Nevada Site Specific Advisory Board (NSSAB)

Full Board Meeting - Wednesday, January 18, 2023

Handouts:

Waste Disposal Permits and Environmental Monitoring at Area 5 Radioactive Waste Management Complex (RWMC)

Reed Poderis, Environmental Management and Compliance Manager

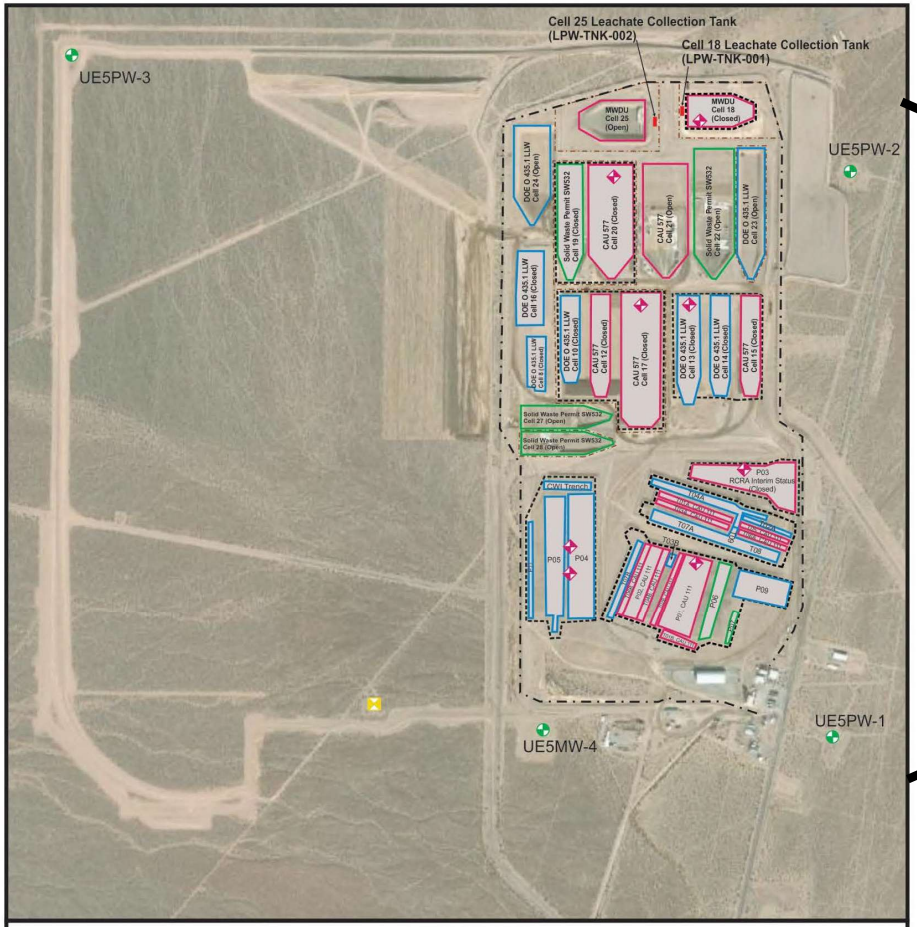
Mission Support and Test Services, LLC

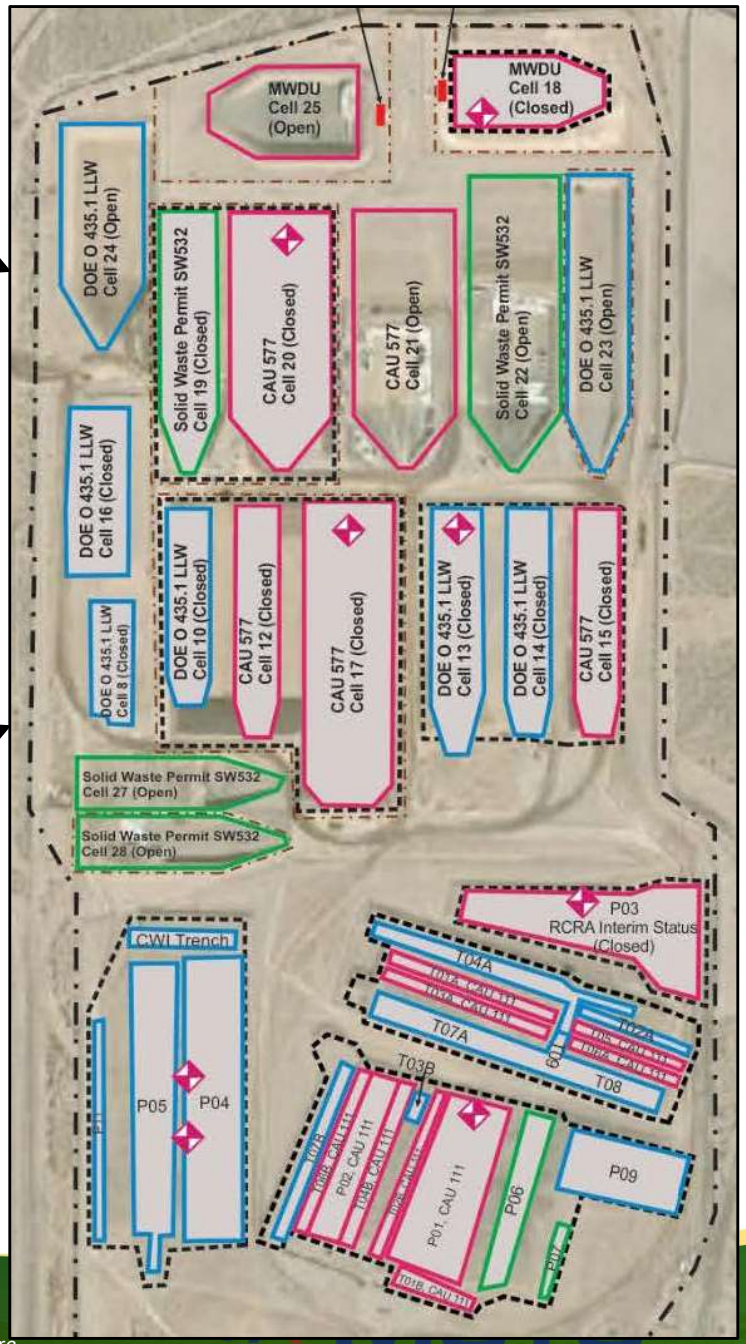
January 18, 2023

Discussion Topics

- Active Permits/Compliance Agreements for Area 5 RWMC waste disposal:
  - Resource Conservation and Recovery Act (RCRA) Permit NEV HW0101
  - Class III Solid Waste Disposal Site, Permit SW 532
  - United States Department of Agriculture (USDA) Compliance Agreement NV-101-NNSS-21

Area 5 RWMC - Permit Map





RCRA Permit NEV HW0101

- Mixed low-level waste (MLLW) storage and disposal [Mixed Waste Storage Unit (MWSU) and Mixed Waste Disposal Unit (MWDU)]
  - Two non-environmental management (EM) managed units also covered in the permit
    - Hazardous Waste Storage Units (HWSU)
    - Explosive Management Unit (EMU) [former Explosive Ordnance Disposal Unit (EODU)]
- Revised application submitted 1/18/2022
- Nevada National Security Site Waste Acceptance Criteria (NNSSWAC) implements requirements for waste disposal

RCRA Permit NEV HW0101

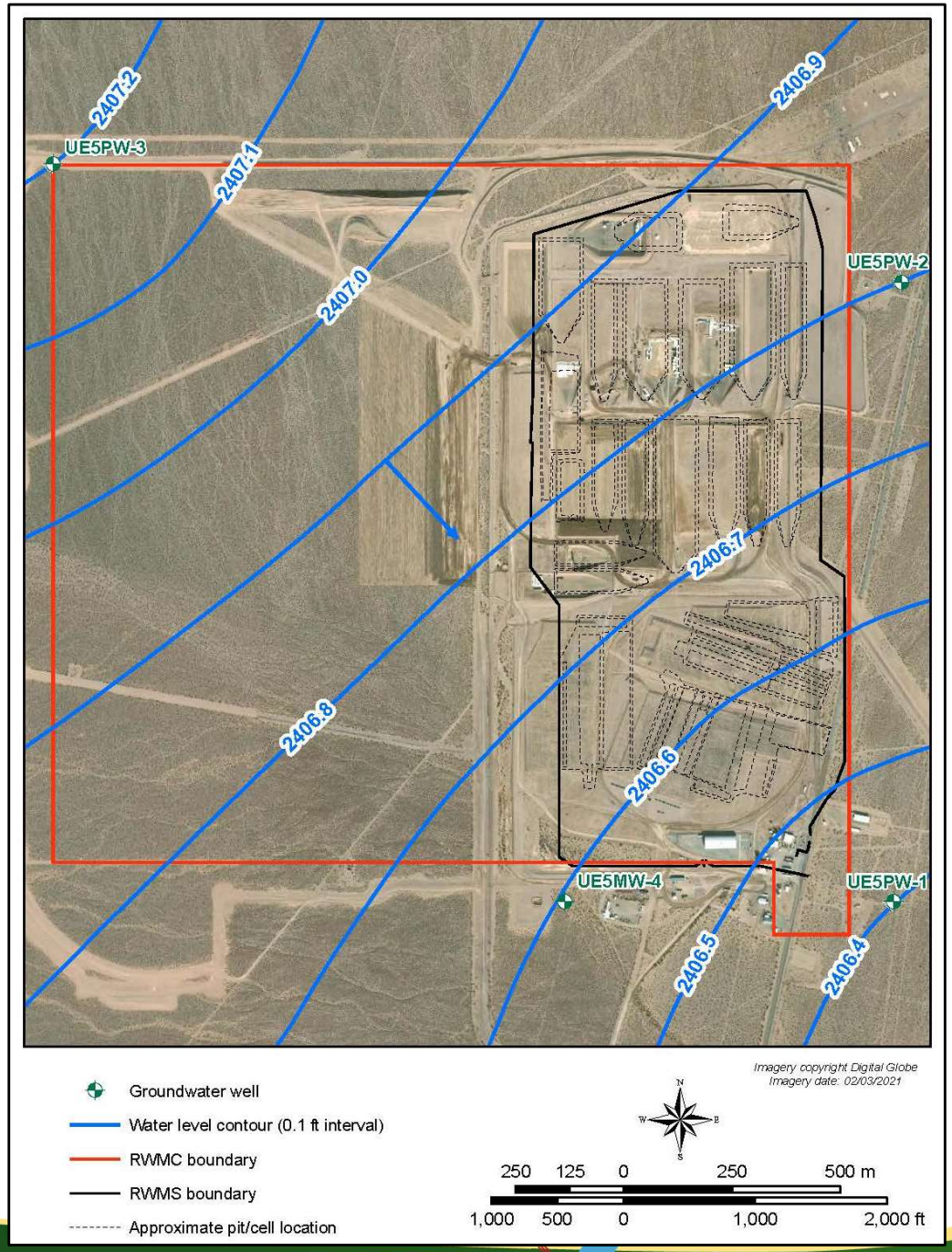
- Monitoring and Reporting Requirements
  - Groundwater sampling/reporting – annual for 2023 (was biannual)
  - Leachate monitoring (Cells 18 and 25)
    - Lined cells with sumps to collect leachate and pump into tanks
  - Quarterly Asbestos Waste Reporting
  - Post closure monitoring of closed cells
    - Cell 18 MWDU
    - Corrective Action Units (CAUs) 111 and 577 at the RWMC, and five others (90, 91, 92, 110, 112)

RCRA Permit NEV HW0101

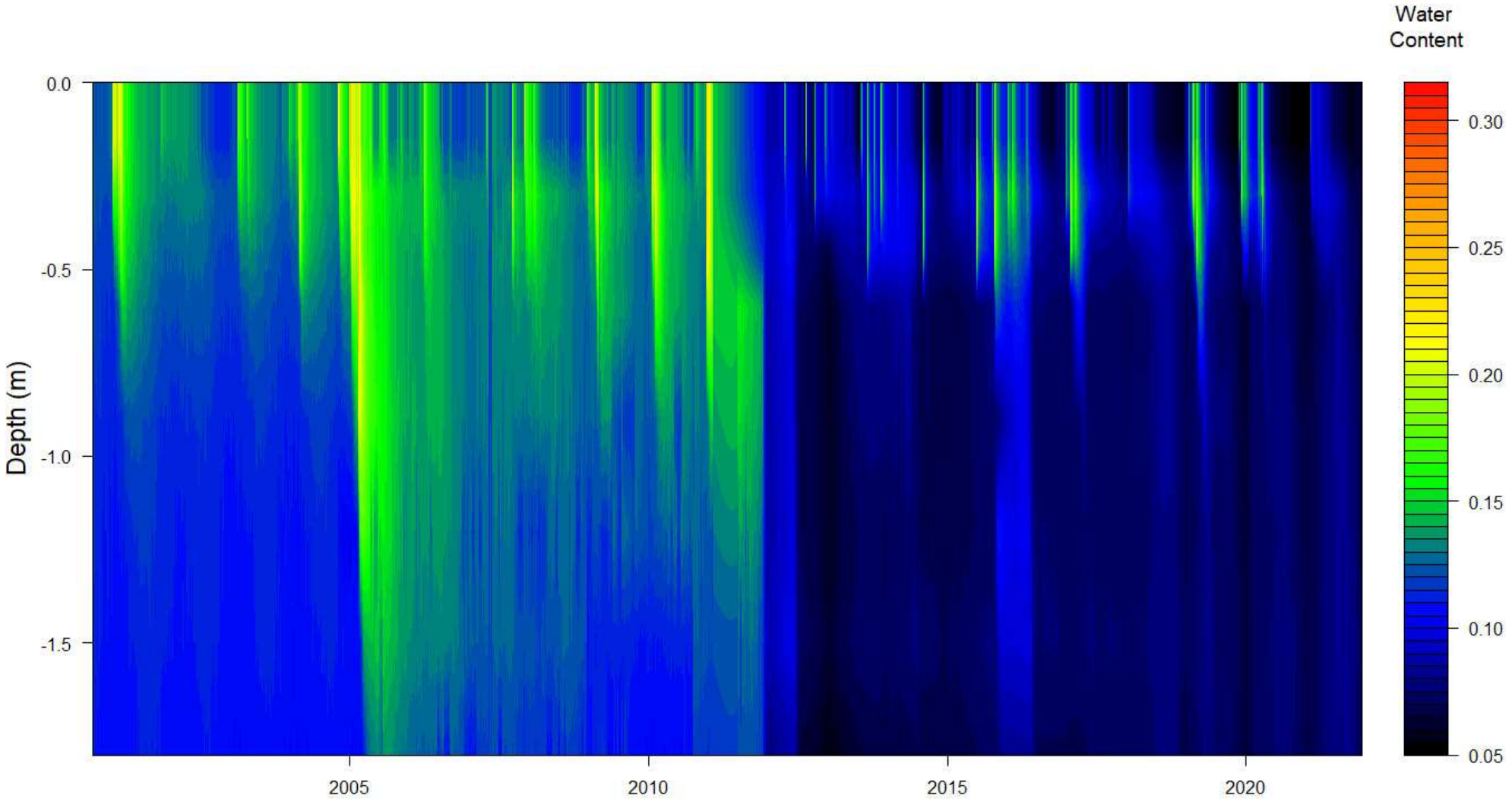
- Monitoring Results
  - The groundwater table below the Area 5 RWMC is essentially flat with negligible flow
  - Infiltrated precipitation does not percolate below the plant root zone and local aquifer recharge is negligible
  - Data show that there is no measurable impact to the uppermost aquifer from the Area 5 RWMC
  - No contaminants have been detected in the leachate from Cells 18 and 25 requiring disposal as hazardous waste

Area 5 RWMC Monitoring Locations

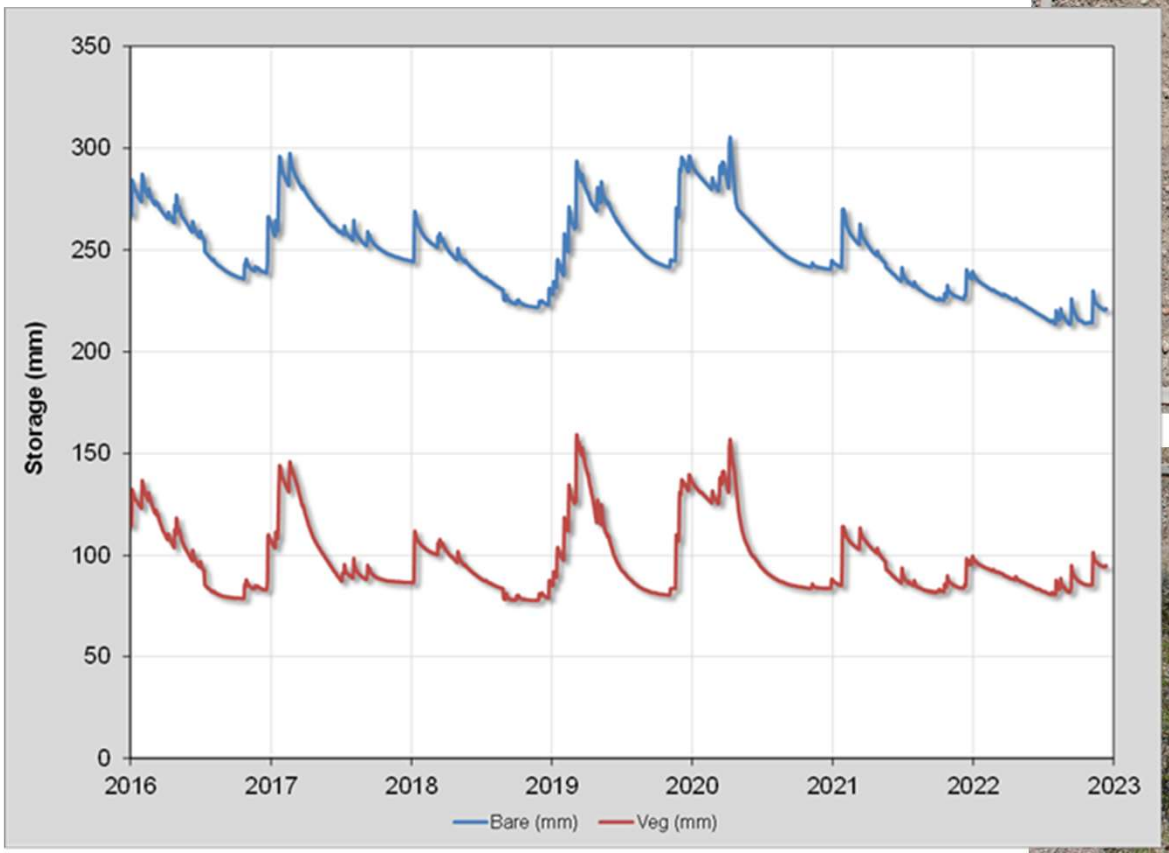
Area 5 RWMC Groundwater Flow Map

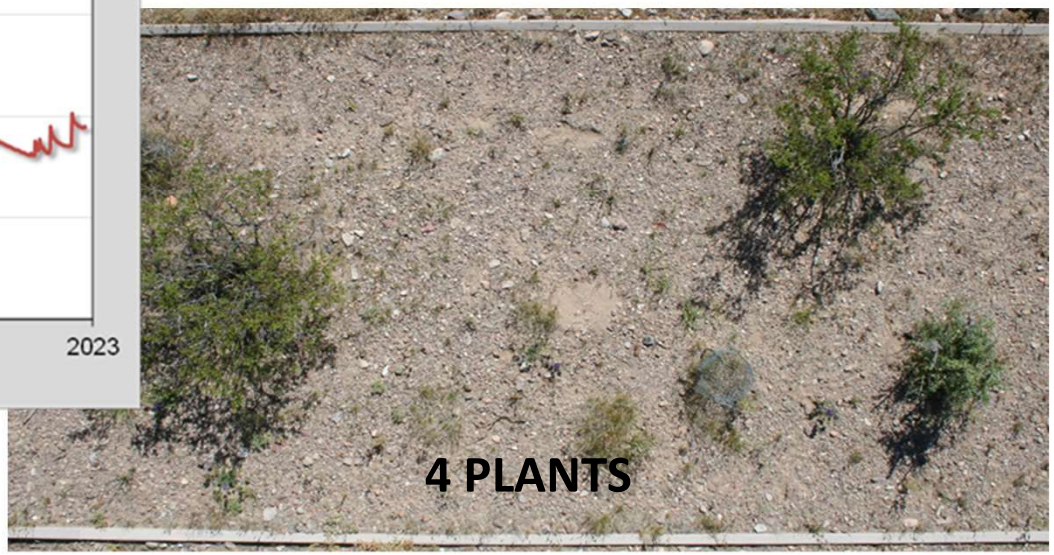


Data Example - Cell 5 Cover

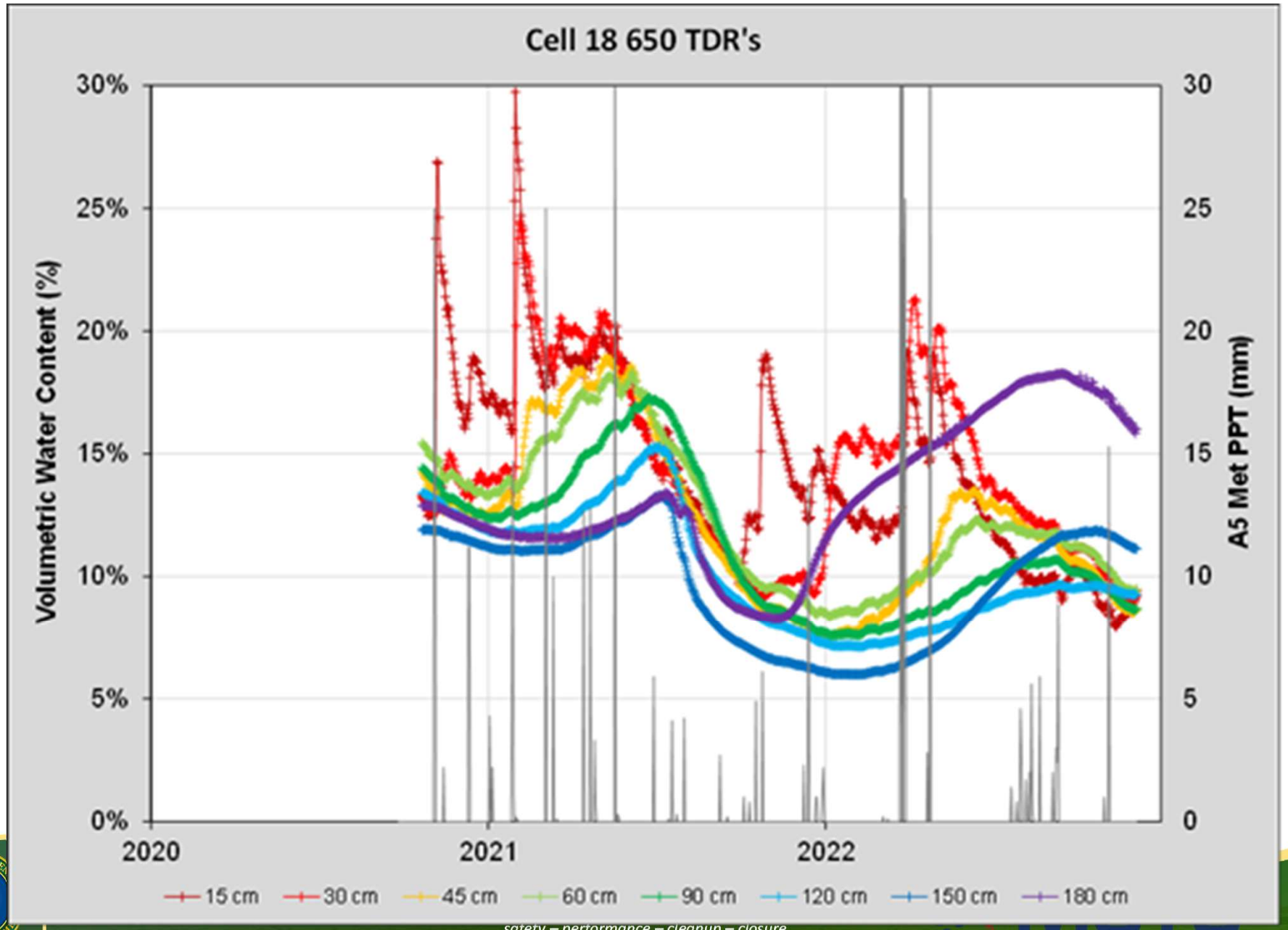


Data Example – Area 5 Lysimeters





Data Example – Cell 18 Time Domain Reflectometers (TDRs)



HW0101 Major Revisions

- Updated flood study for Area 5 RWMC
- Revised Groundwater Monitoring Plan to add Well 4 and enhance discussion of vadose zone monitoring
  - Plans to expand vadose zone monitoring under way
- Included a Post-Closure Plan for Cell 18
- Revised Waste Analysis Plan with input from the State of Nevada Division of Environmental Protection (NDEP), to remove use of the NNSSWAC as acceptance basis
- Updated facility drawings to include new well, new water/power, and berm/channel
- Reduced area of MWSU in the TRU Pad Cover Building to only occupy a portion of the building
- Incorporated NDEP comments from June 2020 formal submittal

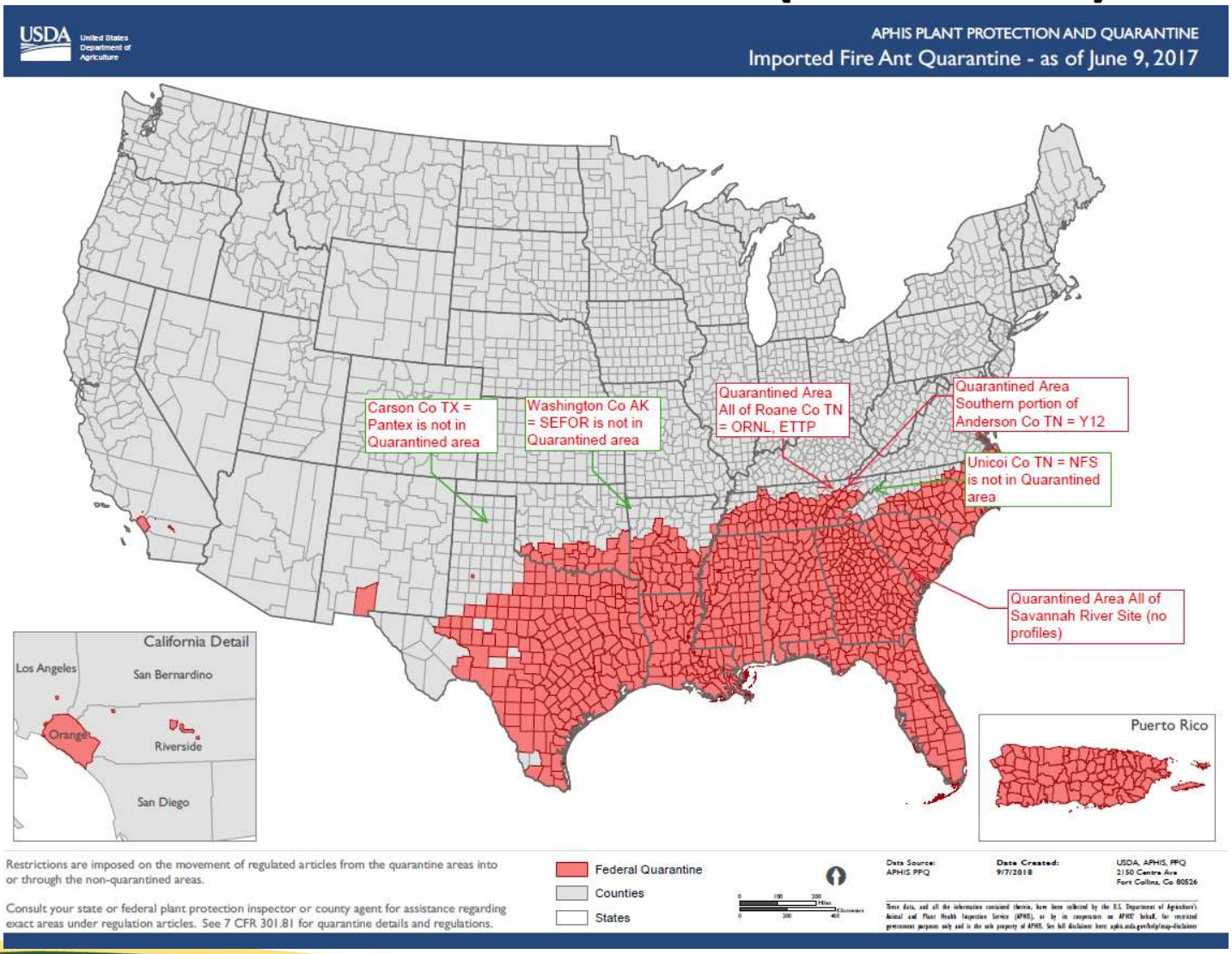
Class III Solid Waste Disposal Site, Permit SW 532

- Low-level waste, primarily with asbestos
- Non-radioactive, non-hazardous Classified Waste
- Revised application submitted 1/18/2022
- Monitoring and Reporting Requirements
  - Post-Closure monitoring of closed cells will begin in 2023

USDA Compliance Agreement, NV-101-NNSS-21

- Compliance agreement for disposal of soils from fire ant regions signed in March 2019
- Several active waste profiles will fall under the agreement
- Received first shipments in April 2019

USDA Compliance Agreement, NV-101-NNSS-21 (continued)



USDA Compliance Agreement, NV-101-NNSS-21 (continued)

- No reporting required
- Annual briefing for RWMC staff required
- Designated cells are required to be posted

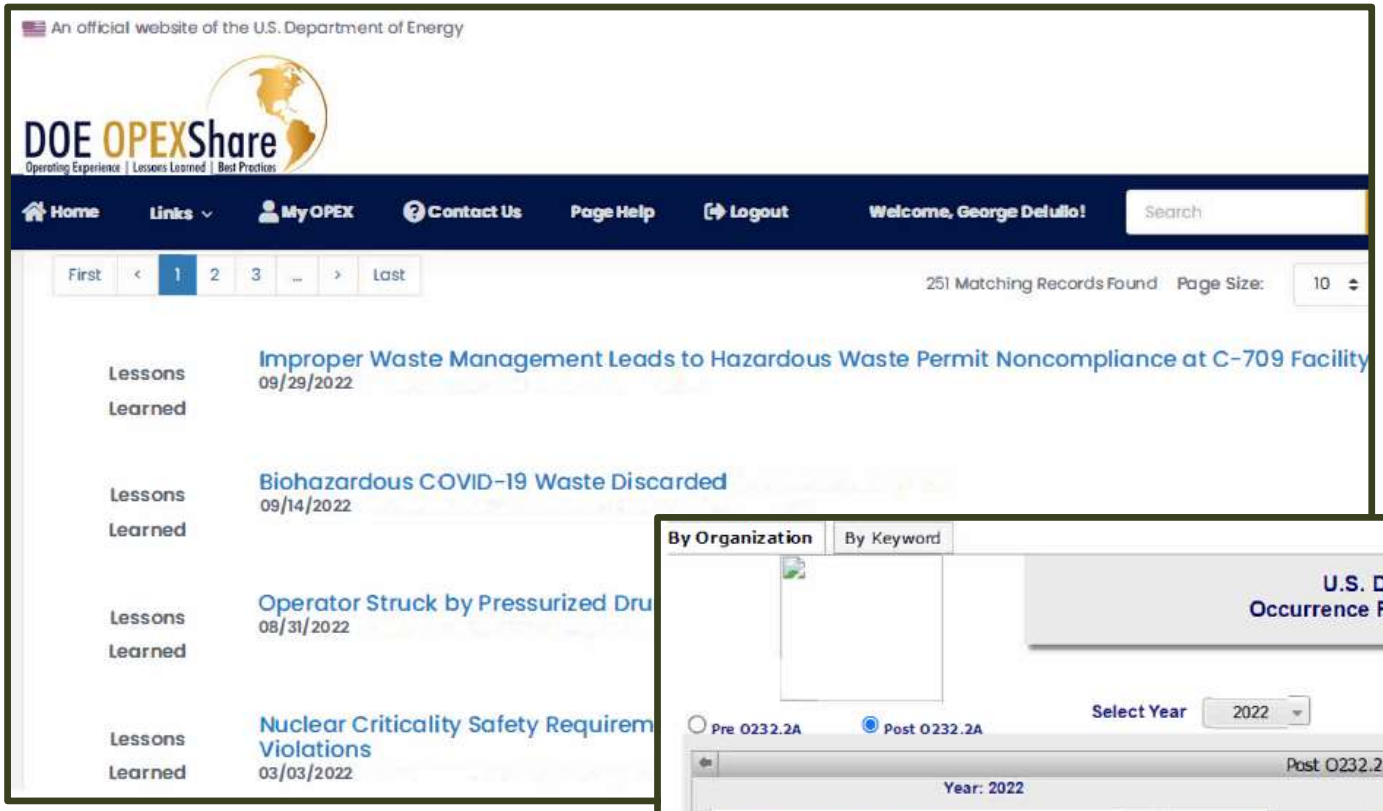
Questions

Lessons Learned from Radioactive Waste Acceptance Program (RWAP) Annual Report

Marilew Bartling, RWAP Manager
Navarro, Contractor to the
U.S. Department of Energy (DOE)
Environmental Management (EM) Nevada Program
January 18, 2023

RWAP 2021 Annual Report – Lessons Learned

- The Report provided a synopsis of RWAP activities and included opportunities for improvement
- While the primary focus was RWAP and Nevada National Security Site (NNSS) generator activities, the lessons learned from the wider DOE Complex were included
  - Sources were the DOE Occurrence Reporting and Processing System (ORPS) and the DOE Operating Experience (OPEX) Program
  - These two sources were reviewed for information pertaining to waste operations, waste management, and transportation
  - Lessons learned, best practices, and innovative ideas were extracted and placed in a table format within the RWAP 2021 Annual Report


An official website of the U.S. Department of Energy
DOE OPEXShare
Operating Experience | Lessons Learned | Best Practices
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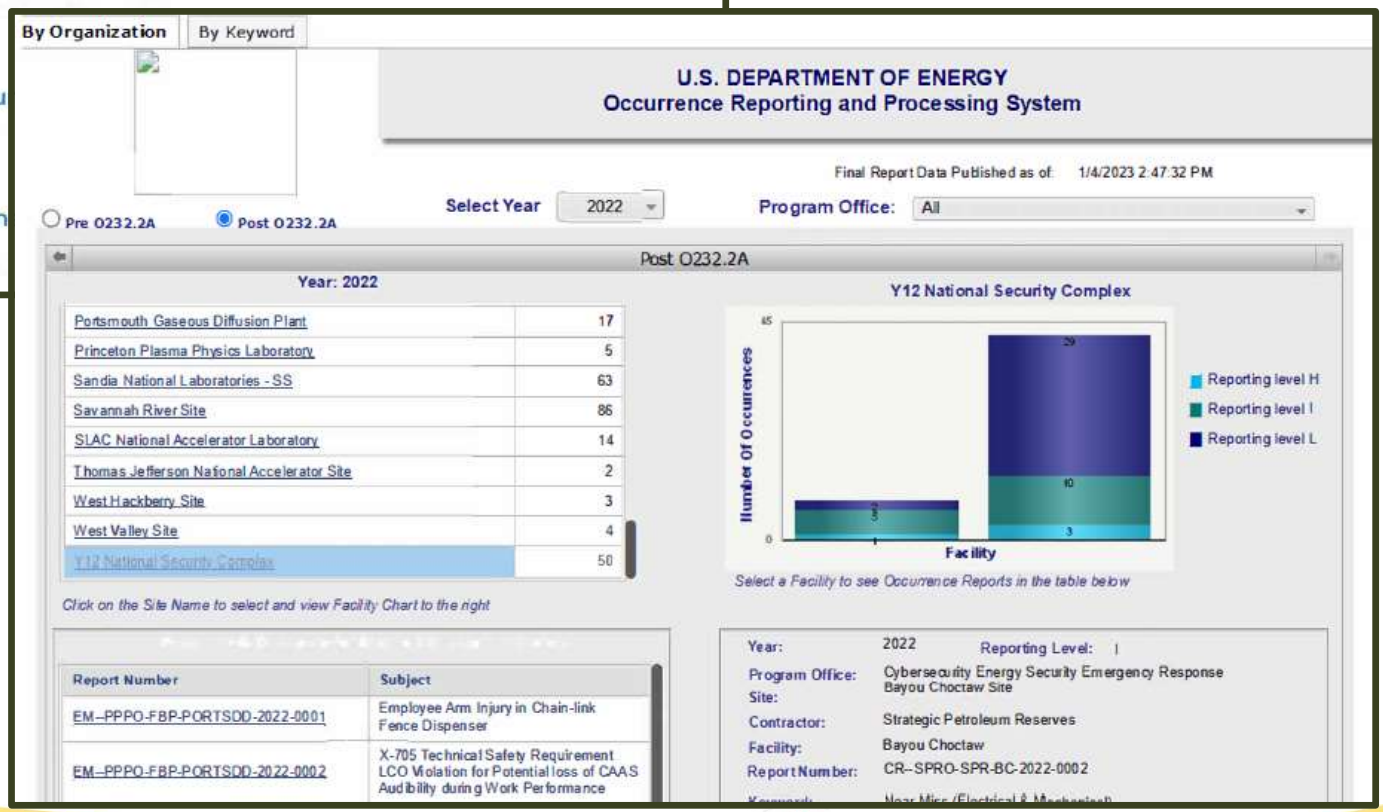
Lessons Learned
Improper Waste Management Leads to Hazardous Waste Permit Noncompliance at C-709 Facility
09/29/2022
Lessons Learned
Biohazardous COVID-19 Waste Discarded
09/14/2022
Lessons Learned
Operator Struck by Pressurized Dru
08/31/2022
Lessons Learned
Nuclear Criticality Safety Requirem
Violations
03/03/2022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U.S. DEPARTMENT OF ENERGY
Occurrence Reporting and Processing System
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Portsmouth Gaseous Diffusion Plant 17
Princeton Plasma Physics Laboratory 5
Sandia National Laboratories - SS 63
Savannah River Site 86
SLAC National Accelerator Laboratory 14
Thomas Jefferson National Accelerator Site 2
West Hackberry Site 3
West Valley Site 4
Y12 National Security Complex 50
Y12 National Security Complex
Number Of Occurrences
Facility
Reporting level H
Reporting level I
Reporting level L
Click on the Site Name to select and view Facility Chart to the right
Select a Facility to see Occurrence Reports in the table below
Report Number
Subject
EM--PPPO-FBP-PORTSOD-2022-0001
Employee Arm Injury in Chain-link Fence Dispenser
EM--PPPO-FBP-PORTSOD-2022-0002
X-705 Technical Safety Requirement LCO Violation for Potential loss of CAAS Audibility during Work Performance
Year: 2022
Reporting Level: I
Program Office: Cybersecurity Energy Security Emergency Response
Site: Bayou Choctaw Site
Contractor: Strategic Petroleum Reserves
Facility: Bayou Choctaw
Report Number: CR--SPRO-SPR-BC-2022-0002

RWAP 2021 Annual Report – Lessons Learned (continued)

- Feedback in July 2022 from the Nevada Site Specific Advisory Board (NSSAB) included a request for more detail regarding the entries describing the ORPS and OPEX issues
- As a result, to increase clarity in the 2022 Report, entries on packaging and transportation were broken down into four subcategories:
  - Transportation of waste using motor vehicles
  - Violation of Hazardous Materials Regulations
  - Unauthorized deviation from a designated route
  - Issues with packaging
- The table in the 2022 Report will also include clarifying language on items identified for sharing with the generators

RWAP 2021 Annual Report – Lessons Learned (continued)

- As examples, two items were identified for sharing with the NNSS Waste Certification Officials to enhance lessons learned and briefed tonight to demonstrate to the NSSAB the types of information identified
- Neither of the lessons learned to be discussed involved waste destined for the NNSS
- RWAP determined these issues warranted discussion with the NNSS waste generator community to help others learn from issues across the DOE Complex

RWAP 2021 Annual Report – Lessons Learned (continued)

- Items shared with the generators were:
  - A generator allowed improper modifications to drum transfer bags used in waste containers. The transfer bags were improperly modified by the contractor to use in waste drums. Some of these bags had seams that failed and, as a result, personnel conducted unauthorized modifications so they could be used.
  - A shipment was identified as non-radioactive by the generator, but review by the shipment receiving department determined it was radioactive. A calculation was erroneously attached to the shipment that was not associated with the shipped packages.

Key Lessons Learned from the 2021 RWAP Annual Report

- Primarily focus and discuss packaging and transportation and management concerns and issues with Working Groups (WGs) as noted from the ORPS data trend
- Evaluate and use annual report correlations and trends to enhance the revised NNSS Waste Acceptance Criteria and RWAP facility evaluation checklists
- Continue generating, revising, and providing enhanced profile, verification, and facility evaluation tools in working with WGs and RWAP's clients - DOE EM Nevada Program and the State of Nevada Division of Environmental Protection

RWAP 2021 Annual Report – Key Message

- **RWAP will continue to work to share lessons learned and ensure the RWAP Annual Report is a self-critical assessment to drive continuous improvement**

Facility Evaluation at a Waste Generator Site

Questions

Observation of a Loading of a Cask during a Facility Evaluation

The Roles and Responsibilities of the Nevada Division of Environmental Protection at Department of Energy Sites in Nevada

January 18, 2023

Christine Andres

Questions you may ask that I will answer tonight:

- Who we are
- What we do
- What we do not do
- Why we do what we do
- When we do it
- How we do it
- Where we do it

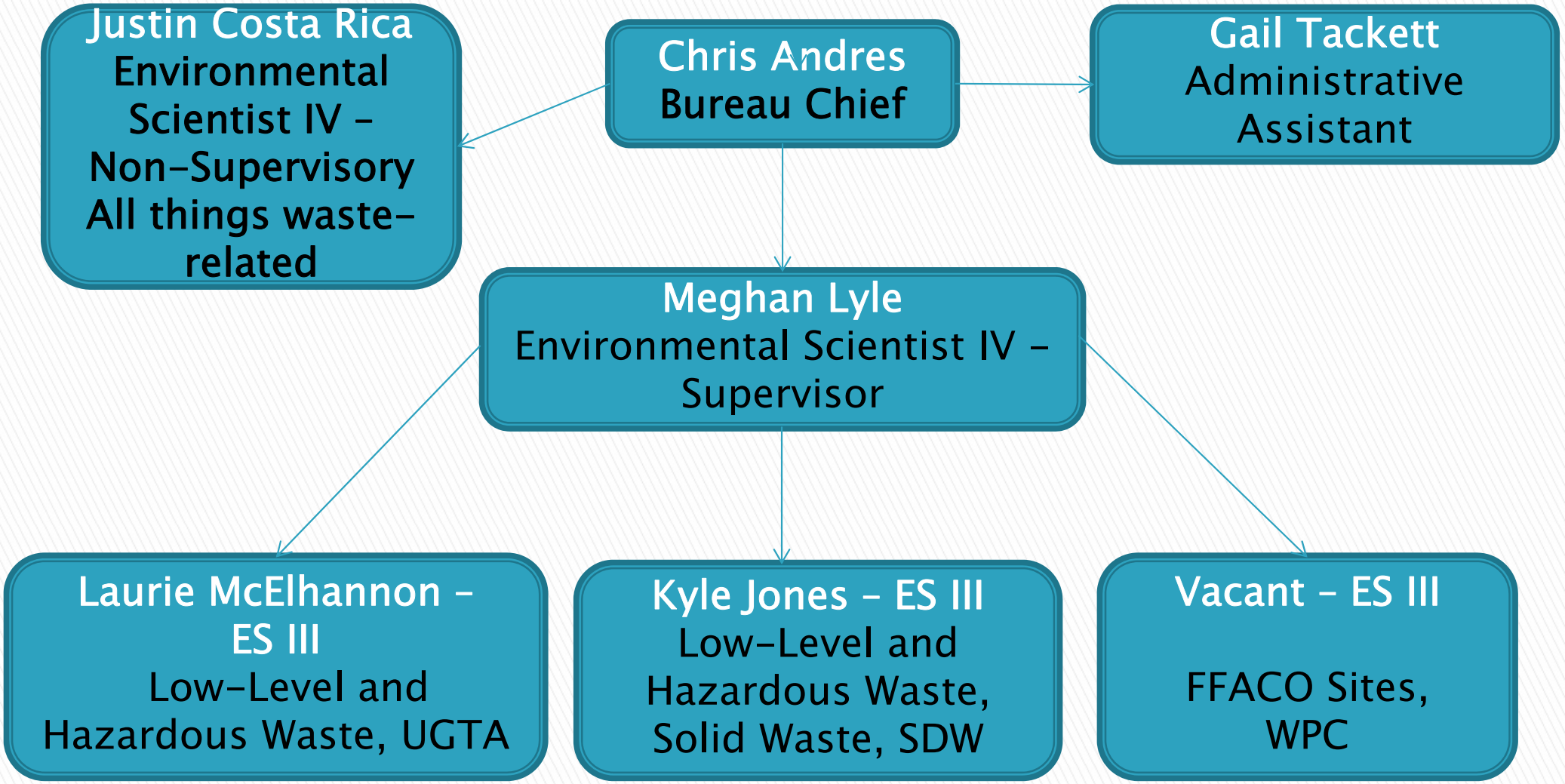
Nevada Department of Conservation and Natural Resources Divisions and Programs:

Conservation Districts Program
Conserve Nevada Program
Environmental Protection
Forestry
Historic Preservation Office (SHPO)
Off-Highway Vehicles Program
Outdoor Recreation
Sagebrush Ecosystem Program
State Lands
State Parks
Water Resources
Natural Heritage

Nevada Division of Environmental Protection Bureaus:

Administrative Services
Air Pollution Control
Air Quality Planning
Corrective Actions
Federal Facilities
Industrial Sites Cleanup
Mining Regulation and Reclamation
Safe Drinking Water
Sustainable Materials Management
Water Pollution Control
Water Quality Planning

Current Bureau of Federal Facilities Organization



The Bureau of Federal Facilities is housed entirely in the Division of Environmental Protection's Las Vegas Office. All individuals may be reached at 702-668-3900.

Division of Environmental Protection's Mission

"To preserve and enhance the environment of the state in order to protect public health, sustain healthy ecosystems and contribute to a vibrant economy."

Bureau of Federal Facilities

The NDEP's Bureau of Federal Facilities provides programmatic and regulatory oversight of the U.S. Department of Energy's (DOE) Environmental Restoration, Environmental Health and Safety, and Waste Management programs at the Nevada National Security Site, Tonopah Test Range, Central Nevada Test Area and Project Shoal Area

The Nevada National Security Site, Tonopah Test Range, Central Nevada Test Area and Project Shoal Area

ARE

Nuclear Weapons Testing Sites

Yucca Mountain

=

The proposed deep geological repository storage facility for spent nuclear fuel and other high-level radioactive waste

Bureau of Federal Facilities' Applicable Agreements, Laws and Regulations

- The Federal Facility Agreement and Consent Order (FFACO) – 1996
- Resource Conservation and Recovery Act
- Federal Facility Compliance Act of 1992
- Agreement in Principle
- Nevada Administrative Code, Chapter 445A – Water Controls

The FFACO

- A three-party compliance agreement for U.S. DOE and U.S. Department of Defense sites within Nevada – 24 months of negotiations – effective May 1996

- The NDEP has regulatory oversight of cleanup operations at federal facilities in Nevada

- Specifically covers the following sites:
  - The Nevada National Security Site
  - The Tonopah Test Range
  - The Nevada Test & Training Range
  - The Central Nevada Test Area
  - The Project Shoal Area

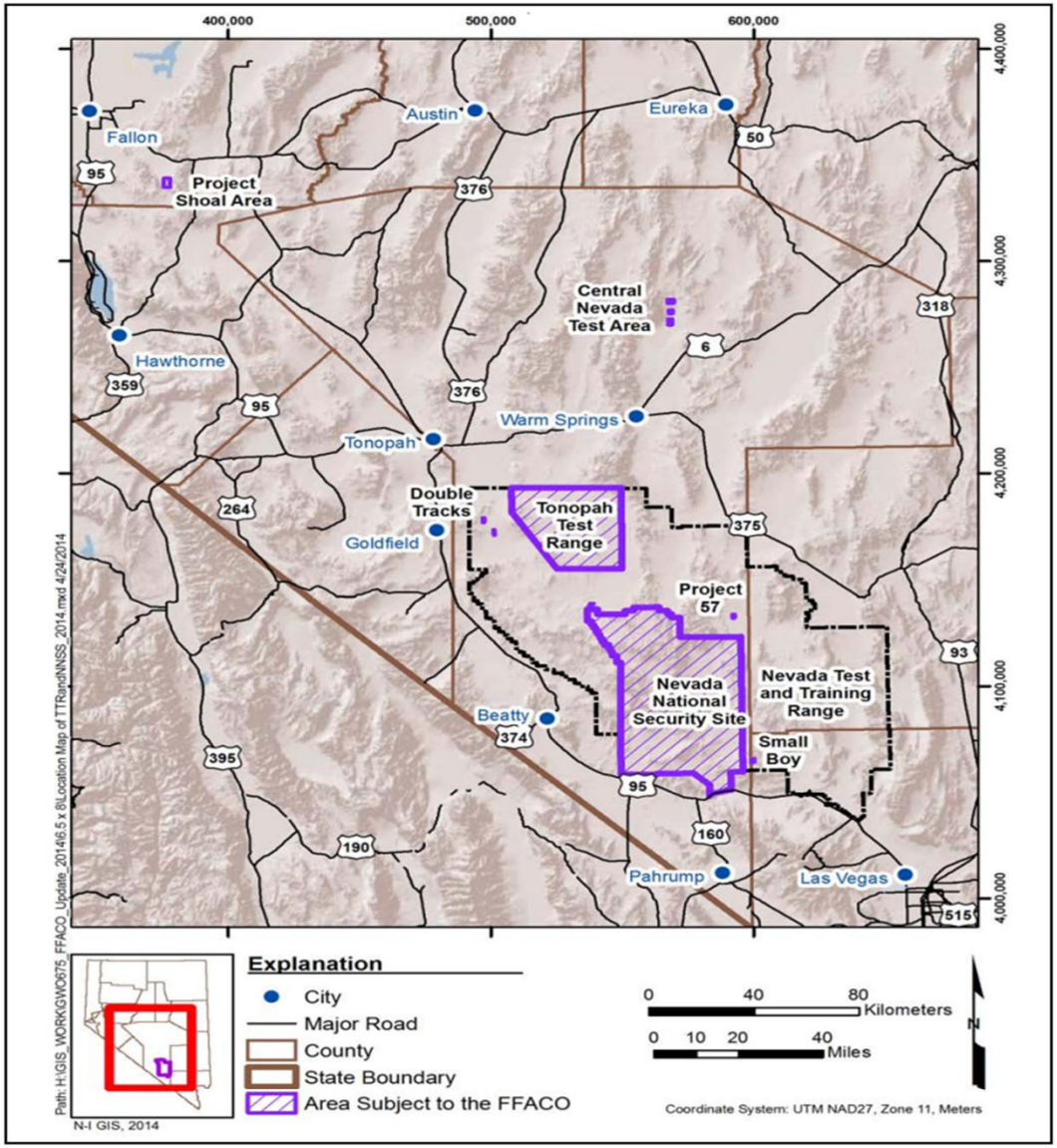


Figure 1-1
Areas Subject to the FFACO

- Ensures the gov't entities work together in a cost-effective manner
- The DOE Offices of Environmental Management and Legacy Management are responsible for remediating the sites and maintaining the sites
- FFACO establishes a framework for identifying, prioritizing, investigating, remediating, and monitoring historically contaminated sites
- Defines the regulations the State of Nevada will use to direct and enforce corrective action activities

- Provides public involvement opportunities
- Establishes a corrective action strategy for cleanup activities
- Has six appendices:
  I. Facility descriptions
  II. Corrective Action Sites / Units
  III. Corrective Action Investigations
  IV. Closed Corrective Action Units
  V. Public Involvement Plan
  VI. Corrective Action Strategy

Corrective Action Strategy

- Corrective action ranges from no action to clean closure
- Corrective action sites grouped into units having common contaminants, geology, location or other factors
- These groups, called Corrective Action Units (CAUs), are prioritized based on:
  - Potential risk to workers and public
  - Available technology
  - Future land use
  - Agency and stakeholder concerns
  - Other criteria

- Under the FFACO, NNSA/NFO and DOD propose and discuss priorities with the State
- State makes recommendations
- Recommendations presented for review by the public and NSSAB for NNSS programs
- Following public's input, the State, NNSA/NFO and DOD develop a final prioritization of units for investigation and corrective action

Three types of Activities under DOE's Environmental Restoration Project that their Environmental Management Program handles and NDEP oversees and regulates:

- Industrial Sites
- Soils Sites
- Underground Test Area Sites

- To ensure compliance with the FFACO, a specific closure approach is chosen to investigate and remediate an Industrial, Soils or UGTA Site

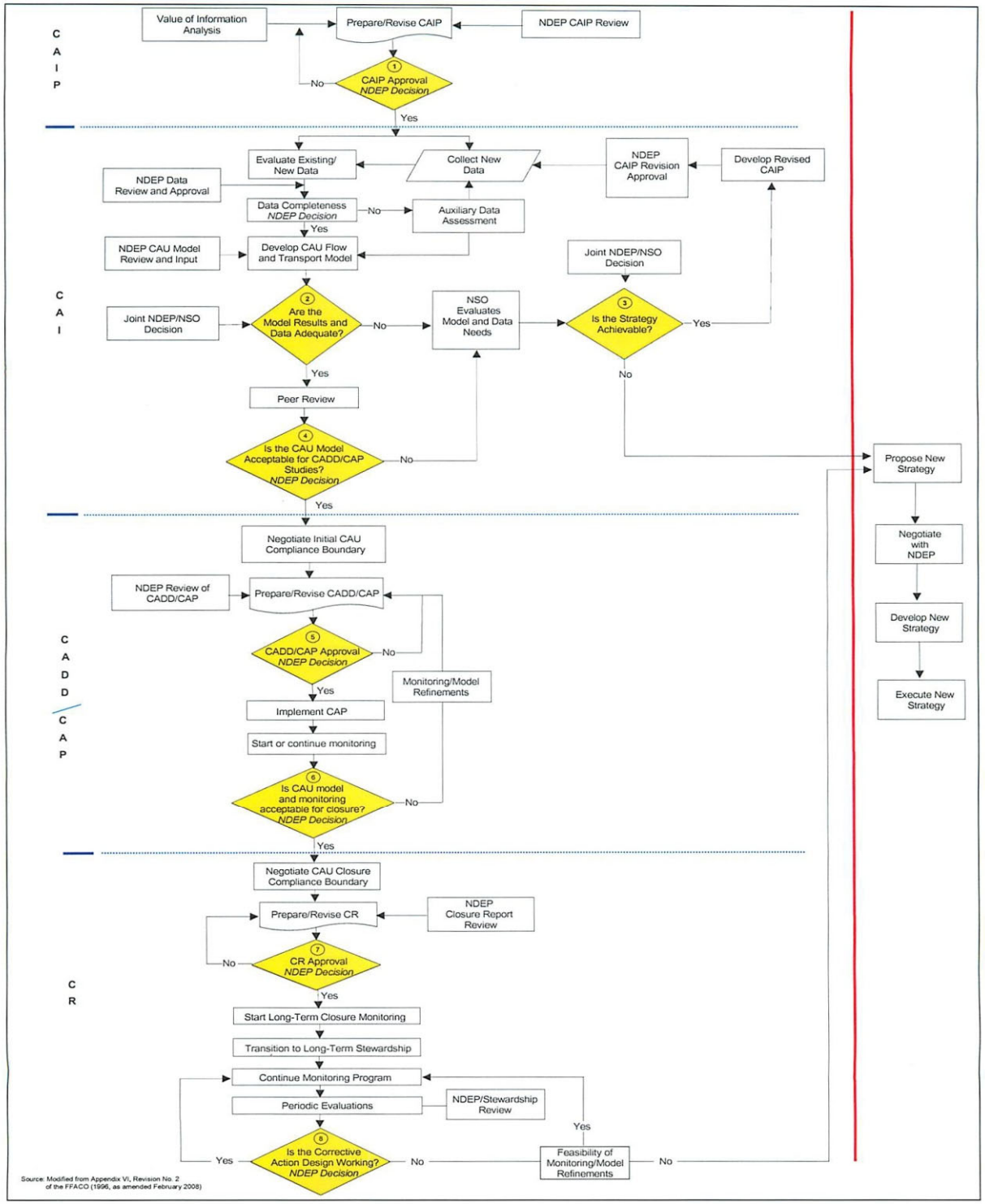
- The three methods for achieving closure are:

  1. Housekeeping

  2. Complex Closure
     - Corrective Action Investigation Plan (CAIP)
     - Corrective Action Decision Document (CADD)
     - Corrective Action Plan (CAP)
     - Closure Report (CR)
     - Notice of Completion

  3. SAFER Plan – Streamlined Approach for Environmental Restoration (SAFER) process

Section 3, Appendix VI of the *Federal Facility Agreement and Consent Order* Process Flow Diagram for UGTA CAUs



UGTA Interim Documents

- Hydrostratigraphic Model (Geology)
- Source Term
- Hydrologic Date Documentation Package
- Transport Date Documentation Package
- Modeling Approach Strategy
- Groundwater Model
- Transport Model
  - NDEP's oversight & input at every step along the way
  - Iterative process

Nevada Off-Sites

- Underground nuclear testing activities conducted in 5 states for various purposes
- DOE Office of Legacy Management assumed responsibility for all activities associated with underground testing and long-term surveillance and maintenance at the Off-Sites on October 1, 2006
- The two Nevada Off-Sites continue to fall under the regulatory authority of the FFACO administered by the NDEP

Tonopah Test Range

- Industrial and Soil Sites
- DOE Office of Legacy Management assumed responsibility for all long-term monitoring activities on the TTR on September 30, 2020
- The TTR continue to fall under the regulatory authority of the FFACO administered by the NDEP

Agreement in Principle – 1999

- Parties to the Agreement:
  - Office of the Governor – Agency Integrator
  - DCNR through NDEP, BFF
  - Department of Public Safety through Division of Emergency Management
  - EM Nevada Program
  - NNSA/NFO

Regulatory Considerations

- At DOE facilities, the BFF implements existing State regulations for:
  - Storage, treatment and disposal of waste
  - Underground storage tanks
  - Water Pollution Control
  - Safe Drinking Water
  - Corrective actions

- BFF implements authorities of other bureaus in NDEP. Consistency of regulatory decisions is critical to maintain credibility.

- The original intent was to support “non-regulatory” oversight and environmental monitoring. DOE’s intent was to gain public confidence through enhanced State oversight.

- Intent is to work cooperatively to assure citizens of NV that the public’s health and safety, as well as the environment, are protected

- Nevada's oversight will encompass only environmental cleanup activities that fall outside those encompassed by the scope of the FFACO

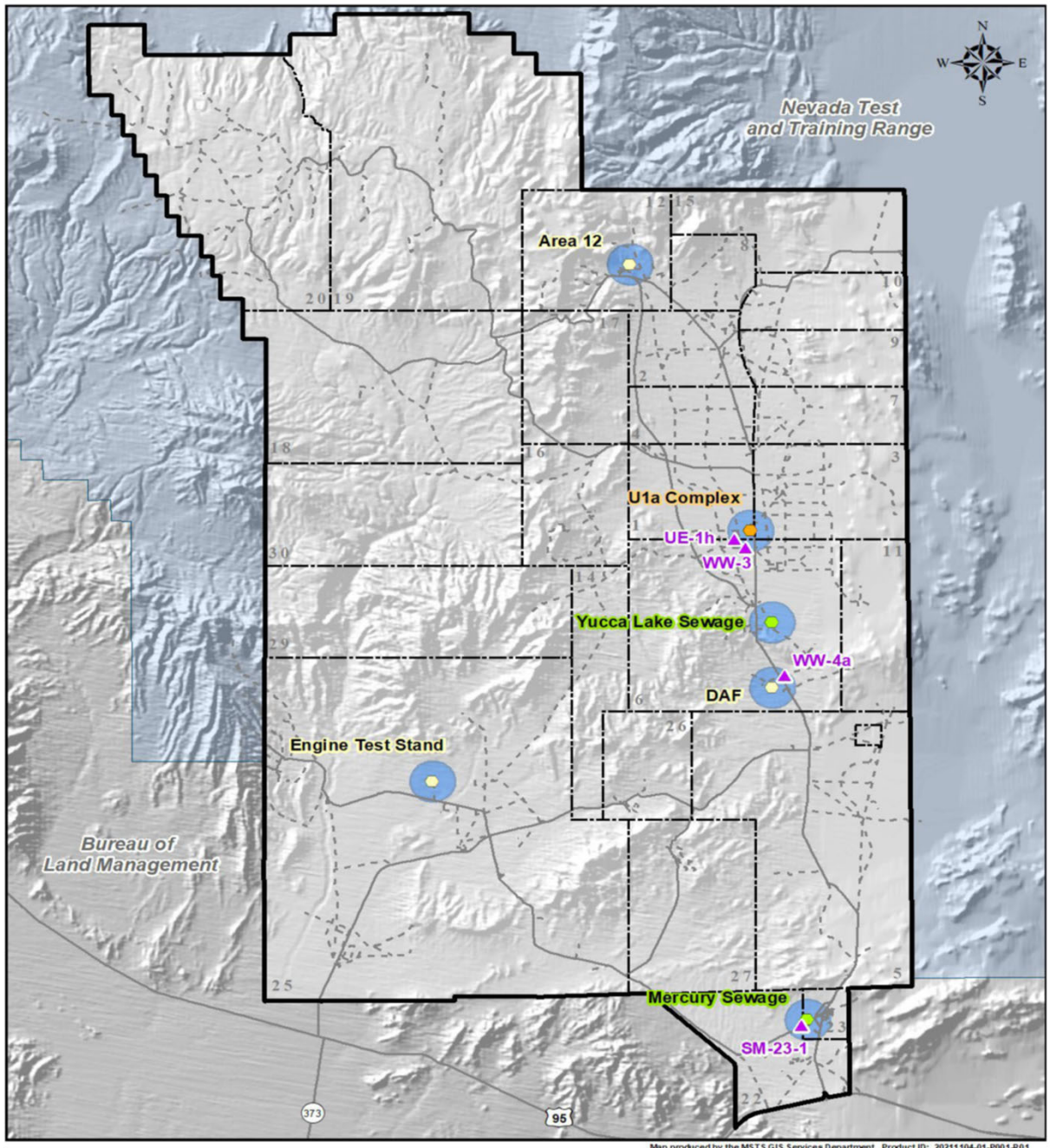
- Five Attachments describe, in part, each of NV's Agencies' commitments and activities in carrying out the AIP

Water Pollution Control

NEVADA ADMINISTRATIVE CODE CHAPTER 445A – WATER CONTROLS

- General Provisions 445A.070 – 445A.117
- Action Levels for Contaminated Sites 445A.226 – 445A.22755
- Discharge Permits 445A.228 – 445A.263
- General Permits 445A.266 – 445A.272
- Corrective Action 445A.273 – 445A.2739
- Use of Treated Effluent 445A.274 – 445A.280
- Treatment Works 445A.283 – 445A.292
- Notification of Release of Hazardous Substance 445A.345 – 445A.348
- Permits for Facilities 445A.390 – 445A.420
- Operation and Design of Facilities 445A.424 – 445A.447

Map of Wastewater Ponds at the NNSS



Safe Drinking Water
Public Water Systems
NAC 445A – WATER CONTROLS

- Water Quality 445A.450 – 445A.492
- Treatment of Water: Generally 445A.495 – 445A.540
- Treatment of Water: Groundwater 445A.54022 – 445A.5405
- Certification of Laboratories to Analyze Drinking Water 445A.542 – 445A.54296
- Operation of Community Water System or Non-transient Water System 445A.591 – 445A.5926
- Permits to Operate Privately Owned Systems 445A.595 – 445A.614
- Certification of Operators 445A.617 – 445A.652
- Design, Construction, Operation and Maintenance 445A.65505 – 445A.6731
- Environmental Review of Proposed Water Projects 445A.6758 – 445A.67611
- Requirements for Water Projects 445A.67624 – 445A.67644

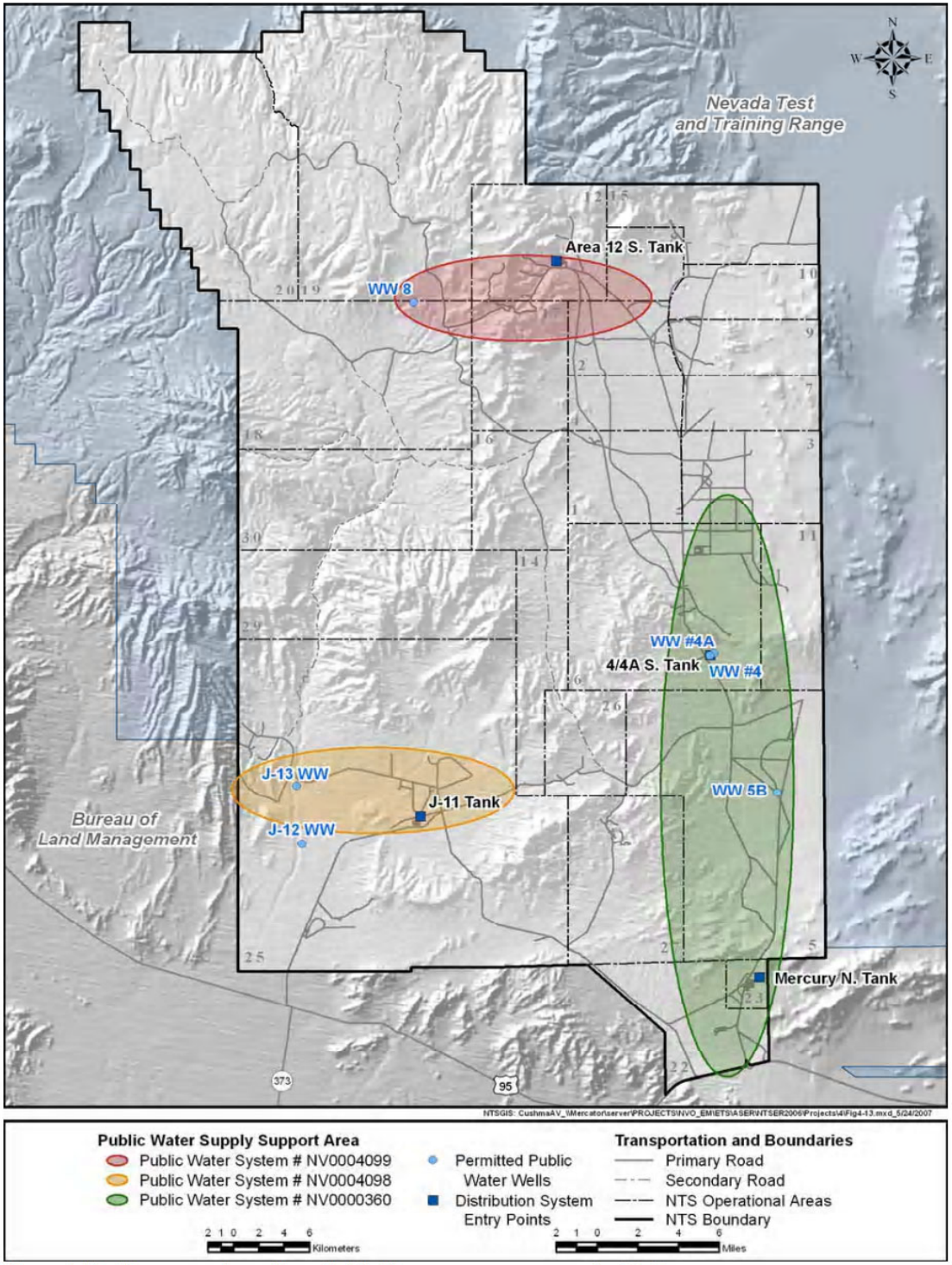


Figure 4-19. Water supply wells and drinking water systems on the NTS

Solid Waste Disposal / Resource Conservation and Recovery and Major Amendments

- The Solid Waste Disposal Act – passed in 1965 as Title II of the Clean Air Act of 1965
- The Resource Recovery Act of 1970
- Resource Conservation and Recovery Act (RCRA) – 1976
  - Subtitle C
  - Hazardous and Solid Waste Amendments of 1984
  - Federal Facility Compliance Act of 1992

Mixed Low-Level Waste Disposal

- Supports DOE Complex-wide cleanup
- LLRW and hazardous waste
- Managed separately from LLRW
- Governed by RCRA, which NV authorized to regulate
- Disposal Facility
  - "Old" mixed waste disposal cell (Pit 3)
    - Permitted by NDEP under RCRA Interim Status
    - Fully closed in January 2012
  - Fully lined Cell 18 permitted by NDEP
    - Fully RCRA compliant
    - Opened Cell 18 January 2011 – Closed in August 2021
  - Fully lined Cell 25 permitted by NDEP
    - Fully RCRA compliant
    - Opened in 2019

Low-Level Radioactive Waste Disposal

- Supports DOE Complex-wide cleanup
- Compliance with Orders and Directives
  - DOE 435.1
  - AIP
  - Stakeholder commitments
- Disposal in several cells in Area 5

Mixed Low-Level and Low-Level Radioactive Waste Acceptance Program

- Radioactive Waste Acceptance Program & Approval Process by the WARP
  - Reviews generator programs and procedures
  - Reviews all specific waste stream profiles
  - Conducts site audits/waste generator evaluations
  - Waste verification

- At NNSS
  - Waste Acceptance Criteria
  - Inspections
  - Paperwork verification
  - Monitoring
  - Regulatory compliance and enforcement

Low-Level and Mixed Low-Level Radioactive Waste

- Performance Assessment on Area 5
  - Extensive complex modeling
  - Gauges potential risks
    - Conservative
    - Short- and long-term
- Environmental Monitoring
  - Air, groundwater and soil
  - Long term groundwater monitoring (UGTA)
  - No indication of any offsite migration
- Closure Program
  - Earthen ET cap research and development
  - Focus on erosion control

RCRA Part B Permit for Four Units at the NNSS:

- A Hazardous Waste Storage Unit
- An Explosive Ordnance Disposal Unit
- Mixed Low-Level Waste Cells
- A Mixed Low-Level Storage Facility

RCRA Part D Permits for Solid Waste in the following locations on the NNSS:

- One near Mercury in Area 23
- One near CP Basin in Area 6
- One near the northern border of Area 9
- One in Area 5 at the RWMC

Transportation

The NDEP does not regulate transportation to and from the NNSS.

The Nevada Department of Transportation Statues and Regulations would apply.

So hopefully I have answered for you:

- Who we are
- What we do
- What we do not do
- Why we do what we do
- When we do it
- How we do it
- Where we do it