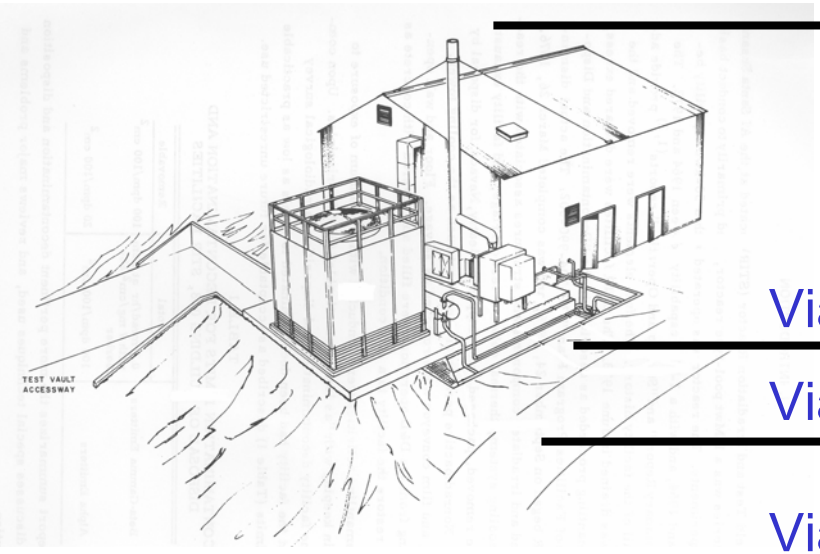
Locations Sampled	> 5,000
Samples Collected	> 20,000
Laboratory Tests Performed	> 30,000

Potential Pathways to the Environment

Sources

Pathways



Via Stack

Via Building Drains

Via Surface Water Runoff

Via Leaks and Spills

Area 3 Sanitary Sewer System

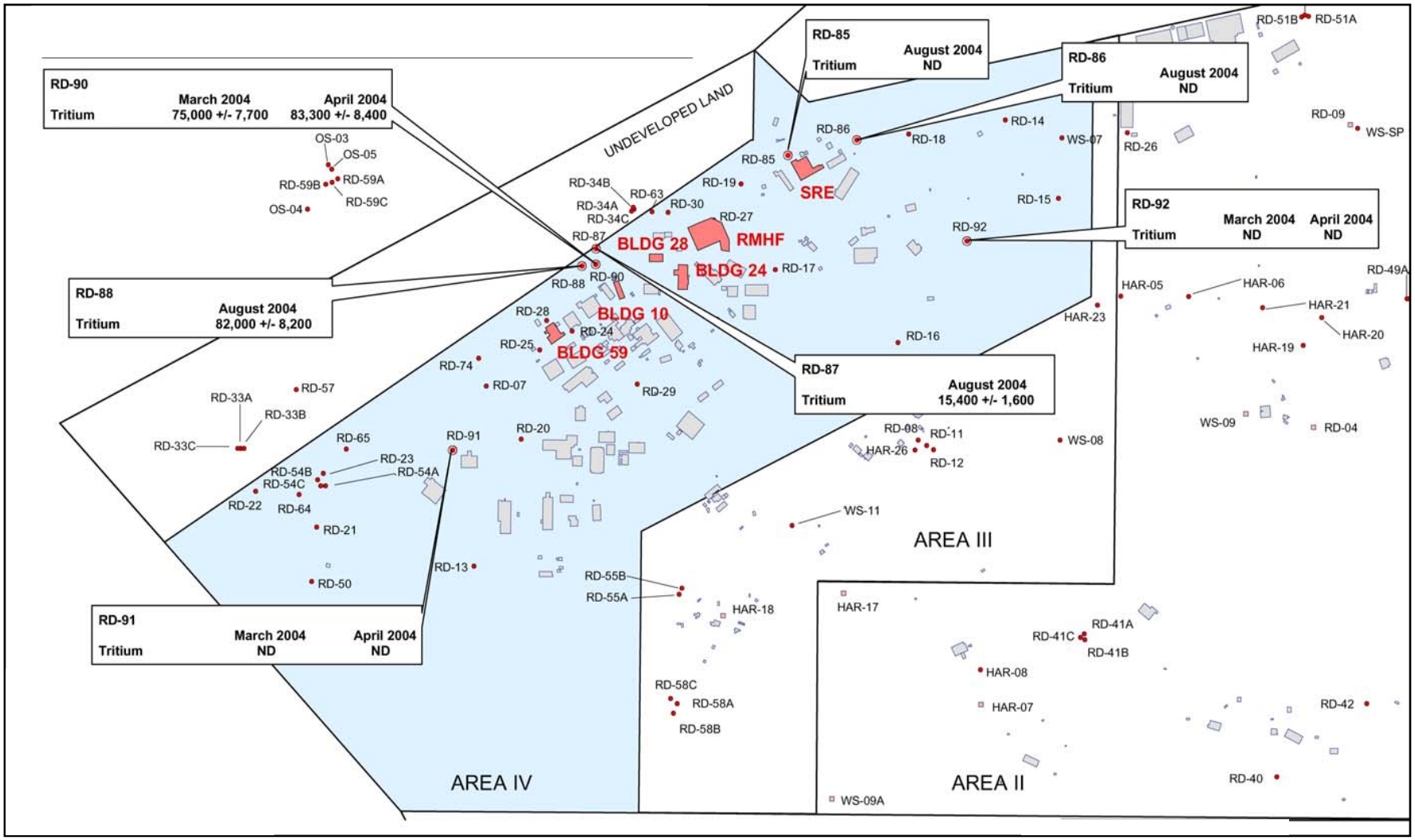
Air

Surface Soil

Subsurface soils/ Bedrock

Groundwater

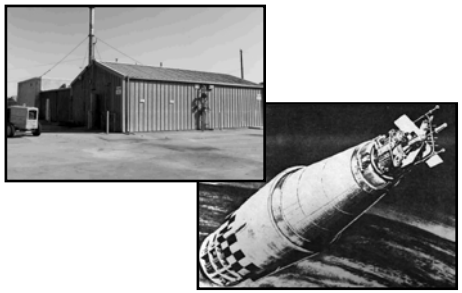
Recent Groundwater Monitoring Results



DTSC – Helped to site the wells

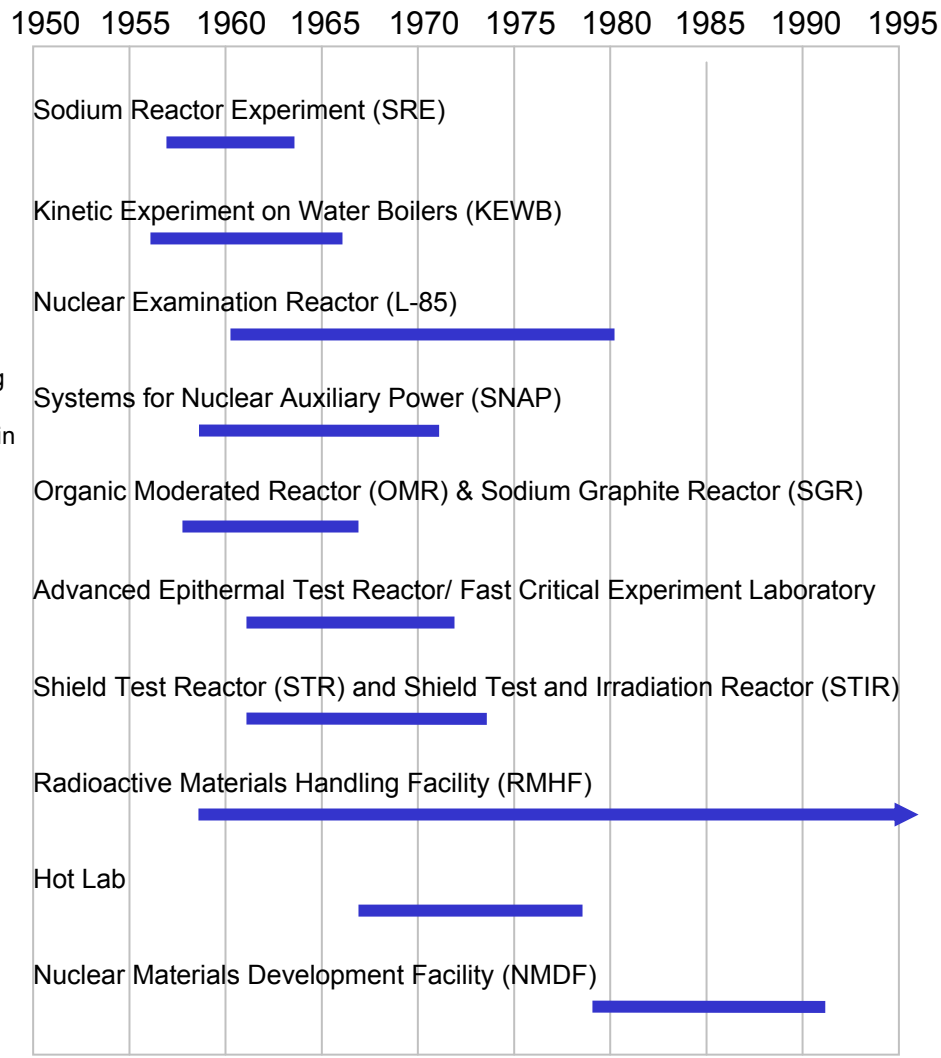
DHS – Took the samples

DOE Radiological Activities in Area IV



Systems for Nuclear Auxiliary Power (SNAP):
• Atomics International (AI) program to develop space nuclear power systems.
• A system was launched from Vandenberg Air Force Base on April 3, 1965.
• Remains the only nuclear reactor placed in space by the U.S.

The Hot Lab:
• Used for 30 years to handle, examine, and disassemble highly radioactive items.
• Activities done remotely in heavily shielded rooms.
• Decontaminated and decommissioned in the mid-1990's.



Sodium Reactor Experiment (SRE):
• Atomic Energy Commission program to test a sodium-cooled power reactor.
• Supplied power to the City of Moorpark.
• The first nuclear reactor in the U.S. to produce power for a commercial power grid.
• Partial melting of 13 of the 43 reactor fuel assemblies occurred in 1959, which released nuclear gasses.

The Radioactive Materials Handling Facility (RMHF):
• Used for packaging radioactive material for offsite disposal.
• Septic tank leach field was contaminated by cesium and strontium in 1962.
• Leach field was cleaned up and released for unrestricted use.
• RMHF remains in use supporting the cleanup of other facilities.

History of the Sodium Reactor Experiment (SRE)

Why the Reactor was Built

- Part of the Atomic Energy Commission's Five-Year Reactor Development Program.
- Developed as prototype of the "next generation" commercial nuclear power plant, which would use liquid metal as a coolant.

Key Dates

November 1957: SRE generated the first nuclear power for commercial use. The power was used to light the City of Moorpark.

July 1959: Partial meltdown occurred. The SRE was repaired and back online in thirteen months.

February 1964: All operational, research and development objectives were completed and SRE was shut down.

SRE Accident: What Happened?

- July 1959, pump fluid leaked into primary reactor coolant, creating a sticky residue.
- Loss of coolant circulation caused overheating of the fuel rods.
- The steel cladding in 13 of 43 fuel rods melted.
- Radioactivity leaked into the coolant and was contained within the reactor.
- The reactor was shut down
- Some radioactive gasses were released to the air.
- Contaminated sodium coolant was shipped to Hanford, Washington.

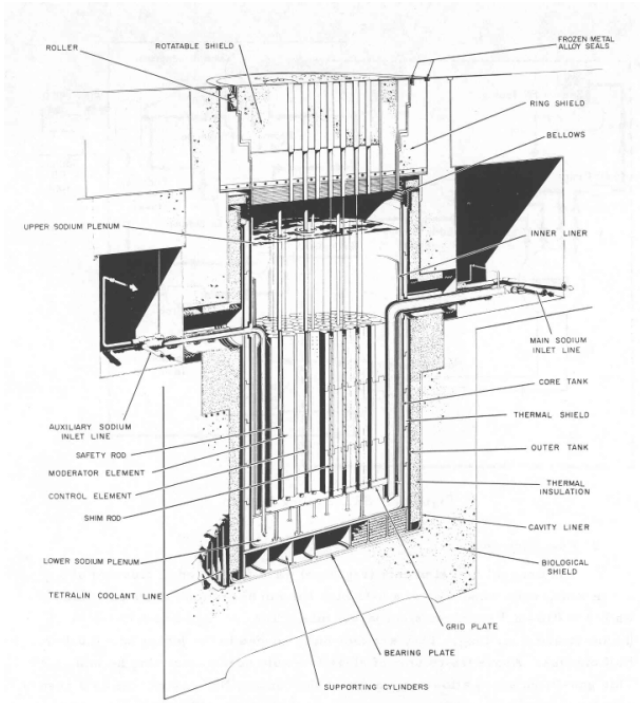


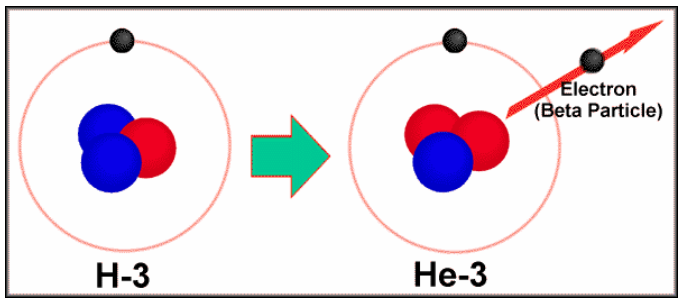
Figure 1. Cutaway View of SRE Reactor

SRE: Back Into Operation

- A new core and new sodium coolant were loaded and the reactor continued operation from 1960 -1964.
- Decontaminated in early 1970's, released for unrestricted use and used for storage.
- In 1999, the SRE facility was completely removed.

Could I be Exposed to Tritium from AREA IV?

WHAT IS TRITIUM?
- A radioactive form of hydrogen.
- Often found in water molecules, when a tritium atom replaces a hydrogen atom.



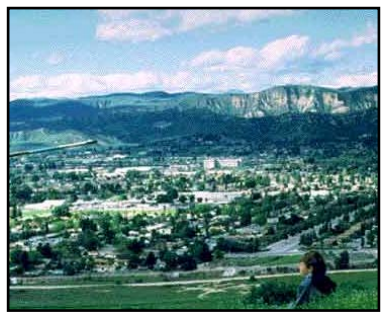
WHAT ARE THE HEALTH EFFECTS?
- Potential health risk if you drink water containing tritium above safe levels.
- Tritium emits a weak type of radiation and leaves the body relatively quickly.
- It is considered to be a low risk radioactive material.
- High exposures to tritium could cause cancer.

COULD I BE EXPOSED?
- The tritium was found in groundwater in a rugged area of SSFL.
- Area IV groundwater is not used for drinking water.

WHAT LEVELS HAVE BEEN FOUND?
- Hundreds of groundwater samples on- and off-site.
- To date, one well had tritium above the drinking water standard.

Next Steps

1. Additional groundwater sampling.
2. Evaluate all the data to determine the appropriate next actions in consultation with DHS and DTSC.
3. Update the community on site activities by December 2004.



DOE is committed to cleaning up the site.