
Overview of the Rocky Flats, Colorado, Site Annual Report of Site Surveillance and Maintenance Activities Calendar Year 2014

Rocky Flats Stewardship Council
June 1, 2015



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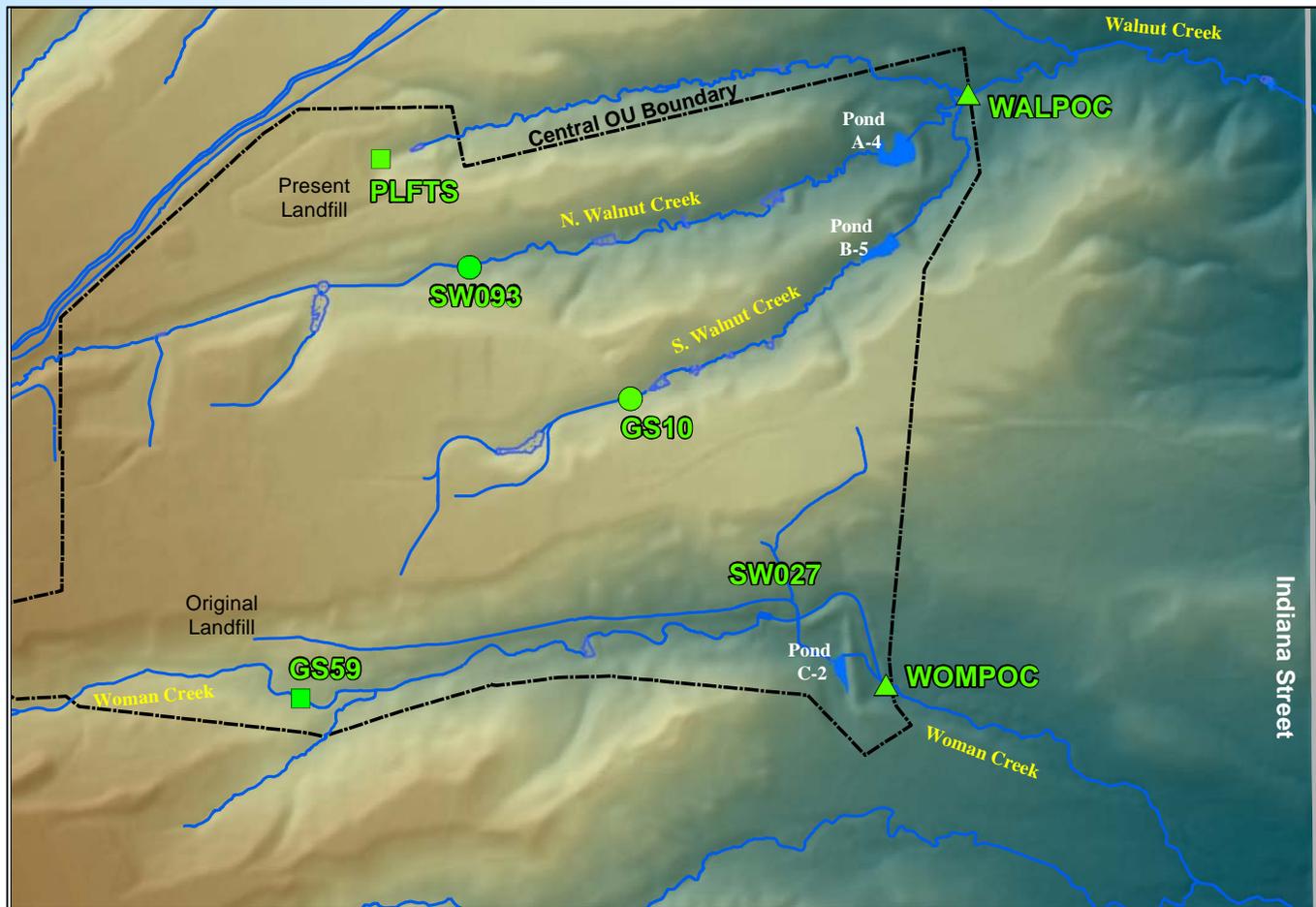
Surface Water Monitoring



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Selected Rocky Flats Legacy Management Agreement (RFLMA) Surface Water Monitoring Locations



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Performance Monitoring at Original and Present Landfills

- Original Landfill (OLF) – Woman Creek
 - All sampling results met water quality standards during calendar year (CY) 2014
- Present Landfill (PLF) – System Effluent
 - Routine quarterly sampling showed that vinyl chloride and arsenic concentrations were above the applicable RFLMA standards, triggering increased sampling frequency (monthly) per RFLMA evaluation protocols
 - Monthly arsenic samples were below the standard and sampling frequency reverted to quarterly
 - Vinyl chloride measured above the standard for three consecutive monthly samples, triggering sampling of surface water from the former PLF pond area outfall to No Name Gulch, per RFLMA evaluation protocols
 - Vinyl chloride was not detected in surface water at the PLF pond area and sampling frequency at the system effluent reverted to quarterly



Point of Evaluation Monitoring

- Reportable 12-month rolling average activities of Americium (Am) and Plutonium (Pu) at GS10 became no longer reportable as of June 30, 2014
- All other RFLMA Point of Evaluation (POE) analyte concentrations remained below reporting levels throughout CY 2014



Point of Compliance Monitoring

- Reportable 30-day average uranium concentrations were observed through May 17, 2014, at Walnut Creek Point of Compliance (WALPOC)
 - The 12-month rolling average subsequently became reportable on October 31
 - Uranium was no longer reportable at WALPOC as of January 31, 2015
- All other RFLMA POC analyte concentrations remained below reporting levels throughout CY 2014



Questions?



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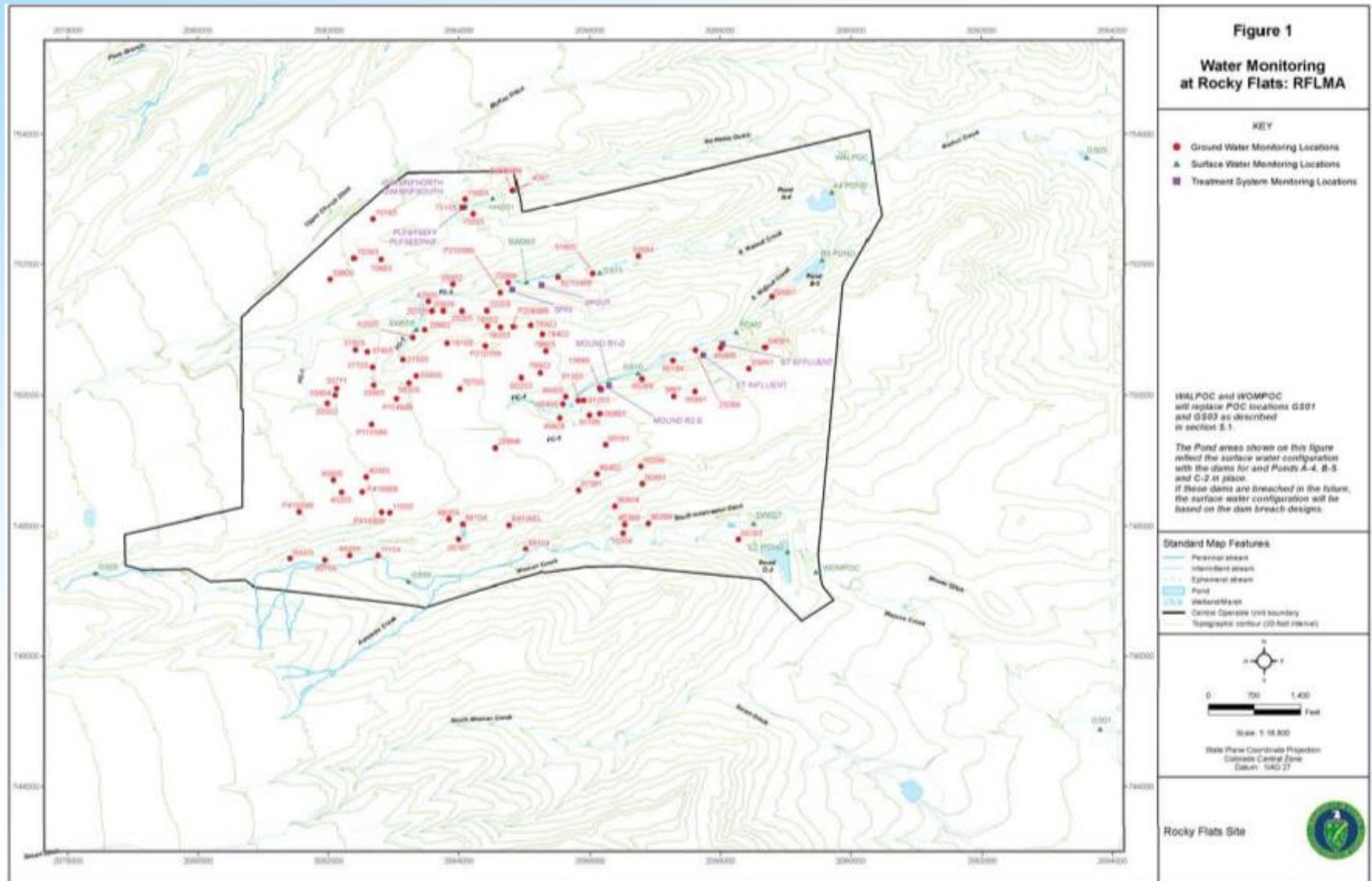
Groundwater Monitoring and Operations



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Objective: Surface Water Protection



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2014 Groundwater Monitoring

- 89 wells and 1 surface location sampled 1 to 4 times each
- Treatment system locations sampled 2 to several times each
- Includes non-routine and non-RFLMA sampling and locations
 - Supports groundwater treatment testing evaluation



2014 Highlights

- All RFLMA-required monitoring and evaluation performed
 - All AOC well data were below RFLMA levels
 - Same applies to data from Surface-Water Support location
 - Results are consistent with previous data
- OLF and PLF RCRA wells
 - Statistical evaluations per RFLMA
 - Results for 2014 are similar to previous years
 - A few analytes were higher in downgradient groundwater than in upgradient groundwater
 - A few analytes in downgradient groundwater are on an increasing trend but below RFLMA levels
 - Several statistical results may not be valid due to abundance of nondetects, estimated concentrations, and/or changes to detection limits
 - Monitoring and evaluation continues per RFLMA
- All Sentinel and Evaluation wells sampled
 - Results largely consistent with previous data



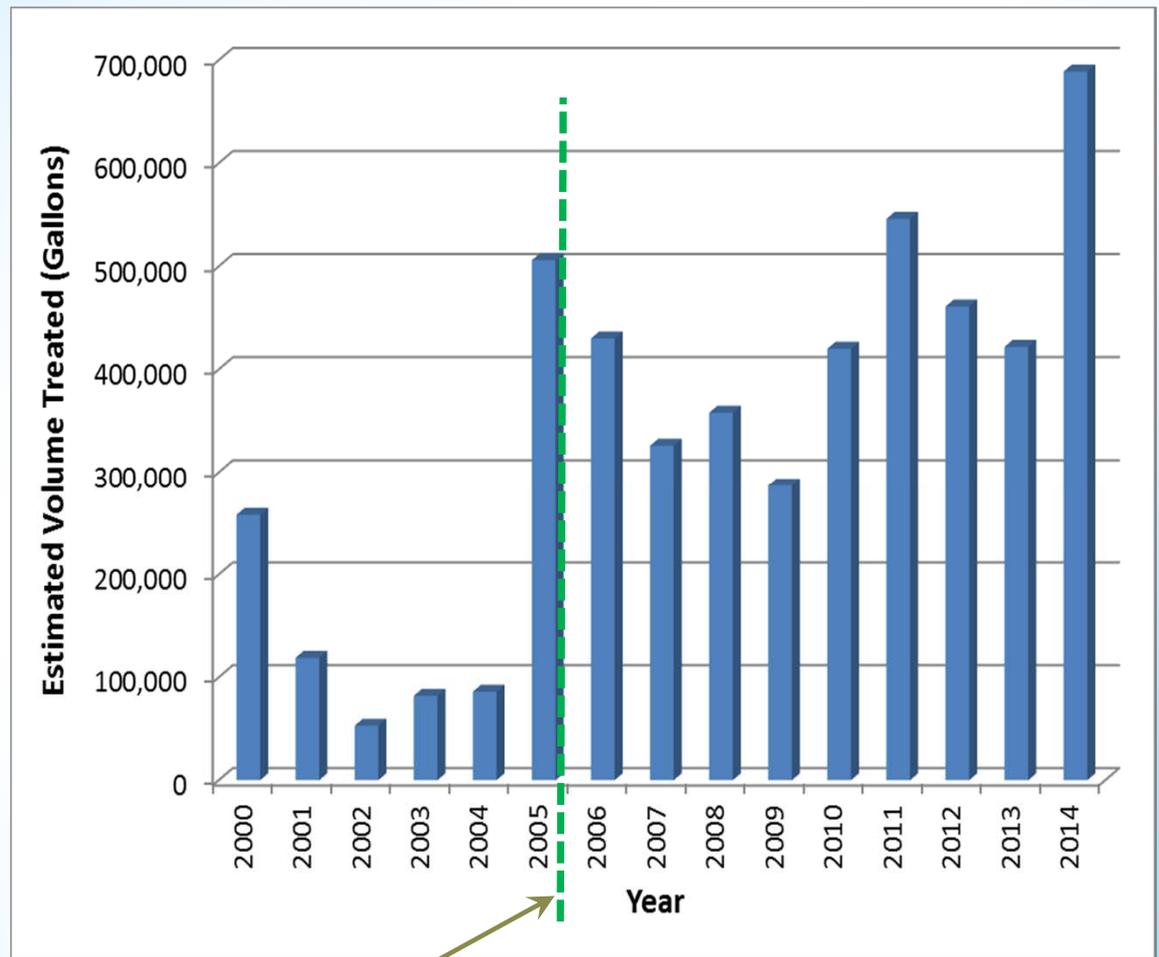
2014 Highlights (continued)

- Large amount of work conducted at groundwater treatment systems
 - East Trenches Plume Treatment System (ETPTS)
 - Reconfigured to eliminate ZVI, replace with commercial air stripper (completed January 2015)
 - Solar Ponds Plume Treatment System (SPPTS)
 - Ongoing lagoon and microcell tests
- Some data suggest continuing influences from September 2013 precipitation event
 - Some areas continued to show higher water levels
 - Treatment system flows remained elevated
 - Contaminant concentrations were within historic ranges in most cases
- Removed one broken well from the monitoring network
 - Sentinel well south of former Building 881
 - Area adequately monitored by remaining Evaluation well, Sentinel well, and downgradient AOC well
 - Contact Record 2014-07



Mound Site Plume Treatment System (MSPTS)

- Total flow volume in 2014 was highest ever measured
- 689,000 gallons
- Averages approximately 1.3 gallons per minute
 - Nearly double the average post-closure flow rate



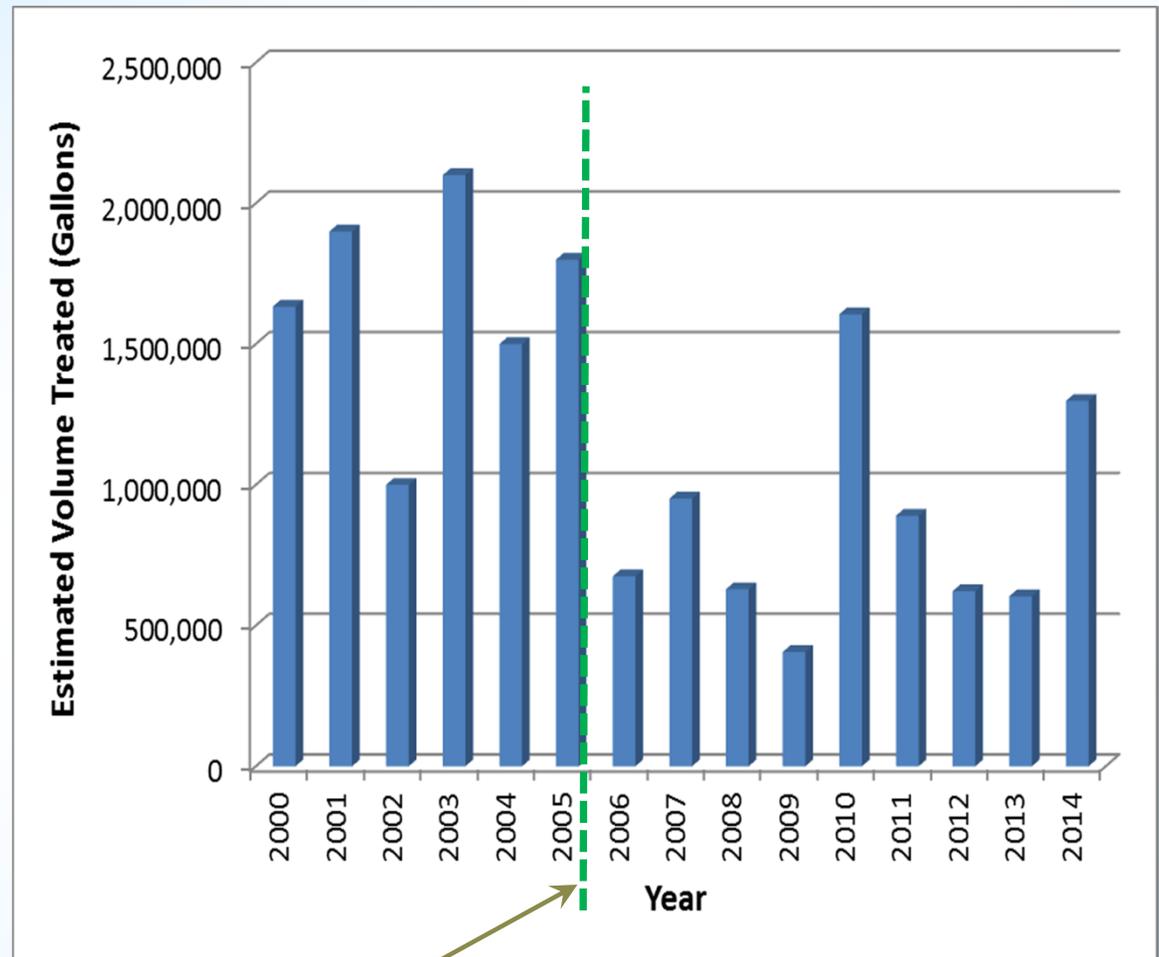
MSPTS Influent Concentrations

- VOC concentrations in influent remain higher than pre-closure
 - Flow from second source area routed to MSPTS as part of site closure
 - MSPTS treats flows from two source areas
- Result: MSPTS treats higher flows and higher concentrations (greater load)



East Trenches Plume Treatment System (ETPTS)

- Total flow volume in 2014 was more than 2012 and 2013 combined
 - Approximately 1.3 million gallons
 - Second highest flow since site closure



ETPTS Influent Concentrations

- VOC concentrations in influent generally higher in 2014 than previous years
- Air stripper installed in 2013 continued to operate
 - Reduced contaminant concentrations by about one order of magnitude
 - Water from air stripper routed through ZVI for further treatment until ZVI removed



ETPTS Reconfiguration Project

- Evolved from air-stripper testing at MSPTS
- Design completed in December 2013
- Construction took place through 2014, completed in January 2015
- Results
 - All ZVI removed and dispositioned; ZVI eliminated from the system
 - Treatment is now based on commercial air stripper
 - Exhaust from air stripper is below air-permitting requirements; constituents degrade in sunlight
 - Powered by pre-existing solar conex, boosted with four additional photovoltaic (PV) panels
 - Reconfigured to deliver AC power to air stripper
 - Air stripper housed in enclosure designed and built for this purpose
 - Uses former Treatment Cell 1 as influent tank, Treatment Cell 2 as effluent tank
 - Automated, with safeguards
 - Operates daily to treat approximately 3,000 to 5,000 gallons per day



ETPTS Reconfiguration Project (continued)

Before



After



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ETPTS Reconfiguration Project (continued)

Two former treatment cells reinforced for use as batch tanks



Enclosure designed and built to house air stripper



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ETPTS Reconfiguration Project (continued)



Solar/battery facility received four additional solar panels and power modifications

Final removal of ZVI from ETPTS treatment cells



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SPPTS

- Lagoon testing continued
 - Bacteria very effective for treating nitrate
 - Cold weather conditions impact treatment
 - Moving to design a larger-scale lagoon
- Microcell testing continued
 - Using ZVI to treat uranium
 - Effective treatment for short lifetime
- First “settling” batch test conducted using lagoon effluent
 - Abundant bacteria could clog downstream components
 - Allowing water to stagnate lets biomass settle to bottom, clarifying the water
- More tests being conducted in 2015



Questions?



Site Operations



Fourth Quarter 2014



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Quarterly Sign Inspections

- RFLMA physical control
- All signs are in good condition



Site Operations – OLF

- Three monthly inspections performed
- Eight settlement monuments and seven inclinometers monitored



Site Operations – OLF (continued)

- Fourth quarter
 - Area within landfill boundaries did not show significant cracking or slumping
 - Outside of the waste footprint 10 small, burrowing-animal holes were noted between berms 6 and 7
 - None showed signs of recent activity
- Berms were re-graded, where necessary, in July 2014
 - Appropriate berm height restored
 - Damaged berm outfalls repaired
- East Perimeter Channel Reconfiguration construction project was initiated in mid-October and completed mid-January



OLF East Perimeter Channel Reconfiguration



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Site Operations – PLF

- One quarterly inspection performed



PLF Monitoring and Maintenance Plan

- The PLF Monitoring and Maintenance Plan was revised and issued in December 2014
- Changes included:
 - Updates to reflect the PLF dam breach and removal of the East Landfill Pond
 - Updates to discontinue quantitative vegetation monitoring
 - Updated sample location East Landfill Pond to its new location, NNG01



Questions?



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Vegetation Management

- Herbicide applications
 - Approximately 118 acres treated
 - Spring – 58
 - Fall – 60
- Habitat enhancement project
 - 50 four-wing saltbush
 - 50 skunkbush
 - 30 Rocky Mountain juniper
- Interseeding/revegetation
 - Approximately 2.4 acres
- Forb nurseries



Ecological Monitoring

- Revegetation monitoring
- Preble's meadow jumping mouse (PMJM) mitigation monitoring
- Wetland mitigation monitoring

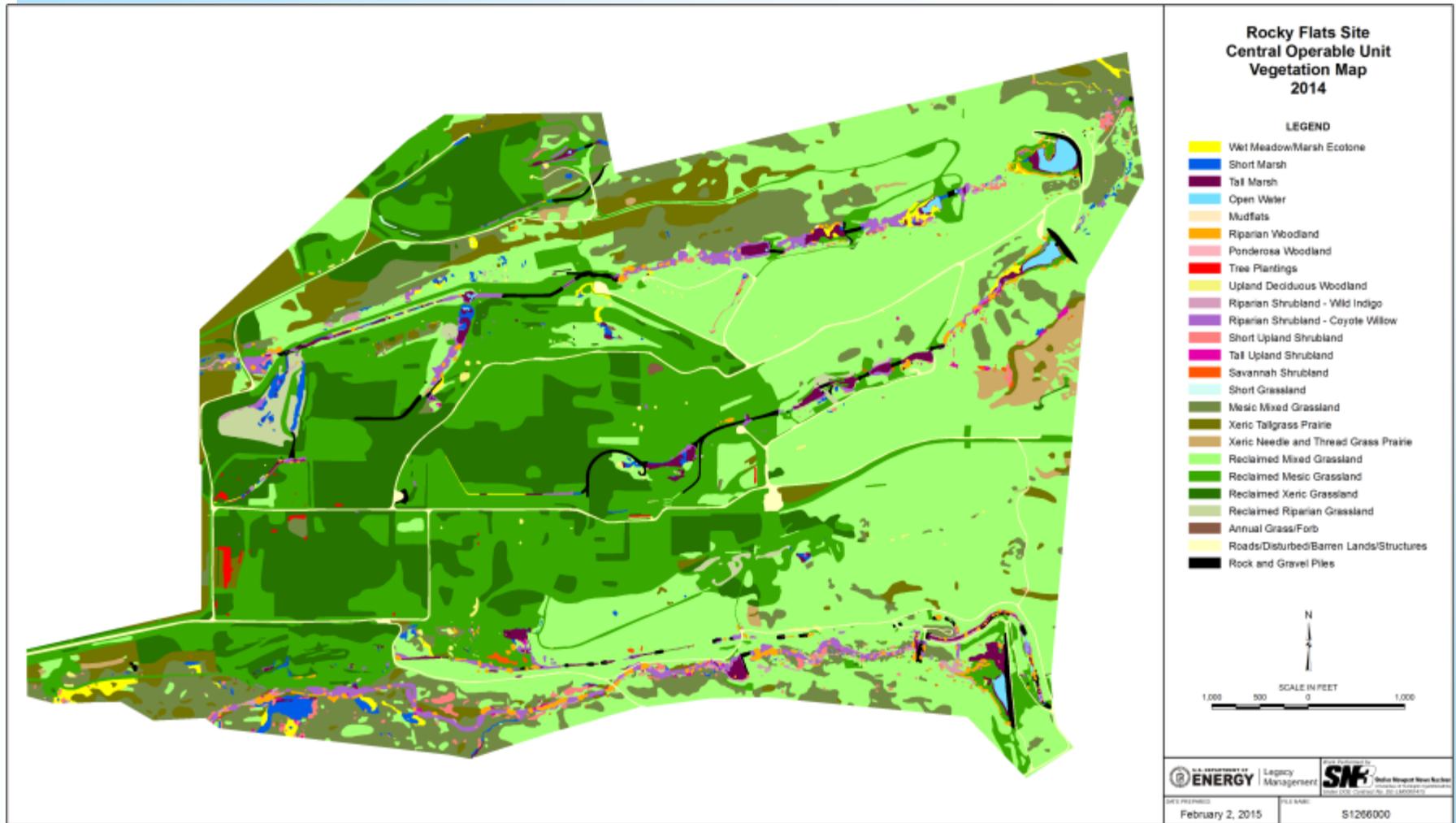


Wildlife Monitoring

- Prairie dog monitoring
- Nest boxes
 - 13 of 20 boxes used in 2014
 - Mountain bluebirds
 - House wrens
 - Tree swallows



Central Operable Unit Vegetation Map



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