Effluent Treatment Facility
Process Systems Overview

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SRS Citizens Advisory Board
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Purpose

- Provide an overview of the Effluent Treatment Facility
Liquid Waste Facilities

170 acres
3 miles in length

Saltstone Processing/Disposal Facilities
SWPF
DWPF

Inter-Area Line (2.2 miles)

F-Tank Farm
H-Tank Farm

Effluent Treatment Project

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Liquid Waste Facilities

Legacy Liquid Waste

Low Level Wastewater from Canyon, F/H Lab, SRNL.

Evaporators

Overheads

Effluent Treatment Project

Salt Process

Salt waste

Recycle

Tanks Cleaned and Closed

<1% radionuclides remain in tanks

Supernate

Sludge waste

DWPF

Radionuclides

Glass Waste Storage

Saltstone Disposal Facility

<<1% radionuclides to saltstone

Solid (not hazardous) waste

Legend:

ARP: Actinide Removal Process
BWRE: Bulk Waste Removal Efforts
DWPF: Defense Waste Processing Facility
MCU: Modular Caustic Side Solvent Extraction Unit
SWPF: Salt Waste Processing Facility

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The Effluent Treatment Facility (ETF) treats low-level radioactive wastewater from the F and H Area separations and waste management facilities to remove chemical and radioactive contaminants before releasing water to the Upper Three Runs Creek.
ETF Treatment Process Overview

Wastewater Collection and Pretreatment → Filtration → Organic Removal → Reverse Osmosis → Ion Exchange

- Clarified Liquid
- Overheads
- Filtered Liquids/Solids
- Filtered/Liquid
- Treated Water
- Upper Three Runs Creek
- Tank 50
- Concentrate

We do the right thing.
ETF Basin Systems

Basins collect potentially contaminated liquids from storm water run off and cooling water diversions from F and H Areas.

After sampling and analysis, liquids from the basin are pumped either to ETF for treatment, or Four Mile Creek.
ETF Wastewater Collection and Pretreatment

- Two 450,000 gallon waste water tanks receive low level wastewater
- Pretreatment consists of adjusting the wastewater chemistry so that particles can be filtered
ETF Filtration System

- The filtration system removes particles from the wastewater.
- After filtration the clear liquid is sent to organic removal and the solution of particles is sent to the Evaporator System.
ETF Organic and Mercury Removal

- The organic and mercury removal system consists of chemical columns that remove organics and mercury.
- After organic and mercury removal the liquid is transferred to the Reverse Osmosis System.
ETF Reverse Osmosis Filter Train

- The reverse osmosis system removes dissolved solids from the wastewater.
- The clear liquid is transferred to Ion Exchange and solution containing solids is sent to the Evaporator system.
ETF Ion Exchange Columns

- The ion exchange system removes residual heavy metals, radioactive contaminants from the wastewater.
- After ion exchange treatment the wastewater is transferred to the treated water system.

We do the right thing.
ETF Treated Water Tanks

- The ETF Treated Water Tanks store water following completion of processing.
- After sampling shows the treated water meets release requirement the treated water is discharged to Upper Three Runs Creek.
ETF Evaporator System

- The ETF evaporator system reduces volume of waste from the ETF process.
- The concentrated waste is transferred to Tank 50 and then to Saltstone.
Effluent Treatment Facility (ETF)

1989 - 2015

Receipts from Tank Farms, Canyons & SRNL

280 Mgals of water treated, released at drinking water standard
Acronym List

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