The Office of Legacy Management's community meeting on the Fernald Preserve was held on October 12, 2011, at the Fernald Preserve Visitors Center. The 10 people who attended the meeting received an update on site activities.

Agenda

- **Nature Nook**
- **Health and Safety**
- **Natural Resource Trusteeship**
- **Site Operations**
- **Visitors Center**
- **Six-Month Look-Ahead**

Meeting agenda.

Nature Nook

Water lily

(*Nymphaea odorata)*

- Flower is open from early morning to noon
- Common plant floating on freshwater ponds
- Bloom from spring to fall

8854.03 10/11

A regular feature of the community meeting is the Nature Nook, which highlights flora and fauna at the Fernald Preserve.

Fernald Preserve

Legacy Management Mission

Manage DOE's post-closure responsibilities and ensure the protection of human health and the environment.

8854.04 10/11

The Office of Legacy Management's mission at the Fernald Preserve.

Worker Health and Safety

Legacy Management Mission

OSHA Recordables (yearly)

DOE Complex	LM	Industry
1.0	0.6	4.2

Fernald Preserve (quarterly)

Lost Time	First Aid	Recordables
0	0	0

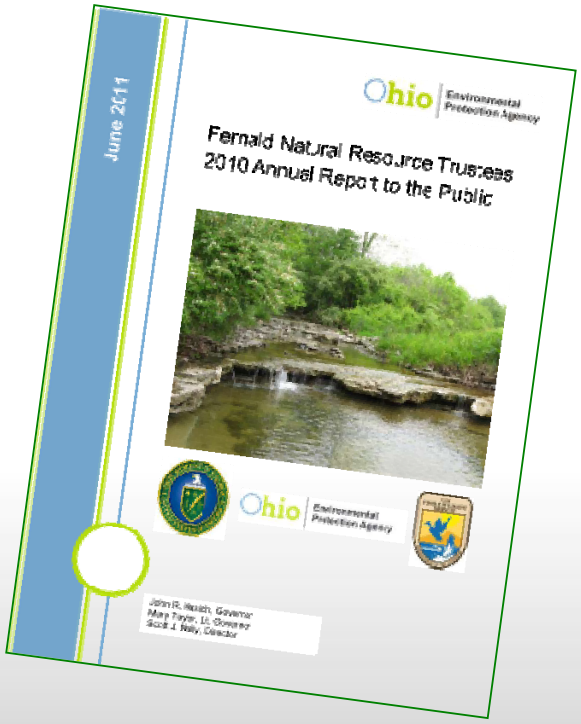
8854.05 10/11

Safety at the Fernald Preserve—and across the Office of Legacy Management complex—continues to surpass industry standards.

Natural Resource Trusteeship

Activities

- **Conservation easements**
- **Ecological restoration projects**
- **2009 follow-up on walk-downs**



8854.06 10/11

Natural Resource Trusteeship activities at and around the Fernald Preserve continue.

Fernald Preserve

Project Leads

- **Greg Lupton, S.M. Stoller**
  - **Data Management and Reporting**
- **John Homer, S.M. Stoller**
  - **Ecological Restoration**
- **Karen Voisard, S.M. Stoller**
  - **Environmental Monitoring**
- **Ken Broberg, S.M. Stoller**
  - **Aquifer Restoration**
- **Sue Walpole, S.M. Stoller**
  - **Public Affairs**

S.M. Stoller project leads.

CERCLA Five-Year Review

Comprehensive Environmental Response, Compensation, and Liability Act

- **Documents site remedial actions for five Operable Units since August 2006**
- **Required by CERCLA**
- **Review required every 5 years for sites that implement remedial actions resulting in hazardous substances, pollutants, or contaminants remaining at the site above levels for unlimited use and unrestricted exposure**
- **CERCLA Five-Year Review Report**
  - **Draft issued March 28, 2011**
  - **Final issued August 31, 2011**
  - **USEPA and Ohio EPA approved September 2011**

The Comprehensive Environmental Response, Compensation, and Liability Act requires that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site be subject to a five-year review.

LMICP

Legacy Management and Institutional Controls Plan

- **Developed to document the requirements for the site's long-term care**
- **Reviewed, revised, and submitted to the regulatory agencies**
- **Consists of two volumes:**
  - **– Volume I: Provides details for site management**
  - **– Volume II: Required under the CERCLA remediation process and is a legally enforceable document**
- **Monitoring requirement results are documented in the annual *Site Environmental Report* (SER).**
- **The LMICP and SER are online and searchable at www.lm.doe.gov.**

8854.09 10/11

The *Legacy Management and Institutional Controls Plan* was developed to document the requirements for the Fernald Preserve's long-term care. It has been reviewed and updated every year, and the latest version is available on the Office of Legacy Management website: www.lm.doe.gov.

Ecological Restoration

- **Restored area maintenance**
- **Ecological monitoring**
- **Site and On-Site Disposal Facility inspections**

8854.10 10/11

Ecological restoration work includes maintenance, monitoring, and inspections.

Monitoring

Ecological

- **Wetland mitigation monitoring**
- **Forest functional monitoring**
- **Implementation monitoring**
- **On-Site Disposal Facility Cells 1 to 3 herbaceous cover**

Monitoring programs help to evaluate the status of ecologically restored areas at the Fernald Preserve.

Inspections

Site and On-Site Disposal Facility

- **Site inspections**
- **On-Site Disposal Facility inspections**

8854.12 10/11

The inspection process continues according to the *Legacy Management and Institutional Controls Plan*.

Sampling

2011

- **Surface water sampling at 21 locations**
- **Treated effluent sample at one location**
- **Direct radiation monitoring at 11 locations**
- **On-Site Disposal Facility leak detection monitoring at 42 locations**
- **Groundwater sampling at 140 monitoring wells**
- **Continuing approved semiannual, quarterly, and daily sampling**

Routine environmental monitoring is conducted to ensure the continued effectiveness of the site's cleanup. The current monitoring regimen includes sampling groundwater, surface water, treated effluent, and direct radiation.

Monitoring

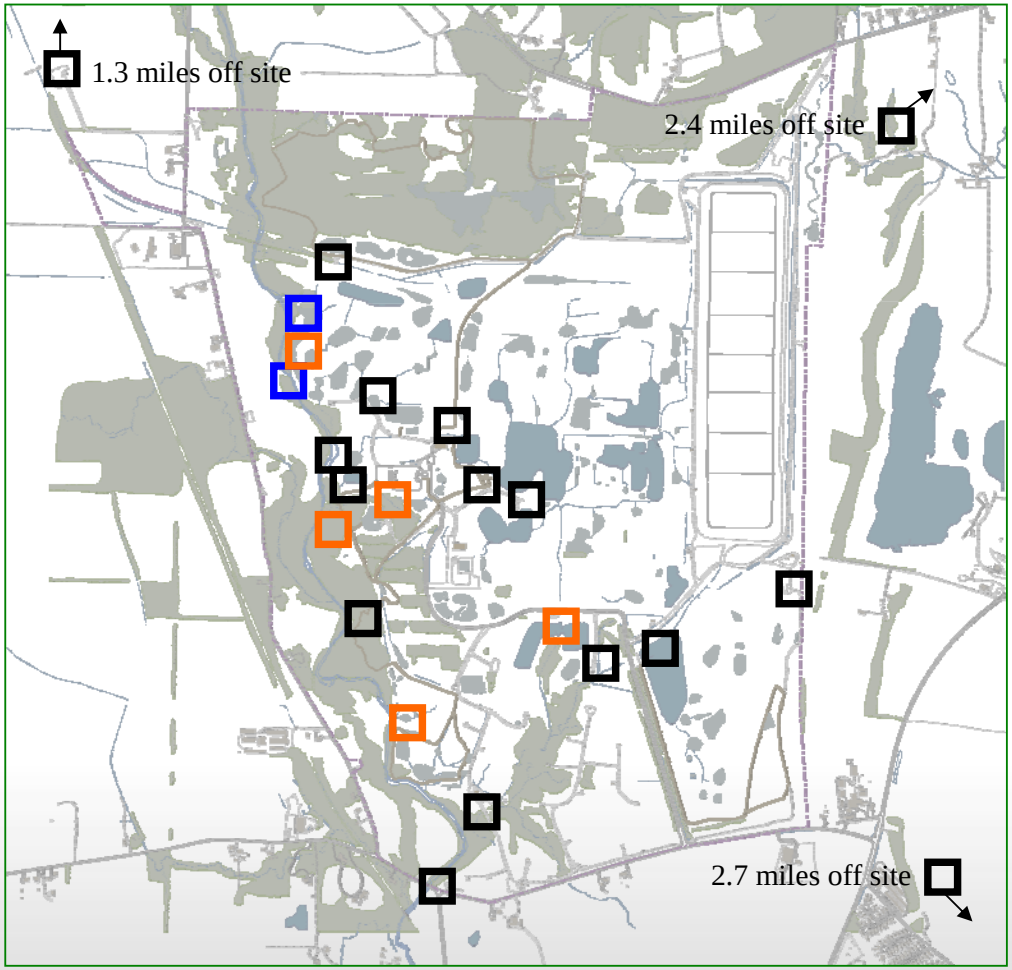
Dosimeter Locations

8854.14 10/11

Direct radiation monitoring locations.

Monitoring

Surface Water and Treated Effluent Locations



Surface water continues to be monitored at numerous locations on and off site.

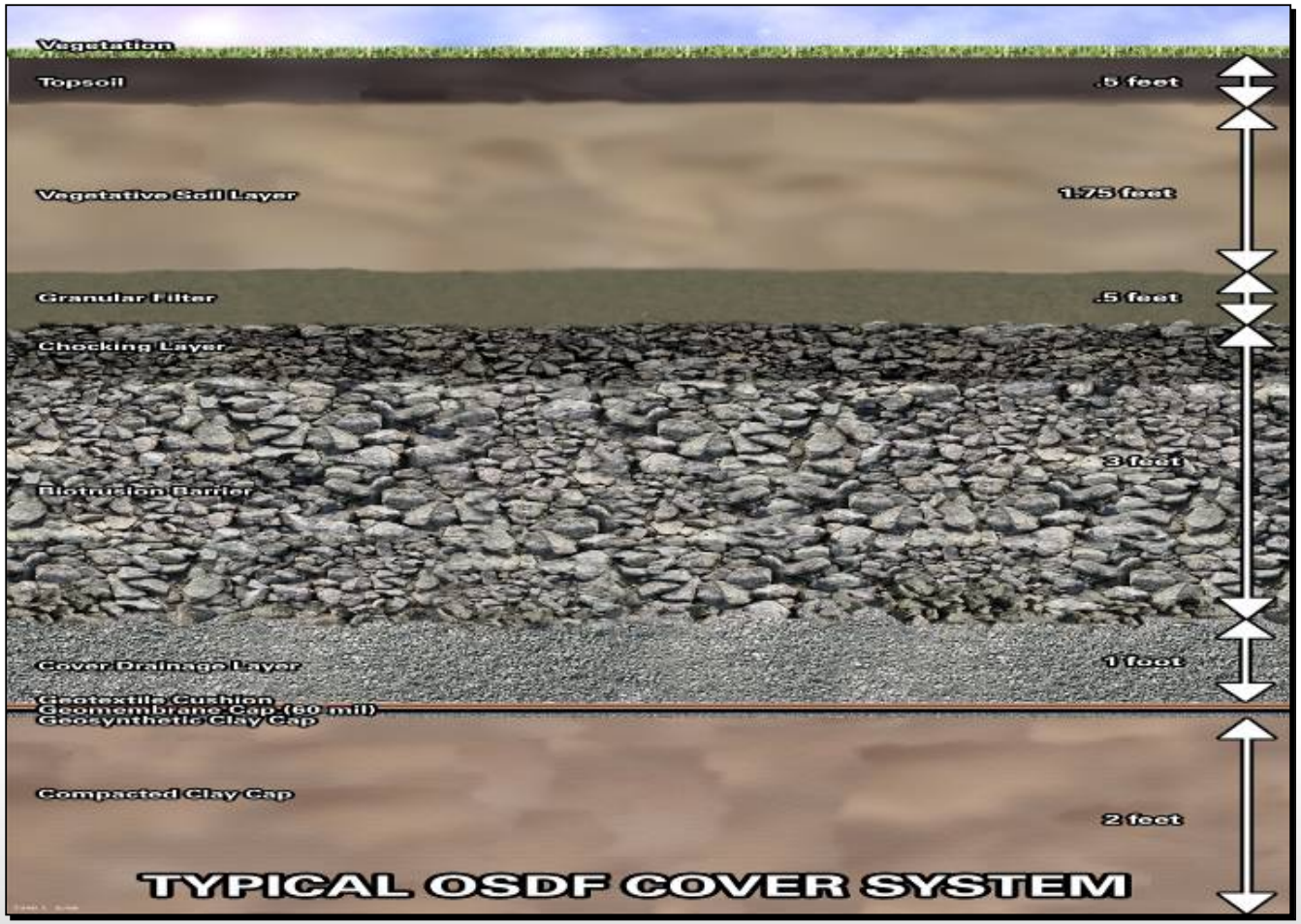
On-Site Disposal Facility

8854.16 10/11

The On-Site Disposal Facility is an engineered waste-storage area that holds 2.95 million cubic yards of waste.

On-Site Disposal Facility

Cover

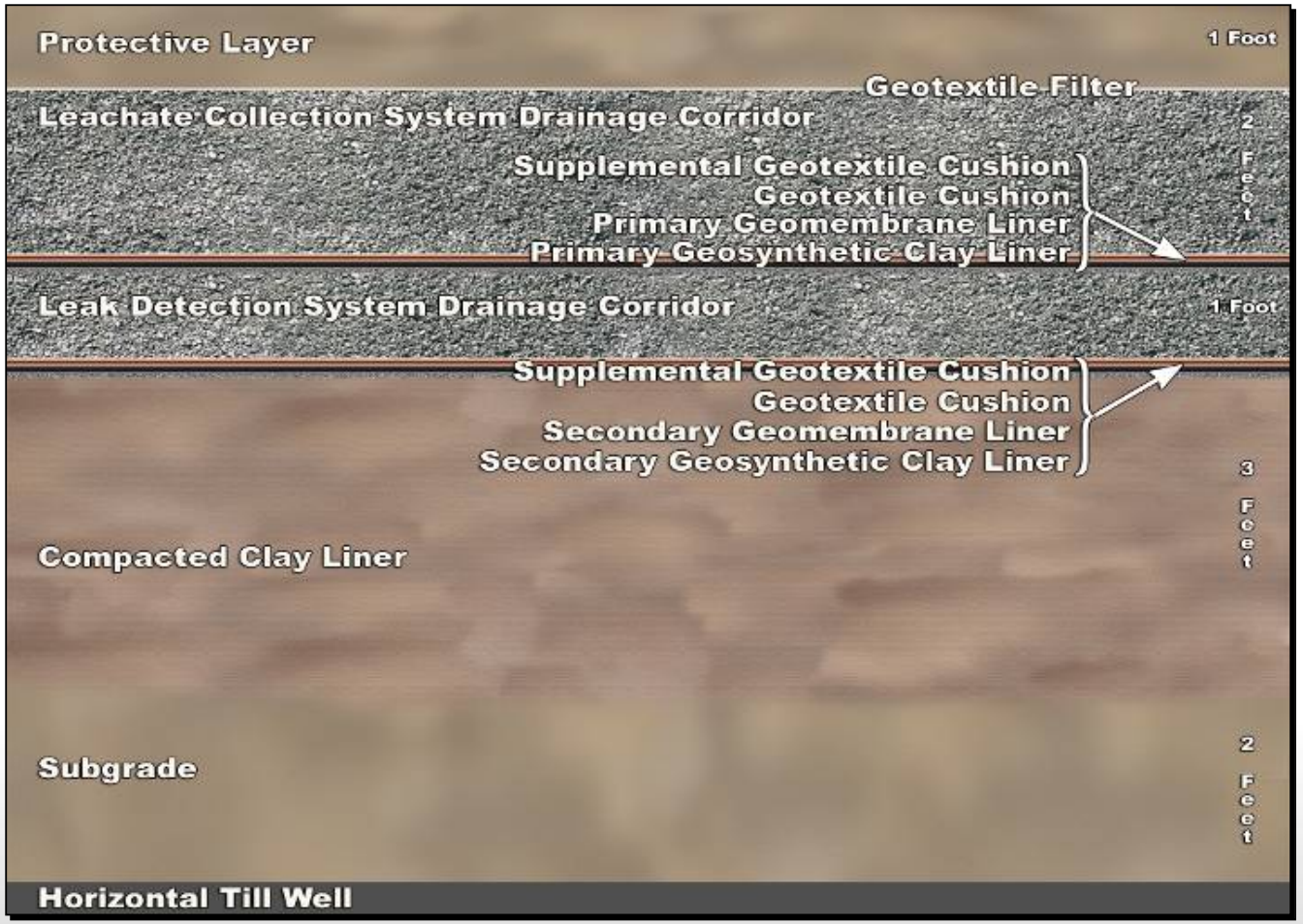


8854.17 10/11

The On-Site Disposal Facility's engineered cover system.

On-Site Disposal Facility

Liner

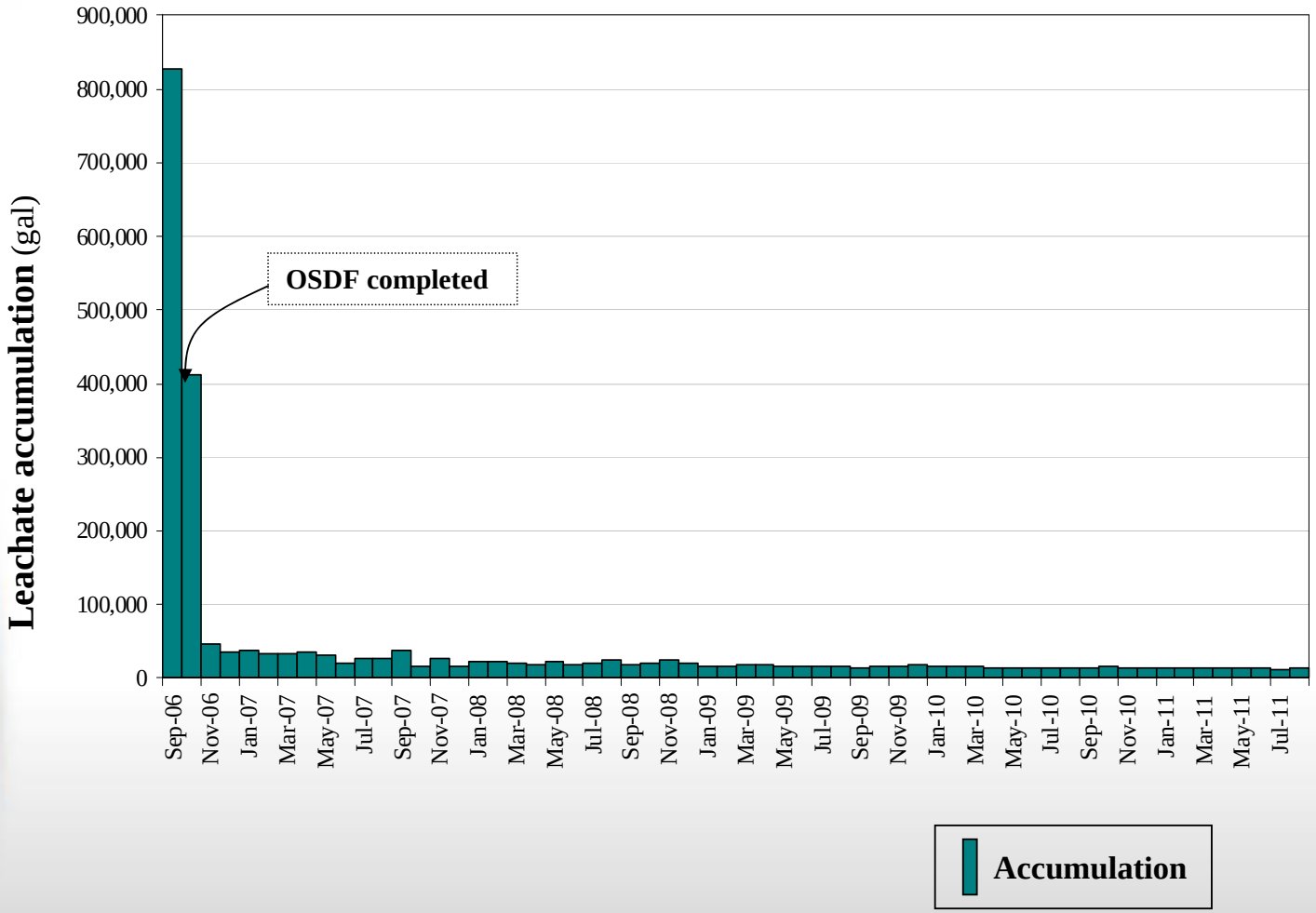


8854.18 10/11

The On-Site Disposal Facility's engineered liner system.

On-Site Disposal Facility

Leachate Collection System

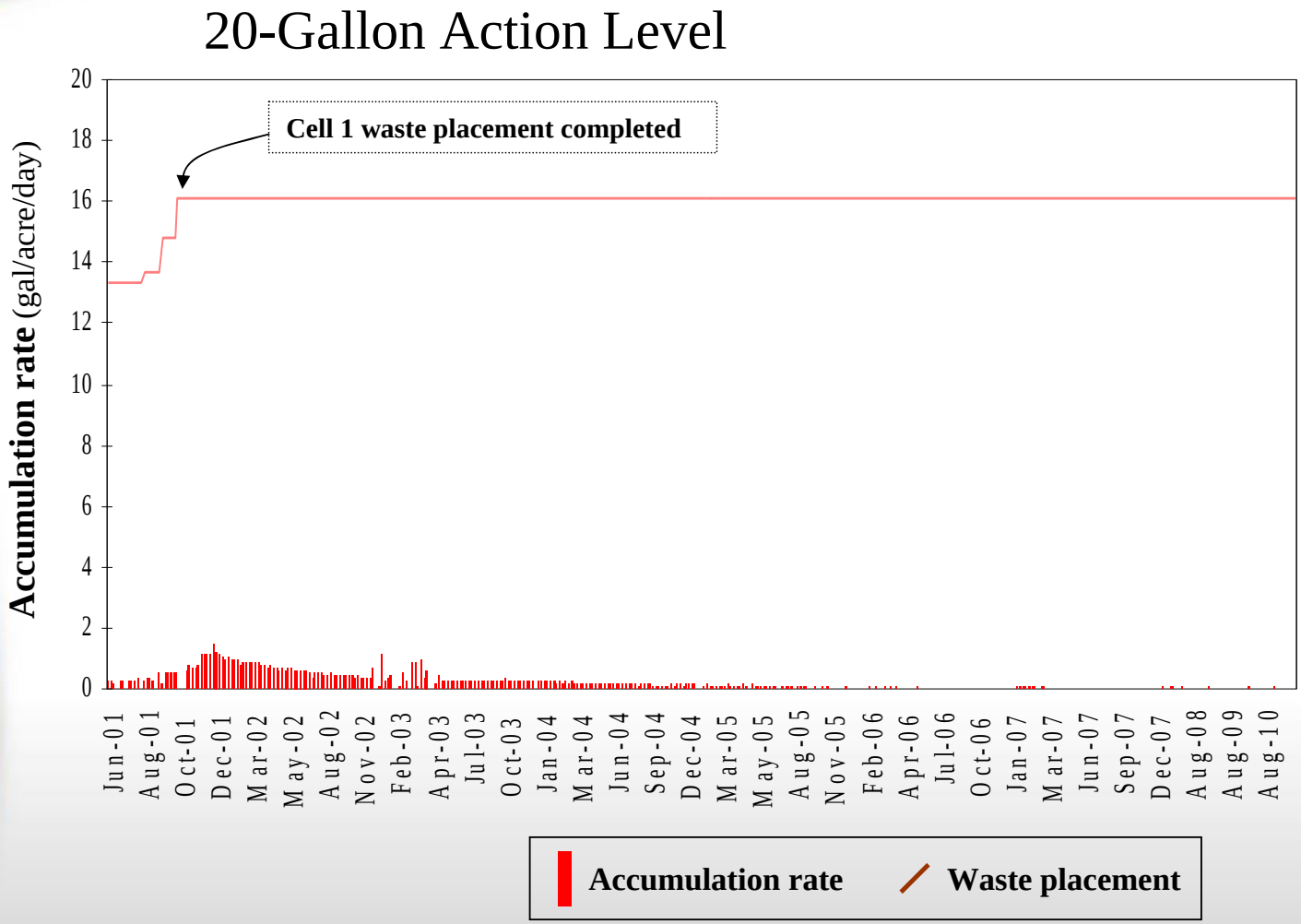


8854.19 10/11

Leachate is the moisture in the waste within the On-Site Disposal Facility. The leachate is collected and transferred to a treatment facility. Before the cover system was completed in October 2006, hundreds of thousands of gallons of leachate flowed each month. Since then, monthly leachate flows have decreased to less than 14,000 gallons per month.

On-Site Disposal Facility

Leak Detection System: Cell 1

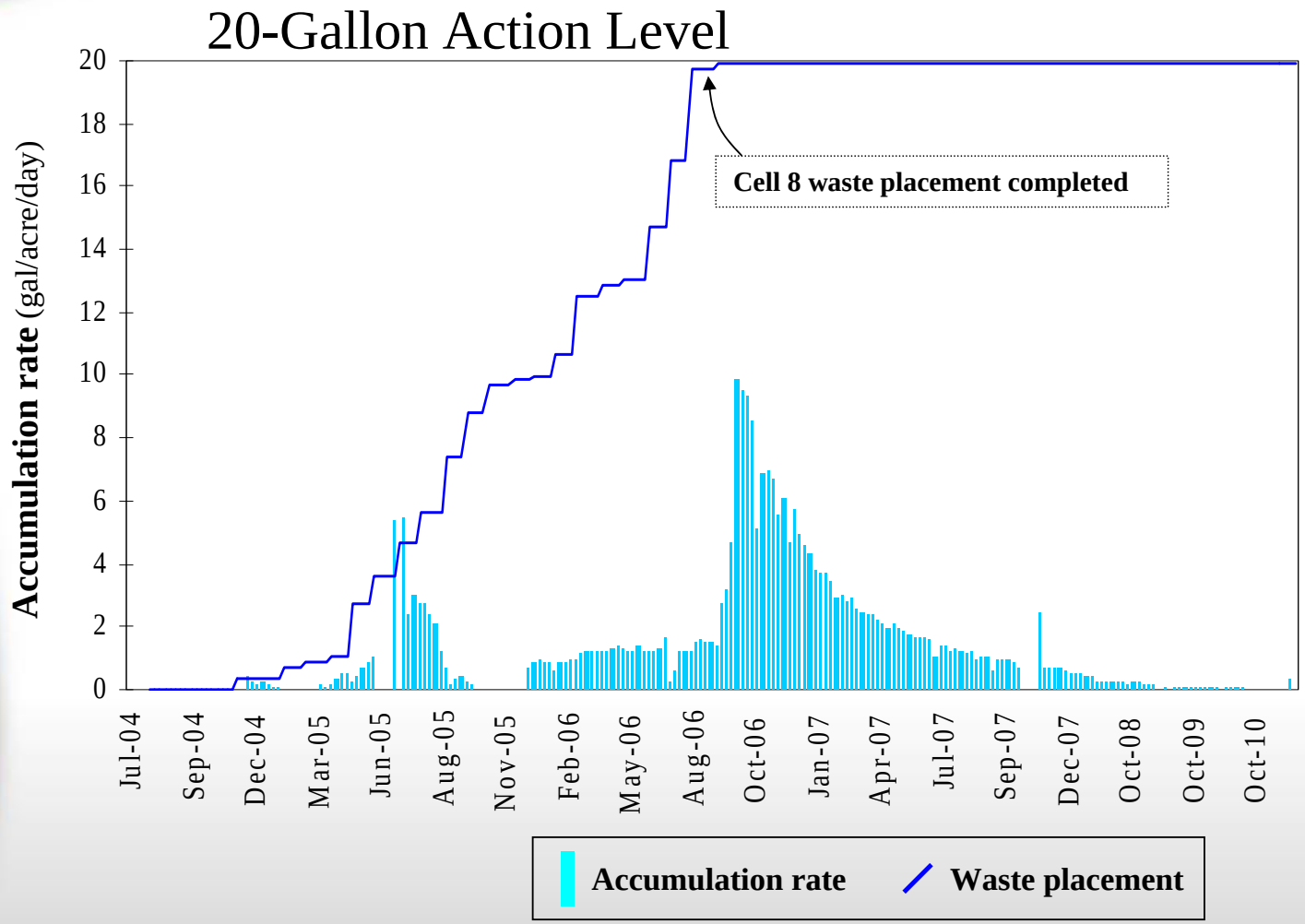


8854.20 10/11

Cell 1 of the On-Site Disposal Facility was the first of eight cells filled with waste and capped. The volume of water collected from this cell's leak detection system is well below the action level, and the system is operating as designed.

On-Site Disposal Facility

Leak Detection System: Cell 8

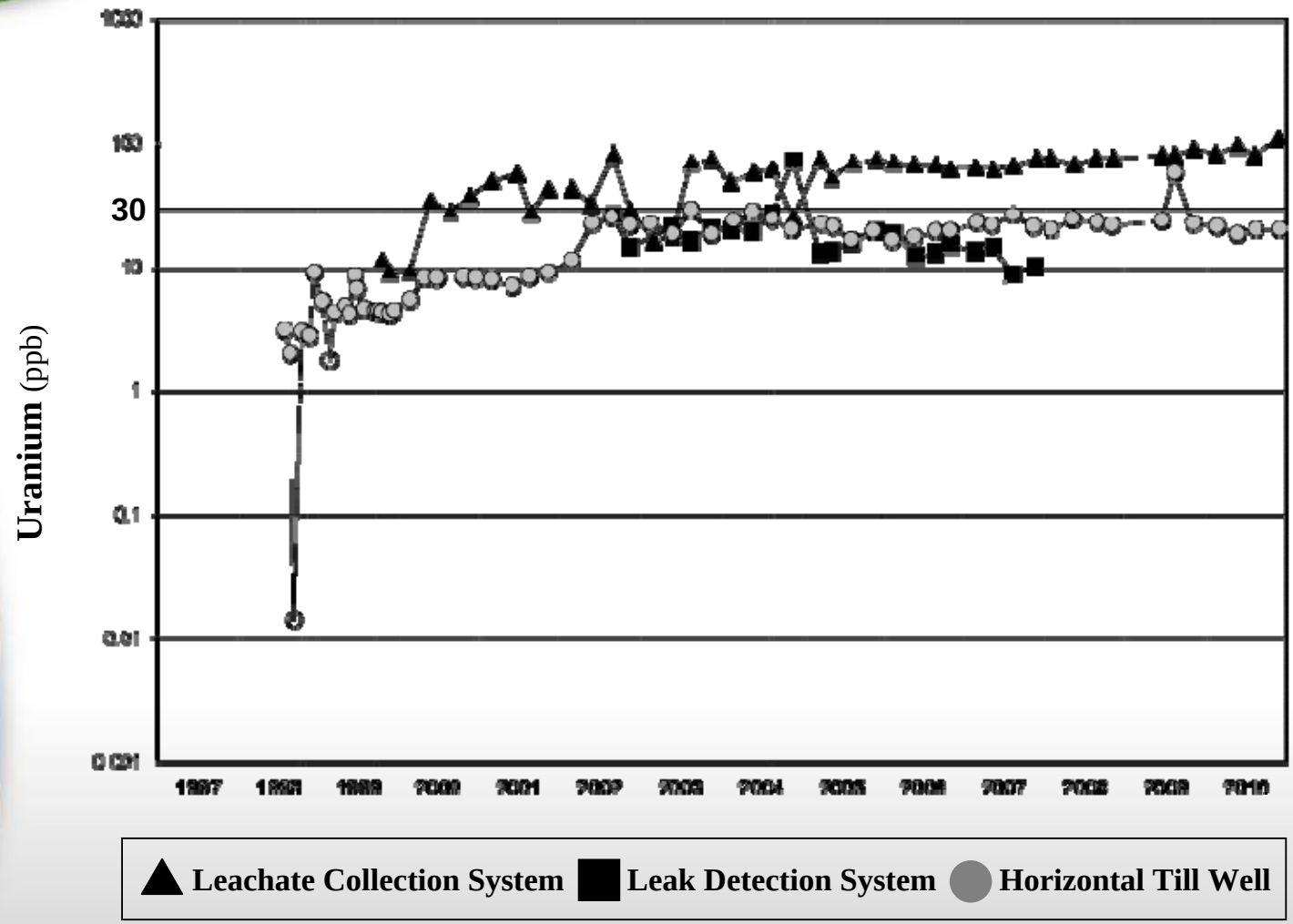


8854.21 10/11

Cell 8 of the On-Site Disposal Facility was the last of eight cells filled with waste and capped. The volume of water collected from this cell's leak detection system is well below the action level, and the system is operating as designed.

On-Site Disposal Facility

Uranium Concentrations: Cell 3

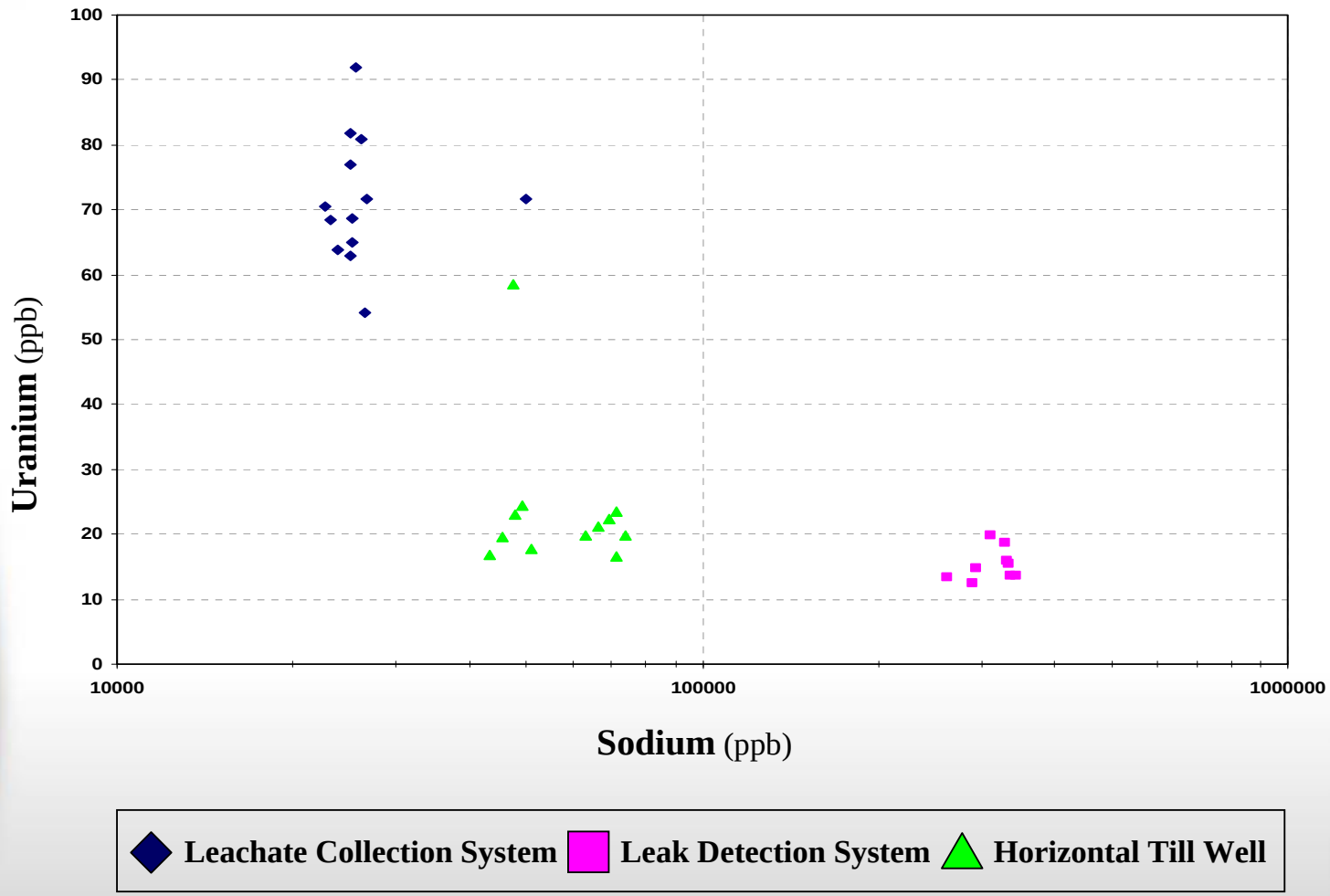


8854.22 10/11

Uranium concentrations in and below Cell 3 of the On-Site Disposal Facility demonstrate that the liner system is working as designed.

On-Site Disposal Facility

Uranium vs. Sodium Concentrations: Cell 3 (bivariate plot)



8854.23 10/11

A comparison of uranium concentrations and sodium concentrations in and below Cell 3 of the On-Site Disposal Facility demonstrates that the liner system is working as designed.

On-Site Disposal Facility

2010 Performance

- **No indication of leaks**
- **Highest leak detection system maximum accumulation**
  - **Cell 6: 0.21 gallons per acre per day (gpad)**
  - **20 gpad initial response leakage rate**
  - **200 gpad action leakage rate**
- **Leachate collection system volumes have stabilized and continue to diminish**
- **Leak detection system accumulation rates indicate liner systems are performing within cell design**
- **Water quality trends in the horizontal till wells and Great Miami Aquifer wells are concentration fluctuations beneath the facility**
- **No visual signs of compromised cap integrity**
- **Camera inspection conducted in 2010**

The On-Site Disposal Facility cap and liner systems are performing as designed.

Aquifer Restoration

Through August 31, 2011

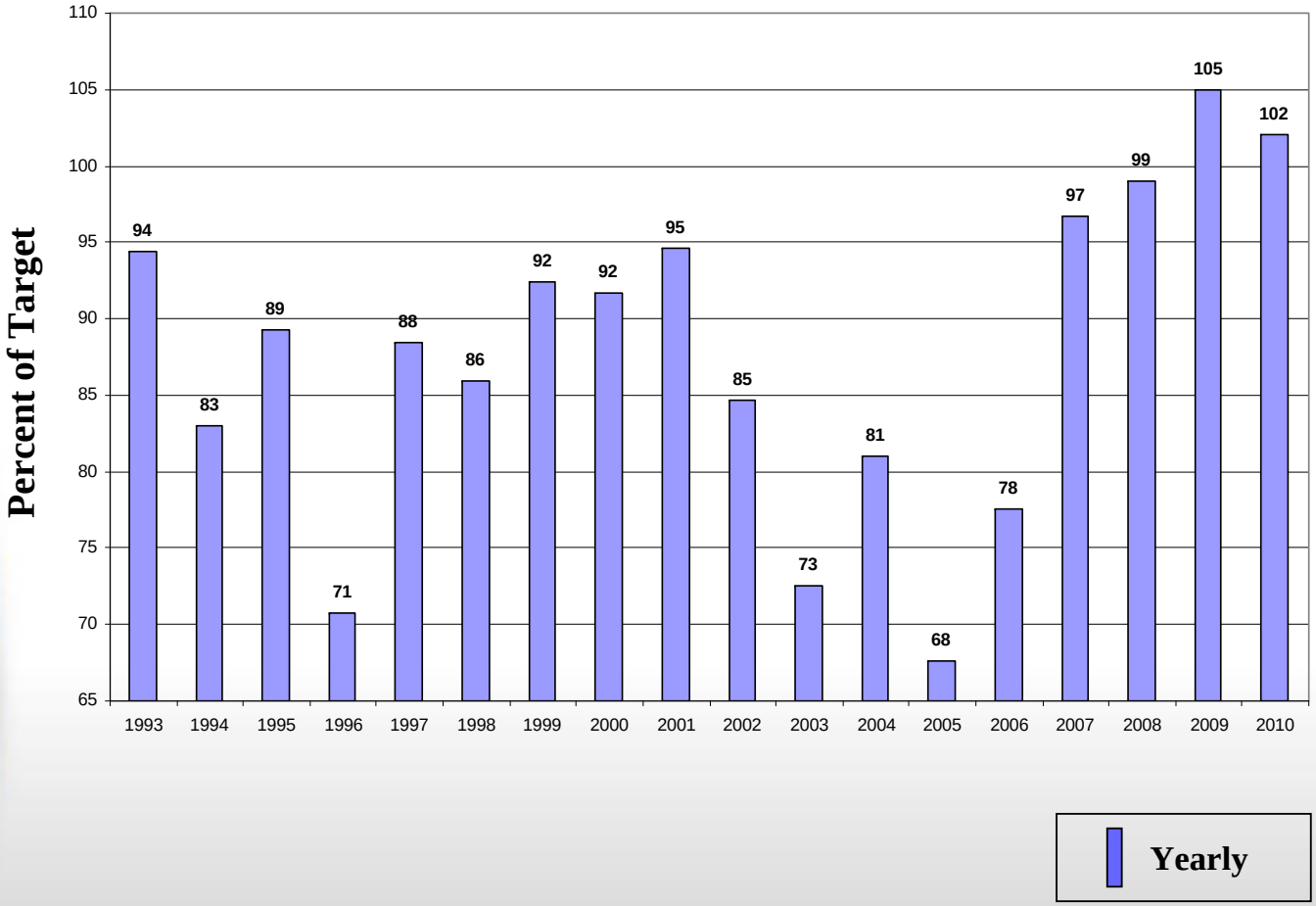
- 4,775 gallons per minute target pumping rate
- 23 extraction wells
- 140 monitoring wells
- 31.3 billion gallons extracted
- 9.86 billion gallons treated
- 10,606 pounds of uranium removed
- Project completion in 2026

8854.25 10/11

Groundwater cleanup continues at the Fernald Preserve.

Aquifer Restoration

Pumping – Percent of Target Achieved



8854.26 10/10

Since site closure in 2006, operations have achieved at least 97 percent of planned operation targets, and this year is on course for achieving close to 100 percent.

Aquifer Restoration

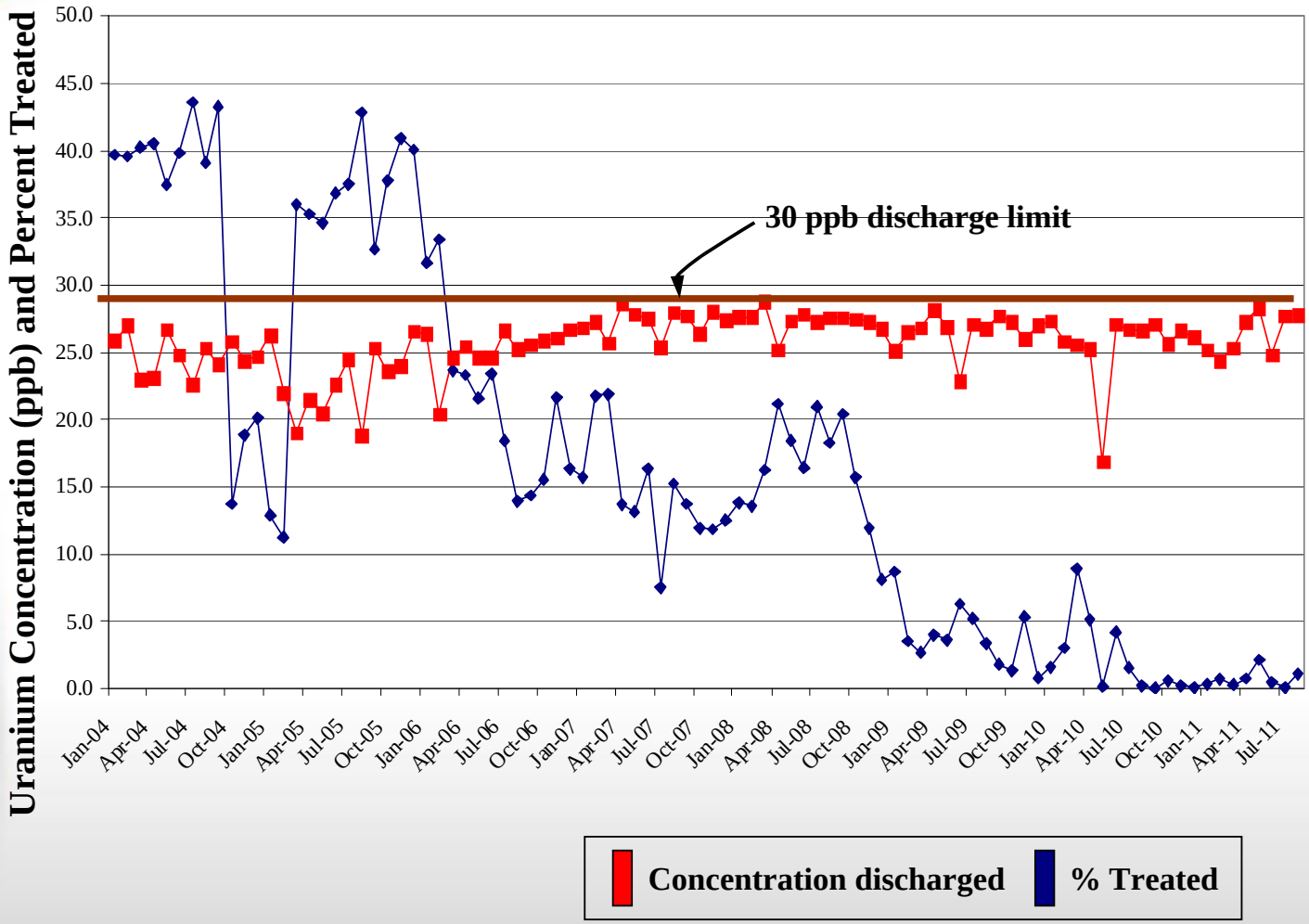
Regulatory Limits

- Meet 30 parts per billion monthly average uranium discharge limit to Great Miami River
- Meet 600 pound per year uranium discharge limit to the Great Miami River

The U.S. Environmental Protection Agency (EPA) sets regulatory limits for uranium that were adopted as the discharge standard at Fernald per a U.S. Department of Energy agreement with EPA.

Aquifer Restoration

Treatment Needs



8854.28 10/11

Treatment needs have declined over time. Compliance with the uranium discharge limit has been maintained.

Aquifer Restoration

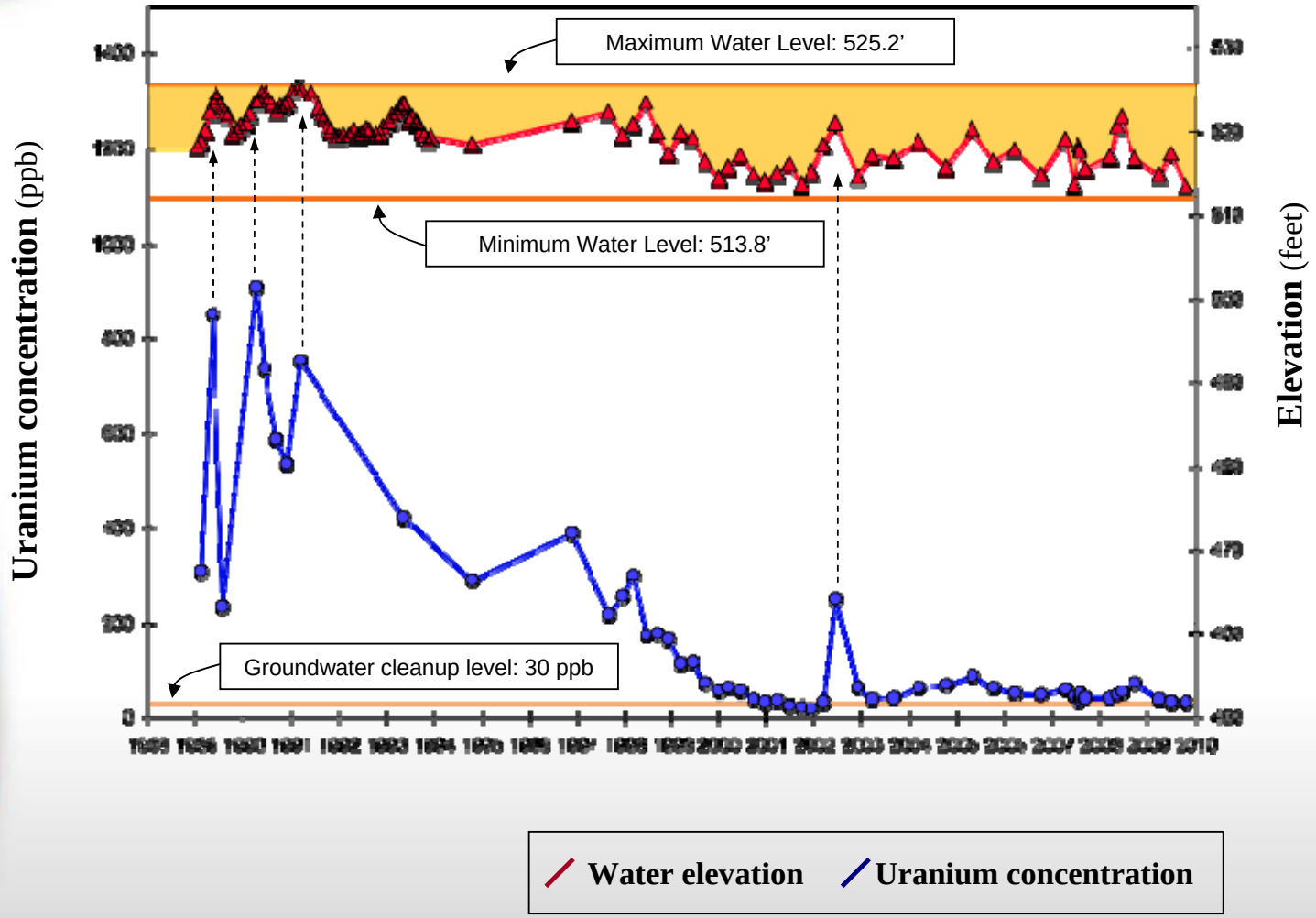
Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Review

- Potential issues that could extend aquifer remediation beyond modeling predictions
  - Uranium contamination in the aquifer's vadose zone
  - Stagnation zone within the uranium plume
  - Preferential flushing pathways within the uranium plume

Three issues have the potential to extend the aquifer remediation completion time beyond that predicted by modeling.

Aquifer Restoration

Monitoring Well 2046 Water Level



8854.30 10/11

The uranium concentration in the groundwater is related to aquifer water levels beneath some areas of the site.

Aquifer Restoration

Water Level Rebound Study

Purpose

- Uranium on sediments above water table under some source areas
- Shut down 19 of 23 extraction wells for 1 month
- Allow water levels to rebound
- Redissolve uranium bound to sediments

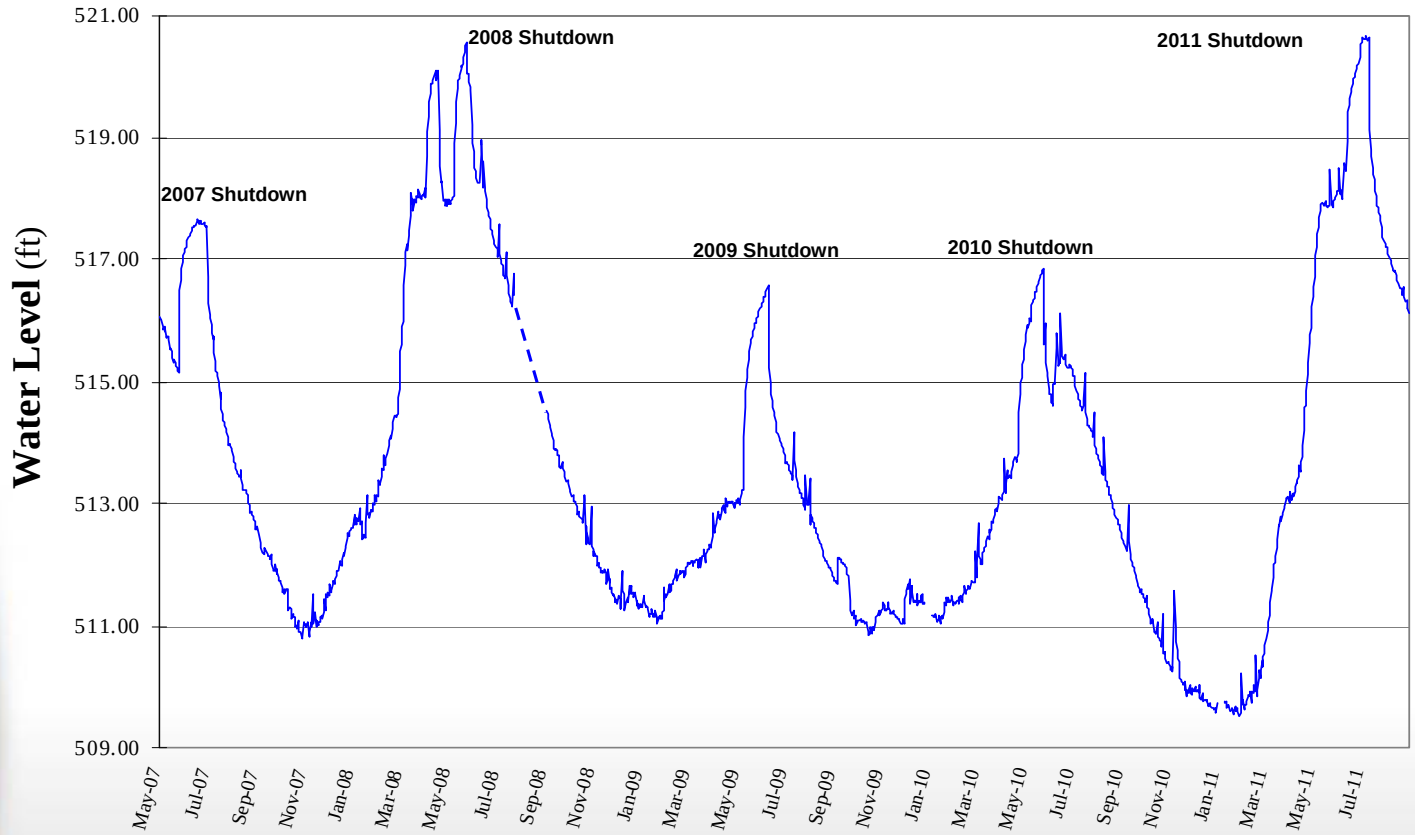
Additional water level rise due to well field shutdown

- 2007: approximately 2.6 feet
- 2008: approximately 2.5 feet
- 2009: approximately 3.1 feet
- 2010: approximately 3.4 feet
- 2011: approximately 3.4 feet

Annual well field pumping shutdowns are designed to help remove uranium from the Great Miami Aquifer.

Aquifer Restoration

Water Levels
(May 2007–August 2011, Well 62433)

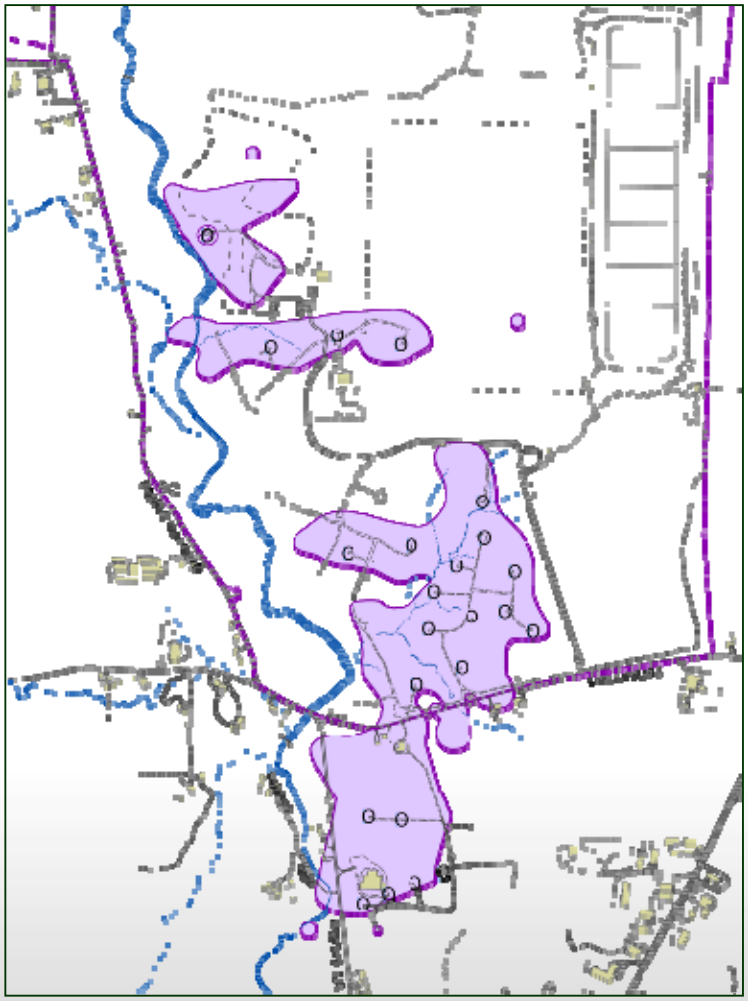


8854.32 10/11

Water levels in the Great Miami Aquifer change seasonally and are highest in the late spring and early summer.

Aquifer Restoration

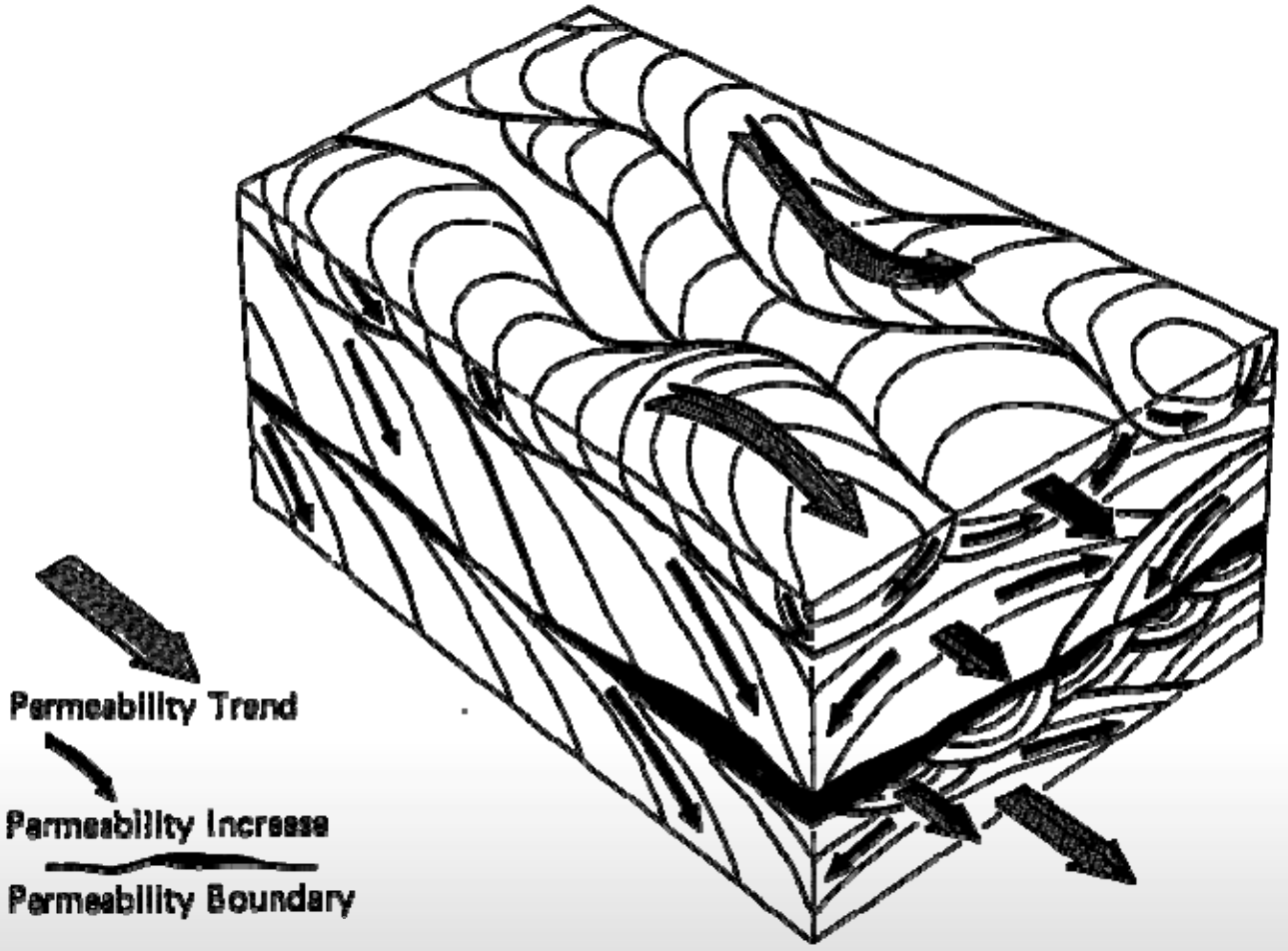
Stagnation Zones



A stagnation zone is present between the South Field pumping wells and South Plume pumping wells.

Aquifer Restoration

Preferential Pathways

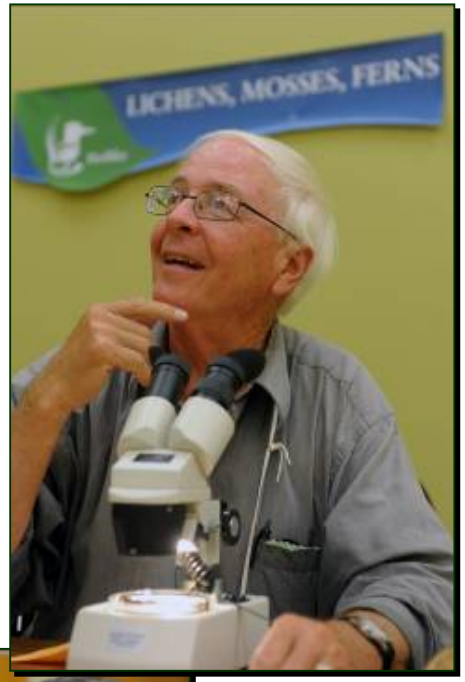


8854.34 10/11

Sands and gravels of the Great Miami Aquifer represent a braided stream depositional environment.

Fernald Preserve

- **Site use**
- **Events**



8854.35 10/11

During the Fernald Preserve Visitors Center's third year of operation, a wide variety of groups—including students, birders, Scouts, and senior centers—has stopped by. Since the Fernald Preserve opened to the public in 2008, schools, conservation organizations, hikers, and cyclists have used the site, the Visitors Center, and the Community Meeting Room.

Look-Ahead

6 Months

- **Continue aquifer restoration**
- **Continue sampling**
- **Continue site and On-Site Disposal Facility monitoring**
- **Conduct prescribed burns**
- **Continue to offer unique educational programs**

The 6-month look-ahead explains the work forecasted through the fall and winter.

Annual Community Meeting

Join us:

October 10, 2012

6:30 p.m.

Fernald Preserve Visitors Center

Jane Powell
LM Fernald Preserve Manager
(513) 648-3148
Jane.Powell@lm.doe.gov

Sue Walpole
S.M. Stoller Public Affairs
(513) 648-4026
Sue.Walpole@lm.doe.gov

General
(513) 648-6000
Fernald@lm.doe.gov
www.lm.doe.gov

8854.37 10/11

The next annual Fernald Preserve community meeting is at 6:30 p.m. on October 10, 2012.