



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

October 22, 2003

Reply To
Attn Of: WCM-127

Joel Hebdon, Director
Regulatory Compliance and Analysis Division
United States Department of Energy, Richland Operations Office
P.O. Box 550
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James Rasmussen, Director
Environmental Division
United States Department of Energy, Office of River Protection
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Re: Approval of the Toxic Substance Control Act (TSCA) Risk-based Disposal
Approval (RBDA) Application for Management of K-Basin Polychlorinated
Biphenyl (PCB) Remediation Waste at the 200 Area Liquid Waste Processing
Facilities

Dear Mr. Hebdon and Mr. Rasmussen:

This letter constitutes approval under the authority of 40 Code of Federal Register (CFR) 761.61(c) to manage certain aqueous PCB remediation wastes generated from cleanup of the Hanford 100-area K-basins at the 200 Area Liquid Waste Processing Facilities¹, subject to conditions established below. This approval is based on the Department of Energy Richland Operations Office (DOE-RL) application for a risk-based disposal approval dated February 28, 2002, as well as additional information provided to the U.S. Environmental Protection Agency (EPA) in support of this application. The aqueous PCB remediation wastes covered by this approval are those identified in the 100-KR-2 Operable Unit (OU) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Record of Decision (ROD) and the February 28, 2002 RBDA application. Attachment A to this approval documents the administrative record that supports this determination. In granting this approval, EPA finds that the proposed

¹ For purposes of this approval, the 200 Area Liquid Waste Processing Facilities (LWPF) consist of the Liquid Effluent Retention Facility (LERF), and the 200 Area Effluent Treatment Facility (ETF). For further details, see Section 1.2 of the February 28, 2002 RBDA Application. This application also discusses the role of the 242-A Evaporator as part of the 200 Area LWPF. Since the 242-A Evaporator is used solely to manage Hanford high-level tank wastes and will not manage K-basin wastewaters, it is not further considered in this approval.

management of aqueous K-basin PCB remediation wastes in the 200 Area Liquid Waste Processing Facilities (LWPF), subject to the conditions below, will not pose an unreasonable risk of injury to health or the environment.

Conditions

- 1) PCB remediation waste from the K-basin cleanup activities managed under this approval at the Liquid Effluent Retention Basins (LERF) and the 200 Area Effluent Treatment Facility (ETF) shall have a maximum PCB content of 6,000 µg/l, measured as the sum of Aroclors. Results of waste stream characterization to meet this condition must be in writing and placed in the facility operating record, along with supporting quality assurance information that documents the process knowledge or analytical sampling data used to demonstrate compliance with the 6000 µg/l limit are adequate for that purpose. Waste stream characterization may be carried out in whole or in part using the waste analysis procedures in the Hanford site-wide Resource Conservation and Recover Act (RCRA) Permit, WA7 89000 8967.
- 2) DOE-RL shall operate LERF and ETF according to applicable terms and conditions of the Hanford site-wide RCRA permit, WA7 89000 8967.
- 3) Treated effluents from ETF shall have a maximum PCB content of 0.5 µg/l, measured as the sum of Aroclors. Sampling and analysis, including quality assurance/quality control procedures, shall be conducted according to a written plan that complies with requirements of 40 CFR 761.79(f). This plan may be based in whole or in part on verification sampling plans required by the Hanford site-wide RCRA permit WA7 89000 8967 or other permit or authorization applicable to 200 Area ETF treated effluent.
- 4) The total quantity of all liquids processed by ETF, including wastewaters other than K-basin aqueous PCB remediation waste, shall be limited to 210 million liters/year.
- 5) Secondary wastes from management of K-basin aqueous liquids in the 200 Area LWPF shall be managed as specified in the 100-KR-2 Operable Unit Record of Decision.
- 6) DOE-RL shall comply with all permits and regulations applicable to LERF, ETF, and the state-authorized land disposal site (SALDS).
- 7) If, anytime before, during, or after disposal of PCB remediation waste in the 200 Area LERF or ETF, DOE-RL possesses or is otherwise made aware of any data (including but not limited to site conditions that differ from those presented in the February 28, 2002 RBDA application) indicating that the concentration limits in Conditions 1 and 3 are exceeded or the disposal activities approved herein may pose an unreasonable risk of injury to health or the environment, DOE-RL must report such data, in writing, to the Regional Administrator within 10 days of first possessing or being made aware of that data. DOE-RL shall also report new or different information related to a condition at the 200 Area LERF, ETF, or units receiving treated effluent or secondary wastes from such disposal activities if the information is relevant to this approval.
- 8) EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 7, or any other information available to EPA that

provides a basis to conclude that the disposal activities covered by this approval pose an unreasonable risk of injury to health or the environment.

EPA's rationale for establishing each of these conditions is contained in the Statement of Basis appearing as Attachment B to this letter.

Should you have any questions or comments, please contact Dave Bartus at (509) 736-5704, or Bartus.dave@epa.gov.

Sincerely,



L. John Iani
Regional Administrator

cc: Mike Wilson, Washington State Department of Ecology
Richard Gurske, Fluor Hanford
Dave Watson, Fluor Hanford

Attachment A

Supporting Documentation

Approval of the TSCA RBDA Application for Management of K-Basin Polychlorinated Biphenyl (PCB) Remediation Waste at the 200 Area Liquid Waste Processing Facilities (LWPF)

- 1) "Application for Risk-Based Disposal Approvals for Polychlorinated Biphenyls, Hanford 200 Area Liquid Waste Processing Facilities," DOE/RL-2002-02, February, 2002.
- 2) "Dangerous Waste Portion Of The Resource Conservation And Recovery Act (RCRA) Permit For The Treatment, Storage, And Disposal Of Dangerous Waste At The Hanford Facility," Rev. 7, WA7 8900 8967.
- 3) "Framework Agreement for Management of Polychlorinated Biphenyls (PCBs) in Hanford Tank Waste," 8/31/00.
- 4) "200 Area Effluent Treatment Facility Delisting Modification," DOE/RL-98-62, Revision 1, November 29, 2001.
- 5) "Toxic Substance Control Act (TSCA) Risk Based Disposal Application of the Double-Shell Tank (DST) System for 2001," RPP-8393, August, 2001.
- 6) "Declaration of the Record of Decision for DOE Hanford 100 Area, 100-KR-2 Operable Unit," U.S. Department of Energy, U.S. Environmental Protection Agency (EPA 541-R99-059), and Washington State Department of Ecology; Richland, Washington, 1999.
- 7) "200 Area Effluent Treatment Facility Delisting Modification," DOE/RL-98-62, Revision 1, November 29, 2001.

Attachment B

Statement of Basis

Approval of the TSCA RBDA Application for Management of K-Basin Polychlorinated Biphenyl (PCB) Remediation Waste at the 200 Area Liquid Waste Processing Facilities (LWPF)

Background

On August 31, 2000, the United States Environmental Protection Agency (EPA), the United States Department of Energy (DOE-RL) and the Washington State Department of Ecology (Ecology) entered into a Framework Agreement concerning management of polychlorinated biphenyl (PCB) remediation wastes regulated under the Toxic Substance Control Act (TSCA). As noted in the Framework Agreement, the signatories sought agreement on an integrated regulatory pathway for management of TSCA regulated wastes in Hanford's tank waste system. The signatories agreed that the preferred regulatory pathway would be exercise of risk-based disposal approval (RBDA) authority under 40 Code of Federal Regulations (CFR) 761.61(c).

Key to establishing the Framework Agreement was reaching agreement that several key Hanford waste management units function together as an integrated system for disposal of PCBs. These units include the double-shell tank system (DSTs), the 242-A evaporator, the Liquid Effluent Retention Facility (LERF) basins, Effluent Treatment Facility (ETF), and the waste treatment plant (WTP). Therefore, EPA envisioned a single RBDA approval for the entire disposal system as it relates to management of Hanford tank wastes.

After finalizing the Framework Agreement, EPA and DOE-RL discussed options for implementing the Framework Agreement and for preparations of the necessary RBDA applications. EPA and DOE-RL recognized that it would be neither practical nor defensible to craft the entire RBDA approval at once. A key rationale for this perspective was that design, construction and performance testing of the waste treatment plant had not yet begun, let alone been completed. However, EPA and DOE-RL also recognized that other components of the disposal system, particularly the 242-A evaporator, ETF, and DSTs were currently operating and managing TSCA-regulated remediation wastes. Therefore, EPA and DOE-RL agreed to a phased implementation approach to the tank waste RBDA.

EPA and DOE-RL agreed that the first step in this phased approach would be to prepare applications for the liquids portion of the tank waste disposal system (the 242-A evaporator, LERF and ETF, collectively referred to as the 200 Area Liquid Waste Processing Facilities [LWPF]) and for the DSTs. Once construction, permitting and performance testing of the WTP were underway and/or completed, DOE-RL would complete the RBDA application process with an application component focusing on the WTP component of the tank waste disposal system. Since the liquids and tank

components of the RBDA would depend in part on assumptions made concerning WTP performance, EPA and DOE-RL recognized that any approval granted for initial operations of the liquids and DST portions of the disposal system might need to be revisited or modified as new information became available concerning WTP operations. In this sense, the Framework Agreement RBDA was anticipated to be an evolving document.

During development of the liquids component of the RBDA application, DOE-RL recognized that the LERF and ETF facilities would likely be used to manage TSCA-regulated remediation wastes from sources other than Hanford tanks. A summary of these additional waste streams is shown in Figure 1-1 of the LWPF RBDA application. In particular, DOE-RL recognized the need to manage aqueous wastes from Hanford's spent fuel project at the K-East and K-West basin areas. While most of the aqueous liquids to be removed from the basins are expected to have very low or undetectable PCB content, fuel sludges in the basins do have measurable PCB content. Therefore, it is prudent to anticipate that some of the K-basin aqueous wastes could be regulated as PCB remediation wastes requiring authorization for disposal.

The 100-KR-2 Operable Unit (OU) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Record of Decision (ROD) describes the K-basin aqueous liquids as follows:

“Each basin contains approximately 1.3 million gallons of water that is used to shield and cool the SNF. The water is currently maintained in a closed-loop system and is continually recycled from the basins, circulated through existing treatment systems, then returned to the basins. This treatment is necessary to maintain adequate water quality (e.g., reduce cloudiness) and reduce concentrations of soluble radionuclides. Based on current chemical characterization data, the water is not regulated as a dangerous waste or as a PCB remediation waste². As outlined in Section IV, the interim remedial action is limited to pretreatment of the water using the in-basin treatment system and transport to the ETF³.”

The ROD further describes the treatment alternative for these liquids:

“The K Basins together contain about 9.8 million L (2.6 million gal) of contaminated water. Under all the action alternatives the water will be treated in the basins with the

² The 100-KR-2 OU ROD states that K-basin wastewaters are not regulated as PCB remediation waste, reflecting experience to date that these wastewaters do not contain PCBs above the unrestricted discharge decontamination concentration of 0.5 µg/l. For purposes of this approval, any K-basin wastewaters with PCB concentrations above the decontamination limit of 0.5 µg/l are considered PCB remediation waste as a result of being generated from PCB source concentrations reasonably expected to be above those specified in the definition of PCB remediation waste at 40 CFR 761.3.

³ Technically, K-basin wastewaters may physically be placed in one of the LERF basins prior to treatment in ETF. For purposes of this approval, statements in the 100-KR-2 OU ROD that K-basin wastewaters will be sent to or managed by ETF are interpreted to mean LERF and ETF.

IWTS [Integrated Water Treatment System]⁴, removed and transferred to the ETF in the 200 Area for further treatment, then disposed at the State-Approved Land Disposal Site in the 200 Area. The activities that are part of this CERCLA interim remedial action are in-basin treatment, removal, and transfer to the 200 Area. Treatment at ETF and disposal at the State-Approved Land Disposal Site are not part of this CERCLA interim remedial action.”

[...]

“An Integrated Water Treatment System (IWTS) shall be added to each of the basins in accordance with the schedule requirements of the Tri-Party Agreement. The IWTS will clear the water so that reduced visibility does not impede fuel or debris removal activities. The IWTS will provide the necessary collection of contaminated basin water, treatment of the water, and return of treated water to all basin processes that require water, such as canister decapping, fuel retrieval, debris cleaning, and sludge retrieval.

Water will be removed from the basins in accordance with the schedule requirements of the Tri-Party Agreement. The IWTS will meet or be modified, as appropriate, so that treated water meets the ETF waste acceptance criteria. The IWTS-treated water will be pumped into tanker trucks and transported to the ETF. The IWTS as designed by DOE-RL shall be included in the RDR/RAWP subject to EPA approval.

During SNF retrieval, some water will be removed with the SNF and trapped inside the MCOs. When the water is drained from the MCOs during later processing, it may be recycled to the basins and managed with the bulk of the contaminated water. This recycle will help maintain necessary water levels in the basins and reduce the volumes of wastewater generated. Alternately, the water may be treated as necessary and transferred directly to the ETF. Clean water will be added to the basins to maintain the water at the level necessary to cool the SNF and provide radiation shielding in the basins during remedial activities.

The IWTS includes a pre-filter to remove particulate matter and an ion exchange module to remove remaining radioactive contaminants except tritium. Tritium cannot be effectively separated from water. Prior to removal from the basins, water will be sampled to determine if it meets ETF waste acceptance criteria including the criterion for PCBs. If PCBs or other contaminants are detected at concentrations greater than the waste acceptance criteria at ETF, then additional treatment will be added to the IWTS to ensure that water leaving the system meets the waste acceptance criteria for ETF. Water removed from the basin that is above a PCB concentration of 0.5 ppb will be a *Toxics Substances Control Act* (TSCA) regulated waste under 40 CFR 761.79.”

In addition to the 2.6 million gallons of water currently in the two basins, additional water will be generated and managed by LERF/ETF from fuel removal operations, debris removal, basin and equipment decontamination and other operations at

⁴ The IWTS is a wastewater treatment unit authorized by the 100-KR-2 operable unit ROD, and is specific to the Hanford 100-Area K-basins. It is separate and distinct from the Hanford 200-Area Liquid Waste Processing Facilities that are the subject of this approval. Further, this approval does not impose any conditions on the IWTS.

the basin approved by EPA as part of 100-KR-2 Operable Unit actions. EPA specifically intends that these additional liquids are included within the scope of this approval.

Since these K-basin wastewaters, which may have regulated PCB content, are most appropriately managed at LERF/ETF, DOE-RL has included management of K-basin liquids in the RBDA request developed pursuant to the Framework Agreement. EPA believes this approach is appropriate, reflecting the key role that LERF and ETF in supporting a number of Hanford cleanup projects. This action is also consistent with the CERCLA ROD for K-basins, which anticipated management of these liquids in LERF/ETF.

With respect to PCB content, EPA does not believe there are any significant differences between the components of Hanford tank wastes suitable for management at LERF/ETF (these are expected to be process condensate from the 242-A evaporator, and liquid effluents from the waste treatment plant), and K-basin liquids. Both are characterized by very low PCB concentrations, with minimal solids content that might be associated with higher PCB content and difficulty to treat in LERF/ETF. Therefore, EPA believes that the analysis performed by DOE-RL in the liquids component of the Framework Agreement RBDA application is fully applicable to K-basin wastewaters.

As a separate action, EPA notes that DOE-RL has petitioned EPA to modify the existing RCRA delisting applicable to ETF treated effluents. See 60 Federal Register (FR) 6054, February 1, 1995. Although not yet proposed, EPA intends to include in this delisting rulemaking a delisting exclusion limit for PCBs based on the same TSCA decontamination limit being approved in this RBDA approval⁵. EPA believes this approach is necessary to insure protectiveness, as well as consistency between the various authorities and decision documents applicable to LERF/ETF.

EPA intends to propose in the near future approval of the RBDA for the liquids portion of the tank waste RBDA. EPA intends that this proposed approval will be consistent with the final approval provided by this letter, and will provide additional details of the relationship between the liquids, DST and waste treatment plant components of the tank waste RBDA.

Discussion of Conditions

This section contains a discussion of EPA's rationale for establishing each of the conditions established in granting this risk-based disposal approval for TSCA-regulated K-basin aqueous liquid PCB remediation waste.

⁵ PCBs are defined as hazardous constituents under RCRA (dangerous waste constituents under Washington State's authorized dangerous waste program), and therefore subject to consideration under delisting authority. See 40 CFR 261. Appendix VIII and Washington Administrative Code (WAC) 173-303-9905 under Washington State's authorized dangerous waste program.

In the February, 2002 RBDA application, DOE-RL analyzed actual or potential risks from disposal of PCB remediation waste in the 200 LWPF through three key potential release mechanisms. As presented in Section 2.3 of the RBDA application, these include:

- Air emissions from process and other vents
- Spills or releases during treatment and processing operations
- Discharge of treated effluents and secondary wastes

EPA believes that these potential release mechanisms reasonably represent all significant sources of human and environmental threats that need be evaluated to support a demonstration that disposal of PCB remediation waste as proposed in DOE-RL's RBDA application do not pose an unreasonable risk of injury to health or the environment. Each of these potential release mechanisms are addressed by one or more conditions of this approval, as discussed in the following paragraphs.

Condition 1: PCB remediation waste from the K-basin cleanup activities managed under this approval at the Liquid Effluent Retention Basins (LERF) and the 200 Area Effluent Treatment Facility (ETF) shall have a maximum PCB content of 6,000 µg/l, measured as the sum of Aroclors. Results of waste stream characterization to meet this condition must be in writing and placed in the facility operating record, along with supporting quality assurance information that documents the process knowledge or analytical sampling data used to demonstrate compliance with the 6000 µg/l limit are adequate for that purpose. Waste stream characterization may be carried out in whole or in part using the waste analysis procedures in the Hanford site-wide Resource Conservation and Recover Act (RCRA) Permit, WA7 89000 8967.

For purposes of this approval, DOE-RL's application discusses three air emissions sources from the 200 Area LWPF. These include: 1) LERF basin vents; 2) Vented tanks in ETF (surge tank, secondary waste receiving tanks, etc.); and 3) degassing column/air stripper emissions from ETF.

With respect to LERF air emissions, Section 2.2 of the RBDA application states:

“The [LERF] basins are designed to have no air emissions, since the LERF is a bladder system. Each breather vent is equipped with drum containing 200 pounds of GAC [granulated activated carbon]. These GAC canisters are expected to be effective for removal of organic vapor, including PCBs, for the life of the LERF basins without requiring replacement.

Considering the engineering function of the LERF basin cover, the ambient temperature of liquids in the LERF basins that limit volatility of PCBs, and the passive air controls on the basins, EPA concurs that these PCB emissions from LERF basins are negligible and do not warrant further evaluation for purposes of this approval.

DOE-RL's RBDA application discusses use of engineering models to calculate expected PCB air emissions from ETF for a range of PCB concentrations, ranging from 0.2 µg/l to 6000 µg/l. DOE-RL's rationale for selecting these PCB concentrations for analysis may be found in Section 3.1.1 of the February 28, 2002 RBDA application. To summarize, the 0.2 µg/l value corresponds to the method detection limit (MDL) typically achieved for Hanford analyses, and an upper bound on PCB concentrations received to date at the 200 Area LWPF. The 600 µg/l value corresponds roughly to the highest solubility of Aroclors in water, while the 6000 µg/l roughly corresponds to the maximum PCB concentration that ETF can process while routinely meeting a treated effluent PCB concentration of 0.5 µg/l.

For vented tanks at the ETF, engineering equilibrium calculations are performed to estimate air emissions of PCBs. Certain operating data in the RBDA analysis, such as air flow rates from the various tanks, are taken from the ETF Notice of Construction required by the Washington State Department of Ecology pursuant to Washington Administrative Code (WAC) 173-400. See Section A.2.1.2 of the RBDA application. Operating temperatures for modeling purposes were determined from typical temperatures of the particular tanks observed during operations.

Emissions from the ETF degassing column are evaluated in a similar way, except that the degassing column is modeled as an air stripper, using a standard engineering modeling approach for packed bed countercurrent mass transfer unit operations.

The modeling of ETF PCB air emissions evaluation considers two key process configurations of ETF, which principally reflect whether ultraviolet oxidation (UV/OC) processing (the key unit operation at ETF for destruction/removal of PCBs) occurs upstream or downstream of the vented tanks in question⁶. The application notes that Configuration 3 has the potential to emit greater quantities of PCBs than other configurations, since UV/OX treatment occurs downstream of other treatment processes. Configuration 3 is applicable to wastewaters with high dissolved solids. Some of these PCBs, specifically those in the secondary treatment train evaporator and thin-film dryer, are recycled back to the main treatment train, so that the emissions difference between these two configurations is only seven percent of ETF feed PCBs for the 6000 µg/l case. As noted in Section 3.1.1 of the RBDA application, Configuration 3 is considered the bounding case for PCB air emissions from the ETF. Therefore, the operating conditions established by this approval are based on a demonstration that ETF operations do not pose an unreasonable risk of injury to health or the environment for either ETF process configuration.

ETF emissions models are based on 24 hour/day operations, 364.25 days/year. This modeling basis is actually significantly greater than the expected operating efficiency of

⁶ The RBDA application actually considers three process configurations, but notes that Configuration 1 and Configuration 2 are similar if volatile organics are present.

70% for ETF, as described in the November 29, 2001 delisting application⁷. As such, EPA considers this modeling basis a conservative bounding estimate of PCB emissions.

Details of this engineering emissions model may be found in Appendix 1 of DOE-RL's RBDA application.

Once PCB air emission rates from ETF sources are calculated, DOE-RL's RBDA application then evaluates the effect of these emissions on various receptors. Receptors considered include Hanford site workers, potentially exposed members of the public, and environmental receptors. Receptor modeling is carried out using a standard EPA model, Industrial Source Complex 3, or ISC3, and Hanford-specific meteorological data. Use of the ISC3 model, and the selected locations of potentially exposed members of the public, is consistent with other air pathway risk evaluations at the Hanford site.

Results of air pathway emissions from ETF disposal of PCB remediation waste show that there is no unreasonable risk of injury to any of the receptors evaluated. Details are provided in Section A.3 of DOE-RL's RBDA application. In particular, Table A.3-8 of the February 28, 2002 RBDA application documents that the highest calculated risk from ETF operations is 2.6×10^{-7} based on the highest 24-hour average concentration exposure to workers for the 6000 $\mu\text{g/l}$ feed case. EPA finds that this bounding risk value supports a conclusion that the proposed disposal of PCB remediation waste does not pose an unreasonable risk of injury to health or the environment.

Ecological risk from disposal of PCB remediation waste in the 200 Area LWPF is based on the ecological receptor impact analysis performed as part of the double-shell tank (DST) component of the Hanford PCB Framework Agreement RBDA application. Briefly, the DST analysis examined the dose or exposure concentration (as appropriate on a species-specific basis) for selected ecological receptors of potential concern applicable to Hanford biota. This analysis considered species-specific exposure and uptake pathways from air emissions to the identified receptors. These values were then compared to corresponding species-specific and general biota class toxicity reference values (TRV). This analysis concluded that the hazard quotient⁸ for all environmental receptors of potential concern were less than one, indicating no unreasonable risk of injury to the environment. This analysis does note that mammal species (white-tailed deer, mink, and meadow vole, exceeded biota class-based health quotients. EPA believes that species-specific TRV values provide a more representative evaluation of the environmental effects of PCB (and other contaminant) exposures. Therefore, EPA is basing its finding of no unreasonable risk of injury to the environment on the species-specific, not the general biota-class analysis.

⁷ The maximum ETF processing volume of 210 million liters/year specified in condition 2 of this approval is based on the engineering design capacity of ETF and the expected operating efficiency of day-to-day operations. As discussed elsewhere in this approval, EPA is establishing the 210 MM l/y value to insure consistency with and protectiveness of modifications to the 200 Area ETF delisting rule that EPA expects to propose in the near future. See also the discussion of Conditions 3 and 4.

⁸ The hazard quotient for this analysis is defined as the dose or exposure concentration divided by the corresponding toxicity reference value. See Section 5.3 of the DST RBDA application.

The February 28, 2002 LWPF RBDA application calculated the environmental risks of LWPF air emissions (including those from the 242-A Evaporator, which are not considered in this approval) by multiplying the species-specific dose or exposure concentration from the DST environmental risk evaluation by the ratio of the air emissions rate calculated from 200 Area LWPF sources to air emissions from DST sources. Results of these calculations are presented in Tables A.3-10 through A.3-12 in the 200 Area LWPF RBDA application for the three feed concentration cases evaluated. In each case, the ratio of 200 Area LWPF air emissions to DST air emissions was less than 1.0, meaning environmental impacts from 200 Area LWPF operations are less than those calculated from DST operation. Further, these calculations include contributions from the 242-A Evaporator, so that they overestimate emissions and ecological risks from management of K-basin liquids. Therefore, the finding reached by the DST RBDA application that there is no unreasonable risk of injury to the environment also applies to air emissions from the management of K-basin liquids in LERF and ETF..

EPA finds that the requirement to measure PCB content on the basis of total Aroclors is appropriate, since the UV/OX treatment in ETF for this waste stream is well-suited to effectively destroying all PCB congeners. Therefore, it is not necessary to identify individual PCB congeners to evaluate whether the wastes can be effectively destroyed in ETF or that the treated effluent meets decontamination standards.

The remaining elements of condition 1 relating to written waste stream characterization is intended to insure appropriate documentation and enforceability of the influent PCB concentration limit. The final element of condition 1 acknowledges EPA's expectation that RCRA and TSCA requirements be integrated to the extent possible while still demonstrating compliance with RCRA and TSCA

Condition 2: DOE-RL shall operate LERF and ETF according to applicable terms and conditions of the Hanford site-wide RCRA permit, WA7 89000 8967.

DOE-RL's RBDA application does not contain an explicit analysis of risks of spills and accidental releases from treatment of PCB remediation waste at ETF. EPA believes this is appropriate, since both ETF and LERF are fully permitted by the Washington State Department of Ecology through the site-wide RCRA permit. This permit contains detailed design and operating conditions intended to insure safe and protective operations of LERF and ETF. Therefore, disposal of PCB remediation at LERF and ETF will not pose an unreasonable risk of injury to health or the environment on the basis of spills or releases when these units are operated according to RCRA permit requirements.

This condition also insures that closure of the 200 Area LERF and ETF facilities is conducted in an environmentally protective manner. For purposes of this approval, this condition establishes that closure that satisfies the RCRA-permitted closure plan is an adequate demonstration that the protectiveness standard of 40 CFR 761.61(c) is met with respect to closure activities. Therefore, EPA is establishing as a condition of this approval that management of K-basin PCB remediation waste at LERF and ETF be

conducted according to the technical standards of the Hanford site-wide RCRA permit, WA7 89000 8967.

In establishing this condition, EPA recognizes that K-basin aqueous liquids are not expected to designate as hazardous wastes, and therefore are not legally subject to RCRA permitting requirement for management at LERF and ETF. EPA is not intending to extend RCRA jurisdiction to non-RCRA-regulated wastes. Rather, EPA is imposing under TSCA authority the technical standards developed through the RCRA permitting process. EPA believes that this approach will not only clearly demonstrate that management of PCB remediation waste in ETF does not pose an unreasonable risk of injury to health or the environment, but it will also insure a consistent set of operating standards and processes for all wastes managed at ETF.

Condition 3: Treated effluents from ETF shall have a maximum PCB content of 0.5 µg/l prior to discharge, as measured by the sum of Aroclors. Sampling and analysis, including quality assurance/quality control procedures, shall be conducted according to a written plan that complies with requirements of 40 CFR 761.79(f). This plan may be based in whole or in part on verification sampling plans required by the Hanford site-wide RCRA permit WA7 89000 8967 or other permit or authorization applicable to 200 Area ETF treated effluent.

Condition 4: The total quantity of liquids processed by ETF, including wastewaters other than K-basin aqueous PCB remediation waste, shall be limited to 210 million liters/year.

To insure that the discharge of treated effluents from the ETF system are fully protective, DOE-RL's RBDA application is based on treating K-basin aqueous PCB remediation wastes to 0.5 µg/l, which is the decontamination limit established by 40 CFR 761.79(b)(1)(iii) for unrestricted use of water. The sampling and analysis requirements are intended to insure compliance with TSCA, as well as more general expectations that concentration-based compliance demonstrations are documented in writing and supported by appropriate quality assurance information.

EPA is including the provision that the 0.5 µg/l limit be met prior to discharge to allow DOE-RL the flexibility to retreat any batch of treated effluent that does not comply with the required concentration limit. EPA anticipates that circumstances where re-treatment may be necessary will occur rarely, if at all, but does feel it prudent accommodate this possibility. Such a provision will be consistent with the design of ETF and other authorizations applicable to ETF.

To insure that this decontamination limit can be routinely achieved, EPA is also establishing the annual volumetric treatment limit for ETF at 210 million liters/year (MM l/y). The technical basis for this limitation is found in Section 2.3 of the February 28, 2002 RBDA application. This section cites vendor data for the ETF UV/OX treatment process, which establishes that the chemical reactions occurring in the UV/OX treatment

units follow first-order reaction kinetics. Therefore, the ratio of effluent PCB concentration to feed concentration is directly proportional to residence time. Once a specific residence time is established, the annual throughput or processing capacity of the UV/OX treatment process immediately follows, given the fixed physical size of the process equipment.

In this approval, EPA is establishing the required maximum effluent PCB concentration, and a maximum allowable influent PCB concentration based on a decontamination factor of 11,600 (The decontamination factor is the ratio of effluent to influent PCB concentrations. See page 3-5 of the February 28, 2002 RBDA application. Since this decontamination factor establishes a specific residence time (2.08 minutes, as cited on page 2-9 of the RBDA application) a maximum throughput immediately follows as noted above. The 210 MM l/y capacity reflects this maximum throughput, adjusted for the expected on-line operating efficiency of ETF (the fraction of time that ETF actually processes waste over an entire calendar year). For these calculations, an on-line operating efficiency of 70% is used. See Section 1.4 of the November 29, 2001 200 Area ETF delisting petition.

EPA is establishing this limit to apply to the total of liquids processed by ETF, not just K-basin wastewaters. Since the UV/OX system at ETF is of a fixed size and characterized by a maximum on-line operating efficiency, allowing treatment of more than 210 MM l/y would mean that the required residence time and corresponding decontamination factor could not be achieved. Therefore, establishing the 210 MM l/y volume limit is integral to insuring that ETF can achieve the PCB destruction level upon which this approval is based.

While other operating conditions are certainly possible (increased peroxide addition rate, UV power input to the reaction unit, etc.), the RBDA application upon which this approval is based does not provide such data or analysis for EPA to evaluate. Therefore, EPA is establishing the volumetric treatment limit on the basis of the information that has been provided in the February 28, 2002 RBDA application.

As noted in footnote 1, EPA also intends to propose these volume and concentration limits as part of a revised RCRA delisting rulemaking applicable to discharge of treated effluent from ETF. See Section 2.3 of DOE-RL's RBDA application, and the November 29, 2001 delisting petition for further details of the relationship between this treatment volume and treated effluent decontamination limits.

Condition 5: Secondary wastes from management of K-basin aqueous liquids in the 200 Area LWPF shall be managed as specified in the 100-KR-2 Operable Unit Record of Decision.

This condition is intended to reflect secondary waste management conditions established in the 100-KR-2 Operable Unit ROD, which are as follows:

“ETF operating permits will be modified as necessary before K Basins water is received. The DOE-RL shall submit all necessary information and applications for any modifications of permits in a timely manner to support the Tri-Party Agreement schedule. Note that operation of the ETF is not part of this CERCLA interim remedial action. Contaminants and by-products removed during the treatment process at the ETF are concentrated and dried into a powder. The powder generated at ETF from treating water generated under this interim remedial action is authorized for disposal at the ERDF if it (1) meets the ERDF waste acceptance criteria, (2) the K Basins water is not combined with other liquid effluent whose treatment residue is not authorized for ERDF disposal, and (3) the residue from treatment of K Basins water is not combined with waste that is not authorized for ERDF disposal. Otherwise, the powder will be disposed at another authorized facility as per ETF operating permit(s).”

Other secondary wastes from TSCA disposal activities at the 200 Area LERF and ETF not enumerated or specifically considered by this condition, the 100-KR-2 OU ROD or other CERCLA decision documents may be managed and disposed of according to applicable rules and regulations.

Condition 6: DOE-RL shall comply with all other rules and regulations applicable to LERF, ETF, and the state-authorized land disposal site (SALDS).

While this condition does not impose any new requirements beyond those already applicable to the enumerated units, EPA believes this condition is appropriate, in that the protective function of permits and regulations other than RCRA (already explicitly accounted for in Condition 2) help insure that the approved disposal activities do not pose an unreasonable risk of injury to health or the environment. This condition also helps insure consistency between TSCA and other applicable authorities.

Condition 7: If, anytime before, during, or after disposal of PCB remediation waste in the 200 Area LERF or ETF, DOE-RL possesses or is otherwise made aware of any data (including but not limited to site conditions that differ from those presented in the February 28, 2002 RBDA application) indicating that the concentration limits in Conditions 1 and 3 are exceeded or the disposal activities approved herein may pose an unreasonable risk to of injury to health or the environment, DOE-RL must report such data, in writing, to the Regional Administrator within 10 days of first possessing or being made aware of that data. DOE-RL shall also report new or different information related to a condition at the 200 Area LERF, ETF, or units receiving treated effluent or secondary wastes from such disposal activities if the information is relevant to this approval.

Condition 8: EPA reserves the right to modify or revoke this approval based on information provided pursuant to Condition 7, or any other information available to EPA that provides a basis to conclude that the disposal activities covered by this approval pose an unreasonable risk of injury to health or the environment.

EPA finds that the application submitted by DOE-RL provides a defensible and complete analysis of actual and potential risks from the proposed disposal activities. However, both planned and unforeseen changes in waste streams, site conditions, or processing units may provide a basis for re-evaluating or modifying this approval. EPA believes it appropriate to include notification and re-opener provisions to help insure that new information not available to EPA at the time of this approval is timely available to the agency, and that EPA's ability to modify or revoke this approval as necessary to insure the protectiveness standard of 40 CFR 761.61(c) is not violated.