# Cannonsville Dam Incident Response and Resolution

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Delaware River Basin Commission: Regulated Flow Advisory Committee

# Agenda

- Dam
- What happened
- Immediate actions taken
- Corrective actions
- Testing the Repair
- Monitoring the Repair

# Cannonsville Dam

- Completion date: 1964
- Reservoir is contained by a earthen dam with impervious clay core and a split-level spillway
- Classified as a Class “C” High-Hazard Dam per NYSDEC regulations
- The **Cannonsville Reservoir** has a 455 sq mi drainage area and a 7.5 sq mi surface area holding 97 billion gallons of water
- **Cannonsvile Dam**:
  - Dam length: 2800 ft
  - Width at base 1100 ft
  - Dam height: 170 ft
- **Spillway**:
  - Located on north side of Dam
  - Spillway length & elevation:
    Upper Weir: 560 ft @ 1158 ft ele
    Lower Weir: 240 ft @ 1150 ft ele
- **Outlet Works**
  - 12 ft diameter pipe into
    5 discharge pipes
  - ~1500 cfs – max discharge rate

# What happened

# Turbid Discharge 7-13-15

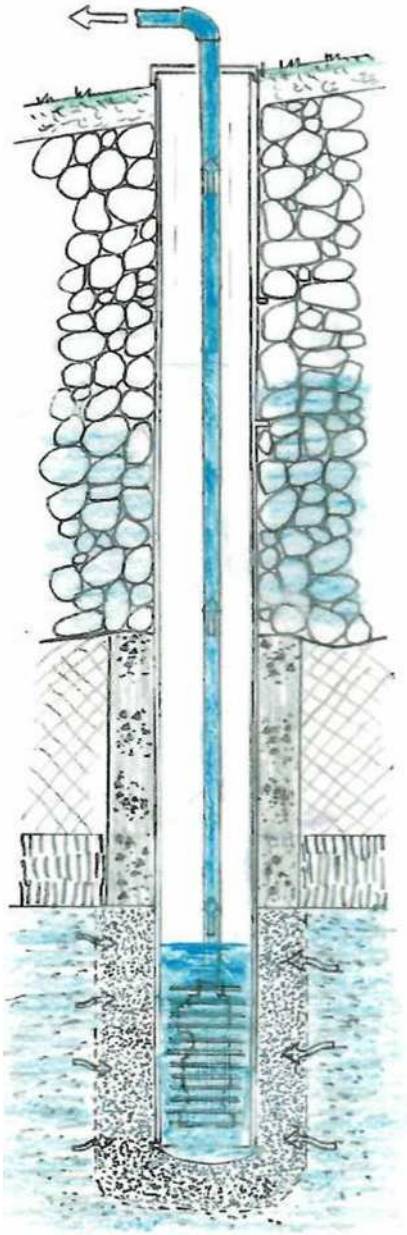
# Immediate Actions Taken

- Site monitoring
  - 24/7 physical monitoring presence
  - Enhanced piezometer data collection/analysis by consultant experts
  - Turbidity monitoring, water sample analysis and comparison to boring samples
  - Piezometer and turbidity alarms
  - Engineer daily inspections
  - Frequent DEP Police patrols
  - Downstream flow monitoring
  - Turbid discharge plume photographic monitoring

- Review of historical information
- Stockpiling materials and equipment for emergency on-call repairs
- Consultations with FERC, DEC Dam Safety and construction contractors for repair plans
- Lowering Reservoir – maximized drinking water diversions and river releases
- Public awareness, EAP reviews, Updates with State and County OEMs

# Corrective Action - Step 1

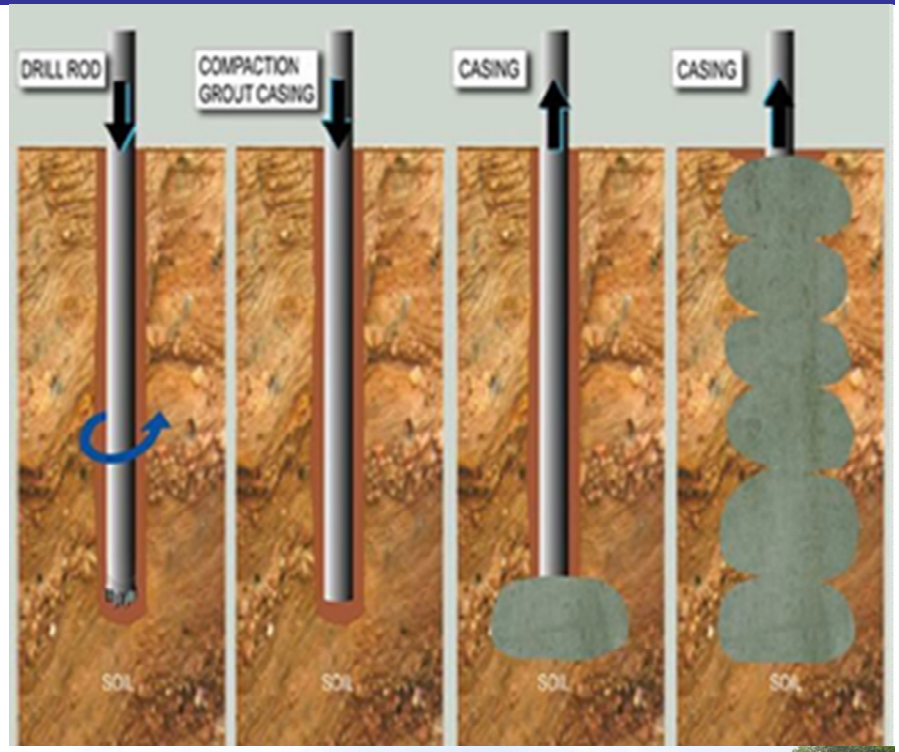
- DEP procured Moretrench as repair contractor
- Installed 8 upstream relief wells to allow artesian water through screens into casing
- Relief wells stopped the turbid discharge



# Turbid Discharge Ended 8-2-15

# Corrective Action - Step 2

- Compaction grouting
  - drilling to a prescribed depth
  - pumping low mobility grout through drill casing to the bottom
  - pumping continues until a safe pressure or volume limit is achieved
  - pressure and volume limits change with depth based on the geology at the borehole
  - drill casing is then pulled up 2 feet and the process is repeated




# Testing the Repair (8-26-15 to 9-11-15)

- Reduced relief well pumping in a staged manner from 8-26-15 to 8-28-15
- Continue normal drinking water diversions and FFMP releases
- Continue with 24/7 site monitoring plan
- Continue turbidimeter readings and piezometer monitoring
- Continue water quality sampling and analysis

# Monitoring the Repair

- September 12 to November 25, 2015
  - Continue normal drinking water diversions and FFMP releases
  - Continue turbidimeter readings and dam piezometer monitoring
  - 24/7 closed-circuit television camera feed to WSCC
  - Daily on-site documented observations by a professional engineer
  - Winterize relief wells
- November 26, 2015 through refill
  - Continue normal drinking water diversions and FFMP releases
  - Continue turbidimeter readings
  - 24/7 closed-circuit television camera feed to WSCC
  - Perform on-site documented observations and piezometer analysis by a professional engineer at least twice a week