The U.S. Department of Energy (DOE) Office of Legacy Management (LM) 16th annual community meeting on the Fernald Preserve, Ohio, Site was held October 15, 2019, at the Fernald Preserve Visitors Center. The 14 guests in attendance received a summary of the 2018 Site Environmental Report and an update on current site activities.

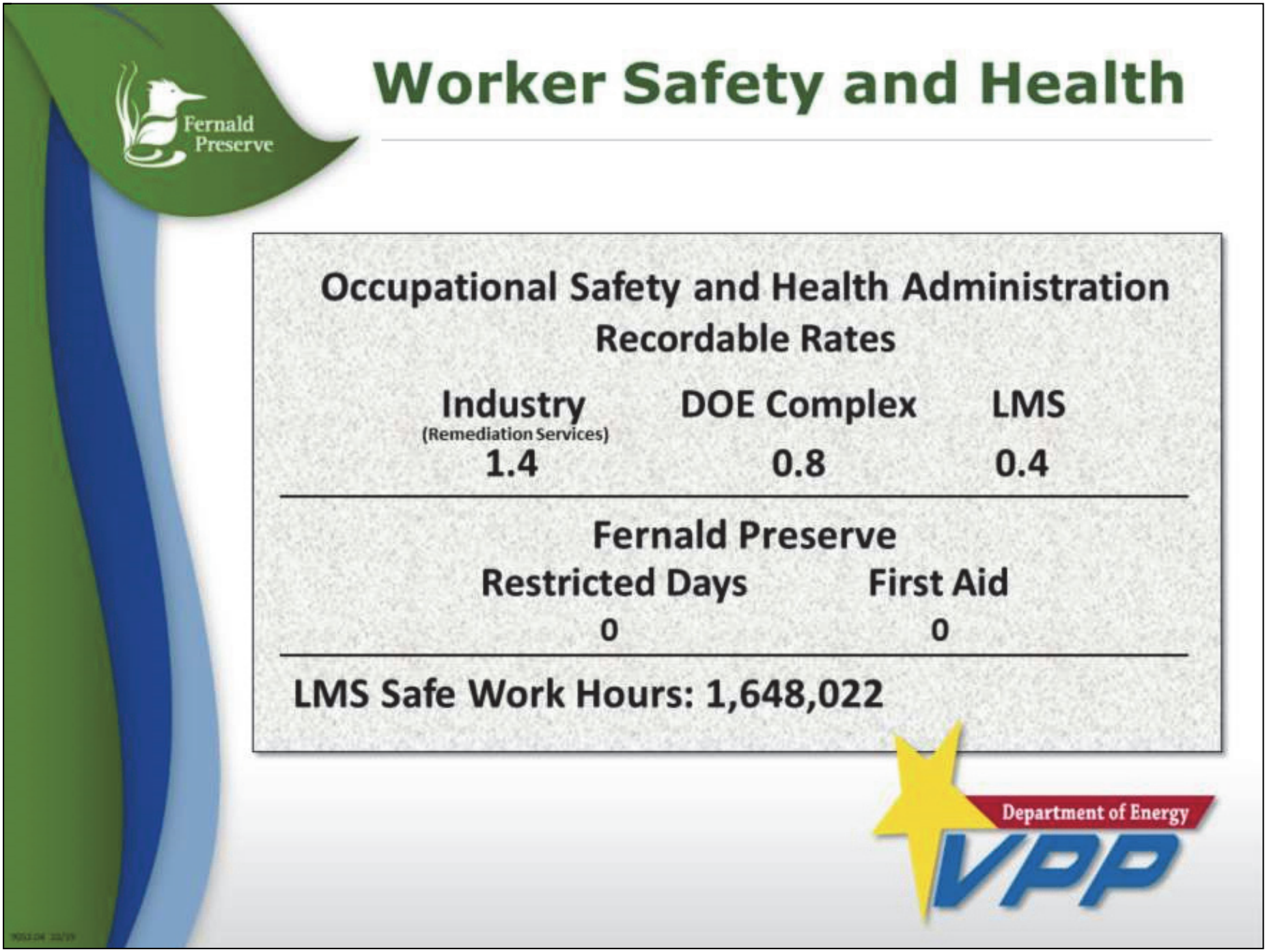
Community meeting agenda.

Fernald Preserve

U.S. Department of Energy (DOE)
Office of Legacy Management (LM) Mission

To fulfill the Department's post-closure responsibilities and ensure the future protection of human health and the environment.

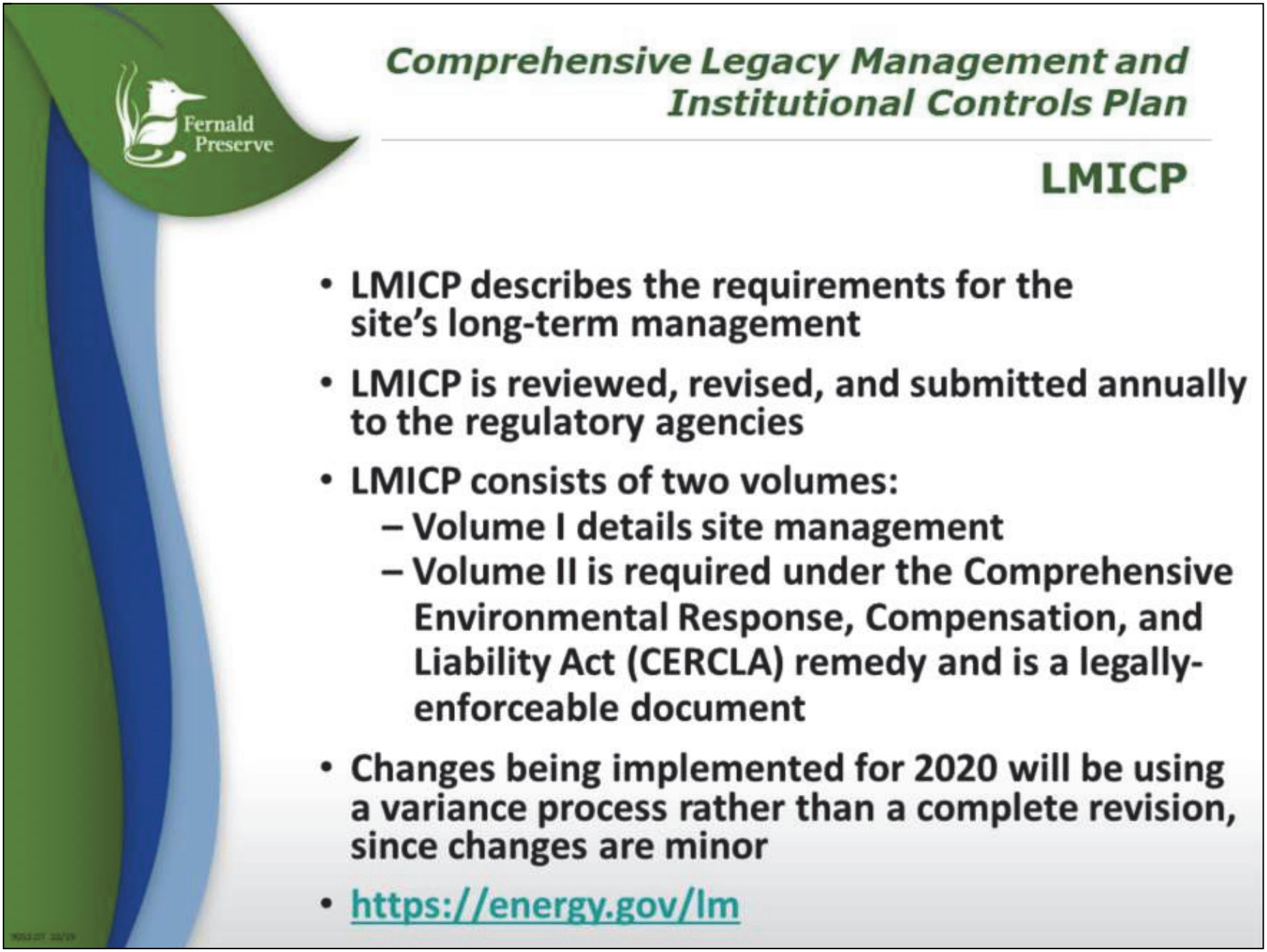
The LM mission at the Fernald Preserve.



Safety records at the Fernald Preserve and in the nationwide LM program continue to surpass overall DOE and private sector standards.

The Fernald Preserve was honored to receive the 2019 National Federal Facility Excellence in Site Reuse Award in the National Priorities List (NPL) sites category from the U.S. Environmental Protection Agency.

Fernald Preserve LM contractor, Navarro Research and Engineering, Inc., site management, and project leads.

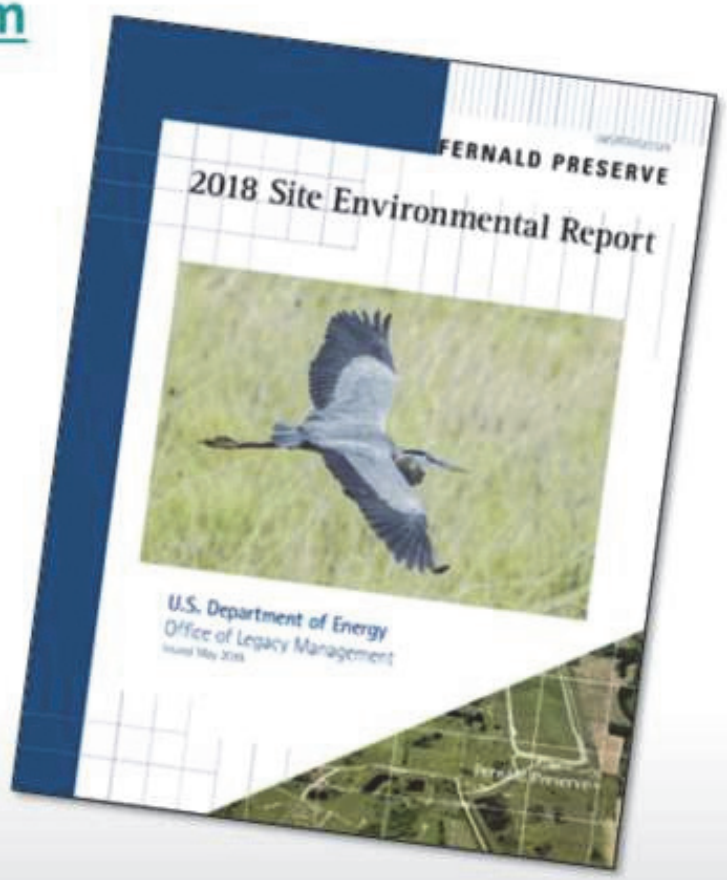


The Comprehensive Legacy Management and Institutional Controls Plan documents the requirements for Fernald Preserve's long-term management and is reviewed and updated annually. The latest version is available at https://www.lm.doe.gov/Fernald/Documents.aspx.

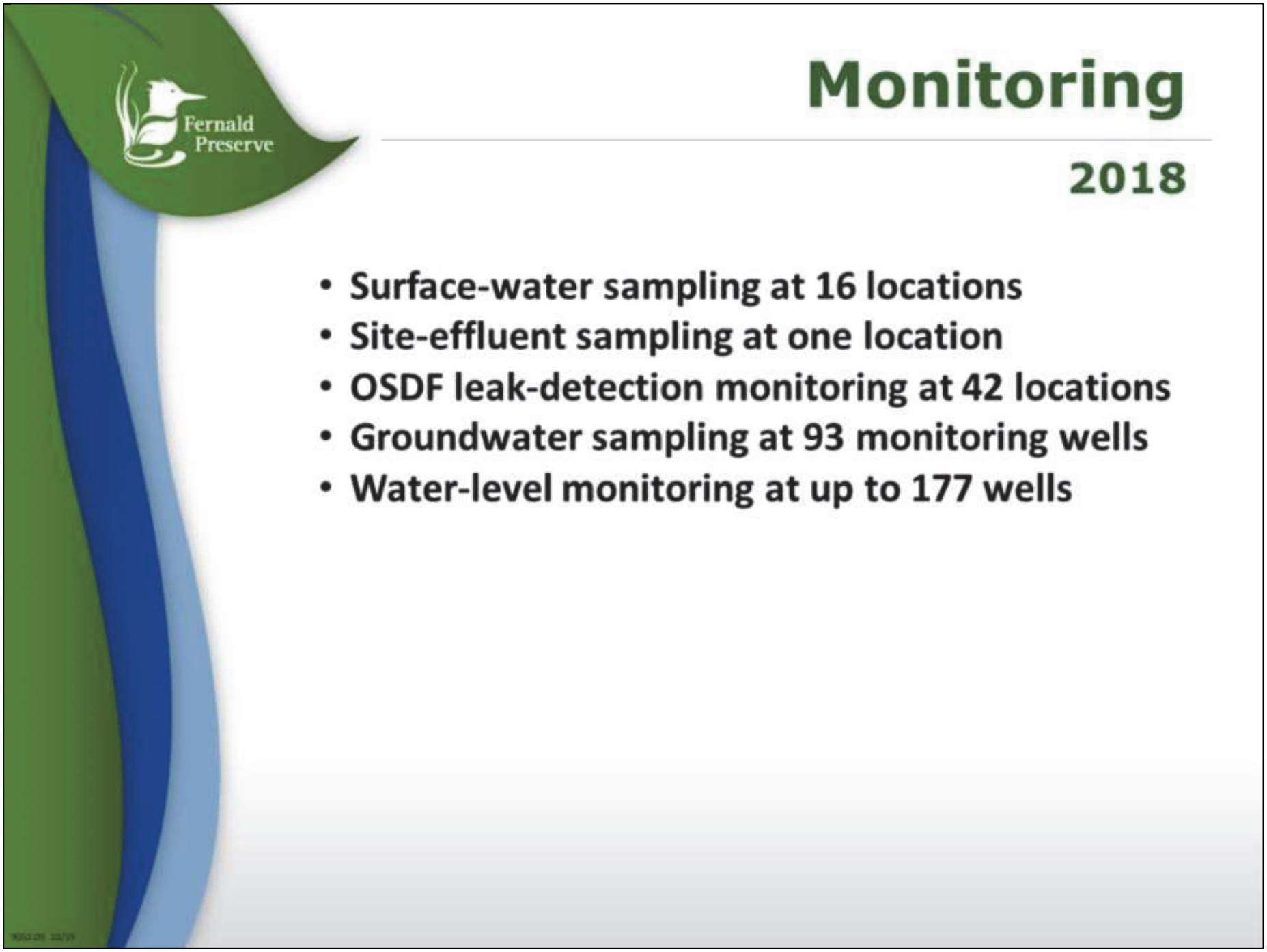
2018 Site Environmental Report

SER

- https://energy.gov/lm



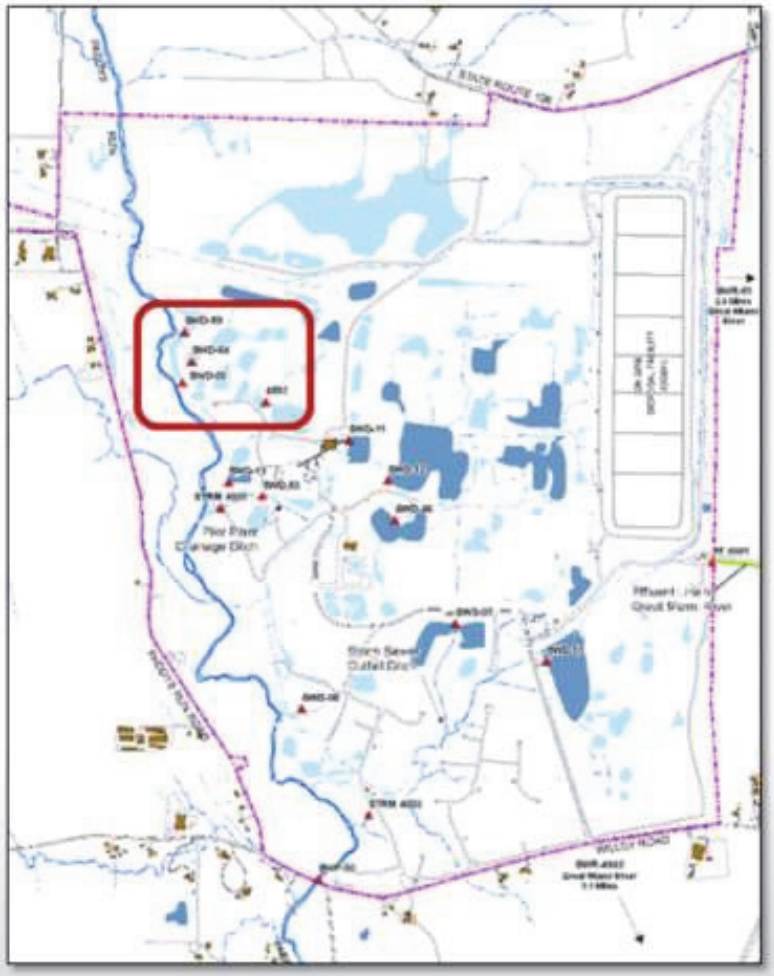
The 2018 Site Environmental Report contains annual monitoring requirement results and is available at https://www.lm.doe.gov/Fernald/Documents.aspx.



Routine environmental monitoring is conducted to ensure continued effectiveness of the site's cleanup. The 2018 monitoring program included sampling groundwater, surface water, and liquid effluent.

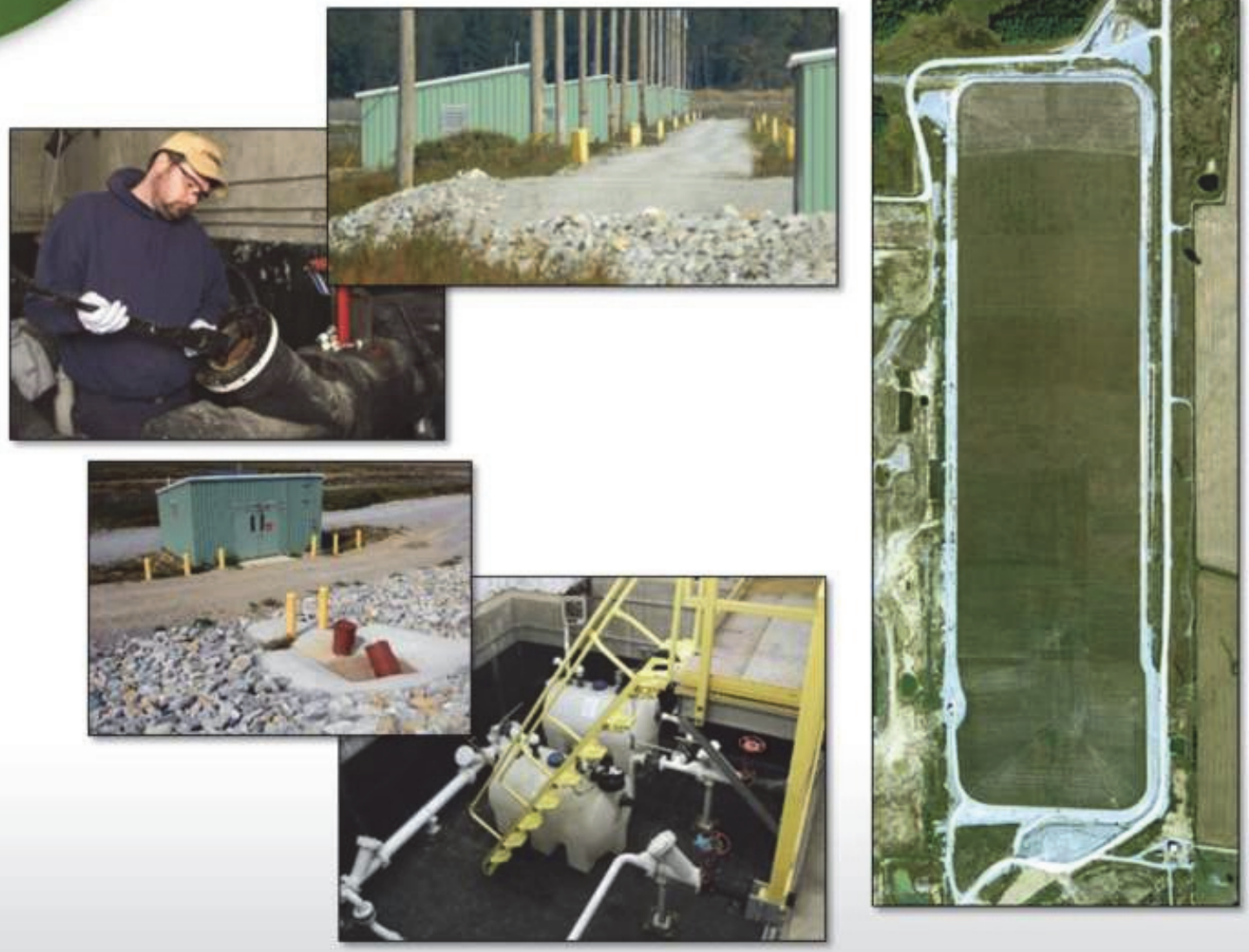
Monitoring

Surface Water and Site Effluent



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

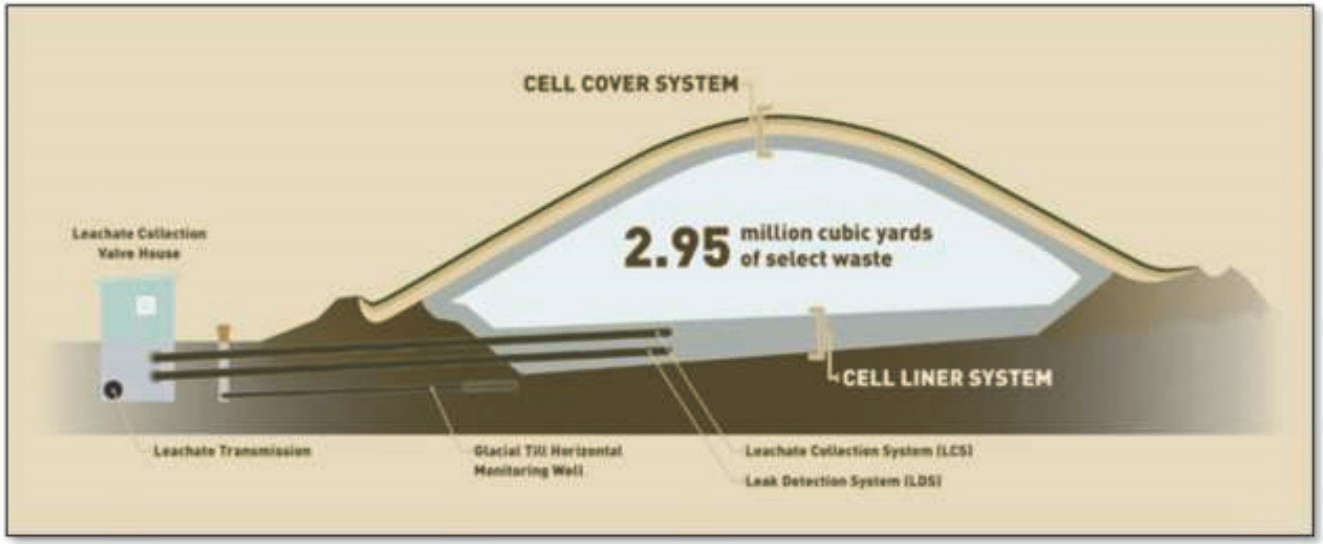
On-Site Disposal Facility



The On-Site Disposal Facility (OSDF) is an engineered waste storage facility that holds 2.95 million cubic yards of waste (85% soil/soil-like material and 15% demolition debris) that was generated as part of the site cleanup.

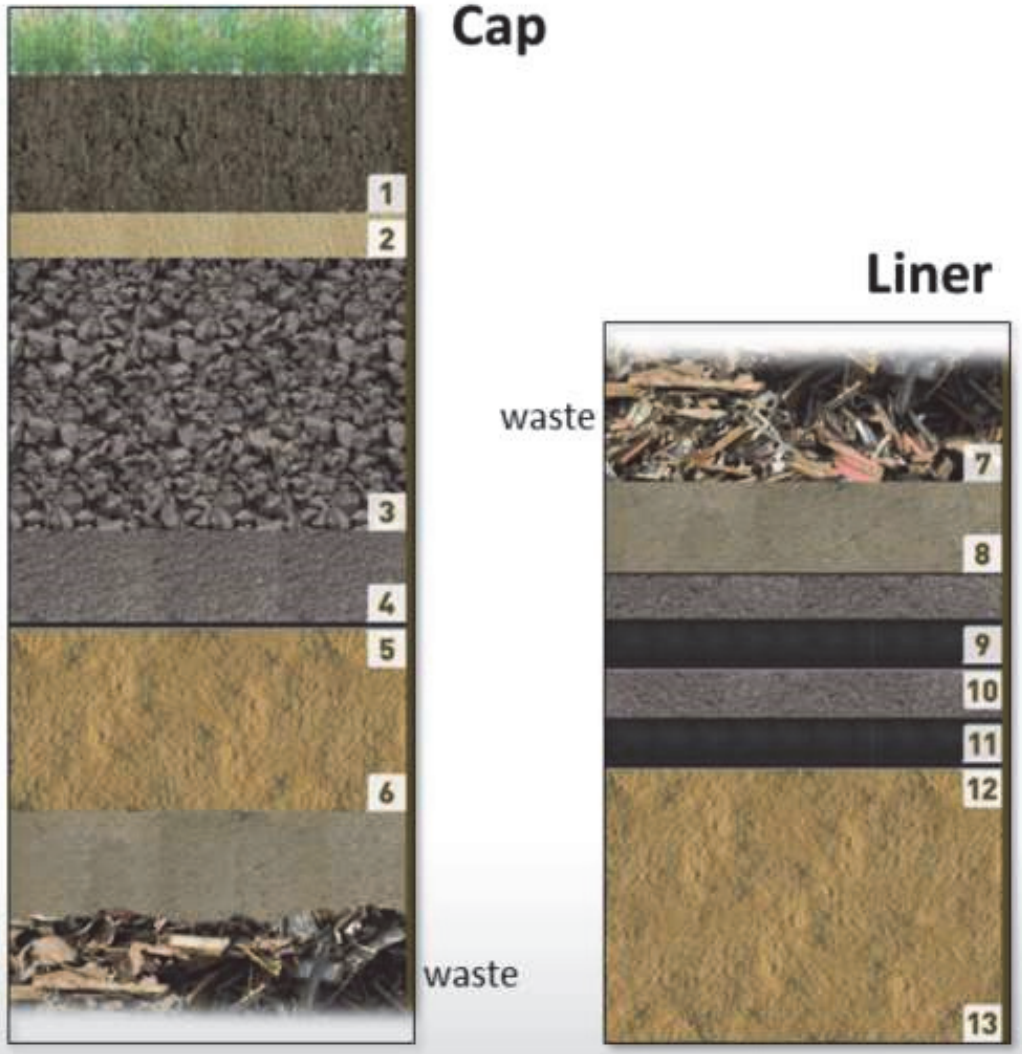
On-Site Disposal Facility

Leachate Collection System



The OSDF was constructed with an engineered liner and cover system that serves to isolate the entombed waste from the environment.

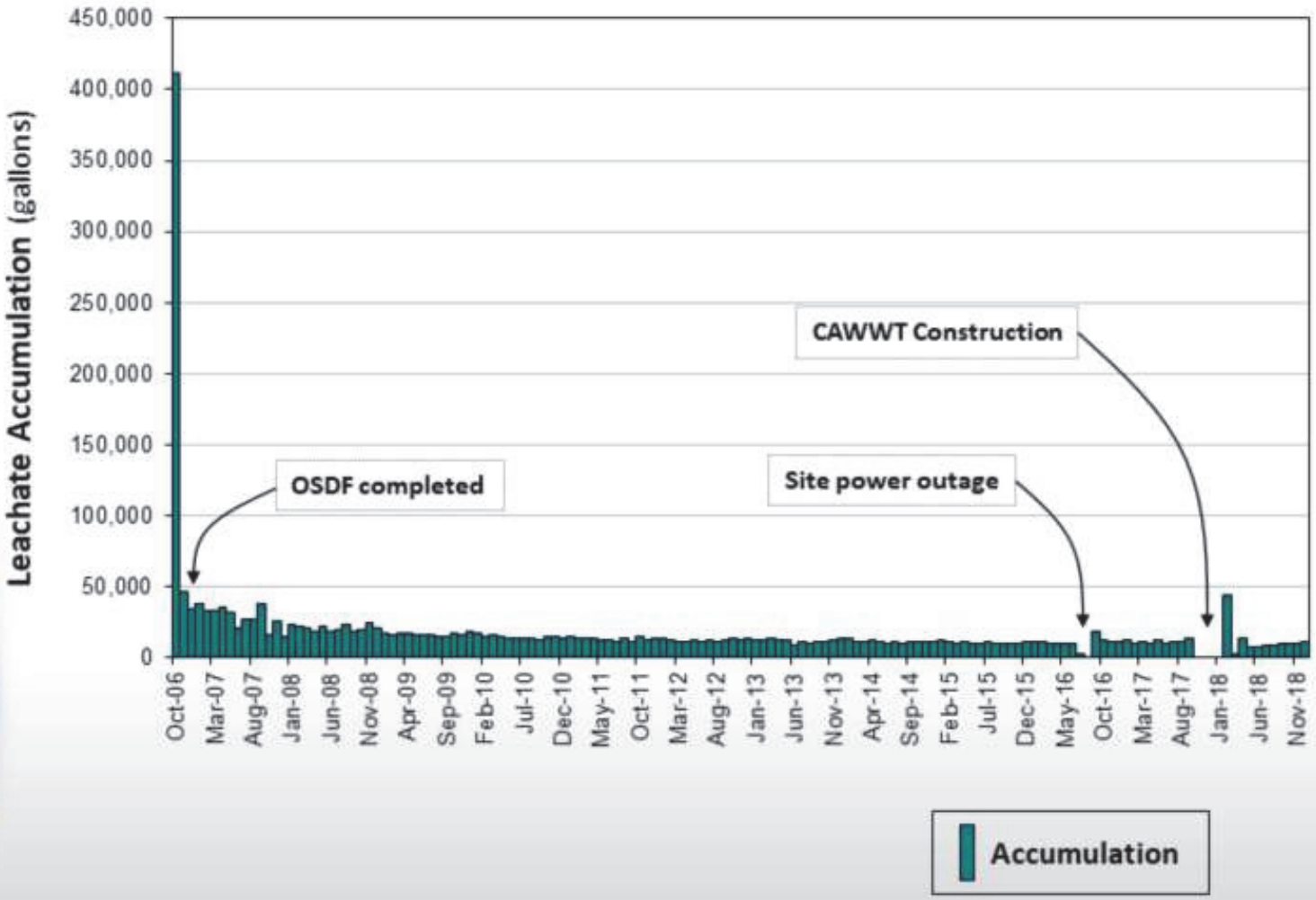
On-Site Disposal Facility



Waste is safely encapsulated between a 9-foot cap and a 6-foot liner.

On-Site Disposal Facility

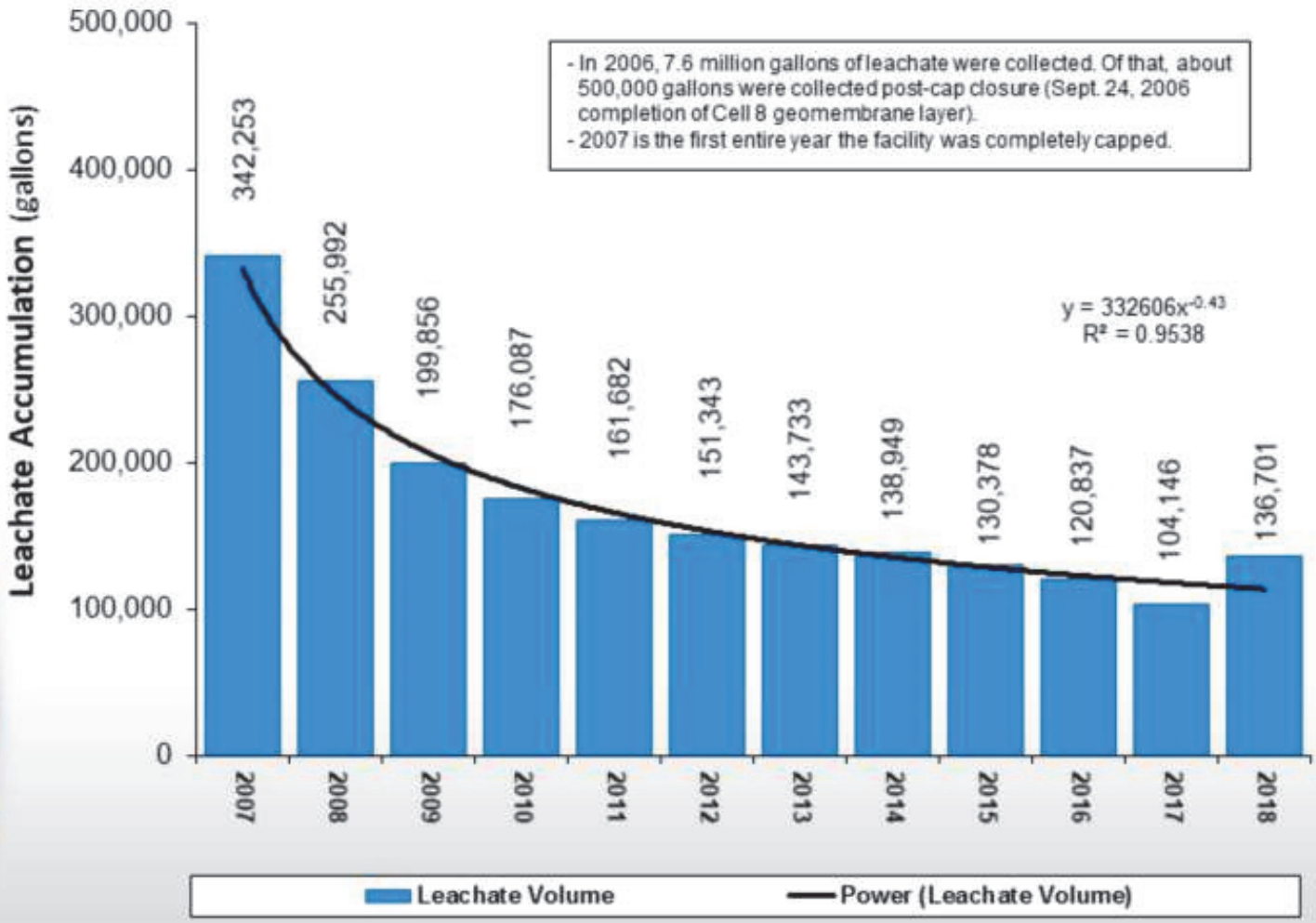
Leachate Collection System – Monthly Flow



Leachate is moisture that comes from the waste within the OSDF. It includes precipitation and water sprayed on the waste to control dust during construction of the OSDF. The leachate is collected and transferred to an on-site treatment facility.

On-Site Disposal Facility

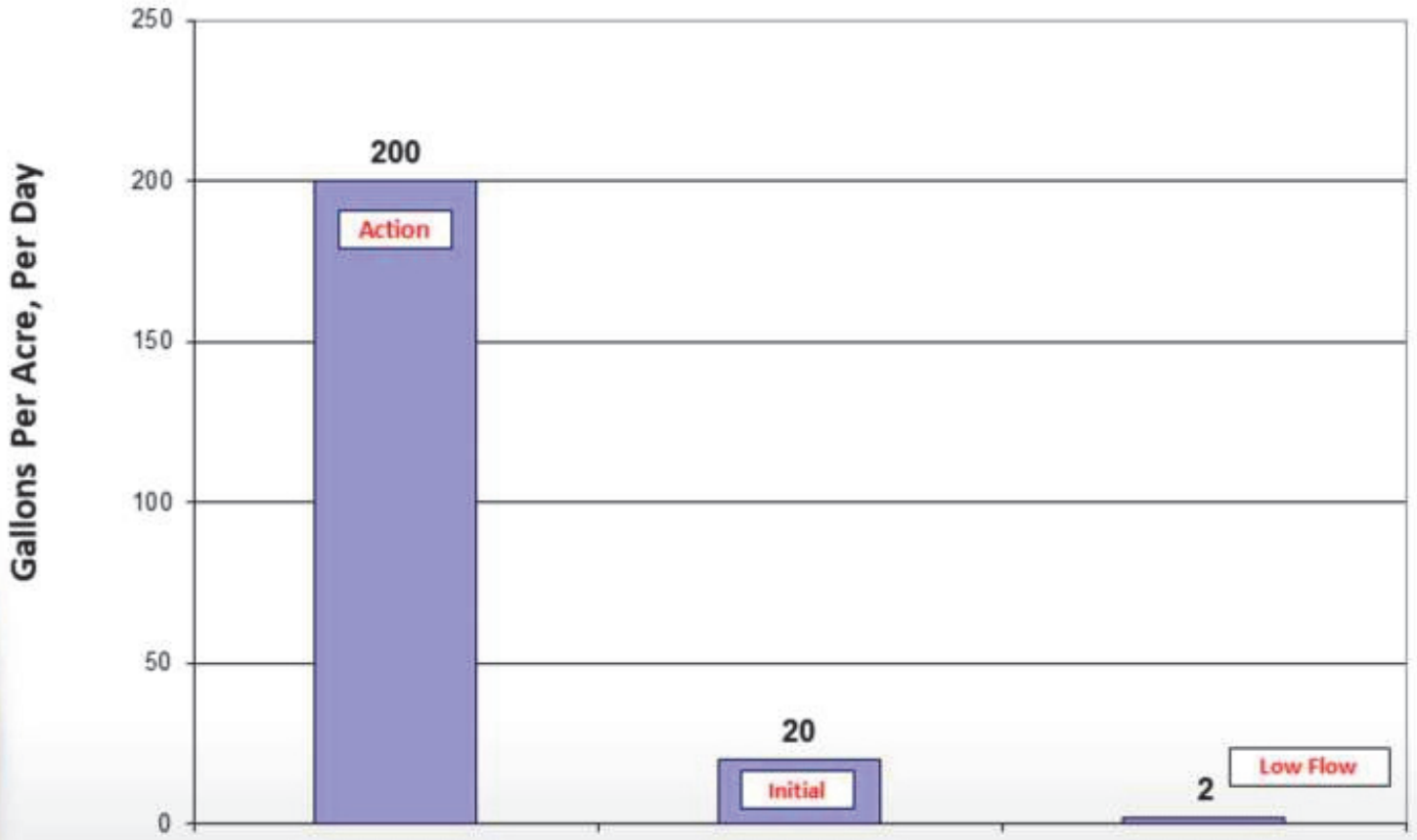
Leachate Collection System – Annual Flow



Leachate is moisture in the waste within the OSDF. The leachate is collected and transferred to an on-site water treatment facility. As expected, annual leachate flow continues to decline.

On-Site Disposal Facility

Leak Detection System – Flow Rates



The volume of water in the leak detection system necessary to initiate an investigation has decreased over time due to the good performance of the primary liner.

On-Site Disposal Facility

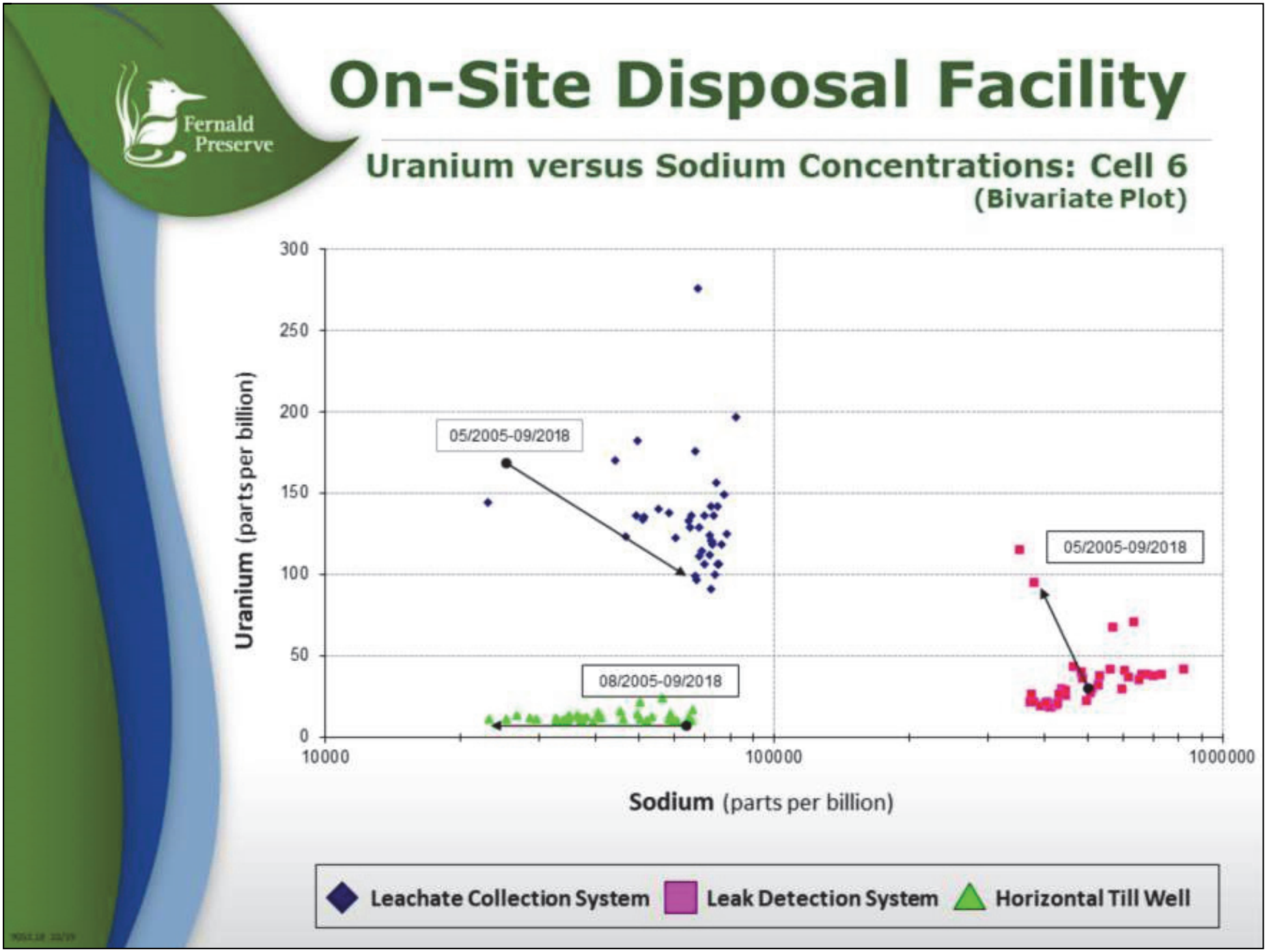
Low Flow Response Leakage Rate Basis

Year	Cell	Maximum Accumulation Rate (gpad)	Maximum Flow Rate (gpd)
2008	5	1.36	8.70
2009	5	0.48	3.10
2010	6	0.21	1.30
2011	8	0.38	3.50
2012	6	0.10	0.64
2013	6	0.07	0.45
2014	6	0.06	0.40
2015	6	0.23	1.50
2016	6	0.18	1.20
2017	6	0.05	0.32
2018	6	0.11	0.70

Action leakage rate	200 gpad	1,300-1,900 gpd
Initial response leakage rate	20 gpad	130-190 gpd
Low response leakage rate	2 gpad	13-19 gpd

gpad: gallons per acre per day
gpd: gallons per day

Leak Detection System accumulation rates in the disposal cells are so low that a new low-flow response leakage rate of 2 gallons per acre per day has been defined for early investigation. By comparison, the previously established initial response leakage rate is 20 gallons per acre per day and the action leakage rate is 200 gallons per acre per day.



A comparison of uranium concentrations and sodium concentrations in and below Cell 6 of the OSDF is an example of a method used to demonstrate that the liner system is working as designed.

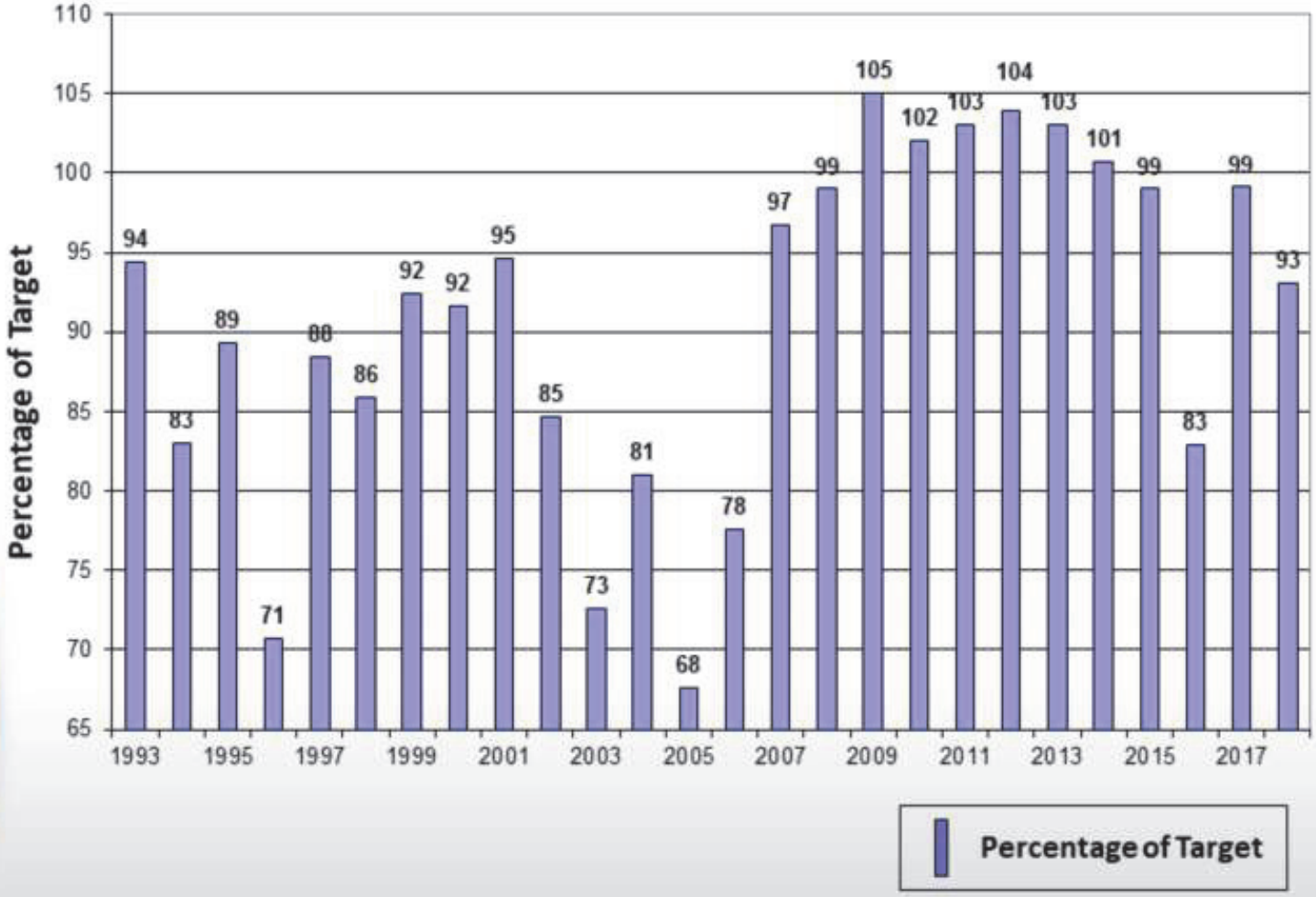
OSDF cap and liner systems are performing as designed.

Aquifer Restoration

Groundwater cleanup continues at the site.

Aquifer Restoration

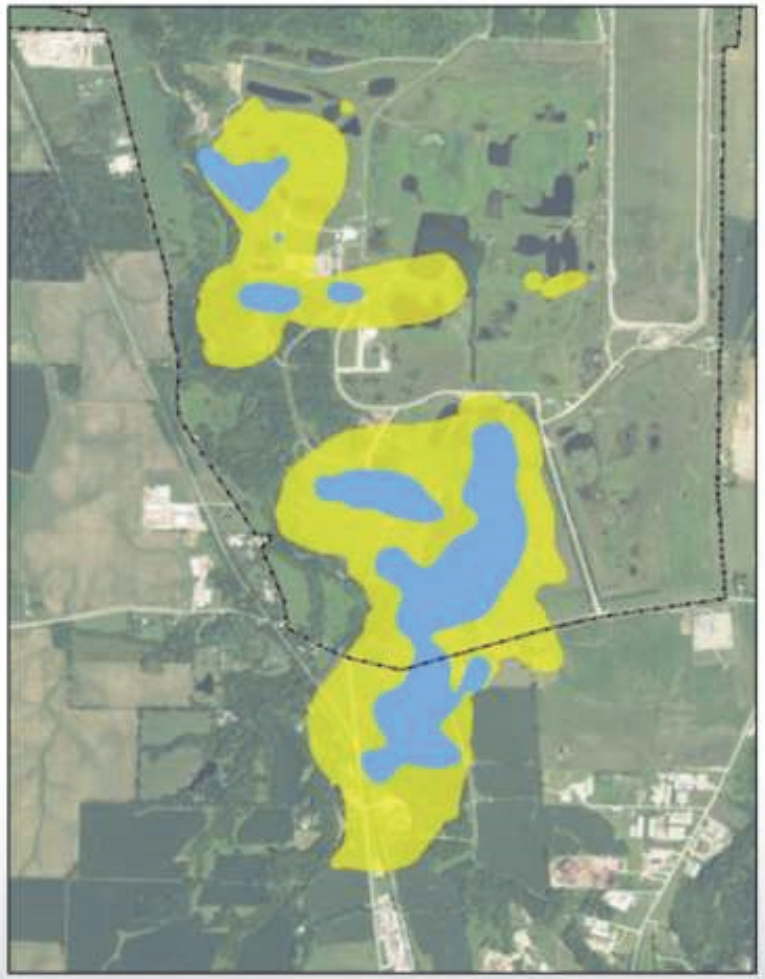
Pumping: Percentage of Target Achieved



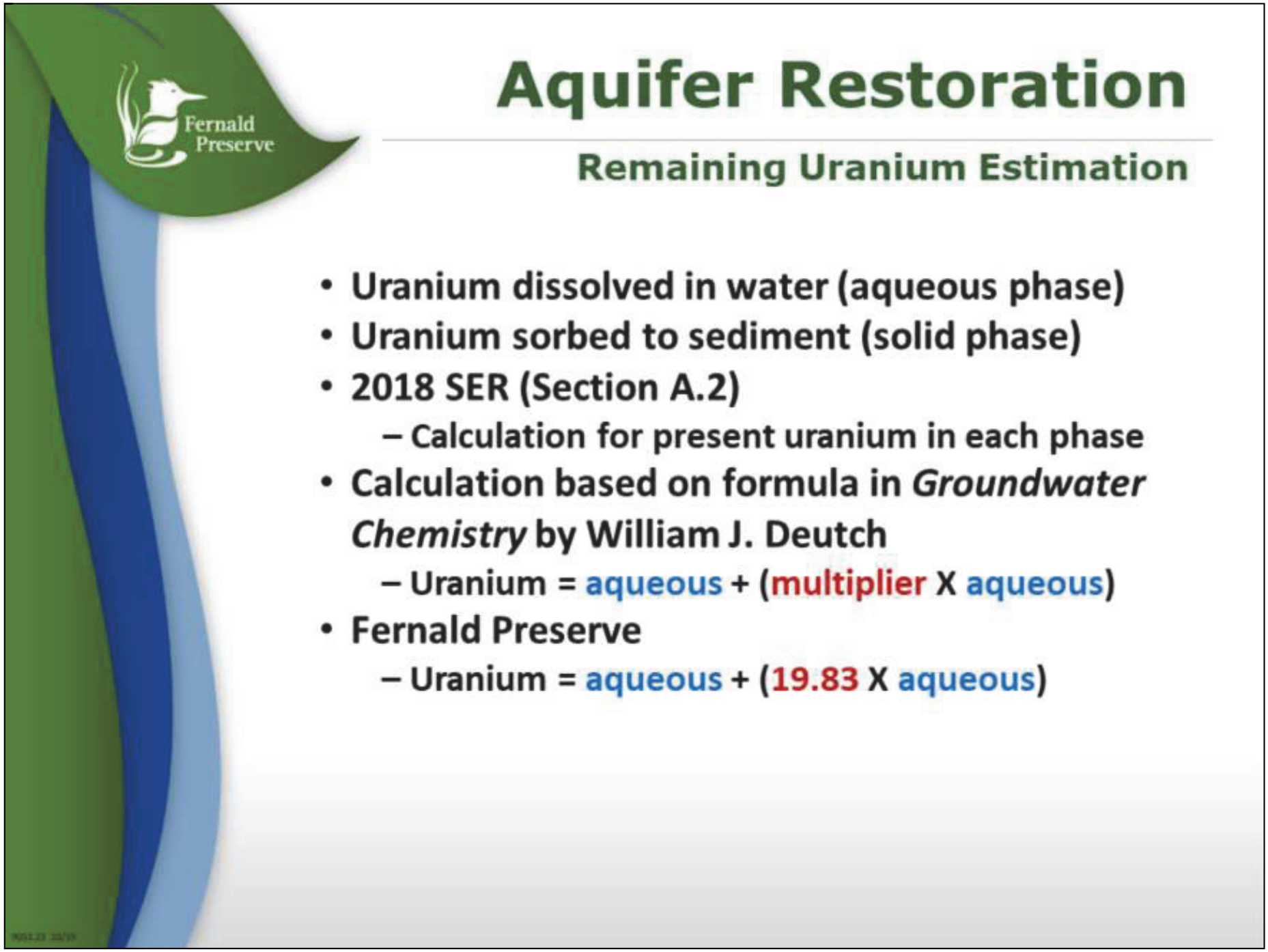
Since site closure in 2006, operations have achieved at least 97% of the planned annual target pumping rates, with the exception of: 1) an unplanned well field shutdown due to site electrical problems in the summer of 2016 and 2) several well field shutdowns due to a planned CAWWT project and high-water levels in the Great Miami River in 2018.

Aquifer Restoration

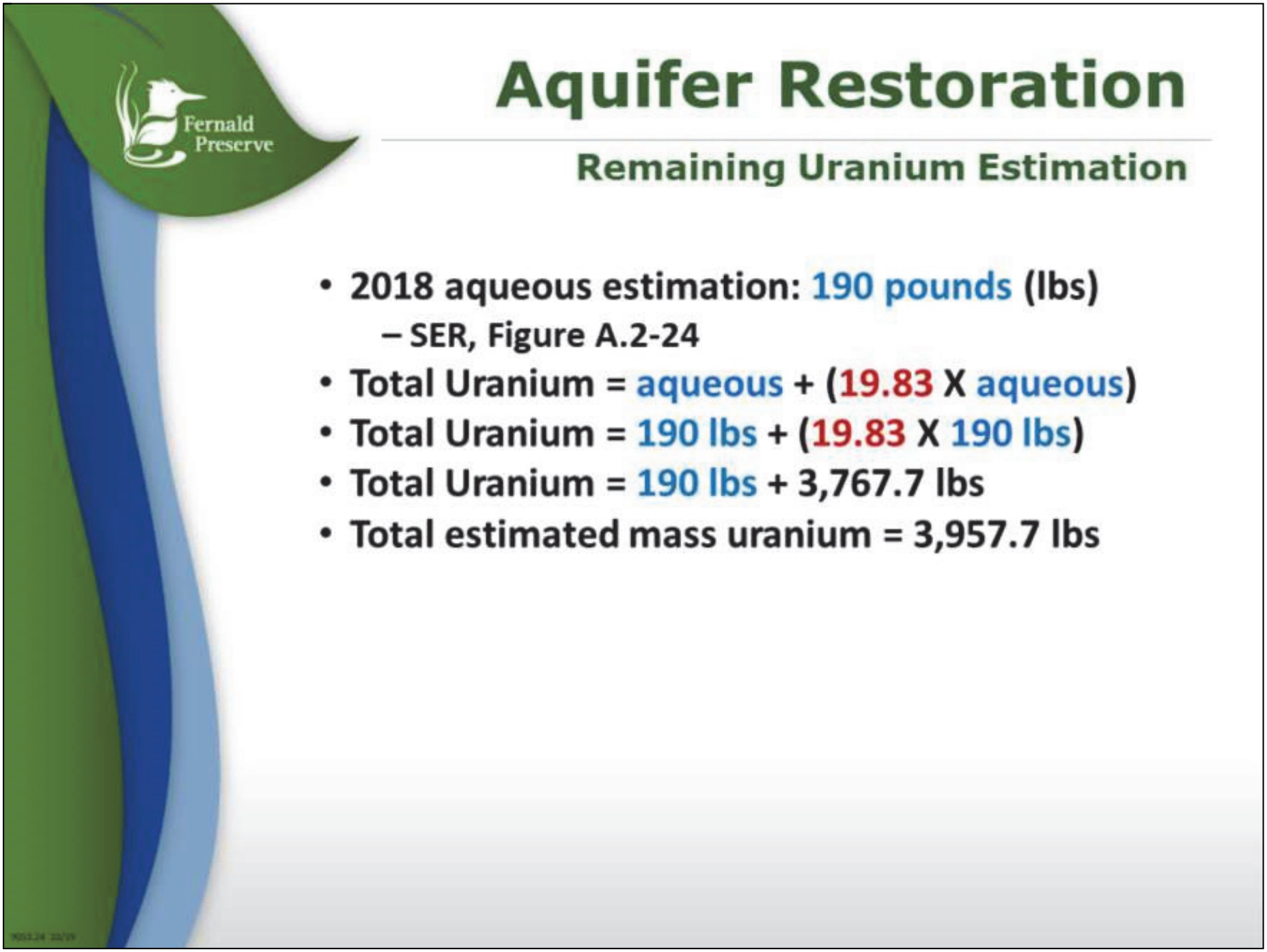
Maximum Plume Acreage: 2006–2018



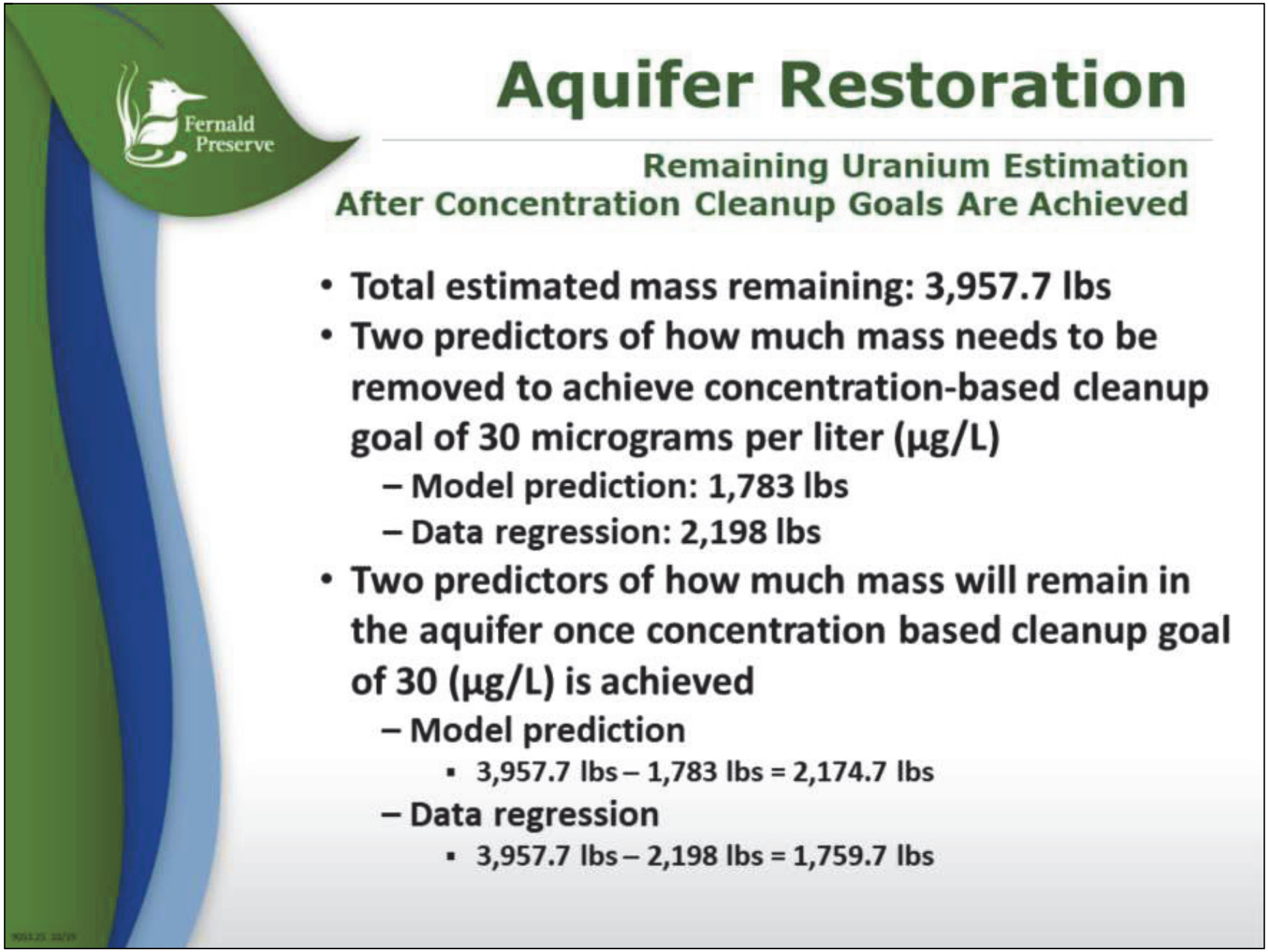
Since 2006 the uranium plume (uranium concentrations above the groundwater final remediation level) has decreased by 53% from 189 acres to 89 acres.



Calculations are presented that provide an estimate of how many pounds of uranium may be left in the aquifer after concentration-based cleanup goals are achieved.



At the end of 2018, an estimate of total mass of uranium remaining in the aquifer is 3,957.7 pounds.



An estimate of how many pounds of uranium may be left in aquifer after concentration-based cleanup goals are achieved is presented.

Uranium-concentration data trends and modeling predictions indicate that the pumping operation is becoming less efficient over time. This is typical of groundwater pump-and-treat systems, and DOE continues to look for ways to optimize system performance.

Aquifer Restoration

Five extraction wells were rehabilitated in 2018 to address iron plugging. Iron plugging decreases the pumping efficiency of the well.

Ecological Restoration

- Restoration projects
- Restored area maintenance
- Ecological monitoring
- Site inspections
- OSDF inspections

Ecological restoration work includes maintenance, monitoring, and inspections.

Ecological Restoration

Restored Area Maintenance

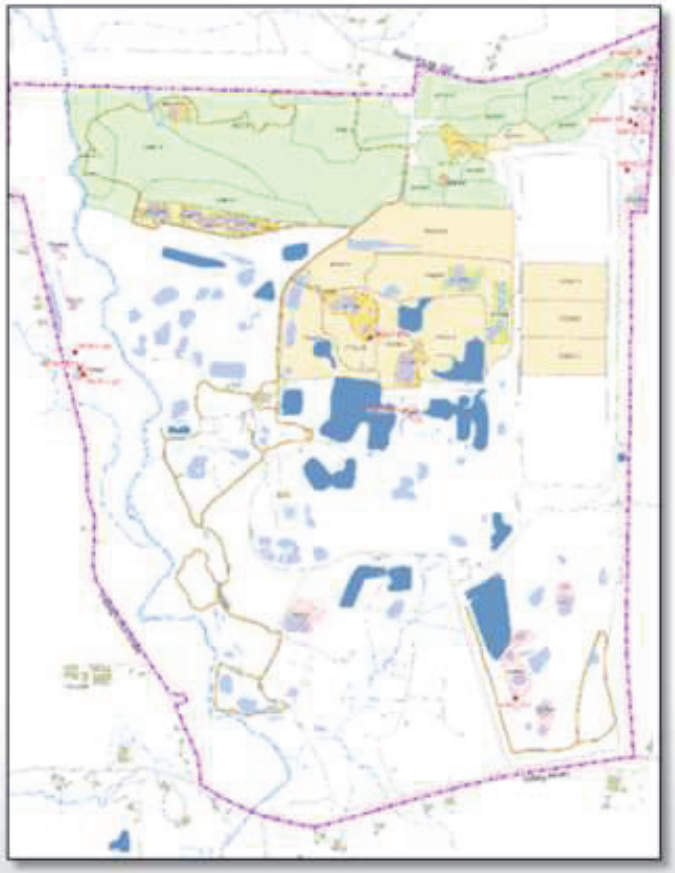
- Vegetation management
- Inspection follow-up

Restored area maintenance includes vegetation management and follow-up from site inspections. Controlled burns are used to manage prairie communities across the site.

Ecological Restoration

Monitoring

- Wetland mitigation
- Functional
- Implementation
- OSDF vegetation cover



Monitoring programs help site personnel evaluate the status of ecologically restored areas at the site, including the health and diversity of amphibian populations.

Ecological Restoration

Inspections

- Site
- OSDF
- Trails

The inspection process continues in compliance with the Fernald Preserve Comprehensive Legacy Management and Institutional Controls Plan.

Ecological Restoration

Endangered Species and Cultural-Resources Surveys

Endangered species and cultural resource surveys are conducted prior to field activities.

Interpretive Services

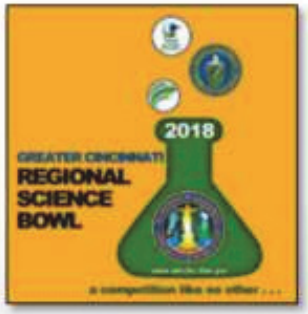
- Public amenities and services
- New Sunday hours
  - Noon-5:00 p.m.

Since the site opened to the public in 2008, schools, conservation organizations, former workers, bird watchers, hikers, and many others continue to use the public amenities at the site, including the Visitors Center, walking trails, wildlife observation opportunities, interpretive programs, and reservable meeting spaces.

Interpretive Services

Community Engagement

- Butler Soil and Water Conservation District Conservation Educator Award
- National Day of Remembrance for Cold War Workers 2018
- Three Valley Conservation Trust annual banquet and meeting
- 2018 Regional Science Bowl Competition



The Fernald Preserve was honored to receive the 2018 Butler County Soil and Water Conservation District's Conservation Educator of the Year Award and to be recognized as a regional "Greenspace Gem" by Green Umbrella, the Greater Cincinnati regional environmental sustainability alliance. Many events were held at the site in 2018 and staff members supported additional community events at off-site locations.

Community Engagement

- Nature programs and hikes remain popular

Public nature programs capture community interest. A variety of public programs and other activities were offered throughout the year.

Community Engagement

- Birders and photographers are frequent guests

Ecologically restored habitats, including the expansive prairie grasslands at the site, are recognized as regionally important birding areas that attract birds, bird watchers, and photographers.

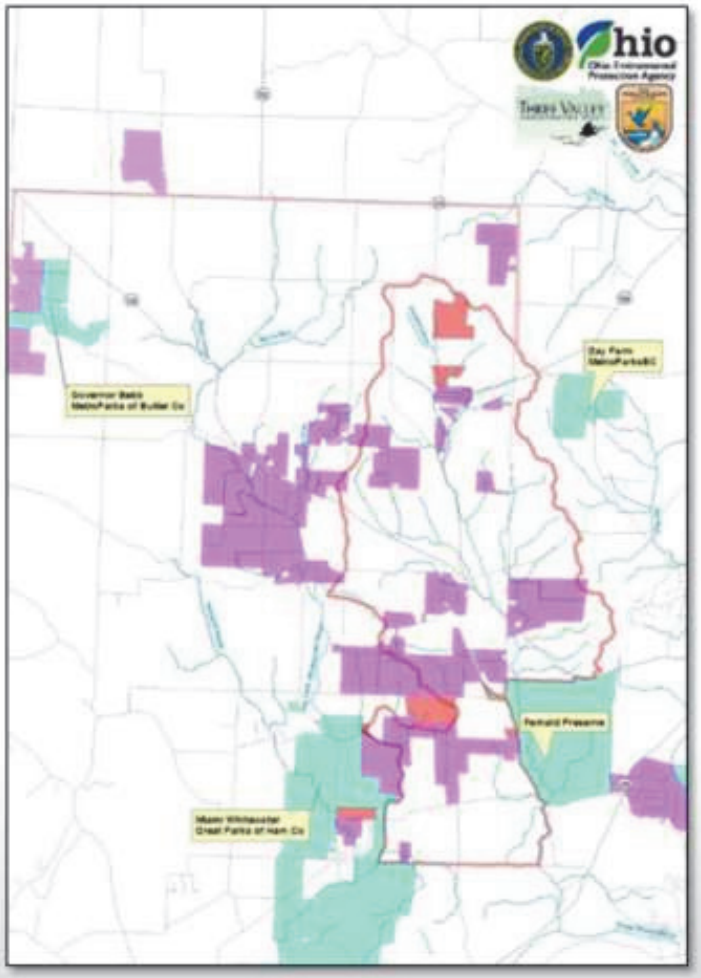
Community Engagement

- Bobcat update 2018
- Upcoming public events

Bobcats have raised kittens on-site for six consecutive years, including 2019. Upcoming public programs feature wildlife and history topics. Information can be found at: https://www.lm.doe.gov/Fernald_Events.pdf

Natural Resource Trusteeship

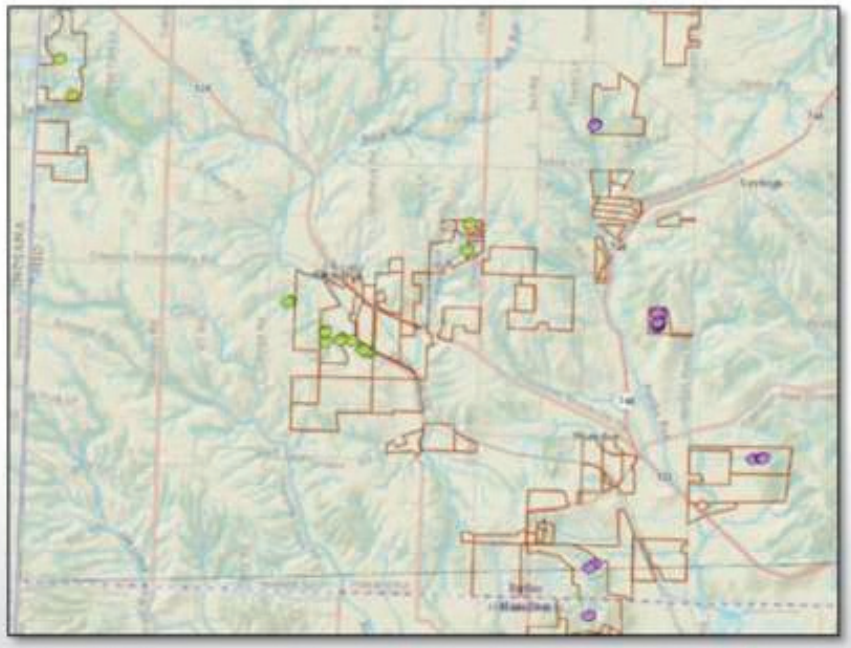
Summer 2019



The Natural Resource Trustees — comprised of Ohio EPA, U.S. Fish and Wildlife Service, and DOE — have partnered with the Three Valley Conservation Trust to purchase conservation and agriculture easements in the Paddys Run watershed and above the associated Great Miami Buried Valley Aquifer.

Natural Resource Trusteeship

Reptile and Amphibian Survey



Several new populations of cave salamanders and long-tailed salamanders have been found on Paddys Run Conservation Project properties. The cave salamander is listed as endangered in Ohio.

Wastewater Treatment

Optimization Project

- **Multi-year project**
- **Planning** (2015)
- **Components/sub-projects**
  - **Remove old system components** (2016-17)
  - **Design new system** (2017)
  - **Fabricate/install new system components** (2017-18)
  - **Backwash basin** (2019)
  - **Roof repairs** (2019)

Most of the wastewater-treatment optimization project was completed in 2018, except for the backwash basin refurbishment which will be completed in 2019.

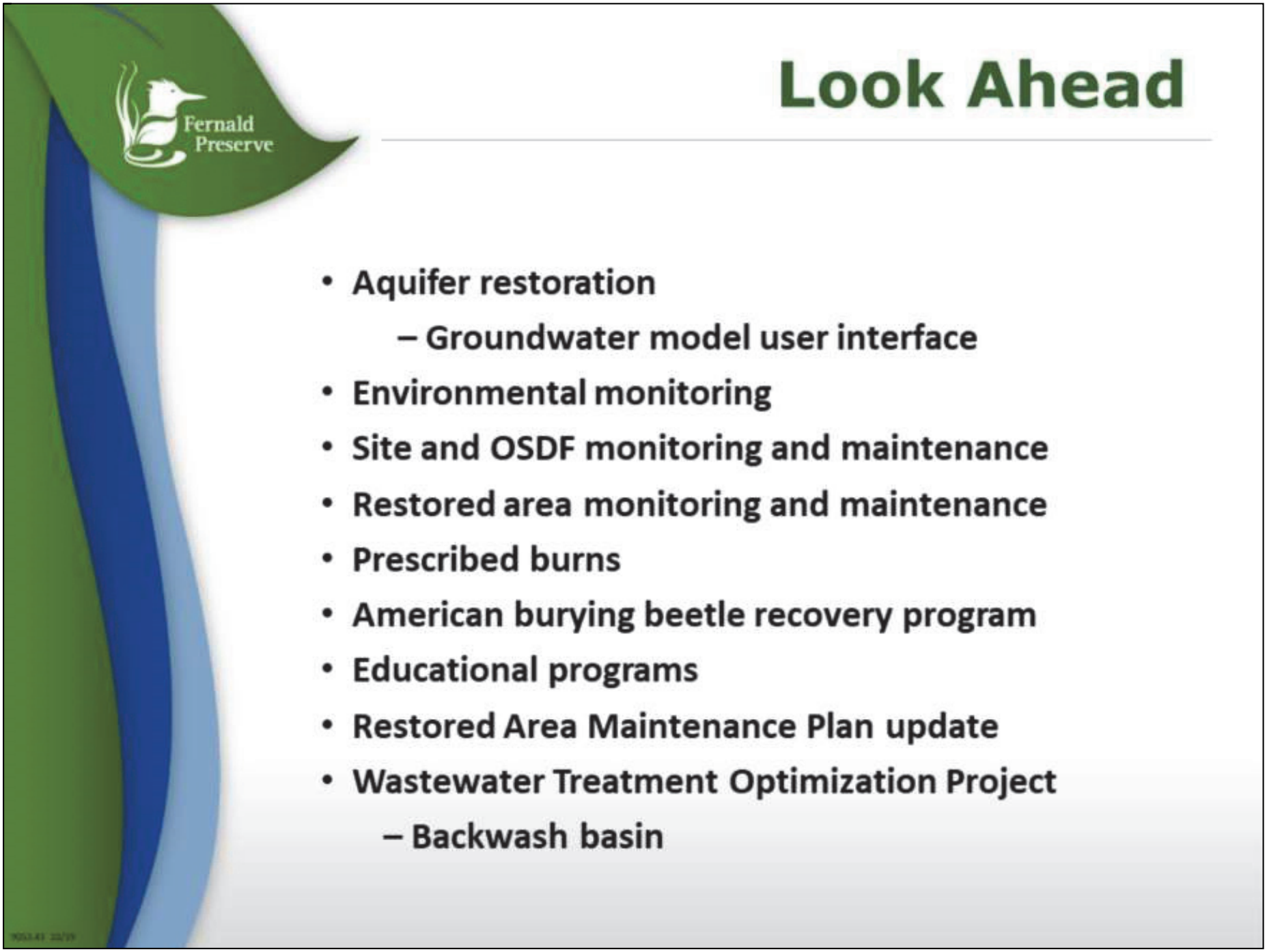
2019 Site Projects

- Hickory Trail repairs
- Visitors Center parking lot sidewalk ramp

Completed 2019 projects include trail repair work and the installation of a pedestrian sidewalk ramp.

Master Plan

DOE completed a Master Plan with input from stakeholders that will help guide decisions regarding future land use, public amenities, and interpretive services. The Master Plan will not affect CERCLA cleanup levels, remediation plans, or institutional controls.



Numerous work activities are planned for 2019.

The next annual Fernald Preserve community meeting will take place in autumn 2020.