



UNITED STATES DEPARTMENT OF ENERGY

# OFFICE OF RIVER PROTECTION

## Waste Treatment and Immobilization Plant Project

**Bill Hamel**

**Assistant Manager & Federal Project Director**



# WTP Leadership Changes in 2013



**Kevin Smith**  
ORP Manager  
*January 2013*



**JD Dowell**  
ORP Deputy Manager  
*October 2013*



**Bill Hamel**  
WTP Assistant Manager  
*February 2013*



**Peggy McCullough**  
WTP Project Director  
*July 2013*



# Waste Treatment Plant Project Details





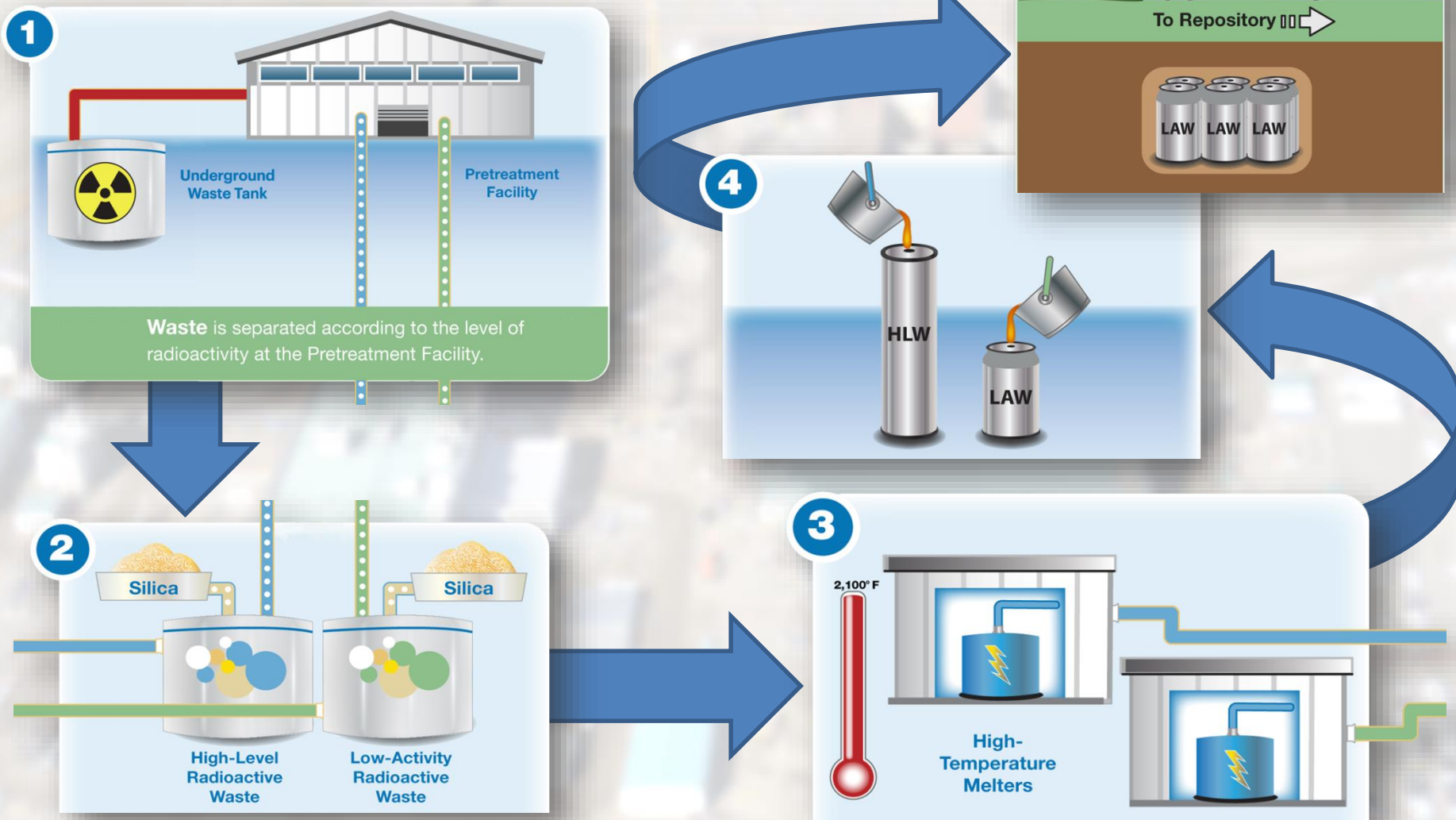
# The WTP Mission: Immobilize the Waste in Glass

Vitrification offers the best solution for immobilizing Hanford's high-level radioactive waste for reducing the risk





# The WTP Vitrification Process





# WTP's Four Nuclear Facilities



*Low-Activity Waste Vitrification*



*Analytical Laboratory*



*Pretreatment*



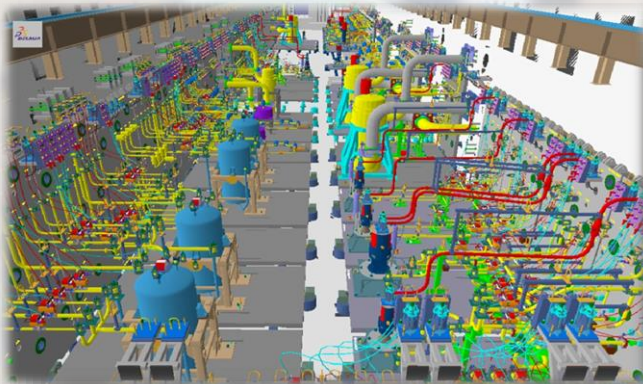
*High-Level Waste Vitrification*



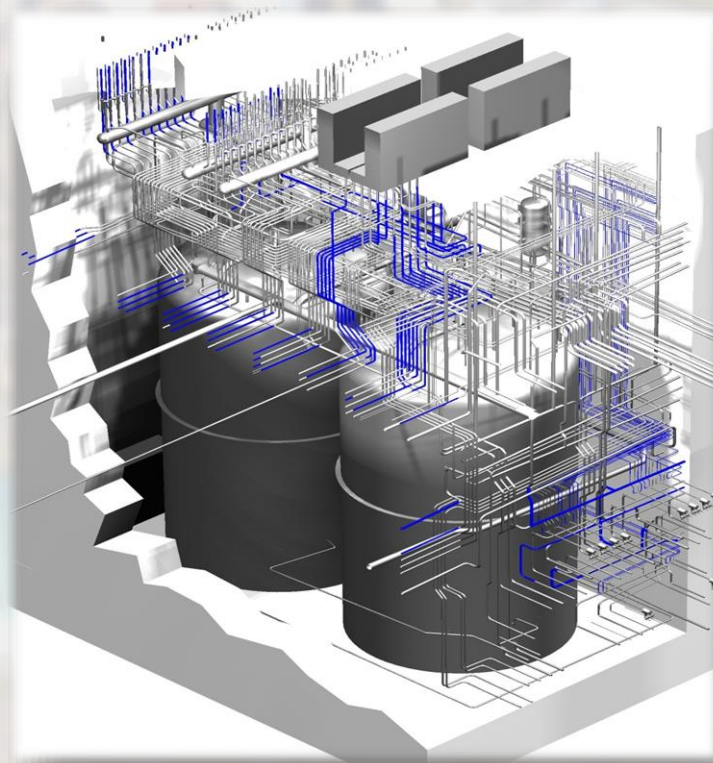
# Pretreatment Facility – Separates Solids and Liquids



**Exterior**



**Hot cell**

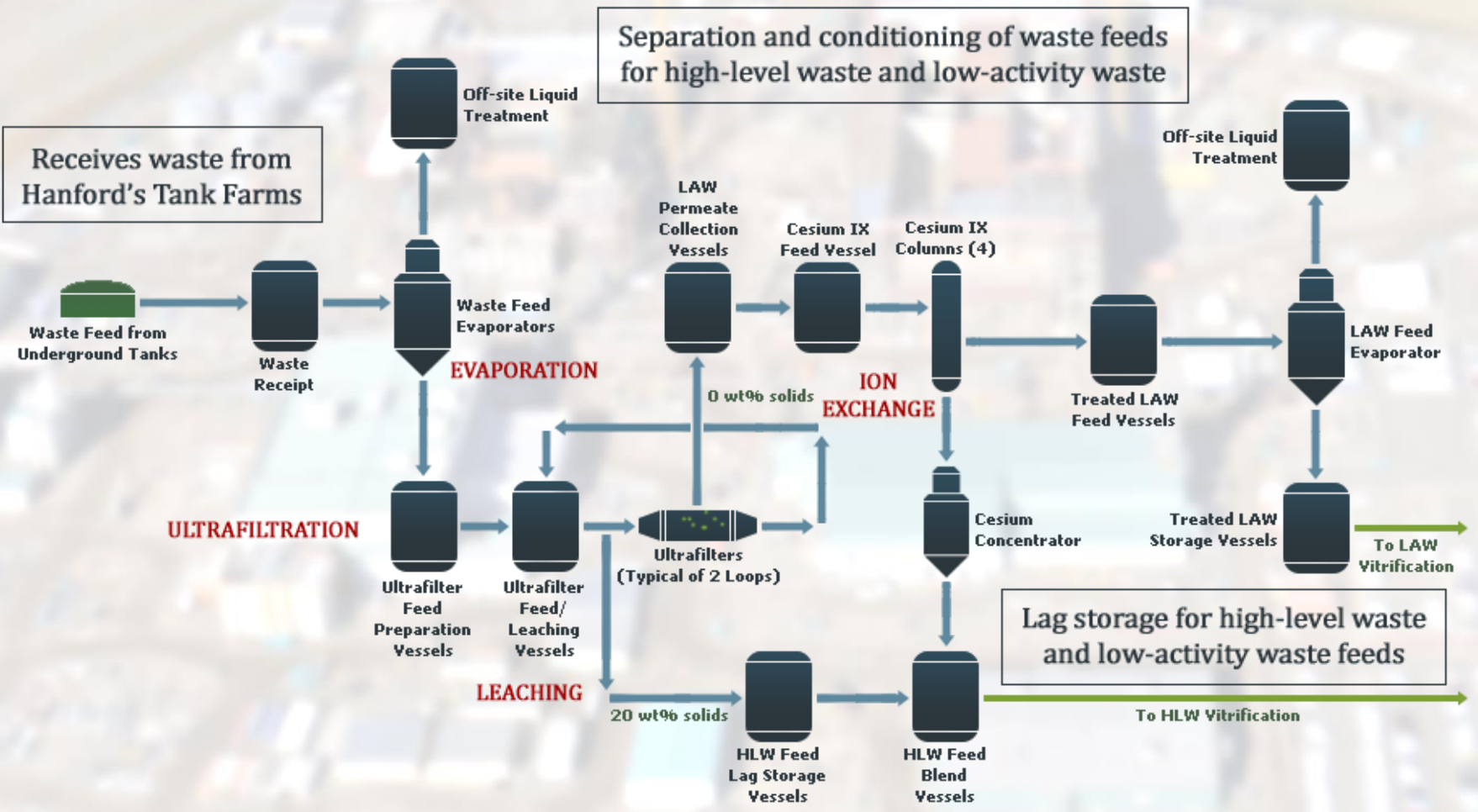


**Vessels and pipes in black cell**



# The Challenge

## Pretreatment Facility Functions and Simplified Flow Diagram







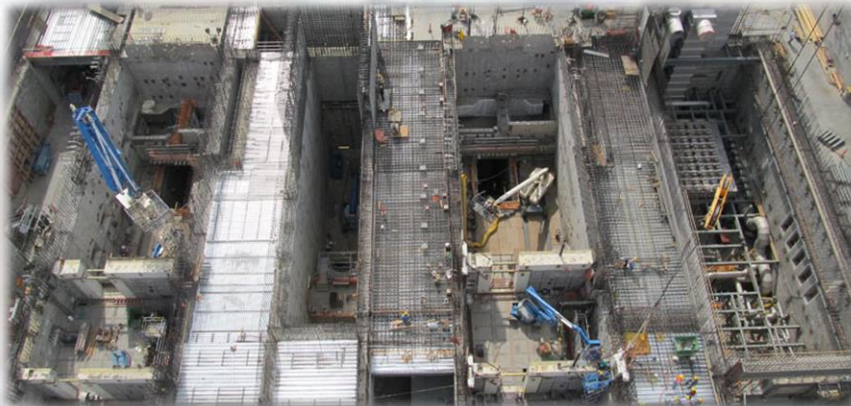
# High-Level Waste Facility – Makes High-Activity Glass Canisters



**Exterior**



**Truck Bay Walls**



**Melter Bay**



**Bridge Crane**



# Low-Activity Waste Facility – Makes Low-Activity Glass Containers



**Exterior**



**Overhead pipe racks for steam and glass formers**



**Carbon bed adsorber**



**Transfer Tunnel**



**Melter**



# Analytical Laboratory – Process Samples Testing



**Exterior**



**Air-handling systems**



**Fume hoods**



# Balance of Facilities – Supports Operations



**20 support buildings for the Balance of Facilities**



**Glass former piping**



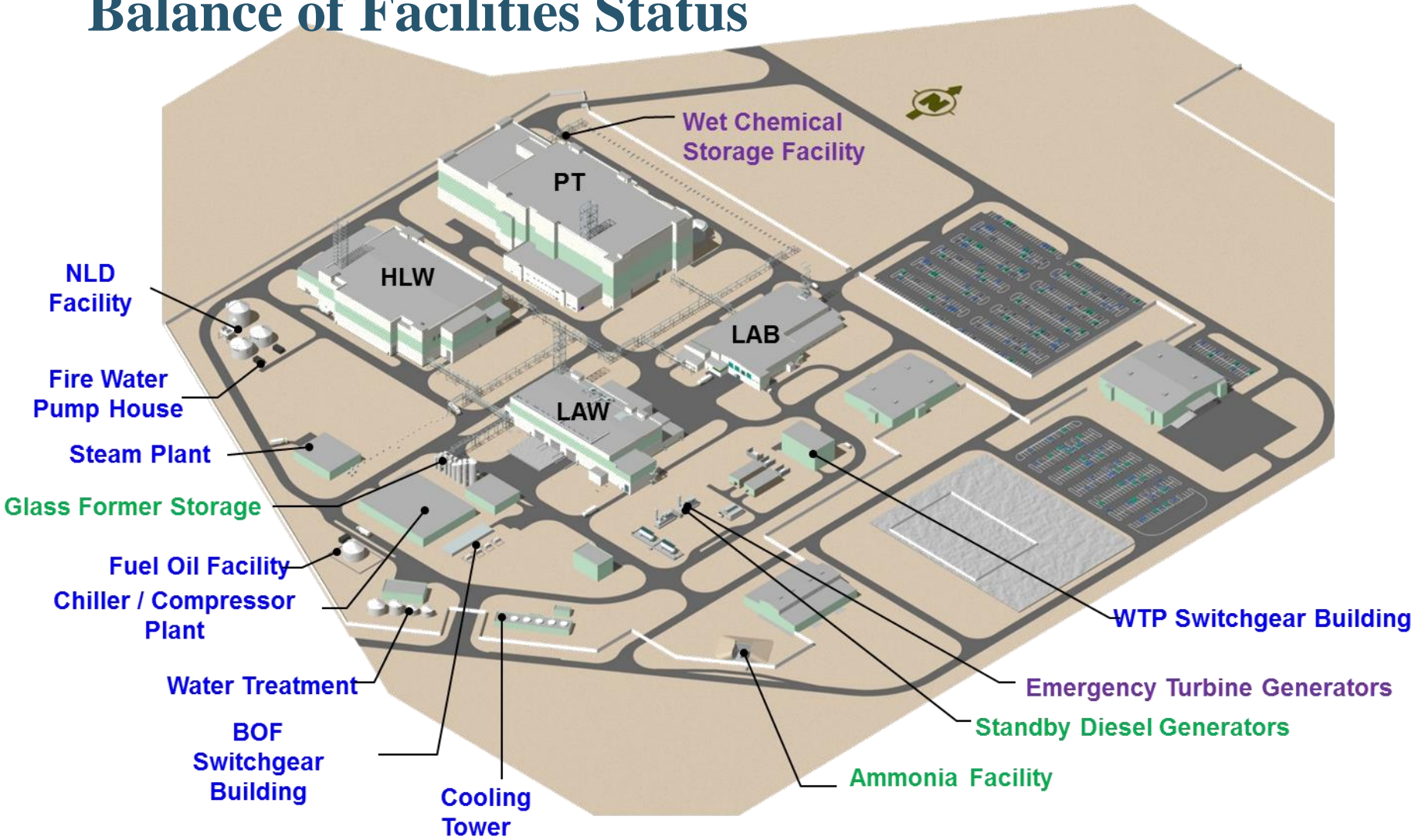
**Overhead pipe racks for steam and glass former materials**



**Glass former silos**



# Balance of Facilities Status



**Facility Complete/Construction in Progress/Construction Schedule Aligned with PT/HLW**



# WTP Technical Issues



## Pretreatment and HLW Technical Decisions

Technical Decision #	Item
T1	Hydrogen gas release from vessel solids
T2	Criticality in WTP vessels
T3	Hydrogen in piping and ancillary vessels (HPAV)
T4	Pulse jet mixing vessel performance
T5	Erosion and localized corrosion
T6	Design redundancy in black cells/ in-service inspection (ISI)
T7	Black cell vessel structural integrity
T8	Facility ventilation
T9	Waste preconditioning requirements