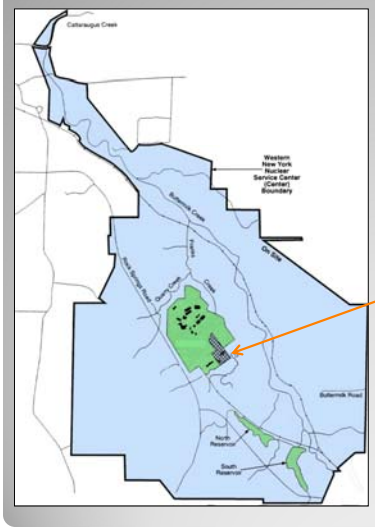
State-Licensed Disposal Area (SDA)

Tom Attridge - Program Manager

Location of the SDA



- Approximately 15 acres adjacent to the West Valley Demonstration Project
- NYSERDA has 100% management responsibility for the SDA

2

Operational History of the SDA

- Commercial radioactive waste disposal facility – operated by Nuclear Fuel Services from 1963-1975
- 2.4 million cubic feet of waste was disposed in the 14 trenches at the SDA

- ~ 736,000 curies of radioactivity was disposed of in the trenches
- Water infiltration caused the trenches to overflow in 1975 and disposal operations were terminated

3

NYSERDA Management History

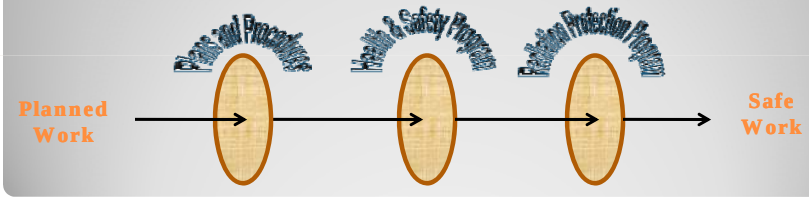
- NYSERDA assumed day-to-day management responsibility for the shutdown facility in 1983
- Water infiltration controls installed by NYSERDA in the 1990s has stopped water from accumulating in the trenches

4

Regulatory Framework

- Radioactive Materials
  - Public and worker H&S
- Environmental Protection
- Employee Protection

Work Process



5

Organizational Management

Environmental Monitoring – Marty Willett

Erosion Monitoring and Research – Lee Gordon

Operations & Maintenance – Chris Andrzejewski

Waste Management – Andrea Mellon

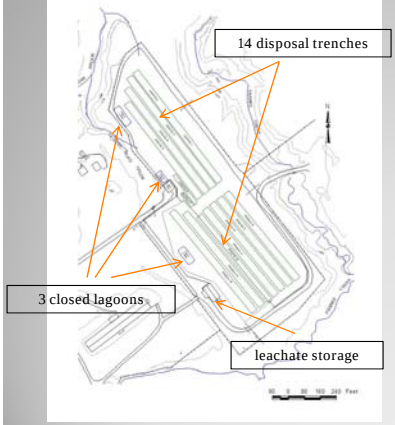
Health & Safety – Jean Williams

6

Environmental Monitoring at the SDA

Marty Willett – Senior Project Manager

Why Monitor?
Site Integrity and Public Safety



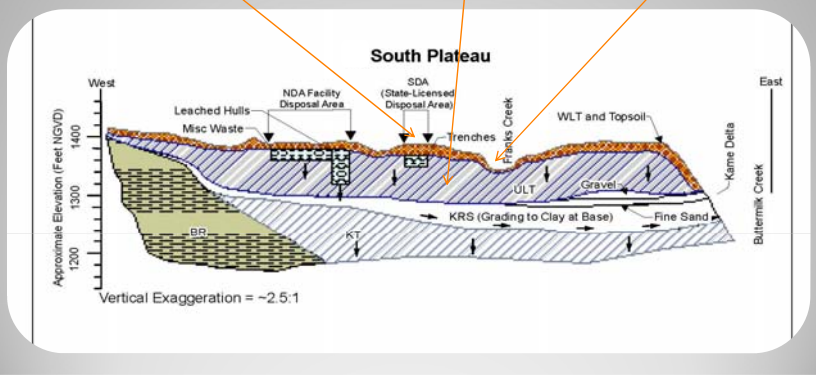
Facilities

- **14 Unlined Disposal Trenches**
  - ~2.4 Million Cubic Feet of Radioactive waste
  - ~130,000 Curies of Radioactivity
- **Three Closed Lagoons**
- **Leachate Storage Tank**
  - 8000 gallons of Trench Leachate
- **Slurry Wall and Drainage**
- **Two Buildings**

8

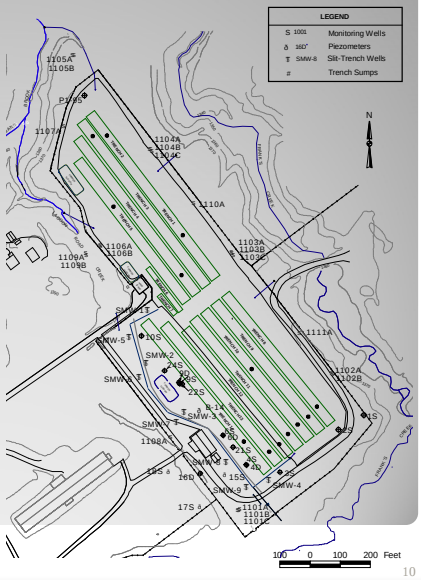
Environmental Pathways

Air **Groundwater** **Surface Water**



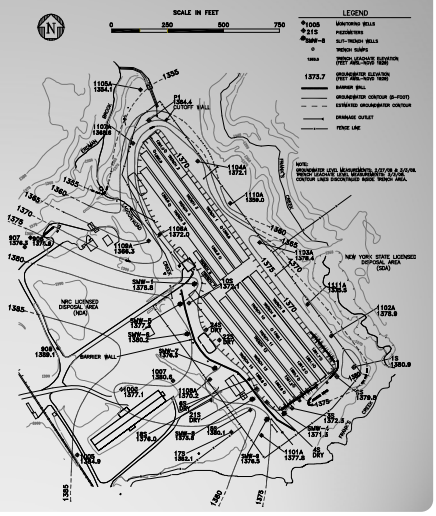
Groundwater Sampling & Analysis

- **Radiation Control Permit, RCRA 3008 (h) Consent Order**
- **21 Groundwater Monitoring Wells**
  - Semiannual sampling for detection of radionuclides and volatile organic compounds
  - Three geologic units are monitored - Weathered Lavery Till, Unweathered Lavery Till and Kent Recessional Unit
- **2008 Groundwater Results**
  - Results did not exceed regulatory groundwater quality standards (6 NYCRR Part 703)



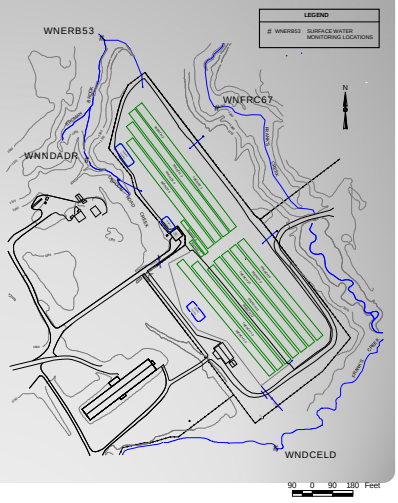
Groundwater Elevation Measurements

- **Quarterly Water Level Measurements**
  - 21 Groundwater Wells (perimeter)
  - 19 Piezometers (south trenches)
  - 9 Special Monitoring Wells (barrier wall)
  - 12 Trench Sumps (leachate levels)
- **Groundwater measurements provide information on groundwater flow around the SDA**



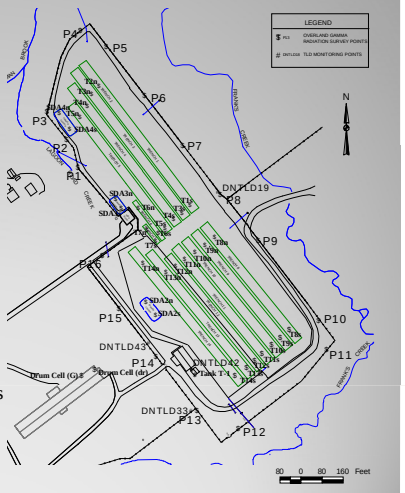
Surface Water Monitoring

- **Streams**
  - Quarterly sampling for detection of radionuclides
  - Streams include Frank's Creek, Erdman Brook and Buttermilk Creek
- **Five Stormwater Outfalls**
  - SDA State Pollution Discharge Elimination System (SPDES) permit
  - Semiannual sampling of one outfall for the detection of radionuclides, chemicals and physical parameters
- **2008 Surface Water Results**
  - All results did not exceed regulatory surface water quality standards (6 NYCRR Part 703)



Radiation Monitoring (Air)

- 50 Gamma Survey Points
- 5 Thermoluminescent Dosimeter Locations
- 2008 Radiation Monitoring Results
  - Current gamma radiation results in the vicinity of the SDA are near background levels

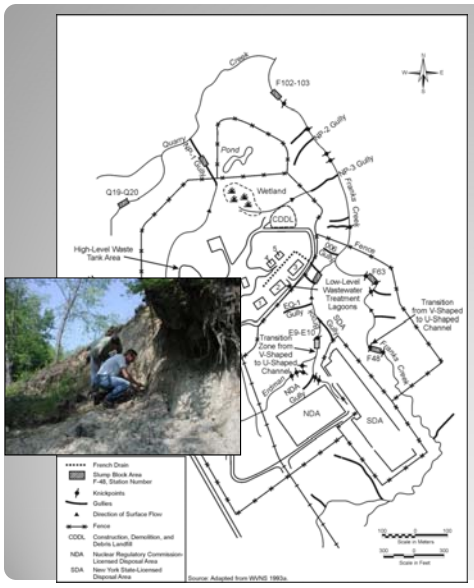


Summary

- Regulatory review and oversight is provided through the Radiation Control Permit (NYSDEC Part 380) and the RCRA 3008 (h) Consent Order, and the Radioactive Materials License (NYSDOH Part 38)
- Monitoring data are reviewed, assessed, and reported (at least) quarterly to the regulatory agencies
- Environmental monitoring results indicate the SDA is meeting all regulatory requirements in place to protect public heath, safety and the environment

Erosion Monitoring & Research at the SDA

Lee Gordon – Associate Project Manager



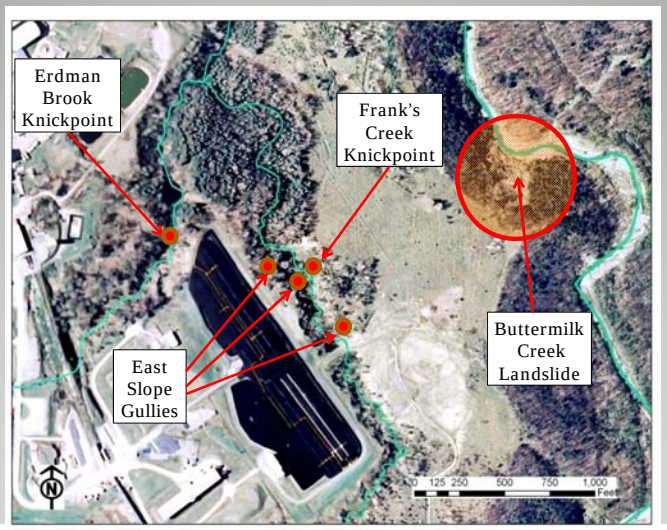
What do we know about erosion?

- Historical Studies
- Erosion Processes
  - Knickpoint erosion
  - Gully advancement
  - Landsliding
- Predicting Landscape Evolution over Long Time Periods

NYSERDA continues to believe that erosion is a significant issue in the management of the Western New York Nuclear Service Center

16

Erosion issues near the SDA



17

Knickpoint (Headcut) Erosion


Frank's Creek Knickpoint

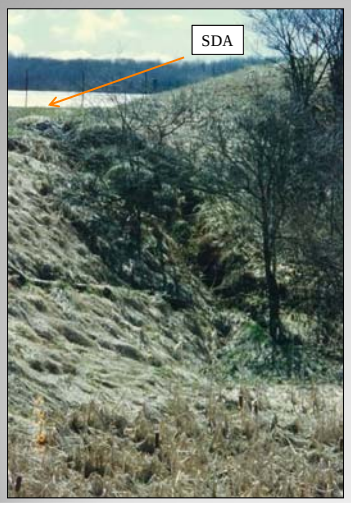
- A waterfall where localized erosion takes place
- Can be of any size (e.g. Niagara Falls, small creeks)
- Moves upstream, eroding material


Erdman Brook Knickpoint

- Frank's Creek and Erdman Brook knickpoints are 4-5 feet deep and approximately 15-20 feet wide

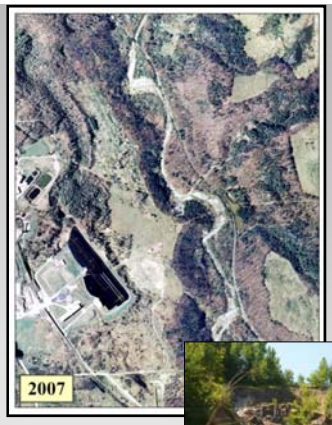
18

Gully Advancement



East Slope Erosion Controls

19



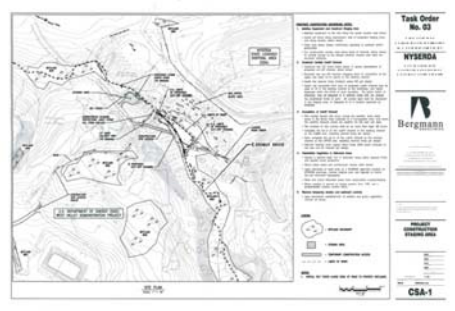
Landslides

- Buttermilk Creek Landslide
  - Buttermilk Creek watershed erosion processes
  - Monitoring can inform future erosion modeling

20

Erosion Monitoring and Controls

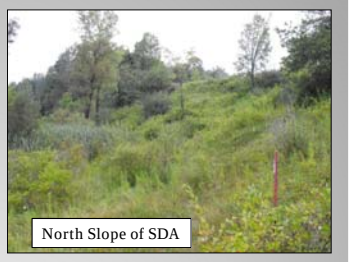
- Inspections of the SDA, Nearby Creeks and Slopes
- North Slope Monitoring (Ground Surface Elevation Surveys)
- Erosion Control Projects (Erdman Brook, East Slope Gullies, Frank's Creek)



NYSERDA is Effectively Monitoring and Managing Erosion Threats to Protect the Integrity of the SDA

Erosion Data Collection

- Gathering Data
  - Erosion processes and rates
  - Effectiveness and maintenance of erosion controls
  - Meteorology, geology and geography
  - Slope stability


North Slope of SDA

- Specialized Equipment and Services for Erosion Monitoring and Modeling
  - Weather instrumentation
  - Stream flow and sediment transport
  - LIDAR (laser, high-resolution) elevation surveys
  - Computer-based hydrologic analyses

Comprehensive Erosion Research Plan

- Regardless of the final decision on the SDA, erosion processes near the SDA must be characterized, monitored, predicted and controlled.
- NYSERDA is developing a comprehensive research program to investigate:
  - Rates of gully erosion
  - Spatial distribution and development of gullies
  - Rates and modes of knickpoint development and migration
  - Regional stream channel stability
  - Geologic setting and technical properties of soils
- Close coordination with Erosion Peer Review Group (EPRG)

23

Operations & Maintenance at the SDA

Chris Andrzejewski – Associate Project Manager

What do we maintain?

- **Facilities and Property**
  - Frac Tank and Tank T-1 Building
  - Trenches, Trench Caps and Slopes
- **Geomembrane Covers**
  - Very-Low Density Polyethylene (VLDPE)
  - XR-5 (Hypalon)
- **Monitoring Equipment**
  - Wells and Trench Sumps
  - Alarms and Sensors
- **Infrastructure**
  - Roads
  - Drainage
  - Fences
  - Utilities

25

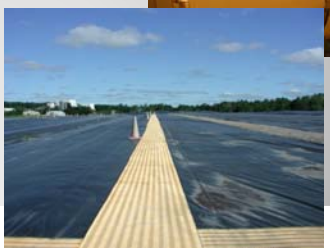
How do we maintain?

- **Routine Inspections**
  - Weekly - building inspection
  - Monthly - fire extinguisher inspections
  - Bi-Monthly - drainage basins, membrane covers, creek channels, and slopes (inside and outside SDA fence)
  - Annual – electrical and alarm checks/geomembrane inspections
- **Non-Routine Inspections**
  - Response to changing conditions
  - Observations during inspections
- **Maintenance Log**
  - Tracking maintenance items from identification through completion

26

SDA Maintenance Activities

- **Routine Work**
  - Plowing Snow/Grass Mowing
  - Perimeter Fence and Gate Upkeep
  - Surface Drainage Improvements
  - Detention Basins
  - Geomembrane Testing and Repair
  - Monitoring Well Repair
  - Electrical Improvements in Buildings
  - Non-Skid Walkway Replacement (on covers)
  - Signs and Labeling Replacement
  - General Housekeeping in Buildings
- **Contractor Support**
  - Technical Support
    - Construction, Geomembrane, Electrical, Surveying
  - Engineering Support



27

SDA Maintenance Projects

- **Currently Underway**
  - North Slope/Erdman Brook Erosion Mitigation Project (Immediate Response Actions)

- **Near Future**
  - Replacement of VLDPE Geomembrane Cover
  - North Slope/Erdman Brook Erosion Mitigation Project (Longer-Term Mitigation Actions)
  - East Slope Erosion Repairs
  - Frank's Creek Knickpoint

28

Waste Management at the SDA

Andrea Mellon – Senior Project Manager

Waste Generation

- NYSERDA does not routinely generate radioactive waste
- ~ 8,000 gallons of leachate is stored in the Tank T-1 Building
- Solid waste (e.g. pumps, motors, filters, etc.) stored in Tank T-1 Building

30

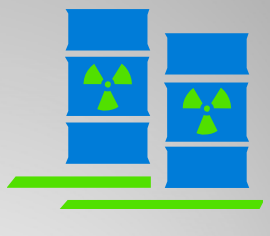
Regulatory Framework for Waste Management

- Hazardous Waste
- Radioactive Waste

Waste Inspections

- Weekly
- Quarterly
- Annually

Liquid Waste Removal Project



- Shipment , Treatment and Disposal Project
- Leachate and Solid Waste will be Disposed
- RCRA “Clean Closure” of Tank T-1 Building
- Future Waste Management Activities