



## GWEN

- Welcome.
- Eleventh community meeting in this “green” building.
- This evening, the main topic will be detailed reports on long-term surveillance and maintenance at Fernald.
- We’ll be discussing both current and future projects at the site.

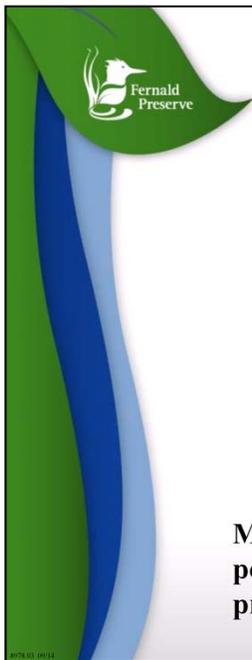


**Agenda**

- **Health and safety**
- **Natural Resource Trusteeship**
- **Site operations**
- **Nature nook**
- **Site activities**
- **Look ahead**

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- Meeting agenda.



# Fernald Preserve

## Legacy Management Mission



**Manage the U.S. Department of Energy (DOE) post-closure responsibilities and ensure the protection of human health and the environment.**

- DOE’s mission here at the Fernald Preserve.
- The Office of Legacy Management’s mission here is long-term surveillance and maintenance. The focus is on “maintaining the remedy.”
- This photo was taken in June 2014.



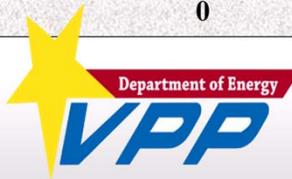
## Worker Health and Safety

Occupational Safety and Health Administration (OSHA)

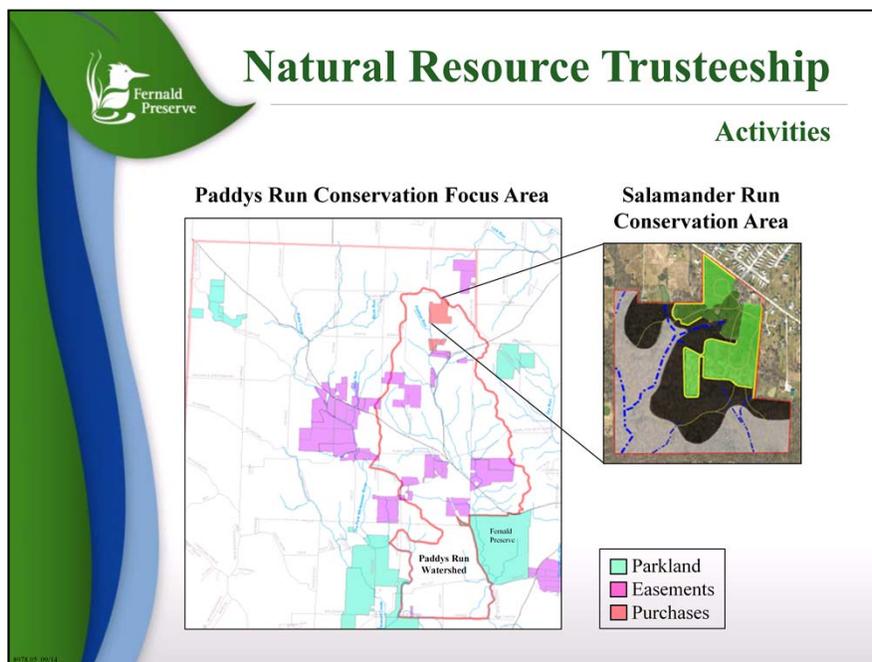
OSHA Recordable Cases (annually)		
DOE Complex	LM	Industry
0.9	0.9	3.1

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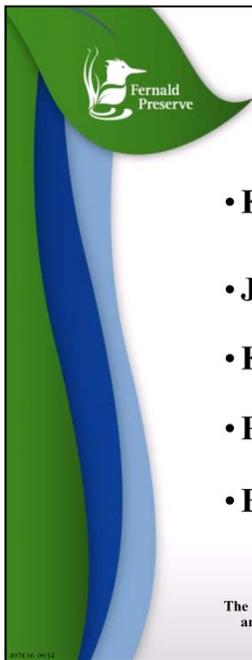
Fernald Preserve (quarterly)		
Lost Time	First Aid	Recordable
0	1	0



- The Stoller Team is the prime contractor for DOE’s Office of Legacy Management program nationwide. In 2012, the Stoller Team received the Star Award in DOE’s Voluntary Protection Program. The VPP program spotlights companies that have exemplary safety cultures.
- The Star Award is the highest honor and safety award in DOE’s VPP program.
- The Stoller Team also won DOE’s Star of Excellence (highest) in calendar year 2012 and the Superior Star in calendar year 2013.
- Fernald Preserve employees received the 100% Award for 2013 from the Greater Hamilton Safety Council. The award is for companies that had no lost-time injuries or illnesses.
- The OSHA recordable rate is the number of recordable injuries times 200,000 hours divided by total hours worked during the year.
- No lost-time work accidents at the Fernald Preserve last year.
- One muscle strain at the Fernald Preserve last year.
- No OSHA recordables at the Fernald Preserve last year.



- Define who the trustees are:
  - Ohio Environmental Protect Agency (Tom Schneider)
  - U.S. Fish and Wildlife Service (Jenny Finfera)
  - DOE (Gwen Hooten)
    - Laura Hafer, Ohio EPA - active
- The Natural Resource Trustees have partnered with the Three Valley Conservation Trust to purchase conservation and agriculture easements in the Paddys Run watershed and the associated Buried Valley aquifer. Easements are one way of protecting groundwater.
- The Trustees and the Three Valley Conservation Trust continue to accept applications for easements.
- Since 2011, more than 2,700 acres have been permanently protected in the Paddys Run watershed.
- A 125-acre property on Layhigh Road has been purchased outright and is being restored. Once restoration is complete, it will be turned over to Butler County MetroParks and open to the public.
- Restoration is similar to past restoration projects at Fernald, and includes honeysuckle removal, wetland, and pond restoration and prairie establishment.



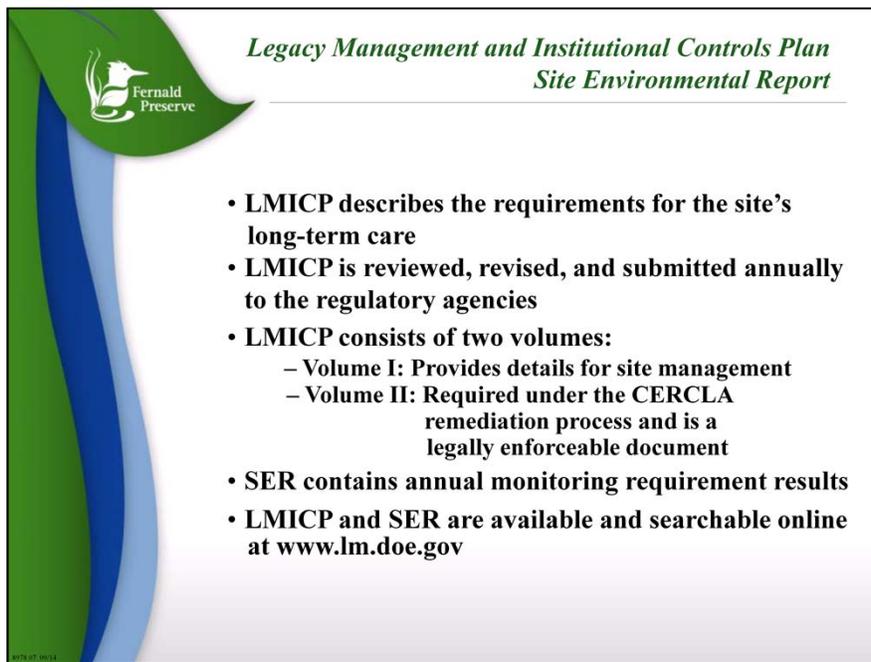
# Fernald Preserve

## Project Leads

- **Karen Voisard**, The S.M. Stoller Corporation  
– Environmental Monitoring, Data Management and Reporting
- **John Homer**, The S.M. Stoller Corporation  
– Ecological Restoration
- **Ken Broberg**, The S.M. Stoller Corporation  
– Aquifer Restoration
- **Penny Borgman**, The S.M. Stoller Corporation  
– Public Affairs
- **Bill Hertel**, The S.M. Stoller Corporation  
– Site Manager

The S.M. Stoller Corporation is a wholly owned subsidiary of Huntington Ingalls Industries, and contractor to the U.S. Department of Energy Office of Legacy Management.

- S.M. Stoller project leads.
- **Gwen turns over to SMEs.**



## KAREN

- The LMICP, revision 8, will be available for public comment after September 30, 2014.
- Comments can be submitted electronically by clicking on **Contact Us** on the Fernald Preserve webpage.
- Hold up the LMICP.
- Hardcopy of the LMICP and a computer are available in the Resource Room.
  - Attachment A—Operations and Maintenance Master Plan for - Aquifer and Wastewater Treatment
  - Attachment B—Post-Closure Care and Inspection Plan
  - Attachment C—Groundwater/Leak Detection and Leachate Monitoring Plan
  - Attachment D—Integrated Environmental Monitoring Plan
  - Attachment E—Community Involvement Plan
- Hold up SER and appendixes.
- John, Karen, and Ken are going to discuss the monitoring results that are typically presented in the SER.



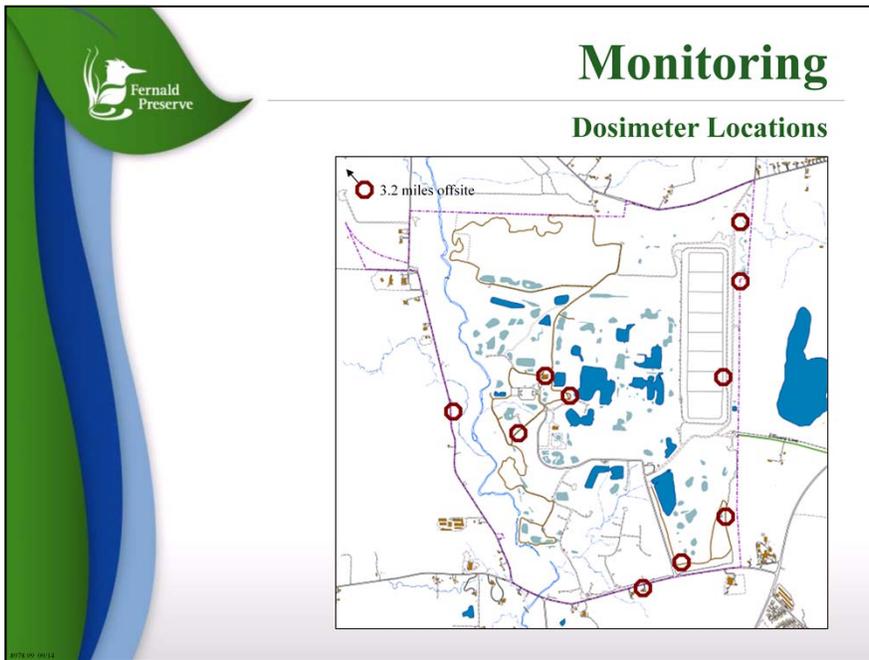
# Sampling

2013

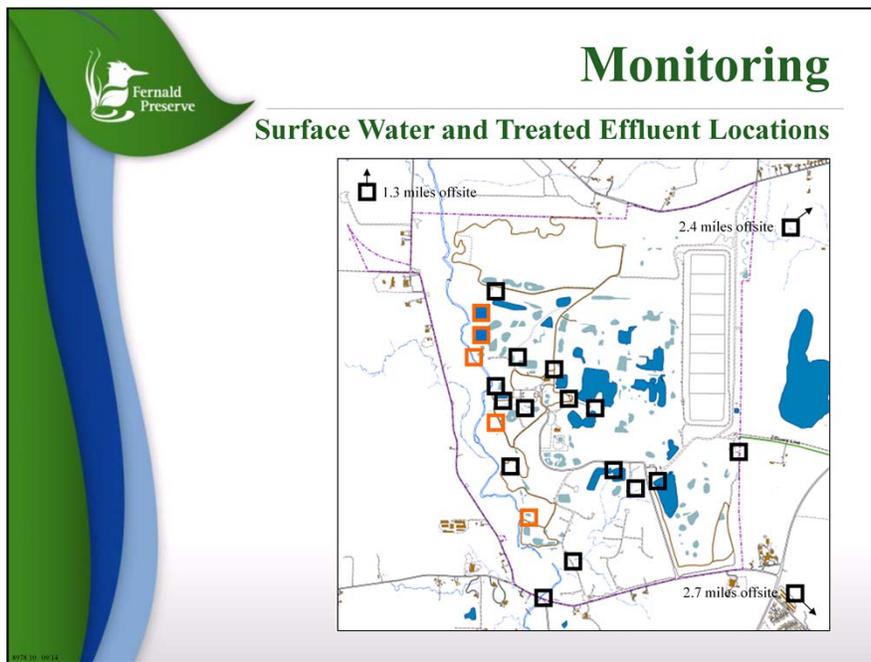
- Surface water sampling at 21 locations
- Treated effluent sampling at one location
- Direct radiation monitoring at 11 locations
- On-Site Disposal Facility leak detection monitoring at 42 locations
- Groundwater sampling at 140 monitoring wells
- Continuing approved semiannual, quarterly, and daily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

## KAREN

- On-Site Disposal Facility leak detection monitoring points include:
  - Five locations per cell
    - One east, one west, one horizontal till well, one Leak Detection System, one Leachate Collection System
  - Two additional locations south of the On-Site Disposal Facility
- Groundwater and surface water:
  - Includes both onsite and offsite locations.
- Composite effluent sampling:
  - Flow-weighted composite.
- Direct radiation monitoring:
  - Includes both onsite and offsite locations.
- Sediment sampling:
  - Samples collected once every 5 years; next event was /will be completed this year.
  - One location upstream, one location downstream of treated effluent discharge.



- The dosimeters are located along some of the trails, in the Visitors Center, and at the site boundary.
- Direct radiation levels continue to be at or near background levels.
- Point out VC and trails.



- Paddys Run is on the left and the other areas are surface water (i.e., ponds, wetlands, etc.)
- Several locations onsite are monitored to determine the potential impact of surface water on the groundwater.
- Five locations (orange) exceeded the groundwater final remediation level of 30 parts-per-billion in 2013.
- Two locations (blue) east of the Waste Storage Area were the only areas to exceed the surface water uranium concentration final remediation level of 530 parts-per-billion in 2013.
  - These two locations are in an area where the public is not allowed and are dry much of the year.
- One location (SWD-05) exceeded the groundwater final remediation level for Thorium-232 (1.2 picocuries/liter) for a second straight year.
- All locations are within the capture zone of the extraction wells and will continue to be monitored.
- The concentrations, although above the surface water final remediation level, are statistically trending downward or no trend.
- During a site inspection in early 2014, erosion of the Paddys Run bank was noted in this area (i.e., two locations that are higher than surface water FRL). Plans were made to stabilize the bank, which John Homer will discuss later.

 **Restoration**  
Ecological

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



## JOHN

- Use aerial photo to point out project locations.
- Work in 2013 included completion of the Silos Area restoration project and the Restoration Garden, along with construction of a wildlife observation blind that overlooks the former production area. The Biowetland Trail and an overlook access for the former storm-water retention basin was added as well.
- Other maintenance activities include spot-spraying noxious weeds, clearing honeysuckle, addressing inspection findings (debris removal, fence repair, and so on). About 13 acres of thick honeysuckle areas were cleared, mostly along the Hickory Trail.



# Monitoring

## Ecological

- **Functional monitoring**
- **Implementation monitoring**
- **Site and On-Site Disposal Facility inspections**




- Activities in 2013 include prairie functional monitoring, wetland mitigation monitoring, and evaluating woody vegetation survival herbaceous cover at the Paddys Run Tributary and Silos Area restoration projects.
- Wetland monitoring involved amphibian monitoring and measuring water level elevations. Amphibians continue to become established in the northern wetlands near forested areas. Lots of cricket frogs are present in the former production area. Water elevations were similar to previous years.
- Functional monitoring consisted of vegetation surveys in restored prairie areas. Results indicated that some prairie areas may be impacted by invasive vegetation. We are evaluating our maintenance efforts and might try some new approaches in the coming years.
- Implementation monitoring included evaluating woody vegetation survival at the Paddys Run Tributary and Silos Area projects, and evaluating the herbaceous cover at these two areas plus the Triangle Area. Results were below goals (53% in the Paddys Run Tributary, 76% in the Silos Area). Part of this may be due to the difficulty in finding planted trees. The goal is 80% survival.
- There are a lot of volunteer recruits that have become established, which helps offset % survival.
- For herbaceous cover, all goals were met. Pursuant to the LMICP, Onsite Disposal Facility Cells herbaceous cover data were collected on Cell Caps 7 and 8. Results show acceptable cover, with over 73% total cover on Cell 7 and 56% total cover on Cell 8. Total cover may have been impacted by yellow sweet clover, which was observed across Cells 7 and 8. Native species composition met goals, with Cell 7 at 79% and Cell 8 at 61%. Herbaceous goals are 50% native species and 90% total cover.

 **Inspections**  
2013

- Site
- On-Site Disposal Facility
- Trail



- The inspection process continues, in compliance with the LMICP. Onsite Disposal Facility inspection findings consist mostly of invasive plants and trees that are either sprayed with herbicide or physically removed. Poor drainage in a couple locations within the west inner drainage led to a follow-up inspection last fall. This resulted in some maintenance and repair to one of the Geographic Information Systems (GIS) structures.
- Site inspections in 2014 were similar to those of recent years. This year, there were no major issues concerning unauthorized activities. Findings usually focus on vegetation (invasives), deer fencing, and debris in portions of the former production area.



## JOHN

- The Paddys Run stream has been migrating into the former Pit 3 Swale area. It has moved approximately 13 feet eastward since 2012.
- This swale area is the location of the puddles with elevated uranium concentrations that were just discussed.
- These puddles are not an immediate concern because they are isolated. They do not drain into Paddys run and are located with the “capture zone” of aquifer restoration.
- These puddles do not normally drain into Paddys Run, but this may change if Paddys Run continues to migrate east.
- DOE has decided to stabilize the streambank to prevent further migration of Paddys Run into the swale area.
- Ken Broberg will discuss the On-Site Disposal Facility and aquifer restoration.

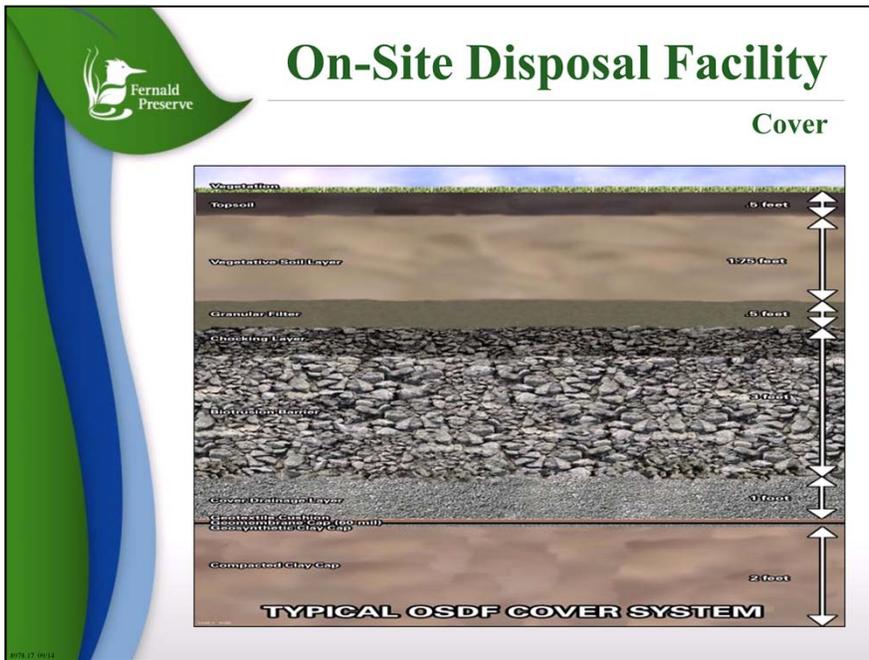


- Work includes relocating the streambed and softening the curve
- Bank stabilization will be accomplished with soil encapsulated lifts and regrade/fabric/reseed
- Two “crossvanes” will be installed in the streambed to stabilize the streambed elevation
- Work will take place for the next several months



## KEN

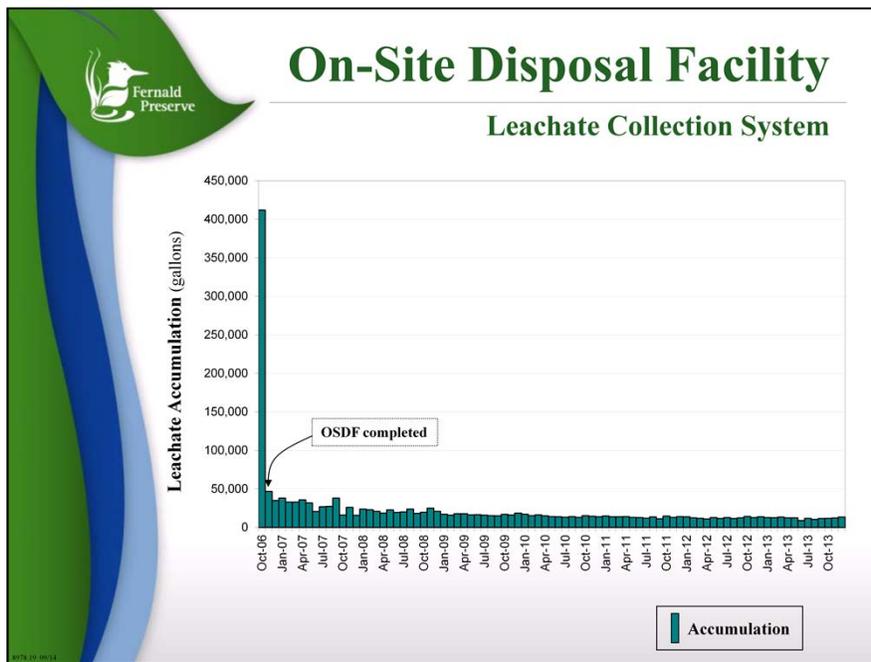
- Counterclockwise –
  - Typical aerial shot of entire On-Site Disposal Facility after capping in 2006.
  - View from south to north of the valve houses where Leachate Collection System and Leak Detection System flows are collected and monitored.
  - Worker preparing to camera survey one of the pipes.
  - Individual valve houses.
  - Valve house tanks where the drainage from the Leachate Collection System and the Leak Detection System is collected and monitored.



- Cap is nearly 9 feet thick
- Designed to keep water, roots, and animals out.



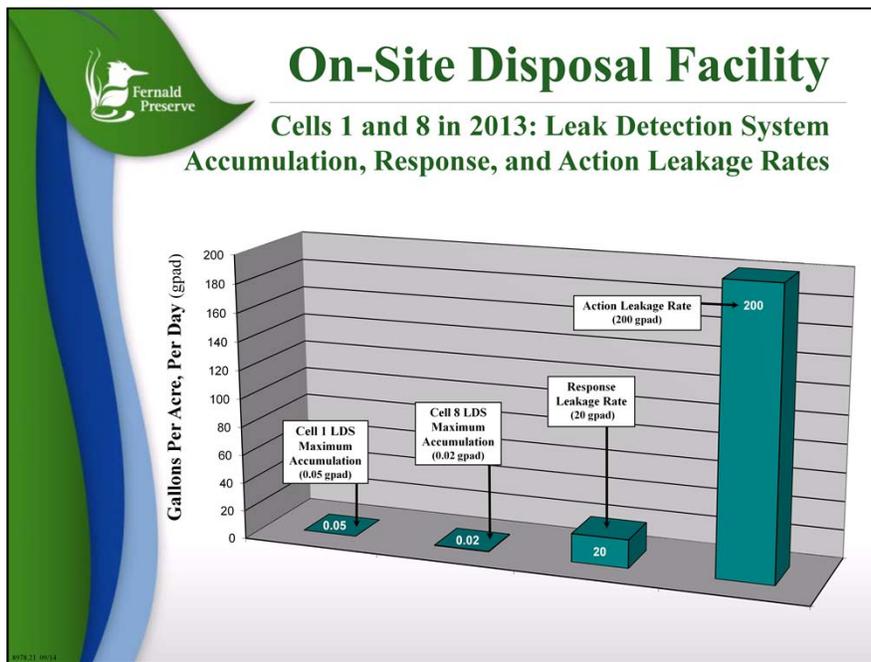
- 6-foot-thick liner system.
- Two high-density polyethylene liners (primary and secondary).
- Leachate Collection System and Leak Detection System layers that slope to the center, then west.
- Drainage from these layers collects in the valve houses for each cell.
- The drainage collects in tanks where flow volume is closely monitored, and samples are collected for analysis two times per year.
- Visual display provided in column in the atrium.



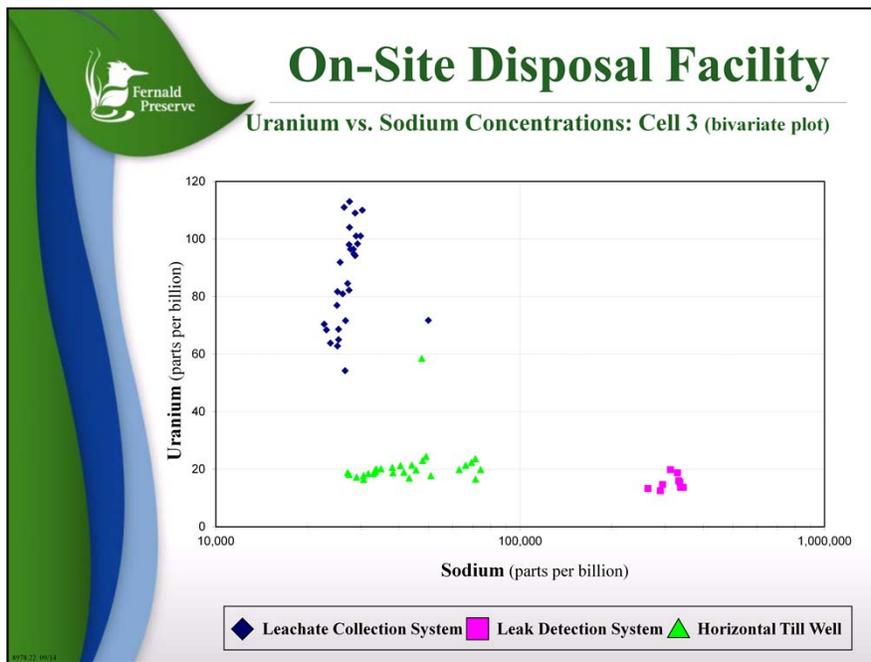
- Graph shows Leachate Collection System flow from the entire facility by month, from just before the final capping (in September 2006) through December 2013.
- Note the large flows prior to cap completion; flow was greater than 800,000 gallons in September 2006, and greater than 400,000 gallons in October 2006. Flows have been much lower since capping was completed in October 2006.



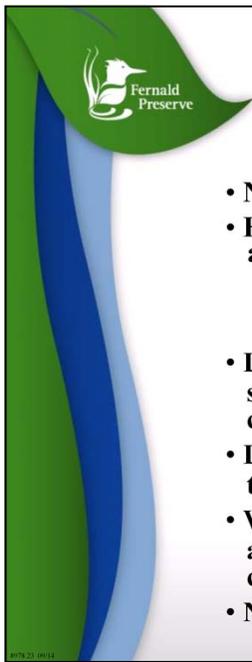
- Graph shows Leachate Collection System flow from the entire facility by year after final capping (in September 2006) through December 2013.
- The annual flow amount continues to decline. Total annual flow as measured at 151,343 gallons in 2012 and at 143,733 gallons in 2013.



- Cell 1 was the first cell completed.
- Cell 8 was the last cell completed.
- Leak Detection System accumulation rates in Cells 1 and 8 were very small compared to the Response Leakage Rate which is 20 gallons per acre per day, while the Action Leakage Rate was 200 gallons per day.



- Note that each monitoring horizon plots out on a different area on the graph.
- If all horizons plotted out in the same area, that would indicate similar chemical characteristics and possible mixing of the water from the different horizons.
- This graph can be used to look for potential mixing over time.



## On-Site Disposal Facility

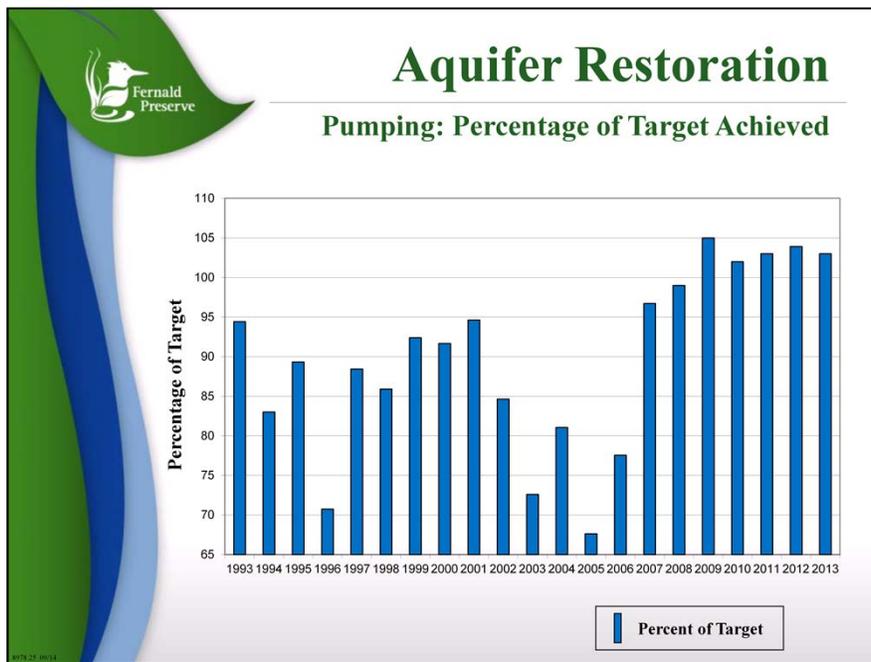
Performance: 2013

- **No indication of leaks**
- **Highest Leak Detection System maximum accumulation**
  - Cell 6: 0.07 gallon per acre, per day (gpad)
  - Initial response leakage rate: 20 gpad
  - Action leakage rate: 200 gpad
- **Leachate Collection System volumes have stabilized and continue to diminish indicating the cell cap is functioning as designed**
- **Leak Detection System accumulation rates indicate the liner systems are performing within cell design**
- **Water quality trends in the horizontal till wells and Great Miami Aquifer wells indicate concentration fluctuations beneath the facility**
- **No visual signs of compromised cap integrity**

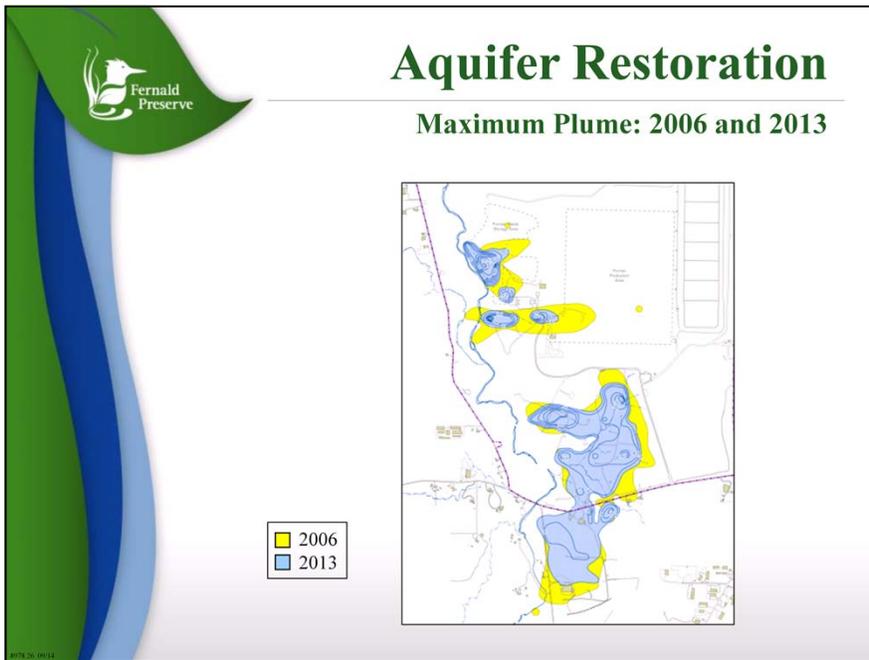
- No talking points.



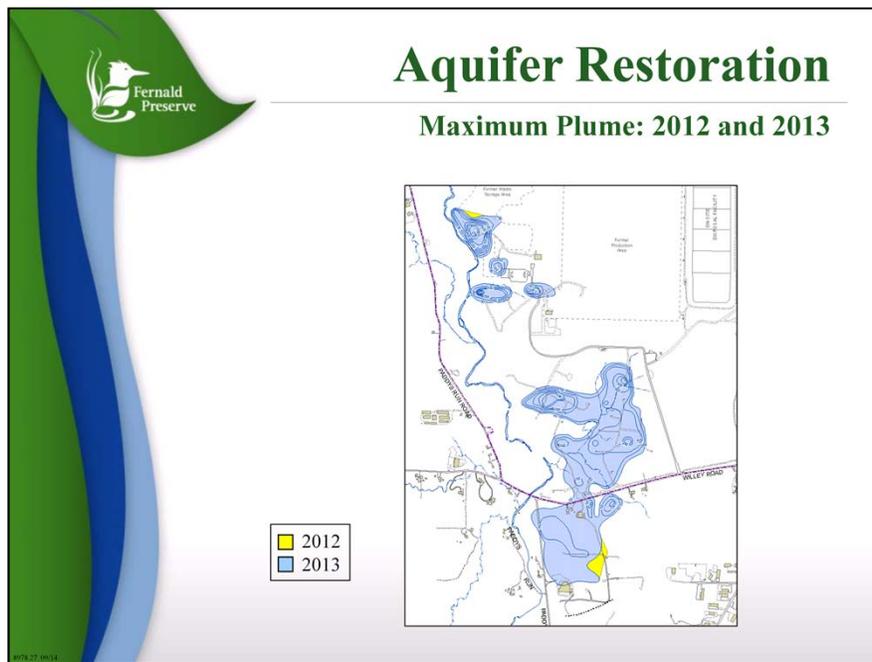
- Aquifer restoration data as of December 31, 2013:
  - 4,775 average gallons per minute target pumping rate
  - 23 extraction wells
  - 140 monitoring wells
  - 34.9 billion gallons extracted 1993
  - 9.86 billion gallons treated since 1993
  - 11,784 pounds of uranium removed



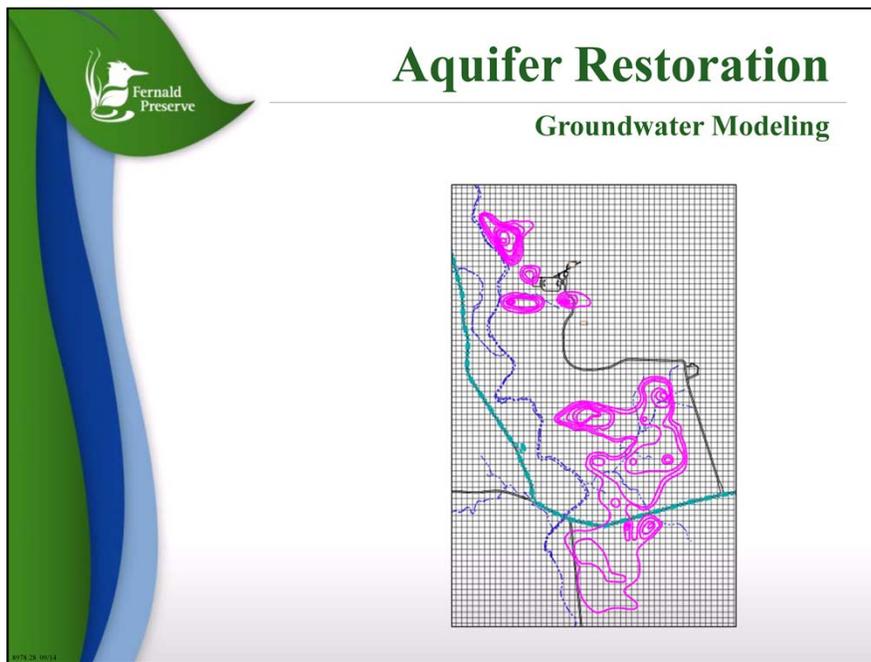
- Left axis shows percent of target pumping rate (4,775 gallons per minute).
- Blue bars show how we've done with respect to the target.
- Note the improvements in percent of target achieved since 2006.
- Improvements directly reflect the improvements (e.g., insitu well treatment to clean pumps, performance testing, etc.) we've made to our well field operation and maintenance program.



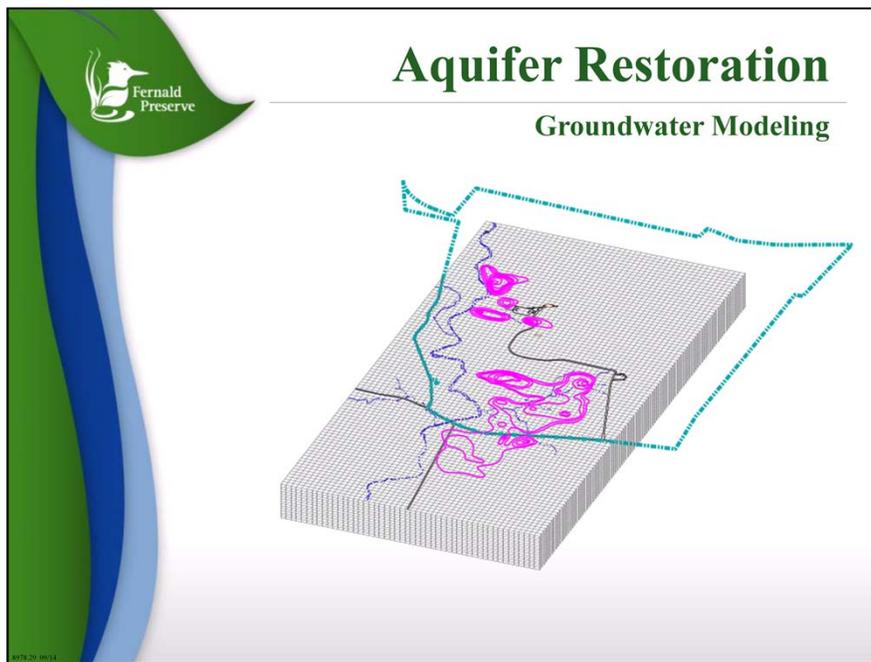
- Concentrations from all depths projected onto one surface.
- Represents worst-case interpretation.



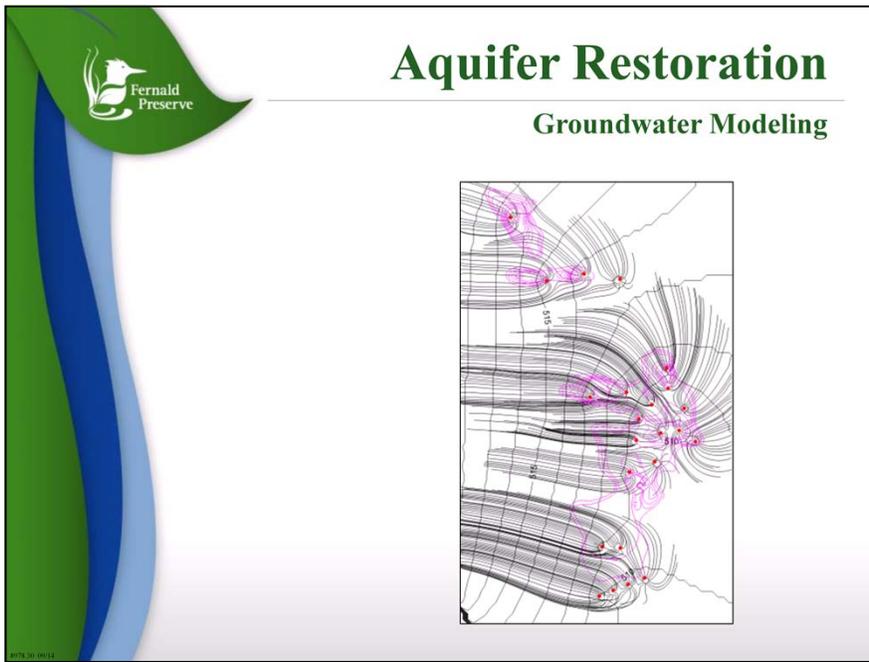
- Overall size of the uranium plume footprint did not decrease much between 2012 and 2013.
- At the end of 2013, the footprint (area above 30 ppb) was approximately 127.3 acres. This was a reduction of 3 acres (2.3 percent) from the 2012 interpretation.
- However, we did see significant concentration reductions within the more concentrated areas of the plume.
- The area within the plume above a concentration of 50 ppb decreased in size by 21.1 acres (21.7 percent).
- The area within the plume above a concentration of 100 ppb decreased in size by 13.4 acres (26.5 percent).
- The difference in concentration between the two years does not necessarily mean that the concentrations decreased in one year. It means only that we were able to sample and document the decrease in 2013.



- New groundwater modeling was completed in 2013.
- Groundwater samples collected in 2011 indicated that an area of the uranium plume just south of Willey Road was higher in concentration and larger than previously characterized.
- 2012 uranium concentrations were loaded into the groundwater model site-wide and the model was rerun.
- The result was longer predicted cleanup times. The revised cleanup prediction was: South Plume 2028, SF 2028, WSA 2032. Based on a 2012 start.
- Additional groundwater modeling using a variety of pumping scenarios was conducted to try to shorten the cleanup time predictions.



- Each point in the aquifer fits into a unique cell of the groundwater model.
- The model has 72,114 cells (101 x 51 x 14 layers).
- In 2013 we had 23 extraction wells pumping at design rates ranging from 100 to 300 gallons per minute.
- The groundwater modeling has two components: (1) flow and (2) transport.

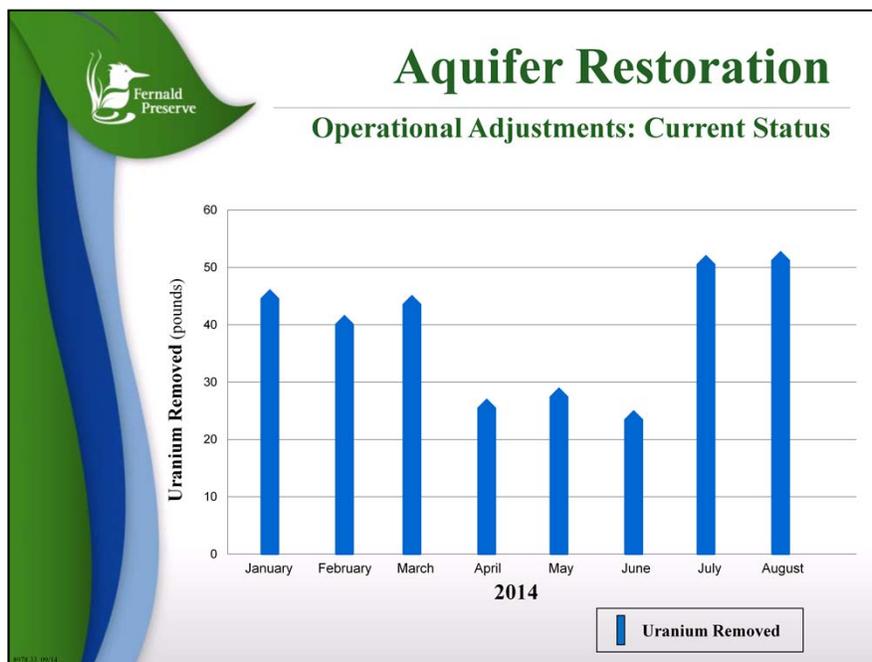


- This figure shows the flow pattern of operations in 2013.
- Water is moving toward each pumping well. The water moves along what is referred to as “particle tracks.”
- Note that some of the particle tracks no longer pull from the plume area, because the plume is no longer there.

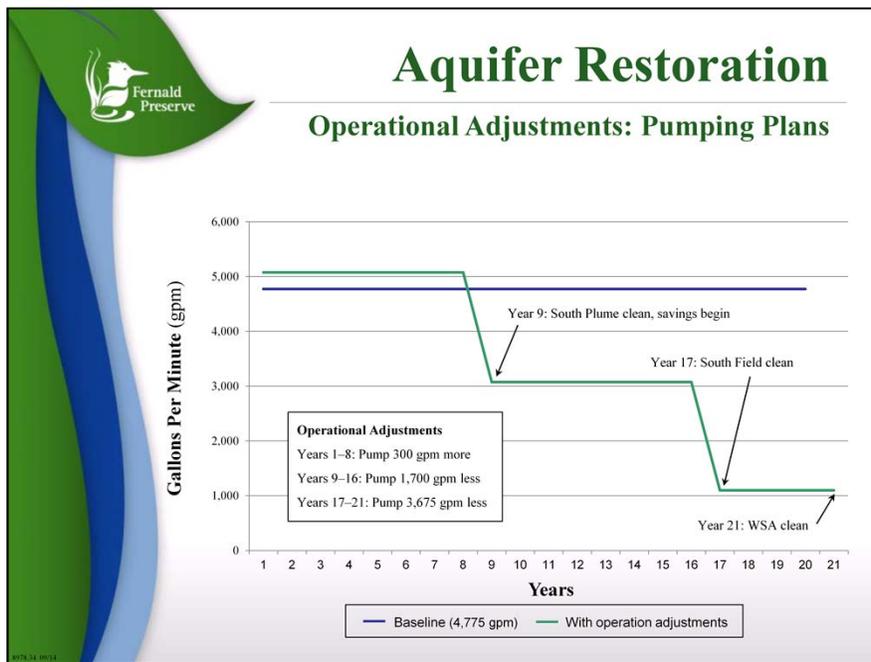




- Turned off extraction wells EW-28A, EW-31, and EW-32.
- Rehabilitated seven extraction wells.
- Installed new larger pumps in seven extractions wells.
- Installed new motors in three wells.
- Installed larger variable frequency drives in three extraction wells.
- Implemented new pumping targets in July 2014.



- As the groundwater model predicted, with the new pumping rates, more uranium is being pulled out of the aquifer. This means that some of the groundwater pumped from the aquifer now needs to be treated in order to meet discharge limits at the Great Miami River.
- A few wells have not achieved their target set points.
- In the next few months DOE will adjust operations as needed in an effort bring all wells up to their new target design set points.
- DOE will determine the cause for any well not meeting its set point and take appropriate action to either mitigate the problem or to assess the impact that not meeting design set point will have on model-predicted cleanup times.
- Data will be in next year's SER.



- Extraction wells will pump at slightly higher rates for the first 8 years after implementing the changes.
- The model predicts that pumping can be decreased in year 9, then again in year 17.

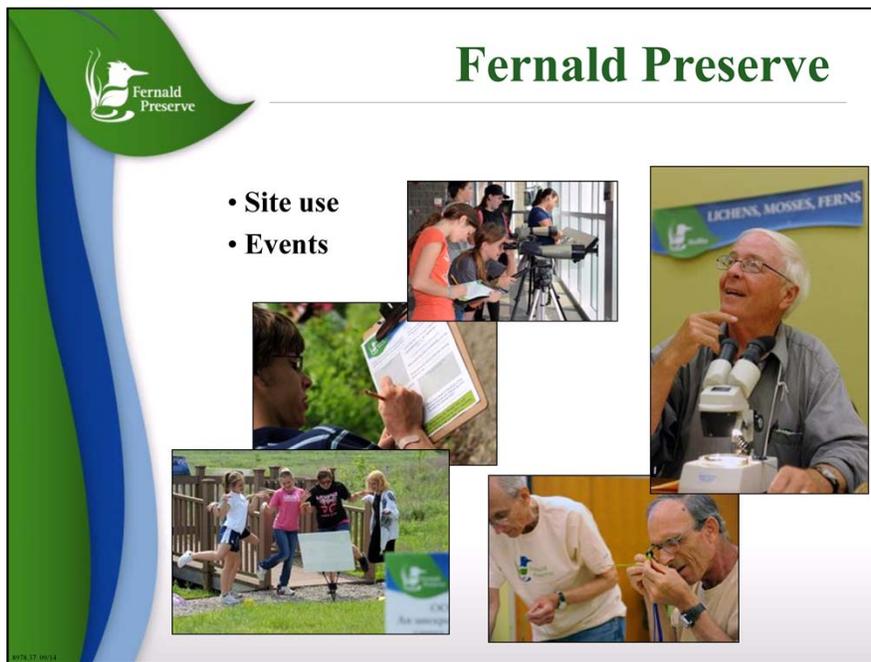


- The revised pumping scenarios indicate higher operating costs for the first 8 years.
- Savings will begin if pumping rates are reduced in year 9, as the model predicts.
- The potential savings are estimated at \$6 million.
- Introduce Penny Borgman, Public Affairs.



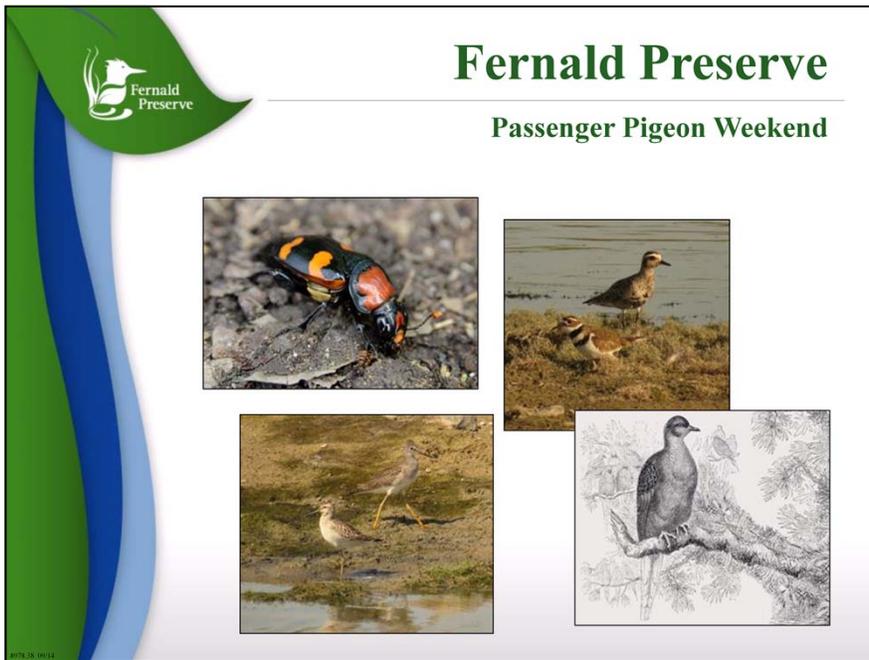
## PENNY

- The diminutive Saw-whet Owl is banded for research purposes throughout its range. The Fernald Preserve has a banding station and the public has been invited to observe the process. This activity has been so popular that pre-registration is required. These owls are found in southern Ohio only in the winter, so watch for the opportunity to witness this hands-on science activity in November.



- Site use
- Events

- This community meeting room has been used by many nonprofit community groups, including garden clubs, schools, senior centers, quilters, former workers, Scouts, and more. In 2013 the east wall of the community meeting room was upgraded with a natural area wall mural that reflects the site's habitats and wildlife populations.
- Fernald Preserve naturalists develop and present programs on a wide range of cultural and natural history topics for ages ranging from elementary students through senior adults. Every month, programs are offered to the public such as the firefly hikes enjoyed by nearly 100 guests this past June.
- So far this year, more than 1,600 people have used the community meeting room, 1,500+ offsite program contacts, 1,500+ onsite program contacts, 2,500 VC guests = **7,200+**.
- You are all welcome to reserve this room or the recently completed Program Shelter by filling out a form provided online or at the receptionist's desk. (Explain the conditions for use—nonprofits can use it, etc.).
- Upcoming public events:
  - National Day of Remembrance for Cold War Workers program will be held November 1.
  - Great Outdoor Weekend will be celebrated with monarch and spider programs on September 27 and 28.
- Since the site opened to the public in 2008, the Fernald Preserve staff has worked with over 57,000 visitors.



- It has been 100 years since the last passenger pigeon on earth died.
- This extinction spurred conservation agencies all over the country to generate wildlife protection efforts.
- We collaborated with the Cincinnati Zoo to offer activities highlighting wildlife conservation efforts at the Fernald Preserve.
- Shorebird Hike, American Burying Beetle Talk, Mothing, and Night Walk.
- Introduce Bill Hertel, site manager.

 Fernald Preserve

## Site Activities

Projects: 2014

- Program Shelter
- Stabilize Paddys Run streambank
- Construct boardwalk
- Upgrade site electrical infrastructure



## BILL

- The Paddys Run Streambank Stabilization Project was discussed earlier. The recently constructed Program Shelter, and the current Sycamore Trail Boardwalk and the electrical upgrades construction projects will be discussed briefly.



- A boardwalk is being built along the Sycamore Trail to enhance outreach programs that involve wetlands.
- The project is being designed and constructed to ensure minimal damage to the wetland.
- Helical piers are being used, along with special equipment (i.e., rubber tracks, relatively lightweight equipment, and smaller footprint) that will limit entry points into the wetland.



- This project is a follow-on to a project we completed in 2010.
- The area of focus for this project is from the southwest corner of the On-Site Disposal Facility to the site access road, and then over to the wastewater treatment facility.
- Drawing shows above ground lines to be removed.
- Project Scope includes:
  - Install new power lines and conduit for communication lines underground, and then remove overhead electrical power lines, communication lines, and poles.
  - Install new more efficient pad-mounted transformers and then remove the old oversized transformers located on the power poles.
- Reintroduce Gwen.

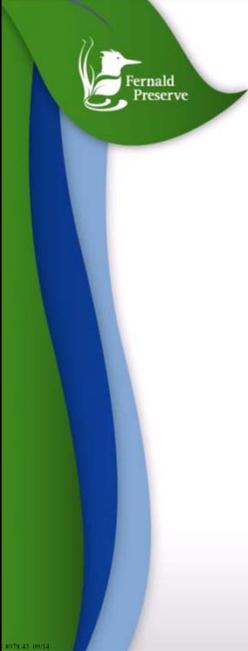


## Look Ahead

- Continue aquifer restoration
- Continue sampling
- Continue site and On-Site Disposal Facility monitoring and maintenance
- Continue unique educational programs
- Pave select gravel areas
- Construct boardwalk
- Upgrade site electrical infrastructure
- Natural Resource Trusteeship
  - Enhance northern woodlot
  - Restore Paddys Run west wetlands

## GWEN

- This look ahead summarizes work and activities planned for the fall and winter months.
- NRT Projects are being completed in cooperation with Ohio EPA and U.S. Fish and Wildlife Service. Funding for these projects is coming from the NRD settlement funds.
- NRT projects are scheduled to begin Spring 2015.
- David Seely, US EPA



## Questions and Contacts

**Gwen Hooten**  
LM Fernald Preserve Manager  
(513) 648-3333  
gwen.hooten@lm.doe.gov

**Penny Borgman**  
Stoller Public Affairs  
(513) 648-3334  
penny.borgman@lm.doe.gov

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

## GWEN

- Are there any questions?
- Although it seems a long way off, please plan to attend next year's annual Community Meeting to be held in September or October.
- Many of you here already receive email updates from me. If anyone would like to be added to our email public events contact list, please see Penny.
- The next annual Fernald Preserve community meeting will be announced through the email distribution list. If you would like to be added to this list please see Penny.

# Fernald Preserve Annual Community Meeting

September 16, 2014

## PLEASE SIGN IN

Include your e-mail address ONLY if you wish to be added to the program/announcement mailing list.

Name: CRISTIAN MITCHELL

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: JERRY BRADLEY

Address: [REDACTED]

[REDACTED]

Phone #: [REDACTED]

E-mail: [REDACTED]

Name: Edward Yocum

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Glenn Griffiths

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Bea Samples

Address: 110 S. [REDACTED] Ave

[REDACTED]

Phone #: \_\_\_\_\_

E-mail: [REDACTED]

Name: ERESH/FCA

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

# Fernald Preserve Annual Community Meeting

September 16, 2014

## PLEASE SIGN IN

Include your e-mail address ONLY if you wish to be added to the program/announcement mailing list.

Name: Lisa Crawford

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Laura Hoyer

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Joyce Bentele

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Fresh, Inc.

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: Bill Snyder

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

# Fernald Preserve Annual Community Meeting

September 16, 2014

## PLEASE SIGN IN

Include your e-mail address ONLY if you wish to be added to the program/announcement mailing list.

Name: DICK KASPARAK

Address: [REDACTED]

[REDACTED]

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone #: \_\_\_\_\_

E-mail: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

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