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

Calendar Year 2015

Rocky Flats Stewardship Council
June 6, 2016

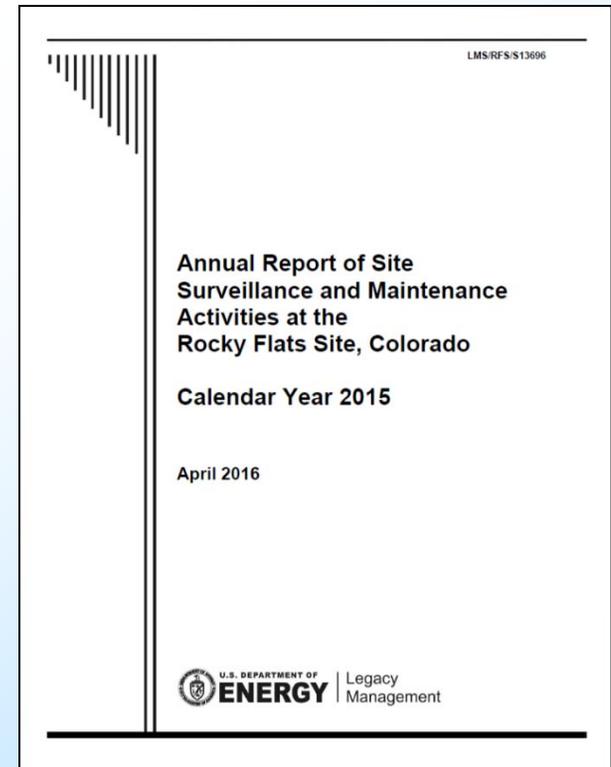


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Quarterly Monitoring and Reporting

- Quarterly reports are required under RFLMA to document that the CERCLA remedy continues to be protective
 - Primary goal: surface water protection
- Response action under the final remedy for Rocky Flats
 - Maintain two landfill covers
 - Maintain four groundwater treatment systems
 - Monitor surface water and groundwater
 - Maintain physical controls
 - Signage
 - Access restriction
 - Enforce institutional controls
 - No building construction or occupation
 - Excavation and soil-disturbance restrictions
 - No surface water consumption or agricultural use
 - No groundwater wells, except for monitoring
 - Landfill covers and engineered remedy-components protection



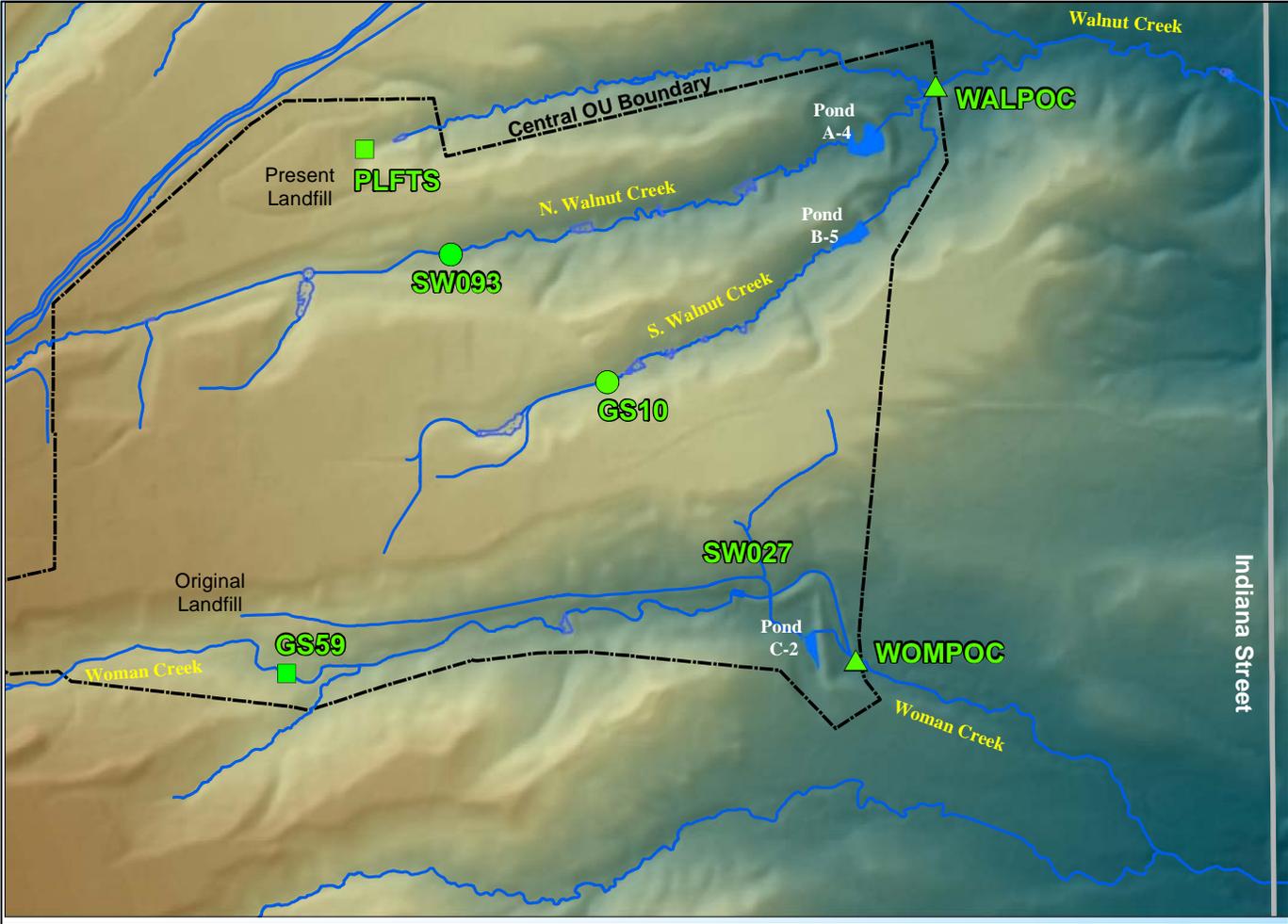
Surface Water Monitoring



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Selected RFLMA Surface Water Monitoring Locations



Performance Monitoring at the OLF and PLF

■ OLF – Woman Creek

- Routine composite sampling during CY 2015 at downstream location GS59 showed that arsenic, lead, and selenium concentrations were above applicable RFLMA standards, triggering increased sampling frequency (monthly) per RFLMA evaluation protocols
 - Subsequent monthly sample results were below the standard and sampling frequency reverted to quarterly
- Similar concentrations detected at upstream location GS05



Performance Monitoring at the OLF and PLF (continued)

■ PLF – PLFTS

- Routine quarterly sampling during CY 2015 of the system effluent showed that arsenic, selenium, and vinyl chloride concentrations were above applicable RFLMA standards, triggering increased sampling frequency (monthly) per RFLMA evaluation protocols
 - Monthly arsenic and selenium sample results 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 (location NNG01)
 - Vinyl chloride was not detected in surface water at the PLF pond area and sampling frequency at the system effluent reverted to quarterly



POE Monitoring

- Location SW027: 12-month rolling averages for plutonium and americium were reportable during CY 2015
 - 12-month rolling averages remain at reportable levels through February 29, 2016
 - RFLMA CR 2015-05 (July 8, 2015)
 - Mitigating actions include enhancing upstream erosion controls
 - Plutonium and americium are not reportable at downstream POC (WOMPOC)
- All other RFLMA POE analyte concentrations remained below reportable levels throughout CY 2015



POC Monitoring

- All RFLMA POC analyte concentrations remained below reportable levels throughout CY 2015



Questions?



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Groundwater Monitoring and Operations



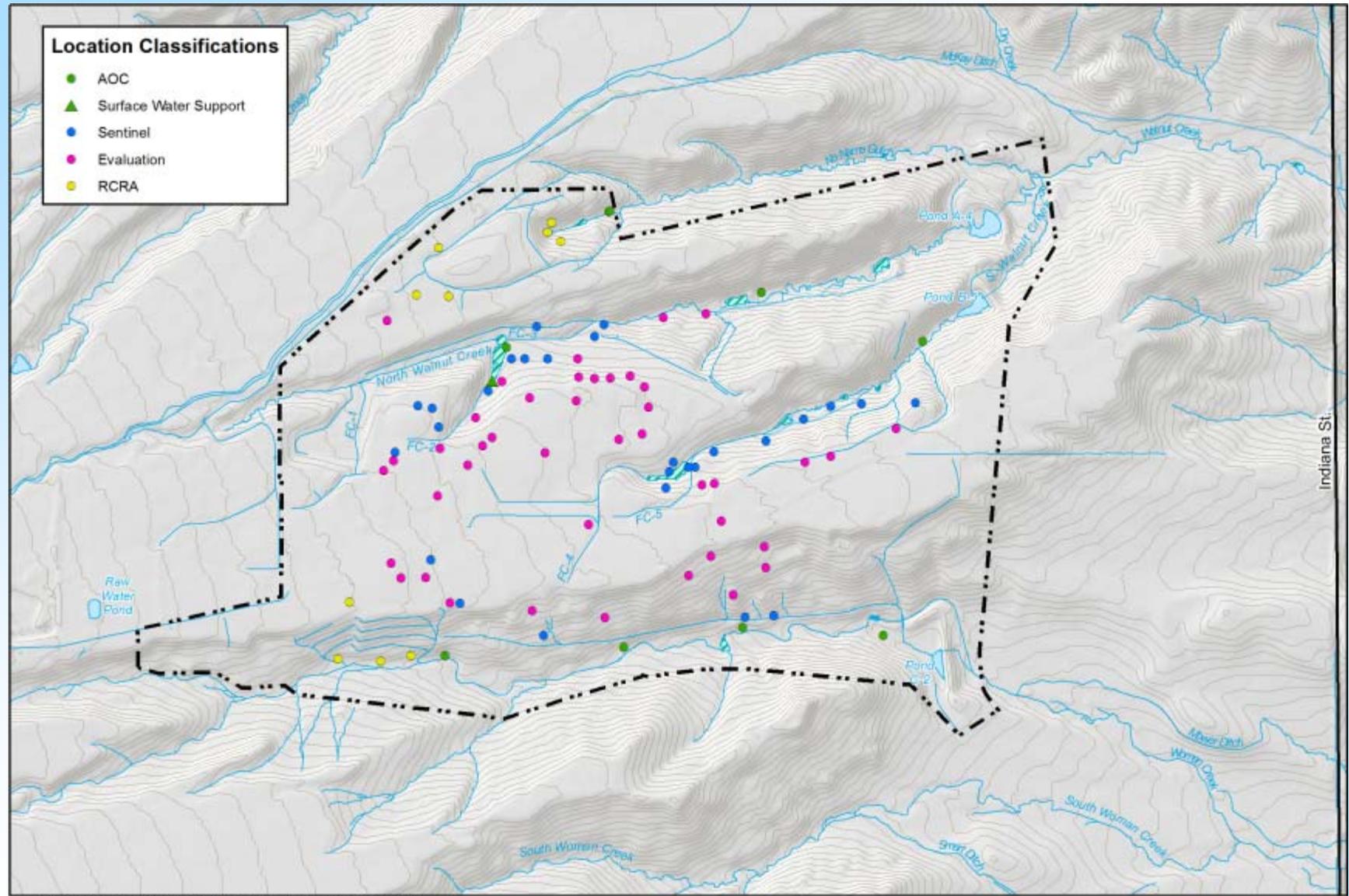
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4th Quarter RFLMA Monitoring

- Heavy sampling quarter
 - 10 RCRA wells (sampled quarterly)
 - 27 Sentinel wells (semiannually)
 - 9 AOC wells (semiannually)
 - 1 Surface Water Support location (semiannually)
 - 9 treatment system locations (semiannually)
- Groundwater quality generally consistent with previous results
 - Heavy spring precipitation continued to affect groundwater levels and treatment system flows, but effects were waning
- Results were evaluated in the 2015 Annual Report





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NOTE: Groundwater treatment system locations omitted for clarity.



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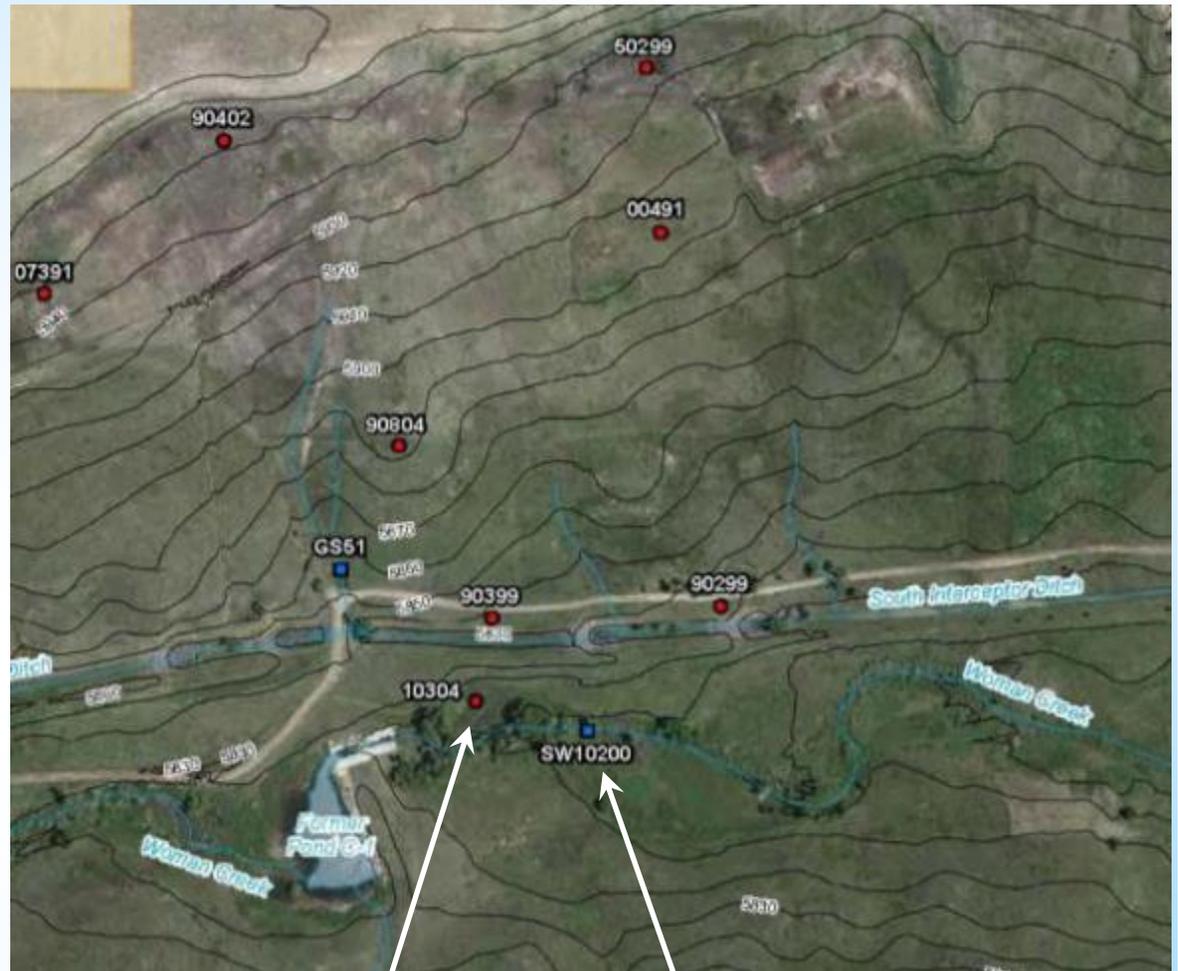
4th Quarter RFLMA Monitoring (continued)

- Reportable condition for AOC Well 10304
 - AOC wells define reportable conditions
 - Two consecutive, routine samples contained a contaminant above the RFLMA level
 - 2nd quarter 2015: TCE at 15 µg/L (RFLMA value is 2.5 µg/L)
 - 4th quarter 2015: TCE at 72 µg/L
 - Documented in CR 2015-10
 - This condition was anticipated in two major groundwater reports that documented closure conditions and decisions
 - Fate and transport modeling report (2004)
 - Groundwater IM/IRA (2005)
 - Response per CR 2015-10: Sample Woman Creek in vicinity of the well to look for impact to surface water quality



Location SW10200 (4th Quarter)

- Sample collected in December 2015
 - TCE not detected
- Will be sampled each time well 10304 is sampled
 - Until well is no longer reportable for TCE



10304

SW10200



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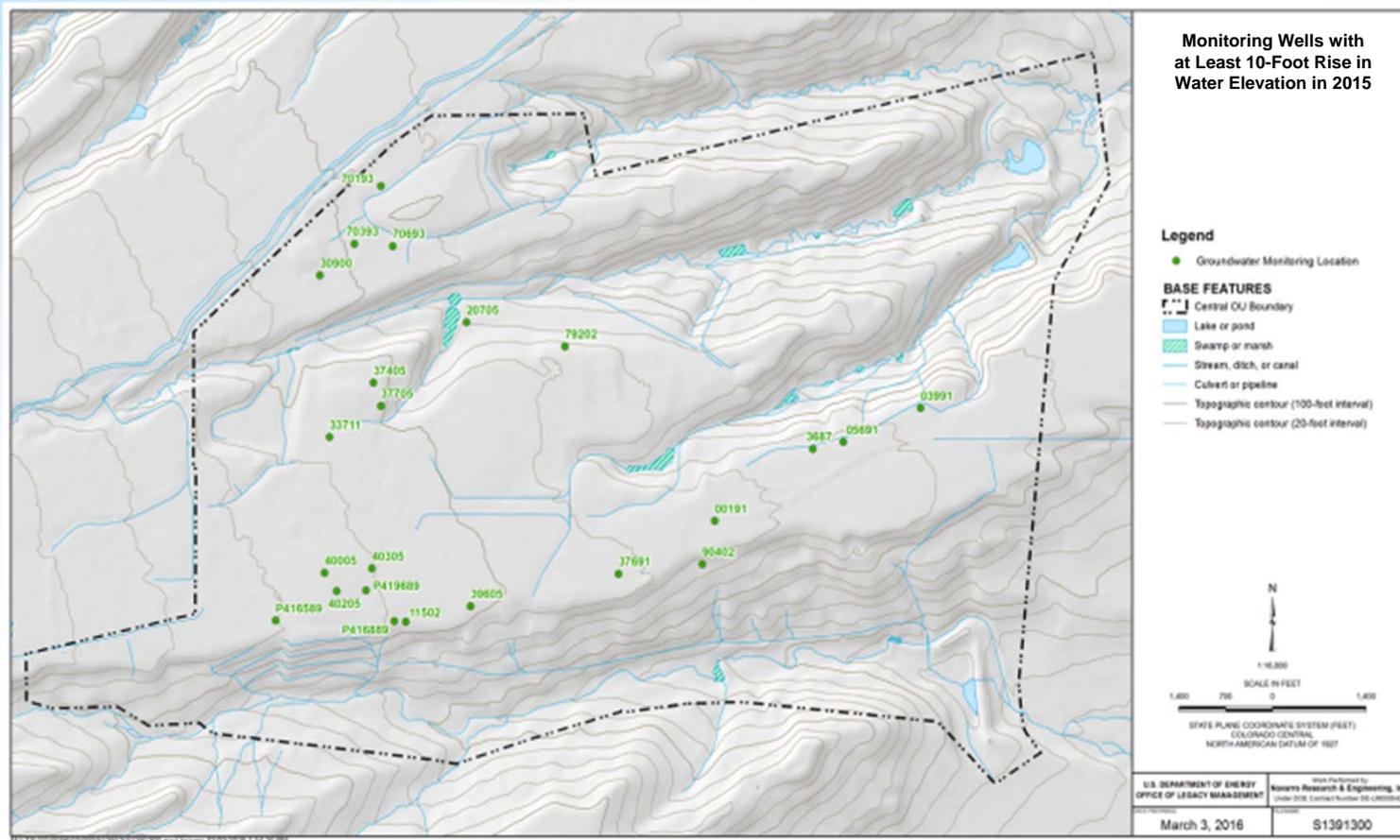
Treatment System Activities (4th Quarter)

- Treatment system flows continued to decline after a wet spring
 - More normal conditions approached by the end of 2015
- MSPTS
 - Routine maintenance on air stripper and other components
 - System reconfiguration scheduled for mid-2016
- ETPTS
 - Routine maintenance
 - Adjusted timer settings
 - Monitored power levels
- SPPTS
 - Contract let for interim reconfiguration construction
 - Empty original “Big Box” structure, convert it to test full-scale lagoon
 - Construction began in April 2016; summer completion expected



2015: Year in Review

- Extremely wet year, abundant groundwater recharge
- Water levels in some wells rose over 10 feet



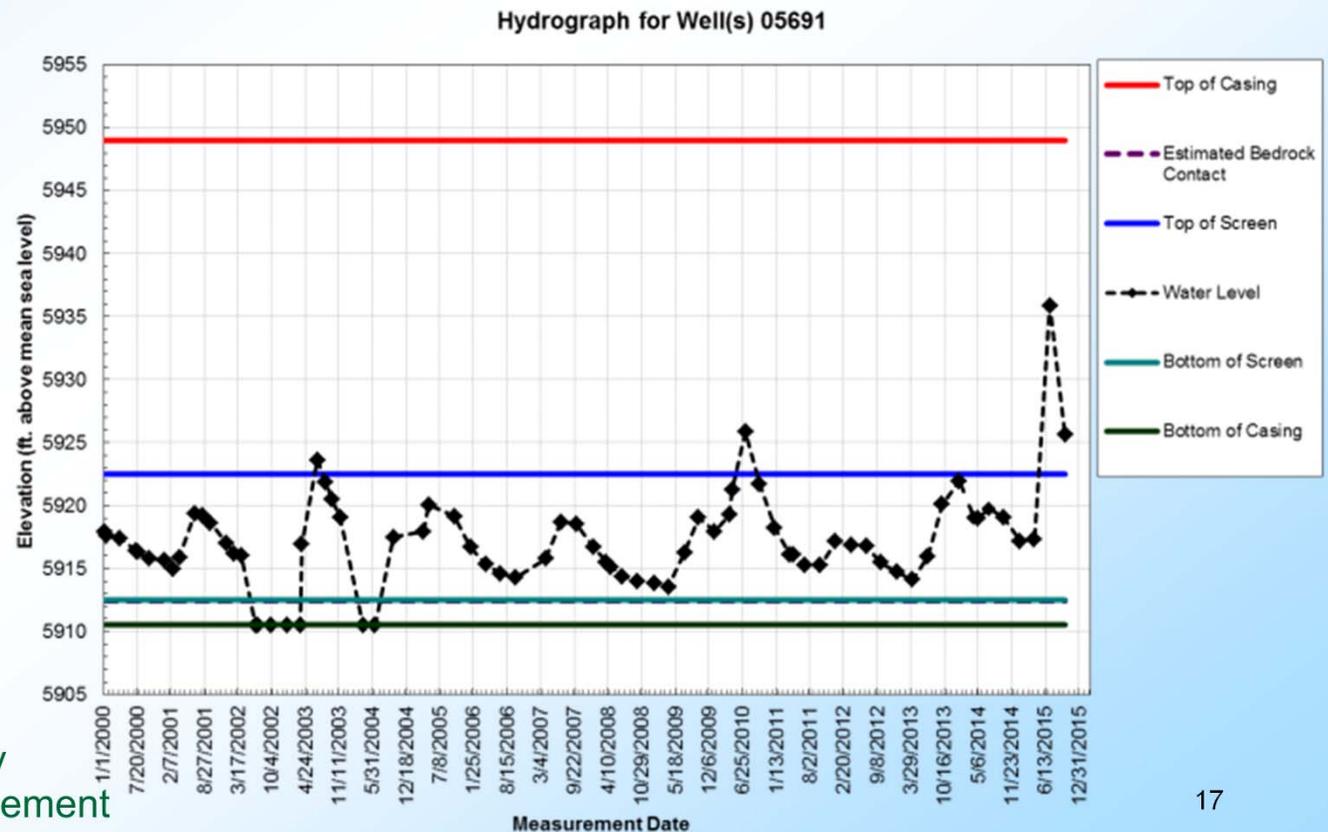
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2015: Year in Review (continued)

- Example of well showing strong response to wet spring
 - Evaluation well 05691: Water level rose almost 20 feet
 - Monitors East Trenches Plume source area
 - Will be sampled 2nd quarter 2016

See Annual Report Section 3.1.3.5 for discussion, and Appendix A for hydrographs



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2015: Year in Review (continued)

- All RFLMA-required monitoring and evaluations performed
 - All AOC well data were below RFLMA levels except for two locations
 - Surface Water Support location results were consistent with previous
- OLF and PLF RCRA wells
 - Statistical evaluations performed per RFLMA
 - Statistical results for 2015 are nearly identical to previous years
 - Concentrations of a few analytes were higher in downgradient groundwater than in upgradient groundwater
 - Concentrations of a few analytes in downgradient groundwater are on an increasing trend but below RFLMA levels
 - Several statistical conclusions may not be valid due to abundance of nondetects, estimated concentrations, and/or changes to detection limits
 - Monitoring and evaluation continues per RFLMA
- Sentinel wells were also evaluated for statistical trends
 - Results are largely consistent with previous data

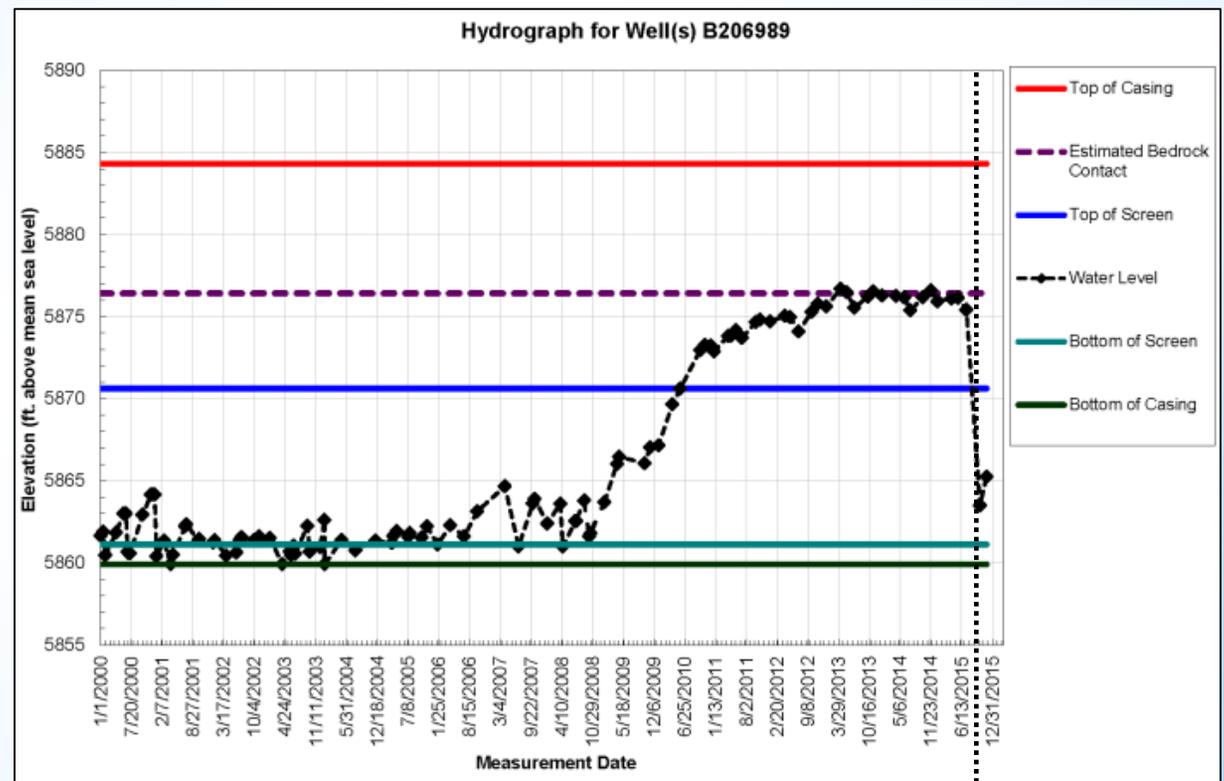


2015: Year in Review (continued)

■ Well redevelopment

- Routine maintenance: Improves well yield, conditions borehole
- Conducted site-wide to take advantage of high water levels
- Some wells will take many months to return to normal water levels

- Example:
AOC Well
B206989 in
No Name
Gulch



Redeveloped 9/3/2015 →



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2015: Year in Review (continued)

- Treatment-system flows increased sharply
- MSPTS
 - Average post-closure flow: 0.8 gpm
 - 2015 average: 1.9 gpm
- ETPTS
 - Average post-closure flow: 1.6 gpm
 - 2015 average: 3.9 gpm
- SPPTS
 - Average post-closure flow: 0.9 gpm
 - 2015 average: 2.1 gpm
 - Volume in 2015 was more than five times the average pre-closure annual volume

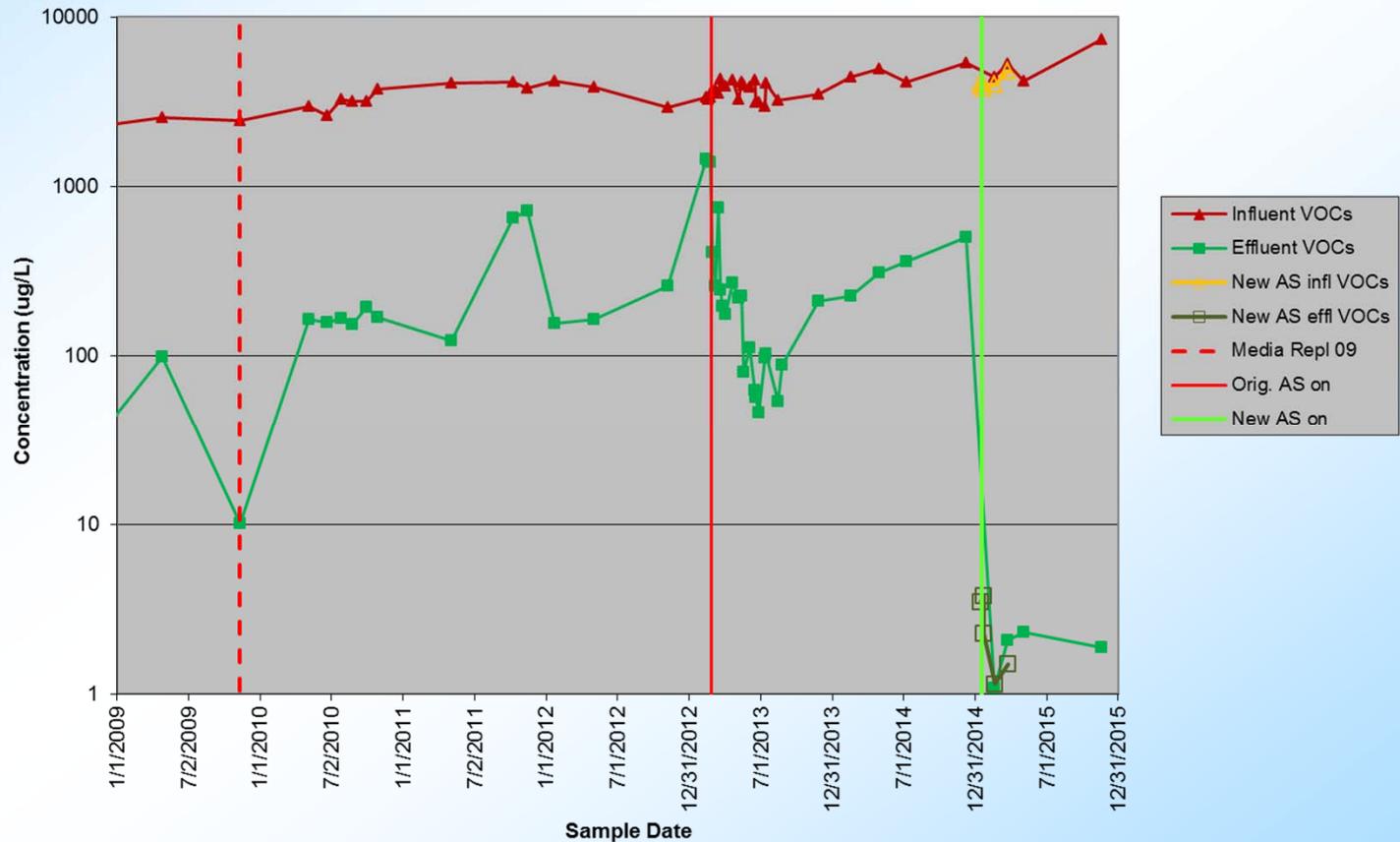


2015: Year in Review (continued)

- Completed reconfiguring ETPTS in January 2015

ZVI was very effective at reducing load (as designed)

Commercial air stripper is able to meet RFLMA targets



LEGEND: AS = air stripper, infl = influent, effl = effluent; Media Repl 09 shows last time ZVI media was replaced



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2015: Year in Review (continued)

- Plutonium and americium in groundwater
 - Monitored downgradient of former plutonium production facilities
 - Every result assigned a lab qualifier of “non detect”
 - Consistent with previous results

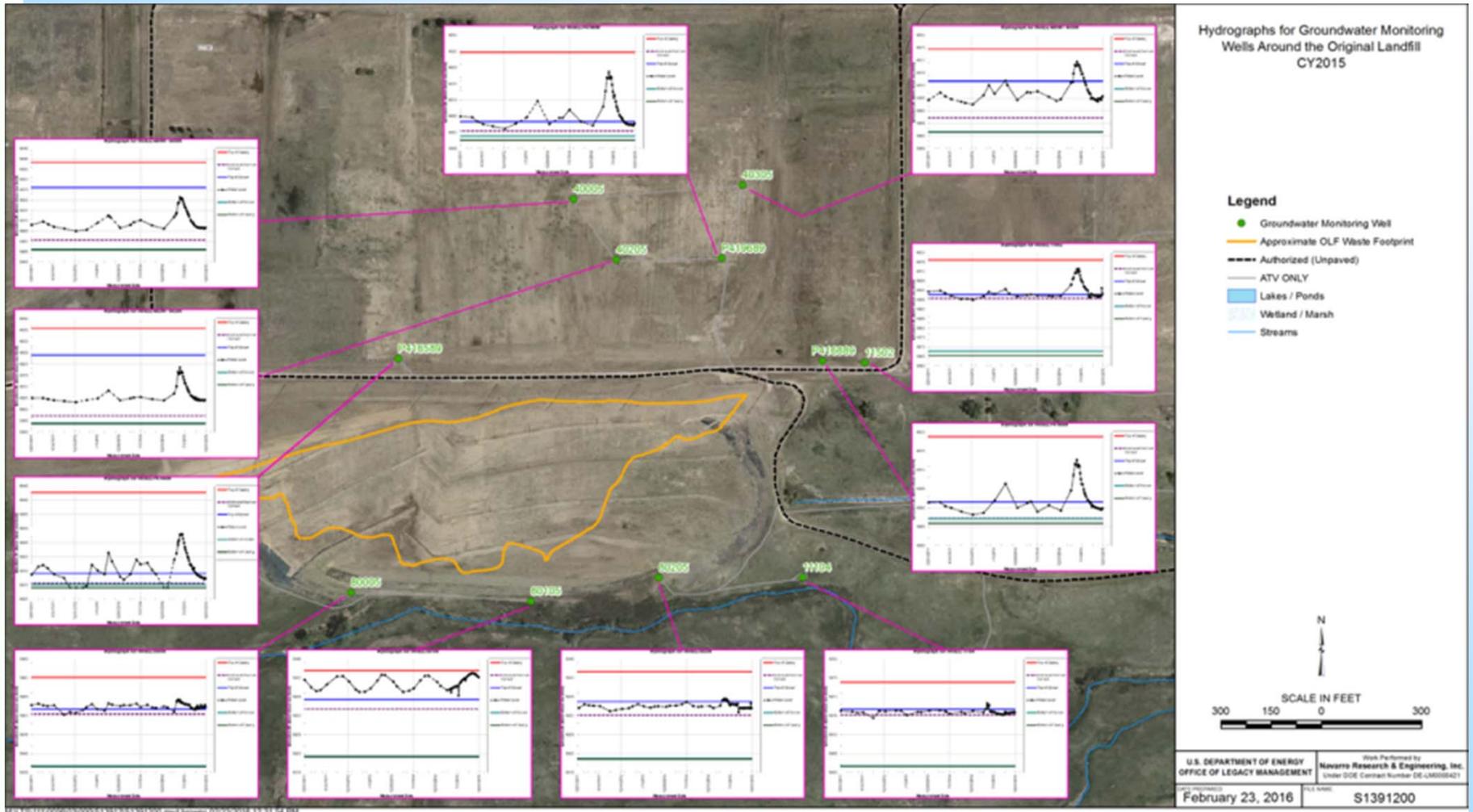


2015: Year in Review (continued)

- High-resolution uranium analyses
 - Conducted to evaluate natural vs. anthropogenic uranium
 - 21 samples from 2015 were submitted for this specialized analysis
 - Wells around former Solar Evaporation Ponds
 - Surface water locations contributing to Walnut Creek location (WALPOC)
 - Collected to support continuing geochemistry study
 - Additional samples will be analyzed periodically to support this study and other data needs



Questions?



Hydrograph data for 2012 through 2015



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Site Operations



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Quarterly Sign Inspections

- RFLMA physical control
- All signs are in good condition



Site Operations – OLF

- Performed three monthly inspections
 - One weather-related inspection occurred in October 2015 due to a precipitation event producing more than 1 inch of rain in a 24-hour period
- Monitored eight settlement monuments



Site Operations – PLF

- Performed one quarterly inspection and one weather-related inspection for precipitation events producing more than 1 inch of rain in a 24-hour period
 - No issues were observed during inspections
- Completed annual settlement monument survey



Former Building Areas 371, 771, 881, and 991

- Inspected former building areas
- One weather-related inspection occurred in October 2015 due to a precipitation event producing more than 1 inch of rain in a 24-hour period
- Cracking was observed and filled along roadway near former building 771
- No other movement observed



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Ecology Activities



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Vegetation Management

- Herbicide applications
 - Approximately 339 acres treated: 194 – spring, 145 – fall
- Habitat Enhancement Project
 - 15 fourwing saltbush
 - 15 skunkbush
 - 15 Rocky Mountain juniper
- Interseeding/revegetation
 - Approximately 10 acres
- Forb nurseries



Ecological Monitoring

- Revegetation monitoring
 - 11 areas monitored
 - All continue to meet success criteria
- PMJM mitigation monitoring
 - Habitat continues to establish
 - One area met success criteria in 2015
- Wetland mitigation monitoring
 - Wetlands continue to establish



Wildlife Monitoring

- Prairie dog monitoring
 - No active prairie dog towns within the COU
- Nest boxes
 - 14 of 21 boxes used in 2015 (house wrens, tree swallows)
- Active raptor nest observed in Woman Creek (red-tailed Hawks) and one attempted along Central Ave. (Swainson's Hawks)

