WHC-EP-0342
Addendum 15

242-A Evaporator Process Condensate Stream-Specific Report

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

Westinghouse Hanford Company Richland, Washington

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

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Tank Farms Environmental Engineering

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Prepared for the U.S. Department of Energy
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242-A EVAPORATOR PROCESS CONDENSATE STREAM-SPECIFIC REPORT

Tank Farms Environmental Engineering

ABSTRACT

The proposed wastestream designation for the 242-A Evaporator Process Condensate wastestream is that this stream is a dangerous waste, pursuant to the Washington (State) Administration Code (WAC) 173-303, Dangerous Waste Regulations.* *A combination of process knowledge and sampling data was used to make this determination.*

*Ecology, 1989, *Dangerous Waste Regulations*, Washington (State) Administrative Code (WAC) 173-303, Washington State Department of Ecology, Olympia, Washington.

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EXECUTIVE SUMMARY

The proposed wastestream designation for the 242-A Evaporator Process Condensate wastestream is that this stream is a dangerous waste, pursuant to the Washington (State) Administrative Code (WAC) 173-303, *Dangerous Waste Regulations*.* A combination of process knowledge and sampling data was used to determine if the effluent contains a listed dangerous waste (WAC 173-303-080). Sampling data alone are compared to the dangerous waste criteria (WAC 173-307-100) and dangerous waste characteristics (WAC 173-303-090). Process knowledge was based on knowledge of the process configuration and operations in the tank farm facilities (including the chemicals that are utilized). Sample data are based on samples taken downstream of all process contributors and consist of 34 random samples taken at four sampling points from August 25, 1985, to March 22, 1989.

*Ecology, 1989, *Dangerous Waste Regulations*, Washington (State). Administrative Code (WAC) 173-303, Washington State Department of Ecology, Olympia, Washington.

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LIST OF TERMS

EC%	percent equivalent concentration
μS	microsiemen
ASF	ammonium scrubber feed
CRW	cladding removal waste
DOE	U.S. Department of Energy
DST	double-shell tank
Ecology	Washington State Department of Ecology
EDTA	ethylenediaminetetraacetic acid
EP	extraction procedure
EPA	U.S. Environmental Protection Agency
HEDTA	hydroxy ethylenediaminetraacetic acid
HEPA	high efficiency particulate air (filter)
HH	halogenated hydrocarbon
HVAC	heating, ventilation, and air conditioning
IC	ion chromatography
ISE	ion specific electrode
LERF	Liquid Effluent Retention Facility
MSDS	Material Safety Data Sheets
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
PFP	Plutonium Finishing Plant
ppb	parts per billion
PUREX	Plutonium-Uranium Extraction
REDOX	Reduction-Oxidation
SST	single-shell tank
TCA	1,1,1-trichlorethane
TOX	total organic halogen
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TRU	transuranic
VOA	volatile organic compound
WAC	Washington (State) Administrative Code

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242-A EVAPORATOR PROCESS CONDENSATE STREAM-SPECIFIC REPORT

1.0 INTRODUCTION

1.1 BACKGROUND

In response to the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989), comments were received from the public regarding reduction of the discharge of liquid effluents into the soil column. As a result, the U.S. Department of Energy (DOE), with the concurrence of the Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA), committed to assess the contaminant migration potential of liquid discharges at the Hanford Site (Lawrence 1989).

This assessment is described in the *Liquid Effluent Study Project Plan* (WHC 1990a), a portion of which characterizes 33 liquid effluent streams. This characterization consists of integrating the following elements, pursuant to the Washington (State) Administrative Code (WAC) 173-303, *Dangerous Waste Regulations* (Ecology 1989): process knowledge, sampling data, and dangerous waste regulations.

The results of the characterization study are documented in 33 separate reports, one report per wastestream. The complete list of stream-specific reports appears in Table 1-1. This document is one of the 33 reports.

1.2 APPROACH

This report characterizes the 200 East Area 242-A Evaporator Process Condensate wastestream in sufficient detail so that a wastestream designation, in accordance with WAC 173-303 can be proposed. This report also provides a means of assessing the relative effluent priorities with regard to the need for treatment and/or alternative disposal practices.

The characterization strategy undertaken in this report (shown in Figure 1-1) is implemented by means of the following steps:

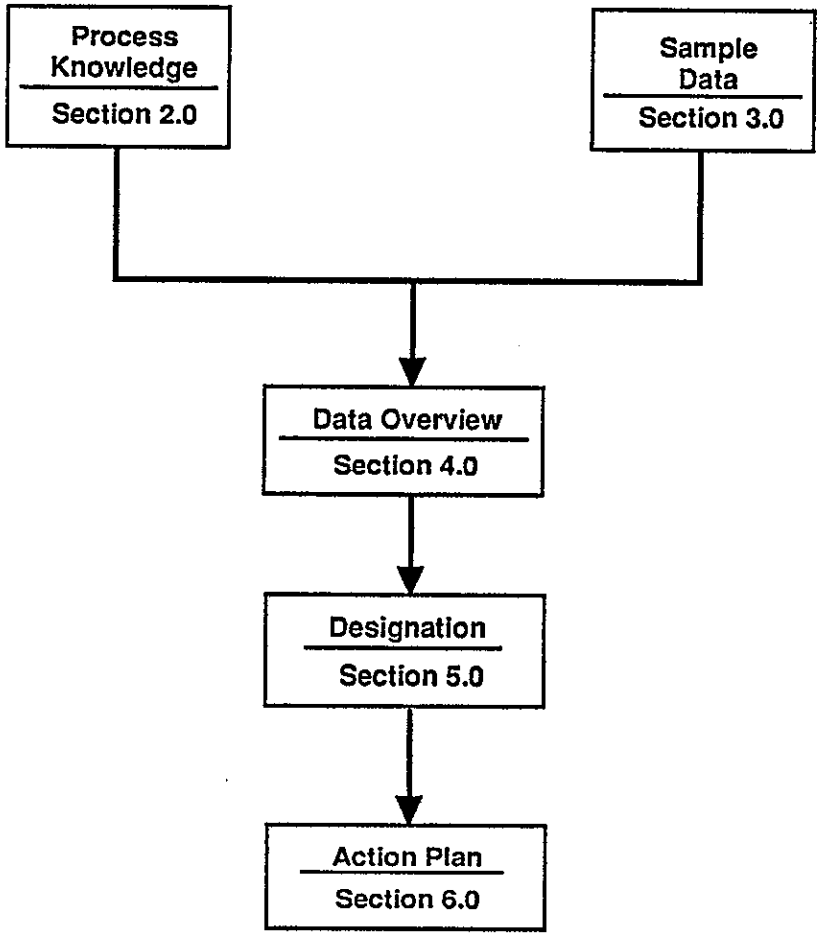
1. Describe the current process based on the knowledge of the system and the chemical/radiological constituents that are known to be present. A historical perspective of the process configuration, along with future projects and upgrades, has been presented so the reader can better understand the current status and current and future disposition of the effluent (Section 2.0).

2. Characterize the wastestream by presenting chemical and radioactive analytical results from samples taken over time in the wastestream (Section 3.0).

Table 1-1. Stream-Specific Characterization Reports.

WHC-EP-0342	Addendum 1	300 Area Process Wastewater
WHC-EP-0342	Addendum 2	PUREX Plant Chemical Sewer
WHC-EP-0342	Addendum 3	N Reactor Effluent
WHC-EP-0342	Addendum 4	163N Demineralization Plant Wastewater
WHC-EP-0342	Addendum 5	PUREX Plant Steam Condensate
WHC-EP-0342	Addendum 6	B Plant Chemical Sewer
WHC-EP-0342	Addendum 7	UO_3/U Plant Wastewater
WHC-EP-0342	Addendum 8	Plutonium Finishing Plant Wastewater
WHC-EP-0342	Addendum 9	S Plant Wastewater
WHC-EP-0342	Addendum 10	T Plant Wastewater
WHC-EP-0342	Addendum 11	2724-W Laundry Wastewater
WHC-EP-0342	Addendum 12	PUREX Plant Process Condensate
WHC-EP-0342	Addendum 13	222-S Laboratory Wastewater
WHC-EP-0342	Addendum 14	PUREX Plant Ammonia Scrubber Condensate
WHC-EP-0342	Addendum 15	242-A Evaporator Process Condensate
WHC-EP-0342	Addendum 16	B Plant Steam Condensate
WHC-EP-0342	Addendum 17	B Plant Process Condensate
WHC-EP-0342	Addendum 18	2101-M Laboratory Wastewater
WHC-EP-0342	Addendum 19	UO_3 Plant Process Condensate
WHC-EP-0342	Addendum 20	PUREX Plant Cooling Water
WHC-EP-0342	Addendum 21	242-A Evaporator Cooling Water
WHC-EP-0342	Addendum 22	B Plant Cooling Water
WHC-EP-0342	Addendum 23	241-A Tank Farm Cooling Water
WHC-EP-0342	Addendum 24	284-E Powerplant Wastewater
WHC-EP-0342	Addendum 25	244-AR Vault Cooling Water
WHC-EP-0342	Addendum 26	242-A Evaporator Steam Condensate
WHC-EP-0342	Addendum 27	284-W Powerplant Wastewater
WHC-EP-0342	Addendum 28	400 Area Secondary Cooling Water
WHC-EP-0342	Addendum 29	242-S Evaporator Steam Condensate
WHC-EP-0342	Addendum 30	241-AY/AZ Tank Farms Steam Condensate
WHC-EP-0342	Addendum 31	209-E Laboratory Reflector Water
WHC-EP-0342	Addendum 32	T Plant Laboratory Wastewater
WHC-EP-0342	Addendum 33	183-D Filter Backwash Wastewater

Figure 1-1. Characterization Strategy.



3. Compare characterization data obtained through both process knowledge and sampling information. Provide an estimate of stream loadings for radionuclides and chemical constituents based on these factors (Section 4.0).

4. Utilize the process knowledge and sample data to propose a dangerous waste designation (Section 5.0).

5. Identify new tasks needed to further characterize the wastestream, or to demonstrate continued compliance (Section 6.0).

1.3 SCOPE

The scope of this report is a characterization of the current 242-A Evaporator Process Condensate effluents that previously entered the soil column at the 216-A-37-1 Crib. On April 12, 1989, the discharge of this stream to the crib was discontinued. The report does not address any other wastestream leaving the 242-A Evaporator (e.g., solid, gaseous, or sanitary waste).

Historical changes, process campaign changes, and sampling data are considered only if relevant to the characterization of the wastestream as it presently exists. Future configuration and process modifications are addressed only if they will significantly alter the present effluent. A facility site plan is shown in Figures 1-2 and 1-3.

Figure 1-2. The 200 East Area Site Plan.

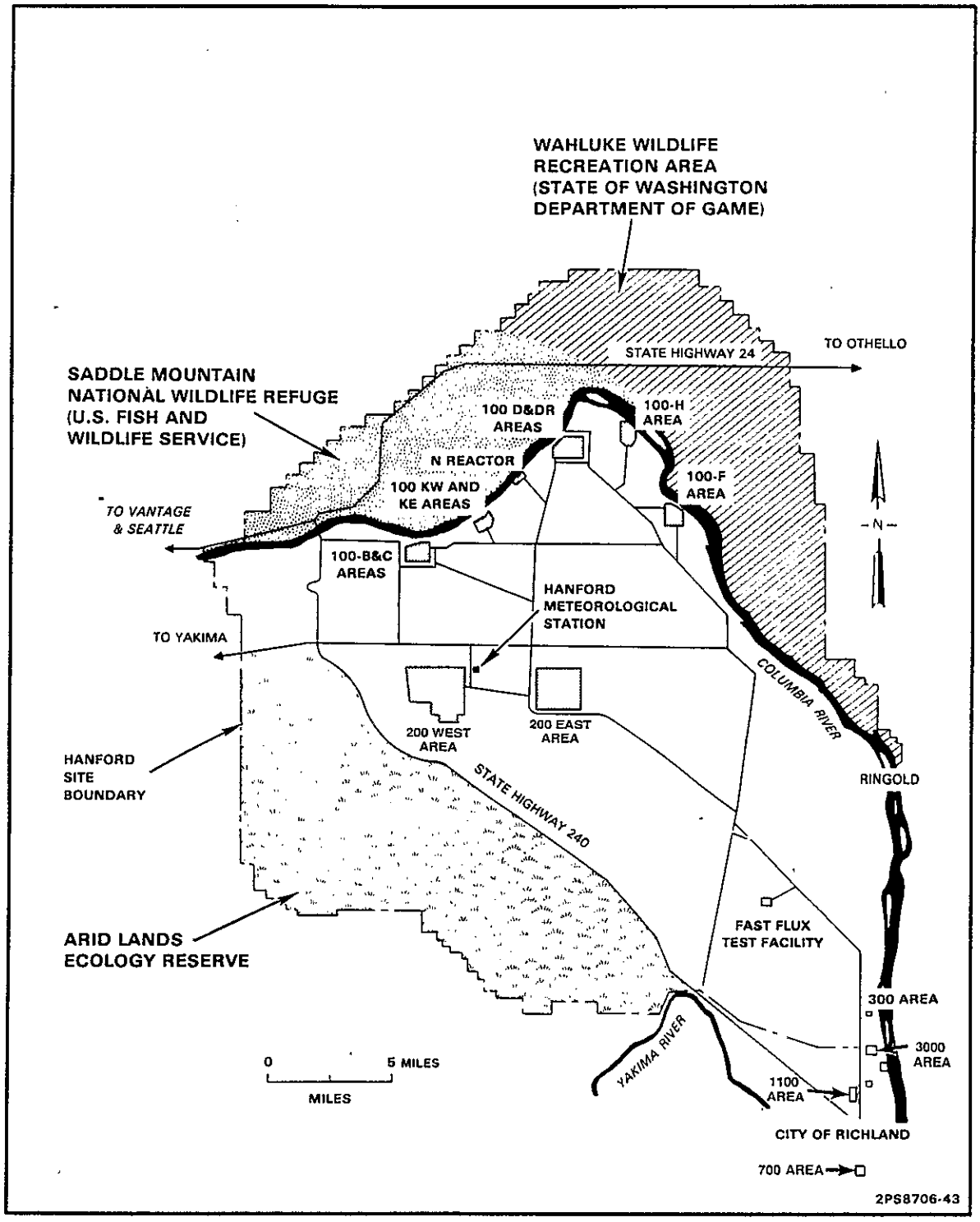


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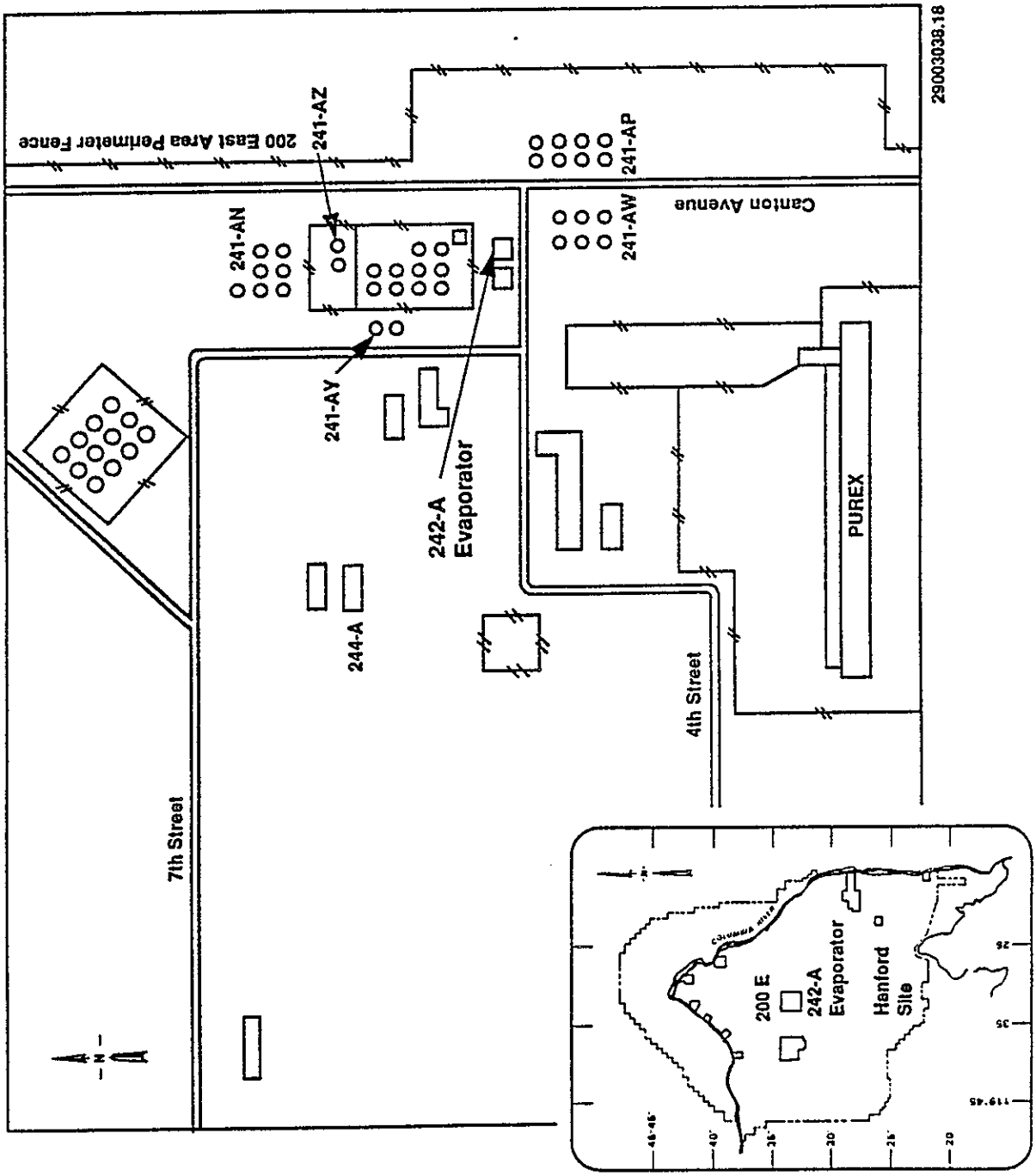
Figure 1-3. The 242-A Evaporator Site Plan.



2.0 PROCESS KNOWLEDGE

This section presents a qualitative and quantitative process knowledge characterization of the chemical and radiological constituents of the 200 East Area 242-A Evaporator Process Condensate cooling water wastestream. The process knowledge is discussed in terms of the following factors:

1. Location and physical layout of the process facility
2. The identity of the wastestream contributors
3. A general description of the present, past, and future activities of the process
4. The identity of constituents that are known to be present in each of the contributors.

2.1 PHYSICAL LAYOUT

The 242-A Evaporator Complex is located in the 200 East Area. The principal process components of the evaporator/crystallizer (EC) system are located in the 242-A Building, with supporting service and operating areas. The building comprises Structures A and B that are adjoining but structurally independent. See Appendix A, Figure A-1 (floor plan) and Appendix A, Figure A-2 (building elevations).

Structure A, which houses processing and service areas (e.g., evaporator room; heating, ventilation, and air conditioning (HVAC) room), is a reinforced concrete shear wall and slab structure with concrete mat footing in below-grade regions and spread footing elsewhere.

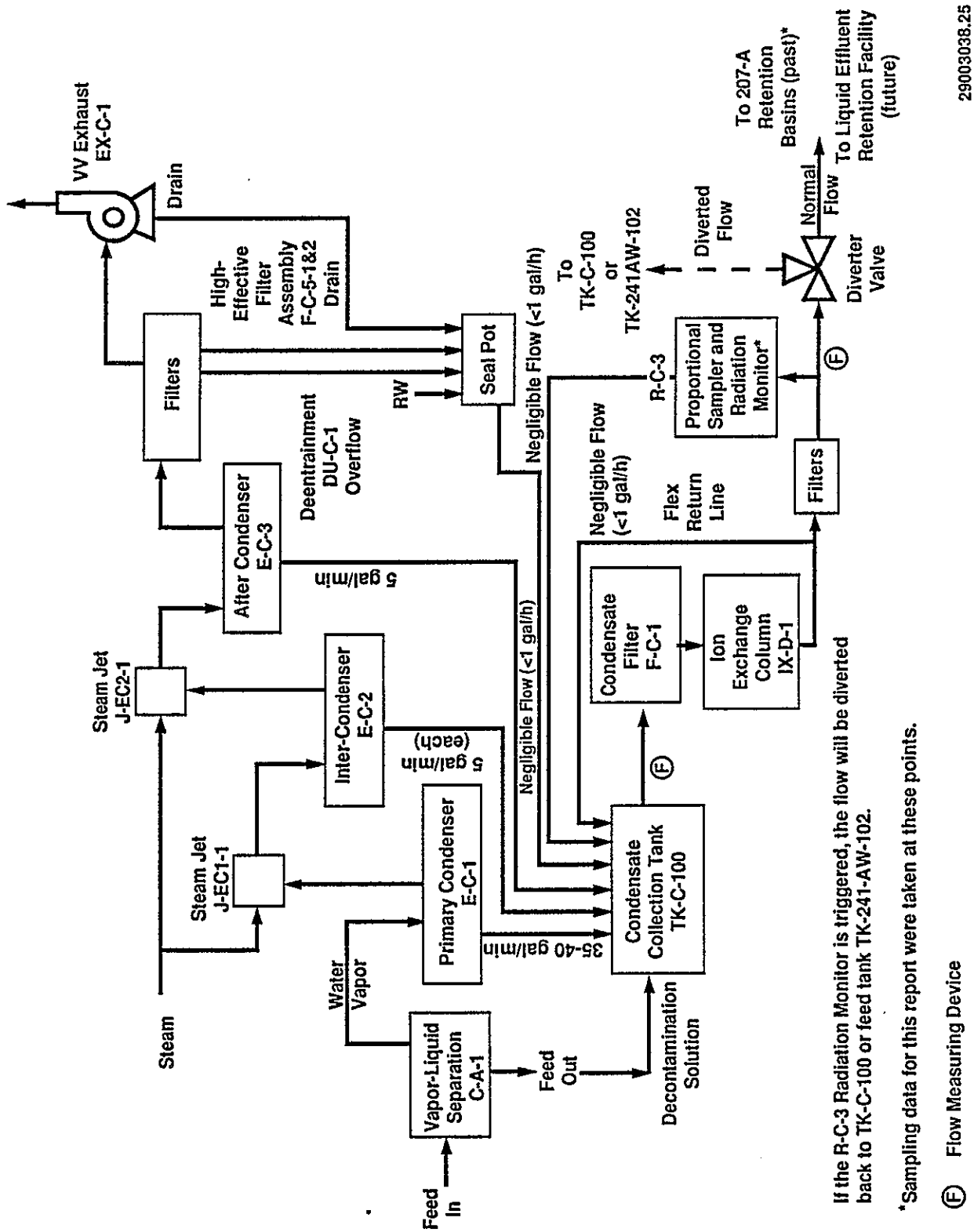
Structure B, which houses operating and personnel support areas (e.g., control room, lunchroom), is separated from Structure A by a seismic joint. The roof consists of metal decking supported by structural steel members spanning to reinforced concrete block walls. The foundations for Structure B are continuous strip footings.

2.2 CONTRIBUTORS

The process condensate collection tank (TK-C-100) is where all contributing streams to the process condensate merge, as shown in Figure 2-1. Seven streams feed into tank TK-C-100:

1. Primary condenser
2. Inter-condenser
3. After-condensers
4. Vessel vent seal pot

Figure 2-1. Process Condensate Configuration.



5. Sample return line
6. Decontamination solution
7. Flex return line.

NOTE: Diverted process condensate flow can also be routed to Tank C-100.

2.3 PROCESS DESCRIPTION

The 242-A Evaporator is the primary waste concentrator for Hanford Site wastes that are stored and treated in underground, double-shell tanks (DST) (1-Mgal nominal capacity). Low heat-generating liquid wastes (<0.1 Btu/h/gal) that contain relatively small amounts of fission products are stored in the underground tanks. The 242-A Evaporator uses evaporative concentration followed by crystallization and precipitation of salts to reduce the volume of wastes, thus reducing the number of tanks required for storage. The 242-A Evaporator started operations in September 1977 and was designed for a useful life of 10 yr. Upgrades to the facility in 1989 and 1990 will extend the life of the 242-A Evaporator through the year 2000.

The 242-A Evaporator is located in the 200 East Area of the Hanford Site. The facility comprises the process building (242-A Building), the 207-A Retention Basins, and the 216-A-37-1 underground crib. Building 242-A contains the evaporator vessel and supporting process equipment. The building ventilation exhaust fans and high-efficiency particulate air (HEPA) filter housing are located on the north side and an emergency power diesel generator is located on the south side of the building. Raw water, steam, and electrical power are provided to the 242-A Building from existing service facilities in the 200 East Area.

The 242-A Evaporator is currently shut down because of listed waste concerns and ammonium hydroxide toxicity levels in the process condensate stream. Possible listed wastes in the process condensate stream are discussed in Section 5.1.2. Ammonium hydroxide toxicity levels are discussed in Section 5.2.1. The 242-A Evaporator is presently undergoing a modernization that will include a new microprocessor controlled monitor and control system, a new emergency diesel generator, a new water service building for filtration and pressure regulation of raw water, and various new instrumentation in the process.

2.3.1 Present Activities

The 242-A Evaporator is currently shut down and there is no discharge of process condensate occurring. This section is intended to identify the current physical configuration of the process condensate system. The past and future disposal sites for this stream will be discussed in Sections 2.3.2 and 2.3.3, respectively, as there is no current disposal site for this wastestream.

2.3.1.1 Evaporation Process. The 242-A Evaporator receives a mixed blend feed from DST 241-AW-102. The feed consists of unprocessed and processed

waste as well as recycled liquid that is removed from storage tanks after solids have settled. The feed is pumped into the recirculation line on the upstream side of the reboiler at a rate controlled to maintain a constant vapor-liquid separator liquid level. As the feed enters the recirculation line, it blends with the main process slurry stream, which flows to the reboiler. A simplified schematic of the 242-A Evaporator process is shown in Figure 2-2.

In the reboiler, the mixture is heated slightly to a specified operating temperature, normally 100 to 170 °F, by using 3- to 10-lb/in^2 (gauge) steam. The low-pressure steam provides adequate heat input, and the resulting low temperature differential across the reboiler helps minimize scale formation on the heat transfer surfaces.

The heated slurry stream is discharged from the reboiler to the vapor-liquid separator, which is maintained at a pressure of 35 to 85 torr (0.68 and 1.64 lb/in^2 [absolute]). Under this reduced pressure, a fraction of the water in the heated slurry flashes to steam and is drawn through two wire-mesh deentrainer pads into a 42-in. vapor line that leads to the primary condenser. As evaporation takes place in the separator vessel, the slurry becomes supersaturated. This supersaturation promotes the growth of existing crystals and forms some new salt crystals in the slurry liquor. After the process slurry has remained in the vapor-liquid separator approximately 2 min, the slurry flows to the recirculation pump (P-B-1) suction via the bottom of the separator vessel and the lower recirculation line. The recirculation pump discharges the slurry back to the reboiler through the upper recirculation line, thus completing the process circuit. The process is continuous with typical stream flowrates of 90 to 140 gal/min from the feed tank, 20 to 60 gal/min for the condensate, and 43 to 90 gal/min for the slurry discharge.

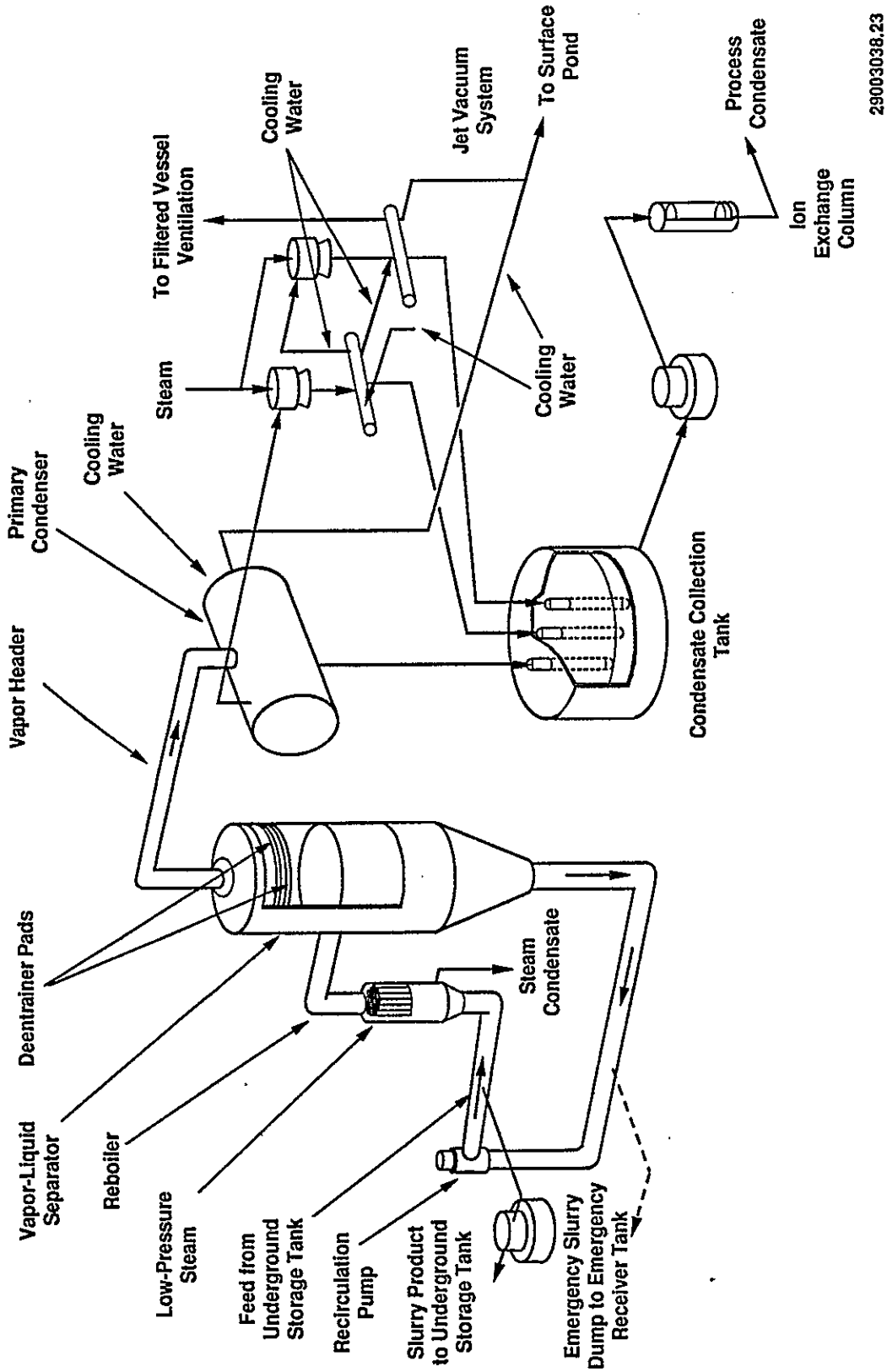
The recirculation pump moves waste at high velocities through the reboiler to accomplish the following:

- Improve the heat transfer coefficient
- Reduce fouling of heat transfer surfaces
- Keep solids in suspension
- Permit transfer of large quantities of heat with only a small change to the temperature of the solution being heated.

The static pressure of the solution above the reboiler is sufficient to suppress the boiling point so the solution will not boil in the reboiler tubes. Boiling occurs only near or at the liquid surface in the vapor-liquid separator.

When the process solution has been concentrated to specified parameters, a small fraction is withdrawn from the upper recirculation line upstream of the feed addition point and is pumped by the slurry pump (P-B-2) to underground storage tanks. In the storage tanks, the slurry is allowed to separate into solid and liquid layers by the solids settling. The liquid layer is

Figure 2-2. The 242-A Process Schematic.



removed and may be set aside, or it may be returned to the feed tank and mixed with other evaporator waste feed stocks.

Because of the high concentration of solids in the slurry, the transfer lines from the evaporator to the tank farm settling tanks may plug because of solids settling. The slurry pump is designed for high pressures so the slurry can be transferred at high velocities to alleviate this problem.

Pressure in the vapor-liquid separator is maintained at approximately 35 to 85 torr (0.68 to 1.64 lb/in^2 [absolute]) via the primary condenser and process vapor line by a two-stage steam-jet eductor system. Steam from the primary jet and the secondary jet discharges goes to the intercondenser and after condenser, respectively. Both condensers drain to the process condensate collection tank, while noncondensables are filtered and discharged to the atmosphere via the vessel vent system.

2.3.1.2 Process Condensate Contributors. The process condensate stream is a collection of the condensable materials carried over from the evaporation process into the condensers. These materials collect in tank TK-C-100 where they are pumped out for filtration and disposal. Below is a brief description of each of the seven individual contributing streams:

1. Primary condenser
2. Inter-condenser
3. After-condensers
4. Vessel vent seal pot
5. Sample return line
6. Decontamination solution
7. Flex return line.

Primary Condenser (E-C-1)--The primary condenser is the main contributor to the process condensate stream. Contributors to the drainage from the primary condenser are condensed vapor and raw water leakage. The water vapor originating from the vapor-liquid separator (C-A-1) enters the primary condenser (E-C-1), contacts the cooling tubes, and is condensed. The condensed vapors drain through a 20-in. hot well and a 4-in. line to tank TK-C-100. The normal condensate flowrate without leakage is 25 gal/min for feed boiloff, 3 gal/min for pump seal water, and 5 gal/min for deentrainment spray, as shown in Appendix A, Figure A-3.

Raw water leakage because of corrosion in the main condenser can contribute from 0 gal/min (at evaporator startup in 1977) to 40 gal/min (as shown in Appendix A, Table A-4. The noncondensed vapor is steam jetted to the intercondenser.

Inter-condenser (E-C-2)--Noncondensed vapor and steam from the steam jet (J-EC-1) contact the cooling tubes in the inter-condenser and then condense and drain to the tank. The noncondensed vapor is then steam-jetted to the after condenser.

After-condenser (E-C-3)--Noncondensed vapors and steam from the steam jet (J-EC-1) contact the cooling tubes in the after-condenser and then condense

and drain to tank. The remaining noncondensable gases are drawn through a series of filters (deentrainment DU-C-1, prefilter F-C-6, high-efficiency filter assemblies F-C-5-1 and F-C-5-2, and by the vessel vent exhauster (EX-C-1) and are then discharged to the atmosphere. Both the inter-condenser and the after-condenser contribute approximately 5 gal/min to the process condensate collection tank (TK-C-100).

Vessel Vent Seal Pot--The seal pot consists of drains from above the deentrainment pad (DU-C-1), high-efficiency filter assemblies (F-C-5-1 and F-C-5-2), and vessel vent exhauster (EX-C-1). Raw water is added to the seal pot to maintain a designated water level. The seal pot drainage is a minor contributor to the condensate collection tank (TK-C-100).

Sampler Return Line--The stream that passes through the radiation cell (RE-RC-3-1) is routed back to the process condensate collection tank (TK-C-100). The sampler (R-C-3) is discussed later.

Decontamination Solution--Decontamination solution is used to flush various parts of the system; this is an infrequent contributor to the stream. Decontamination solution can also be added directly to the process condensate collection tank (TK-C-100). Previous decontamination of the process condensate system involved flushing the system with raw water and directing the flush water to the evaporator feedtank (AW-102). No chemical agents were added.

Flex Return Line--The flex line was initially used as an ion exchange resin regeneration return line. This process is no longer used.

2.3.1.3 Process Condensate Flowpath. The process condensate pump moves the process condensate from the condensate collection tank (TK-C-100), through an inline filter (F-C-1) (to prevent particulate matter from reaching the ion exchange column), to the ion exchange column. Process condensate flows through the 1,133-gal ion exchange column for the removal of ^{137}Cs and ^{90}Sr. An in-line strainer is installed downstream of the ion exchange bed to collect any ion exchange resin that escapes the column.

The process condensate system is sampled and monitored downstream of the ion exchange column filter by the R-C-3 proportional sampler and radiation monitor. Process condensate samples are removed from the stream by means of an Isolok sampler.* The sampling system consists of an Isolok sampler and radiation cell (RE-RC-3-1). The Isolok sampler is activated by a proportional sample controller that is integrated with the flow measuring system. When activated a plunger is forced into the effluent stream by compressed air and then forced to retract and withdraw a sample. The sampler withdraws a sample at a preset interval. The samples are deposited in a 14-gal polyethylene bottle located at the sample rack. Laboratory samples are taken daily from this receiving tank. Downstream of the ion exchange column filter a portion

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*Isolok is a registered trademark of Bristol Engineering Co., Yorkville, Illinois.

of the stream is routed through the radiation cell (RE-RC-3-1), then back to the process condensate collection tank. The condensate flow is diverted for 5 min each hour to allow the radiation cell (RE-RC-3-1) to drain to provide a check of the radiation background.

A radiation monitor is in place as part of the R-C-3 sampling system. This detector is used to identify carryover of radioactive material into the wastestream. If radiation is detected by this monitor above a predetermined setpoint (determined by radiological controls personnel depending upon background radiation levels), then a signal is sent to the diversion valve to divert flow. The diverted flow can be sent to either the C-100 tank or the feed tank (TK 241-AW-102).

Future plans for the 242-A Evaporator Process Condensate stream include the construction of a Liquid Effluent Retention Facility (LERF) and a treatment system, which is under design at this time.

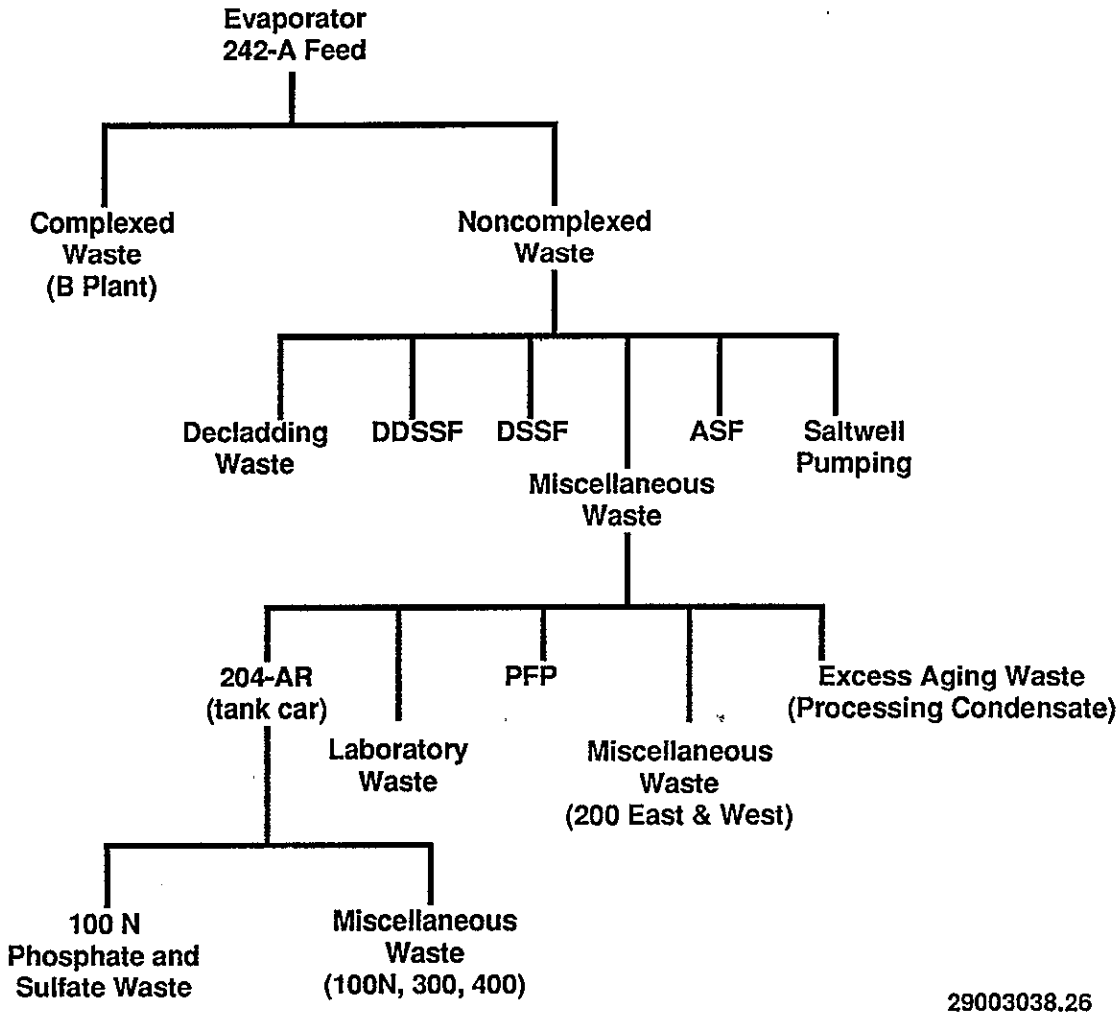
The projected restart date of the 242-A Evaporator is December 1990. Process condensate from the 242-A Evaporator will be stored at the LERF until the treatment system is operational. The LERF has a capacity to hold approximately 1 yr (13 Mgal) of 242-A Evaporator output in two 6.5 Mgal surface impoundments. Following treatment, the stream will be disposed of via the soil column or the Columbia River.

2.3.1.4 Evaporator Feed Types. The 242-A Evaporator receives dilute wastes from most of the Hanford Site waste generators and processors. Wastes are processed through the 242-A Evaporator in different batches according to their classification by total organic content, transuranic (TRU) content, and affects on the evaporation process. Dilute complexed wastes are received from the processing operations of B Plant, while a mixture of noncomplexed wastes are received from a number of operations, including Plutonium-Uranium Extraction (PUREX) Plant, saltwell pumping, and N Reactor. A feed type flowchart is shown in Figure 2-3.

2.3.1.4.1 Complexed Waste. The complexed wastes that are processed in the 242-A Evaporator were generated during B Plant processing. This waste contains high amounts of total organics such as the complexants ethylenediaminetetraacetic acid (EDTA) and hydroxy ethylenediaminetraacetic acid (HEDTA). These wastes must be processed separately in the 242-A Facility due to their adverse effects on evaporation and their TRU content.

2.3.1.4.2 Dilute Noncomplexed Waste. This waste is the composite of a number of wastes, including T and S Plant wastes, Plutonium Finishing Plant (PFP) supernate, saltwell liquids, 300 and 400 Area wastes (including fuel fabrication waste), 100 N Area sulphate waste, PUREX Plant neutralized decladding supernate, and miscellaneous waste from both B Plant (low-level) and the PUREX Plant. These wastes may be mixed during collection and storage before treatment in the 242-A Evaporator.

Figure 2-3. Evaporator Feed Types.



2.3.1.4.2.1 Cladding Removal Waste. Neutralized cladding removal waste is a TRU sludge that has a low-level supernate. It is generated in a process where the Zircaloy cladding on N Reactor irradiated fuel is dissolved chemically in the PUREX Plant by reaction with an aqueous ammonium fluoride and ammonium nitrate solution. Neutralization of the waste is required so it will meet the tank acceptance criteria for corrosion protection. It is transferred to storage where the supernate is retrieved and mixed with another of the dilute, noncomplexed waste types for further processing.

2.3.1.4.2.2 Saltwell Feed. Wastes classified as saltwell liquor are those wastes removed by saltwell pumping. Saltwell pumping removes the interstitial pumpable liquids within the saltcake of the single-shell tanks (SST). Although high-level waste in varying composition exists within the SSTs, the portion taken for evaporator processing is processed as noncomplexed, low-level waste and is mixed with other noncomplexed wastes.

2.3.1.4.2.3 Ammonia Scrubbing Feed. Ammonia scrubber waste is the ammonia scrubber waste concentrator bottoms. Feed to the concentrator includes dissolver offgas condensate and spent ammonia scrub water, as well as PUREX Plant vessel and condenser vent jet steam condensate. Ammonia is produced during the head-end Zircaloy cladding removal process at PUREX Plant.

2.3.1.4.2.4 Miscellaneous Waste. Dilute miscellaneous wastes consist of the following:

- Sump wastes
- Ammonia scrubber wastes
- Laboratory wastes
- Organic wash wastes
- Neutralized decladding waste supernate
- Other miscellaneous waste generated during PUREX Plant processing
- Cell drainage and vessel cleanout wastes generated at B Plant
- Supernate liquid generated with TRU sludge during PFP processing
- Laboratory wastes and decontamination solutions generated at Reduction/Oxidation (REDOX) Complex
- Decontamination solutions generated at T Plant
- Laboratory waste from the 400 Area
- Laboratory and fuels fabrication waste in the 300 Area.

2.3.1.4.2.5 Plutonium Finishing Plant Waste. The PFP TRU sludge waste is generated during the conversion of plutonium nitrate or plutonium oxide to plutonium metal. This waste is handled in the same manner as the PUREX Plant neutralized cladding removal waste and routed to a designated tank. The supernate is pumped off and mixed with dilute wastes to be further processed in the 242-A Evaporator.

2.3.1.4.2.6 100 N Phosphate Waste. The phosphate waste is produced during periodic reactor decontamination with a commercial decontamination agent that contains phosphoric acid, citric acid, and small quantities of other chemicals. The resulting waste, after dilution and neutralization with sodium hydroxide (NaOH), has chemical characteristics of a weak solution of trisodium phosphate. This waste is segregated and processed separately from others because of its effect on evaporation.

2.3.1.4.2.7 100 N Sulfate Waste. The radioactive sulfate waste is produced during periodic regeneration of ion exchange resins that are used to remove contaminates from the water in the spent fuel storage basin. A sand filter backwash sludge is incorporated as a small percentage of the volume of the sulfate wastestream. This waste is neutralized and then mixed with dilute waste to be further processed.

2.3.1.4.2.8 Dilute Double-Shell Slurry Feed. This type of waste feed is the product of partial processing of dilute, noncomplexed waste feed through the evaporator. It exists in various compositions and consistency and exists for the purpose of bringing other waste to the levels necessary for storage (i.e., as a dilutant or to minimize corrosion).

2.3.1.4.2.9 Double-Shell Tank Slurry Feed. The DST slurry feed is waste that was evaporated up to, but not beyond, the sodium aluminate phase boundary and therefore contains no aluminate solids. This waste is an interim waste storage form and further treatment in the evaporator will produce DST slurry that can be grouted for final disposal.

2.3.2 Past Activities

Operation of the system up to Tank C-100 is the same as for the current process configuration. From this point, an inline pump (P-C-100) moves the process condensate from the tank through a filter (F-C-1) to remove solids. Condensate then flows down through the ion exchange column (IX-D-1) to reduce the final cesium and strontium concentrations. Clinoptilolite is used as the ion exchange media in the ion exchange column (IX-D-1). The condensate exits from the column and flows through a seal loop to maintain a full column. The condensate then flows through an inline strainer, which collects any clinoptilolite media that may escape the ion exchange column (IX-D-1), and is then discharged to the retention basins.

The process condensate stream was discharged from the building to retention basins. If laboratory analysis showed the process condensate basin material was below set discharge limits for radionuclide concentration

(Appendix A, Table A-2), it was discharged to the 216-A-37-1 Crib. The individual evaporator process condensate discharge runs are in Appendix A, Table A-4.

Radiation readings above a specified amount in the retention basins resulted in pumping the process condensate back to the feed tank (TK-241AW-102) for eventual reprocessing in the evaporator. The process condensate stream was provided with continuous, proportional sampling systems including radiation monitoring equipment.

The R-C-3 system monitors the process condensate. Diversion valves can route the condensate flow to either Tank C-100 for additional treatment (i.e., recycled through the ion exchange column) or to the feed tank to be recycled as evaporator feed.

2.3.2.1 Past Disposal Site. The 216-A-37-1 Crib located southeast of the 242-A Evaporator shown in Appendix A, Figure A-4, has received process condensate from the 242-A Evaporator exclusively via the 207-A Retention Basins. The crib has a 10-in. corrugated, galvanized, perforated pipe located horizontally, 7 ft below grade. Bottom dimensions of the excavation are 700-ft long by 10-ft wide and 11-ft deep. The excavation contains 5 ft (5,300 ft^3) of gravel fill, and the site has been backfilled. The crib was in service from March 1977 to April 1989 but was still considered active as of August 1989. As of April 1989, process condensate discharged to the crib has been discontinued and closure of the crib has been permitted.

2.3.3 Future Plans

The LERF is being built to allow temporary storage of the process condensate wastestream until a treatment facility can be constructed. The 242-A Evaporator portion of LERF is being constructed with a capacity of 13 Mgal in order to allow 18 mo of evaporator operation. The process condensate wastestream will be piped directly to the treatment facility when it is operational.

A treatment facility will be built to treat the process condensate wastestream. This treatment facility is to be operational by 1992 to support Tri-Party Agreement milestone M-26-00. The discharge from the treatment facility will be to a Washington State-approved soil disposal site or to the Columbia River.

2.4 PROCESS DATA

Process condensate constituents include carryover from boiloff of the evaporator feed and any chemicals added to the process condensate stream following evaporation in the main, inter-condensers, and after-condensers. The process condensate system is a closed system and the addition of chemicals would only be through the decontamination line in the condensate collection tank. To date, only raw water has been used for decontamination and no chemicals have been added through the decontamination lines. Any constituents

reaching the process condensate stream from the evaporation/condensation process would also be part of the stream. The identification of these constituents is not possible at the present time because past sampling analysis of radioactive tank waste did not include volatile organic analysis. However, future sampling will include volatile organic sampling of the evaporator feed.

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3.0 SAMPLE DATA

This section is intended to characterize the wastestream by presenting chemical and radioactive analytical results from samples taken over time. The discussion identifies the source of the sampling (Section 3.1) and addresses data presentation (Section 3.2).

3.1 DATA SOURCE

The chemical data utilized in this report was obtained from 34 samples taken from August 25, 1985, to March 22, 1989. These samples were taken while the 242-A Evaporator was operational and in the past configuration (see Section 2.3.2). Table 3-1 presents a listing of when and where each of the samples used was taken. The chemical data samples were taken at four different locations:

- Sampler R-C-3 in the 242-A Building
- Process condensate basin 1 in the 242-A Building
- Process condensate basin 2 in the 242-A Building
- Process condensate basin 3 in the 242-A Building.

The analysis of the samples was performed at the Contract Laboratory in Richland, Washington. Appendix B contains a complete listing of the analysis performed and data obtained from these sampling efforts. The EPA sampling and analytical protocols were followed in obtaining this chemical data about the steam condensate.

Process control sampling data are also available for the period 1977 to 1988. The analysis of these samples was performed at the 222-S Laboratory and was intended for process control rather than environmental sampling. The designation process utilized in this report does not include the 222-S Laboratory data. The process control data were previously presented in the *Waste Stream Characterization Report* (WHC 1989) and are referenced here for completeness of this report.

3.2 DATA PRESENTATION

Statistical summaries of the chemical data are presented in Tables 3-2 through 3-5. Each table provides for each analyte the mean concentration, standard error, 90% confidence interval (90%CI), and maximum concentration encountered in any of the samples. The individual tables describe the results from the following types of evaporator feed:

- Table 3-2 Cladding removal waste (CRW) feed
- Table 3-3 Linked run feed
- Table 3-4 Ammonia scrubber feed (ASF)
- Table 3-5 Saltwell feed.

Complete listings of all the chemical data are presented in Appendix B along with thorough descriptions of the information types presented.

Table 3-1. 242-A Evaporator Process Condensate Resource Conservation and Recovery Act Sample Locations and Dates.

Feed type	Sample point	Number of samples	Date	Time
Cladding Removal Waste	R-C-3	2	03/17/88	09:52
			03/03/88	15:41
	Basin 1	1	03/03/88	13:35
	Basin 2	1	03/04/88	09:27
	Basin 3	1	03/05/88	09:04
Linked Feed	R-C-3	7	08/25/85	18:19
			06/13/86	13:33
			07/03/86	10:09
			10/13/86	10:28
			03/12/87	13:56
			09/02/87	09:55
			02/26/88	12:03
	Basin 1	1	02/25/88	09:26
	Basin 2	2	02/19/88	09:38
			02/27/88	09:30
	Basin 3	2	02/19/88	09:08
			02/26/88	10:34
Ammonium Scrubber Feed	R-C-3	5	10/11/88	09:58
			10/27/88	08:05
			02/28/89	10:32
			03/09/89	10:12
			03/22/89	10:32
	Basin 1	4	03/22/89	11:24
			01/28/88	09:23
			03/10/88	14:53
			08/12/88	10:21
	Basin 2	2	03/10/88	14:53
			08/08/88	10:00
	Basin 3	2	03/10/88	14:53
			08/13/88	09:50
Saltwell	Basin 1	1	07/10/88	09:14
	BASIN 2	2	07/08/88	09:35
			07/13/88	16:02
	BASIN 3	1	07/09/88	09:06

Table 3-2. Cladding Removal Waste Feed.

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Aluminum	5	0	n/a	1.14E+03	9.66E+01	1.29E+03	1.47E+03
Barium	5	4	DL	6.00E+00	2.13E-07	6.00E+00	6.00E+00
Calcium	5	0	n/a	4.97E+03	1.15E+03	6.74E+03	7.88E+03
Chloride	5	3	DL	6.23E+02	8.51E+01	7.54E+02	9.32E+02
Magnesium	5	4	DL	5.42E+01	4.20E+00	6.06E+01	7.10E+01
Mercury	5	0	n/a	5.26E-01	5.87E-02	6.16E-01	6.90E-01
Potassium	5	0	n/a	6.03E+02	3.20E+01	6.52E+02	6.74E+02
Uranium	5	0	n/a	3.88E-01	2.42E-01	7.59E-01	1.35E+00
Zinc	5	4	DL	5.00E+00	1.51E-07	5.00E+00	5.00E+00
Acetone	5	0	n/a	2.10E+03	2.89E+02	2.54E+03	2.57E+03
Ammonia	5	0	n/a	6.41E+05	1.12E+05	8.12E+05	1.00E+06
Benzyl alcohol	3	0	n/a	1.47E+01	1.76E+00	1.80E+01	1.80E+01
Butanal	4	0	n/a	4.42E+01	1.31E+01	6.57E+01	7.60E+01
1-Butanol	5	0	n/a	4.60E+04	1.90E+04	7.51E+04	8.80E+04
2-Butanone	5	0	n/a	7.16E+01	1.04E+01	8.76E+01	9.00E+01
2-Butoxyethanol	5	0	n/a	5.52E+02	1.09E+02	7.20E+02	8.40E+02
Butoxyglycol	5	0	n/a	2.77E+02	6.95E+01	3.84E+02	5.40E+02
3,5-Dimethylpyridine	3	0	n/a	2.07E+01	2.03E+00	2.45E+01	2.40E+01
2-Hexanone	4	0	n/a	9.25E+00	1.11E+00	1.11E+01	1.10E+01
MIBK (Hexone)	3	0	n/a	4.33E+00	3.33E-01	4.96E+00	5.00E+00
2-Pentanone	4	0	n/a	8.75E+00	1.25E+00	1.08E+01	1.20E+01
2-Propanol	1	0	n/a	3.90E+01	n/a	n/a	3.90E+01
Tetradecane	4	0	n/a	1.92E+01	3.61E+00	2.52E+01	2.60E+01
Tetrahydrofuran	5	0	n/a	1.50E+01	1.48E+00	1.73E+01	1.80E+01
Tributylphosphate	5	0	n/a	3.59E+03	1.28E+03	5.55E+03	6.80E+03
Tridecane	4	0	n/a	1.27E+01	2.06E+00	1.61E+01	1.80E+01
Unknown	3	0	n/a	4.40E+01	1.30E+01	6.85E+01	6.60E+01
Alpha Activity (pCi/L)	2	0	n/a	2.15E-01	6.30E-02	4.09E-01	2.78E-01
Beta Activity (pCi/L)	5	0	n/a	3.86E+02	1.88E+02	6.73E+02	1.09E+03
Conductivity (μS)	5	0	n/a	3.18E+02	3.73E+01	3.75E+02	4.20E+02
pH (dimensionless)	5	0	n/a	1.05E+01	5.10E-02	1.06E+01	1.07E+01
Temperature (°C)	2	0	n/a	3.33E+01	3.40E+00	4.38E+01	3.67E+01
TOC	5	0	n/a	4.38E+04	8.91E+03	5.75E+04	6.25E+04

Table 3-3. Linking Run Feed. (sheet 1 of 2)

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Aluminum	12	1	LM	5.99E+02	1.22E+02	7.65E+02	1.65E+03
Barium	12	11	DL	6.00E+00	1.17E-07	6.00E+00	6.00E+00
Cadmium	12	11	DL	2.25E+00	2.50E-01	2.59E+00	5.00E+00
Calcium	12	0	n/a	2.04E+03	3.45E+02	2.51E+03	4.37E+03
Chloride	12	10	DL	5.94E+02	6.50E+01	6.83E+02	1.17E+03
Copper	12	8	LM	1.11E+01	5.89E+00	1.92E+01	7.30E+01
Fluoride	7	6	DL	2.21E+01	2.14E+00	2.52E+01	3.50E+01
#Iron	12	7	DL	5.46E+01	1.07E+01	6.92E+01	1.56E+02
Magnesium	12	1	LM	5.17E+02	3.28E+02	9.64E+02	4.03E+03
Mercury	12	3	LM	2.22E-01	3.36E-02	2.68E-01	4.80E-01
Nickel	12	9	DL	1.12E+01	7.26E-01	1.22E+01	1.70E+01
Nitrate	12	8	LM	9.83E+02	5.10E+02	1.68E+03	4.98E+03
Potassium	12	1	LM	4.07E+02	1.28E+02	5.81E+02	1.71E+03
Sodium	12	1	LM	2.87E+03	2.08E+03	5.71E+03	2.56E+04
Sulfate	12	5	LM	2.04E+03	1.10E+03	3.54E+03	1.30E+04
Sulfide	12	10	DL	6.73E+03	5.36E+03	1.40E+04	6.56E+04
Uranium	12	2	MR	1.54E-01	4.33E-02	2.13E-01	4.75E-01
Vanadium	12	11	DL	5.00E+00	1.17E-07	5.00E+00	5.00E+00
Zinc	12	6	LM	7.33E+00	2.89E+00	1.13E+01	3.40E+01
Acetone	11	0	n/a	1.10E+03	4.29E+02	1.69E+03	5.10E+03
Ammonia	12	0	n/a	7.55E+04	2.25E+04	1.06E+05	2.50E+05
Benzaldehyde	1	0	n/a	2.30E+01	n/a	n/a	2.30E+01
Benzyl alcohol	1	0	n/a	1.00E+01	n/a	n/a	1.00E+01
Butanal	4	0	n/a	1.20E+02	5.25E+01	2.06E+02	2.30E+02
1-Butanol	10	0	n/a	3.99E+02	1.37E+02	5.89E+02	1.13E+03
2-Butanone	12	5	LM	4.17E+01	1.21E+01	5.83E+01	1.20E+02
Butoxydiglycol	1	0	n/a	1.10E+01	n/a	n/a	1.10E+01
2-Butoxyethanol	10	0	n/a	4.82E+02	1.08E+02	6.33E+02	9.20E+02
Butoxyglycol	6	0	n/a	8.48E+01	1.36E+01	1.05E+02	1.30E+02
Dodecane	2	0	n/a	4.30E+01	3.00E+00	5.22E+01	4.60E+01
Ethoxytriethylene glycol	1	0	n/a	1.50E+02	n/a	n/a	1.50E+02
Heptadecane	1	0	n/a	1.80E+01	n/a	n/a	1.80E+01
Hexadecane	1	0	n/a	1.70E+01	n/a	n/a	1.70E+01
Hexanoic acid	1	0	n/a	7.00E+01	n/a	n/a	7.00E+01
2-Hexanone	5	0	n/a	1.12E+01	2.60E+00	1.52E+01	2.00E+01
Methoxydiglycol	1	0	n/a	2.80E+01	n/a	n/a	2.80E+01
Methoxytriglycol	1	0	n/a	3.70E+02	n/a	n/a	3.70E+02
#MIBK (Hexone)	7	1	DL	1.46E+01	8.95E+00	2.75E+01	6.80E+01
N-Nitrosodimethylamine	12	11	DL	1.39E+01	3.92E+00	1.93E+01	5.70E+01
Pentadecane	1	0	n/a	2.00E+01	n/a	n/a	2.00E+01
2-Pentanone	4	0	n/a	9.75E+00	9.46E-01	1.13E+01	1.10E+01
Phenol	12	11	DL	1.19E+01	1.92E+00	1.45E+01	3.30E+01
2-Propanol	2	0	n/a	1.60E+01	6.00E+00	3.45E+01	2.20E+01
Pyridine	12	11	DL	5.04E+02	4.17E+00	5.10E+02	5.50E+02
Tetradecane	9	0	n/a	1.16E+02	5.17E+01	1.88E+02	4.40E+02
Tetrahydrofuran	6	0	n/a	1.98E+01	2.94E+00	2.42E+01	3.00E+01
Tributylphosphate	11	0	n/a	3.30E+03	1.81E+03	5.79E+03	2.06E+04

Table 3-3. Linking Run Feed. (sheet 2 of 2)

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Tridecane	9	0	n/a	1.01E+02	4.51E+01	1.64E+02	3.50E+02
Triglyme	1	0	n/a	9.00E+01	n/a	n/a	9.00E+01
Alpha Activity (pCi/L)	10	1	LM	7.52E-01	1.55E-01	9.69E-01	1.62E+00
#Beta Activity (pCi/L)	12	1	DL	1.29E+03	4.51E+02	1.90E+03	4.34E+03
Conductivity (μS)	12	0	n/a	1.56E+02	3.44E+01	2.03E+02	4.70E+02
pH (dimensionless)	12	0	n/a	9.42E+00	2.19E-01	9.72E+00	1.04E+01
Temperature (°C)	7	0	n/a	2.66E+01	3.12E+00	3.11E+01	3.90E+01
TOC	12	1	LM	1.76E+04	5.42E+03	2.50E+04	5.61E+04

# Denotes an ill-conditioned data set, i.e., one in which at least one reported measurement is less than at least one reported detection limit.

Table 3-4. Ammonia Scrubber Feed.
(sheet 1 of 2)

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Aluminum	10	1	LM	9.44E+02	1.44E+02	1.15E+03	1.77E+03
Arsenic (EP Toxic)	2	2	n/a	<5.00E+01	0.00E+00	<5.00E+01	<5.00E+01
Barium	10	8	DL	6.30E+00	2.13E-01	6.60E+00	8.00E+00
Barium (EP Toxic)	2	0	n/a	2.31E+02	5.00E-01	2.33E+02	2.32E+02
Boron	4	3	DL	1.07E+01	7.50E-01	1.20E+01	1.30E+01
Cadmium (EP Toxic)	2	2	n/a	<1.00E+01	0.00E+00	<1.00E+01	<1.00E+01
Calcium	10	0	n/a	3.46E+03	6.91E+02	4.42E+03	8.32E+03
Chloride	10	7	DL	7.00E+02	1.79E+02	9.48E+02	2.30E+03
Chromium (EP Toxic)	2	2	n/a	<5.00E+01	0.00E+00	<5.00E+01	<5.00E+01
Copper	10	9	DL	1.02E+01	2.00E-01	1.05E+01	1.20E+01
#Fluoride	10	4	DL	1.47E+02	1.03E+02	2.91E+02	1.07E+03
Iron	10	6	LM	2.77E+01	5.65E+00	3.55E+01	6.70E+01
Lead (EP Toxic)	2	2	n/a	<5.00E+01	0.00E+00	<5.00E+01	<5.00E+01
Magnesium	10	8	DL	1.20E+02	6.98E+01	2.17E+02	7.48E+02
Manganese	10	9	DL	5.00E+00	1.01E-07	5.00E+00	5.00E+00
Mercury	10	4	LM	1.79E-01	5.11E-02	2.50E-01	5.60E-01
Mercury (EP Toxic)	2	2	n/a	<1.00E+01	0.00E+00	<1.00E+01	<1.00E+01
Nickel	10	9	DL	1.04E+01	4.00E-01	1.10E+01	1.40E+01
Potassium	10	0	n/a	5.11E+03	2.02E+03	7.92E+03	1.57E+04
Selenium (EP Toxic)	2	2	n/a	<5.00E+01	0.00E+00	<5.00E+01	<5.00E+01
Silicon	4	0	n/a	6.72E+03	9.11E+02	8.22E+03	9.40E+03
Silver (EP Toxic)	2	2	n/a	<5.00E+01	0.00E+00	<5.00E+01	<5.00E+01
Sodium	10	0	n/a	4.02E+03	3.25E+03	8.55E+03	3.32E+04
#Strontium	10	6	DL	1.85E+01	1.81E+00	2.10E+01	3.00E+01
Sulfate	10	0	n/a	2.01E+03	2.75E+02	2.40E+03	3.90E+03
Uranium	10	4	MR	5.43E-01	2.42E-01	8.80E-01	2.03E+00
Vanadium	10	7	DL	5.50E+00	2.69E-01	5.87E+00	7.00E+00
Zinc	10	5	LM	6.33E+00	1.49E+00	8.41E+00	1.70E+01
Acetone	9	0	n/a	1.03E+03	1.70E+02	1.27E+03	2.16E+03
Ammonia	10	0	n/a	8.20E+05	1.82E+05	1.07E+06	2.19E+06
#Benzyl alcohol	8	4	DL	1.19E+01	1.09E+00	1.34E+01	1.70E+01
Butanal	3	0	n/a	8.67E+00	2.33E+00	1.31E+01	1.30E+01
1-Butanol	9	0	n/a	2.84E+04	1.29E+04	4.64E+04	1.21E+05
2-Butanone	10	1	LM	3.38E+01	7.56E+00	4.43E+01	9.30E+01

Table 3-4. Ammonia Scrubber Feed.
(sheet 2 of 2)

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Butoxydiglycol	1	0	n/a	2.70E+01	n/a	n/a	2.70E+01
2-Butoxyethanol	6	0	n/a	2.89E+02	7.74E+01	4.03E+02	4.90E+02
Butoxyglycol	6	0	n/a	1.88E+02	4.48E+01	2.54E+02	3.60E+02
Butoxytriethyleneglycol	1	0	n/a	3.50E+01	n/a	n/a	3.50E+01
Ethanol	1	0	n/a	2.00E+00	n/a	n/a	2.00E+00
2-Hexanone	6	3	DL	3.20E+01	1.31E+01	5.13E+01	7.90E+01
2-Methylnonane	2	0	n/a	1.55E+01	1.50E+00	2.01E+01	1.70E+01
2-Propanol	3	0	n/a	1.90E+01	4.51E+00	2.75E+01	2.40E+01
Tetradecane	6	0	n/a	1.40E+01	2.62E+00	1.79E+01	2.50E+01
Tetrahydrofuran	9	0	n/a	2.92E+01	7.85E+00	4.02E+01	8.10E+01
Tributylphosphate	13	2	LM	3.95E+03	9.39E+02	5.22E+03	1.01E+04
Tridecane	6	0	n/a	1.27E+01	3.57E+00	1.79E+01	2.80E+01
Unknown	9	0	n/a	2.88E+02	1.29E+02	4.69E+02	1.13E+03
Unknown aliphatic HC	1	0	n/a	1.20E+01	n/a	n/a	1.20E+01
Alpha Activity (pCi/L)	8	6	DL	3.72E-01	1.05E-01	5.20E-01	1.01E+00
Beta Activity (pCi/L)	10	0	n/a	4.11E+03	1.41E+03	6.07E+03	1.25E+04
Conductivity (μS)	10	0	n/a	3.19E+02	4.49E+01	3.82E+02	5.90E+02
pH (dimensionless)	10	0	n/a	1.05E+01	2.31E-01	1.08E+01	1.13E+01
TDS	2	0	n/a	2.25E+04	1.50E+03	2.71E+04	2.40E+04
Temperature (°C)	6	0	n/a	2.76E+01	2.31E+00	3.10E+01	3.49E+01
TOC	10	0	n/a	2.70E+04	6.87E+03	3.66E+04	7.85E+04

# Denotes an ill-conditioned data set, i.e., one in which at least one reported measurement is less than at least one reported detection limit.

Table 3-5. Saltwell Feed. (sheet 1 of 2)

Constituent	N	MDA	Method	Mean	StdErr	90%CILim	Maximum
Aluminum	4	0	n/a	5.93E+02	2.43E+01	6.33E+02	6.42E+02
Calcium	4	0	n/a	3.65E+02	3.43E+01	4.21E+02	4.47E+02
Mercury	4	0	n/a	1.83E-01	1.97E-02	2.15E-01	2.30E-01
Nickel	4	3	DL	1.07E+01	7.50E-01	1.20E+01	1.30E+01
Potassium	4	0	n/a	4.81E+03	2.62E+02	5.24E+03	5.28E+03
Sodium	4	0	n/a	1.74E+03	4.27E+02	2.44E+03	2.73E+03
Zinc	4	1	DL	1.55E+01	9.51E+00	3.11E+01	4.40E+01
Acetone	4	0	n/a	8.00E+02	1.49E+02	1.04E+03	1.20E+03
Ammonia	4	0	n/a	7.97E+04	8.04E+03	9.29E+04	8.89E+04
Benzyl alcohol	1	0	n/a	1.10E+01	n/a	n/a	1.10E+01
Butanal	3	0	n/a	3.10E+01	7.23E+00	4.46E+01	4.30E+01
1-Butanol	4	0	n/a	3.90E+02	6.43E+01	4.95E+02	5.25E+02
2-Butanone	4	0	n/a	3.25E+01	3.84E+00	3.88E+01	4.40E+01
2-Butoxyethanol	4	0	n/a	7.17E+01	1.22E+01	9.17E+01	9.80E+01
Butoxyglycol	4	0	n/a	7.02E+02	4.99E+01	7.83E+02	8.06E+02
Ethoxytriethylene glycol	3	0	n/a	8.20E+01	2.57E+01	1.30E+02	1.20E+02
2-Hexanone	4	0	n/a	6.25E+00	1.31E+00	8.40E+00	1.00E+01
Methoxydiglycol	1	0	n/a	5.20E+01	n/a	n/a	5.20E+01
Methoxytriglycol	1	0	n/a	6.50E+01	n/a	n/a	6.50E+01
MIBK (Hexone)	1	0	n/a	8.00E+00	n/a	n/a	8.00E+00
2-Propanol	4	0	n/a	2.35E+01	5.55E+00	3.26E+01	3.40E+01
Tetradecane	4	0	n/a	1.38E+02	6.60E+01	2.46E+02	3.20E+02
Tetrahydrofuran	4	0	n/a	1.07E+02	2.74E+01	1.52E+02	1.70E+02
Tributylphosphate	4	0	n/a	3.64E+03	9.53E+02	5.21E+03	6.15E+03
Tridecane	4	0	n/a	1.45E+02	6.52E+01	2.52E+02	3.00E+02
Unknown	4	0	n/a	4.47E+01	2.46E+00	4.88E+01	5.10E+01
Beta Activity (pCi/L)	4	0	n/a	1.27E+03	1.36E+02	1.50E+03	1.61E+03
Conductivity (μS)	4	0	n/a	8.32E+01	2.17E+00	8.68E+01	8.70E+01
pH (dimensionless)	4	0	n/a	1.01E+01	4.75E-02	1.01E+01	1.01E+01
TOC	4	0	n/a	2.36E+04	2.22E+03	2.72E+04	2.97E+04
TOX (as Cl)	4	3	DL	1.15E+01	7.98E+00	2.46E+01	3.50E+01

Table 3-5. Saltwell Feed. (sheet 2 of 2)

NOTES:

Mean values, standard errors, confidence interval limits and maxima are in ppb (parts per billion) unless indicated otherwise.

The column headed MDA (Minimum Detectable Amount) is the number of results in each data set below the detection limit.

The column headed Method shows the MDA replacement method used: replacement by the detection limit (DL), replacement of single-valued MDAs by the log-normal plotting position method (LM), or replacement of multiple valued MDAs by the normal plotting position method (MR).

The column headed "90%CILim" (90% Confidence Interval Limit) is the lower limit of the one-tailed 90% confidence interval for all ignitability data sets and pH data sets with mean values below 7.25. For all other data sets it is the upper limit of the one-tailed 90% confidence interval.

The column headed "Maximum" is the minimum value in the data set for ignitability, the value furthest from 7.25 for pH, and the maximum value for all other analytes.

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4.0 DATA OVERVIEW

The purpose of this section is to compare the characterization data obtained through both process knowledge and sampling of the wastestream. This section will also provide an estimate of the stream loadings based on radionuclide and chemical constituents.

4.1 DATA COMPARISON

Knowing the makeup of the feed water for the process is useful, in conjunction with other data, to identify effluent constituents attributable to facility additions. This can guide the process evaluation and support listed waste determinations. There is no attempt in this report to subtract source levels from the final effluent composition used for designation purposes. The influence this type of information may have on permit release limits is also beyond the scope of this report.

Feed for the 242-A Evaporator consists of a variety of liquid wastes as discussed in Section 2.0. The largest portion of these wastes are aqueous salts; however, concentration of constituents present in the feed varies depending upon the waste source.

Along with the feed, raw water leakage in the main condenser can be a large contributor to the process condensate wastestream. Leakage in the condensor has occurred up to a flowrate of 40 gal/min. At a flowrate of 20 gal/min, however, the leak rate accounts for over one third of the total process condensate flow. This level of leakage makes operation of the evaporator process no longer practical.

4.1.1 Raw Water To Stream Comparison

Process knowledge indicates that the steam condensate effluent should be similar to the raw water background, with some differences due to the nature of the evaporation process and the waste. Sample data results were compared with the raw water background data mean to determine areas where differences occurred. The raw water stream data are presented in Table 4-1.

To perform an adequate comparison, a ratio of the wastestream mean concentration and the raw water mean concentration has been utilized to determine analytes of interest. This comparison is presented in Table 4-2.

Table 4-1. Raw Water Background Data. (sheet 1 of 2)

Constituent/Parameter [all ppb, exceptions noted]	Raw Water[a] (1986-1987) N[c]	AVG	STD DEV	Sanitary Water[b] (1985-1988) N	AVG	STD DEV
Arsenic				4	<5.00E+00	NA
Barium	5	2.80E+01	3.40E+00	4	*1.05E+02	1.00E+01
Cadmium	5	2.40E+00	8.94E-01	4	<5.00E-01	NA
Calcium	5	1.84E+04	1.47E+03			
Chromium				4	<1.00E+01	NA
Chloride	5	8.71E+02	2.37E+02	4	3.05E+03	6.76E+02
Conductivity-field (μS)	5	9.32E+01	4.61E+01			
Copper	5	1.06E+01	1.34E+00	4	*2.50E+01	1.00E+01
Color (units)				4	<5.00E+00	NA
Iron	5	6.36E+01	2.57E+01	4	*8.25E+01	5.19E+01
Fluoride				4	*1.13E+02	2.50E+01
Lead				4	<5.00E+00	NA
Magnesium	5	4.19E+03	4.83E+02			
Manganese	5	9.80E+00	3.49E+00	4	<1.00E+01	NA
Mercury				4	<5.00E-01	NA
Nickel	5	1.04E+01	8.94E-01			
Nitrate (as N)	5	9.96E+02	8.79E+02	4	*3.72E+02	5.44E+02
pH (dimensionless)	5	7.41E+00	1.18E+00			
Potassium	5	7.95E+02	6.24E+01			
Selenium				4	<5.00E+00	NA
Silver				4	<1.00E+01	NA
Sodium	5	2.26E+03	2.42E+02	4	2.28E+03	1.26E+02
Sulfate	5	1.06E+04	9.97E+02	4	1.68E+04	3.37E+03
Temperature-field (C)	5	1.64E+01	5.84E+00			
TOC (μg/g)	5	1.36E+03	2.53E+02			
TDS (mg/L)				4	8.10E+01	1.69E+01
Trichloromethane	5	1.18E+01	4.02E+00			
Uranium	4	7.26E-01	2.22E-01			
Zinc	5	2.00E+01	2.12E+01	4	<1.00E+02	NA
Radionuclides (pCi/L)						
Alpha Activity	4	8.85E-01	5.30E-01			
Beta Activity	4	4.47E+00	1.76E+00			

NOTES: Averages denoted by an asterisk include a mix of above- and below-detection limit in computations when the actual values are below the detection limit.

See companion table for inorganic detection limits as compiled from Hanford Environmental Health Foundation.

[a]Compiled from "Substance Toxicity Evaluation of Waste Data Base," provided by F. M. Jungfleisch (this data is an update of the data presented in WHC 1988, Preliminary Evaluation of Hanford Liquid Discharges to Ground, Westinghouse Hanford Company, Richland, Washington.

[b]Compiled from HEHF 1986, Hanford Sanitary Water Quality Surveillance, CY 1985, HEHF-55, Hanford Environmental Health Foundation, Environmental Health Sciences, April 1986, and HEHF-59; HEHF-71; and HEHF-74 (corresponding reports for CY 1986, 1987, and 1988).

[c]N is defined as the number of test results available for a particular analyte. N may reflect both single and multiple data sets.

ppb = parts per billion.
pCi/L = picoCuries/liter.
TOC = total organic carbon.
TOX = total organic halides.
TDS = Total Dissolved Solids.
μS = microsiemen.
μg = microgram.

Table 4-1. Raw Water Background Data. (sheet 2 of 2)

Constituent/Parameter [all ppb, exceptions noted]	100-N N[b]	100-N AVG	100-N STD DEV	100-D N	100-D AVG	100-D STD DEV
1,1,1-Trichloroethane	1	<DL	NA	1	<DL	NA
1,1 Dichloroethylene	1	<DL	NA	1	<DL	NA
1,2,-Dichloroethane	1	<DL	NA	1	<DL	NA
1,3,5-Trimethylbenzene	1	<DL	NA	1	<DL	NA
Benzene	1	<DL	NA	1	<DL	NA
Bromodichloromethane	5	*1.28E+00	3.65E-01	5	*1.05E+00	5.40E-01
Bromoform	5	DL	NA	5	<DL	NA
Carbon Tetrachloride	1	<DL	NA	1	<DL	NA
Chlorodibromomethane	5	<DL	NA	5	<DL	NA
Chloroform	5	2.08E+01	4.39E+00	5	1.59E+01	1.04E+01
Difluorodichloromethane	2	<DL	NA	2	<DL	NA
Ethylbenzene	1	<DL	NA	1	<DL	NA
o-Xylene	1	<DL	NA	1	<DL	NA
p-Chlorotoluene	1	<DL	NA	1	<DL	NA
p-Dichlorobenzene	1	<6.60E-01	NA	1	<DL	NA
Tetrachloroethylene	1	<DL	NA	1	<DL	NA
Toluene	1	<DL	NA	1	<DL	NA
Trichloroethylene	1	<DL	NA	1	<DL	NA
Vinyl Chloride	1	<DL	NA	1	<DL	NA

NOTES:

Averages denoted by an asterisk include a mix of above- and below-detection limit in computations when the actual values are below the detection limit.

See companion table for organic detection limits as compiled from Hanford Environmental Health Foundation (HEHF) data.

[a]The data given in this table were compiled by HEHF. Data sets included first quarter 1987 and quarterly 1988 data. The total trihalomethane concentration for the 100 N and D Areas appears in HEHF, 1989, *Hanford Sanitary Water Quality Surveillance Report* HEHF-71, Hanford Environmental Health Foundation, Environmental Health Sciences, Richland, Washington, and the CY 1989 Report.

[b]N is defined as the number of test results available for a particular analyte; N may reflect both single and multiple data sets. For N = 1, the sole available data entry is listed as "AVG."

DL = detection limit.

ppb = parts per billion.

Table 4-2. Chemical Sampling Data Comparison. (sheet 1 of 3)

Analyte	Raw water data Average (ppb)	Raw water data U90%CI (ppb)	Wastestream data Average (ppb)	Wastestream data U90%CI (ppb)	Comparison ratio (sample mean divided by background mean)
MISCELLANEOUS					
Alpha Activity (LDL,pCi/L)	8.85E-01	1.3 E+00	7.0 E-01	7.5 E-01	.54
Beta Activity (pCi/L)	4.47E+00	6 E+00	2.1 E+03	2.2 E+03	350
Conductivity-Field (μS)	9.32E+01	1.3 E+02	2.9 E+02	3.1 E+02	2.2
Conductivity-UST (μS)	No Data	No Data	1.5 E+02	1.6 E+02	No Data
pH-Field	6.9 E+00	6.0 E+00	9.9 E+00	1.0 E+01	1.4
pH-UST	No Data	No Data	9.8 E+00	9.8 E+00	No Data
Temperature-Field (Celsius)	1.64E+01	2.2 E+01	2.9 E+01	3.0 E+01	1.3
TOC	1.36E+03	1.6 E+03	2.6 E+04	2.7 E+04	16
Total Dissolved Solids	No Data	No Data	2.3 E+04	2.7 E+04	No Data
TOX (LDL)	No Data	No Data	3.5 E+01	No Data	No Data
INORGANIC CATIONS					
Aluminum	No Data	No Data	8.4 E+02	8.6 E+02	No Data
Ammonium	(BDL)	No Data	4.1 E+05	4.3 E+05	No Data
Barium	2.80E+01	3.1 E+01	6.8 E+00	7.2 E+00	.22
Boron	(BDL)	No Data	1.3 E+01	No Data	No Data
Cadmium	2.40E+00	3.2 E+00	5.0 E+00	No Data	1.6
Calcium	1.84E+04	2.0 E+04	2.7 E+03	2.8 E+03	.14
Copper	1.06E+01	1.2 E+01	2.6 E+01	3.5 E+01	2.2
Iron	6.36E+01	8.7 E+01	6.3 E+01	7.0 E+01	.72
Magnesium	4.19E+03	4.6 E+03	5.0 E+02	6.0 E+02	.11
Manganese	9.80E+00	1.3 E+01	5.0 E+00	No Data	.38
Mercury	(BDL)	No Data	3.0 E-01	3.1 E-01	No Data
Nickel	1.04E+01	1.1 E+01	1.4 E+01	1.5 E+01	1.3
Potassium	7.95E+02	8.5 E+02	2.6 E+03	2.8 E+03	3.1
Silicon	(BDL)	No Data	6.8 E+03	7.6 E+03	No Data
Sodium	2.26E+03	2.5 E+03	3.3 E+03	3.7 E+03	1.3
Vanadium	(BDL)	No Data	5.2 E+00	5.6 E+00	No Data
Zinc	2.00E+01	3.9 E+01	1.3 E+01	1.4 E+01	.33
INORGANIC ANIONS					
Chloride	8.71E+02	1.1 E+03	1.0 E+03	1.2 E+03	.91
Fluoride (IC)	(BDL)	No Data	2.1 E+03	No Data	No Data
Fluoride (ISE)	No Data	No Data	4.0 E+01	4.3 E+01	No Data
Nitrate	9.96E+02	1.8 E+03	2.8 E+03	3.8 E+03	1.6
Sulfate	1.06E+04	1.1 E+04	2.6 E+03	2.8 E+03	.24
Sulfide	(BDL)	No Data	6.8 E+03	1.3 E+05	No Data

Table 4-2. Chemical Sampling Data Comparison. (sheet 2 of 3)

Analyte	Raw water data Average (ppb)	Raw water data U90%CI (ppb)	Wastestream data Average (ppb)	Wastestream data U90%CI (ppb)	Comparison ratio (sample mean divided by background mean)
ACIDS					
Caproic acid	(BDL)	No Data	7.0 E+01	No Data	None
PARAFINS					
2-Methylnonane	(BDL)	No Data	1.6 E+01	2.0 E+01	None
Dodecane	(BDL)	No Data	4.3 E+01	5.2 E+01	None
Heptadecane	(BDL)	No Data	1.8 E+01	No Data	None
Hexadecane	(BDL)	No Data	1.7 E+01	No Data	None
Pentadecane	(BDL)	No Data	2.0 E+01	No Data	None
Tetradecane	(BDL)	No Data	7.6 E+01	8.3 E+01	None
Tridecane	(BDL)	No Data	7.0 E+01	7.7 E+01	None
ALCOHOLS					
2-Propanol	(BDL)	No Data	2.2 E+01	2.4 E+01	None
Butyl alcohol	(BDL)	No Data	9.8 E+03	1.1 E+04	None
Ethyl alcohol	(BDL)	No Data	2.0 E+00	No Data	None
ALDEHYDES					
Butyraldehyde	(BDL)	No Data	5.6 E+01	6.2 E+01	None
KETONES					
Acetone (VOA)	(BDL)	No Data	9.8 E+02	1.0 E+03	None
Methyl ethyl ketone	(BDL)	No Data	5.1 E+01	5.3 E+01	None
Methyl n-butyl ketone	(BDL)	No Data	1.3 E+01	1.4 E+01	None
Methyl n-propyl ketone	(BDL)	No Data	9.3 E+00	9.7 E+00	None
MIBK (Hexone)	(BDL)	No Data	1.1 E+01	1.4 E+01	None
CYCLICS					
Benzaldehyde	(BDL)	No Data	2.3 E+01	No Data	None
Benzyl alcohol	(BDL)	No Data	1.3 E+01	1.4 E+01	None
Phenol	(BDL)	No Data	3.3 E+01	No Data	None
Tetrahydrofuran	(BDL)	No Data	3.7 E+01	3.9 E+01	None

Table 4-2. Chemical Sampling Data Comparison. (sheet 3 of 3)

Analyte	Raw water data Average (ppb)	Raw water data U90%CI (ppb)	Wastestream data Average (ppb)	Wastestream data U90%CI (ppb)	Comparison ratio (sample mean divided by background mean)
ESTERS					
Tributyl phosphate	(BDL)	No Data	3.9 E+03	4.1 E+03	None
NITROGEN CONTAINING ORGANICS					
3,5-Dimethylpyridine	(BDL)	No Data	2.1 E+01	2.3 E+01	None
Dimethylnitrosamine	(BDL)	No Data	5.7 E+01	No Data	None
Pyridine	(BDL)	No Data	5.5 E+02	No Data	None
ETHERS AND GLYCOLS					
2-Butoxyethanol	(BDL)	No Data	3.8 E+02	4.0 E+02	None
Butoxydiglycol	(BDL)	No Data	1.9 E+01	4.4 E+01	None
Butoxyglycol	(BDL)	No Data	2.8 E+02	2.9 E+02	None
Butoxytriethylene glycol	(BDL)	No Data	3.5 E+01	No Data	None
Ethoxytriethylene glycol	(BDL)	No Data	9.9 E+01	1.2 E+02	None
Methoxydiglycol	(BDL)	No Data	4.0 E+01	7.7 E+01	None
Methoxytriglycol	(BDL)	No Data	2.2 E+02	6.9 E+02	None
Triglyme	(BDL)	No Data	9.0 E+01	No Data	None

NOTES: (BDL) = Below Detectable Limits
Background data was taken from raw water at the 200 East Area.

There were 10 inorganic and 33 organic analytes detected in the process condensate that were not detected in the raw water. In addition, one inorganic cation, aluminum, and one miscellaneous analyte, total organic carbon, were one order of magnitude greater than background values.

4.1.2 Stream Comparison to Screening Guidance

Table 4-3 presents a comparison of average constituent concentrations to various screening criteria. These criteria are not used here for compliance purposes.

4.2 STREAM DEPOSITION RATES

Table 4-4 has been included to provide deposition rates using the average data from Table 3-1 adjusted according to flow data from Section 2.0.

Table 4-3. Maximum Concentration Limit/Derived Concentration Guide Comparisons. (sheet 1 of 2)

CRW FEED

Constituent	Result a	SV1 b	SV2 c
Aluminum	1.1E+00	5.0E-02 f *	
Barium	6.0E-03	5.0E+00 g	
Chloride	6.2E-01	2.5E+02 h	
Mercury	5.3E-04	2.0E-03 g	
Zinc	5.0E-03	5.0E+00 h	
Alpha Activity (pCi/L) (n)	2.1E-01	1.5E+01 g	3.0E+01
Beta Activity (pCi/L)	3.9E+02		1.0E+03

LINKED FEED

Constituent	Result a	SV1 b	SV2 c
Aluminum	6.0E-01	5.0E-02 f *	
Barium	6.0E-03	5.0E+00 g	
Cadmium	2.3E-03	5.0E-03 e	
Chloride	5.9E-01	2.5E+02 h	
Copper	1.1E-02	1.0E+00 h	
Fluoride	2.2E-02	2.0E+00 g	
Iron (d)	5.5E-02	3.0E-01 h	
Mercury	2.2E-04	2.0E-03 g	
Nickel	1.1E-02	1.0E-01 e	
Nitrate	9.8E-01	4.5E+01 e	
Sulfate	2.0E+00	2.5E+02 h	
Zinc	7.3E-03	5.0E+00 h	
Alpha Activity (pCi/L) (n)	7.5E-01	1.5E+01 g	3.0E+01
Beta Activity (pCi/L) (d)	1.3E+03		1.0E+03 *

ASF FEED

Constituent	Result a	SV1 b	SV2 c
Aluminum	9.4E-01	5.0E-02 f *	
Barium	6.3E-03	5.0E+00 g	
Chloride	7.0E-01	2.5E+02 h	
Copper	1.0E-02	1.0E+00 h	
Fluoride (d)	1.5E-01	2.0E+00 g	
Iron	2.8E-02	3.0E-01 h	
Manganese	5.0E-03	5.0E-02 h	
Mercury	1.8E-04	2.0E-03 g	
Nickel	1.0E-02	1.0E-01 e	
Sulfate	2.0E+00	2.5E+02 h	
Zinc	6.3E-03	5.0E+00 h	
Alpha Activity (pCi/L) (n)	3.7E-01	1.5E+01 g	3.0E+01
Beta Activity (pCi/L)	4.1E+03		1.0E+03 *
TDS	2.3E+01	5.0E+02 h	

Table 4-3. Maximum Concentration Limit/Derived Concentration Guide Comparisons. (sheet 2 of 2)

SALTWELL FEED

Constituent	Result a	SV1 b	SV2 c
Aluminum	5.9E-01	5.0E-02 f *	
Mercury	1.8E-04	2.0E-03 g	
Nickel	1.1E-02	1.0E-01 e	
Zinc	1.5E-02	5.0E+00 h	
Beta Activity (pCi/L)	1.3E+03		1.0E+03 *

NOTES:

[a]Units of results are mg/L unless indicated otherwise. The results are the mean values reported in the Statistics table of Chapter 3.

[b]Screening Value 1 (SV1) lists the value first, basis second and an asterisk (*) third if the result exceeds the regulatory value. The basis is the proposed primary MCL (e), the proposed secondary MCL (f), the primary MCL (g), or the secondary MCL (h). The value is the smaller of two MCLs: the proposed primary MCL (or the primary MCL as a default) or the proposed secondary MCL (or the secondary MCL as a default). See WHC-EP-0342, "Hanford Site Stream-Specific Reports", August 1990.

[c]Screening Value 2 (SV2) lists the value first and an asterisk (*) second if the result exceeds the SV2). These values are derived concentration guides obtained from Appendix A of WHC-CM-7-5, "Environmental Compliance Manual", Revision 1, January 1990.

[d]Constituents are identified (d) if any detected result is less than any detection limit.

[n]The SV1 and SV2 values for Gross Alpha are used to evaluate Alpha Activity.

[o]The SV2 for Gross Beta is used to evaluate Beta Activity.

Table 4-4. Stream Deposition Rates. (sheet 1 of 5)

CRW FEED

Constituent	Kg/L*	Kg/mo*
Aluminum	1.14E-06	5.32E+00
Barium	6.00E-09	2.80E-02
Calcium	4.97E-06	2.32E+01
Chloride	6.23E-07	2.91E+00
Magnesium	5.42E-08	2.53E-01
Mercury	5.26E-10	2.45E-03
Potassium	6.03E-07	2.81E+00
Uranium	3.88E-10	1.81E-03
Zinc	5.00E-09	2.33E-02
Acetone	2.10E-06	9.80E+00
Ammonia	6.41E-04	2.99E+03
Benzyl alcohol	1.47E-08	6.86E-02
Butanal	4.42E-08	2.06E-01
1-Butanol	4.60E-05	2.15E+02
2-Butanone	7.16E-08	3.34E-01
2-Butoxyethanol	5.52E-07	2.58E+00
Butoxyglycol	2.77E-07	1.29E+00
3,5-Dimethylpyridine	2.07E-08	9.66E-02
2-Hexanone	9.25E-09	4.32E-02
MIBK (Hexone)	4.33E-09	2.02E-02
2-Pentanone	8.75E-09	4.08E-02
2-Propanol	3.90E-08	1.82E-01
Tetradecane	1.92E-08	8.96E-02
Tetrahydrofuran	1.50E-08	7.00E-02
Tributylphosphate	3.59E-06	1.67E+01
Tridecane	1.27E-08	5.92E-02
Unknown	4.40E-08	2.05E-01
Alpha Activity *	2.15E-13	1.00E-06
Beta Activity *	3.86E-10	1.80E-03
TOC	4.38E-05	2.04E+02

NOTES:
Data collected during March 1988 and May 1988.
Flowrate is the average of rates from Chapter 2.
Constituent concentrations are average values from the Statistics Report in Chapter 3.
Concentration units of flagged (*) constituents are reported as curies per liter.
Deposition rate units of flagged (*) constituents are reported as curies per month.

Table 4-4. Stream Deposition Rates. (sheet 2 of 5)

LINKED FEED

Constituent	Kg/L*	Kg/mo*
Aluminum	5.99E-07	1.62E+00
Barium	6.00E-09	1.62E-02
Cadmium	2.25E-09	6.07E-03
Calcium	2.04E-06	5.51E+00
Chloride	5.94E-07	1.60E+00
Copper	1.11E-08	3.00E-02
Fluoride	2.21E-08	5.96E-02
Iron #	5.46E-08	1.47E-01
Magnesium	5.17E-07	1.40E+00
Mercury	2.22E-10	5.99E-04
Nickel	1.12E-08	3.02E-02
Nitrate	9.83E-07	2.65E+00
Potassium	4.07E-07	1.10E+00
Sodium	2.87E-06	7.74E+00
Sulfate	2.04E-06	5.51E+00
Sulfide	6.73E-06	1.82E+01
Uranium	1.54E-10	4.16E-04
Vanadium	5.00E-09	1.35E-02
Zinc	7.33E-09	1.98E-02
Acetone	1.10E-06	2.97E+00
Ammonia	7.55E-05	2.04E+02
Benzaldehyde	2.30E-08	6.21E-02
Benzyl alcohol	1.00E-08	2.70E-02
Butanal	1.20E-07	3.24E-01
1-Butanol	3.99E-07	1.08E+00
2-Butanone	4.17E-08	1.13E-01
Butoxydiglycol	1.10E-08	2.97E-02
2-Butoxyethanol	4.82E-07	1.30E+00
Butoxyglycol	8.48E-08	2.29E-01
Dodecane	4.30E-08	1.16E-01
Ethoxytriethylene glycol	1.50E-07	4.05E-01
Heptadecane	1.80E-08	4.86E-02
Hexadecane	1.70E-08	4.59E-02
Hexanoic acid	7.00E-08	1.89E-01
2-Hexanone	1.12E-08	3.02E-02
Methoxydiglycol	2.80E-08	7.56E-02
Methoxytriglycol	3.70E-07	9.98E-01
MIBK (Hexone) #	1.46E-08	3.94E-02
N-Nitrosodimethylamine	1.39E-08	3.75E-02
Pentadecane	2.00E-08	5.40E-02
2-Pentanone	9.75E-09	2.63E-02
Phenol	1.19E-08	3.21E-02
2-Propanol	1.60E-08	4.32E-02
Pyridine	5.04E-07	1.36E+00
Tetradecane	1.16E-07	3.13E-01

Table 4-4. Stream Deposition Rates. (sheet 3 of 5)

LINKED FEED

Constituent	Kg/L*	Kg/mo*
Tetrahydrofuran	1.98E-08	5.34E-02
Tributylphosphate	3.30E-06	8.91E+00
Tridecane	1.01E-07	2.73E-01
Triglyme	9.00E-08	2.43E-01
Alpha Activity *	7.52E-13	2.03E-06
Beta Activity #,*	1.29E-09	3.48E-03
TOC	1.76E-05	4.75E+01

NOTES:
Data collected during August 1985, June 1986, July 1986, October 1986, March 1987, September 1987 and February 1988.
Flowrate is the average of rates from Chapter 2.
Constituent concentrations are average values from the Statistics Report in Chapter 3.
Concentration units of flagged (*) constituents are reported as curies per liter.
Deposition rate units of flagged (*) constituents are reported as curies per month.
Constituents are flagged (#) if any detected result is less than any detection limit.

ASF FEED Flowrate: 4.10E+06 L/mo

Constituent	Kg/L*	Kg/mo*
Aluminum	9.44E-07	3.87E+00
Barium	6.30E-09	2.58E-02
Boron	1.07E-08	4.39E-02
Calcium	3.46E-06	1.42E+01
Chloride	7.00E-07	2.87E+00
Copper	1.02E-08	4.18E-02
Fluoride #	1.47E-07	6.03E-01
Iron	2.77E-08	1.14E-01
Magnesium	1.20E-07	4.92E-01
Manganese	5.00E-09	2.05E-02
Mercury	1.79E-10	7.34E-04
Nickel	1.04E-08	4.26E-02
Potassium	5.11E-06	2.09E+01
Silicon	6.72E-06	2.75E+01
Sodium	4.02E-06	1.65E+01
Strontium #	1.85E-08	7.58E-02
Sulfate	2.01E-06	8.24E+00
Uranium	5.43E-10	2.23E-03
Vanadium	5.50E-09	2.25E-02
Zinc	6.33E-09	2.59E-02

Table 4-4. Stream Deposition Rates. (sheet 4 of 5)

ASF FEED

Constituent	Kg/L*	Kg/mo*
Acetone	1.03E-06	4.22E+00
Ammonia	8.20E-04	3.36E+03
Benzyl alcohol #	1.19E-08	4.88E-02
Butanal	8.67E-09	3.55E-02
1-Butanol	2.84E-05	1.16E+02
2-Butanone	3.38E-08	1.39E-01
Butoxydiglycol	2.70E-08	1.11E-01
2-Butoxyethanol	2.89E-07	1.18E+00
Butoxyglycol	1.88E-07	7.71E-01
Butoxytriethyleneglycol	3.50E-08	1.43E-01
Ethanol	2.00E-09	8.20E-03
2-Hexanone	3.20E-08	1.31E-01
2-Methylnonane	1.55E-08	6.35E-02
2-Propanol	1.90E-08	7.79E-02
Tetradecane	1.40E-08	5.74E-02
Tetrahydrofuran	2.92E-08	1.20E-01
Tributylphosphate	3.95E-06	1.62E+01
Tridecane	1.27E-08	5.21E-02
Unknown	2.88E-07	1.18E+00
Unknown aliphatic HC	1.20E-08	4.92E-02
Alpha Activity *	3.72E-13	1.52E-06
Beta Activity *	4.11E-09	1.68E-02
TDS	2.25E-05	9.22E+01
TOC	2.70E-05	1.11E+02

NOTES:

Data collected during January 1988, August 1988, October 1988, February 1989 and March 1989.

Flowrate is the average of rates from Chapter 2.

Constituent concentrations are average values from the Statistics Report in Chapter 3.

Concentration units of flagged (*) constituents are reported as curies per liter.

Deposition rate units of flagged (*) constituents are reported as curies per month.

Constituents are flagged (#) if any detected result is less than any detection limit.

Table 4-4. Stream Deposition Rates. (sheet 5 of 5)

SALTWELL FEED

Constituent	Kg/L*	Kg/mo*
Aluminum	5.93E-07	2.50E+00
Calcium	3.65E-07	1.54E+00
Mercury	1.83E-10	7.70E-04
Nickel	1.07E-08	4.50E-02
Potassium	4.81E-06	2.03E+01
Sodium	1.74E-06	7.33E+00
Zinc	1.55E-08	6.53E-02
Acetone	8.00E-07	3.37E+00
Ammonia	7.97E-05	3.36E+02
Benzyl alcohol	1.10E-08	4.63E-02
Butanal	3.10E-08	1.31E-01
1-Butanol	3.90E-07	1.64E+00
2-Butanone	3.25E-08	1.37E-01
2-Butoxyethanol	7.17E-08	3.02E-01
Butoxyglycol	7.02E-07	2.96E+00
Ethoxytriethylene glycol	8.20E-08	3.45E-01
2-Hexanone	6.25E-09	2.63E-02
Methoxydiglycol	5.20E-08	2.19E-01
Methoxytriglycol	6.50E-08	2.74E-01
MIBK (Hexone)	8.00E-09	3.37E-02
2-Propanol	2.35E-08	9.89E-02
Tetradecane	1.38E-07	5.81E-01
Tetrahydrofuran	1.07E-07	4.50E-01
Tributylphosphate	3.64E-06	1.53E+01
Tridecane	1.45E-07	6.10E-01
Unknown	4.47E-08	1.88E-01
Beta Activity *	1.27E-09	5.35E-03
TOC	2.36E-05	9.94E+01
TOX (as Cl)	1.15E-08	4.84E-02

NOTES:
Data collected during July 1988.
Flowrate is the average of rates from Chapter 2.
Constituent concentrations are average values from the Statistics Report in Chapter 3.
Concentration units of flagged (*) constituents are reported as curies per liter.
Deposition rate units of flagged (*) constituents are reported as curies per month.

5.0 DESIGNATION

The purpose of this section is to utilize process knowledge and sampling data to propose a designation of the wastestream in accordance with the requirements of the Dangerous Waste Regulations (WAC 173-303).

The evaluation of the 242-A Evaporator Process Condensate wastestream performed to compose this report indicates that the wastestream should be designated as a dangerous waste. This proposed designation uses data from both the process knowledge and sampling data (Sections 2.0 through 4.0) and complies with the following designation requirements of WAC 173-303-070:

- Dangerous Waste Lists (WAC 173-303-080)
- Dangerous Waste Criteria (WAC 173-303-100)
- Dangerous Waste Characteristics (WAC 173-303-090).

The proposed designation is based upon the sample data collected between August 25, 1985, and March 22, 1989. A diagram depicting the designation process used is shown in Figure 5-1.

5.1 DANGEROUS WASTE LISTS

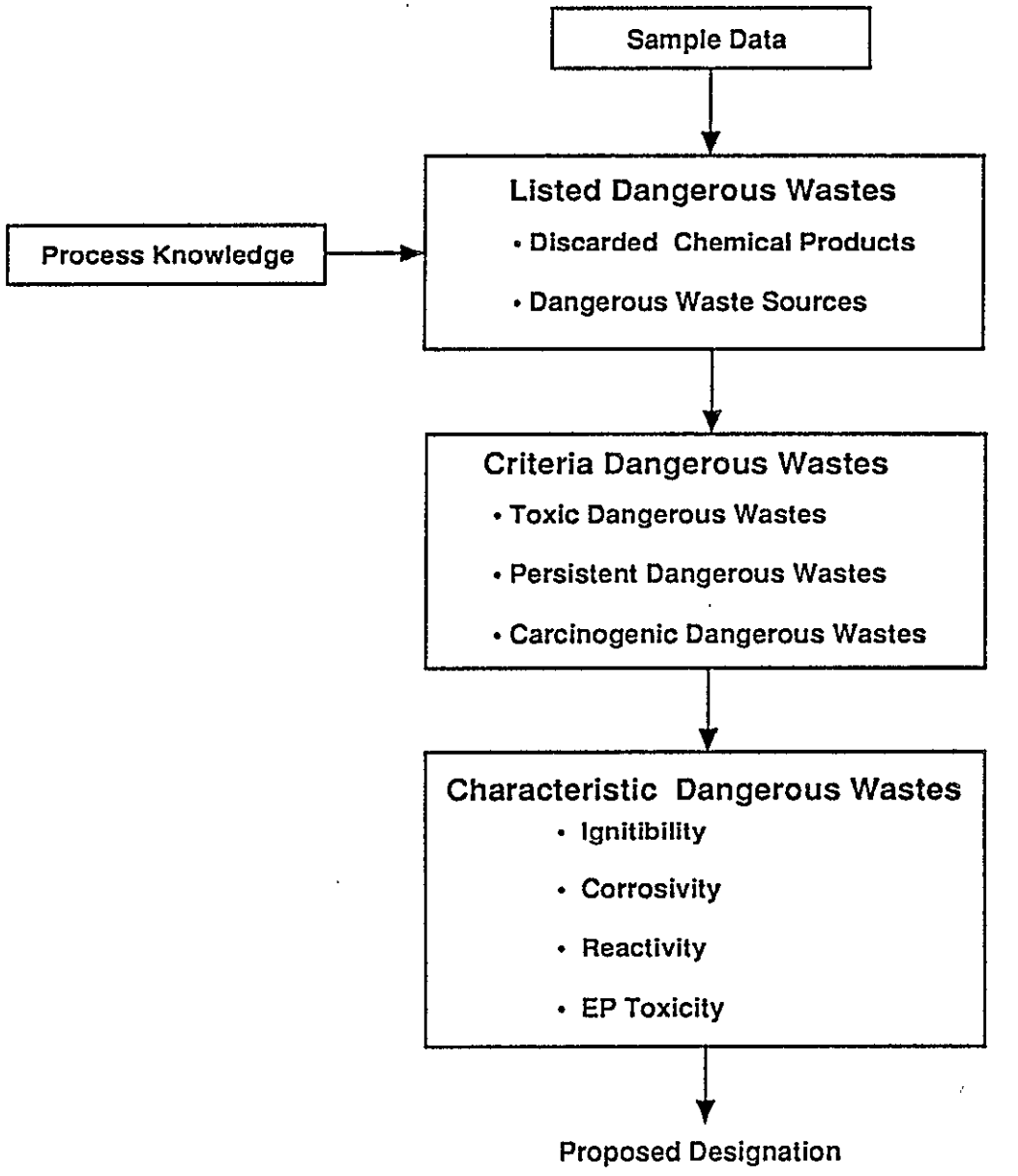
A listed waste is considered a dangerous waste if it either contains a discarded chemical product (WAC 173-303-081) or originates from a dangerous waste source (WAC 173-303-082). The proposed designation was based on a combination of process knowledge and sampling data.

5.1.1 Discarded Chemical Products

A wastestream constituent is a discarded chemical product (WAC 173-303-081) if it is listed in WAC 173-303-9903 and characterized by one or more of the following descriptions.

- The listed constituent was the sole active ingredient in a commercial chemical product which had been discarded. Commercial chemical products which, as purchased, contained two or more active ingredients were not designated as discarded chemical products. Products which contained nonactive components such as water, however, were designated if the sole active ingredient in the mixture was listed in WAC 173-303-9903.
- The constituent results from a spill of unused chemicals. (A spill of a discarded chemical product would cause a wastestream to be designated during the time that the discharge is occurring. The approach taken is that the current wastestream would not be designated unless a review of past spill events indicates that the

Figure 5-1. Illustration of the Designation Procedure.



spills are predictable, systematic events that are ongoing, or are reasonably anticipated to occur in the future. In this report, the evaluation of this criterion is based on a review of spill data according to the *Comprehensive Environmental, Response, Compensation, and Liability Act*.)

- The constituent is discarded in the form of a residue resulting from cleanup of a spill of an unused chemical on the discarded chemical products list. (A chemical product that is used in a process and then released to the wastestream is not a discarded chemical product. Off-specification, unused chemicals, and chemicals that have exceeded a shelf life but have not been used are considered discarded chemical products.)

5.1.2 Dangerous Waste Sources

A list of dangerous waste sources is contained in WAC 173-303-9904, pursuant to WAC 173-303-082. There are three major categories of sources in WAC 173-303-9904. The first is nonspecific sources from routine maintenance operations occurring at many industries. The second is specific sources (e.g., wastes from ink formulation, etc.). The third is state sources which are limited to polychlorinated biphenyl (PCB)-contaminated transformers and capacitors from salvaging, rebuilding, or discarding activities.

Of the nonspecific sources, only F003 and F005 apply to the 242-A Evaporator Process Condensate.

5.2 LISTED WASTE DATA CONSIDERATIONS

The proposed designation of the wastestream described in this report is based on an evaluation of process and sampling data. The following sections describe the types of information used in this designation.

5.2.1 Process Evaluation

The process evaluation began with a thorough review of the processes contributing to the wastestream. Processes were reviewed and compared with the discarded chemical products list and the dangerous waste source list. This process evaluation is necessary because the stream could be a listed waste if a listed waste was known to have been added at any upstream location, even if a listed constituent was not detected at the sample point. The process evaluation included a review of the following information sources:

- Material Safety Data Sheets (MSDS)
- *Superfund Amendments and Reauthorization Act* (SARA) Title III Inventory reports
- Operating procedures

- Process chemical inventories
- Physical inspections, where possible.

If a listed chemical was identified, the specific use of the chemical was evaluated to determine if such use resulted in the generation of a listed waste.

5.2.2 Sampling Data

Sampling data were used as screening tools to enhance and support the results of the process evaluation. This screening compared the results of the sampling data with the WAC 173-303-9903 and -9904 lists. If a constituent was cited on one or both of these lists, an engineering evaluation was performed to determine if the constituent had entered the wastestream as a discarded chemical product or came from a dangerous waste source.

Screening organic constituents is a relatively simple procedure because analytical data for organic constituents are reported as substances and are easily compared to the WAC 173-303-9903 and -9904 lists. It is not as simple to screen inorganic analytical data because inorganic data are reported as ions or elements rather than as substances. For example, an analysis may show that a wastestream contains the cations sodium and calcium along with the anions chloride and nitrate. The possible combinations of substances include: sodium chloride, sodium nitrate, calcium chloride, and calcium nitrate. In a situation with many cations and anions, however, the list of possible combinations is extensive.

A procedure was developed by the Westinghouse Hanford Company for combining the inorganic constituents into substances. This screening procedure is described in WHC (1990b) and is intended to be a tool in the evaluation of a wastestream. The listing of the inorganic substances developed by this screening procedure is not intended to be an indication that the substance was discharged to the wastestream, only that the necessary cations and anions are present and an investigation should be conducted to determine how they entered the wastestream.

5.3 PROPOSED LISTED WASTE DESIGNATIONS

A process evaluation, along with a review of sampling data, indicated that the 242-A Evaporator Process Condensate did not contain a discarded chemical product. The condensate does contain listed waste sources, spent nonhalogenated solvents (F003), and (F005). The following sections discuss the evaluation that was conducted to substantiate this conclusion.

5.3.1 Discarded Chemical Products

As discussed in Section 5.2, a process evaluation of the contributors to the 242-A Evaporator Process Condensate was conducted. This evaluation

included a review of MSDS at the plant and chemical inventories compiled for compliance with the SARA Title III requirements for possible listed waste contributors.

Table 5-1 is a list of the 13 potential discarded chemical products identified from sampling data (using the screening procedure described in Section 5.2). The 13 products are described in the sections below.

5.3.1.1 Ammonium Metavanadate. The ammonium ion was detected in 31 of the 34 wastestream samples at an average concentration of 410,000 ppb. Vanadium was detected at an average concentration of 5.2 ppb in 4 of the 22 wastestream samples in which it was analyzed.

Ammonia metavanadate is a hypothetical compound that exists in the form of ammonium and vanadium ions. The fact that both ammonium and vanadium were detected led to this being identified as a potential discarded chemical, although ammonium metavanadate was not detected as a compound in the wastestream.

Ammonium is present in high concentrations in the evaporator feed while processing ammonia scrubber feed (ASF) and cladding removal waste. The presence of ammonium is not unexpected or unwarranted.

The presence of vanadium in the wastestream was not expected from a process overview. The four samples that vanadium were detected in were at levels of 5 ppb, 6 ppb, 7 ppb, and 7 ppb. An average vanadium level of 5.2 ppb was calculated for this wastestream based on these results. This average used the conservative method of replacing less than detectable results with the contract laboratory detection limit of 5 ppb. The standard deviation for the 22 results was 0.40 ppb. The average is within one standard deviation of the minimum detection limit at the laboratory, which makes the vanadium presence suspect as laboratory uncertainty.

Ammonium metavanadate is not present at the 242-A Facility and is not utilized in the evaporator process. The presence of ammonium in the wastestream is attributed to the feed in the evaporator. The presence of vanadium, however, must be attributed to laboratory uncertainty. Ammonium and vanadium in the wastestream are certainly not present as the result of discharge or mixing the stream with waste ammonium metavanadate.

5.3.1.2 Hydrogen Fluoride. The fluoride ion was detected at an average concentration of 210 ppb in 7 of the 17 wastestream samples in which it was analyzed. This average is based upon results from the ion-specific electrode (ISE) method. The ISE average was chosen because it is a much more sensitive method than the ion chromatography (IC) method.

Hydrogen fluoride is a hypothetical compound that exists in the form of a hydronium and fluoride ions. Fluoride concentrations were not available for the 200 East Area raw water data utilized in this report, as shown in Table 4-1. General raw water data, however, exists for the 200 Areas and has shown fluoride concentrations ranging from 90 to 140 ppb (WHC 1988). The current sample results are within the expected concentration ranges of naturally occurring fluoride.

Hydrogen fluoride is not present at the 242-A Facility, is not utilized in the evaporator process, and cannot be introduced inadvertently (via a floor drain) to this wastestream. Based on this discussion, the fluoride detected in this wastestream must be considered as occurring in the raw water supply to this stream.

5.3.1.3 Hydrogen Sulfide. The sulfide ion was detected at an average sulfide level of 6,800 ppb in 2 of the 12 wastestream samples in which the sulfide analysis was performed. This average used the conservative method of replacing less than detectable results with the contract laboratory detection limit of 1,000 ppb.

Hydrogen sulfide is a hypothetical compound that exists in the form of hydronium and sulfide ions. Sulfide concentrations were not available for the 200 East Area raw water data utilized in this report, as shown in Table 4-1.

Hydrogen sulfide is not present at the 242-A Facility, is not utilized in the evaporator process, and cannot be introduced inadvertently (via a floor drain) to this wastestream. Based on this discussion, the sulfide detected in the two samples of this wastestream must be considered as occurring in the raw water supply to this stream. The presence of sulfide in the wastestream is certainly not as the result of discharge or mixing the stream with waste hydrogen sulfide.

5.3.1.4 Mercury. A review of plant chemical inventory data did not show mercury to be present in any chemical compound used within the tank farms. Mercury has been used in Hanford Site instruments such as manometers.

Mercury appeared in 21 of the 34 samples taken of the wastewater stream. The concentration of mercury in the 34 samples averaged 0.31 ppb with a maximum of 0.56 ppb. The rejection criteria for mercury based on sanitary water supplied to tank farms is 0.5 ppb as presented in Section 5.2 of WHC-EP-0342. Since the concentration of mercury seen in 29 of 31 samples of this wastewater stream is less than the rejection criteria, these data will not be considered in the designation of the wastestream. It is likely that mercury is present in these wastestream samples due to the presence of mercury in the facility water supply.

5.3.1.5 Vanadium Oxide. Vanadium was detected at an average concentration of 5.2 ppb in 4 of the 22 wastestream samples in which it was analyzed. The presence of vanadium was discussed in Section 5.3.1.1.

Vanadium oxide is a hypothetical compound that exists in the form of hydroxide and vanadium ions. The fact that vanadium was detected led to this being identified as a potential discarded chemical, although vanadium oxide was not detected as a compound in the wastestream.

Vanadium oxide is not present at the 242-A Facility and is not used in the evaporator process. Vanadium in the wastestream certainly does not occur as the result of discharge or mixing the stream with waste vanadium oxide.

Table 5-1. Dangerous Waste Designation Report. (sheet 1 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-CRW Feed

Finding: Dangerous Waste

Discarded Chemical Products - WAC 173-303-081

Substance	Review Number	Status	DW Number
Mercury	U151(EHW)	Not Discarded	Undesignated
Acetone	U002(DW)	Not Discarded	Undesignated
1-Butanol	U031(DW)	Not Discarded	Undesignated
2-Butanone	U159(DW)	Not Discarded	Undesignated
MIBK (Hexone)	U161(DW)	Not Discarded	Undesignated
Tetrahydrofuran	U213(DW)	Not Discarded	Undesignated

Dangerous Waste Sources - WAC 173-303-082

Substance	Review Number	Status	DW Number
Acetone	F003	Listed Source	F003(DW)
1-Butanol	F003	Listed Source	F003(DW)
2-Butanone	F005	Listed Source	F005(DW)
MIBK (Hexone)	F003	Listed Source	F003(DW)

Infectous Dangerous Waste - WAC 173-303-083

No regulatory guidance

Dangerous Waste Mixtures - WAC 173-303-084

	Toxic	Persistant		Carcinogenic
Substance	EC%	HH%	PAH%	Total%
Barium chloride	9.10E-10	0.00E+00	0.00E+00	0.00E+00
Calcium chloride	1.49E-09	0.00E+00	0.00E+00	0.00E+00
Magnesium chloride	2.38E-09	0.00E+00	0.00E+00	0.00E+00
Mercury(II) chloride	8.34E-09	0.00E+00	0.00E+00	0.00E+00
Potassium chloride	1.24E-08	0.00E+00	0.00E+00	0.00E+00
Acetone	2.54E-08	0.00E+00	0.00E+00	0.00E+00
Ammonia	8.12E-04	0.00E+00	0.00E+00	0.00E+00
Benzyl alcohol	1.80E-10	0.00E+00	0.00E+00	0.00E+00
Butanal	6.57E-10	0.00E+00	0.00E+00	0.00E+00
1-Butanol	7.51E-07	0.00E+00	0.00E+00	0.00E+00
2-Butanone	8.76E-10	0.00E+00	0.00E+00	0.00E+00
2-Butoxyethanol	7.20E-08	0.00E+00	0.00E+00	0.00E+00
3,5-Dimethylpyridine	2.45E-06	0.00E+00	0.00E+00	0.00E+00
2-Hexanone	1.11E-10	0.00E+00	0.00E+00	0.00E+00
MIBK (Hexone)	4.96E-11	0.00E+00	0.00E+00	0.00E+00
2-Pentanone	1.08E-10	0.00E+00	0.00E+00	0.00E+00
*2-Propanol	3.90E-10	0.00E+00	0.00E+00	0.00E+00
Tetrahydrofuran	1.73E-09	0.00E+00	0.00E+00	0.00E+00
Tributylphosphate	5.55E-08	0.00E+00	0.00E+00	0.00E+00
Total	8.16E-04	0.00E+00	0.00E+00	0.00E+00
DW Number	Undesignated	Undesignated	Undesignated	Undesignated

Dangerous Waste Characteristics - WAC 173-303-090

Characteristic	Value	DW Number
Ignitables % (Calc.)	7.86E-03	Undesignated
Corrosivity-pH	10.62	Undesignated
Total Cyanide (mg/kg)	0.00E+00	Undesignated
Total Sulfide (mg/kg)	0.00E+00	Undesignated
Total Barium (mg/L)	6.00E-03	Undesignated
Total Mercury (mg/L)	6.16E-04	Undesignated

Table 5-1. Dangerous Waste Designation Report. (sheet 2 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-CRW Feed

Dangerous Waste Criteria - WAC 173-303-100

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%	DW Number-Positive
Barium chloride	9.10E-10	0.00E+00	0.00E+00	0.00E+00	
Calcium chloride	1.49E-09	0.00E+00	0.00E+00	0.00E+00	
Magnesium chloride	2.38E-09	0.00E+00	0.00E+00	0.00E+00	
Mercury(II) chloride	8.34E-09	0.00E+00	0.00E+00	0.00E+00	
Potassium chloride	1.24E-08	0.00E+00	0.00E+00	0.00E+00	
Acetone	2.54E-08	0.00E+00	0.00E+00	0.00E+00	
Ammonia	8.12E-04	0.00E+00	0.00E+00	0.00E+00	
Benzyl alcohol	1.80E-10	0.00E+00	0.00E+00	0.00E+00	
Butanal	6.57E-10	0.00E+00	0.00E+00	0.00E+00	
1-Butanol	7.51E-07	0.00E+00	0.00E+00	0.00E+00	
2-Butanone	8.76E-10	0.00E+00	0.00E+00	0.00E+00	
2-Butoxyethanol	7.20E-08	0.00E+00	0.00E+00	0.00E+00	
3,5-Dimethylpyridine	2.45E-06	0.00E+00	0.00E+00	0.00E+00	
2-Hexanone	1.11E-10	0.00E+00	0.00E+00	0.00E+00	
MIBK (Hexone)	4.96E-11	0.00E+00	0.00E+00	0.00E+00	
2-Pentanone	1.08E-10	0.00E+00	0.00E+00	0.00E+00	
*2-Propanol	3.90E-10	0.00E+00	0.00E+00	0.00E+00	
Tetrahydrofuran	1.73E-09	0.00E+00	0.00E+00	0.00E+00	
Tributylphosphate	5.55E-08	0.00E+00	0.00E+00	0.00E+00	
Total	8.16E-04	0.00E+00	0.00E+00	0.00E+00	
DW Number	Undesignated	Undesignated	Undesignated	Undesignated	

Dangerous Waste Constituents - WAC 173-303-9905

Substance
Acetone
Barium and compounds,NOS
Mercury and compounds,NOS

Substance names may include MB (monobasic), DB (dibasic), or TB (tribasic) to identify the equivalence of hydrogen ion that have been nutralized from polyprotic weak acids to form their conjugate bases.

Results based on a single datum are noted by an asterisk (*). Others are based on the lower limit of the one-tailed 90% confidence interval for pH data sets with mean values below 7.25 or by the upper limit of the one-tailed 90% confidence interval for all other data sets.

EP Toxic contaminants, ignitability, and reactivity are reported by standard methods when available. In the absence of EP Toxicity data, total contaminant concentrations are evaluated. In lieu of closed cup ignition results, ignitability is estimated from the sum of the contributions of all substances that are ignitable when pure. A waste is flagged as dangerous if sum of the ignitable substances exceeds one percent. Reactivity is by SW-846: 250 mg of cyanide as hydrogen cyanide per kg of waste or 500 mg of sulfide as hydrogen sulfide per kg of waste. Total cyanide and total sulfide are used in lieu of amenable cyanide and amenable sulfide.

Inorganic substances are fomulated and their possible concentrations calculated for designation purposes only. The actual existance in the waste of these substances is not implied and should not be infered.

Table 5-1. Dangerous Waste Designation Report. (sheet 3 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-Linked Feed

Finding: Dangerous Waste

Discarded Chemical Products - WAC 173-303-081

Substance	Review Number	Status	DW Number
Ammonium metavanadate	P119(EHW)	Not Discarded	Undesignated
Hydrogen fluoride	U134(DW)	Not Discarded	Undesignated
Hydrogen sulfide, DB	U135(EHW)	Not Discarded	Undesignated
Mercury	U151(EHW)	Not Discarded	Undesignated
Vanadium(V) oxide	P120(EHW)	Not Discarded	Undesignated
Acetone	U002(DW)	Not Discarded	Undesignated
1-Butanol	U031(DW)	Not Discarded	Undesignated
2-Butanone	U159(DW)	Not Discarded	Undesignated
MIBK (Hexone)	U161(DW)	Not Discarded	Undesignated
N-Nitrosodimethylamine	P082(EHW)	Not Discarded	Undesignated
Phenol	U188(EHW)	Not Discarded	Undesignated
Pyridine	U196(EHW)	Not Discarded	Undesignated
Tetrahydrofuran	U213(DW)	Not Discarded	Undesignated

Dangerous Waste Sources - WAC 173-303-082

Substance	Review Number	Status	DW Number
Acetone	F003	Listed Source	F003(DW)
1-Butanol	F003	Listed Source	F003(DW)
2-Butanone	F005	Listed Source	F005(DW)
MIBK (Hexone)	F003	Listed Source	F003(DW)
Pyridine	F005	Listed Source	F005(DW)

Infectous Dangerous Waste - WAC 173-303-083

No regulatory guidance

Dangerous Waste Mixtures - WAC 173-303-084

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%
Aluminum nitrate	3.30E-07	0.00E+00	0.00E+00	0.00E+00
Barium chloride	1.71E-09	0.00E+00	0.00E+00	0.00E+00
Cadmium chloride	7.94E-09	0.00E+00	0.00E+00	7.94E-07
Copper(II) chloride	7.63E-07	0.00E+00	0.00E+00	0.00E+00
Hydrogen sulfide, DB	1.45E-05	0.00E+00	0.00E+00	0.00E+00
Iron(III) chloride	3.06E-08	0.00E+00	0.00E+00	0.00E+00
Iron(III) fluoride	5.00E-08	0.00E+00	0.00E+00	0.00E+00
Magnesium chloride	5.82E-09	0.00E+00	0.00E+00	0.00E+00
Magnesium sulfate	4.43E-08	0.00E+00	0.00E+00	0.00E+00
Mercury(II) chloride	6.81E-09	0.00E+00	0.00E+00	0.00E+00
Nickel(II) hydroxide	3.61E-09	0.00E+00	0.00E+00	3.61E-06
Potassium sulfide, DB	1.54E-06	0.00E+00	0.00E+00	0.00E+00
Uranyl nitrate	6.64E-10	0.00E+00	0.00E+00	0.00E+00
Vanadium(V) oxide	1.68E-08	0.00E+00	0.00E+00	0.00E+00
Zinc nitrate	6.14E-09	0.00E+00	0.00E+00	0.00E+00
Acetone	1.69E-08	0.00E+00	0.00E+00	0.00E+00
Ammonia	1.06E-04	0.00E+00	0.00E+00	0.00E+00
*Benzaldehyde	2.30E-10	0.00E+00	0.00E+00	0.00E+00
*Benzyl alcohol	1.00E-10	0.00E+00	0.00E+00	0.00E+00
Butanal	2.06E-09	0.00E+00	0.00E+00	0.00E+00
1-Butanol	5.89E-09	0.00E+00	0.00E+00	0.00E+00
2-Butanone	5.83E-10	0.00E+00	0.00E+00	0.00E+00
*Butoxydiglycol	1.10E-10	0.00E+00	0.00E+00	0.00E+00
2-Butoxyethanol	6.33E-08	0.00E+00	0.00E+00	0.00E+00
*Ethoxytriethylene glycol	1.50E-09	0.00E+00	0.00E+00	0.00E+00

Table 5-1. Dangerous Waste Designation Report. (sheet 4 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-Linked Feed

Dangerous Waste Mixtures - WAC 173-303-084 - Continued

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%
*Hexanoic acid	7.00E-09	0.00E+00	0.00E+00	0.00E+00
2-Hexanone	1.52E-10	0.00E+00	0.00E+00	0.00E+00
*Methoxydiglycol	2.80E-09	0.00E+00	0.00E+00	0.00E+00
*Methoxytriglycol	3.70E-09	0.00E+00	0.00E+00	0.00E+00
MIBK (Hexone)	2.75E-10	0.00E+00	0.00E+00	0.00E+00
N-Nitrosodimethylamine	1.93E-08	0.00E+00	0.00E+00	1.93E-06
2-Pentanone	1.13E-10	0.00E+00	0.00E+00	0.00E+00
Phenol	1.45E-08	0.00E+00	0.00E+00	0.00E+00
2-Propanol	3.45E-10	0.00E+00	0.00E+00	0.00E+00
Pyridine	5.10E-08	0.00E+00	0.00E+00	0.00E+00
Tetrahydrofuran	2.42E-09	0.00E+00	0.00E+00	0.00E+00
Tributylphosphate	5.79E-08	0.00E+00	0.00E+00	0.00E+00
Total	1.24E-04	0.00E+00	0.00E+00	6.33E-06
DW Number	Undesignated	Undesignated	Undesignated	Undesignated

Dangerous Waste Characteristics - WAC 173-303-090

Characteristic	Value	DW Number
Ignitables % (Calc.)	1.98E-03	Undesignated
Corrosivity-pH	9.72	Undesignated
Total Cyanide (mg/kg)	0.00E+00	Undesignated
Total Sulfide (mg/kg)	1.49E+01	Undesignated
Total Barium (mg/L)	6.00E-03	Undesignated
Total Cadmium (mg/L)	2.59E-03	Undesignated
Total Mercury (mg/L)	2.68E-04	Undesignated

Dangerous Waste Criteria - WAC 173-303-100

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%	DW Number-Positive
Aluminum nitrate	3.30E-07	0.00E+00	0.00E+00	0.00E+00	
Barium chloride	1.71E-09	0.00E+00	0.00E+00	0.00E+00	
Cadmium chloride	7.94E-09	0.00E+00	0.00E+00	7.94E-07	Undesignated
Copper(II) chloride	7.63E-07	0.00E+00	0.00E+00	0.00E+00	
Hydrogen sulfide, DB	1.45E-05	0.00E+00	0.00E+00	0.00E+00	
Iron(III) chloride	3.06E-08	0.00E+00	0.00E+00	0.00E+00	
Iron(III) fluoride	5.00E-08	0.00E+00	0.00E+00	0.00E+00	
Magnesium chloride	5.82E-09	0.00E+00	0.00E+00	0.00E+00	
Magnesium sulfate	4.43E-08	0.00E+00	0.00E+00	0.00E+00	
Mercury(II) chloride	6.81E-09	0.00E+00	0.00E+00	0.00E+00	
Nickel(II) hydroxide	3.61E-09	0.00E+00	0.00E+00	3.61E-06	Undesignated
Potassium sulfide, DB	1.54E-06	0.00E+00	0.00E+00	0.00E+00	
Uranyl nitrate	6.64E-10	0.00E+00	0.00E+00	0.00E+00	
Vanadium(V) oxide	1.68E-08	0.00E+00	0.00E+00	0.00E+00	
Zinc nitrate	6.14E-09	0.00E+00	0.00E+00	0.00E+00	
Acetone	1.69E-08	0.00E+00	0.00E+00	0.00E+00	
Ammonia	1.06E-04	0.00E+00	0.00E+00	0.00E+00	
*Benzaldehyde	2.30E-10	0.00E+00	0.00E+00	0.00E+00	
*Benzyl alcohol	1.00E-10	0.00E+00	0.00E+00	0.00E+00	
Butanal	2.06E-09	0.00E+00	0.00E+00	0.00E+00	
1-Butanol	5.89E-09	0.00E+00	0.00E+00	0.00E+00	
2-Butanone	5.83E-10	0.00E+00	0.00E+00	0.00E+00	
*Butoxydiglycol	1.10E-10	0.00E+00	0.00E+00	0.00E+00	
2-Butoxyethanol	6.33E-08	0.00E+00	0.00E+00	0.00E+00	
*Ethoxytriethylene glycol	1.50E-09	0.00E+00	0.00E+00	0.00E+00	
*Hexanoic acid	7.00E-09	0.00E+00	0.00E+00	0.00E+00	

Table 5-1. Dangerous Waste Designation Report. (sheet 5 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-Linked Feed

Dangerous Waste Criteria - WAC 173-303-100 - Continued

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%	DW Number-Positive
2-Hexanone	1.52E-10	0.00E+00	0.00E+00	0.00E+00	
*Methoxydiglycol	2.80E-09	0.00E+00	0.00E+00	0.00E+00	
*Methoxytriglycol	3.70E-09	0.00E+00	0.00E+00	0.00E+00	
MIBK (Hexone)	2.75E-10	0.00E+00	0.00E+00	0.00E+00	
N-Nitrosodimethylamine	1.93E-08	0.00E+00	0.00E+00	1.93E-06	Undesignated
2-Pentanone	1.13E-10	0.00E+00	0.00E+00	0.00E+00	
Phenol	1.45E-08	0.00E+00	0.00E+00	0.00E+00	
2-Propanol	3.45E-10	0.00E+00	0.00E+00	0.00E+00	
Pyridine	5.10E-08	0.00E+00	0.00E+00	0.00E+00	
Tetrahydrofuran	2.42E-09	0.00E+00	0.00E+00	0.00E+00	
Tributylphosphate	5.79E-08	0.00E+00	0.00E+00	0.00E+00	
Total	1.24E-04	0.00E+00	0.00E+00	6.33E-06	
DW Number	Undesignated	Undesignated	Undesignated	Undesignated	

Dangerous Waste Constituents - WAC 173-303-9905

Substance
Ammonium metavanadate
Hydrogen fluoride
Hydrogen sulfide, DB
Acetone
N-Nitrosodimethylamine
Phenol
Pyridine
Barium and compounds,NOS
Cadmium and compounds,NOS
Mercury and compounds,NOS
Nickel and compounds,NOS

Substance names may include MB (monobasic), DB (dibasic), or TB (tribasic) to identify the equivalence of hydrogen ion that have been nutralized from polyprotic weak acids to form their conjugate bases.

Results based on a single datum are noted by an asterisk (*). Others are based on the lower limit of the one-tailed 90% confidence interval for pH data sets with mean values below 7.25 or by the upper limit of the one-tailed 90% confidence interval for all other data sets.

EP Toxic contaminants, ignitability, and reactivity are reported by standard methods when available. In the absence of EP Toxicity data, total contaminant concentrations are evaluated. In lieu of closed cup ignition results, ignitability is estimated from the sum of the contributions of all substances that are ignitable when pure. A waste is flagged as dangerous if sum of the ignitable substances exceeds one percent. Reactivity is by SW-846: 250 mg of cyanide as hydrogen cyanide per kg of waste or 500 mg of sulfide as hydrogen sulfide per kg of waste. Total cyanide and total sulfide are used in lieu of amenable cyanide and amenable sulfide.

Inorganic substances are fomulated and their possible concentrations calculated for designation purposes only. The actual existance in the waste of these substances is not implied and should not be infered.

Table 5-1. Dangerous Waste Designation Report. (sheet 6 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-ASF Feed

Finding: Dangerous Waste

Discarded Chemical Products - WAC 173-303-081

Substance	Review Number	Status	DW Number
Ammonium metavanadate	P119(EHW)	Not Discarded	Undesignated
Hydrogen fluoride	U134(DW)	Not Discarded	Undesignated
Mercury	U151(EHW)	Not Discarded	Undesignated
Vanadium(V) oxide	P120(EHW)	Not Discarded	Undesignated
Acetone	U002(DW)	Not Discarded	Undesignated
1-Butanol	U031(DW)	Not Discarded	Undesignated
2-Butanone	U159(DW)	Not Discarded	Undesignated
Tetrahydrofuran	U213(DW)	Not Discarded	Undesignated

Dangerous Waste Sources - WAC 173-303-082

Substance	Review Number	Status	DW Number
Acetone	F003	Listed Source	F003(DW)
1-Butanol	F003	Listed Source	F003(DW)
2-Butanone	F005	Listed Source	F005(DW)

Infectous Dangerous Waste - WAC 173-303-083

No regulatory guidance

Dangerous Waste Mixtures - WAC 173-303-084

	Toxic	Persistant		Carcinogenic
Substance	EC%	HH%	PAH%	Total%
Aluminum sulfate	1.49E-08	0.00E+00	0.00E+00	0.00E+00
Barium chloride	1.44E-09	0.00E+00	0.00E+00	0.00E+00
Calcium tetraborate	5.41E-10	0.00E+00	0.00E+00	0.00E+00
Copper(II) chloride	3.18E-07	0.00E+00	0.00E+00	0.00E+00
Iron(III) fluoride	1.03E-07	0.00E+00	0.00E+00	0.00E+00
Magnesium chloride	1.22E-08	0.00E+00	0.00E+00	0.00E+00
Mercury(II) chloride	4.87E-09	0.00E+00	0.00E+00	0.00E+00
Nickel(II) hydroxide	2.49E-09	0.00E+00	0.00E+00	2.49E-06
Potassium chloride	3.33E-10	0.00E+00	0.00E+00	0.00E+00
Potassium fluoride	7.30E-08	0.00E+00	0.00E+00	0.00E+00
Sodium metasilicate	3.26E-07	0.00E+00	0.00E+00	0.00E+00
Vanadium(V) oxide	1.51E-08	0.00E+00	0.00E+00	0.00E+00
Zinc sulfate	2.98E-09	0.00E+00	0.00E+00	0.00E+00
Acetone	1.27E-08	0.00E+00	0.00E+00	0.00E+00
Ammonia	1.07E-03	0.00E+00	0.00E+00	0.00E+00
Benzyl alcohol	1.34E-10	0.00E+00	0.00E+00	0.00E+00
Butanal	1.31E-10	0.00E+00	0.00E+00	0.00E+00
1-Butanol	4.64E-07	0.00E+00	0.00E+00	0.00E+00
2-Butanone	4.43E-10	0.00E+00	0.00E+00	0.00E+00
*Butoxydiglycol	2.70E-10	0.00E+00	0.00E+00	0.00E+00
2-Butoxyethanol	4.03E-08	0.00E+00	0.00E+00	0.00E+00
*Butoxytriethyleneglycol	3.50E-10	0.00E+00	0.00E+00	0.00E+00
2-Hexanone	5.13E-10	0.00E+00	0.00E+00	0.00E+00
2-Propanol	2.75E-10	0.00E+00	0.00E+00	0.00E+00
Tetrahydrofuran	4.02E-09	0.00E+00	0.00E+00	0.00E+00
Tributylphosphate	5.22E-08	0.00E+00	0.00E+00	0.00E+00
Total	1.08E-03	0.00E+00	0.00E+00	2.49E-06
DW Number	DW	Undesignated	Undesignated	Undesignated

Table 5-1. Dangerous Waste Designation Report. (sheet 7 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-ASF Feed

Dangerous Waste Characteristics - WAC 173-303-090

Characteristic	Value	DW Number
Ignitables % (Calc.)	4.83E-03	Undesignated
Corrosivity-pH	10.83	Undesignated
Total Cyanide (mg/kg)	0.00E+00	Undesignated
Total Sulfide (mg/kg)	0.00E+00	Undesignated
EP Toxic Arsenic (mg/L)	<5.00E-02	Undesignated
EP Toxic Barium (mg/L)	2.33E-01	Undesignated
EP Toxic Cadmium (mg/L)	<1.00E-02	Undesignated
EP Toxic Chromium (mg/L)	<5.00E-02	Undesignated
EP Toxic Lead (mg/L)	<5.00E-02	Undesignated
EP Toxic Mercury (mg/L)	<1.00E-02	Undesignated
EP Toxic Selenium (mg/L)	<5.00E-02	Undesignated
EP Toxic Silver (mg/L)	<5.00E-02	Undesignated

Dangerous Waste Criteria - WAC 173-303-100

	Toxic	Persistant		Carcinogenic	
Substance	EC%	HH%	PAH%	Total%	DW Number-Positive
Aluminum sulfate	1.49E-08	0.00E+00	0.00E+00	0.00E+00	
Barium chloride	1.44E-09	0.00E+00	0.00E+00	0.00E+00	
Calcium tetraborate	5.41E-10	0.00E+00	0.00E+00	0.00E+00	
Copper(II) chloride	3.18E-07	0.00E+00	0.00E+00	0.00E+00	
Iron(III) fluoride	1.03E-07	0.00E+00	0.00E+00	0.00E+00	
Magnesium chloride	1.22E-08	0.00E+00	0.00E+00	0.00E+00	
Mercury(II) chloride	4.87E-09	0.00E+00	0.00E+00	0.00E+00	
Nickel(II) hydroxide	2.49E-09	0.00E+00	0.00E+00	2.49E-06	Undesignated
Potassium chloride	3.33E-10	0.00E+00	0.00E+00	0.00E+00	
Potassium fluoride	7.30E-08	0.00E+00	0.00E+00	0.00E+00	
Sodium metasilicate	3.26E-07	0.00E+00	0.00E+00	0.00E+00	
Vanadium(V) oxide	1.51E-08	0.00E+00	0.00E+00	0.00E+00	
Zinc sulfate	2.98E-09	0.00E+00	0.00E+00	0.00E+00	
Acetone	1.27E-08	0.00E+00	0.00E+00	0.00E+00	
Ammonia	1.07E-03	0.00E+00	0.00E+00	0.00E+00	
Benzyl alcohol	1.34E-10	0.00E+00	0.00E+00	0.00E+00	
Butanal	1.31E-10	0.00E+00	0.00E+00	0.00E+00	
1-Butanol	4.64E-07	0.00E+00	0.00E+00	0.00E+00	
2-Butanone	4.43E-10	0.00E+00	0.00E+00	0.00E+00	
*Butoxydiglycol	2.70E-10	0.00E+00	0.00E+00	0.00E+00	
2-Butoxyethanol	4.03E-08	0.00E+00	0.00E+00	0.00E+00	
*Butoxytriethyleneglycol	3.50E-10	0.00E+00	0.00E+00	0.00E+00	
2-Hexanone	5.13E-10	0.00E+00	0.00E+00	0.00E+00	
2-Propanol	2.75E-10	0.00E+00	0.00E+00	0.00E+00	
Tetrahydrofuran	4.02E-09	0.00E+00	0.00E+00	0.00E+00	
Tributylphosphate	5.22E-08	0.00E+00	0.00E+00	0.00E+00	
Total	1.08E-03	0.00E+00	0.00E+00	2.49E-06	
DW Number	DW	Undesignated	Undesignated	Undesignated	

Dangerous Waste Constituents - WAC 173-303-9905

Substance
Ammonium metavanadate
Hydrogen fluoride
Acetone
Barium and compounds,NOS
Mercury and compounds,NOS
Nickel and compounds,NOS

Table 5-1. Dangerous Waste Designation Report. (sheet 8 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-ASF Feed

Substance names may include MB (monobasic), DB (dibasic), or TB (tribasic) to identify the equivalence of hydrogen ion that have been nutralized from polyprotic weak acids to form their conjugate bases.

Results based on a single datum are noted by an asterisk (*). Others are based on the lower limit of the one-tailed 90% confidence interval for pH data sets with mean values below 7.25 or by the upper limit of the one-tailed 90% confidence interval for all other data sets.

EP Toxic contaminants, ignitability, and reactivity are reported by standard methods when available. In the absence of EP Toxicity data, total contaminant concentrations are evaluated. In lieu of closed cup ignition results, ignitability is estimated from the sum of the contributions of all substances that are ignitable when pure. A waste is flagged as dangerous if sum of the ignitable substances exceeds one percent. Reactivity is by SW-846: 250 mg of cyanide as hydrogen cyanide per kg of waste or 500 mg of sulfide as hydrogen sulfide per kg of waste. Total cyanide and total sulfide are used in lieu of amenable cyanide and amenable sulfide.

Inorganic substances are fomulated and their possible concentrations calculated for designation purposes only. The actual existance in the waste of these substances is not implied and should not be infered.

Table 5-1. Dangerous Waste Designation Report. (sheet 9 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-Saltwell Feed

Finding: Dangerous Waste

Discarded Chemical Products - WAC 173-303-081

Substance	Review Number	Status	DW Number
Mercury	U151(EHW)	Not Discarded	Undesignated
Acetone	U002(DW)	Not Discarded	Undesignated
1-Butanol	U031(DW)	Not Discarded	Undesignated
2-Butanone	U159(DW)	Not Discarded	Undesignated
*MIBK (Hexone)	U161(DW)	Not Discarded	Undesignated
Tetrahydrofuran	U213(DW)	Not Discarded	Undesignated

Dangerous Waste Sources - WAC 173-303-082

Substance	Review Number	Status	DW Number
Acetone	F003	Listed Source	F003(DW)
1-Butanol	F003	Listed Source	F003(DW)
2-Butanone	F005	Listed Source	F005(DW)
*MIBK (Hexone)	F003	Listed Source	F003(DW)

Infectous Dangerous Waste - WAC 173-303-083

No regulatory guidance

Dangerous Waste Mixtures - WAC 173-303-084

	Toxic	Persistant		Carcinogenic
Substance	EC%	HH%	PAH%	Total%
Nickel(II) hydroxide	1.89E-09	0.00E+00	0.00E+00	1.89E-06
Acetone	1.04E-08	0.00E+00	0.00E+00	0.00E+00
Ammonia	9.29E-05	0.00E+00	0.00E+00	0.00E+00
*Benzyl alcohol	1.10E-10	0.00E+00	0.00E+00	0.00E+00
Butanal	4.46E-10	0.00E+00	0.00E+00	0.00E+00
1-Butanol	4.95E-09	0.00E+00	0.00E+00	0.00E+00
2-Butanone	3.88E-10	0.00E+00	0.00E+00	0.00E+00
2-Butoxyethanol	9.17E-09	0.00E+00	0.00E+00	0.00E+00
Ethoxytriethylene glycol	1.30E-09	0.00E+00	0.00E+00	0.00E+00
2-Hexanone	8.40E-11	0.00E+00	0.00E+00	0.00E+00
*Methoxydiglycol	5.20E-09	0.00E+00	0.00E+00	0.00E+00
*Methoxytriglycol	6.50E-10	0.00E+00	0.00E+00	0.00E+00
*MIBK (Hexone)	8.00E-11	0.00E+00	0.00E+00	0.00E+00
2-Propanol	3.26E-10	0.00E+00	0.00E+00	0.00E+00
Tetrahydrofuran	1.52E-08	0.00E+00	0.00E+00	0.00E+00
Tributylphosphate	5.21E-08	0.00E+00	0.00E+00	0.00E+00
Total	9.30E-05	0.00E+00	0.00E+00	1.89E-06
DW Number	Undesignated	Undesignated	Undesignated	Undesignated

Dangerous Waste Characteristics - WAC 173-303-090

Characteristic	Value	DW Number
Ignitables % (Calc.)	1.92E-04	Undesignated
Corrosivity-pH	10.13	Undesignated
Total Cyanide (mg/kg)	0.00E+00	Undesignated
Total Sulfide (mg/kg)	0.00E+00	Undesignated
Total Mercury (mg/L)	2.15E-04	Undesignated

Table 5-1. Dangerous Waste Designation Report. (sheet 10 of 10)

Dangerous Waste Data Designation Report for 242-A Evaporator Process Condensate-Saltwell Feed

Dangerous Waste Criteria - WAC 173-303-100

Substance	Toxic EC%	Persistant HH%	Persistant PAH%	Carcinogenic Total%	DW Number-Positive
Nickel(II) hydroxide	1.89E-09	0.00E+00	0.00E+00	1.89E-06	Undesignated
Acetone	1.04E-08	0.00E+00	0.00E+00	0.00E+00	
Ammonia	9.29E-05	0.00E+00	0.00E+00	0.00E+00	
*Benzyl alcohol	1.10E-10	0.00E+00	0.00E+00	0.00E+00	
Butanal	4.46E-10	0.00E+00	0.00E+00	0.00E+00	
1-Butanol	4.95E-09	0.00E+00	0.00E+00	0.00E+00	
2-Butanone	3.88E-10	0.00E+00	0.00E+00	0.00E+00	
2-Butoxyethanol	9.17E-09	0.00E+00	0.00E+00	0.00E+00	
Ethoxytriethylene glycol	1.30E-09	0.00E+00	0.00E+00	0.00E+00	
2-Hexanone	8.40E-11	0.00E+00	0.00E+00	0.00E+00	
*Methoxydiglycol	5.20E-09	0.00E+00	0.00E+00	0.00E+00	
*Methoxytriglycol	6.50E-10	0.00E+00	0.00E+00	0.00E+00	
*MIBK (Hexone)	8.00E-11	0.00E+00	0.00E+00	0.00E+00	
2-Propanol	3.26E-10	0.00E+00	0.00E+00	0.00E+00	
Tetrahydrofuran	1.52E-08	0.00E+00	0.00E+00	0.00E+00	
Tributylphosphate	5.21E-08	0.00E+00	0.00E+00	0.00E+00	
Total	9.30E-05	0.00E+00	0.00E+00	1.89E-06	
DW Number	Undesignated	Undesignated	Undesignated	Undesignated	

Dangerous Waste Constituents - WAC 173-303-9905

Substance
Acetone
Mercury and compounds,NOS
Nickel and compounds,NOS

Substance names may include MB (monobasic), DB (dibasic), or TB (tribasic) to identify the equivalence of hydrogen ion that have been nutralized from polyprotic weak acids to form their conjugate bases.

Results based on a single datum are noted by an asterisk (*). Others are based on the lower limit of the one-tailed 90% confidence interval for pH data sets with mean values below 7.25 or by the upper limit of the one-tailed 90% confidence interval for all other data sets.

EP Toxic contaminants, ignitability, and reactivity are reported by standard methods when available. In the absence of EP Toxicity data, total contaminant concentrations are evaluated. In lieu of closed cup ignition results, ignitability is estimated from the sum of the contributions of all substances that are ignitable when pure. A waste is flagged as dangerous if sum of the ignitable substances exceeds one percent. Reactivity is by SW-846: 250 mg of cyanide as hydrogen cyanide per kg of waste or 500 mg of sulfide as hydrogen sulfide per kg of waste. Total cyanide and total sulfide are used in lieu of amenable cyanide and amenable sulfide.

Inorganic substances are fomulated and their possible concentrations calculated for designation purposes only. The actual existance in the waste of these substances is not implied and should not be infered.

5.3.1.6 Acetone. Acetone (U002) was detected in all 34 samples taken. The average concentration of acetone was 980 ppb. Acetone was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. Acetone was used in the laboratories to dry glassware and could have been disposed of, through drains, to the tank farms. Alternate sources of acetone probably exist and also are being investigated. Acetone is a volatile organic and probably originates from the evaporation and condensation process in the 242-A Evaporator. Acetone in the form of a discarded chemical product has not been discarded to the waste tanks at the Hanford Site.

5.3.1.7 1-Butanol. Butyl alcohol (1-Butanol) (U031) was detected in 30 of the 34 samples at an average concentration of 9,800 ppb. Butyl alcohol was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. Butyl alcohol is an impurity in PUREX Plant tributyl phosphate and is also a degradation product. Butyl alcohol is a volatile organic and probably originates from the evaporation and condensation process in the 242-A Evaporator. Butyl alcohol is not known to have been discarded in any waste tanks. It is not considered a discarded chemical product.

5.3.1.8 2-Butanone. Methyl ethyl ketone (2-Butanone) (U159) was detected in 25 of the 34 samples at an average concentration of 51 ppb. Methyl ethyl ketone was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. The origin of methyl ethyl ketone has not been determined. Methyl ethyl ketone is a volatile organic and originates from the evaporation and condensation process in the 242-A Evaporator. Methyl ethyl ketone in the form of a discarded chemical product has not been discarded to any of the waste tanks at the Hanford Site.

5.3.1.9 Dimethylnitrosamine. Dimethylnitrosamine (P082) was detected, while performing a linked feed run, in 1 of 34 samples at a concentration of 57 ppb. The origin of the dimethylnitrosamine is unknown at this time. Dimethylnitrosamine was never purchased in its pure form at the Hanford Site and was never known to have been discarded to any tanks; therefore, it is not a discarded chemical product.

5.3.1.10 Methyl Isobutyl Ketone. Methyl isobutyl ketone (hexone) (U161) was detected in 10 of 34 samples at an average concentration of 11 ppb. Hexone was detected while processing CRW and saltwell feed as well as during linked feed runs. Hexone was used in the separation process of plutonium and uranium at the REDOX Plant between 1951 and 1966. Hexone in the form of a discarded chemical product has not been discarded to any of the waste tanks at the Hanford Site.

5.3.1.11 Phenol. Phenol (U188) was detected in the process condensate in 1 out of 34 samples at a concentration of 33 ppb. Phenol is not detected in raw Columbia river water. Phenol was detected while performing a linked feed run. Phenol entered the process condensate stream through the evaporation and condensation process in the 242-A Evaporator. Phenol was never purchased for any chemical processing purpose at the Hanford Site and is therefore not a discarded chemical product.

5.3.1.12 Tetrahydrofuran. Tetrahydrofuran (U213) was detected in 24 of 34 samples at an average concentration of 37 ppb. Tetrahydrofuran is a component in a commercial decontamination solution used at T Plant. Wastes from T Plant were discharged to the tank farms and would have been introduced into the process condensate through the evaporation and condensation process in the 242-A Evaporator. Tetrahydrofuran was never discarded in its pure form and is therefore not a discarded chemical product.

5.3.1.13 Pyridine. Pyridine (U196) was detected in 1 of 34 samples at a concentration of 550 ppb. Pyridine was detected while performing a linked feed run. Pyridine probably entered the process condensate stream through the evaporation and condensation process in the 242-A Evaporator. Pyridine was not used in Hanford Site chemical processing and was never intentionally discarded; therefore, it is not a discarded chemical product.

5.3.2 Dangerous Waste Sources

The process evaluation (see Section 5.2) was also used to determine if the wastestream included any specific waste sources (K and W wastes) or any nonspecific waste sources (F wastes) in WAC 173-303-9904.

Sampling data were utilized to enhance the process evaluation. Two potential listed solvents were identified from process data. Four more potential listed solvents were identified by the sampling data.

5.3.2.1 Methylene Chloride. Between 1986 and 1988 four commercial decontamination solutions containing greater then 10% methylene chloride were used at T Plant (a decontamination facility located in the 200 West Area of the Hanford Site). The solutions were wiped or sprayed on to the equipment from a bottle, allowed to "work" for a time, then washed off into a collection sump. When the sump eventually filled, the contents were steam jetted to a collection tank that interconnected with the double-shell underground storage tanks. Methylene chloride is extremely volatile, boiling at 40 °C. A significant fraction evaporated during and after application, and while residing in the sump. The steam-motivated transfer jet violently mixes the sump solution about 1:5 with 100 lb/in^2 (gauge) steam during sump transfers. This would have steam-stripped the remaining methylene chloride into the T-Plant 15-1 receiver tank vapor space where it exhausted as a gas; it is unlikely any methylene chloride ever entered the DSTs. However, if methylene chloride is discovered in DST waste during DST waste characterization efforts, it will be assumed to be from a listed waste source and the waste will be treated accordingly.

About 35 gal of methylene chloride were used per year at T Plant. The waste solution was discharged with about 370,000 gal of water per year to the DSTs. Regulations specify that methylene chloride that has been used in degreasing is a listed hazardous waste (F001), as is methylene chloride that is a spent solvent (F002). If decontamination is determined to be equivalent to degreasing or solvent use, then it can be concluded that the DSTs contain listed hazardous waste via the mixture rule, and that the 242-A process

condensate is a listed waste because it is "derived-from" the DST listed waste. It should be noted that no methylene chloride was detected in any of the 34 samples taken of the process condensate.

5.3.2.2 1,1,1-Trichlorethane. 1,1,1-Trichlorethane (TCA) has been used to wash radionuclides from the B Plant crane. The TCA that falls to the B Plant canyon floor during this process is allowed to evaporate. The canyon floor is periodically washed to a sump that drains to the DSTs.

It is unclear whether these practices have resulted in a discharge of listed wastes to the DSTs. The TCA is used during decontamination of the crane because it will evaporate completely and not cause electrical shorts in the crane. Because the TCA that is highly volatile appears to evaporate on the floor before being washed into the sump, it can be argued that the TCA does not reach the DST system. However, this assumption has never been analytically verified. No TCA was detected in any of the 34 samples taken of the process condensate.

5.3.2.3 Acetone. Acetone (F003) was detected in all 34 samples taken. The average concentration of acetone was 980 ppb. Acetone was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. Acetone was used in the laboratories to dry glassware and could have been disposed of through drains to the tank farms. Acetone is a volatile organic and probably originates from the evaporation and condensation process in the 242-A Evaporator. The DST waste has been determined to be a listed (F003) source because of the presence of acetone. Consequently, the 242-A process condensate is also an F003 waste because it is derived from DST waste.

5.3.2.4 1-Butanol. Butyl alcohol was detected in 30 of 34 samples at an average concentration of 9,800 ppb. Butyl alcohol was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. Butyl alcohol is an impurity in PUREX tributyl phosphate that was used in several laboratories in the 300 Area, and is a degradation product. Butyl alcohol is a volatile organic and probably originates from the evaporation and condensation process in the 242-A Evaporator.

5.3.2.5 Methyl isobutyl ketone. Methyl isobutyl ketone (hexone) (F003) was detected in 10 of 34 samples at an average concentration of 11 ppb. Hexone was detected while processing CRW and saltwell feed as well as during linked feed runs. Between 1951 and 1966 the REDOX Plant used a distillation process to clean hexone for reuse in the solvent extraction process. The hexone was first washed with sodium carbonate to remove the radiation-produced degradation products, then distilled to remove the water that had dissolved in it during washing. The water left behind was combined with the high-level wastestream for final steam stripping in the plant's waste concentrator. This step recovered any hexone dissolved in the high-level wastestream or in the water sent over from the distillation process. After steam stripping the concentrated high-level waste was sent to boiling waste SSTs in the 241-S and 241-SX Tank Farms. Steam stripping is a recommended recovery technique for hexone (40CFR Part 268). During normal operation, it is unlikely that measurable quantities of hexone left the plant in the concentrated waste.

The high-level concentrate must be considered a secondary waste from the hexone recovery process. The fact that the hexone recovery process was utilized to recover an F003 solvent leads to this secondary wastestream being designated a listed waste.

The contents of the DSTs can be concluded to contain F003 listed waste when the mixture rule is further applied to this system. The 242-A process condensate is therefore an F003 listed waste based on the fact that it is derived from a listed waste.

5.3.2.6 2-Butanone. Methyl ethyl ketone (2-Butanone) (F005) was detected in 25 of 34 samples at an average concentration of 51 ppb. Methyl ethyl ketone was detected while processing ASF, CRW, saltwell feed, and during linked feed runs. Methyl ethyl ketone was used in the REDOX analytical laboratories. Methyl ethyl ketone is a volatile organic and probably originates from the evaporation and condensation process in the 242-A Evaporator.

5.3.2.7 Pyridine. Pyridine (F005) was detected in 1 of 34 samples at a concentration of 550 ppb. Pyridine was detected while performing a linked feed run. Pyridine was not used for any purpose at the Hanford Site and is therefore not considered a dangerous waste source. Pyridine entered the process condensate stream through the evaporation-condensation process in the 242-A Evaporator.

5.4 DANGEROUS WASTE CRITERIA

A waste is considered a dangerous waste if it meets any of the following criteria categories (WAC 173-303-100): toxic dangerous waste, persistent dangerous waste, or carcinogenic dangerous waste. A description of the methods used to test the sampling data against the criteria is contained in WHC (1990b). Summaries of the methods, along with the results, are contained in the following sections.

5.4.1 Toxic Dangerous Wastes

The procedure for determining if a wastestream is a toxic dangerous waste is below (WAC 173-303-101).

- Collect and analyze multiple samples from the wastestream.
- Calculate the upper limit of the one-sided 90% confidence interval for each analyte in the wastestream.
- Formulate substances from the analytical data. NOTE: This step is only required for inorganic analytes since it is not possible to complete the evaluation based on the concentration of cations and anions. This methodology is described in WHC (1990b) and is based on an evaluation of the most substances that can exist in an aqueous environment under normal temperatures and pressures.

- Assign toxic categories to the substances formulated for the wastestream.
- Calculate the contribution of each substance to the percent equivalent concentration (EC%).
- Calculate the EC% by summing the contributions of each substance.
- Designate the wastestream as a toxic dangerous waste if the EC% is greater than 0.001% in accordance WAC 173-303-9906.

Forty-seven substances potentially present in the 242-A Evaporator Process Condensate stream were determined to have toxic categories associated with them. These substances are listed in Table 5-1. The individual and sum EC% values for these substances also are listed in Table 5-1. Since the EC% sum is 9.40 E-05 to 1.09 E-03, depending upon the operating configuration chosen, which is greater than the designation limit of 1.0 E-03 (i.e., 0.001%), the wastestream is a toxic dangerous waste.

5.4.2 Persistent Dangerous Wastes

The procedure for determining if a wastestream is a persistent dangerous waste is as follows (WAC 173-303-102).

- Collect multiple grab samples of the wastestream.
- Determine which substances in the wastestream are halogenated hydrocarbons (HH) and which are polycyclic aromatic hydrocarbons (PAH).
- Determine the upper limit of the one-sided 90% confidence interval for the substances of interest.
- Calculate the weight percent (wt%) contribution of each HH and PAH, and HH% and PAH% separately.
- Sum the resulting HH% and PAH% contributors separately.
- Designate the wastestream as persistent if the HH% concentration is greater than 0.01% or if the PAH% is greater than 1.0% in accordance with WAC 173-303-9907.

No substances detected in the 242-A Evaporator Process Condensate stream were determined to be HH and no chemical compounds were determined to be PAH. The 242-A Evaporator Process Condensate is not a persistent dangerous waste.

5.4.3 Carcinogenic Dangerous Wastes

The procedure for determining if a wastestream is a carcinogenic dangerous waste is as follows (WAC 173-303-103).

- Collect multiple grab samples of the wastestream.
- Determine the upper limit of the one-sided 90% confidence interval for the substances of interest.
- Formulate substances from the analytical data. NOTE: This step is only required for inorganic analytes since it is not possible to complete the evaluation based on the concentrations of cations and anions. This methodology is described in WHC (1990b) and is based on an evaluation of the most toxic substances that exist in an aqueous environment under normal temperatures and pressures.
- Determine which substances in the wastestream are carcinogens according to the International Agency for Research on Cancer.
- Calculate the weight percent (wt%) concentration for each carcinogen.
- Sum the resulting wt% concentrations.
- Designate the wastestream as carcinogenic if any of the positive carcinogens are above 0.01% or if the total concentration of positive and suspected carcinogens is above 1.0%.

Three substances potentially present in the 242-A Evaporator Process Condensate Stream were determined to be carcinogenic chemical compounds. The values for these chemicals are listed in Table 5-1. Since none of the positive carcinogens exceed 1.00 E-02% (i.e., 0.01%) and the sum is less than 1.0%, the 242-A Evaporator Process Condensate is not a carcinogenic dangerous waste.

5.5 DANGEROUS WASTE CHARACTERISTICS

A waste is considered a dangerous waste if it is ignitable, corrosive, reactive, or extraction procedure (EP) toxic (WAC 173-303-090). A description of the methods used to evaluate the data in terms of these characteristics is contained in WHC (1990b). Summaries of the methods, along with the results, are contained in the following sections.

5.5.1 Ignitability

Because of the dilute aqueous nature of these wastes, flashpoint testing was not performed on initial samples collected from the wastestream; instead an ignitability index was calculated for the samples and was based on the sum of the percent concentrations of all ignitible contributors in the waste.

Pure substances with a flashpoint <140 °F were considered ignitable. Using best professional judgment, samples with an ignitability index below 1% were not considered ignitable.

One or more chemical compounds potentially present in the 242-A Evaporator Process Condensate Stream are ignitable substances. The value of the index calculated from these constituents (presented in Table 5-1) is between 1.92 E-04% and 7.86 E-03%, depending upon the operating configuration chosen. Therefore, the 242-A Evaporator Process Condensate Stream is not an ignitable waste.

5.5.2 Corrosivity

A waste is a corrosive dangerous waste if it has a pH of $\leq$2.0 or $\geq$12.5. The comparison to the characteristic was based on the lower limit of the one-sided 90%CI for a stream with a mean value of pH <7.25 and the upper limit of the 90%CI for a stream with a mean value of pH $\geq$7.25.

Because the mean values of the pH measurements for all operating configurations were above 7.25, the upper confidence interval limits were used. The pH values observed during sampling were between 9.72 and 10.83, depending upon the operating configuration chosen. The wastestream is not a corrosive dangerous waste (WAC 173-303-090[6]).

5.5.3 Reactivity

An aqueous waste is reactive if the waste contains an amount of cyanide or sulfide under conditions near corrosivity sufficient to threaten human health or the environment (WAC 173-303-090[7]). A recent revision to *Test Methods for Evaluating Solid Waste* (SW-846) (EPA 1986) provides a more quantitative indicator level for cyanide and sulfide. It states that levels of (equivalent) HCN below 250 mg/kg or of (equivalent) H_2S below 500 mg/kg would not be considered reactive.

Samples collected before July 1989 utilized total cyanide and total sulfide to evaluate reactivity. The total cyanide concentration for this wastestream was below the minimum detection limit. The average sulfide concentration is 10 mg/kg. Both values are below the respective designation limits which verifies the wastestream is not a reactive dangerous waste.

5.5.4 Extraction Procedure Toxicity

A waste is an EP toxic dangerous waste if contaminant results from EP toxicity testing exceed the limits of WAC 173-303-090(8)(c). In the absence of specific EP toxicity test results, total analyte concentrations are used. Three analytes with concentrations above detection limits are on the EP toxic list and were found in the 242-A Evaporator Process Condensate stream. The concentrations of these three analytes are listed in Table 5-1. Because the barium concentration of 0.0 to 0.0066 mg/L does not exceed the limit of

100 mg/L, the cadmium concentration of 0.0 to 0.0026 mg/L does not exceed the limit of 1 mg/L, and the mercury concentration of 0.0002 to 0.0006 mg/L does not exceed the limit of 0.02 mg/L, the 242-A Evaporator Process Condensate wastestream is not an EP toxic dangerous waste.

5.6 PROPOSED DESIGNATIONS

Because the 242-A Evaporator Process Condensate wastestream contains dangerous waste, as defined in WAC 173-303-070, it is proposed that the wastestream be designated a dangerous waste. This designation is based on toxicity and the presence of Dangerous Waste Sources (F003) and (F005).

6.0 ACTION PLAN

This purpose of this section is to address recommendations for future waste characterization tasks for this wastestream. The final extent of and schedule for any recommended tasks are subject to negotiation between Ecology, the EPA, and DOE. An implementation schedule for the completion of these tasks will give consideration to other compliance actions already under way as part of the Tri-Party Agreement (Ecology et al. 1989), and on the availability of funding. All effluent monitoring and sampling will be conducted according to DOE Order 5400.1 ("General Environmental Protection Program," issued November 9, 1988).

6.1 FUTURE SAMPLING

The sampling utilized in this report was performed during the timeframe from August 25, 1985, to March 22, 1989. No sampling of this wastestream was performed during the recent sampling campaign of October 1989 to March 1990 due to the 242-A Evaporator being shut down for the evaporator upgrade and pending completion of the LERF.

The sampling contained in this report is representative of the 242-A Evaporator Process Condensate wastestream during operation of the evaporator.

Additional sampling of this stream upon restart of the 242-A Evaporator will be performed in accordance with the facility Waste Analysis Plan. This Waste Analysis Plan will be submitted as part of the 242-A Evaporator Part B Dangerous Waste Treatment, Storage, Disposal Permit Application.

6.2 TECHNICAL ISSUES

As described in Section 2.0, the effluent was sampled in four different locations. These locations were utilized because they were easily accessible and downstream of all of the contributing wastestreams.

The samples collected at these points are considered representative of the types of constituents present in the contributing wastestreams in the current configuration.

The identification of additional waste characterization tasks will be negotiated between Ecology, the EPA, and the DOE. These negotiations will consider the contents of this report along with the results of the groundwater characterization and waste disposal site assessment aspects of the *Liquid Effluent Study Project Plan* (WHC 1990a). The implementation schedule for any additional characterization tasks will give consideration to other compliance actions already underway as part of the Tri-Party Agreement (Ecology et al. 1989).

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7.0 REFERENCES

APHA, 1985, *Standard Methods for the Examination of Water and Wastewater*, Sixteenth Edition, American Public Health Association, American Water Works Association and Water Pollution Control Federal, Washington, D.C.

ASTM, 1986, *1986 Book of ASTM Standards*, American Society of Testing and Materials, Philadelphia, Pennsylvania.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, Public Law 96-510, 94 Stat. 2767, 42 USC 9601 et seq.

DOE, 1988, *General Environmental Protection Program*, DOE Order 5400.1, U.S. Department of Energy, Washington, D.C.

Ecology, 1989, Dangerous Waste Regulations, Washington Administrative Code 173-303, Washington State Department of Ecology, Olympia, Washington.

EPA, 1986, *Test Methods for Evaluating Solid Wastes*, 3rd Edition, SW-846, U.S. Environmental Protection Agency, Washington, D.C.

Lawrence, M. J., 1989, *Liquid Effluent Study*, (External Letter 8902106 to C. Gregoire, Washington State Department of Ecology; and R. Russell, U.S. Environmental Protection Agency, May 13, 1989), U.S. Department of Energy-Richland Operations Office, Richland, Washington.

Somers, S., 1989, *Hanford Sanitary Water Quality Surveillance, CY 1988*, HEHF-74, Hanford Environmental Health Foundation, Richland, Washington.

Somers, S., 1988, *Hanford Sanitary Water Quality Surveillance, CY 1987*, HEHF-71, Hanford Environmental Health Foundation, Richland, Washington.

Somers, S., 1987, *Hanford Sanitary Water Quality Surveillance, CY 1986*, HEHF-59, Hanford Environmental Health Foundation, Richland, Washington.

Somers, S., 1986, *Hanford Sanitary Water Quality Surveillance, CY 1985*, HEHF-55, Hanford Environmental Health Foundation, Richland, Washington.

Thurman, P. A., 1990, *Hanford Sanitary Water Quality Surveillance, CY 1989*, HEHF-76, Hanford Environmental Health Foundation, Richland, Washington.

WHC, 1990a, *Liquid Effluent Study Project Plan*, WHC-EP-0275 REV 2, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990b, *Wastestream Designation of Liquid Effluent Analytical Data*, WHC-EP-0334, Westinghouse Hanford Company, Richland, Washington.

WHC, 1989, *Waste Stream Characterization Report*, WHC-EP-0287, Volumes 1-4, Westinghouse Hanford Company, Richland, Washington, August 1989.

WHC, 1988, Preliminary Evaluation of Hanford Liquid Discharge to Ground, WHC-EP-0052, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

MISCELLANEOUS DATA

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Figure A-1. Floor Plan.

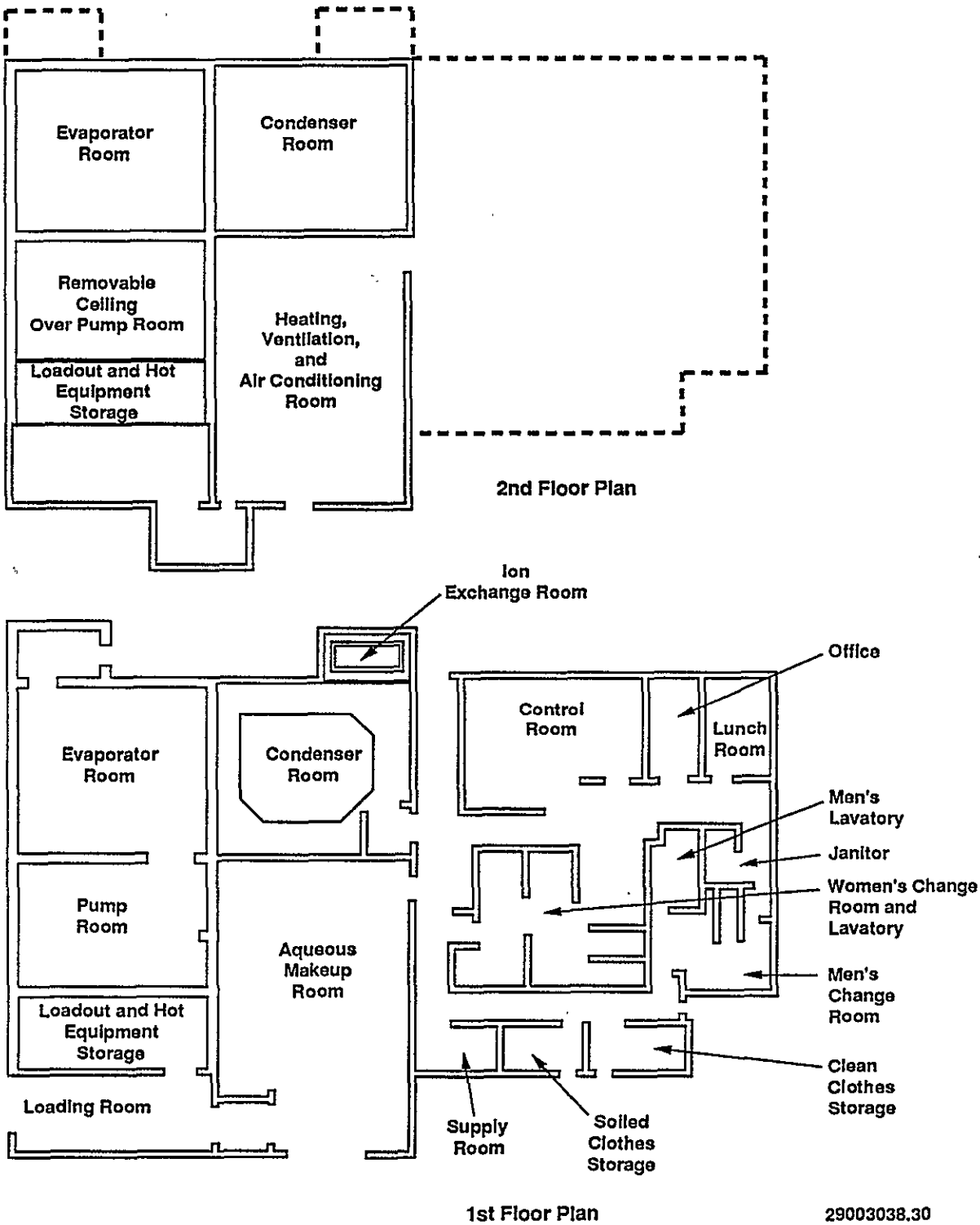


Figure A-2. Elevations of the 242-A Building.

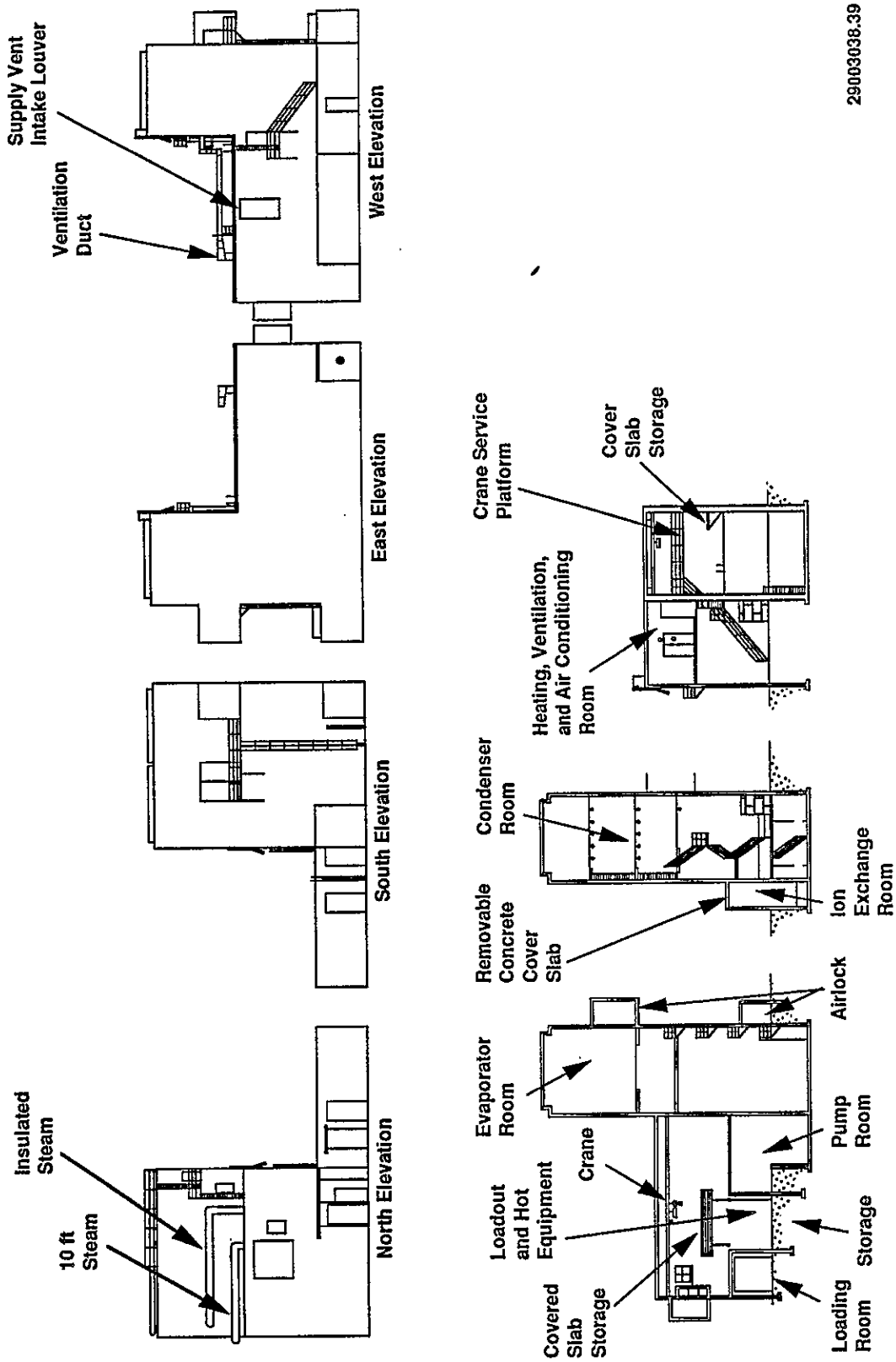


Figure A-3. The 242-A Evaporator Operation Water Balance.

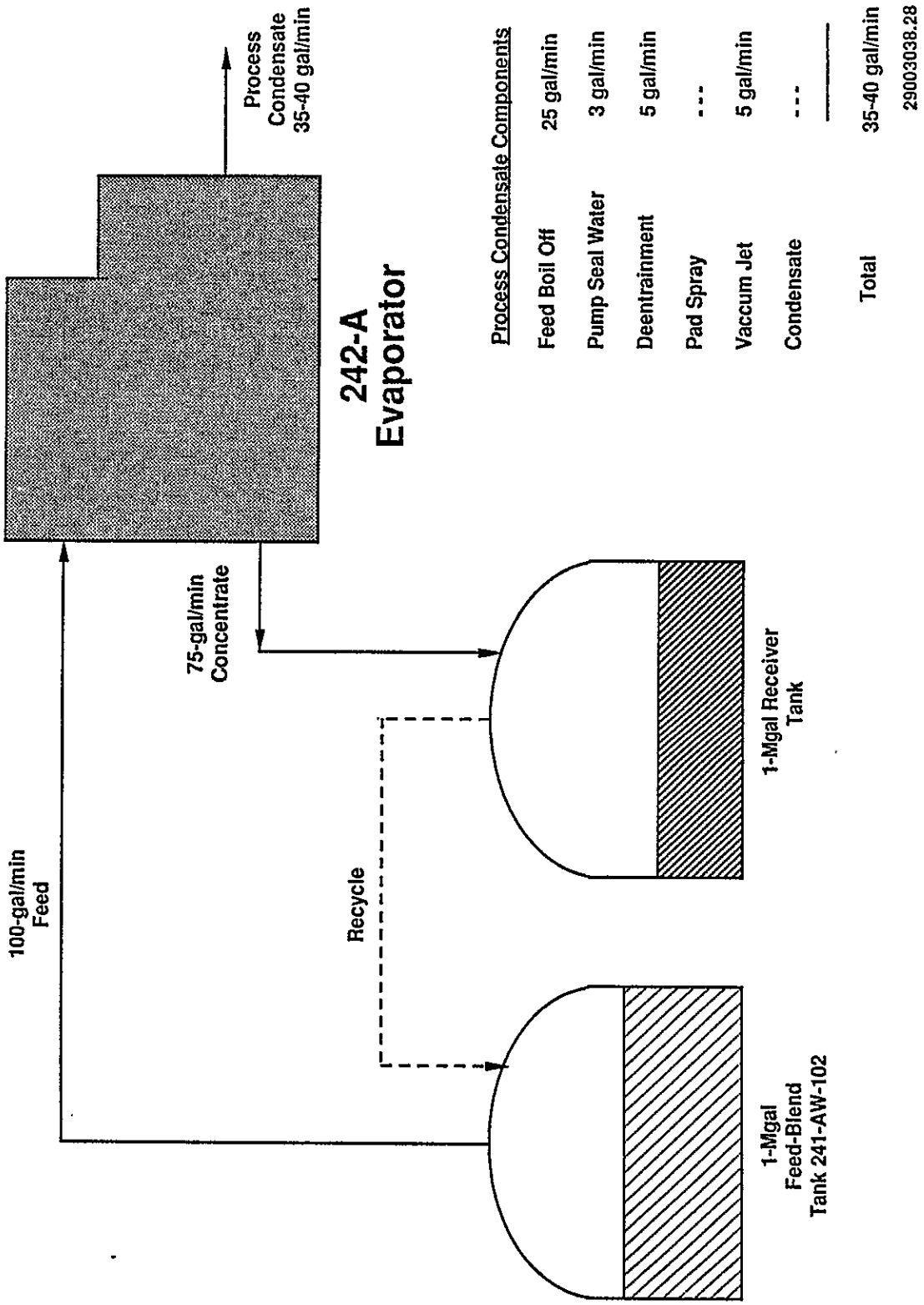


Table A-1. The E-C-1 Leak History.

Date	Tubes Plugged	Leak Rate
September 1977	Evaporator Startup	0 gpm
July 1982	16 Tubes Plugged, 4 Tube Sheet Holes Plugged	12 gpm to 0 gpm
March 1984	38 Tubes Plugged	30-40 gpm to 3 gpm
October 1984*	36 Tubes Plugged	25 gpm to 2 gpm
November 1987	6 Tubes Plugged	20 gpm to 1 gpm
November 1988	11 Tubes Plugged	16 gpm to 2 gpm

Total - 117 Tubes Plugged (Note - 6 tubes were plugged and not accounted for during one of the above outages)

* **Began using a corrosion inhibitor on the shell side of the condenser during long outages.**

Table A-2. Process Condensate Release Limits.

	Administrative Control Values		Operating Specifications			Procedural Limits
			Annual	Monthly	Instantaneous	
^{239} Pu (Total Alpha)	4.0 E-09	3x(DCG/25)	3.0 E-06	6.0 E-06	1.5 E-02	1.0 E-06
^{137} Cs	3.0 E-05	250x(DCG/25)	7.0 E-05	1.4 E-04	3.5 E-01	2.0 E-06
^{90} Sr (Total Beta)	1.0 E-04	100xDCG[ICV]	1.0 E-05	2.0 E-05	5.0 E-02	8.0 E-06
^{106} Ru/^{106} Rh	6.0 E-04	250x(DCG/25)	6.0 E-06	1.2 E-05	3.0 E-02	1.3 E-05
^{144} Ce/^{144} Pr	7.0 E-06	25x(DCG/25)	7.0 E-06	1.4 E-05	3.5 E-02	
^{60} Co	5.0 E-06	25x(DCG/25)	5.0 E-06	1.0 E-05	2.5 E-02	
^{125} Sb	5.0 E-05	25x(DCG/25)	6.0 E-05	1.2 E-04	3.0 E-01	
Strontium	1.0 E-04	100xDCG[ICV]				3.0 E-07
^{129} I	1.0 E-07	0.2XDCG[ICV]				
^{241} Am	3.0 E-07	10XDCG[ICV]				
Ammonia (NH3)						1.4 E-01 M
pH						7.5 to 11.0

NOTE: All radionuclide limits in microcuries per milliliter.

Table A-3. The 242-A Evaporator Filtered Process Condensate Discharge October 1984 to September 1989. (Kgal)

Month	Fiscal year 1985	Fiscal year 1986	Fiscal year 1987	Fiscal year 1988	Fiscal year 1989
October	676	547	1,656	70	1,320
November	1,184	1,551	2,289	0	1,278
December	648	2,012	1,078	70	1,693
January	1,706	1,430	111	70	1,085
February	562	528	1,073	134	1,026
March	166	1,628	109	1,401	1,329
April	1,320	445	0	975	0
May	1,053	2,157	0	1,065	0
June	251	1,190	813	893	0
July	1,589	422	1,378	1,113	0
August	656	151	2,039	1,669	0
September	1,719	344	823	1,380	0
Totals	11,530	12,404	11,369	8,839	7,731

AFPC - 242-A Evaporator Filtered Process Condensate. Includes vapor condensed in the main condenser (E-C-1), steam and vapors condensed in the inter- and after-condensers (E-C-2 and E-C-3), and leakage of raw water from tubes in the main condenser.

Table A-4. The 242-A Evaporator Process Condensate Discharge Runs 85-1 through 89-2.

Run Number	AFPC (in.)	Throughput (in.)	Slurry out (in.)	WVR (in)
89-2	600.1	514.6	47.3	285.0
89-1	3131.2	2978.1	1355.0	1217.6
88-1	2970.2	5228.0	2645.2	2030.9
87-3	1837.4	3365.4	1810.2	1073.6
87-2	370.7	639.8	302.8	259.4
87-1	1826.2	3138.8	124.0	1279.4
86-5	292.6	622.9	392.1	190.7
86-4	840.1	2244.1	719.4	840.1
86-3	493.9	1172.1	383.0	493.3
86-2	190.3	382.0	241.0	117.3
86-1	1809.0	3529.2	374.3	1251.9
85-4	1970.6	4733.8	536.9	918.6
85-3	1295.2	2406.9	418.9	914.4
85-2	105.0	356.0	288.5	28.6
85-1	444.0	703.4	349.6	299.7

1 inch = 2750 gallons

AFPC - 242-A Evaporator Filtered Process Condensate. Includes vapor condensed in the main condenser (E-C-1), steam and vapors condensed in the inter- and after-condensers (E-C-2 and E-C-3), and leakage of raw water from the tubes in the main condenser.

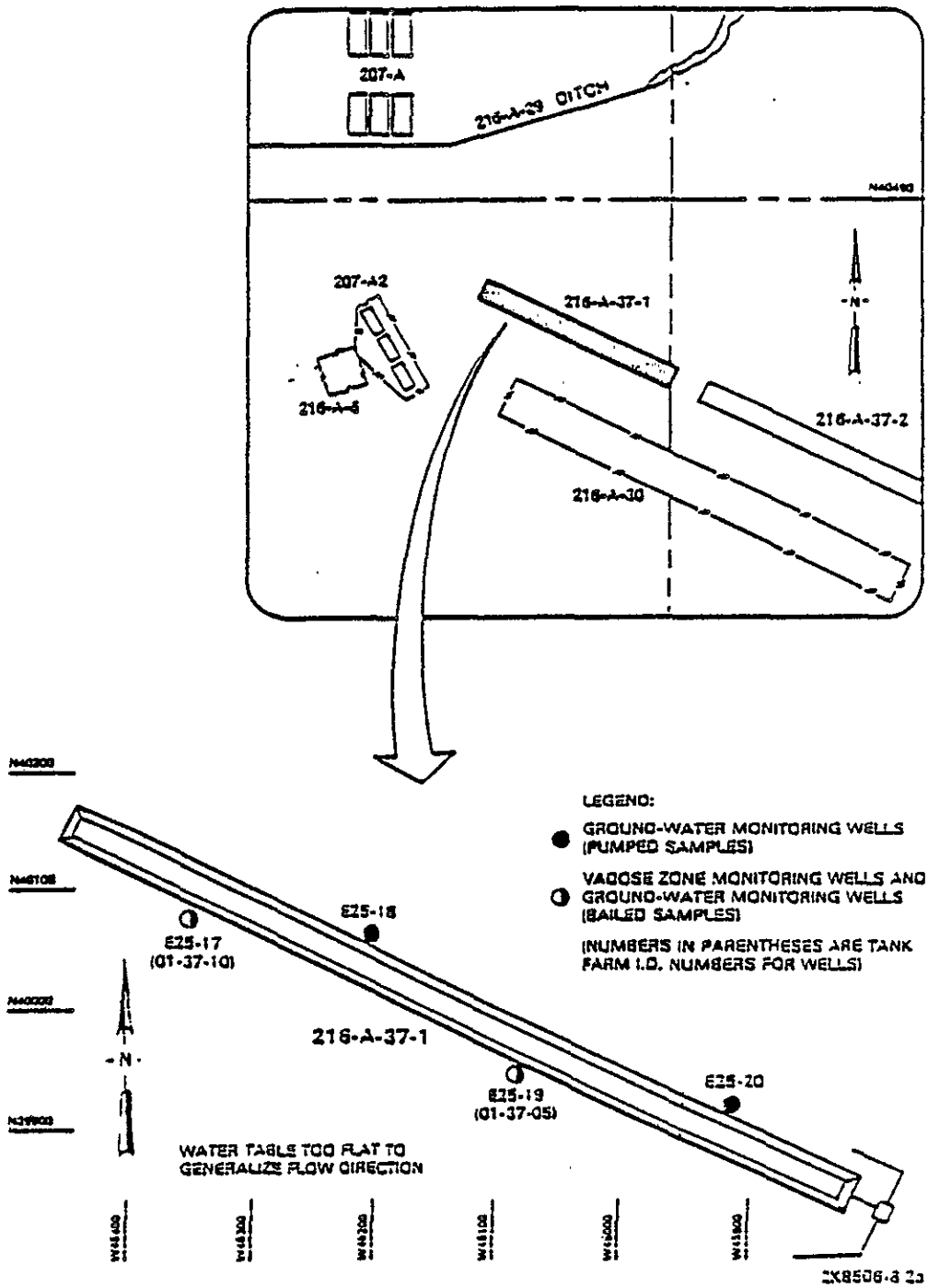
THROUGHPUT - Feedstock (the sum of the changes of the tank levels where the feed was taken from) plus water additions due to the following: deep flushes, seal water, pot water additions, pot dumps/refeeds, miscellaneous flushes, diverted/ recycled process condensate, CA1-9 valve leakage.

WVR - Waste Volume Reduction (the sum of the changes of all tank levels)

RUN DATES

85-1	10/27/84 - 11/13/84	86-5	06/23/86 - 07/05/86
85-2	12/08/84 - 12/16/84	87-1	10/04/86 - 12/31/86
85-3	12/23/84 - 04/14/85	87-2	02/01/87 - 02/22/87
85-4	04/17/85 - 11/06/85	87-3	05/15/87 - 10/02/87
86-1	11/06/85 - 01/26/86	88-1	01/20/88 - 09/20/88
86-2	01/21/86 - 02/16/86	89-1	09/29/88 - 02/14/89
86-3	02/22/86 - 04/01/86	89-2	02/24/89 - 04/12/89
86-4	04/01/86 - 06/10/86		

Figure A-4. The 216-A-37-1 Crib.



APPENDIX B

CHEMICAL ANALYTES DETECTED

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Table B-1. Analyte Summary. (sheet 1 of 7)

CRW FEED SAMPLES

LEAD#	50398	50424	59023	59025
CofC#	50398	50424	59023	59025
Alpha counting				X
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-field	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)	X	X	X	X
Hydrazine	X	X	X	X
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-field	X	X	X	X
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Temperature-field	X	X		
Total organic carbon	X	X	X	X
Total organic halides (LDL)	X	X	X	X
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50398B	50424B	59023B	59025B
CofC#	50399	50425	59024	59026
Volatile organics (GC/MS)	X	X	X	X
LEAD#	59027			
CofC#	59027			
Alpha counting	X			
Ammonia	X			
Atomic emission spectroscopy	X			
Beta counting	X			
Conductivity-field	X			
Cyanide	X			
Direct aqueous injection (GC/MS)	X			
Fluoride (LDL)	X			
Hydrazine	X			
Ion chromatography	X			
Lead	X			
Mercury	X			
pH-field	X			
Semivolatile organics (GC/MS)	X			
Sulfide	X			

Table B-1. Analyte Summary. (sheet 2 of 7)

CRW FEED SAMPLES				
Temperature-field				
Total organic carbon	X			
Total organic halides (LDL)	X			
Uranium	X			
Volatile organics (GC/MS)	X			
LEAD#	59027B			
CofC#	59028			
Volatile organics (GC/MS)	X			
LINKED FEED SAMPLES				
LEAD#	50008	50063	50083	50153
CofC#	50008	50063	50083	50153
Alpha counting	X	X	X	
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-field	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)				
Hydrazine	X	X	X	X
Ion chromatography	X	X	X	X
Lead				X
Mercury	X	X	X	X
pH-field	X	X	X	X
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Temperature-field	X	X	X	X
Total organic carbon	X	X	X	X
Total organic halides	X	X	X	X
Total organic halides (LDL)				
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50063B	50083B	50153B	
CofC#	50064	50084	50154	
Volatile organics (GC/MS)		X	X	X
LEAD#	50252	50346	50384	59017
CofC#	50252	50346	50384	59017
Alpha counting	X		X	X
Ammonia	X	X	X	X

Table B-1. Analyte Summary. (sheet 3 of 7)

LINKED FEED SAMPLES				
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-field	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)			X	X
Hydrazine	X	X	X	X
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-field	X	X	X	X
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Temperature-field	X	X	X	
Total organic carbon	X	X	X	X
Total organic halides				
Total organic halides (LDL)	X	X	X	X
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50252B	50346B	50384B	59017B
CofC#	50253	50347	50385	59018
Volatile organics (GC/MS)	X	X	X	X
LEAD#	59013	59015	59019	59021
CofC#	59013	59015	59019	59021
Alpha counting	X	X	X	X
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-field	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)	X	X	X	X
Hydrazine	X	X	X	X
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-field	X	X	X	X
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Temperature-field				
Total organic carbon	X	X	X	X
Total organic halides				
Total organic halides (LDL)	X	X	X	X
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X

Table B-1. Analyte Summary. (sheet 4 of 7)

LINKED FEED SAMPLES				
LEAD#	59013B	59015B	59019B	59021B
CofC#	59014	59016	59020	59022
Volatile organics (GC/MS)	X	X	X	X

ASF FEED SAMPLES				
LEAD#	50474	50482	50540	50550
CofC#	50474	50482	50540	50550
Alpha counting			X	X
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-field	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)	X	X	X	X
Hydrazine	X	X		
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-field	X	X	X	X
pH-laboratory				
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Suspended solids				
Temperature-field	X	X	X	X
Total dissolved solids				
Total organic carbon	X	X	X	X
Total organic halides (LDL)	X	X	X	X
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50474B	50482B	50540B	
CofC#	50475	50483	50541	
Volatile organics (GC/MS)	X	X	X	
LEAD#				
CofC#				
Atomic emission spectroscopy				
Mercury (mixed matrix)				

Table B-1. Analyte Summary. (sheet 5 of 7)

ASF FEED SAMPLES

LEAD#	50562	50564	59011	59046
CofC#	50562	50564	59011	59046
Alpha counting	X	X	X	X
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-laboratory	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)	X	X	X	X
Hydrazine			X	X
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-field	X	X		
pH-laboratory			X	X
Semivolatile organics (GC/MS)	X	X	X	X
Sulfide	X	X	X	X
Suspended solids	X	X		
Temperature-field	X	X		
Total dissolved solids	X	X		
Total organic carbon	X	X	X	X
Total organic halides (LDL)	X		X	X
Uranium	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50562B	50564B	59011B	59046B
CofC#	50563	50565	59012	59047
Volatile organics (GC/MS)	X	X	X	X
LEAD#	50562E	50564E		
CofC#	50581	50582		
Atomic emission spectroscopy	X	X		
Mercury (mixed matrix)	X	X		
LEAD#	59044	59048		
CofC#	59044	59048		
Alpha counting	X	X		
Ammonia	X	X		
Atomic emission spectroscopy	X	X		
Beta counting	X	X		
Conductivity-laboratory	X	X		
Cyanide	X	X		
Direct aqueous injection (GC/MS)	X	X		

Table B-1. Analyte Summary. (sheet 6 of 7)

ASF FEED SAMPLES

Fluoride (LDL)	X	X
Hydrazine	X	X
Ion chromatography	X	X
Lead	X	X
Mercury	X	X
pH-field		
pH-laboratory	X	X
Semivolatile organics (GC/MS)	X	X
Sulfide	X	X
Suspended solids		
Temperature-field		
Total dissolved solids		
Total organic carbon	X	X
Total organic halides (LDL)		
Uranium	X	X
Volatile organics (GC/MS)	X	X
LEAD#	59044B	59048B
CofC#	59045	59049
Volatile organics (GC/MS)	X	X
LEAD#		
CofC#		
Atomic emission spectroscopy		
Mercury (mixed matrix)		

SALTWELL FEED SAMPLES

LEAD#	59036	59032	59038	59034
CofC#	59036	59032	59038	59034
Alpha counting	X	X	X	X
Ammonia	X	X	X	X
Atomic emission spectroscopy	X	X	X	X
Beta counting	X	X	X	X
Conductivity-laboratory	X	X	X	X
Cyanide	X	X	X	X
Direct aqueous injection (GC/MS)	X	X	X	X
Fluoride (LDL)	X	X	X	X
Gamma energy analysis	X	X		X
Hydrazine	X	X	X	X
Ion chromatography	X	X	X	X
Lead	X	X	X	X
Mercury	X	X	X	X
pH-laboratory	X	X	X	X
Semivolatile organics (GC/MS)	X	X	X	X

Table B-1. Analyte Summary. (sheet 7 of 7)

SALTWELL FEED SAMPLES

Sulfide	X	X	X	X
Total organic carbon	X	X	X	X
Total organic halides (LDL)	X	X	X	X
Volatile organics (GC/MS)	X	X	X	X
LEAD#	59036B	59032B	59038B	59034B
CofC#	59037	59033	59039	59035
Volatile organics (GC/MS)	X	X	X	X

NOTES:
Procedures that were performed for a given sample are identified by an "X". Procedure references appear with the data.
LEAD# is the Liquid Effluent Analytical Data number that appears in the data reports. CofC# is the chain-of-custody number.
Abbreviations:
gas chromatography (GC)
low-detection limit (LDL)
mass spectrometry (MS).

Table B-2. Raw Analytical Data. (sheet 1 of 30)

CRW FEED

Constituent	Sample #	Date	Method	Result
Aluminum	50398	3/17/88	ICP	1.21E+03
Aluminum	50424	5/23/88	ICP	1.47E+03
Aluminum	59023	3/03/88	ICP	8.99E+02
Aluminum	59025	3/04/88	ICP	1.09E+03
Aluminum	59027	3/05/88	ICP	1.03E+03
Barium	50398	3/17/88	ICP	6.00E+00
Barium	50424	5/23/88	ICP	<6.00E+00
Barium	59023	3/03/88	ICP	<6.00E+00
Barium	59025	3/04/88	ICP	<6.00E+00
Barium	59027	3/05/88	ICP	<6.00E+00
Calcium	50398	3/17/88	ICP	4.91E+03
Calcium	50424	5/23/88	ICP	8.68E+02
Calcium	59023	3/03/88	ICP	7.88E+03
Calcium	59025	3/04/88	ICP	6.12E+03
Calcium	59027	3/05/88	ICP	5.08E+03
Chloride	50398	3/17/88	IC	6.85E+02
Chloride	50424	5/23/88	IC	<5.00E+02
Chloride	59023	3/03/88	IC	<5.00E+02
Chloride	59025	3/04/88	IC	9.32E+02
Chloride	59027	3/05/88	IC	<5.00E+02
Magnesium	50398	3/17/88	ICP	<5.00E+01
Magnesium	50424	5/23/88	ICP	<5.00E+01
Magnesium	59023	3/03/88	ICP	7.10E+01
Magnesium	59025	3/04/88	ICP	<5.00E+01
Magnesium	59027	3/05/88	ICP	<5.00E+01
Mercury	50398	3/17/88	CVAA	6.90E-01
Mercury	50424	5/23/88	CVAA	3.40E-01
Mercury	59023	3/03/88	CVAA	4.70E-01
Mercury	59025	3/04/88	CVAA	5.40E-01
Mercury	59027	3/05/88	CVAA	5.90E-01
Potassium	50398	3/17/88	ICP	5.79E+02
Potassium	50424	5/23/88	ICP	6.71E+02
Potassium	59023	3/03/88	ICP	6.74E+02
Potassium	59025	3/04/88	ICP	5.86E+02
Potassium	59027	3/05/88	ICP	5.03E+02
Uranium	50398	3/17/88	FLUOR	5.79E-02
Uranium	50424	5/23/88	FLUOR	1.88E-01
Uranium	59023	3/03/88	FLUOR	2.06E-01
Uranium	59025	3/04/88	FLUOR	1.35E+00
Uranium	59027	3/05/88	FLUOR	1.39E-01
Zinc	50398	3/17/88	ICP	<5.00E+00
Zinc	50424	5/23/88	ICP	<5.00E+00
Zinc	59023	3/03/88	ICP	<5.00E+00
Zinc	59025	3/04/88	ICP	<5.00E+00
Zinc	59027	3/05/88	ICP	5.00E+00
Acetone	50398	3/17/88	VOA	2.57E+03
Acetone	50398B	3/17/88	VOA	2.70E+01
Acetone	50424	5/23/88	VOA	1.00E+03

Table B-2. Raw Analytical Data. (sheet 2 of 30)

CRW FEED

Constituent	Sample #	Date	Method	Result
Acetone	59023	3/03/88	VOA	2.04E+03
Acetone	59023B	3/03/88	VOA	2.70E+01
Acetone	59025	3/04/88	VOA	2.49E+03
Acetone	59027	3/05/88	VOA	2.38E+03
Ammonia	50398	3/17/88	ISE	8.00E+05
Ammonia	50424	5/23/88	ISE	1.00E+06
Ammonia	59023	3/03/88	ISE	5.27E+05
Ammonia	59025	3/04/88	ISE	4.67E+05
Ammonia	59027	3/05/88	ISE	4.09E+05
Benzyl alcohol	50398	3/17/88	ABN	1.80E+01
Benzyl alcohol	50424	5/23/88	ABN	1.40E+01
Benzyl alcohol	59023	3/03/88	ABN	1.20E+01
Butanal	50398	3/17/88	VOA	1.70E+01
Butanal	59023	3/03/88	VOA	7.60E+01
Butanal	59025	3/04/88	VOA	5.40E+01
Butanal	59027	3/05/88	VOA	3.00E+01
1-Butanol	50398	3/17/88	VOA	9.10E+02
1-Butanol	50424	5/23/88	VOA	1.00E+02
1-Butanol	59023	3/03/88	VOA	8.80E+04
1-Butanol	59025	3/04/88	VOA	7.80E+04
1-Butanol	59027	3/05/88	VOA	6.30E+04
2-Butanone	50398	3/17/88	VOA	6.20E+01
2-Butanone	50398B	3/17/88	VOA	<1.00E+01
2-Butanone	50424	5/23/88	VOA	3.50E+01
2-Butanone	50424B	5/23/88	VOA	<1.00E+01
2-Butanone	59023	3/03/88	VOA	9.00E+01
2-Butanone	59023B	3/03/88	VOA	<1.00E+01
2-Butanone	59025	3/04/88	VOA	8.80E+01
2-Butanone	59025B	3/04/88	VOA	<1.00E+01
2-Butanone	59027	3/05/88	VOA	8.30E+01
2-Butanone	59027B	3/05/88	VOA	<1.00E+01
2-Butoxyethanol	50398	3/17/88	ABN	4.30E+02
2-Butoxyethanol	50424	5/23/88	ABN	2.00E+02
2-Butoxyethanol	59023	3/03/88	ABN	6.30E+02
2-Butoxyethanol	59025	3/04/88	ABN	8.40E+02
2-Butoxyethanol	59027	3/05/88	ABN	6.60E+02
Butoxyglycol	50398	3/17/88	ABN	2.30E+02
Butoxyglycol	50424	5/23/88	ABN	5.40E+02
Butoxyglycol	59023	3/03/88	ABN	1.26E+02
Butoxyglycol	59025	3/04/88	ABN	2.30E+02
Butoxyglycol	59027	3/05/88	ABN	2.60E+02
3,5-Dimethylpyridine	59023	3/03/88	ABN	2.40E+01
3,5-Dimethylpyridine	59025	3/04/88	ABN	1.70E+01
3,5-Dimethylpyridine	59027	3/05/88	ABN	2.10E+01
2-Hexanone	50398	3/17/88	VOA	6.00E+00
2-Hexanone	59023	3/03/88	VOA	1.00E+01
2-Hexanone	59025	3/04/88	VOA	1.10E+01
2-Hexanone	59027	3/05/88	VOA	1.00E+01

Table B-2. Raw Analytical Data. (sheet 3 of 30)

CRW FEED

Constituent	Sample #	Date	Method	Result
MIBK (Hexone)	50398	3/17/88	VOA	<1.00E+01
MIBK (Hexone)	50398B	3/17/88	VOA	<1.00E+01
MIBK (Hexone)	50424	5/23/88	VOA	<1.00E+01
MIBK (Hexone)	50424B	5/23/88	VOA	<1.00E+01
MIBK (Hexone)	59023	3/03/88	VOA	<1.00E+01
MIBK (Hexone)	59023	3/03/88	VOA	5.00E+00
MIBK (Hexone)	59023B	3/03/88	VOA	<1.00E+01
MIBK (Hexone)	59025	3/04/88	VOA	<1.00E+01
MIBK (Hexone)	59025	3/04/88	VOA	4.00E+00
MIBK (Hexone)	59025B	3/04/88	VOA	<1.00E+01
MIBK (Hexone)	59027	3/05/88	VOA	<1.00E+01
MIBK (Hexone)	59027	3/05/88	VOA	4.00E+00
MIBK (Hexone)	59027B	3/05/88	VOA	<1.00E+01
2-Pentanone	50398	3/17/88	VOA	6.00E+00
2-Pentanone	59023	3/03/88	VOA	9.00E+00
2-Pentanone	59025	3/04/88	VOA	1.20E+01
2-Pentanone	59027	3/05/88	VOA	8.00E+00
2-Propanol	50424	5/23/88	VOA	3.90E+01
Tetradecane	50398	3/17/88	ABN	2.50E+01
Tetradecane	59023	3/03/88	ABN	2.60E+01
Tetradecane	59025	3/04/88	ABN	1.30E+01
Tetradecane	59027	3/05/88	ABN	1.30E+01
Tetrahydrofuran	50398	3/17/88	VOA	1.20E+01
Tetrahydrofuran	50424	5/23/88	VOA	1.10E+01
Tetrahydrofuran	59023	3/03/88	VOA	1.60E+01
Tetrahydrofuran	59025	3/04/88	VOA	1.80E+01
Tetrahydrofuran	59027	3/05/88	VOA	1.80E+01
Tributylphosphate	50398	3/17/88	ABN	9.50E+02
Tributylphosphate	50424	5/23/88	ABN	2.10E+02
Tributylphosphate	59023	3/03/88	VOA	<1.00E+01
Tributylphosphate	59023	3/03/88	ABN	5.20E+03
Tributylphosphate	59025	3/04/88	ABN	6.80E+03
Tributylphosphate	59027	3/05/88	ABN	4.80E+03
Trichloromethane	50398	3/17/88	VOA	<5.00E+00
Trichloromethane	50398B	3/17/88	VOA	1.00E+01
Trichloromethane	50424	5/23/88	VOA	<5.00E+00
Trichloromethane	50424B	5/23/88	VOA	<3.00E+00
Trichloromethane	59023	3/03/88	VOA	<5.00E+00
Trichloromethane	59023B	3/03/88	VOA	1.20E+01
Trichloromethane	59025	3/04/88	VOA	<5.00E+00
Trichloromethane	59025B	3/04/88	VOA	1.10E+01
Trichloromethane	59027	3/05/88	VOA	<5.00E+00
Trichloromethane	59027B	3/05/88	VOA	1.00E+01
Tridecane	50398	3/17/88	ABN	1.40E+01
Tridecane	59023	3/03/88	ABN	1.80E+01
Tridecane	59025	3/04/88	ABN	9.00E+00
Tridecane	59027	3/05/88	ABN	1.00E+01
Unknown	50398	3/17/88	ABN	4.50E+01

Table B-2. Raw Analytical Data. (sheet 4 of 30)

CRW FEED

Constituent	Sample #	Date	Method	Result
Unknown	50424	5/23/88	ABN	2.10E+01
Unknown	59023	3/03/88	ABN	6.60E+01
Alpha Activity (pCi/L)	59025	3/04/88	Alpha	1.52E-01
Alpha Activity (pCi/L)	59027	3/05/88	Alpha	2.78E-01
Beta Activity (pCi/L)	50398	3/17/88	Beta	4.49E+02
Beta Activity (pCi/L)	50424	5/23/88	Beta	1.09E+03
Beta Activity (pCi/L)	59023	3/03/88	Beta	1.16E+02
Beta Activity (pCi/L)	59025	3/04/88	Beta	7.91E+01
Beta Activity (pCi/L)	59027	3/05/88	Beta	1.95E+02
Conductivity (µS)	50398	3/17/88	COND-Fld	3.67E+02
Conductivity (µS)	50424	5/23/88	COND-Fld	4.20E+02
Conductivity (µS)	59023	3/03/88	COND-Lab	2.55E+02
Conductivity (µS)	59025	3/04/88	COND-Lab	3.33E+02
Conductivity (µS)	59027	3/05/88	COND-Lab	2.14E+02
pH (dimensionless)	50398	3/17/88	PH-Fld	1.07E+01
pH (dimensionless)	50424	5/23/88	PH-Fld	1.06E+01
pH (dimensionless)	59023	3/03/88	PH-Lab	1.04E+01
pH (dimensionless)	59025	3/04/88	PH-Lab	1.05E+01
pH (dimensionless)	59027	3/05/88	PH-Lab	1.05E+01
Temperature (°C)	50398	3/17/88	TEMP-Fld	2.99E+01
Temperature (°C)	50424	5/23/88	TEMP-Fld	3.67E+01
TOC	50398	3/17/88	TOC	4.89E+04
TOC	50424	5/23/88	TOC	1.01E+04
TOC	59023	3/03/88	TOC	6.25E+04
TOC	59025	3/04/88	TOC	5.24E+04
TOC	59027	3/05/88	TOC	4.52E+04

LINKED FEED

Constituent	Sample #	Date	Method	Result
Aluminum	50008	8/29/85	ICP	1.03E+03
Aluminum	50063	6/13/86	ICP	7.48E+02
Aluminum	50083	7/03/86	ICP	8.69E+02
Aluminum	50153	10/13/86	ICP	1.56E+02
Aluminum	50252	3/12/87	ICP	<1.50E+02
Aluminum	50346	9/21/87	ICP	1.65E+03
Aluminum	50384	2/26/88	ICP	4.48E+02
Aluminum	59017	2/25/88	ICP	3.69E+02
Aluminum	59013	2/19/88	ICP	4.19E+02
Aluminum	59021	2/27/88	ICP	4.67E+02
Aluminum	59015	2/19/88	ICP	4.29E+02
Aluminum	59019	2/26/88	ICP	4.56E+02
Barium	50008	8/29/85	ICP	<6.00E+00
Barium	50063	6/13/86	ICP	<6.00E+00
Barium	50083	7/03/86	ICP	<6.00E+00
Barium	50153	10/13/86	ICP	<6.00E+00
Barium	50252	3/12/87	ICP	<6.00E+00

Table B-2. Raw Analytical Data. (sheet 5 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Barium	50346	9/21/87	ICP	6.00E+00
Barium	50384	2/26/88	ICP	<6.00E+00
Barium	59017	2/25/88	ICP	<6.00E+00
Barium	59013	2/19/88	ICP	<6.00E+00
Barium	59021	2/27/88	ICP	<6.00E+00
Barium	59015	2/19/88	ICP	<6.00E+00
Barium	59019	2/26/88	ICP	<6.00E+00
Cadmium	50008	8/29/85	ICP	5.00E+00
Cadmium	50063	6/13/86	ICP	<2.00E+00
Cadmium	50083	7/03/86	ICP	<2.00E+00
Cadmium	50153	10/13/86	ICP	<2.00E+00
Cadmium	50252	3/12/87	ICP	<2.00E+00
Cadmium	50346	9/21/87	ICP	<2.00E+00
Cadmium	50384	2/26/88	ICP	<2.00E+00
Cadmium	59017	2/25/88	ICP	<2.00E+00
Cadmium	59013	2/19/88	ICP	<2.00E+00
Cadmium	59021	2/27/88	ICP	<2.00E+00
Cadmium	59015	2/19/88	ICP	<2.00E+00
Cadmium	59019	2/26/88	ICP	<2.00E+00
Calcium	50008	8/29/85	ICP	4.43E+02
Calcium	50063	6/13/86	ICP	9.22E+02
Calcium	50083	7/03/86	ICP	1.79E+03
Calcium	50153	10/13/86	ICP	2.65E+03
Calcium	50252	3/12/87	ICP	3.78E+03
Calcium	50346	9/21/87	ICP	4.37E+03
Calcium	50384	2/26/88	ICP	1.16E+03
Calcium	59017	2/25/88	ICP	1.64E+03
Calcium	59013	2/19/88	ICP	2.92E+03
Calcium	59021	2/27/88	ICP	1.25E+03
Calcium	59015	2/19/88	ICP	2.31E+03
Calcium	59019	2/26/88	ICP	1.24E+03
Chloride	50008	8/29/85	IC	<5.00E+02
Chloride	50063	6/13/86	IC	<5.00E+02
Chloride	50083	7/03/86	IC	<5.00E+02
Chloride	50153	10/13/86	IC	<5.00E+02
Chloride	50252	3/12/87	IC	1.17E+03
Chloride	50346	9/21/87	IC	9.64E+02
Chloride	50384	2/26/88	IC	<5.00E+02
Chloride	59017	2/25/88	IC	<5.00E+02
Chloride	59013	2/19/88	IC	<5.00E+02
Chloride	59021	2/27/88	IC	<5.00E+02
Chloride	59015	2/19/88	IC	<5.00E+02
Chloride	59019	2/26/88	IC	<5.00E+02
Copper	50008	8/29/85	ICP	<1.00E+01
Copper	50063	6/13/86	ICP	1.40E+01
Copper	50083	7/03/86	ICP	7.30E+01
Copper	50153	10/13/86	ICP	1.50E+01
Copper	50252	3/12/87	ICP	<1.00E+01

Table B-2. Raw Analytical Data. (sheet 6 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Copper	50346	9/21/87	ICP	1.60E+01
Copper	50384	2/26/88	ICP	<1.00E+01
Copper	59017	2/25/88	ICP	<1.00E+01
Copper	59013	2/19/88	ICP	<1.00E+01
Copper	59021	2/27/88	ICP	<1.00E+01
Copper	59015	2/19/88	ICP	<1.00E+01
Copper	59019	2/26/88	ICP	<1.00E+01
Fluoride	50008	8/29/85	IC	<5.00E+02
Fluoride	50063	6/13/86	IC	<5.00E+02
Fluoride	50083	7/03/86	IC	<5.00E+02
Fluoride	50153	10/13/86	IC	<5.00E+02
Fluoride	50252	3/12/87	IC	<5.00E+02
Fluoride	50346	9/21/87	IC	<5.00E+02
Fluoride	50346	9/21/87	ISE	3.50E+01
Fluoride	50384	2/26/88	IC	<5.00E+02
Fluoride	50384	2/26/88	ISE	<2.00E+01
Fluoride	59017	2/25/88	IC	<5.00E+02
Fluoride	59017	2/25/88	ISE	<2.00E+01
Fluoride	59013	2/19/88	IC	<5.00E+02
Fluoride	59013	2/19/88	ISE	<2.00E+01
Fluoride	59021	2/27/88	IC	<5.00E+02
Fluoride	59021	2/27/88	ISE	<2.00E+01
Fluoride	59015	2/19/88	IC	<5.00E+02
Fluoride	59015	2/19/88	ISE	<2.00E+01
Fluoride	59019	2/26/88	IC	<5.00E+02
Fluoride	59019	2/26/88	ISE	<2.00E+01
Iron	50008	8/29/85	ICP	<5.00E+01
Iron	50063	6/13/86	ICP	1.56E+02
Iron	50083	7/03/86	ICP	<5.00E+01
Iron	50153	10/13/86	ICP	<5.00E+01
Iron	50252	3/12/87	ICP	9.90E+01
Iron	50346	9/21/87	ICP	5.00E+01
Iron	50384	2/26/88	ICP	4.50E+01
Iron	59017	2/25/88	ICP	<3.00E+01
Iron	59013	2/19/88	ICP	3.50E+01
Iron	59021	2/27/88	ICP	<3.00E+01
Iron	59015	2/19/88	ICP	<3.00E+01
Iron	59019	2/26/88	ICP	<3.00E+01
Magnesium	50008	8/29/85	ICP	7.20E+01
Magnesium	50063	6/13/86	ICP	7.60E+01
Magnesium	50083	7/03/86	ICP	5.10E+01
Magnesium	50153	10/13/86	ICP	1.01E+03
Magnesium	50252	3/12/87	ICP	4.03E+03
Magnesium	50346	9/21/87	ICP	<5.00E+01
Magnesium	50384	2/26/88	ICP	1.23E+02
Magnesium	59017	2/25/88	ICP	1.88E+02
Magnesium	59013	2/19/88	ICP	1.50E+02
Magnesium	59021	2/27/88	ICP	1.15E+02

Table B-2. Raw Analytical Data. (sheet 7 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Magnesium	59015	2/19/88	ICP	2.33E+02
Magnesium	59019	2/26/88	ICP	1.25E+02
Mercury	50008	8/29/85	CVAA	<1.00E-01
Mercury	50063	6/13/86	CVAA	4.80E-01
Mercury	50083	7/03/86	CVAA	<1.00E-01
Mercury	50153	10/13/86	CVAA	2.10E-01
Mercury	50252	3/12/87	CVAA	<1.00E-01
Mercury	50346	9/21/87	CVAA	3.20E-01
Mercury	50384	2/26/88	CVAA	3.00E-01
Mercury	59017	2/25/88	CVAA	2.80E-01
Mercury	59013	2/19/88	CVAA	2.40E-01
Mercury	59021	2/27/88	CVAA	1.20E-01
Mercury	59015	2/19/88	CVAA	2.60E-01
Mercury	59019	2/26/88	CVAA	1.60E-01
Nickel	50008	8/29/85	ICP	1.10E+01
Nickel	50063	6/13/86	ICP	<1.00E+01
Nickel	50083	7/03/86	ICP	<1.00E+01
Nickel	50153	10/13/86	ICP	<1.00E+01
Nickel	50252	3/12/87	ICP	1.70E+01
Nickel	50346	9/21/87	ICP	<1.00E+01
Nickel	50384	2/26/88	ICP	1.60E+01
Nickel	59017	2/25/88	ICP	<1.00E+01
Nickel	59013	2/19/88	ICP	<1.00E+01
Nickel	59021	2/27/88	ICP	<1.00E+01
Nickel	59015	2/19/88	ICP	<1.00E+01
Nickel	59019	2/26/88	ICP	<1.00E+01
Nitrate	50008	8/29/85	IC	7.10E+02
Nitrate	50063	6/13/86	IC	1.07E+03
Nitrate	50083	7/03/86	IC	<5.00E+02
Nitrate	50153	10/13/86	IC	4.40E+03
Nitrate	50252	3/12/87	IC	4.98E+03
Nitrate	50346	9/21/87	IC	<5.00E+02
Nitrate	50384	2/26/88	IC	<5.00E+02
Nitrate	59017	2/25/88	IC	<5.00E+02
Nitrate	59013	2/19/88	IC	<5.00E+02
Nitrate	59021	2/27/88	IC	<5.00E+02
Nitrate	59015	2/19/88	IC	<5.00E+02
Nitrate	59019	2/26/88	IC	<5.00E+02
Potassium	50008	8/29/85	ICP	<1.00E+02
Potassium	50063	6/13/86	ICP	1.98E+02
Potassium	50083	7/03/86	ICP	2.46E+02
Potassium	50153	10/13/86	ICP	1.74E+02
Potassium	50252	3/12/87	ICP	7.66E+02
Potassium	50346	9/21/87	ICP	1.71E+03
Potassium	50384	2/26/88	ICP	2.51E+02
Potassium	59017	2/25/88	ICP	3.25E+02
Potassium	59013	2/19/88	ICP	3.65E+02
Potassium	59021	2/27/88	ICP	2.27E+02

Table B-2. Raw Analytical Data. (sheet 8 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Potassium	59015	2/19/88	ICP	2.86E+02
Potassium	59019	2/26/88	ICP	2.37E+02
Sodium	50008	8/29/85	ICP	2.56E+04
Sodium	50063	6/13/86	ICP	1.31E+03
Sodium	50083	7/03/86	ICP	4.26E+02
Sodium	50153	10/13/86	ICP	3.59E+03
Sodium	50252	3/12/87	ICP	7.78E+02
Sodium	50346	9/21/87	ICP	5.55E+02
Sodium	50384	2/26/88	ICP	2.51E+02
Sodium	59017	2/25/88	ICP	5.15E+02
Sodium	59013	2/19/88	ICP	4.75E+02
Sodium	59021	2/27/88	ICP	<2.00E+02
Sodium	59015	2/19/88	ICP	5.68E+02
Sodium	59019	2/26/88	ICP	2.16E+02
Sulfate	50008	8/29/85	IC	<5.00E+02
Sulfate	50063	6/13/86	IC	5.80E+03
Sulfate	50083	7/03/86	IC	8.13E+02
Sulfate	50153	10/13/86	IC	1.79E+03
Sulfate	50252	3/12/87	IC	1.30E+04
Sulfate	50346	9/21/87	IC	1.57E+03
Sulfate	50384	2/26/88	IC	<5.00E+02
Sulfate	59017	2/25/88	IC	5.39E+02
Sulfate	59013	2/19/88	IC	<5.00E+02
Sulfate	59021	2/27/88	IC	<5.00E+02
Sulfate	59015	2/19/88	IC	5.08E+02
Sulfate	59019	2/26/88	IC	<5.00E+02
Sulfide	50008	8/29/85	TITRA	<1.00E+03
Sulfide	50063	6/13/86	TITRA	5.22E+03
Sulfide	50083	7/03/86	TITRA	<1.00E+03
Sulfide	50153	10/13/86	TITRA	<1.00E+03
Sulfide	50252	3/12/87	TITRA	<1.00E+03
Sulfide	50346	9/21/87	TITRA	6.56E+04
Sulfide	50384	2/26/88	TITRA	<1.00E+03
Sulfide	59017	2/25/88	TITRA	<1.00E+03
Sulfide	59013	2/19/88	TITRA	<1.00E+03
Sulfide	59021	2/27/88	TITRA	<1.00E+03
Sulfide	59015	2/19/88	TITRA	<1.00E+03
Sulfide	59019	2/26/88	TITRA	<1.00E+03
Uranium	50008	8/29/85	FLUOR	2.58E-01
Uranium	50063	6/13/86	FLUOR	1.23E-01
Uranium	50083	7/03/86	FLUOR	2.74E-02
Uranium	50153	10/13/86	FLUOR	3.61E-01
Uranium	50252	3/12/87	FLUOR	4.75E-01
Uranium	50346	9/21/87	FLUOR	<4.20E-03
Uranium	50384	2/26/88	FLUOR	<4.73E-03
Uranium	59017	2/25/88	FLUOR	7.96E-02
Uranium	59013	2/19/88	FLUOR	2.43E-01
Uranium	59021	2/27/88	FLUOR	1.20E-01

Table B-2. Raw Analytical Data. (sheet 9 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Uranium	59015	2/19/88	FLUOR	5.39E-02
Uranium	59019	2/26/88	FLUOR	1.11E-01
Vanadium	50008	8/29/85	ICP	<5.00E+00
Vanadium	50063	6/13/86	ICP	5.00E+00
Vanadium	50083	7/03/86	ICP	<5.00E+00
Vanadium	50153	10/13/86	ICP	<5.00E+00
Vanadium	50252	3/12/87	ICP	<5.00E+00
Vanadium	50346	9/21/87	ICP	<5.00E+00
Vanadium	50384	2/26/88	ICP	<5.00E+00
Vanadium	59017	2/25/88	ICP	<5.00E+00
Vanadium	59013	2/19/88	ICP	<5.00E+00
Vanadium	59021	2/27/88	ICP	<5.00E+00
Vanadium	59015	2/19/88	ICP	<5.00E+00
Vanadium	59019	2/26/88	ICP	<5.00E+00
Zinc	50008	8/29/85	ICP	3.40E+01
Zinc	50063	6/13/86	ICP	<5.00E+00
Zinc	50083	7/03/86	ICP	1.90E+01
Zinc	50153	10/13/86	ICP	5.00E+00
Zinc	50252	3/12/87	ICP	<5.00E+00
Zinc	50346	9/21/87	ICP	7.00E+00
Zinc	50384	2/26/88	ICP	1.10E+01
Zinc	59017	2/25/88	ICP	<5.00E+00
Zinc	59013	2/19/88	ICP	<5.00E+00
Zinc	59021	2/27/88	ICP	5.00E+00
Zinc	59015	2/19/88	ICP	<5.00E+00
Zinc	59019	2/26/88	ICP	<5.00E+00
Acetone	50008	8/29/85	VOA	6.40E+02
Acetone	50063	6/13/86	VOA	8.00E+01
Acetone	50083	7/03/86	VOA	1.30E+02
Acetone	50153	10/13/86	VOA	5.00E+02
Acetone	50346	9/21/87	VOA	5.10E+03
Acetone	50384	2/26/88	VOA	1.90E+03
Acetone	50384B	2/26/88	VOA	2.70E+01
Acetone	59017	2/25/88	VOA	1.02E+03
Acetone	59013	2/19/88	VOA	4.47E+02
Acetone	59021	2/27/88	VOA	7.09E+02
Acetone	59015	2/19/88	VOA	4.05E+02
Acetone	59019	2/26/88	VOA	1.16E+03
Acetone	59019B	2/26/88	VOA	1.80E+01
Ammonia	50008	8/29/85	ISE	4.05E+03
Ammonia	50063	6/13/86	ISE	2.50E+05
Ammonia	50083	7/03/86	ISE	1.72E+05
Ammonia	50153	10/13/86	ISE	1.80E+04
Ammonia	50252	3/12/87	ISE	2.44E+04
Ammonia	50346	9/21/87	ISE	2.99E+03
Ammonia	50384	2/26/88	ISE	1.05E+05
Ammonia	59017	2/25/88	ISE	4.20E+04
Ammonia	59013	2/19/88	ISE	3.50E+04

Table B-2. Raw Analytical Data. (sheet 10 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Ammonia	59021	2/27/88	ISE	6.60E+04
Ammonia	59015	2/19/88	ISE	3.62E+04
Ammonia	59019	2/26/88	ISE	1.50E+05
Benzaldehyde	50008	8/29/85	ABN	2.30E+01
Benzyl alcohol	50384	2/26/88	ABN	1.00E+01
Butanal	50008	8/29/85	VOA	2.10E+01
Butanal	50384	2/26/88	VOA	4.10E+01
Butanal	59021	2/27/88	VOA	1.90E+02
Butanal	59019	2/26/88	VOA	2.30E+02
1-Butanol	50008	8/29/85	VOA	1.70E+01
1-Butanol	50063	6/13/86	VOA	1.00E+02
1-Butanol	50083	7/03/86	VOA	6.40E+01
1-Butanol	50346	9/21/87	VOA	1.13E+03
1-Butanol	50384	2/26/88	VOA	9.20E+02
1-Butanol	59017	2/25/88	VOA	1.23E+02
1-Butanol	59013	2/19/88	VOA	6.60E+01
1-Butanol	59021	2/27/88	VOA	7.60E+02
1-Butanol	59015	2/19/88	VOA	7.60E+01
1-Butanol	59019	2/26/88	VOA	7.30E+02
2-Butanone	50008	8/29/85	VOA	<1.00E+01
2-Butanone	50063	6/13/86	VOA	<1.00E+01
2-Butanone	50063B	6/13/86	VOA	<1.00E+01
2-Butanone	50083	7/03/86	VOA	<1.00E+01
2-Butanone	50083B	7/03/86	VOA	<1.00E+01
2-Butanone	50153	10/13/86	VOA	<1.00E+01
2-Butanone	50153B	10/13/86	VOA	<1.00E+01
2-Butanone	50252	3/12/87	VOA	<1.00E+01
2-Butanone	50252B	3/12/87	VOA	<1.00E+01
2-Butanone	50346	9/21/87	VOA	1.20E+02
2-Butanone	50346B	9/21/87	VOA	<1.00E+01
2-Butanone	50384	2/26/88	VOA	9.40E+01
2-Butanone	50384B	2/26/88	VOA	<1.00E+01
2-Butanone	59017	2/25/88	VOA	4.90E+01
2-Butanone	59017B	2/25/88	VOA	<1.00E+01
2-Butanone	59013	2/19/88	VOA	2.20E+01
2-Butanone	59013B	2/19/88	VOA	<1.00E+01
2-Butanone	59021	2/27/88	VOA	6.90E+01
2-Butanone	59021B	2/27/88	VOA	<1.00E+01
2-Butanone	59015	2/19/88	VOA	1.70E+01
2-Butanone	59015B	2/19/88	VOA	<1.00E+01
2-Butanone	59019	2/26/88	VOA	9.40E+01
2-Butanone	59019B	2/26/88	VOA	<1.00E+01
Butoxydiglycol	50008	8/29/85	ABN	1.10E+01
2-Butoxyethanol	50008	8/29/85	ABN	1.60E+02
2-Butoxyethanol	50063	6/13/86	ABN	4.20E+01
2-Butoxyethanol	50153	10/13/86	ABN	2.20E+01
2-Butoxyethanol	50346	9/21/87	ABN	3.25E+02
2-Butoxyethanol	50384	2/26/88	ABN	9.00E+02

Table B-2. Raw Analytical Data. (sheet 11 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
2-Butoxyethanol	59017	2/25/88	ABN	5.80E+02
2-Butoxyethanol	59013	2/19/88	ABN	7.60E+02
2-Butoxyethanol	59021	2/27/88	ABN	7.20E+02
2-Butoxyethanol	59015	2/19/88	ABN	3.90E+02
2-Butoxyethanol	59019	2/26/88	ABN	9.20E+02
Butoxyglycol	50384	2/26/88	ABN	8.90E+01
Butoxyglycol	59017	2/25/88	ABN	5.90E+01
Butoxyglycol	59013	2/19/88	ABN	1.10E+02
Butoxyglycol	59021	2/27/88	ABN	1.30E+02
Butoxyglycol	59015	2/19/88	ABN	3.80E+01
Butoxyglycol	59019	2/26/88	ABN	8.30E+01
Dichloromethane	50008	8/29/85	VOA	<1.00E+01
Dichloromethane	50063	6/13/86	VOA	<1.00E+01
Dichloromethane	50063B	6/13/86	VOA	1.50E+02
Dichloromethane	50083	7/03/86	VOA	<1.00E+01
Dichloromethane	50083B	7/03/86	VOA	1.80E+02
Dichloromethane	50153	10/13/86	VOA	<1.00E+01
Dichloromethane	50153B	10/13/86	VOA	1.20E+02
Dichloromethane	50252	3/12/87	VOA	<1.00E+01
Dichloromethane	50252B	3/12/87	VOA	4.80E+01
Dichloromethane	50346	9/21/87	VOA	<1.00E+01
Dichloromethane	50346B	9/21/87	VOA	<1.00E+01
Dichloromethane	50384	2/26/88	VOA	<1.00E+01
Dichloromethane	50384B	2/26/88	VOA	1.15E+02
Dichloromethane	59017	2/25/88	VOA	<1.00E+01
Dichloromethane	59017B	2/25/88	VOA	<1.00E+01
Dichloromethane	59013	2/19/88	VOA	<1.00E+01
Dichloromethane	59013B	2/19/88	VOA	<1.00E+01
Dichloromethane	59021	2/27/88	VOA	<3.00E+00
Dichloromethane	59021B	2/27/88	VOA	<1.00E+01
Dichloromethane	59015	2/19/88	VOA	<1.00E+01
Dichloromethane	59015B	2/19/88	VOA	<1.00E+01
Dichloromethane	59019	2/26/88	VOA	<3.00E+00
Dichloromethane	59019B	2/26/88	VOA	<1.00E+01
Dodecane	50063	6/13/86	ABN	4.00E+01
Dodecane	50384	2/26/88	ABN	4.60E+01
Ethoxytriethylene glycol	50083	7/03/86	ABN	1.50E+02
Heptadecane	50384	2/26/88	ABN	1.80E+01
Hexadecane	50346	9/21/87	ABN	1.70E+01
Hexanoic acid	50008	8/29/85	ABN	7.00E+01
2-Hexanone	50346	9/21/87	VOA	2.00E+01
2-Hexanone	50384	2/26/88	VOA	1.30E+01
2-Hexanone	59017	2/25/88	VOA	6.00E+00
2-Hexanone	59021	2/27/88	VOA	6.00E+00
2-Hexanone	59019	2/26/88	VOA	1.10E+01
Methoxydiglycol	50083	7/03/86	ABN	2.80E+01
Methoxytriglycol	50083	7/03/86	ABN	3.70E+02
MIBK (Hexone)	50346	9/21/87	VOA	6.80E+01

Table B-2. Raw Analytical Data. (sheet 12 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
MIBK (Hexone)	50384	2/26/88	VOA	<1.00E+01
MIBK (Hexone)	50384	2/26/88	VOA	6.00E+00
MIBK (Hexone)	50384B	2/26/88	VOA	<1.00E+01
MIBK (Hexone)	59017	2/25/88	VOA	<1.00E+01
MIBK (Hexone)	59017	2/25/88	VOA	5.00E+00
MIBK (Hexone)	59017B	2/25/88	VOA	<1.00E+01
MIBK (Hexone)	59013	2/19/88	VOA	<1.00E+01
MIBK (Hexone)	59013	2/19/88	VOA	3.00E+00
MIBK (Hexone)	59013B	2/19/88	VOA	<1.00E+01
MIBK (Hexone)	59021	2/27/88	VOA	<1.00E+01
MIBK (Hexone)	59021	2/27/88	VOA	3.00E+00
MIBK (Hexone)	59021B	2/27/88	VOA	<1.00E+01
MIBK (Hexone)	59015	2/19/88	VOA	<1.00E+01
MIBK (Hexone)	59015B	2/19/88	VOA	<1.00E+01
MIBK (Hexone)	59019	2/26/88	VOA	<1.00E+01
MIBK (Hexone)	59019	2/26/88	VOA	7.00E+00
MIBK (Hexone)	59019B	2/26/88	VOA	<1.00E+01
N-Nitrosodimethylamine	50008	8/29/85	ABN	<1.00E+01
Constituent	Sample #	Date	Method	Result
N-Nitrosodimethylamine	50063	6/13/86	ABN	<1.00E+01
N-Nitrosodimethylamine	50083	7/03/86	ABN	<1.00E+01
N-Nitrosodimethylamine	50153	10/13/86	ABN	<1.00E+01
N-Nitrosodimethylamine	50252	3/12/87	ABN	<1.00E+01
N-Nitrosodimethylamine	50346	9/21/87	ABN	<1.00E+01
N-Nitrosodimethylamine	50384	2/26/88	ABN	5.70E+01
N-Nitrosodimethylamine	59017	2/25/88	ABN	<1.00E+01
N-Nitrosodimethylamine	59013	2/19/88	ABN	<1.00E+01
N-Nitrosodimethylamine	59021	2/27/88	ABN	<1.00E+01
N-Nitrosodimethylamine	59015	2/19/88	ABN	<1.00E+01
N-Nitrosodimethylamine	59019	2/26/88	ABN	<1.00E+01
Pentadecane	50063	6/13/86	ABN	2.00E+01
2-Pentanone	50346	9/21/87	VOA	1.10E+01
2-Pentanone	50384	2/26/88	VOA	1.10E+01
2-Pentanone	59021	2/27/88	VOA	7.00E+00
2-Pentanone	59019	2/26/88	VOA	1.00E+01
Phenol	50008	8/29/85	ABN	3.30E+01
Phenol	50063	6/13/86	ABN	<1.00E+01
Phenol	50083	7/03/86	ABN	<1.00E+01
Phenol	50153	10/13/86	ABN	<1.00E+01
Phenol	50252	3/12/87	ABN	<1.00E+01
Phenol	50346	9/21/87	ABN	<1.00E+01
Phenol	50384	2/26/88	ABN	<1.00E+01
Phenol	59017	2/25/88	ABN	<1.00E+01
Phenol	59013	2/19/88	ABN	<1.00E+01
Phenol	59021	2/27/88	ABN	<1.00E+01
Phenol	59015	2/19/88	ABN	<1.00E+01
Phenol	59019	2/26/88	ABN	<1.00E+01
2-Propanol	50008	8/29/85	VOA	2.20E+01

Table B-2. Raw Analytical Data. (sheet 13 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
2-Propanol	50153	10/13/86	VOA	1.00E+01
Pyridine	50008	8/29/85	VOA	<5.00E+02
Pyridine	50063	6/13/86	VOA	5.50E+02
Pyridine	50063B	6/13/86	VOA	<5.00E+02
Pyridine	50083	7/03/86	VOA	<5.00E+02
Pyridine	50083B	7/03/86	VOA	<5.00E+02
Pyridine	50153	10/13/86	VOA	<5.00E+02
Pyridine	50153B	10/13/86	VOA	<5.00E+02
Pyridine	50252	3/12/87	VOA	<5.00E+02
Pyridine	50252B	3/12/87	VOA	<5.00E+02
Pyridine	50346	9/21/87	VOA	<5.00E+02
Pyridine	50346B	9/21/87	VOA	<5.00E+02
Pyridine	50384	2/26/88	VOA	<5.00E+02
Pyridine	50384B	2/26/88	VOA	<5.00E+02
Pyridine	59017	2/25/88	VOA	<5.00E+02
Pyridine	59017B	2/25/88	VOA	<5.00E+02
Pyridine	59013	2/19/88	VOA	<5.00E+02
Pyridine	59013B	2/19/88	VOA	<5.00E+02
Pyridine	59021	2/27/88	VOA	<5.00E+02
Pyridine	59021B	2/27/88	VOA	<5.00E+02
Pyridine	59015	2/19/88	VOA	<5.00E+02
Pyridine	59015B	2/19/88	VOA	<5.00E+02
Pyridine	59019	2/26/88	VOA	<5.00E+02
Pyridine	59019B	2/26/88	VOA	<5.00E+02
Tetradecane	50063	6/13/86	ABN	3.08E+02
Tetradecane	50252	3/12/87	ABN	7.70E+01
Tetradecane	50346	9/21/87	ABN	1.30E+02
Tetradecane	50384	2/26/88	ABN	4.40E+02
Tetradecane	59017	2/25/88	ABN	2.70E+01
Tetradecane	59013	2/19/88	ABN	1.30E+01
Tetradecane	59021	2/27/88	ABN	2.30E+01
Tetradecane	59015	2/19/88	ABN	5.00E+00
Tetradecane	59019	2/26/88	ABN	1.80E+01
Tetrahydrofuran	50083	7/03/86	VOA	2.70E+01
Tetrahydrofuran	50153	10/13/86	VOA	1.70E+01
Tetrahydrofuran	50346	9/21/87	VOA	3.00E+01
Tetrahydrofuran	50384	2/26/88	VOA	1.80E+01
Tetrahydrofuran	59021	2/27/88	VOA	1.10E+01
Tetrahydrofuran	59019	2/26/88	VOA	1.60E+01
Tributylphosphate	50008	8/29/85	ABN	6.60E+01
Tributylphosphate	50063	6/13/86	ABN	4.50E+03
Tributylphosphate	50083	7/03/86	ABN	5.30E+02
Tributylphosphate	50252	3/12/87	ABN	1.20E+02
Tributylphosphate	50346	9/21/87	ABN	2.06E+04
Tributylphosphate	50384	2/26/88	ABN	3.80E+03
Tributylphosphate	59017	2/25/88	ABN	2.08E+02
Tributylphosphate	59013	2/19/88	ABN	2.70E+02
Tributylphosphate	59021	2/27/88	ABN	4.60E+03

Table B-2. Raw Analytical Data. (sheet 14 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Tributylphosphate	59015	2/19/88	ABN	3.60E+02
Tributylphosphate	59019	2/26/88	ABN	1.30E+03
Trichloromethane	50008	8/29/85	VOA	<1.00E+01
Trichloromethane	50063	6/13/86	VOA	<1.00E+01
Trichloromethane	50063B	6/13/86	VOA	<1.00E+01
Trichloromethane	50083	7/03/86	VOA	<1.00E+01
Trichloromethane	50083B	7/03/86	VOA	<1.00E+01
Trichloromethane	50153	10/13/86	VOA	<1.00E+01
Trichloromethane	50153B	10/13/86	VOA	<1.00E+01
Trichloromethane	50252	3/12/87	VOA	<1.00E+01
Trichloromethane	50252B	3/12/87	VOA	<1.00E+01
Trichloromethane	50346	9/21/87	VOA	<1.00E+01
Trichloromethane	50346B	9/21/87	VOA	2.70E+01
Trichloromethane	50384	2/26/88	VOA	<5.00E+00
Trichloromethane	50384B	2/26/88	VOA	1.20E+01
Trichloromethane	59017	2/25/88	VOA	<5.00E+00
Trichloromethane	59017B	2/25/88	VOA	1.30E+01
Trichloromethane	59013	2/19/88	VOA	<5.00E+00
Trichloromethane	59013B	2/19/88	VOA	1.20E+01
Trichloromethane	59021	2/27/88	VOA	<5.00E+00
Trichloromethane	59021B	2/27/88	VOA	1.20E+01
Trichloromethane	59015	2/19/88	VOA	<5.00E+00
Trichloromethane	59015B	2/19/88	VOA	1.30E+01
Trichloromethane	59019	2/26/88	VOA	<5.00E+00
Trichloromethane	59019B	2/26/88	VOA	1.20E+01
Tridecane	50063	6/13/86	ABN	3.04E+02
Tridecane	50252	3/12/87	ABN	8.00E+01
Tridecane	50346	9/21/87	ABN	1.30E+02
Tridecane	50384	2/26/88	ABN	3.50E+02
Tridecane	59017	2/25/88	ABN	1.00E+01
Tridecane	59013	2/19/88	ABN	7.00E+00
Tridecane	59021	2/27/88	ABN	1.40E+01
Tridecane	59015	2/19/88	ABN	4.00E+00
Tridecane	59019	2/26/88	ABN	1.10E+01
Triglyme	50083	7/03/86	ABN	9.00E+01
Alpha Activity (pCi/L)	50008	8/29/85	Alpha	2.36E-01
Alpha Activity (pCi/L)	50063	6/13/86	Alpha	1.19E+00
Alpha Activity (pCi/L)	50083	7/03/86	Alpha	1.62E+00
Alpha Activity (pCi/L)	50252	3/12/87	Alpha	4.27E-01
Alpha Activity (pCi/L)	50384	2/26/88	Alpha	<1.36E-01
Alpha Activity (pCi/L)	59017	2/25/88	Alpha	8.02E-01
Alpha Activity (pCi/L)	59013	2/19/88	Alpha	2.16E-01
Alpha Activity (pCi/L)	59021	2/27/88	Alpha	1.04E+00
Alpha Activity (pCi/L)	59015	2/19/88	Alpha	1.06E+00
Alpha Activity (pCi/L)	59019	2/26/88	Alpha	7.98E-01
Beta Activity (pCi/L)	50008	8/29/85	Beta	3.48E+03
Beta Activity (pCi/L)	50063	6/13/86	Beta	2.99E+03
Beta Activity (pCi/L)	50083	7/03/86	Beta	4.34E+03

Table B-2. Raw Analytical Data. (sheet 15 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
Beta Activity (pCi/L)	50153	10/13/86	Beta	1.16E+03
Beta Activity (pCi/L)	50252	3/12/87	Beta	2.29E+03
Beta Activity (pCi/L)	50346	9/21/87	Beta	<1.05E+02
Beta Activity (pCi/L)	50384	2/26/88	Beta	1.18E+02
Beta Activity (pCi/L)	59017	2/25/88	Beta	1.87E+02
Beta Activity (pCi/L)	59013	2/19/88	Beta	1.89E+02
Beta Activity (pCi/L)	59021	2/27/88	Beta	1.82E+02
Beta Activity (pCi/L)	59015	2/19/88	Beta	3.00E+02
Beta Activity (pCi/L)	59019	2/26/88	Beta	8.43E+01
Conductivity (µS)	50008	8/29/85	COND-Fld	1.26E+02
Conductivity (µS)	50063	6/13/86	COND-Fld	2.42E+02
Conductivity (µS)	50083	7/03/86	COND-Fld	2.62E+02
Conductivity (µS)	50153	10/13/86	COND-Fld	1.25E+02
Conductivity (µS)	50252	3/12/87	COND-Fld	1.48E+02
Conductivity (µS)	50346	9/21/87	COND-Fld	4.70E+02
Conductivity (µS)	50384	2/26/88	COND-Fld	1.42E+02
Conductivity (µS)	59017	2/25/88	COND-Lab	6.88E+01
Conductivity (µS)	59013	2/19/88	COND-Lab	7.29E+01
Conductivity (µS)	59021	2/27/88	COND-Lab	6.25E+01
Conductivity (µS)	59015	2/19/88	COND-Lab	7.82E+01
Conductivity (µS)	59019	2/26/88	COND-Lab	7.08E+01
pH (dimensionless)	50008	8/29/85	PH-Fld	1.01E+01
pH (dimensionless)	50063	6/13/86	PH-Fld	9.05E+00
pH (dimensionless)	50083	7/03/86	PH-Fld	9.35E+00
pH (dimensionless)	50153	10/13/86	PH-Fld	8.40E+00
pH (dimensionless)	50252	3/12/87	PH-Fld	7.80E+00
pH (dimensionless)	50346	9/21/87	PH-Fld	1.04E+01
pH (dimensionless)	50384	2/26/88	PH-Fld	1.02E+01
pH (dimensionless)	59017	2/25/88	PH-Lab	9.81E+00
pH (dimensionless)	59013	2/19/88	PH-Lab	9.26E+00
pH (dimensionless)	59021	2/27/88	PH-Lab	9.81E+00
pH (dimensionless)	59015	2/19/88	PH-Lab	9.16E+00
pH (dimensionless)	59019	2/26/88	PH-Lab	9.74E+00
Temperature (°C)	50008	8/29/85	TEMP-Fld	3.12E+01
Temperature (°C)	50063	6/13/86	TEMP-Fld	3.21E+01
Temperature (°C)	50083	7/03/86	TEMP-Fld	2.46E+01
Temperature (°C)	50153	10/13/86	TEMP-Fld	2.10E+01
Temperature (°C)	50252	3/12/87	TEMP-Fld	1.38E+01
Temperature (°C)	50346	9/21/87	TEMP-Fld	3.90E+01
Temperature (°C)	50384	2/26/88	TEMP-Fld	2.46E+01
TOC	50008	8/29/85	TOC	7.06E+03
TOC	50063	6/13/86	TOC	9.19E+03
TOC	50083	7/03/86	TOC	3.50E+04
TOC	50153	10/13/86	TOC	4.70E+03
TOC	50252	3/12/87	TOC	1.23E+03
TOC	50346	9/21/87	TOC	<1.13E+02
TOC	50384	2/26/88	TOC	5.61E+04
TOC	59017	2/25/88	TOC	9.46E+03

Table B-2. Raw Analytical Data. (sheet 16 of 30)

LINKED FEED

Constituent	Sample #	Date	Method	Result
TOC	59013	2/19/88	TOC	6.98E+03
TOC	59021	2/27/88	TOC	4.14E+04
TOC	59015	2/19/88	TOC	5.41E+03
TOC	59019	2/26/88	TOC	3.43E+04

ASF FEED

Constituent	Sample #	Date	Method	Result
Aluminum	50474	10/11/88	ICP	1.77E+03
Aluminum	50482	10/27/88	ICP	6.11E+02
Aluminum	50540	2/28/89	ICP	1.21E+03
Aluminum	50550	3/09/89	ICP	1.03E+03
Aluminum	50562	3/22/89	ICP	8.73E+02
Aluminum	50564	3/22/89	ICP	8.15E+02
Aluminum	59011	1/28/88	ICP	<1.50E+02
Aluminum	59046	8/12/88	ICP	9.01E+02
Aluminum	59044	8/08/88	ICP	6.34E+02
Aluminum	59048	8/13/88	ICP	1.45E+03
Arsenic (EP Toxic)	50562E	3/22/89	ICP	<5.00E+01
Arsenic (EP Toxic)	50564E	3/22/89	ICP	<5.00E+01
Barium	50474	10/11/88	ICP	<6.00E+00
Barium	50482	10/27/88	ICP	<6.00E+00
Barium	50540	2/28/89	ICP	<6.00E+00
Barium	50550	3/09/89	ICP	<6.00E+00
Barium	50562	3/22/89	ICP	<6.00E+00
Barium	50564	3/22/89	ICP	<6.00E+00
Barium	59011	1/28/88	ICP	<6.00E+00
Barium	59046	8/12/88	ICP	<6.00E+00
Barium	59044	8/08/88	ICP	7.00E+00
Barium	59048	8/13/88	ICP	8.00E+00
Barium (EP Toxic)	50562E	3/22/89	ICP	2.31E+02
Barium (EP Toxic)	50564E	3/22/89	ICP	2.32E+02
Boron	50540	2/28/89	ICP	<1.00E+01
Boron	50550	3/09/89	ICP	1.30E+01
Boron	50562	3/22/89	ICP	<1.00E+01
Boron	50564	3/22/89	ICP	<1.00E+01
Cadmium (EP Toxic)	50562E	3/22/89	ICP	<1.00E+01
Cadmium (EP Toxic)	50564E	3/22/89	ICP	<1.00E+01
Calcium	50474	10/11/88	ICP	3.32E+03
Calcium	50482	10/27/88	ICP	5.11E+03
Calcium	50540	2/28/89	ICP	8.32E+03
Calcium	50550	3/09/89	ICP	2.55E+03
Calcium	50562	3/22/89	ICP	1.85E+03
Calcium	50564	3/22/89	ICP	1.83E+03
Calcium	59011	1/28/88	ICP	5.49E+03
Calcium	59046	8/12/88	ICP	1.93E+03
Calcium	59044	8/08/88	ICP	2.56E+03

Table B-2. Raw Analytical Data. (sheet 17 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Calcium	59048	8/13/88	ICP	1.66E+03
Chloride	50474	10/11/88	IC	2.30E+03
Chloride	50482	10/27/88	IC	<5.00E+02
Chloride	50540	2/28/89	IC	<5.00E+02
Chloride	50550	3/09/89	IC	<5.00E+02
Chloride	50562	3/22/89	IC	<5.00E+02
Chloride	50564	3/22/89	IC	<5.00E+02
Chloride	59011	1/28/88	IC	<5.00E+02
Chloride	59046	8/12/88	IC	6.68E+02
Chloride	59044	8/08/88	IC	<5.00E+02
Chloride	59048	8/13/88	IC	5.28E+02
Chromium (EP Toxic)	50562E	3/22/89	ICP	<5.00E+01
Chromium (EP Toxic)	50564E	3/22/89	ICP	<5.00E+01
Copper	50474	10/11/88	ICP	<1.00E+01
Copper	50482	10/27/88	ICP	<1.00E+01
Copper	50540	2/28/89	ICP	<1.00E+01
Copper	50550	3/09/89	ICP	<1.00E+01
Copper	50562	3/22/89	ICP	<1.00E+01
Copper	50564	3/22/89	ICP	<1.00E+01
Copper	59011	1/28/88	ICP	<1.00E+01
Copper	59046	8/12/88	ICP	<1.00E+01
Copper	59044	8/08/88	ICP	1.20E+01
Copper	59048	8/13/88	ICP	<1.00E+01
Fluoride	50474	10/11/88	IC	<5.00E+02
Fluoride	50474	10/11/88	ISE	3.40E+01
Fluoride	50482	10/27/88	IC	2.10E+03
Fluoride	50482	10/27/88	ISE	4.80E+01
Fluoride	50540	2/28/89	IC	<5.00E+02
Fluoride	50540	2/28/89	ISE	<5.00E+01
Fluoride	50550	3/09/89	IC	<5.00E+02
Fluoride	50550	3/09/89	ISE	<5.00E+01
Fluoride	50562	3/22/89	IC	<5.00E+02
Fluoride	50562	3/22/89	ISE	<5.00E+01
Fluoride	50564	3/22/89	IC	<5.00E+02
Fluoride	50564	3/22/89	ISE	<5.00E+01
Fluoride	59011	1/28/88	IC	<5.00E+02
Fluoride	59011	1/28/88	ISE	6.50E+01
Fluoride	59046	8/12/88	IC	<5.00E+02
Fluoride	59046	8/12/88	ISE	3.20E+01
Fluoride	59044	8/08/88	IC	<5.00E+02
Fluoride	59044	8/08/88	ISE	4.40E+01
Fluoride	59048	8/13/88	IC	<5.00E+02
Fluoride	59048	8/13/88	ISE	2.30E+01
Iron	50474	10/11/88	ICP	<3.00E+01
Iron	50482	10/27/88	ICP	<3.00E+01
Iron	50540	2/28/89	ICP	3.40E+01
Iron	50550	3/09/89	ICP	<3.00E+01
Iron	50562	3/22/89	ICP	4.10E+01

Table B-2. Raw Analytical Data. (sheet 18 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Iron	50564	3/22/89	ICP	<3.00E+01
Iron	59011	1/28/88	ICP	6.70E+01
Iron	59046	8/12/88	ICP	<3.00E+01
Iron	59044	8/08/88	ICP	<3.00E+01
Iron	59048	8/13/88	ICP	3.80E+01
Lead (EP Toxic)	50562E	3/22/89	ICP	<5.00E+01
Lead (EP Toxic)	50564E	3/22/89	ICP	<5.00E+01
Magnesium	50474	10/11/88	ICP	<5.00E+01
Magnesium	50482	10/27/88	ICP	<5.00E+01
Magnesium	50540	2/28/89	ICP	<5.00E+01
Magnesium	50550	3/09/89	ICP	<5.00E+01
Magnesium	50562	3/22/89	ICP	<5.00E+01
Magnesium	50564	3/22/89	ICP	<5.00E+01
Magnesium	59011	1/28/88	ICP	7.48E+02
Magnesium	59046	8/12/88	ICP	<5.00E+01
Magnesium	59044	8/08/88	ICP	5.30E+01
Magnesium	59048	8/13/88	ICP	<5.00E+01
Manganese	50474	10/11/88	ICP	<5.00E+00
Manganese	50482	10/27/88	ICP	<5.00E+00
Manganese	50540	2/28/89	ICP	<5.00E+00
Manganese	50550	3/09/89	ICP	<5.00E+00
Manganese	50562	3/22/89	ICP	<5.00E+00
Manganese	50564	3/22/89	ICP	<5.00E+00
Manganese	59011	1/28/88	ICP	5.00E+00
Manganese	59046	8/12/88	ICP	<5.00E+00
Manganese	59044	8/08/88	ICP	<5.00E+00
Manganese	59048	8/13/88	ICP	<5.00E+00
Mercury	50474	10/11/88	CVAA	1.80E-01
Mercury	50482	10/27/88	CVAA	<1.00E-01
Mercury	50540	2/28/89	CVAA	<1.00E-01
Mercury	50550	3/09/89	CVAA	<1.00E-01
Mercury	50562	3/22/89	CVAA	1.20E-01
Mercury	50564	3/22/89	CVAA	1.50E-01
Mercury	59011	1/28/88	CVAA	5.60E-01
Mercury	59046	8/12/88	CVAA	3.20E-01
Mercury	59044	8/08/88	CVAA	<1.00E-01
Mercury	59048	8/13/88	CVAA	2.40E-01
Mercury (EP Toxic)	50562E	3/22/89	CVAA/M	<1.00E+01
Mercury (EP Toxic)	50564E	3/22/89	CVAA/M	<1.00E+01
Nickel	50474	10/11/88	ICP	<1.00E+01
Nickel	50482	10/27/88	ICP	<1.00E+01
Nickel	50540	2/28/89	ICP	1.40E+01
Nickel	50550	3/09/89	ICP	<1.00E+01
Nickel	50562	3/22/89	ICP	<1.00E+01
Nickel	50564	3/22/89	ICP	<1.00E+01
Nickel	59011	1/28/88	ICP	<1.00E+01
Nickel	59046	8/12/88	ICP	<1.00E+01
Nickel	59044	8/08/88	ICP	<1.00E+01

Table B-2. Raw Analytical Data. (sheet 19 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Nickel	59048	8/13/88	ICP	<1.00E+01
Potassium	50474	10/11/88	ICP	1.34E+03
Potassium	50482	10/27/88	ICP	2.46E+03
Potassium	50540	2/28/89	ICP	2.31E+03
Potassium	50550	3/09/89	ICP	8.27E+02
Potassium	50562	3/22/89	ICP	4.40E+02
Potassium	50564	3/22/89	ICP	4.53E+02
Potassium	59011	1/28/88	ICP	4.33E+02
Potassium	59046	8/12/88	ICP	1.29E+04
Potassium	59044	8/08/88	ICP	1.57E+04
Potassium	59048	8/13/88	ICP	1.42E+04
Selenium (EP Toxic)	50562E	3/22/89	ICP	<5.00E+01
Selenium (EP Toxic)	50564E	3/22/89	ICP	<5.00E+01
Silicon	50540	2/28/89	ICP	9.40E+03
Silicon	50550	3/09/89	ICP	6.35E+03
Silicon	50562	3/22/89	ICP	5.68E+03
Silicon	50564	3/22/89	ICP	5.47E+03
Silver (EP Toxic)	50562E	3/22/89	ICP	<5.00E+01
Silver (EP Toxic)	50564E	3/22/89	ICP	<5.00E+01
Sodium	50474	10/11/88	ICP	3.32E+04
Sodium	50482	10/27/88	ICP	1.40E+03
Sodium	50540	2/28/89	ICP	2.60E+02
Sodium	50550	3/09/89	ICP	2.69E+02
Sodium	50562	3/22/89	ICP	2.64E+02
Sodium	50564	3/22/89	ICP	3.24E+02
Sodium	59011	1/28/88	ICP	7.31E+02
Sodium	59046	8/12/88	ICP	1.15E+03
Sodium	59044	8/08/88	ICP	1.94E+03
Sodium	59048	8/13/88	ICP	6.88E+02
Strontium	50474	10/11/88	ICP	<2.00E+01
Strontium	50482	10/27/88	ICP	<2.00E+01
Strontium	50540	2/28/89	ICP	3.00E+01
Strontium	50550	3/09/89	ICP	1.40E+01
Strontium	50562	3/22/89	ICP	1.00E+01
Strontium	50564	3/22/89	ICP	1.10E+01
Strontium	59011	1/28/88	ICP	<2.00E+01
Strontium	59046	8/12/88	ICP	<2.00E+01
Strontium	59044	8/08/88	ICP	<2.00E+01
Strontium	59048	8/13/88	ICP	<2.00E+01
Sulfate	50474	10/11/88	IC	1.60E+03
Sulfate	50482	10/27/88	IC	3.90E+03
Sulfate	50540	2/28/89	IC	2.00E+03
Sulfate	50550	3/09/89	IC	1.20E+03
Sulfate	50562	3/22/89	IC	1.30E+03
Sulfate	50564	3/22/89	IC	1.30E+03
Sulfate	59011	1/28/88	IC	2.60E+03
Sulfate	59046	8/12/88	IC	2.15E+03
Sulfate	59044	8/08/88	IC	2.77E+03

Table B-2. Raw Analytical Data. (sheet 20 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Sulfate	59048	8/13/88	IC	1.32E+03
Uranium	50474	10/11/88	FLUOR	1.86E+00
Uranium	50482	10/27/88	FLUOR	5.39E-01
Uranium	50540	2/28/89	FLUOR	<3.12E-02
Uranium	50550	3/09/89	FLUOR	4.04E-01
Uranium	50562	3/22/89	FLUOR	2.03E+00
Uranium	50564	3/22/89	FLUOR	3.57E-01
Uranium	59011	1/28/88	FLUOR	2.37E-01
Uranium	59046	8/12/88	FLUOR	<1.26E-01
Uranium	59044	8/08/88	FLUOR	<9.81E-02
Uranium	59048	8/13/88	FLUOR	<7.25E-02
Vanadium	50474	10/11/88	ICP	<5.00E+00
Vanadium	50482	10/27/88	ICP	<5.00E+00
Vanadium	50540	2/28/89	ICP	6.00E+00
Vanadium	50550	3/09/89	ICP	<5.00E+00
Vanadium	50562	3/22/89	ICP	<5.00E+00
Vanadium	50564	3/22/89	ICP	<5.00E+00
Vanadium	59011	1/28/88	ICP	<5.00E+00
Vanadium	59046	8/12/88	ICP	7.00E+00
Vanadium	59044	8/08/88	ICP	<5.00E+00
Vanadium	59048	8/13/88	ICP	7.00E+00
Zinc	50474	10/11/88	ICP	<5.00E+00
Zinc	50482	10/27/88	ICP	<5.00E+00
Zinc	50540	2/28/89	ICP	<5.00E+00
Zinc	50550	3/09/89	ICP	1.70E+01
Zinc	50562	3/22/89	ICP	1.00E+01
Zinc	50564	3/22/89	ICP	<5.00E+00
Zinc	59011	1/28/88	ICP	7.00E+00
Zinc	59046	8/12/88	ICP	6.00E+00
Zinc	59044	8/08/88	ICP	<5.00E+00
Zinc	59048	8/13/88	ICP	9.00E+00
Acetone	50474	10/11/88	VOA	8.80E+02
Acetone	50474B	10/11/88	VOA	1.50E+01
Acetone	50482	10/27/88	VOA	9.20E+02
Acetone	50540	2/28/89	VOA	2.16E+03
Acetone	50540	2/28/89	ABN	<1.00E+01
Acetone	50540B	2/28/89	VOA	<1.00E+01
Acetone	50550	3/09/89	VOA	1.48E+03
Acetone	50550	3/09/89	ABN	<1.00E+01
Acetone	50562	3/22/89	VOA	5.85E+02
Acetone	50562	3/22/89	ABN	<1.00E+01
Acetone	50562B	3/22/89	VOA	1.80E+01
Acetone	50564	3/22/89	VOA	4.43E+02
Acetone	50564	3/22/89	ABN	<1.00E+01
Acetone	50564B	3/22/89	VOA	1.20E+01
Acetone	59046	8/12/88	VOA	9.00E+02
Acetone	59044	8/08/88	VOA	9.50E+02
Acetone	59048	8/13/88	VOA	9.70E+02

Table B-2. Raw Analytical Data. (sheet 21 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Ammonia	50474	10/11/88	ISE	1.27E+06
Ammonia	50482	10/27/88	ISE	6.21E+05
Ammonia	50540	2/28/89	ISE	2.19E+06
Ammonia	50550	3/09/89	ISE	8.56E+05
Ammonia	50562	3/22/89	ISE	8.28E+05
Ammonia	50564	3/22/89	ISE	6.42E+05
Ammonia	59011	1/28/88	ISE	1.19E+04
Ammonia	59046	8/12/88	ISE	6.61E+05
Ammonia	59044	8/08/88	ISE	4.47E+05
Ammonia	59048	8/13/88	ISE	6.78E+05
Benzyl alcohol	50540	2/28/89	ABN	<1.00E+01
Benzyl alcohol	50550	3/09/89	ABN	<1.00E+01
Benzyl alcohol	50562	3/22/89	ABN	<1.00E+01
Benzyl alcohol	50564	3/22/89	ABN	<1.00E+01
Benzyl alcohol	59029	3/10/88	ABN	1.70E+01
Benzyl alcohol	59030	3/10/88	ABN	1.30E+01
Benzyl alcohol	59044	8/08/88	ABN	9.00E+00
Benzyl alcohol	59031	3/10/88	ABN	1.60E+01
Butanal	59046	8/12/88	VOA	5.00E+00
Butanal	59044	8/08/88	VOA	1.30E+01
Butanal	59048	8/13/88	VOA	8.00E+00
1-Butanol	50474	10/11/88	VOA	1.10E+02
1-Butanol	50482	10/27/88	VOA	2.20E+02
1-Butanol	50482	10/27/88	DIMS	5.70E+03
1-Butanol	50540	2/28/89	DIGC	1.21E+05
1-Butanol	50550	3/09/89	DIGC	5.50E+04
1-Butanol	50562	3/22/89	DIGC	2.40E+04
1-Butanol	50564	3/22/89	DIGC	2.60E+04
1-Butanol	59046	8/12/88	VOA	2.50E+02
1-Butanol	59046	8/12/88	DIMS	1.90E+04
1-Butanol	59044	8/08/88	VOA	2.60E+02
1-Butanol	59044	8/08/88	DIMS	1.31E+04
1-Butanol	59048	8/13/88	VOA	2.70E+02
1-Butanol	59048	8/13/88	DIMS	2.10E+04
2-Butanone	50474	10/11/88	VOA	2.90E+01
2-Butanone	50474B	10/11/88	VOA	<1.00E+01
2-Butanone	50482	10/27/88	VOA	3.50E+01
2-Butanone	50482B	10/27/88	VOA	<1.00E+01
2-Butanone	50540	2/28/89	VOA	9.30E+01
2-Butanone	50540B	2/28/89	VOA	<1.00E+01
2-Butanone	50550	3/09/89	VOA	5.50E+01
2-Butanone	50562	3/22/89	VOA	2.20E+01
2-Butanone	50562B	3/22/89	VOA	<1.00E+01
2-Butanone	50564	3/22/89	VOA	1.80E+01
2-Butanone	50564B	3/22/89	VOA	<1.00E+01
2-Butanone	59011	1/28/88	VOA	<1.00E+01
2-Butanone	59011B	1/28/88	VOA	<1.00E+01
2-Butanone	59046	8/12/88	VOA	2.50E+01

Table B-2. Raw Analytical Data. (sheet 22 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
2-Butanone	59046B	8/12/88	VOA	<1.00E+01
2-Butanone	59044	8/08/88	VOA	2.50E+01
2-Butanone	59044B	8/08/88	VOA	<1.00E+01
2-Butanone	59048	8/13/88	VOA	2.60E+01
2-Butanone	59048B	8/13/88	VOA	<1.00E+01
Butoxydiglycol	50482	10/27/88	ABN	2.70E+01
2-Butoxyethanol	59029	3/10/88	ABN	4.30E+02
2-Butoxyethanol	59046	8/12/88	ABN	1.10E+02
2-Butoxyethanol	59030	3/10/88	ABN	4.90E+02
2-Butoxyethanol	59044	8/08/88	ABN	8.50E+01
2-Butoxyethanol	59031	3/10/88	ABN	4.60E+02
2-Butoxyethanol	59048	8/13/88	ABN	1.60E+02
Butoxyglycol	59029	3/10/88	ABN	2.50E+02
Butoxyglycol	59046	8/12/88	ABN	1.05E+02
Butoxyglycol	59030	3/10/88	ABN	1.30E+02
Butoxyglycol	59044	8/08/88	ABN	3.60E+02
Butoxyglycol	59031	3/10/88	ABN	2.20E+02
Butoxyglycol	59048	8/13/88	ABN	6.30E+01
Butoxytriethyleneglycol	50474	10/11/88	ABN	3.50E+01
Ethanol	50540	2/28/89	DIGC	<1.00E+04
Ethanol	50550	3/09/89	DIGC	<1.00E+04
Ethanol	50562	3/22/89	DIGC	<1.00E+04
Ethanol	50564	3/22/89	DIGC	<1.00E+04
Ethanol	59048	8/13/88	VOA	2.00E+00
2-Hexanone	50540	2/28/89	VOA	7.90E+01
2-Hexanone	50540B	2/28/89	VOA	<5.00E+01
2-Hexanone	50550	3/09/89	VOA	<5.00E+00
2-Hexanone	50562	3/22/89	VOA	<5.00E+01
2-Hexanone	50562B	3/22/89	VOA	<5.00E+01
2-Hexanone	50564	3/22/89	VOA	<5.00E+01
2-Hexanone	50564B	3/22/89	VOA	<5.00E+01
2-Hexanone	59046	8/12/88	VOA	4.00E+00
2-Hexanone	59048	8/13/88	VOA	4.00E+00
2-Methylnonane	50474	10/11/88	ABN	1.70E+01
2-Methylnonane	50482	10/27/88	ABN	1.40E+01
2-Propanol	50474	10/11/88	VOA	1.00E+01
2-Propanol	59046	8/12/88	VOA	2.30E+01
2-Propanol	59048	8/13/88	VOA	2.40E+01
Tetradecane	59029	3/10/88	ABN	1.30E+01
Tetradecane	59046	8/12/88	ABN	1.50E+01
Tetradecane	59030	3/10/88	ABN	1.30E+01
Tetradecane	59044	8/08/88	ABN	2.50E+01
Tetradecane	59031	3/10/88	ABN	1.30E+01
Tetradecane	59048	8/13/88	ABN	5.00E+00
Tetrahydrofuran	50474	10/11/88	VOA	4.20E+01
Tetrahydrofuran	50482	10/27/88	VOA	3.00E+01
Tetrahydrofuran	50540	2/28/89	VOA	8.10E+01
Tetrahydrofuran	50540B	2/28/89	VOA	<1.00E+01

Table B-2. Raw Analytical Data. (sheet 23 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Tetrahydrofuran	50550	3/09/89	VOA	4.10E+01
Tetrahydrofuran	50562	3/22/89	VOA	2.50E+01
Tetrahydrofuran	50562B	3/22/89	VOA	<1.00E+01
Tetrahydrofuran	50564	3/22/89	VOA	1.70E+01
Tetrahydrofuran	50564B	3/22/89	VOA	<1.00E+01
Tetrahydrofuran	59046	8/12/88	VOA	1.20E+01
Tetrahydrofuran	59044	8/08/88	VOA	1.20E+01
Tetrahydrofuran	59048	8/13/88	VOA	3.00E+00
Tributylphosphate	50474	10/11/88	ABN	<1.00E+01
Tributylphosphate	50482	10/27/88	ABN	<1.00E+01
Tributylphosphate	50540	2/28/89	ABN	1.46E+03
Tributylphosphate	50550	3/09/89	ABN	2.98E+03
Tributylphosphate	50562	3/22/89	ABN	4.70E+03
Tributylphosphate	50564	3/22/89	ABN	1.50E+03
Tributylphosphate	59011	1/28/88	ABN	3.10E+02
Tributylphosphate	59029	3/10/88	ABN	4.40E+03
Tributylphosphate	59046	8/12/88	ABN	6.90E+03
Tributylphosphate	59030	3/10/88	ABN	8.00E+03
Tributylphosphate	59044	8/08/88	ABN	3.10E+03
Tributylphosphate	59031	3/10/88	ABN	7.90E+03
Tributylphosphate	59048	8/13/88	ABN	1.01E+04
1,1,1-Trichloromethane	50474	10/11/88	VOA	<5.00E+00
1,1,1-Trichloromethane	50474B	10/11/88	VOA	<5.00E+00
1,1,1-Trichloromethane	50482	10/27/88	VOA	<5.00E+00
1,1,1-Trichloromethane	50482B	10/27/88	VOA	<5.00E+00
1,1,1-Trichloromethane	50540	2/28/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50540B	2/28/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50550	3/09/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50562	3/22/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50562B	3/22/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50564	3/22/89	VOA	<5.00E+00
1,1,1-Trichloromethane	50564B	3/22/89	VOA	<5.00E+00
1,1,1-Trichloromethane	59011	1/28/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59011B	1/28/88	VOA	5.00E+00
1,1,1-Trichloromethane	59046	8/12/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59046B	8/12/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59044	8/08/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59044B	8/08/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59048	8/13/88	VOA	<5.00E+00
1,1,1-Trichloromethane	59048B	8/13/88	VOA	<5.00E+00
Trichloromethane	50474	10/11/88	VOA	<5.00E+00
Trichloromethane	50474B	10/11/88	VOA	<5.00E+00
Trichloromethane	50482	10/27/88	VOA	<5.00E+00
Trichloromethane	50482B	10/27/88	VOA	<5.00E+00
Trichloromethane	50540	2/28/89	VOA	<5.00E+00
Trichloromethane	50540B	2/28/89	VOA	<5.00E+00
Trichloromethane	50550	3/09/89	VOA	<5.00E+00
Trichloromethane	50562	3/22/89	VOA	<5.00E+00

Table B-2. Raw Analytical Data. (sheet 24 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Trichloromethane	50562B	3/22/89	VOA	<5.00E+00
Trichloromethane	50564	3/22/89	VOA	<5.00E+00
Trichloromethane	50564B	3/22/89	VOA	<5.00E+00
Trichloromethane	59011	1/28/88	VOA	<5.00E+00
Trichloromethane	59011B	1/28/88	VOA	1.40E+01
Trichloromethane	59046	8/12/88	VOA	<5.00E+00
Trichloromethane	59046B	8/12/88	VOA	<5.00E+00
Trichloromethane	59044	8/08/88	VOA	<5.00E+00
Trichloromethane	59044B	8/08/88	VOA	1.90E+01
Trichloromethane	59048	8/13/88	VOA	<5.00E+00
Trichloromethane	59048B	8/13/88	VOA	1.70E+01
Tridecane	59029	3/10/88	ABN	7.00E+00
Tridecane	59046	8/12/88	ABN	1.40E+01
Tridecane	59030	3/10/88	ABN	1.60E+01
Tridecane	59044	8/08/88	ABN	2.80E+01
Tridecane	59031	3/10/88	ABN	6.00E+00
Tridecane	59048	8/13/88	ABN	5.00E+00
Unknown	50474	10/11/88	ABN	3.70E+01
Unknown	50482	10/27/88	ABN	6.50E+01
Unknown	50540	2/28/89	VOA	2.04E+03
Unknown	50540	2/28/89	ABN	2.30E+02
Unknown	50540B	2/28/89	VOA	5.20E+01
Unknown	50550	3/09/89	VOA	1.28E+03
Unknown	50550	3/09/89	ABN	2.00E+01
Unknown	50562	3/22/89	VOA	6.50E+02
Unknown	50562	3/22/89	ABN	4.40E+01
Unknown	50562B	3/22/89	VOA	3.30E+01
Unknown	50564	3/22/89	VOA	6.25E+02
Unknown	50564	3/22/89	ABN	4.00E+01
Unknown	50564B	3/22/89	VOA	2.50E+01
Unknown	59046	8/12/88	ABN	9.00E+00
Unknown	59044	8/08/88	ABN	9.00E+00
Unknown	59048	8/13/88	ABN	9.00E+00
Unknown aliphatic HC	50562	3/22/89	ABN	1.20E+01
Alpha Activity (pCi/L)	50540	2/28/89	Alpha	<2.44E-01
Alpha Activity (pCi/L)	50550	3/09/89	Alpha	<4.18E-02
Alpha Activity (pCi/L)	50562	3/22/89	Alpha	<3.61E-01
Alpha Activity (pCi/L)	50564	3/22/89	Alpha	<4.84E-01
Alpha Activity (pCi/L)	59011	1/28/88	Alpha	3.10E-01
Alpha Activity (pCi/L)	59046	8/12/88	Alpha	<4.05E-01
Alpha Activity (pCi/L)	59044	8/08/88	Alpha	1.01E+00
Alpha Activity (pCi/L)	59048	8/13/88	Alpha	<1.22E-01
Beta Activity (pCi/L)	50474	10/11/88	Beta	1.25E+04
Beta Activity (pCi/L)	50482	10/27/88	Beta	2.67E+03
Beta Activity (pCi/L)	50540	2/28/89	Beta	4.36E+01
Beta Activity (pCi/L)	50550	3/09/89	Beta	7.81E+02
Beta Activity (pCi/L)	50562	3/22/89	Beta	9.45E+02
Beta Activity (pCi/L)	50564	3/22/89	Beta	1.22E+03

Table B-2. Raw Analytical Data. (sheet 25 of 30)

ASF FEED

Constituent	Sample #	Date	Method	Result
Beta Activity (pCi/L)	59011	1/28/88	Beta	2.48E+02
Beta Activity (pCi/L)	59046	8/12/88	Beta	8.01E+03
Beta Activity (pCi/L)	59044	8/08/88	Beta	5.13E+03
Beta Activity (pCi/L)	59048	8/13/88	Beta	9.51E+03
Conductivity (μS)	50474	10/11/88	COND-Fld	5.90E+02
Conductivity (μS)	50482	10/27/88	COND-Fld	3.33E+02
Conductivity (μS)	50540	2/28/89	COND-Fld	5.32E+02
Conductivity (μS)	50550	3/09/89	COND-Fld	3.03E+02
Conductivity (μS)	50562	3/22/89	COND-Fld	2.83E+02
Conductivity (μS)	50564	3/22/89	COND-Fld	2.18E+02
Conductivity (μS)	59011	1/28/88	COND-Lab	1.08E+02
Conductivity (μS)	59046	8/12/88	COND-Lab	2.81E+02
Conductivity (μS)	59044	8/08/88	COND-Lab	2.58E+02
Conductivity (μS)	59048	8/13/88	COND-Lab	2.85E+02
pH (dimensionless)	50474	10/11/88	PH-Fld	1.13E+01
pH (dimensionless)	50482	10/27/88	PH-Fld	1.07E+01
pH (dimensionless)	50540	2/28/89	PH-Fld	1.10E+01
pH (dimensionless)	50550	3/09/89	PH-Fld	1.09E+01
pH (dimensionless)	50562	3/22/89	PH-Fld	1.07E+01
pH (dimensionless)	50564	3/22/89	PH-Fld	1.07E+01
pH (dimensionless)	59011	1/28/88	PH-Lab	8.60E+00
pH (dimensionless)	59046	8/12/88	PH-Lab	1.04E+01
pH (dimensionless)	59044	8/08/88	PH-Lab	1.04E+01
pH (dimensionless)	59048	8/13/88	PH-Lab	1.04E+01
TDS	50562	3/22/89	TDS	2.40E+04
TDS	50564	3/22/89	TDS	2.10E+04
Temperature (°C)	50474	10/11/88	TEMP-Fld	3.49E+01
Temperature (°C)	50482	10/27/88	TEMP-Fld	2.94E+01
Temperature (°C)	50540	2/28/89	TEMP-Fld	2.86E+01
Temperature (°C)	50550	3/09/89	TEMP-Fld	2.77E+01
Temperature (°C)	50562	3/22/89	TEMP-Fld	2.74E+01
Temperature (°C)	50564	3/22/89	TEMP-Fld	1.75E+01
TOC	50474	10/11/88	TOC	6.10E+03
TOC	50482	10/27/88	TOC	1.17E+04
TOC	50540	2/28/89	TOC	7.85E+04
TOC	50550	3/09/89	TOC	3.54E+04
TOC	50562	3/22/89	TOC	2.02E+04
TOC	50564	3/22/89	TOC	2.13E+04
TOC	59011	1/28/88	TOC	2.53E+03
TOC	59046	8/12/88	TOC	3.37E+04
TOC	59044	8/08/88	TOC	2.30E+04
TOC	59048	8/13/88	TOC	3.75E+04

Table B-2. Raw Analytical Data. (sheet 26 of 30)

SALTWELL FEED

Constituent	Sample #	Date	Method	Result
Aluminum	59036	7/10/88	ICP	6.28E+02
Aluminum	59032	7/08/88	ICP	5.58E+02
Aluminum	59038	7/13/88	ICP	5.46E+02
Aluminum	59034	7/09/88	ICP	6.42E+02
Calcium	59036	7/10/88	ICP	3.44E+02
Calcium	59032	7/08/88	ICP	2.84E+02
Calcium	59038	7/13/88	ICP	3.84E+02
Calcium	59034	7/09/88	ICP	4.47E+02
Mercury	59036	7/10/88	CVAA	1.50E-01
Mercury	59032	7/08/88	CVAA	2.00E-01
Mercury	59038	7/13/88	CVAA	2.30E-01
Mercury	59034	7/09/88	CVAA	1.50E-01
Nickel	59036	7/10/88	ICP	<1.00E+01
Nickel	59032	7/08/88	ICP	<1.00E+01
Nickel	59038	7/13/88	ICP	<1.00E+01
Nickel	59034	7/09/88	ICP	1.30E+01
Potassium	59036	7/10/88	ICP	4.77E+03
Potassium	59032	7/08/88	ICP	4.09E+03
Potassium	59038	7/13/88	ICP	5.10E+03
Potassium	59034	7/09/88	ICP	5.28E+03
Sodium	59036	7/10/88	ICP	1.06E+03
Sodium	59032	7/08/88	ICP	2.73E+03
Sodium	59038	7/13/88	ICP	9.98E+02
Sodium	59034	7/09/88	ICP	2.18E+03
Zinc	59036	7/10/88	ICP	<5.00E+00
Zinc	59032	7/08/88	ICP	7.00E+00
Zinc	59038	7/13/88	ICP	4.40E+01
Zinc	59034	7/09/88	ICP	6.00E+00
Acetone	59036	7/10/88	VOA	5.30E+02
Acetone	59032	7/08/88	VOA	8.50E+02
Acetone	59038	7/13/88	VOA	6.20E+02
Acetone	59034	7/09/88	VOA	1.20E+03
Ammonia	59036	7/10/88	ISE	8.55E+04
Ammonia	59032	7/08/88	ISE	5.57E+04
Ammonia	59038	7/13/88	ISE	8.89E+04
Ammonia	59034	7/09/88	ISE	8.87E+04
Benzyl alcohol	59036	7/10/88	ABN	1.10E+01
Butanal	59036	7/10/88	VOA	3.20E+01
Butanal	59038	7/13/88	VOA	1.80E+01
Butanal	59034	7/09/88	VOA	4.30E+01
1-Butanol	59036	7/10/88	VOA	4.60E+02
1-Butanol	59032	7/08/88	VOA	3.40E+02
1-Butanol	59032B	7/08/88	VOA	5.00E+00
1-Butanol	59038	7/13/88	VOA	2.35E+02
1-Butanol	59034	7/09/88	VOA	5.25E+02
1-Butanol	59034B	7/09/88	VOA	7.00E+00
2-Butanone	59036	7/10/88	VOA	2.90E+01
2-Butanone	59036B	7/10/88	VOA	<1.00E+01

Table B-2. Raw Analytical Data. (sheet 27 of 30)

SALTWELL FEED

Constituent	Sample #	Date	Method	Result
2-Butanone	59032	7/08/88	VOA	2.80E+01
2-Butanone	59032B	7/08/88	VOA	<1.00E+01
2-Butanone	59038	7/13/88	VOA	2.90E+01
2-Butanone	59038B	7/13/88	VOA	<1.00E+01
2-Butanone	59034	7/09/88	VOA	4.40E+01
2-Butanone	59034B	7/09/88	VOA	<1.00E+01
2-Butoxyethanol	59036	7/10/88	ABN	4.10E+01
2-Butoxyethanol	59032	7/08/88	ABN	8.20E+01
2-Butoxyethanol	59038	7/13/88	ABN	9.80E+01
2-Butoxyethanol	59034	7/09/88	ABN	6.60E+01
Butoxyglycol	59036	7/10/88	ABN	8.06E+02
Butoxyglycol	59032	7/08/88	ABN	5.70E+02
Butoxyglycol	59038	7/13/88	ABN	7.40E+02
Butoxyglycol	59034	7/09/88	ABN	6.90E+02
Ethoxytriethylene glycol	59036	7/10/88	ABN	9.30E+01
Ethoxytriethylene glycol	59038	7/13/88	ABN	1.20E+02
Ethoxytriethylene glycol	59034	7/09/88	ABN	3.30E+01
2-Hexanone	59036	7/10/88	VOA	6.00E+00
2-Hexanone	59032	7/08/88	VOA	4.00E+00
2-Hexanone	59038	7/13/88	VOA	5.00E+00
2-Hexanone	59034	7/09/88	VOA	1.00E+01
Methoxydiglycol	59038	7/13/88	ABN	5.20E+01
Methoxytriglycol	59038	7/13/88	ABN	6.50E+01
MIBK (Hexone)	59036	7/10/88	VOA	<1.00E+01
MIBK (Hexone)	59036B	7/10/88	VOA	<1.00E+01
MIBK (Hexone)	59032	7/08/88	VOA	<1.00E+01
MIBK (Hexone)	59032B	7/08/88	VOA	<1.00E+01
MIBK (Hexone)	59038	7/13/88	VOA	<1.00E+01
MIBK (Hexone)	59038B	7/13/88	VOA	<1.00E+01
MIBK (Hexone)	59034	7/09/88	VOA	<1.00E+01
MIBK (Hexone)	59034	7/09/88	VOA	8.00E+00
MIBK (Hexone)	59034B	7/09/88	VOA	<1.00E+01
2-Propanol	59036	7/10/88	VOA	3.00E+01
2-Propanol	59032	7/08/88	VOA	2.10E+01
2-Propanol	59038	7/13/88	VOA	9.00E+00
2-Propanol	59034	7/09/88	VOA	3.40E+01
Tetradecane	59036	7/10/88	ABN	3.20E+02
Tetradecane	59032	7/08/88	ABN	1.40E+01
Tetradecane	59038	7/13/88	ABN	1.40E+02
Tetradecane	59034	7/09/88	ABN	7.70E+01
Tetrahydrofuran	59036	7/10/88	VOA	1.70E+02
Tetrahydrofuran	59032	7/08/88	VOA	4.40E+01
Tetrahydrofuran	59038	7/13/88	VOA	8.50E+01
Tetrahydrofuran	59034	7/09/88	VOA	1.31E+02
Tributylphosphate	59036	7/10/88	ABN	6.15E+03
Tributylphosphate	59032	7/08/88	ABN	2.03E+03
Tributylphosphate	59038	7/13/88	ABN	4.10E+03
Tributylphosphate	59034	7/09/88	ABN	2.30E+03

Table B-2. Raw Analytical Data. (sheet 28 of 30)

SALTWELL FEED

Constituent	Sample #	Date	Method	Result
Tridecane	59036	7/10/88	ABN	3.00E+02
Tridecane	59032	7/08/88	ABN	9.00E+00
Tridecane	59038	7/13/88	ABN	2.00E+02
Tridecane	59034	7/09/88	ABN	7.10E+01
Unknown	59036	7/10/88	ABN	4.50E+01
Unknown	59032	7/08/88	ABN	3.90E+01
Unknown	59038	7/13/88	ABN	4.40E+01
Unknown	59034	7/09/88	ABN	5.10E+01
Beta Activity (pCi/L)	59036	7/10/88	Beta	1.33E+03
Beta Activity (pCi/L)	59032	7/08/88	Beta	9.57E+02
Beta Activity (pCi/L)	59038	7/13/88	Beta	1.61E+03
Beta Activity (pCi/L)	59034	7/09/88	Beta	1.19E+03
Conductivity (μS)	59036	7/10/88	COND-Lab	8.70E+01
Conductivity (μS)	59032	7/08/88	COND-Lab	8.40E+01
Conductivity (μS)	59038	7/13/88	COND-Lab	7.70E+01
Conductivity (μS)	59034	7/09/88	COND-Lab	8.50E+01
pH (dimensionless)	59036	7/10/88	PH-Lab	1.01E+01
pH (dimensionless)	59032	7/08/88	PH-Lab	9.91E+00
pH (dimensionless)	59038	7/13/88	PH-Lab	1.01E+01
pH (dimensionless)	59034	7/09/88	PH-Lab	1.01E+01
TOC	59036	7/10/88	TOC	2.97E+04
TOC	59032	7/08/88	TOC	1.91E+04
TOC	59038	7/13/88	TOC	2.25E+04
TOC	59034	7/09/88	TOC	2.31E+04
TOX (as Cl)	59036	7/10/88	LTOX	<2.00E+00
TOX (as Cl)	59032	7/08/88	LTOX	<8.00E+00
TOX (as Cl)	59038	7/13/88	LTOX	<1.00E+00
TOX (as Cl)	59034	7/09/88	LTOX	3.50E+01

NOTES:

Sample# is the number of the sample. See Chapter 3 for corresponding chain-of-custody number.
Date is the sampling date.
Results are in ppb (parts per billion) unless otherwise indicated.

The following table lists the methods that are coded in the method column.

Code	Analytical Method	Reference
ABN	Semivolatile Organics (GC/MS)	USEPA-8270
AEA	^{241}Am	UST-20Am01
AEA	Curium Isotopes	UST-20Am/Cm01
AEA	Plutonium Isotopes	UST-20Pu01
AEA	Uranium Isotopes	UST-20U01
ALPHA	Alpha Counting	EPA-680/4-75/1
ALPHA-Ra	Total Radium Alpha Counting	ASTM-D2460
BETA	Beta Counting	EPA-680/4-75/1

Table B-2. Raw Analytical Data. (sheet 29 of 30)

SALTWELL FEED

Code	Analytical Method	Reference
BETA	^{90}Sr	UST-20Sr02
COLIF	Coliform Bacteria	USEPA-9131
COLIFMF	Coliform Bacteria (Membrane Filter)	USEPA-9132
COND-Fld	Conductivity-Field	ASTM-D1125A
COND-Lab	Conductivity-Laboratory	ASTM-D1125A
CVAA	Mercury	USEPA-7470
CVAA/M	Mercury-Mixed Matrix	USEPA-7470
DIGC	Direct Aqueous Injection (GC)	UST-70DIGC
DIMS	Direct Aqueous Injection (GC/MS)	"USEPA-8240"
DSPEC	Reactive Cyanide (Distillation, Spectroscopy)	USEPA-CHAPTER 7
DTITRA	Reactive Sulfide (Distillation, Titration)	USEPA-CHAPTER 7
FLUOR	Uranium (Fluorometry)	ASTM-D2907-83
GEA	Gamma Energy Analysis Spectroscopy	ASTM-D3649-85
GFAA	Arsenic (AA, Furnace Technique)	USEPA-7060
GFAA	Lead (AA, Furnace Technique)	USEPA-7421
GFAA	Selenium (AA, Furnace Technique)	USEPA-7740
GFAA	Thallium (AA, Furnace Technique)	USEPA-7841
IC	Ion Chromatography	EPA-600/4-84-01
ICP	Atomic Emission Spectroscopy (ICP)	USEPA-6010
ICP/M	Atomic Emission Spectroscopy (ICP)-Mixed Matrix	USEPA-6010
IGNIT	Pensky-Martens Closed-Cup Ignitability	USEPA-1010
ISE	Fluoride-Low Detection Limit	ASTM-D1179-80-B
ISE	Ammonium Ion	ASTM-D1426-D
LALPHA	Alpha Activity-Low Detection Limit	EPA-680/4-75/1
LEPD	^{129}I	UST-20I02
LSC	^{14}C	UST-20C01
LSC	Tritium	UST-20H03
LTOX	Total Organic Halides-Low Detection Limit	USEPA-9020
PH-Fld	pH-Field	USEPA-9040
PH-Lab	pH-Laboratory	USEPA-9040
SPEC	Total and Amenable Cyanide (Spectroscopy)	USEPA-9010
SPEC	Hydrazine-Low Detection Limit (Spectroscopy)	ASTM-D1385
SSOLID	Suspended Solids	SM-208D
TC	Total Carbon	USEPA-9060
TDS	Total Dissolved Solids	SM-208B
TEMP-Fld	Temperature-Field	Local
TITRA	Alkalinity-Method B (Titration)	ASTM-D1067B
TITRA	Sulfides (Titration)	USEPA-9030
TOC	Total Organic Carbon	USEPA-9060
TOX	Total Organic Halides	USEPA-9020
VOA	Volatile Organics (GC/MS)	USEPA-8240

Analytical Method Acronyms:
atomic absorption spectroscopy (AA)
gas chromatography (GC)
mass spectrometry (MS)
inductively-coupled plasma spectroscopy (ICP).

Table B-2. Raw Analytical Data. (sheet 30 of 30)

References:

ASTM - "1986 Annual Book of ASTM Standards", American Society for Testing and Materials, Philadelphia, Pennsylvania.

EPA - Various methods of the U.S. Environmental Protection Agency, Washington, D.C.

UST - Methods of the United States Testing Company, Incorporated, Richland, Washington.

SM - "Standard Methods for the Examination of Water and Wastewater", 16th ed., American Public Health Association, American Water Works Association and Water Pollution Control Federation, Washington, D.C.

USEPA- "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", 3rd ed., SW-846, U.S. Environmental Protection Agency, Washington, D.C.

Table B-3. Inorganic Chemistry Data. (sheet 1 of 4)

CRW FEED

Constituent	ppb	Ion	Eq/g	Normalized
Charge Normalization:				
Aluminum	1.29E+03	Al+3	1.43E-07	
Barium	6.00E+00	Ba+2	8.74E-11	
Calcium	6.74E+03	Ca+2	3.36E-07	
Chloride	7.54E+02	Cl-1	2.13E-08	2.44E-08
Magnesium	6.06E+01	Mg+2	4.99E-09	
Mercury	6.16E-01	Hg+2	6.14E-12	
Potassium	6.52E+02	K+1	1.67E-08	
Uranium	7.59E-01	UO2+2	6.38E-12	
Zinc	5.00E+00	Zn+2	1.53E-10	
Hydrogen Ion (from pH 10.6)		H+	(2.41E-14)	
Hydroxide Ion (from pH)		OH-	(4.15E-07)	
Cation total			5.02E-07	
Anion total			4.36E-07	
Anion normalization factor:	1.149			

Substance Formation:

Substance	%	Cation Out	Anion Out
Mercury(II) chloride	8.34E-08	0.00E+00	2.44E-08
Barium chloride	9.10E-07	0.00E+00	2.43E-08
Magnesium chloride	2.38E-05	0.00E+00	1.94E-08
Potassium chloride	1.24E-04	0.00E+00	2.69E-09
Calcium chloride	1.49E-05	3.34E-07	0.00E+00

LINKED FEED

Constituent	ppb	Ion	Eq/g	Normalized
Charge Normalization:				
Aluminum	7.65E+02	Al+3	8.51E-08	1.60E-07
Barium	6.00E+00	Ba+2	8.74E-11	1.64E-10
Cadmium	2.59E+00	Cd+2	4.61E-11	8.67E-11
Calcium	2.51E+03	Ca+2	1.25E-07	2.36E-07
Chloride	6.83E+02	Cl-1	1.93E-08	
Copper	1.92E+01	Cu+2	6.04E-10	1.13E-09
Fluoride	2.52E+01	F-1	1.33E-09	
Iron	6.92E+01	Fe+3	3.72E-09	6.99E-09
Magnesium	9.64E+02	Mg+2	7.93E-08	1.49E-07
Mercury	2.68E-01	Hg+2	2.67E-12	5.01E-12
Nickel	1.22E+01	Ni+2	4.14E-10	7.79E-10
Nitrate	1.68E+03	NO3-1	2.71E-08	
Potassium	5.81E+02	K+1	1.49E-08	2.79E-08
Sodium	5.71E+03	Na+1	2.48E-07	4.67E-07
Sulfate	3.54E+03	SO4-2	7.36E-08	

Table B-3. Inorganic Chemistry Data. (sheet 2 of 4)

LINKED FEED

Constituent	ppb	Ion	Eq/g	Normalized
Sulfide	1.40E+04	S-2	8.76E-07	
Uranium	2.13E-01	UO2+2	1.79E-12	3.37E-12
Vanadium	5.00E+00	V+5	4.91E-10	9.23E-10
Zinc	1.13E+01	Zn+2	3.45E-10	6.49E-10
Hydrogen Ion (from pH 9.7)		H+	(1.90E-13)	
Hydroxide Ion (from pH)		OH-	(5.27E-08)	
Cation total			5.59E-07	
Anion total			1.05E-06	
Cation normalization factor:	1.880			

Substance Formation:

Substance	%	Cation Out	Anion Out
Cadmium chloride	7.94E-07	0.00E+00	1.92E-08
Nickel(II) hydroxide	3.61E-06	0.00E+00	
Copper(II) chloride	7.63E-06	0.00E+00	1.80E-08
Mercury(II) chloride	6.81E-08	0.00E+00	1.80E-08
Potassium sulfide, DB	1.54E-04	0.00E+00	8.48E-07
Uranyl nitrate	6.64E-08	0.00E+00	2.71E-08
Vanadium(V) oxide	1.68E-06	0.00E+00	
Hydrogen sulfide, DB	1.45E-03		0.00E+00
Iron(III) fluoride	5.00E-06	5.66E-09	0.00E+00
Barium chloride	1.71E-06	0.00E+00	1.79E-08
Zinc nitrate	6.14E-06	0.00E+00	2.64E-08
Iron(III) chloride	3.06E-05	0.00E+00	1.22E-08
Aluminum nitrate	3.30E-04	1.34E-07	0.00E+00
Magnesium chloride	5.82E-05	1.37E-07	0.00E+00
Magnesium sulfate	4.43E-04	6.33E-08	0.00E+00

ASF FEED

Constituent	ppb	Ion	Eq/g	Normalized
Charge Normalization:				
Aluminum	1.15E+03	Al+3	1.27E-07	1.83E-07
Barium	6.60E+00	Ba+2	9.61E-11	1.38E-10
Boron	1.20E+01	B407-2	5.54E-10	
Calcium	4.42E+03	Ca+2	2.21E-07	3.17E-07
Chloride	9.48E+02	Cl-1	2.68E-08	
Copper	1.05E+01	Cu+2	3.30E-10	4.74E-10
Fluoride	2.91E+02	F-1	1.53E-08	
Iron	3.55E+01	Fe+3	1.91E-09	2.74E-09

Table B-3. Inorganic Chemistry Data. (sheet 3 of 4)

ASF FEED

Constituent	ppb	Ion	Eq/g	Normalized
Magnesium	2.17E+02	Mg+2	1.79E-08	2.57E-08
Manganese	5.00E+00	Mn+2	1.82E-10	2.61E-10
Mercury	2.50E-01	Hg+2	2.50E-12	3.59E-12
Nickel	1.10E+01	Ni+2	3.73E-10	5.36E-10
Potassium	7.92E+03	K+1	2.03E-07	2.91E-07
Silicon	8.22E+03	SiO3-2	5.85E-07	
Sodium	8.55E+03	Na+1	3.72E-07	5.34E-07
Strontium	2.10E+01	Sr+2	4.80E-10	6.89E-10
Sulfate	2.40E+03	SO4-2	4.99E-08	
Uranium	8.80E-01	UO2+2	7.39E-12	1.06E-11
Vanadium	5.87E+00	V+5	5.76E-10	8.28E-10
Zinc	8.41E+00	Zn+2	2.57E-10	3.69E-10
Hydrogen Ion (from pH 10.8)		H+	(1.47E-14)	
Hydroxide Ion (from pH)		OH-	(6.79E-07)	
Cation total			9.45E-07	
Anion total			1.36E-06	

Cation normalization factor: 1.437

Substance Formation:

Substance	%	Cation Out	Anion Out
Nickel(II) hydroxide	2.49E-06	0.00E+00	
Copper(II) chloride	3.18E-06	0.00E+00	2.63E-08
Mercury(II) chloride	4.87E-08	0.00E+00	2.63E-08
Vanadium(V) oxide	1.51E-06	0.00E+00	
Iron(III) fluoride	1.03E-05	0.00E+00	1.26E-08
Potassium fluoride	7.30E-05	2.79E-07	0.00E+00
Barium chloride	1.44E-06	0.00E+00	2.61E-08
Zinc sulfate	2.98E-06	0.00E+00	4.95E-08
Magnesium chloride	1.22E-04	0.00E+00	4.47E-10
Potassium chloride	3.33E-06	2.78E-07	0.00E+00
Calcium tetraborate	5.41E-06	3.17E-07	0.00E+00
Sodium metasilicate	3.26E-03	0.00E+00	5.13E-08
Aluminum sulfate	1.49E-04	1.34E-07	0.00E+00
Potassium metasilicate	3.96E-04	2.27E-07	0.00E+00
Strontium hydroxide	4.19E-06	0.00E+00	

Table B-3. Inorganic Chemistry Data. (sheet 4 of 4)

SALTWELL FEED

Constituent	ppb	Ion	Eq/g	Normalized
Charge Normalization:				
Aluminum	6.33E+02	Al+3	7.04E-08	
Calcium	4.21E+02	Ca+2	2.10E-08	
Mercury	2.15E-01	Hg+2	2.14E-12	
Nickel	1.20E+01	Ni+2	4.08E-10	
Potassium	5.24E+03	K+1	1.34E-07	
Sodium	2.44E+03	Na+1	1.06E-07	
Zinc	3.11E+01	Zn+2	9.51E-10	
Hydrogen Ion (from pH 10.1)		H+	(7.41E-14)	
Hydroxide Ion (from pH)		OH-	(1.35E-07)	
Cation total			3.33E-07	
Anion total			1.35E-07	
Anion normalization factor:	2.467			

Substance Formation: Substance	%	Cation Out	Anion Out
Nickel(II) hydroxide	1.89E-06	0.00E+00	

NOTES:

Statistics based on a single datum are noted by an asterisk (*). With the exception of hydrogen ion and hydroxide, others report the upper limit of the one-tailed 90% confidence interval. Hydrogen ion is based on the lower limit of the one-tailed 90% confidence interval for pH sets with mean values below 7.25 and on the upper limit of the one-tailed 90% confidence interval for pH data sets with mean values of 7.25 or higher. The hydroxide magnitude is equal to 1.00E-20 (Eq/g)**2 divided by the hydrogen ion value (in Eq/g).

Ion concentrations in equivalents per gram (Eq/g) are based on the statistic. Conversions include scale (ppb to g/g), molecular weight (constituent form to ionic form), and equivalents (charges per ion). The column headed "Normalized" shows normalized concentrations (also in Eq/g) calculated by increasing concentrations of cations, excluding Hydrogen ion, or anions, excluding hydroxide, by the normalization factor. The normalization factor is the larger of the cation total, including Hydrogen ion, or anion total, including hydroxide, divided by the smaller total.

Substance names may include MB (monobasic), DB (dibasic), TB (tribasic) to identify the equivalents of hydrogen ion that have been neutralized from polycrotic weak acids to form their conjugate bases.

Substances are formulated in the order listed. The column headed "%" is the percent of the substance in the waste (gms/100gms). Substances formulated with oxygen are based on the residual concentration of the counterion. Other substance concentrations are based on the limiting residual concentration of the cation or anion. The columns headed "Cation Out" and "Anion Out" indicate the residual concentrations (in Eq/g) of each ion after a substance concentration has been calculated.

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APPENDIX C

CRITERIA DESIGNATION WORKSHEET FOR 242-A PROCESS CONDENSATE

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Table C-1. Criteria Designation Worksheet for 242-A Process Condensate.

Waste Discharges of the 242-A Evaporator/Crystallizer Process Condensate that are Designated as Dangerous Waste due to Toxicity.

Dates of Occurrences	Ammonia wt % / 100	Ammonium Hydroxide wt % / 1000	Other Constituents %	Equivalent Concentration %
04/22/88	0.0011 2820	0.0000 0642	0.0000 1247	0.0011 4709
04/23/88	0.0011 1094	0.0000 0438	0.0000 1247	0.0011 2779
04/25/88	0.0010 5449	0.0000 0620	0.0000 1247	0.0010 7316
04/30/88	0.0012 7135	0.0000 0985	0.0000 1247	0.0012 9367
05/03/88	0.0010 0843	0.0000 1918	0.0000 1247	0.0010 4008
05/05/88	0.0013 4367	0.0000 2226	0.0000 1247	0.0013 7840
05/07/88	0.0013 1079	0.0000 1573	0.0000 1247	0.0013 3899
05/08/88	0.0014 7980	0.0000 1173	0.0000 1247	0.0015 0401
05/10/88	0.0011 7818	0.0000 1048	0.0000 1247	0.0012 0114
08/22/88	0.0009 9854	0.0000 0582	0.0000 1247	0.0010 1683
09/02/88	0.0010 4076	0.0000 0518	0.0000 1247	0.0010 5840
09/05/88	0.0011 1926	0.0000 0266	0.0000 1247	0.0011 3439
10/12/88	0.0010 2518	0.0000 0558	0.0000 1247	0.0010 4323
10/13/88	0.0014 4726	0.0000 0058	0.0000 1247	0.0014 6032
12/07/88	0.0011 4220	0.0000 0984	0.0000 1247	0.0011 6451
12/08/88	0.0011 9268	0.0000 0225	0.0000 1247	0.0012 0740
12/26/88	0.0011 4929	0.0000 1048	0.0000 1247	0.0011 7224
02/28/89	0.0009 9272	0.0000 2417	0.0000 1247	0.0010 2935
03/02/89 to 03/03/89	0.0018 2228	0.0000 2382	0.0000 1247	0.0018 5858
03/04/89	0.0013 3945	0.0000 1298	0.0000 1247	0.0013 6490
03/10/89	0.0009 7994	0.0000 3695	0.0000 1247	0.0010 2935
03/12/89 to 03/13/89	0.0015 8382	0.0000 1062	0.0000 1247	0.0016 0691

NOTE: The volume discharged for each occurrence is 69,100 gal, except on 4/30/88 (56,100 gal) and on 3/4/89 (54,770 gal).

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