release will be greatly reduced.
2. Credible sources of potential contamination at this outfall are due to rainwater pick–up of contamination and equipment failure associated with related processing units. Processing areas include: 221–1F (A–Line), 232–F (Abandoned Tritium), 292–F (F–Area Stack) and Waste Trailer Receiving at 211–F.
3. Depleted uranium is stored in 728–F and 730–F. Building integrity and drum corrosion are major concerns. The material in F–Area represents approximately 12% of the site total. A release of this material from the container could result in contamination reaching the outfall.

D) Initiatives that would reduce production of this waste –

1. If current long term operating plans are not revised, reduction of radioactive material and process storage will reduce the source for potential NMPD releases. Past contaminations will continue to have potential impacts on releases from this outfall. However, this potential will decrease over time.

WSRC Recommendations – F–Area processes will be operated in an environmentally sound manner and will be in a position to take on new production initiatives, if assigned. The current strategic plan for operations will reduce and ultimately eliminate the risk associated with new radioactive material processing and process storage. Past contaminations and residual materials will continue to require active management. Continue with all initiatives as per the site mission.

Outfall – U3R–2

E) Initiatives that would reduce the size of the release – ..... Cost

1. Improve confinement, monitoring, and fire protection at the liquid waste unloading facility. $20M
2. Line the B–1 and B–3 basins with stainless steel to seal cracks. $0.4M
3. Ceilcoat Sandfilter ditch up to 4 feet and maintain ditches as a clean area. $0.1M
4. Install Sandfilter roof to eliminate ditch rainwater processing $0.5M
5. Install piping to transfer ditch rainwater to process through GP evaporators. $0.5M
6. Construct a divided basin and administratively control releases by sampling prior to release. Normally clean rainwater can be transferred directly to the outfall thus eliminating processing. $1M
7. Provide monitoring capability at F–002, make slidegate remotely operational, and install piping to 211F. $1M

WSRC Recommendations – Due to environmental risks and long term needs, implement Items #1, #2 & #3. The Item #1 Project has been requested for funding. However, it was rejected. A Work Order for Items #2 and #3 will initiated by the end of September, then it will be prioritized with other AMO jobs for funding.
Items #4 through #7 are not justifiable based on cost/benefit. Items #4 & #5 were rejected in favor of Item #3.

F–Area

A) Release Points – ..... Naval Fuels Effluent

Outfall – U3RF–3

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	2	0.2	0.2	0.2	<0.2	<0.2	<0.2
Sr	N/A	N/A	N/A	N/A	0.002	<<0.001	<<0.001	0.00002	<<0.001	<<0.001	<<0.001
U/Pu	N/A	N/A	N/A	N/A	<<0.001	<<0.001	<<0.001	0.00002	<<0.001	<<0.001	<<0.001
Pm	N/A	N/A	N/A	N/A	0.002	<<0.001	<<0.001	0.00003	<<0.001	<<0.001	<<0.001

C) Impact of Operational Considerations –

1. The 247–F facility has been placed in non–operational stand–by. This placement considered environmental issues and the current condition is considered to be environmentally sound.

D) Initiatives that would reduce production of this waste –

1. Abandon and seal building. Shut down building support functions.
2. Decommission and Decontaminate the facility.

WSRC Recommendations – Maintain current stand–by status per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Current releases are negligible.

WSRC Recommendations – No new initiatives are believed to be justified. Keep facility in non–operational, stand–by mode, as per the the site mission.

H–Area

A) Release Points – ..... H–Area Cooling Water, Stormwater and H–Area Effluents

Outfall – FM–1C

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	72	56	205	12	20	18	12	5	5	10	<10
Sr	0.003	0.003	0.002	0.013	0.004	<0.001	0.006	0.0007	0.0005	<0.005	<0.005
Cs	0.009	0.011	0.008	0.040	0.060	0.02	0.002	0.001	0.01	<0.01	<0.01

Note: Projected releases do not reflect the substantial potential releases that exist with the Seg. CW System.

C) Impact of Operational Considerations –

1. H–Canyon is scheduled for operation through FY98 to process select RBOF inventory and current reactor basin material. H–Canyon waste recovery and HB–line will continue to process and blend Pu–238 oxide for NASA space missions.
2. Potential substantial accidental releases to H–Area Segregated Cooling Water Effluent are dependent upon operation, coil leaks, and the presence of residual activity from past leaks. Upon completion of clean out of H–Canyon, the potential for accidental release and cooling water diversion will greatly decrease.
3. Tritium will continue to unload reservoirs from weapons retirement and will continue to perform normal recycling.

D) Initiatives that would reduce production of this waste –

1. Reduction of radioactive material inventory in H–Canyon vessels will reduce the source of potential releases.
2. Completion of H–Canyon clean out (FY98–99) will eliminate the source of potential radioactive releases.
3. Shutdown of 234–H processes after FY94 will eliminate this source of potential releases.
4. Design completion and installation of drain collection system for Tank Farm H–East and H–West cooling water pumphouses.
5. Reroute stormwater runoff around H–East and H–West pumphouses to the monitored zone.

WSRC Recommendations – Start up the state–of–the–art Replacement Tritium Facility, as planned. Other H–Area operations will be performed in an environmentally sound manner and will be positioned to take on new initiatives, if assigned. The current strategic plan for operations will ultimately eliminate the risk associated with new radioactive material processing. Past contaminations will continue to require active management. Complete Item #4 as planned. Item #5 is not justifiable in light of the low levels of contamination involved.

Outfall – FM–1C

E) Initiatives that would reduce the size of the release – ..... Cost

1. Install additional instrumentation and modify existing cooling water monitoring equipment. ..... Funded
   (estimated completion date is 12/30/93)
2. Line the B–3 basin with stainless steel to seal cracks. $0.2M
   (AMO has been approved, estimated completion date is 12/30/93)
3. Ceilcoat Sandfilter ditch and maintain as a "clean area." ..... comp.
4. Continue to monitor outfall per 12 hour shift for tritium concentrations (Tritium). ..... Funded
5. Install Sandfilter roof to eliminate ditch rainwater processing and possible contamination of the environment. $0.5M
   (Temporary installation complete, AMO for permanent installation is being routed, estimated completed date is 1/30/94).
6. Install piping to transfer ditch rainwater from LAW evaporator to GP evaporator and the ARU. $0.5M
7. Construct a divided basin and administratively control releases by sampling prior to release. Normally clean rainwater can be transferred directly to the outfall, thus eliminating processing. $1M
8. Provide alternate transfer route of spill containment basins and 500 and 600 aprons to ETF. $0.3M

WSRC Recommendations – Implement Items #1, #2, #4, and #6. Items #5, and #7 through #8 are not justifiable on a cost/benefit basis. Items #5 was rejected in favor of Item #3.

H–Area

A) Release Points – ..... Tritium Facility Stormwater
Outfall – HP–15

B) Past, Present and Projected Releases Based on Current Initiatives –
(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	1	4	5	<5	<5	<5	<5
Sr	N/A	N/A	N/A	N/A	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Pm	N/A	N/A	N/A	N/A	0.0002	0.0006	0.001	0.001	0.001	<0.001	<0.001

C) Impact of Operational Considerations –

1. Tritium will continue to unload reservoirs from weapons retirement and will continue to perform normal recycling.
2. Tritium's schedule to extract tritium from reactor targets is dependent upon K–Reactor Operations.
3. 233–H (RTF) startup is scheduled for FY94, which will result in a period of dual operation with the current processing facility (234–H).
4. The 234–H facility will stop processing after FY94.
5. Stormwater runoff will be affected by a tritium release only during an accidental release, or by rainout of tritium to the outfall.

D) Initiatives that would reduce production of this waste –

1. The cessation of processing in the existing 234–H facility after FY94 will reduce the potential for NMPD releases to this outfall.
2. The RTF (233–H) will be less vulnerable to accidental releases. ALso, reduced tritium emissions will reduce the potential for rainout of tritium to the environment.

WSRC Recommendations – Execute the strategic operating plan for start up of the state–of–the–art Replacement Tritium Facility as scheduled.

E) Initiatives that would reduce the size of the release – ..... Cost

1. There is no viable option for treating tritium which may migrate to an outfall by stormwater runoff.

WSRC Recommendations – No action recommended.

S–Area

A) Release Points – ..... H–Area Runoff and Future S–Area Effluent

Outfall – ..... McQueen's Branch at Rd 4

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	<10	<10	<10
Cs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<<0.01	<<0.01	<<0.01

C) Impact of Operational Considerations –

1. H–Canyon is scheduled for operation through FY98 to process select RBOF inventory and current reactor basin material, after which releases will be reduced in the rainwater runoff through this outfall.
2. H–Canyon frames waste recovery and HB–Line will process and blend Pu–238 oxide for NASA's Cassini space mission.
3. S–Area is scheduled for start–up in 1994, this will cause a small increase in releases.

D) Initiatives that would reduce production of this waste –

1. Reduction of radioactive material inventory will reduce the source of potential releases.

WSRC Recommendations – Complete operational initiatives as per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Install Sandfilter roof to eliminate ditch rainwater processing and potential contamination. $0.5M
2. Ceilcoat Sandfilter ditch up to 4 feet and maintain ditches as a "clean area." $0.1M
3. Install permanent piping to transfer ditch rainwater to process through the GP evaporators. $0.5M
4. Construct a divided basin and administratively control releases by sampling prior to release. Normally clean rainwater can be transferred directly to outfall, thus eliminating processing. $1M

WSRC Recommendations – Implement Item #2. Items #1, #3 and #4 are not justifiable on a cost/benefit basis. Items #1 and #3 were rejected in favor of Item #2.

M–Area

A) Release Points – ..... M–Area ETF, Air Stripper, Cooling Water and Stormwater

Outfall – ..... Tims Branch–3 (TB–3)

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
U	0.002	0.045	0.006	0.006	0.001	0.002	0.002	0.002	<0.001	<0.001	<0.001

C) Impact of Operational Considerations –

1. M–Area releases are mainly due to background radioactivity in the groundwater pumped from wells and are, therefore, proportional to the volume of water discharged.
2. Uranium in LETF effluent is at the drinking water concentration of 20 ppb and cannot be distinguished from background in the the combined effluent at TB–3.

D) Initiatives that would reduce production of this waste –

1. Shutdown of M–Area would reduce the volume of non–contact cooling water by 40%. M–Area is scheduled to process existing stored waste through 1998.
2. Shutdown of the M–Area groundwater air stripper would reduce the volume of discharged water by 60%. It is estimated that 30 years may be required to complete remedial action for plume of chlorocarbon contamination.

WSRC Recommendations – Continue waste treatment until RCRA Facilities are clean and closed.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Tails treatment could be added to the LETF to remove uranium to 2 ppb, but this project could not be completed before most of the stored waste is scheduled to be processed. The reduction in the size of radioactive release would not be measurable at TB–3. ..... $10M

WSRC Recommendations – Continue with present operation per the site mission. Item #1 is not justifiable on a cost/benefit basis.

INTER-OFFICE MEMORANDUM
Savannah River Site

Date: 20-Aug-1993 12:17pm EDT
From: Jacqueline A. McLaughlin
MCLAUGHLIN-JA-09043
Dept: Engineering/Regulatory Program
s
Tel No: 2-3564

TO: J. Stephen Bellamy (BELLAMY-JS-09501)

CC: W.M. WIERZBICKI (WIERZBICKI-WM-05933)
CC: G. Timothy Jannik, 735-11A (JANNIK-GT-09913)

Subject: Re-evaluation of Outfall Analysis Sheets (U)

In the Final Environmental Release Prevention and Control Plan (ERP & CP) that was submitted to DOE-SR on June 30, 1992, "Outfall Analysis" sheets were included. Those sheets contained information on releases to that outfall such as C) impact of Operational considerations, D) initiatives that would reduce production of this waste, and E) initiatives that would reduce the size of the release. Listed below for all outfalls associated with Separations are changes, corrections, and/or additions and status of each initiative to reduce release size. Initiative that were not considered profitable due to the cost/benefit ratio have been excluded.

Outfall	E. Initiatives that would reduces release size	Status
FM-3	1. Install additional instrumentation & modify existing cooling water monitoring equipment to enhance reliability, sensitivity and trouble-shooting capability. (Britt)	Complete
	2. Consolidate & upgrade UO3 Storage facilities to provide satisfactory storage criteria and satisfy findings by DOE-SR and Tiger Team findings. (Britt, Geddes)	There has been no movement of drums. Funding is not available from the FY93/FY94 Budgets.
U3R-2	1. Improve confinement, monitoring, and fire protection at the liquid waste unloading facility. (Britt)	Project has been requested for funding. Rejected.
	2. Line the B-1 and B-3 basins with stainless steel to seal cracks. (Britt)	Work Order will be initiated by end of Sept. Then prioritize with other AMO jobs for funding.
	3. Cellcoat Sandfilter ditch up to 4 feet and maintain ditches as a clean area. (Britt)	Work Order will be initiated by end of Sept. Then prioritize with other AMO jobs for funding.

	4. Install Sandfilter roof to eliminate ditch rainwater processing.	Cancelled
	5. Install piping to transfer ditch rainwater to process through GP evaporators.	Cancelled
FM-1C	1. Install additional instrumentation and modify existing cooling water monitoring equipment. (Isom, Geddes)	Project Completion 12/30/93
	2. Line the B-3 basins with stainless steel to seal cracks. (Isom)	AMO has been approved Project Compl. 12/30/93
	3. Cellcoat Sandfilter ditch up to 4 feet and maintain ditches as a "clean area". (Isom)	Completed
	5. Install Sandfilter roof to eliminate ditch rainwater processing and possible contamination to the area.	Cancelled
	6. Install piping to transfer ditch rainwater to process through GP evaporator & ARU.	Temporary Installment Routing AMO for permanent installation Project Compl. 1/94

INTER-OFFICE MEMORANDUM
Savannah River Site

Date: 11-Aug-1993 04:17pm EDT
From: Roseann M. Benson
BENSON-RM-L3855
Dept: NMPD Regulatory Programs
Tel No: x2-4754

TO: G. Timothy Jannik, 735-11A (JANNIK-GT-09913)

CC: Frank R. Weitz (WEITZ-FR-B4662 @A1@SLSRP1)

Subject: ALARA Revised Goals and Other Agenda Items (U)

Tim - The following are answers to the agenda items from the ALARA Committee meeting on Monday:

1) M-Area's 1993 ALARA Goals for both liquid and atmospheric releases will remain the same throughout the calendar year. However, the revised ALARA atmospheric guide, which is written on the handout I received at the meeting, is incorrect. The guide was increased to 6.31E-04 mrem, not 1.0E-05 mrem.

2) M-Area does not have any action items on the ERP&CP list to reconcile. Health Protection is responsible for the close out of the three action items on the ARP&CP list.

3) M-Area's re-evaluation of the ERP&CP Outfall Analysis Sheets did not produce any changes to the sheets.

When will the 1994 proposed ALARA guides be due?

Talk to you - Roseann Benson (5-4122)

Prev by: DMW

SEPARATIONS AND TRITIUM
RECOMMENDED PHYSICAL ACTIONS

- ADD AND MODIFY CANYON COOLING WATER MONITORS — $ 2 MM
  - -COMPLETE IN F AREA
  - -1Q94 IN H AREA
- PROVIDE ENHANCED URANIUM OXIDE STORAGE — $20 MM
  - -NOT PRESENTLY FUNDED, CONTINUE TO SEEK FUNDING
  - -PLAN TO BE FORMALLY SUBMITTED IN SEPTEMBER
- IMPROVE 211-F UNLOADING FACILITY — $20 MM
  - -NOT PRESENTLY FUNDED, CONTINUE TO SEEK FUNDING
- COAT BASINS — $ 0.4 MM
  - -4Q93 COMPLETION IN H AREA
  - -4Q93 WORK SCHEDULED IN F AREA
- COAT SANDFILTER DITCHES — $ 0.2 MM
  - -COMPLETE IN H AREA
  - -4Q93 WORK SCHEDULED IN F AREA
- MONITOR TRITIUM AT OUTFALLS — ONGOING
  - -CONTINUING

HLW & SW Outfall Analyses Initiatives and Recommendations

1993 Review and Update

F–Area

A) Release Points – ..... F–Area CoolingWater, Stormwater and F–Area Effluents

Outfall – FM–3

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	13	14	13	a	8	33	6	5	5	5	5
Sr	0.013	0.011	0.008		0.003	0.004	0.004	0.0006	0.0005	<0.0005	<0.0005
Cs	0.019	0.022	N/A	N/A	0.006	0.002	0.002	0.0008	0.0005	<0.001	<0.001
Pm	N/A	N/A	N/A	N/A	0.015	0.020	0.003	0.00008	0.002	<0.001	<0.001

C) Impact of Operational Considerations –

1. Increases in F–Tank Farm operations will increase the risk of stormwater contamination.
2. Reduced F–Canyon operation will decrease the probability of cooling water diversions.

D) Initiatives that would reduce production of this waste –

1. Shutdown of the F Canyon will reduce the production of waste from cooling water diversions.

WSRC Recommendations – Continue with plans to shutdown the F–Canyon.

Outfall – FM–3

E) Initiatives that would reduce the size of the release – ..... Cost

1. **Improve the sensitivity of the stormwater monitors so that stormwater at lower concentration levels may be diverted and sent to treatment. $0.5M**
2. **Design and install a closed–cooling water system. $40M**
3. **Perform a general erosion control study on the Tank Farm. ..... unreviewed**
4. **Develop and install a sediment removal system in storm drains. ..... unreviewed**
5. **Evaluate and improve current methods for surveying and cleaning storm drains. .. unreviewed**
6. **Increase inspections and repair leaking storm sewer lines using "in situ form" or "slick lining" to seal leaks. ..... unreviewed**
7. **Evaluate and determine if all portions of Tank Farm should be drained to a a monitored and divertable storm water zone. ..... unreviewed**

WSRC Recommendations – Continue with plans to shutdown the F–Canyon. Items #1 and #2 are not justifiable on a cost/benefit basis. Items #3 through #7 are new initiatives that have not been reviewed due to lack of manpower (ref. HLE–HLW–931170).

H–Area

A) Release Points – ..... H–Area Cooling Water, Stormwater and H–Area Effluents

Outfall – FM–1C

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H-3	72	56	205	12	20	18	12	10	5	5	<5
Sr	0.003	0.003	0.002	0.013	0.004	<0.001	0.006	0.005	0.005	<0.005	<0.005
Cs	0.009	0.011	0.008	0.040	0.060	0.02	0.002	0.01	0.01	<0.01	<0.01
Pm	N/A	N/A	N/A	<0.01	0.013	0.004	0.003	0.01	0.01	<0.01	<0.01

C) Impact of Operational Considerations –

1. Reduced operation in H–Canyon will greatly reduce probability of cooling water diversion.

D) Initiatives that would reduce production of this waste –

1. Complete installation of new stormwater monitor detector and source holders in all stormwater monitor manholes.
2. Complete program to develop geometry–specific calibrations for each stormwater monitor.

WSRC Recommendations – Continue with these initiatives as planned.

Outfall – FM–1C

E) Initiatives that would reduce the size of the release – ..... Cost

1. Improve the sensitivity of the stormwater monitors so that stormwater at lower concentration levels may be diverted and sent to treatment. $0.5M
2. Complete design and installation of drain collection system for Tank Farm H–East and H–West cooling water pumphouses. $0.5M
3. Reroute stormwater runoff and H–East/West pumphouses to a monitored zone. $1M
4. Perform a general erosion control study on the Tank Farm. ..... unreviewed
5. Develop and install a sediment removal system in storm drains. ..... unreviewed
6. Evaluate and improve current methods for surveying and cleaning storm drains. .. unreviewed
7. Increase inspections and repair leaking storm sewer lines using "in situ form" or "slick lining" to seal leaks. ..... unreviewed
8. Evaluate and determine if all portions of Tank Farm should be drained to a a monitored and divertable storm water zone. ..... unreviewed
9. Decontaminate RCA's and re–designate as clean areas. ..... funded

WSRC Recommendations – Continue with Items #1 and #9 as planned. Items #2 and #3 are currently not justifiable in light of the low levels of contamination involved. However, they should be re–evaluated per Items #4 through #8. Items 4 through 8 are initiatives that have not been reviewed in detail due to lack of manpower.

F–Area

A) Release Points – ..... F– Retention Basin

Outfall – F–12

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	N/A	0	<3	<3	<3	<3
Sr	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01
Cs	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01

C) Impact of Operational Considerations –

1. Increased operations in F–Tank Farm will increase the risk of stormwater contamination.
2. Reduced F and H Canyon operation will decrease the probability of cooling water diversion.

D) Initiatives that would reduce production of this waste –

1. Improve the stormwater monitors to reduce the amount of clean water diverted to basin.

WSRC Recommendations – Continue with this initiative as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Continue with stormwater monitor upgrades. ..... Funded
2. Route all collected stormwater through ETF for processing. $3M/yr
3. Modify discharge pump suction to reduce amount of mud in effluent stream. $10K
4. Clean sediment out of basin twice per year. $0.1M/yr
5. Design and install a filtration system for basin effluent. $0.5M
6. Design and construct a settling basin upstream of existing retention basin. $1M
7. Route all basin effluent through portable treatment system. $3M/yr
   (Unit currently being procured for treating High Activity water >10 dpm/ml).

WSRC Recommendations – Complete Items #1, #3, & #4. Implement items #2 and/or #7 on an as needed basis only. Items #5 and #6 are not justifiable on a cost benefit basis.

F–Area

A) Release Points – ..... F– Seg Cooling Water Basin

Outfall – F–13

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	N/A	0	<3	<3	<3	<3
Sr	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01
Cs	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01

C) Impact of Operational Considerations –

1. Reduced F Canyon operations will decrease the probability of cooling water diversion.

D) Initiatives that would reduce production of this waste –

1. Shutdown of F Canyon would reduce the the probability of a cooling water diversion.

WSRC Recommendations – Continue with planned reductions in F–Canyon operations, as per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Route all collected cooling water through ETF for processing. ..... Capital ... $2M
   Operating . $0.2M/yr
2. Route all basin effluent through portable treatment system (unit currently being procured). $0.2M/yr
3. Design and install a closed cooling water system (total cost). $40M

WSRC Recommendations – Implement Items #1 and/or #2 on an as–needed basis. Item #3 is not justifiable on a cost/benefit basis.

H–Area

A) Release Points – ..... ETF

Outfall – U3R–2A

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	100	2100	1200	3100	3000	500	500	500
Sr	N/A	N/A	N/A	0	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cs	N/A	N/A	N/A	0	0.068	<0.001	0.002	0.002	0.008	<0.008	<0.008
Pm	N/A	N/A	N/A	0.0002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

C) Impact of Operational Considerations –

1. F and H Canyon operation will be reduced with K–Reactor shutdown. Unloading of Reactor trailers at 211–F will be reduced with K–Reactor shutdown.
2. Volume from H–Tank Farm to ETF will increase with operation of the 1H evaporator and the RHLWE.

D) Initiatives that would reduce production of this waste –

1. Reduced operations and clean out of the F and H canyons will reduce waste production.

WSRC Recommendations – Continue with operations as per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Route 100–Area waste trailers to the tank farm. $2M/yr
2. Route 100–Area waste trailers directly to Z–Area. $2M/yr
3. Segregate high tritium ETF influent and route to Z–Area. $20M/yr
4. Segregate high tritium ETF effluent and route to Z–Area. $20M/yr
5. Route ETF effluent to H–Tank farm for use in ESP/salt mining operation. $1M/yr
6. Route ETF effluent to use as process make–up water. $2M/yr
7. Design and install a de–tritiation facility. $100M
8. Evaporate all ETF effluent to atmosphere. $50M
9. Design and construct a tile field for ETF effluent. $20M

WSRC Recommendations – Initiate feasibility study for Tank farm storage of 100–Area Waste. Other initiatives are not justifiable for either regulatory (Item #2), or cost/benefit reasons (Items #3–#9).

H–Area

A) Release Points – ..... H–Area Tank Farm Stormwater
Outfall – HP–52

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	5	3	<5	<5	<5	<5
Sr	N/A	N/A	N/A	N/A	N/A	0.0005	0.0009	0.0005	<0.0005	<0.0005	<0.0005
Cs	N/A	N/A	N/A	N/A	N/A	0.003	0.006	0.003	0.001	<0.001	<0.001

C) Impact of Operational Considerations –

1. Increases in operations at H–Tank Farm will increase the risk of stormwater contamination.

D) Initiatives that would reduce production of this waste –

1. Complete installation of new stormwater monitor and source holders in all stormwater monitor manholes.
2. Complete program to develop geometry–specific calibrations for each stormwater monitor.
3. Design, fabricate, test, and implement a prototype sediment removal system in the stormwater monitor manholes.
4. Continue program to identify, track, reduce, and prevent fixed and transferrable surface contamination within the F/H Tank Farm boundaries.
5. Complete design/installation of containment dikes around waste Tanks 13–15.

WSRC Recommendations – Continue with all identified initiatives as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Test/Install new Beta/Gamma inline probe assembly in the 907–6H and 907–7H stormwater monitor manholes. $60K
2. Improve the sensitivity of stormwater monitors. (Dependent on sediment removal). ..... <$10K
3. Route all collected stormwater through ETF. $3M/yr
4. Collect all stormwater runoff from the H–Area Tank Farm. ..... $6.1M+

WSRC Recommendations – Complete Items #1 and #2. Items #3 and #4 are not justifiable in light of the low levels of contamination involved.

H–Area

A) Release Points – ..... H–Retention Basin

Outfall – H–17

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	N/A	0	3	<3	<3	<3
Sr	N/A	N/A	N/A	N/A	N/A	N/A	0.01	<0.02	<0.01	<0.01	<0.01
Cs	N/A	N/A	N/A	N/A	N/A	N/A	0.01	<0.01	<0.06	<0.01	<0.01

C) Impact of Operational Considerations –

1. Increased operations in H–Tank Farm will increase the risk of stormwater contamination.
2. Reduced F and H Canyon operations will decrease the probability of a diversions to basin.

D) Initiatives that would reduce production of this waste –

1. Improve stormwater monitors to reduce amount of clean water diverted to basin.

WSRC Recommendations – Continue with this initiative as planned.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Continue with stormwater monitor upgrades. $10K
2. Route all collected stormwater through ETF for processing. $3M/yr
3. Modify discharge pump suction to reduce amount of mud in effluent stream. $10K
4. Clean sediment out of basin periodically. $0.1M/yr
5. Design and install a filtration system for basin effluent. $0.5M
6. Design and construct a settling basin upstream of existing retention basin. $1M
7. Route all basin effluent through portable treatment system. $3M/yr
   (Unit currently being procured for treating High Activity water >10 dpm/ml).

WSRC Recommendations – Complete Items #1, #3, and #4. Implement items #2 and/or #7 on an as–needed basis. Items #5 and #6 are not justifiable on a cost/benefit basis.

H–Area

A) Release Points – ..... H– Seg Cooling Water Basin

Outfall – H–18

B) Past, Present and Projected Releases Based on Current Initiatives –

(Curies)

Nuclide	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
H–3	N/A	N/A	N/A	N/A	N/A	N/A	0	5	<3	<3	<3
Sr	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01
Cs	N/A	N/A	N/A	N/A	N/A	N/A	0	<0.01	<0.01	<0.01	<0.01

C) Impact of Operational Considerations –

1. Reduced H Canyon operations will decrease the probability of cooling water diversion.

D) Initiatives that would reduce production of this waste –

1. Shutdown of H Canyon would reduce the the probability of a cooling water diversion.

WSRC Recommendations – Continue with planned reductions in H–Canyon operations, as per the site mission.

E) Initiatives that would reduce the size of the release – ..... Cost

1. Route all collected cooling water through ETF for processing. ..... Capital ... $2M
   Operating . $0.2M/yr
2. Route all basin effluent through portable treatment system
   (unit currently being procured)..... $0.2M/yr
3. Design and install a closed cooling water system (total cost). $40M

WSRC Recommendations – Implement Items #1 and/or #2 on an as–needed basis. Item #3 is not justifiable on a cost/benefit basis.

WESTINGHOUSE SAVANNAH RIVER COMPANY

TER-OFFICE MEMORANDUM

August 23, 1993 HLE-HLW-931170

To: G.T. Jannik, 735-11A

From: M.J. Hagenbarth, 742-6G M.J. Hagenbarth

HIGH LEVEL WASTE MANAGEMENT AND SOLID WASTE MANAGEMENT DIVISION ERP&CP RE-EVALUATION (U)

High Level Waste Management (HLWM) and Solid Waste Management (SWM) Divisions have re-evaluated initiatives presented in the 1992 Environmental Release Prevention and Control Plan (ERP&CP). It has been concluded through this re-evaluation that initiative recommendations made for the ERP&CP have not changed in the past year.

New initiatives were also considered during the re-evaluation. Several initiatives were proposed, however, the current budget does not provide funds to further develop or implement these initiatives. These initiatives are not required for regulatory compliance, however are considered to be above and beyond applicable requirements. Therefore, the initiatives may be investigated at a later date as funding and manpower permit. It must be noted that these initiatives have not been completely developed or fully reviewed by HLW and SWM management due to lack of funding for new initiative development. For your information, those initiatives proposed during the re-evaluation are listed below.

INITIATIVES APPLICABLE TO H-TANK FARM

The following is a listing of proposed monitoring points. Currently, on-line monitoring is not performed for these streams, however, sampling is being performed further downstream from the source. The proposed upgrades will improve the release accountability of H Tank Farm. Costs for each of these points have been included, however, these are only estimations and a more detailed analysis should be performed in order to finalize expenditures.

One solution to the problems faced with storm water run off is to install on-line monitors, diversion gates, and retention basins for all effluent streams. This would provide real-time process control and accountability. However, the costs associated with this type of system have been judged to outweigh the benefits. Therefore, the following recommendations are proposed in order to minimize the impact to facility operations, yet still improve release accountability.

1. Proposed Radiological Sampling Point #1 (PRSP1)

Location:
Between 230-H and Crouch Branch sample point. New radiation sample location to be located near the H-4 outfall.

Rad. Component:
Various radionuclides (primary Cs-137 or Sr-90) and ash residue from 230-H.

Current Measures:
Sampling well downstream from source.

Proposed Sampling:
EMS to pull weekly proportional sample at PRSP1, analyze biweekly composite for tritium (HTO) and gross alpha/beta.

Additional Information to Support Recommendation:
Currently the storm water runoff from 230-H follows a dirt ditch, runs alongside a gravel road, crosses underneath the road, and then joins the effluent downstream from the H-4 outfall. To upgrade the current situation, a concrete drainage trench should be installed to catch all the current runoff. A concrete pipe should be placed underneath the road and a weir placed on the other side to collect the effluent. EMS suggests the collection area consist of a concrete pad with a V-notch metal weir. Steps with a metal grating landing near the bottom would be needed in order to provide access and a location for the sampler. An ISCO flow proportional sampler can be provided by EMS at no cost to HLW. The costs to HLW would be incurred for the construction of the concrete drainage trench and steps. Currently, it is estimated that this type of project would cost approximately $100,000. More detailed cost estimations would be required if this option was pursued.

Benefit: Improves release accountability. By sampling each separate stream, any newly discovered contamination can be tracked back to its source. A more expedient response can then be initiated. This negates any further releases to the environment. With a faster analysis and response time, better process control is achieved.

2. Proposed Radiological Sampling Point #2 (PRSP2)

Location:
A new radiological sample point can be located at either outfall H-5 or H-6. However, there is no continuous flow at either of these outfalls.

Rad Component:
Various radionuclides (primarily Cs-137 or Sr-90) and ash residue from 230-H.

Current Measures:
Sampling well downstream from source.

Proposed Sampling:
None

Additional Information to Support Recommendation:
Since there is no continuous flow to these outfalls, radiological sampling by EMS is not possible. There are no process systems tied into these streams. In order for any contamination to be released into these steams, a major process upset would have to occur. Because of current HLW operating practices, the risk of this type of event occurring is minimal.

Benefit: N/A

3. Proposed Radiological Sampling Point #3 (PRSP3)
Location:
Between building 241-49H and before Outfall H-7.

Rad. Component:
Primarily very low concentrations of Cs-137 (<500 dpm) from cooling coil leakage.
Current Measures:
Sampling well downstream from source.

Proposed Sampling:
EMS to pull weekly proportional sample at PRSP3 and analyze biweekly composite for tritium (HTO) and gross alpha/beta.

Additional Information to Support Recommendation:
Currently, storm water runoff from 241-49H pumphouse and the cooling tower blowdown flows in a dirt ditch and through two thirty-six inch concrete pipes under the railroad tracks toward outfall H-7. The two concrete pipes are in need of repair. They appear to be clogged and both have improper seals on the discharge side that has created an erosion problem due to heavy rains. The roadside is eroding and both the pipes and the road need to be repaired. Upgrading would require construction of a concrete drainage trench, replacing the current underground piping with an H-flume, and backfilling the roadside. The new radiological sample point should be located on the discharge of the H-flume. Steps with a metal grating landing would be needed at this location in order to provide access and a location for the sampler. An ISCO flow proportional sampler can be provided by EMS at no cost to HLW. Cost to HLW would be incurred mainly for the construction of the concrete drainage trench and steps. Currently it is estimated that this type of project would cost approximately $250,000.

This upgrade would become a small project and as such would require estimation upon further development.

Benefit: Improves release accountability. By sampling each separate stream, any found contamination can be traced back to its source. A more expedient response can then be initiated. This negates any further releases to the environment. With a faster analysis and response time, better process control is achieved. Repair of the pipes and roadside will enhance safety.

4. Proposed Radiological Sampling Point #4 (PRSP4)

Location:
After the intersection of 241-14H, -13H, and -17H/64H liquid streams and before joining of 285-H stream.

Rad. Component:
Primarily very low concentration of Cs-137 (<500 dpm) from cooling coil leakage.

Current Measures:
Sampling well downstream from source.

Proposed Sampling:
EMS to pull weekly proportional sample at PRSP4, analyze biweekly composite for tritium (HTO) and gross alpha/beta-gamma.

Additional Information to Support Recommendation:
Currently, storm water runoff from the 241-14, -13H pumphouses, 241-17H/64H buildings and the cooling tower blowdown flow in a concrete ditch within the tank farm boundary. The stream exits the tank farm and flows underground toward sample point 4M-1C. The best location for a radiological sample point is before the stream goes underground and exits the tank farm boundaries. Since this sample location would be within an RCA, EMS would not set up a sampling point. A new radiological sampling point could be located outside the RCA if a dense area of vegetation is cleared and steps are built down approximately 15 feet to the bottom of the ditch. This line also collects storm water runoff from the RBOF facility, therefore not providing release accountability. A proposed solution would be to procure an ISCO flow proportional sampler from EMS and install in the stormwater drain before effluent exits the tank farm. The cost of this sampler is approximately $5000.00 and could be bought from the vendor or procured through EMS. Documentation can be found in Attachment 3. A procedure could be written for Health Protection to analyze this sample weekly. If this option is pursued, a cost estimate will be required for clearing the area and installing steps.

Benefit:
Improves release accountability. By sampling each separate stream, any found contamination can be traced back to its source. A more expedient response can then be initiated. This negates any further releases to the environment. With a faster analysis and response time, better process control is achieved.

INITIATIVES APPLICABLE TO H AND F-AREA TANK FARMS

1. Sedimentation Control

Sedimentation is considered a potential concern in the storm water system due to its nature to hold radioactive particles, similar to an ion exchange process. When sediment accumulates in the vicinity of storm water monitors, the background activity increases and may eventually reach the alarm setpoint, thereby causing an unnecessary diversion of otherwise "clean" water. When the sediment accumulation becomes a problem, standard practice is to flush the sediment that has accumulated over the retention weir into the discharge pipe of the manhole. This practice presents a concern because the sediment contains radioactivity and has the potential to reach either the creek or the retention basin. Therefore, the following initiatives have been proposed:

A. Perform a general erosion control study on the entire Tank Farm and suggest action which will 1) identify sources of sediment, and 2) suggest alternatives to reduce or even eliminated the sources. This would reduce or eliminate production of the silt which then washes into the system to become sediment.

B. Recognizing that some silt will always be present in the Tank Farm area, an initiative has been proposed to install some other form of hold-up mechanism around the storm drains to prevent the silt form entering the system, and periodically removing the silt which is retained.

C. Initiatives for managing sediment already in the system were also proposed. These initiatives included evaluating various methods for surveying and cleaning storm sewer lines.

2. NIST Traceable Standards

An initiative was proposed to use only NIST traceable standards for calibration of storm water monitors. In addition, samples pulled during an alarm event would be sent to the SRTC lab, which uses NIST traceable standards, as opposed to the ETF lab which does not. Sending samples to the SRTC lab will raise confidence levels when making the decision to sent the water back to the creek or remain diverted to the basin.

3. Increase Inspection of Storm Sewers

An initiative was proposed for increasing inspection on storm sewer lines and evaluating mitigative options for repairing leaking lines. One possibility is to line the interior wall of storm water lines with a "in-situ form", "slick lining", or some other comparable product which will seal all leaks and provide a low friction surface for cleaning.

4. Tank Farm Drainage and Monitoring

It has been suggested that an evaluation be performed to determine if all portions of the Tanks Farms located within an RCA should drain to a monitored and divertable storm water zone.

5. Decontamination

Efforts for decontaminating portions of RCAs and re-designating as clean areas should continue. This will reduce the potential for contamination to be washed into the storm water system.

INITIATIVES APPLICABLE TO THE SOLID WASTE DISPOSAL FACILITY

No new initiatives have been proposed for the Solid Waste Disposal Facility.

Again, it must be stressed that the above initiatives are preliminary. These initiatives will be further developed, reviewed, and possibly implemented upon allocation of appropriate funding and manpower. If you have any questions of the above information, please call me at x7-0279.

MJH:mjh

Memo, M.J. Hagenbarth to G.T. Jannik, "High Level Waste Management and Solid Waste Management Division ERP&CP Re-Evaluation (U)", HLW-HLE-931170, August 23, 1993.

cc:
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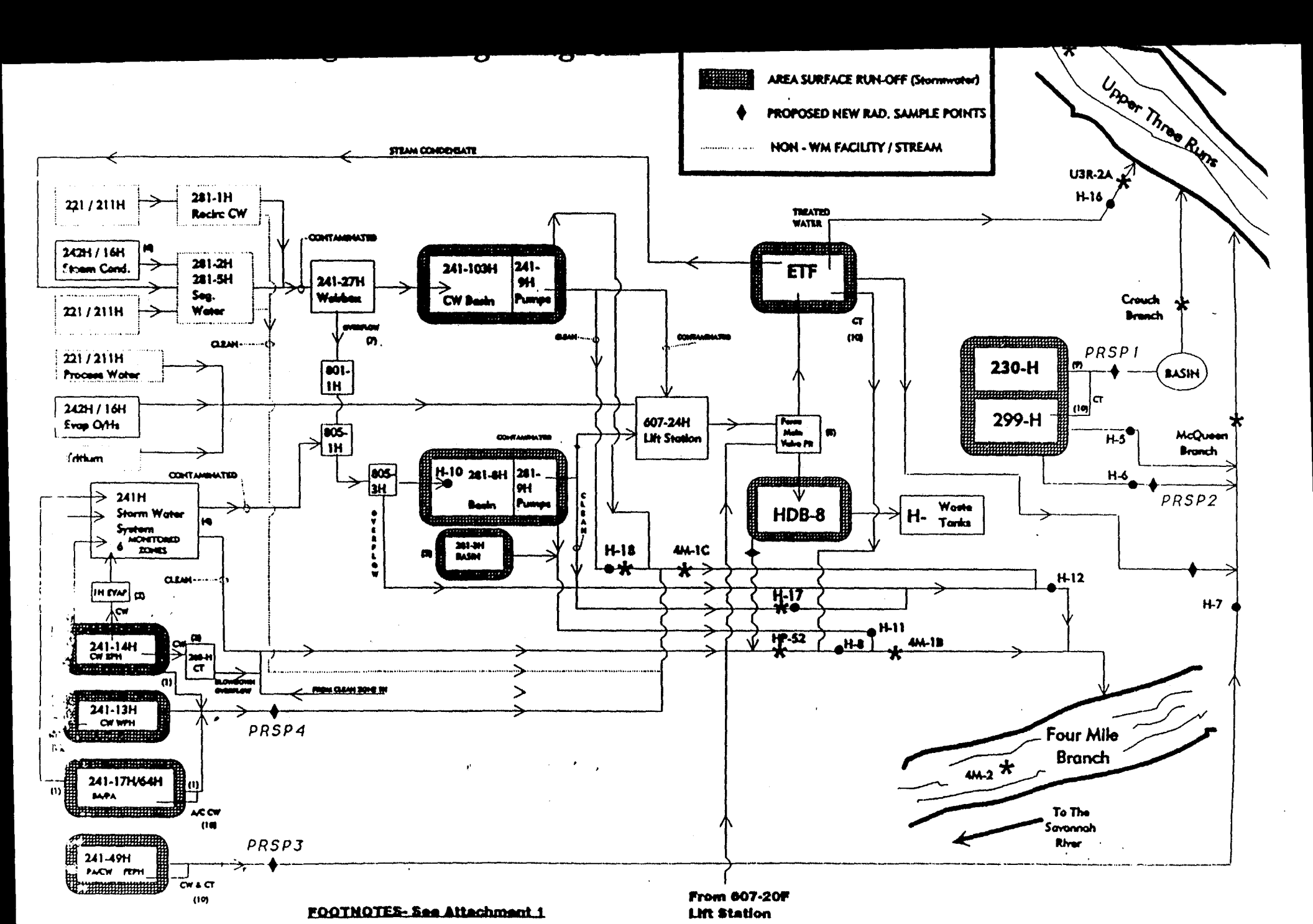
WM File: 703-H, Rm. 76/77
File Code: 250.0

ERP&CP RE-EVALUATION

Presented by:
Michael J. Hagenbarth
High Level Waste Environmental Compliance



FOOTNOTES- See Attachment 1

Newly Proposed Monitors

Proposed Radiological Sample Point #1

Location:

- Between 230-H and Crouch Branch sample point, near H-4 Outfall.

Source:

- Storm water runoff from 230-H.

Radiological Component:

- Various radionuclides (primarily Cs-137 or Sr-90).

Benefit :

- Improves release accountability, allows expedited response to unplanned releases.

Newly Proposed Monitors (cont.)

Proposed Radiological Sampling Point # 2

Location:

- At either H-5 or H-6 Outfall.

Source:

- Storm water runoff from 299-H and ash residue from 230-H.

Radiological Component :

- Various radionuclides (primarily Cs-137 or Sr-90).

Benefit :

- N/A. There is no continuous flow to these outfalls, therefore, radiological sampling by EMS is not possible.

Newly Proposed Monitors (cont.)

Proposed Radiological Sampling Point # 3

Location:

- Between building 241-49H and Outfall H-7.

Source:

- Storm water runoff from 241-49H pumphouse and cooling tower blowdown.

Radiological Components :

- Low concentrations of Cs-137 (<500 dpm) from cooling coil leakage.

Benefit:

- Improved release accountability, expedited response to unplanned releases.

Newly Proposed Monitors (cont.)

Proposed Radiological Sampling Point # 4

Location:

- After intersection of 241-14H, 241-13H and 241-17H/64H liquid streams and before joining of 285-H stream.

Source:

- Cooling tower blowdown and storm water runoff from 241-14H pumphouse, 241-13H pumphouse, 241-17H/64H buildings.

Radiological Components:

- Low concentrations of Cs-137 (<500 dpm) from cooling coil leakage.

Benefit:

- Improved release accountability, expedited response to unplanned releases.

SEDIMENTATION CONTROL

1. General erosion control study.
   - Identify major sources of sediment
   - Suggest alternatives to eliminate or reduce the source

2. Install hold-up mechanism around storm drains
   - Prevents silt from entering the storm water system
   - Periodically, silt must be removed from hold-up area

3. Evaluate alternatives for managing sediment already in the the storm water system.

NIST TRACEABLE STANDARDS

NIST traceable standards will be used for analyzing storm water samples during an alarm condition.

Proposed Action:

Evaluate the most cost effective means to accomplish this task. Options are:

- Purchase NIST traceable standards accurate to 10 d/m/ml for the ETF lab.
- Send all samples to SRTC lab where NIST traceable standards are used.
- Provide documentation that current ETF sources are as accurate as NIST traceable standards at 10 d/m/ml.

STORM SEWER INSPECTION

Assuming sedimentation concerns are resolved through earlier initiatives,

- Storm sewers will be inspected for leaks.
- Any significant leaks will be repaired.
- A study will be performed to evaluate the need and feasibility of lining the storm sewers.

TANK FARM DRAINAGE

Currently, not all RCA areas inside the Tank Farms are included in a monitored and divertable storm water management zone.

Proposed Action:

Evaluate the need to include all Tank Farm RCA areas in a monitored and divertable storm water management zone.

- Potential for release and cost to modify the existing system shall be considered.
- If necessary, Indirect Work Orders shall be submitted based on the conclusions of this evaluation.

DECONTAMINATION GOALS

INITIATIVE:

- Establish a baseline of contaminated areas in the F-and H-Tank Farms, expressed in square feet.
- Set annual goals for reduction of contaminated areas.
- Issue plans for meeting these goals and quarterly progress reports.

Benefits :

- Reduced contamination available to be released to the environment.

Proposed responsible organization:

- Health Protection

ATTACHMENT IV

ENVIRONMENTAL ALARA RELEASE GUIDES AND DCGS

After issuance of the Final ERP & CP, the Environmental ALARA Release Guides procedure (ECM 18.2 of Procedure Manual 3Q) was changed to require that the Environmental ALARA Release Guides Committee review and revise the release guides every four months.

This section documents the most recent (August 1993) revision of the release guides, and provides several comparisons of them to previous guides.

Also presented in this section is a listing of the total 1992 liquid radioactive releases by facility, and a comparison of the annual average concentrations at each outfall to the DOE DCGs. Please note that –

The U3R–2A (ETF Outfall) discharge point exceeded the DCG guide for 12–month average tritium concentrations during 1992. However, DOE Order 5400.5 specifically exempts tritium from BAT waste treatment investigation requirements (but not from ALARA program requirements). The sum of the fractions for all other radionuclides at this outfall did not exceed 1.00.

The K–Area Purge to Containment Basin (K percolation field) also exceeded the tritium DCG during 1992, but again, tritium is exempted from the BAT requirements. However, with tritium discounted, the sum of the fractions for all other radionuclides at this discharge point is greater that 2.00, which exceeds the DCG limit.

The K–Area purges are batch releases which are not directly discharged to site surface waters. However, they are still considered environmental release points. In addition, the consecutive 12–month average concentration is not weighted averaged over the year but is simply, and conservatively, an average of the individual releases.

In response to section II–3.b(1) of 5400.5 (Phasing Out the Use of Soil Columns), the BAT selection process has already been applied to the K–Area Purge liquid waste stream. Reference: WSRC–RP–90–1299, 11/27/90 Environmental Information Document: Reactor Seepage Basins (U). This document has gone through four revisions. The latest was sent to DOE–SR under cover letter ESH–ENV–920180, J.S. Roberts to S.R. Wright on 5/1/92.

SAVANNAH RIVER SITE

INTER–OFFICE MEMORANDUM

ESH–EMS–930525

August 31, 1993

TO: **J. D. Woodward, Acting General Manager**
ESH&QA Division

FROM: **G. T. JANNIK, Acting Chairman**
Environmental ALARA Release Guides Committee

AUGUST 1993 RELEASE GUIDE REVISIONS (U)

In accordance with ECM 18.2 of Procedure Manual 3Q, the Environmental ALARA Release Guides Committee requests concurrence from the Environmental ALARA Management Steering Committee, and your authorization, for the attached August 1993 revised Environmental ALARA release guides. The attached tables show the proposed Environmental ALARA guides by area, and also show a comparison of them to the current April 1993 guides.

Due to operational considerations and changes in production schedules in F- and H-Areas, the site liquid radioactive release guide is being decreased by over 15%.

Due to the same operational considerations and changes in production schedules in F- and H-Areas, the site airborne radioactive release guide is being decreased by over 11%.

Since the last revision of the release guides, and as documented in the April 1993 Monthly Radioactive Releases Report, A–Area exceeded their atmospheric release guide and K–Area exceeded their liquid release guide during March 1993. These exceedances have been investigated and applicable corrective actions are being taken (Ref. IOM–SRT–ALARA–930467 and SR–WSRC–REACK–1993–0095, respectively). The revised guides take into account the releases that caused these exceedances.

The revised guides were established using past release information and operating history, the most current operating and maintenance schedules, and projected EDEs (Effective Dose Equivalents) for 1993. Delays in operating schedules at F-Canyon and H-Canyon were two of the major changes affecting the Environmental ALARA Release Guides. In addition, the liquid release guides were adversely affected by the one-time release that caused the K–Area liquid release guide exceedance.

All members of the Committee have approved the revised guides and have obtained concurrence from the pertinent operations and technology departments.

Following your authorization, the Committee will implement the revised goals effective with the August 1993 SRS Monthly Radiological Release Report, which is scheduled to be issued on or before October 15, 1993.

AUTHORIZATION: _____ **Date:** 8/31/93

J. D. Woodward, Acting General Manager, ESH&QA

Distribution:

Environmental ALARA Management Steering Committee

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B. Rankin, RRD, 707–C
C. Hardin, SRTC, 773–A
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Environmental ALARA Release Guides Committee

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M. Hagenbarth, HLWM, 742–6G
M. Kidd, AL, 703–11C
P. Rowan, Trit, 232–H
M. Tyrrell, SWM & ER, 742–6G
D. Hamby, SRTC, 773–A

8/93 Revised ALARA Guide Assignments

AIRBORNE EMISSIONS

AREA	EDE (MREM)	% SITE TOTAL
A	4.00 E–03	1.00%
C	8.00 E–04	0.20%
D	3.30 E–02	8.85%
F	1.45 E–02	3.89%
H	2.28 E–01	61.1%
K	8.00 E–02	21.4%
L	8.00 E–03	2.14%
M	6.31 E–04	0.17%
P	4.00 E–03	1.00%
TNX	0.00	0.00%
SITE TOTAL	0.373	

8/93 Revised ALARA Guide Assignments

LIQUID EMISSIONS

AREA	EDE (MREM)	% SITE TOTAL
A	5.00 E–06	0.00%
C	1.00 E–04	0.16%
D	4.42 E–03	7.04%
F	4.83 E–03	7.69%
H	4.23 E–02	67.4%
K	1.10 E–02	17.5%
L	1.00 E–04	0.16%
M	5.00 E–05	0.08%
P	2.00 E–05	0.03%
TNX	5.00 E–06	0.00%
SITE TOTAL	0.0628 mrem	

8/93 REVISED ALARA GUIDES
VS
4/93 REVISED ALARA GUIDES

AIRBORNE EMISSIONS
(EDE in mrem)

Area	8/93 Revised-Guides (mrem)	4/93 Revised Guides (mrem)	Percentage Change
A	4.00E–03	1.00E–04	▲3,900% *
C	8.00E–04	8.00E–04	0.0%
D	3.30E–02	3.30E–02	0.0%
F	1.45E–02	3.13E–02	▼54%
H	2.28E–01	2.56E–01	▼11%
K	8.00E–02	8.00E–02	0.0%
L	8.00E–03	1.00E–02	▼20%
M	6.31E–04	6.31E–04	0.0%
P	4.00E–03	6.00E–03	▼33%
TNX	———	———	———
SITE	0.373	0.419	▼11%

* Note: A–Area atmospheric releases exceeded their 4/93 ALARA guide during March 1993. This exceedance was attributed to either inadvertent cross contamination of the air filter sample, or, the more likely scenario, maintenance activities that occurred in room B–001 causing airborne contamination, which subsequently leaked into the monitor box, or ductwork, and contaminated the sample of record. The 8/93 revised guide includes this release and is the reason for the large percentage increase in the A–Area Guide (Ref. IOM–SRT–ALARA–930467).

8/93 REVISED ALARA GUIDES
VS
4/93 REVISED ALARA GUIDES

LIQUID EFFLUENTS – (EDE in mrem)

Area	8/93 Revised Guides (mrem)	4/93 Revised Guides (mrem)	Percentage Change
A	5.00E–06	3.00E–05	▼83% at ALARA
C	1.00E–04	1.00E–04	0.0%
D	4.42E–03	4.42E–03	0.0%
F	4.83E–03	1.48E–02	▼67%
H	4.23E–02	5.43E–02	▼22%
K	1.10E–02	1.00E–04	▲10,900% *
L	1.00E–04	1.00E–04	0.0%
M	5.00E–05	5.00E–05	0.0%
P	2.00E–05	5.00E–05	▼60%
TNX	5.00E–06	5.00E–06	at ALARA
SITE	0.0628	0.0740	▼15%

* Note: K–Area liquid releases exceeded their 4/93 ALARA guide. When K–Reactor cooling water flow was resumed in February, following the tie–in of the the cooling tower, elevated Cs–137 results were detected in the first EMS sample analyzed. An investigation determined that the Cs–137 was from previous reactor operations that flushed from the cooling water system when the flow resumed. No other elevated Cs–137 results have been detected since this occurrence. The 8/93 revised guides includes this release and is the reason for the large percentage increase in the K–Area guide (Reference Occurrence Report #SR–WSRC–REACK–1993–0095).

Additional Environmental ALARA Release Guide Comparisons

ALARA RELEASE GUIDES – LIQUID

1990 ALARA Goal	0.500 mrem	
1991 ALARA Guide	0.450 mrem	(▼10% from 1990)
1992 ALARA Guide	0.262 mrem	(▼41% from 1991)
1993 ALARA Guide	0.0944 mrem	(▼64% from 1992)
4/93 Revised Guide	0.0740 mrem	(▼22% from 1993)
8/93 Revised Guide	0.0628 mrem	(▼15% from 4/93)

8/30/93 Revised Environmental ALARA Release Guides–Liquid Compared to 1992 Actual Releases

Area – Increment	1992 Actual Release (mrem)	8/93 Revised Guide (mrem)	% that revised guide is above 1992 Actual Release	% that Area guide is of 8/93 Site Guide Total
A – Baseline	–	1.68 E–05	–	–
A – Changes	–	(–2.50 E-05)	–	–
A – Total	1.68 E–05	5.00 E–06	–70% (lower)	0.0%
C – Baseline	–	7.37 E–05	–	–
C – Changes	–	2.63 E-05	–	–
C – Total	7.37 E-05	1.00 E-04	35%	0.16%
D – Baseline	–	1.62 E–03	–	–
D – Changes	–	2.80 E-03	–	–
D – Total	1.62 E-03	4.42 E-03	172%	7.04%
F – Baseline	–	6.07 E–04	–	–
F – Changes	–	4.22 E-03	–	–
F – Total	6.07 E-04	4.83 E-03	698%	7.69%
H – Baseline	–	2.68 E-02	–	–
H – Changes	–	1.55 E-02	–	–
H – Total	2.68 E-02	4.23 E-02	58%	67.4%

8/30/93 Liquid Guides versus 1992 Actual Releases

Area – Increment	1992 Actual Release (mrem)	8/93 Revised Guide (mrem)	% that 8/93 Guide is above actu-al 92 release	% that Area guide is of 8/93 Site Total
K – Baseline	–	1.10 E–03	–	–
K – Changes	–	9.90 E–03	–	–
K – Total	1.10 E-03	1.10 E-02	900%	17.5%
L – Baseline	–	1.55 E–04	–	–
L – Changes	–	(–0.55 E-04)	–	–
L – Total	1.55 E-04	1.00 E-04	–36% (lower)	0.16%
M – Baseline	–	2.13 E–05	–	–
M – Changes	–	2.87 E-05	–	–
M – Total	2.13 E-05	5.00 E-05	135%	0.08%
P – Baseline	–	2.16 E–05	–	–
P – Changes	–	(–0.16 E-05)	–	–
P – Total	2.16 E-05	2.00 E-05	–7.4% (lower)	0.03%
T – Baseline	–	2.59 E–07	–	–
T – Changes	–	4.74 E-06	–	–
TNX – Total	2.59 E-07	5.00 E-06	1,830%	0.00%
Site–Baseline	–	0.0304	–	–
Site–Increases	–	0.0436	–	–
Site – Total	0.0304	0.0628	106%	–

ALARA RELEASE GUIDES – AIRBORNE

1990 ALARA Goal	**0.600 mrem** (1.11 mrem if adjusted for new dose–factors)
1991 ALARA Guide	**0.540 mrem (▼10% from 1990)** (0.999 mrem if adjusted for new dose–factors)
1992 ALARA Guide	**0.484 mrem (▼11% from 1991)** (0.895 mrem if adjusted for new dose–factors)
1993 ALARA Guide	**0.274 mrem (▼43% from 1992)** (0.507 mrem if adjusted for new dose–factors)
4/93 Revised Guide	**0.419 mrem (▼17% from adjusted 93)**
8/93 Revised Guide	**0.373 mrem (▼11% from 4/93)**

8/30/93 Revised Environmental ALARA Release Guides–Airborne Compared to 1992 Actual Releases

Area – Increment	1992 Actual Release (old dose-factors) (mrem)	8/93 Revised Guide (new dose-factors) (mrem)	% that revised guide is above 1992 Actual Release	% that Area guide is of 8/93 Site Guide Total
A – Baseline	–	8.19 E–05	–	–
A – Changes	–	1.92 E-03	–	–
A – Total	3.41 E–06	4.00 E–03	4,784%	1.00%
C – Baseline	–	6.76 E–04	–	–
C – Changes	–	1.24 E-04	–	–
C – Total	3.38 E-04	8.00 E-04	18%	0.20%
D – Baseline	–	1.83 E–02	–	–
D – Changes	–	1.47 E-02	–	–
D – Total	4.43 E-04	3.30 E-02	80%	8.85%
F – Baseline	–	5.04 E–03	–	–
F – Changes	–	9.46 E-03	–	–
F – Total	2.52 E-03	1.45 E-02	188%	3.89%
H – Baseline	–	7.05 E-02	–	–
H – Changes	–	1.58 E-01	–	–
H – Total	5.07 E-02	2.28 E-01	223%	61.1%

8/93 Airborne Guides versus 1992 Actual Releases

Area – Increment1	1992 Actual Release (old dose-factors) (mrem)	8/93 Revised Guide (new dose-factors) (mrem)	% that revised guide is above 1992 Actual Release	% that Area guide is of 8/93 Site Guide Total
K – Baseline	–	7.28 E–02	–	–
K – Changes	–	0.72 E-02	–	–
K – Total	3.64 E-02	**8.00 E-02**	10%	21.4%
L – Baseline	–	8.22 E–03	–	–
L – Changes	–	0.22 E-03	–	–
L – Total	6.13 E-03	**8.00 E-03**	–2.8% (lower)	2.14%
M – Baseline	–	1.98 E–04	–	–
M – Changes	–	4.33 E-04	–	–
M – Total	3.13 E-06	**6.31 E-04**	218%	0.17%
P – Baseline	–	8.04 E–04	–	–
P – Changes	–	3.12 E-03	–	–
P – Total	4.02 E-04	**4.00 E-03**	198%	1.00%
Site–Baseline	–	0.177	–	–
Site–Increases	–	0.196	–	–
Site – Total	**0.097**	**0.373**	**111%**	–

Note: The Baseline release number is based on the actual 1992 release, but is adjusted from the 1992 value to account for the new area-specific ALARA dose-release factors, which the 8/93 revised guides are based on.

Table 10
1992 Liquid Radioactive Releases by Facility and Comparison of Annual Average Concentrations to DOE DCGs

Stack or Facility	Radionuclide	Quantity released during 1992 - Ci	Average effluent concentration during 1992 - μCi/mL	DOE DCGs[a] - μCi/mL	Fraction of DOE DCG
A-Area (SRTC)					
TB–2 A–1 Outfall	H-3	2.67E–01	3.17E–07	2.0E–03	1.59E–04
	U/Pu (Pu-239)	1.61E–05	1.68E–10	3.0E–08	5.59E–03
				Sum of Fractions -	5.75E–03
C-Area (C-Reactor)					
C, Proc. Sewer	H-3	6.01E–01	N/A (part year)	2.0E–03	N/A[b]
	Sr-89,90	1.01E–05	N/A (part year)	1.0E–06	N/A
				Sum of Fractions -	N/A
C-Canal	H-3	2.75E+01	1.71E–06	2.0E–03	8.57E–04
	Sr-89,90	4.61E–05	2.32E–10	1.0E–06	2.32E–04
				Sum of Fractions -	1.09E–03
D-Area (Heavy Water Rework)					
D-Area Eff.	H-3	5.76E+02	1.05E–05	2.0E–03	5.25E–03
	Sr-89,90	9.70E–03	9.61E–11	1.0E–06	9.61E–05
				Sum of Fractions -	5.35E–03
F-Area (Separations and Waste Management)					
F–001	H-3	6.95E–02	3.98E–07	2.0E–03	1.99E–04
				Sum of Fractions -	1.99E–04
F–012 (281–8F)	H-3	2.34E–01	3.15E–06	2.0E–03	1.57E–03
	Sr-89,90	8.97E–05	2.77E–09	1.0E–06	2.77E–03
	Cs-137	8.97E–04	3.56E–08	3.0E–06	1.19E–02
				Sum of Fractions -	1.62E–02
F–013 (200–F)	H-3	4.94E–02	8.79E–06	2.0E–03	4.40E–03
				Sum of Fractions -	4.40E–03
FM–3 (F-Area)	H-3	4.56E+00	2.60E–06	2.0E–03	1.30E–03

a Source: DOE Order 5400.5. In cases where different chemical forms have different DCGs, the lowest DCG for the radionuclide is given. These DCGs are defined as the air concentration of that radionuclide that will give a 50-year committed dose of 100 mrem under conditions of continuous exposure for one year. DCGs are reference values only and are not considered release limits or standards.

b Not applicable

Table 10
1992 Liquid Radioactive Releases by Facility and Comparison of Annual Average Concentrations to DOE DCGs

Stack or Facility	Radionuclide	Quantity released during 1992 - Ci	Average effluent concentration during 1992 - μCi/mL	DOE DCGs[a] - μCi/mL	Fraction of DOE DCG
	Sr-89,90	6.84E–04	7.28E–10	1.0E–06	7.28E–04
	Cs-137	7.39E–04	1.16E–08	3.0E–06	3.88E–03
	Pm-147	7.79E–05	3.48E–10	1.0E–04	3.48E–06
				Sum of Fractions -	5.91E–03
U3R–2 (F-Storm)	H-3	7.64E–01	2.34E–06	2.0E–03	1.17E–03
	Sr-89,90	1.44E–04	5.66E–10	1.0E–06	5.66E–04
	U/Pu (Pu-239)	3.29E–04	1.32E–09	3.0E–08	4.40E–02
				Sum of Fractions -	4.57E–02
F-Area (Separations and Waste Management) cont.					
U3RF–3 (N.F.)	H-3	1.58E–01	3.08E–06	2.0E–03	1.54E–03
	Sr-89,90	1.50E–05	1.54E–10	1.0E–06	1.54E–04
	Pm-147	2.11E–05	8.15E–10	1.0E–04	8.15E–06
	U-235,238	1.31E–05	2.94E–10	6.0E–07	2.19E–03
				Sum of Fractions -	2.19E–03
H-Area (Separations and Waste Management) cont.					
FM–1C (H-Area)	H-3	5.05E+00	1.01E–05	2.0E–03	5.04E–03
	Sr-89,90	6.59E–04	1.84E–09	1.0E–06	1.84E–03
	Cs-137	8.05E–04	4.03E–08	3.0E–06	1.34E–02
	Pm-147	9.16E–05	1.50E–09	1.0E–04	1.50E–05
				Sum of Fractions -	2.03E–02
H–017 (281–8H)	H-3	1.10E+00	7.05E–06	2.0E–03	3.53E–03
	Sr-89,90	6.54E–03	4.92E–08	1.0E–06	4.92E–02
	Cs-137	5.64E–02	3.96E–07	3.0E–06	1.32E–01
				Sum of Fractions -	1.85E–01
H–018 (200–H)	H-3	8.26E–02	2.93E–05	2.0E–03	1.46E–02

a Source: DOE Order 5400.5. In cases where different chemical forms have different DCGs, the lowest DCG for the radionuclide is given. These DCGs are defined as the air concentration of that radionuclide that will give a 50-year committed dose of 100 mrem under conditions of continuous exposure for one year. DCGs are reference values only and are not considered release limits or standards.

Table 10
1992 Liquid Radioactive Releases by Facility and Comparison of Annual Average Concentrations to DOE DCGs

Stack or Facility	Radionuclide	Quantity released during 1992 - Ci	Average effluent concentration during 1992 - μCi/mL	DOE DCGs[a] - μCi/mL	Fraction of DOE DCG
	Sr-89,90	6.18E–04	1.53E–07	1.0E–06	1.53E–01
	Cs-137	1.90E–03	7.79E–07	3.0E–06	2.60E–01
				Sum of Fractions -	4.27E–01
HP–52 (H-Tanks)	H-3	2.61E+00	5.19E–06	2.0E–03	2.59E–03
	Sr-89,90	1.67E–04	5.07E–10	1.0E–06	5.07E–04
	Cs-137	1.25E–03	1.60E–08	3.0E–06	5.32E–03
				Sum of Fractions -	8.42E–03
McQueen's Br.	H-3	1.08E+01	1.08E–05	2.0E–03	5.39E–03
				Sum of Fractions -	5.39E–03
U3R-2A (ETF)	H-3	1.01E+03	1.44E–02	2.0E–03	7.18E+00
	Sr-89,90	7.17E–05	1.40E–09	1.0E–06	1.40E–03
	Cs-137	1.69E–02	5.63E–07	3.0E–06	1.88E–01
	Pm-147	5.44E–05	5.34E–09	1.0E–04	5.34E–05
				Sum of Fractions -	7.37E-00
K-Area (K-Reactor)					
K-Canal	H-3	1.20E+02	1.59E–06	2.0E–03	7.93E–04
				Sum of Fractions -	7.93E–04
K–008	H-3	2.52E+00	4.45E–05	2.0E–03	2.22E–02
				Sum of Fractions -	2.22E–02
107–K Cooling	H-3	1.92E–08	N/A (part year)	2.0E–03	N/A[b]
				Sum of Fractions -	N/A
K-Area (K-Reactor)					
K, Proc. Sewer	H-3	6.36E+00	N/A (part year)	2.0E–03	N/A
				Sum of Fractions -	N/A
PB–1 (Sec. Eff.)	H-3	1.74E+00	1.83E-05	2.0E–03	9.17E–03

a Source: DOE Order 5400.5. In cases where different chemical forms have different DCGs, the lowest DCG for the radionuclide is given. These DCGs are defined as the air concentration of that radionuclide that will give a 50-year committed dose of 100 mrem under conditions of continuous exposure for one year. DCGs are reference values only and are not considered release limits or standards.

b Not applicable

Table 10
1992 Liquid Radioactive Releases by Facility and Comparison of Annual Average Concentrations to DOE DCGs

Stack or Facility	Radionuclide	Quantity released during 1992 - Ci	Average effluent concentration during 1992 - μCi/mL	DOE DCGs[a] - μCi/mL	Fraction of DOE DCG
K-Area Purge	H-3	1.50E+02	2.32E–01	2.0E–03	1.16E+02
	S-35	3.25E–05	6.56E–08	2.0E–04	3.28E–04
	Co-60	4.76E–05	1/91E–07	5.0E–02	3.81E–06
	Sr-89,90	3.25E–04	6.56E–07	1.0E–06	6.56E–01
	Y-91	2.01E–05	6.41E–08	2.0E–05	3.20E–03
	Sb-125	7.22E–05	2.00E–07	5.0E–05	3.99E–03
	Cs-134	2.15E–05	4.45E–08	2.0E–06	2.23E–02
	Cs-137	1.14E–03	1.62E–06	3.0E–06	5.39E–01
	Pm-147	2.85E–05	4.75E–08	1.0E–04	4.75E–04
	U-235,238	8.60E–07	1.21E–09	6.0E–07	2.01E–03
	Pu-238	1.26E–05	1.85E–08	4.0E–08	4.63E–01
	Pu-239	1.47E–06	2.31E–09	3.0E–08	7.70E–02
	Am-241,243	6.85E–07	9.89E–10	3.0E–08	3.30E–02
	Cm-242,244	1.99E–07	7.96E–10	6.0E–08	1.33E–02
				Sum of Fractions -	1.18E+02
L-Area (L-Reactor)					
L–007	H-3	4.91E+01	7.72E–07	2.0E–03	3.86E–04
				Sum of Fractions -	3.86E–04
107–L, Cooling	H-3	7.13E+00	N/A (part year)	2.0E–03	N/A[b]
				Sum of Fractions -	N/A
L, Proc. Sewer	H-3	1.49E+00	N/A (part year)	2.0E–03	N/A
	Sr-89,90	3.59E–04	N/A (part year)	1.0E–06	N/A
				Sum of Fractions -	N/A
M-Area (Reactor Materials)					
TB–3 (M-Area)	U-235,238	1.89E–03	9.77E–10	6.0E–07	1.63E-03

a Source: DOE Order 5400.5. In cases where different chemical forms have different DCGs, the lowest DCG for the radionuclide is given. These DCGs are defined as the air concentration of that radionuclide that will give a 50-year committed dose of 100 mrem under conditions of continuous exposure for one year. DCGs are reference values only and are not considered release limits or standards.

b Not applicable

Table 10
1992 Liquid Radioactive Releases by Facility and Comparison of Annual Average Concentrations to DOE DCGs

Stack or Facility	Radionuclide	Quantity released during 1992 - Ci	Average effluent concentration during 1992 - μCi/mL	DOE DCGs[a] - μCi/mL	Fraction of DOE DCG
				Sum of Fractions -	1.63E–03
P-Area (P-Reactor)					
P–019	H-3	8.17E+00	1.64E–06	2.0E–03	8.20E–04
				Sum of Fractions -	8.20E–04
107–P (Cooling)	H-3	1.42E–01	N/A (part year)	2.0E–03	N/A[b]
				Sum of Fractions -	N/A
TNX Area					
TNX–1	H-3	9.96E–02	3.45E–08	2.0E–03	1.72E–05
				Sum of Fractions -	1.72E–05

a Source: DOE Order 5400.5. In cases where different chemical forms have different DCGs, the lowest DCG for the radionuclide is given. These DCGs are defined as the air concentration of that radionuclide that will give a 50-year committed dose of 100 mrem under conditions of continuous exposure for one year. DCGs are referenoe values only and are not considered release limits or standards.

b Not applicable

ATTACHMENT V

ANNUAL RE-EVALUATION OF OPTIONS AND ALTERNATIVES FOR ELIMINATION/MINIMIZATION OF LIQUID RADIOACTIVE RELEASES

During August 1993, and as per a commitment made in the Final–ERP & CP, WSRC senior management requested that the operating departments perform a re-analysis of the options and alternatives that were identified in the ERP & CP for the elimination or minimization of releases from each of their radioactive liquid release points.

This section presents, in matrix form, the WSRC recommendations that resulted from these re-analyses. The matrix also includes a listing of all incomplete recommendations from the original outfall analysis sheets (see Attachment III). Back up documentation of the re-analyses is provided in Attachment III.

DOE–SR Assistant Managers and their WSRC counterparts are expected to review and reach consensus on these recommendations by November 1, 1993.

To ensure timely closure, the status of the agreed recommendations will now be reviewed (along with the Attachment I action items) by WSRC senior staff at least every four months.

RRD
K Purge to Percolation Field

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Cover the disassembly basin to avoid required purges for reducing tritium concentrations.	SRTC	TBD	Funded WSRC Recommendations – Continue to discharge to the percolation field on an as required basis, only. The monomolecular film study is to be completed as planned. However, the reactor has been drained of moderator, therefore, any discharges from the reactor to the disassembly basin should not increase the tritium level.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

RRD
C–Canal, Beaver Dam Creek, K–Canal, L–Canal, and P–Canal Outfalls

WSRC Recommendations – Continue with current site mission as planned.
No other options or engineered solutions are recommended by WSRC for these outfalls at this time.

SRTC
Tims Branch–2 (A–Area) Outfall

No options or engineered solutions are recommended by WSRC for this outfall at this time.

SRTC
TNX–1 Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Reinvestigate closure of the old TNX Seepage Basin in accordance with the waste site remediation schedule and program agreed to by the regulatory agencies.	SRTC	TBD	Unreviewed and unfunded. WSRC Recommendations – Reinvestigate closure of the old TNX Seepage Basin in accordance with the waste site remediation schedule and program agreed to by the regulatory agencies. The actual closure project has not yet been funded.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
Four Mile 3 Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Consolidate and upgrade UO3 Storage facilities to provide satisfactory storage criteria and satisfy findings by DOE–SR and Tiger Team findings.	NMPD	TBD	$20M Reference Action Item ERPT–Recommendation # 24. Plan and Schedule has not been approved as of yet.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
Upper Three Runs 2 Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Improve confinement, monitoring, and fire protection at the liquid waste unloading facility.	NMPD	TBD	$20M Project has been requested for funding, but was rejected. WSRC still recommends that this project be completed.
2) Line the B–1 and B–3 basins with stainless steel to seal cracks.	NMPD	TBD	$0.4M Work Order will be initiated and then prioritized with other AMO jobs for funding.
3) Ceilcoat Sandfilter ditch up to 4 feet and maintain ditches as a clean area.	NMPD	TBD	$0.1M Work Order will be initiated and then prioritized with other AMO jobs for funding.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
Four Mile 1C Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Install additional instrumentation and modify existing cooling water monitoring equipment (estimated completion date is 12/30/93)	NMPD Isom, Geddes	12/30/93	Funded (estimated completion date is 12/30/93)
2) Line the B–3 basin with stainless steel to seal cracks. .	NMPD Isom	12/30/93	$0.2M (AMO has been approved, estimated completion date is 12/30/93)
3) Install piping to transfer ditch rainwater from LAW evaporator to GP evaporator and the ARU.	NMPD	1/30/94	$0.5M Temporary Installation Complete AMO for permanent installation is being routed for approval. Project Completion scheduled for 1/94

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
Upper Three Runs F–3 Outfall

No options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
HP–15 Outfall

No options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
McQueens Branch Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Ceilcoat Sandfilter ditch up to 4 feet and maintain ditches as a clean area.	NMPD	TBD	$0.1M Work Order will be initiated and then prioritized with other AMO jobs for funding.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Separations
Tims Branch–3 (M–Area) Outfall

No options or engineered solutions are recommended by WSRC for this outfall at this time.

Waste Management and Environmental Restoration
Four Mile 3 Outfall

ACTION ITEM	RESPONSIBLE GROUP	COMPLETION DATE	COST, STATUS & COMMENT
1) Perform a general erosion control study on the Tank Farm.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
2) Develop and install a sediment removal system in storm drains.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
3) Evaluate and improve current methods for surveying and cleaning storm drains.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
4) Increase inspections and repair leaking storm sewer lines using "in situ form" or "slick lining" to seal leaks.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
5) Evaluate and determine if all portions of Tank Farm should be drained to a monitored and divertable storm water zone	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Waste Management and Environmental Restoration
Four Mile 1C Outfall

ACTION ITEM	RESPONSIBILITY	COMPLETION DATE	COST, STATUS & COMMENTS
1) Perform a general erosion control study on the Tank Farm.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
2) Develop and install a sediment removal system in storm drains.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
3) Evaluate and improve current methods for surveying and cleaning storm drains.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
4) Increase inspections and repair leaking storm sewer lines using "in situ form" or "slick lining" to seal leaks.	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
5) Evaluate and determine if all portions of Tank Farm should be drained to a monitored and divertable storm water zone	HLW	TBD	Unreviewed for feasibility WSRC recommends that manpower be allocated to perform this study.
6) Improve the sensitivity of the stormwater monitors so that stormwater at lower concentration levels may be diverted and sent to treatment.	HLW	TBD	$0.5 M Priority and completion date of this recommendation has not yet been determined.
7) Decontaminate RCA's and re–designate as clean areas.	RCO	Ongoing	Funded Part of ongoing RCO activities.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.

Waste Management and Environmental Restoration
F–12, F–13, H–17 and H–18 Outfalls

ACTION ITEM	RESPONSIBILITY	COMPLETION DATE	COST, STATUS & COMMENTS
1) Continue with stormwater monitor upgrades.	HLW	TBD	Funded Priority and Completion date not yet determined.
2) Modify discharge pump suction to reduce amount of mud in effluent stream.	HLW	TBD	$10 K Priority and Completion date not yet determined.
3) Clean sediment out of basin twice per year.	HLW	ongoing activity	$0.1 M / year

No other options or engineered solutions are recommended by WSRC for these outfalls at this time.

Waste Management and Environmental Restoration
Upper Three Runs 2A (ETF) Outfall

No options or engineered solutions are recommended by WSRC for this outfall at this time.

Waste Management and Environmental Restoration
HP–52 Outfall

ACTION ITEM	RESPONSIBILITY	COMPLETION DATE	COST, STATUS & COMMENTS
1) Test/Install new Beta/Gamma inline probe assembly in the 907–6H and 907–7H stormwater monitor manholes.	HLW	TBD	$60 K Priority and Completion date not yet determined.
2) Improve the sensitivity of stormwater monitors. (Dependent on sediment removal).	HLW	TBD	< $10 K Priority and Completion date not yet determined.

No other options or engineered solutions are recommended by WSRC for this outfall at this time.