



**Canal
Corporation**



BERGMANN
ARCHITECTS ENGINEERS PLANNERS

DeRuyter Reservoir Dam Rehabilitation Project

February 1, 2019

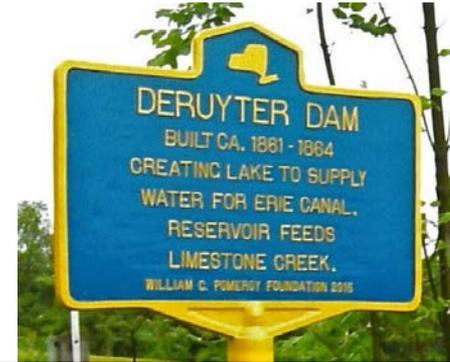
NYS Canal Corporation

Agenda

- Introduction
 - DeRuyter Reservoir History & Statistics
 - Infrastructure Overview
 - Rehabilitation Scope
 - Reservoir Levels
 - Community Impacts
 - Next Steps
-
- Emergency Action Planning Process

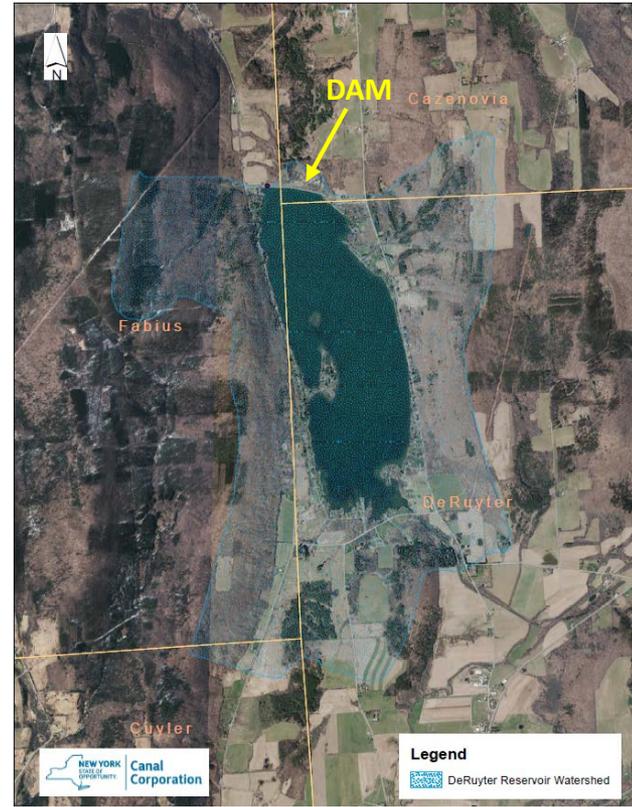
DeRuyter Reservoir History & Vital Statistics

- Built in 1861-1864 to supply water to the Old Erie Canal.
- Reservoir was constructed with an inlet diversion channel from an adjacent watershed to supply water needed for navigation.
- Water is no longer used or necessary for Canal operation and diversion is no longer active.
- Significant year-round residential population with important quality-of-life benefits for local residents.

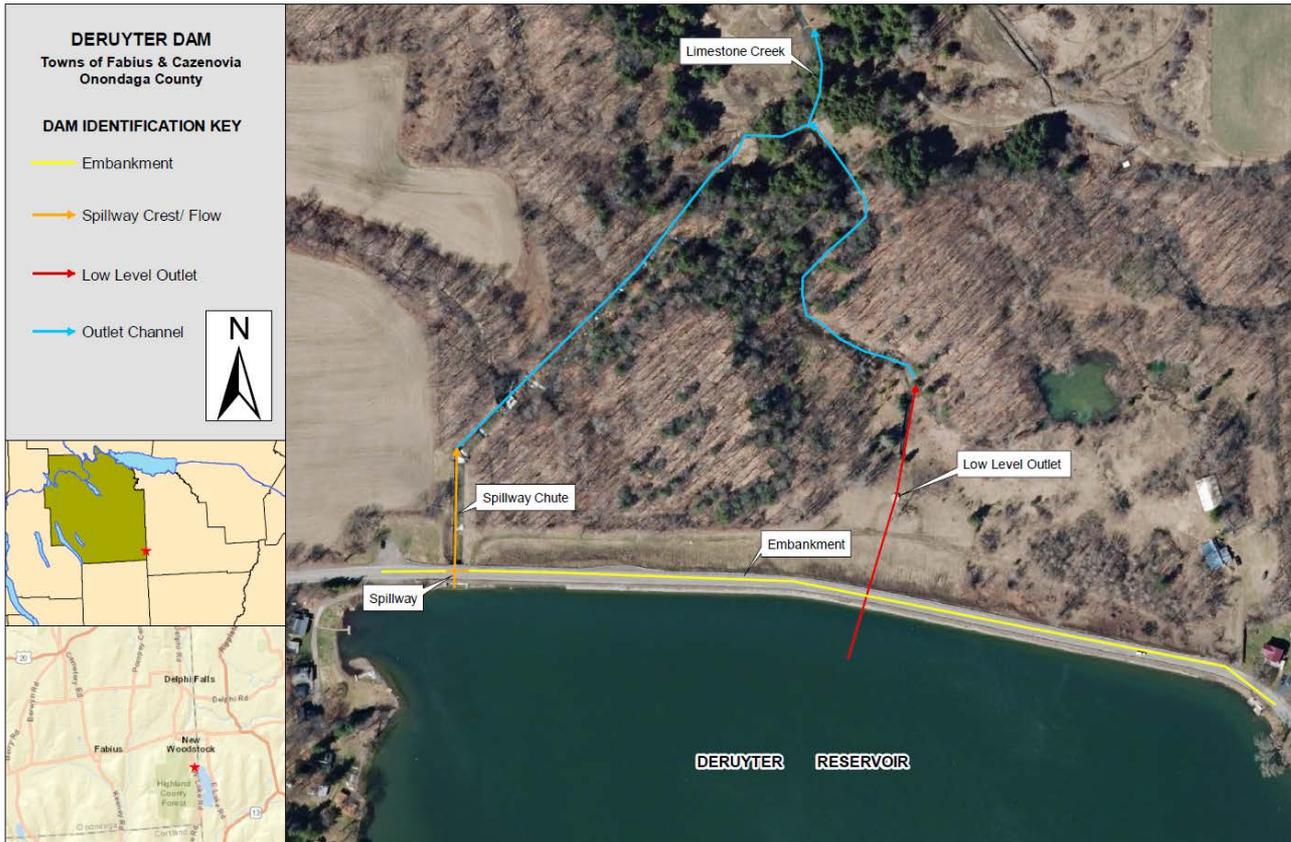


Why We Are Here

- Dam Classified as large “High Hazard” according to NYSDEC.
- Sudden failure of the dam would likely result in loss of life to downstream residents, and widespread substantial economic and environmental loss.
- Public safety is the top priority of the Canal Corporation and NYPA



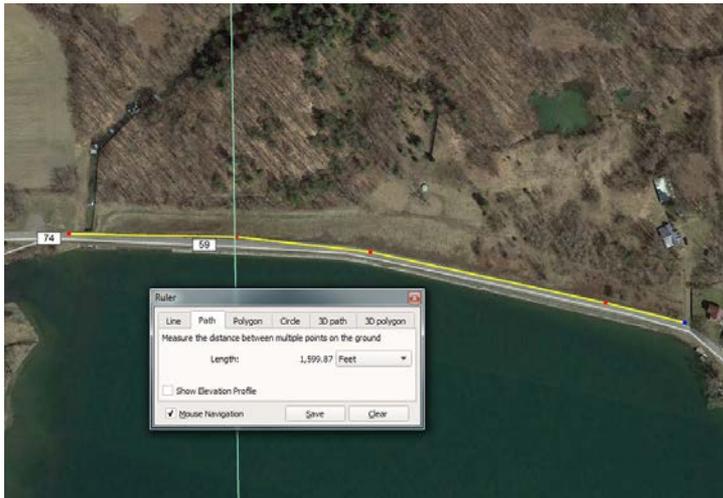
DeRuyter Dam Infrastructure Overview



- Dam consists of:
 - 1600 ft long earthen embankment
 - Overflow spillway crest, spillway chute and energy dissipater
 - Low Level Outlet (LLO) works and an LLO sluice channel.

Why the Project Is Needed – Embankment

- Stumps remaining from 2018 tree removal must be removed and backfilled with appropriate materials.
- The dam embankment has calculated stability deficiencies based on the design, geometry, and known material properties.
- Dam embankment exhibits ongoing seepage and wet areas exist throughout the embankment with variable rates of seepage.



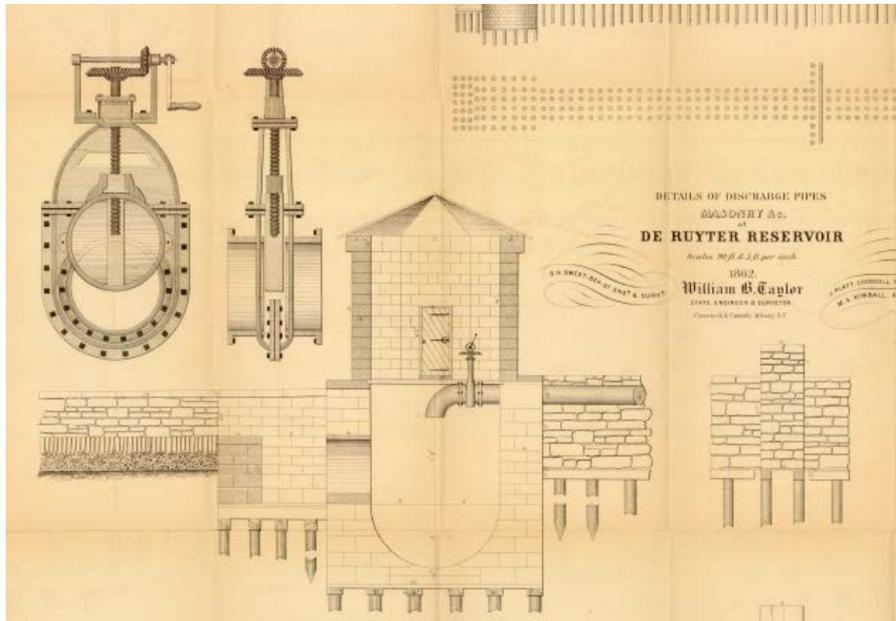
Why the Project Is Needed – Spillway

- On-going erosion and deterioration of the masonry spillway chute and failure of spillway terminus.
- Spillway chute is unable to contain high flows within the spillway training walls during high flow/flood events.
- Spillway chute construction is susceptible to damage during high flow events.



Why the Project Is Needed – Low Level Outlet

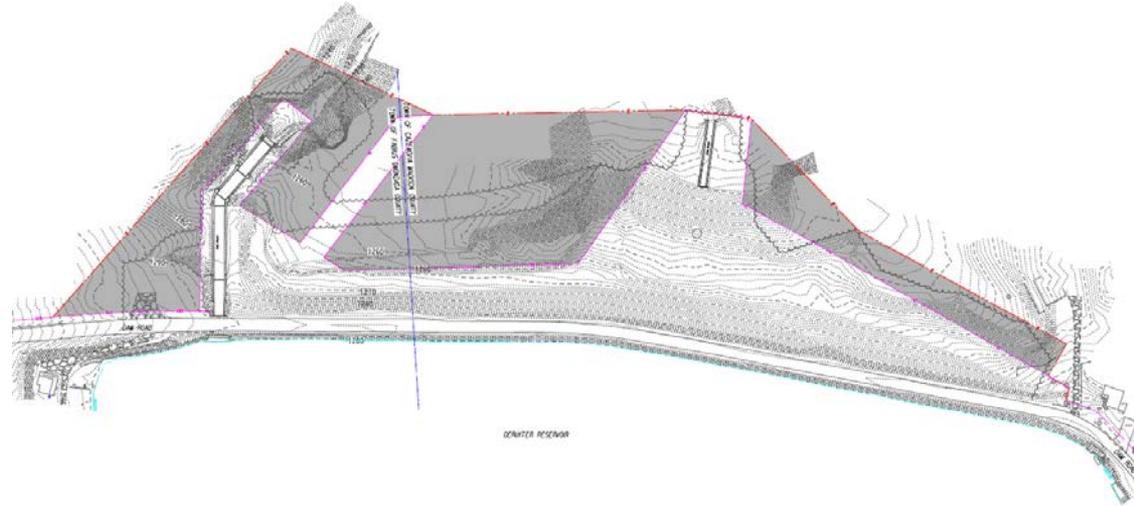
- At 155 years, existing Low Level Outlets have exceeded their useful life and are planned to be sealed in place and replaced with a shallow pipe/ siphon system.



- The Low Level Outlets are used to regulate water levels below the spillway crest and provide the yearly winter reservoir drawdown.
- The valves have been replaced in prior rehabilitations.

Rehabilitation Scope

Property Acquisition: The NYSCC has already acquired (4) parcels of land comprising portions of the dam that were formerly under private ownership.

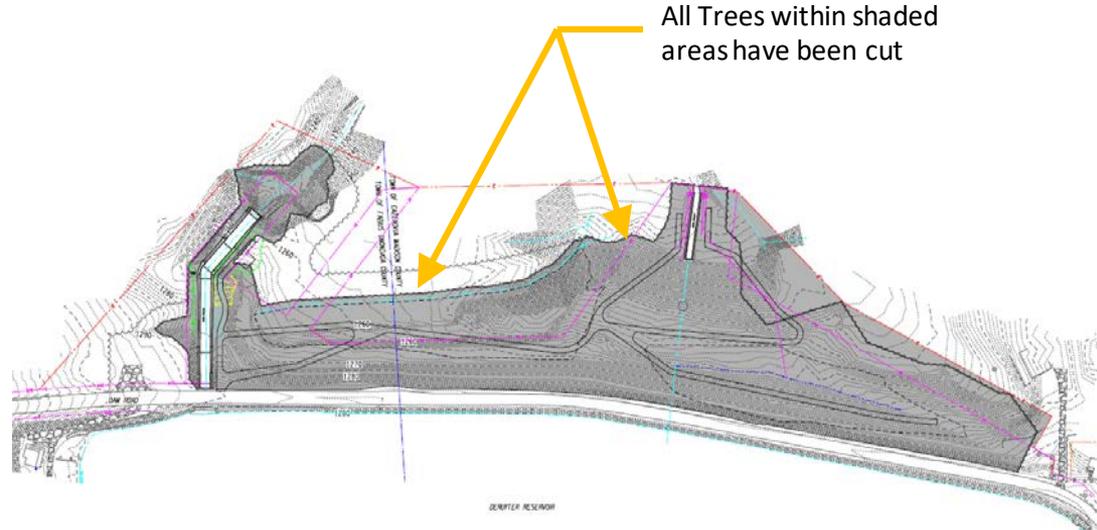


Rehabilitation Scope

Property Acquisition: The NYSCC has already acquired (4) parcels of land comprising portions of the dam that were formerly under private ownership.

Tree Cutting: In the early part of 2018, the trees on the dam embankments and toe were cut to mitigate the risk of windthrow to provide better line-of-sight for inspections.

Stump Removal: Remove stumps & roots in the dam embankment & backfill.



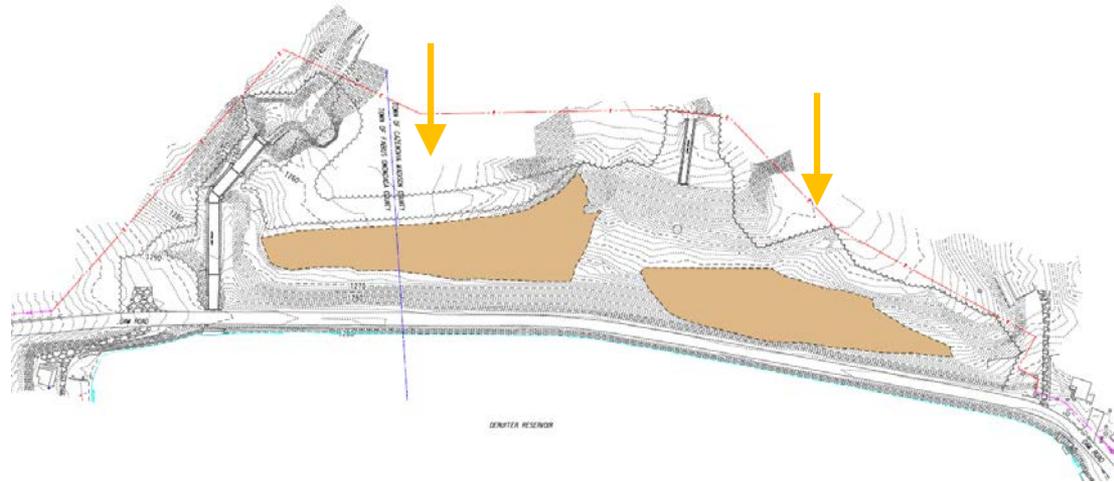
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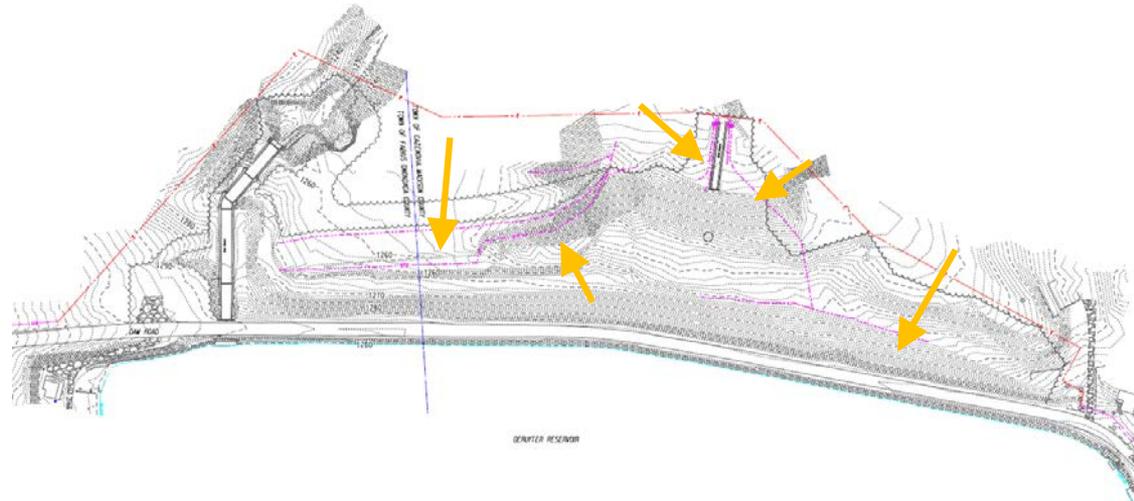
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Drainage: Install drainage system in the existing seepage pathways to capture and direct seepage to monitoring weirs. Backfill these areas as part of embankment buttress work



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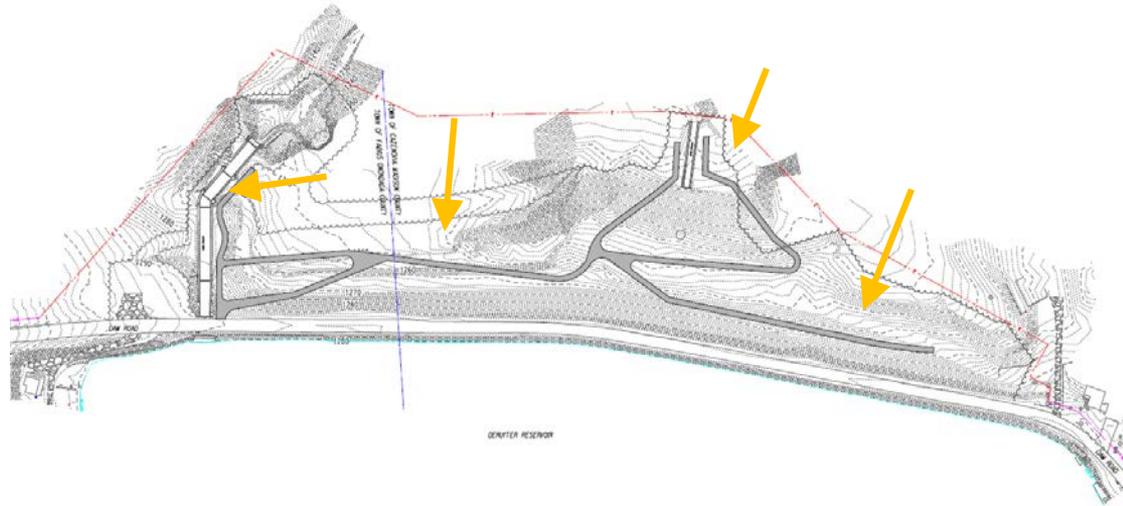
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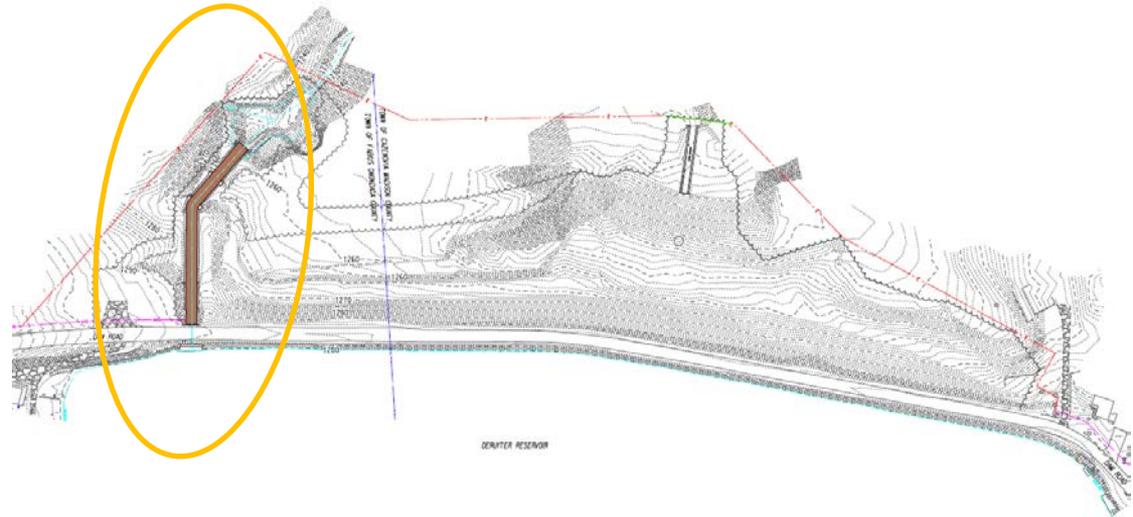
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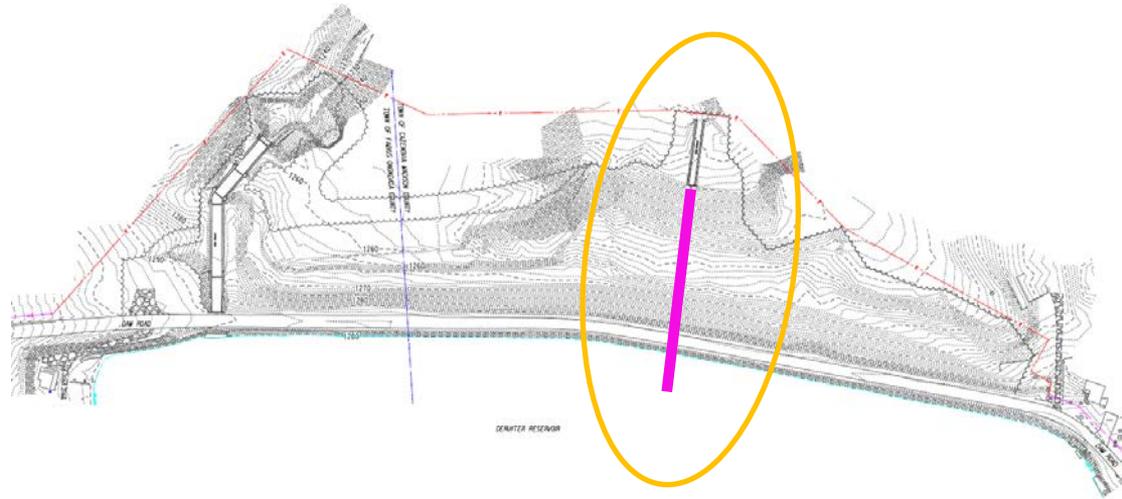
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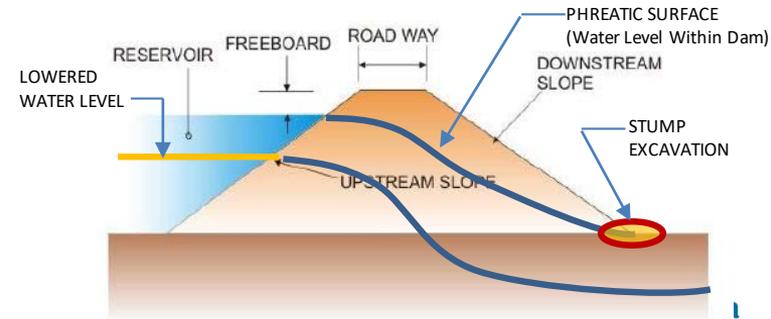
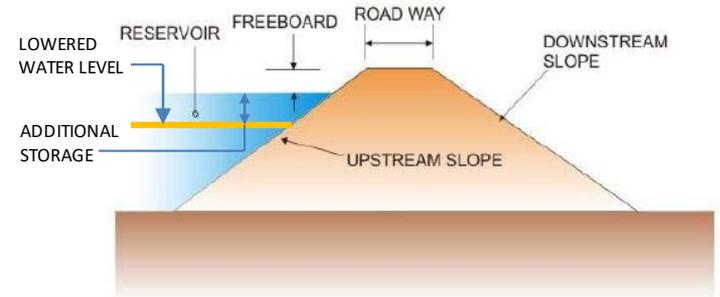
Low Level Outlets: Abandon existing pipes and outlet channel in place filling with materials to prevent future leakage. Construct new shallow pipe system to provide the same functionality.



Reservoir Levels

To maintain a safe condition, rehabilitation of the dam will require temporarily lowering the reservoir's water surface.

1. Work on the main spillway chute will mean there is no capacity to carry inflow due to storms, necessitating an alternate means to pass or store water that flows into the reservoir is required during spillway work.
 - Reservoir is drawn down to provide capacity within the reservoir to handle inflows from storms.
2. Work on the embankment (stump pulling/excavation) is invasive. Reducing the pool level provides safety.
 - Reservoir is drawn down to reduce the water level within the embankment and to reduce the water level below known seepage paths.



Reservoir Lowering

Potential Impacts & Proposed Mitigation for Residents and Visitors:

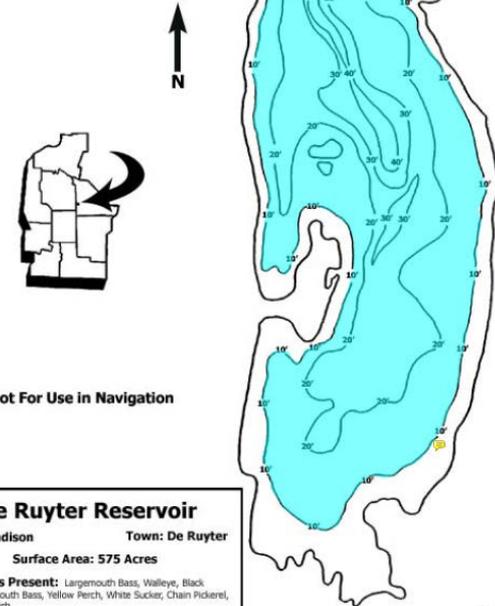
- Adverse impacts to Private Water Supply Intakes (from the reservoirs and potentially shoreline wells also).
 - *Provide portable washing/bathing facilities.*
 - *Mitigation for private wells/reservoirs including water deliveries.*
- Recreational Boating including access to boats (docks will not extend deep enough).
 - *Provide temporary secure docking facilities?*
- Potential for more frost heave (unknown).
 - *Opportunity to perform maintenance for features normally submerged.*
- Potential odor from exposed lake bed.
 - *Bulk of work performed in the winter which should help minimize impact.*

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources
Lake Map Series

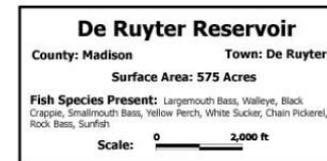


Region 7

De Ruyter Reservoir



Not For Use in Navigation



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Reservoir Lowering – Reservoir Full

(through Labor Day, 2019)



Timing of reservoir lowering and refilling dependent on hydrologic and other weather factors. Also assumes rehabilitation and use of former inlet channel.

Reservoir Lowering – Reservoir -10 ft

(January, 2020)

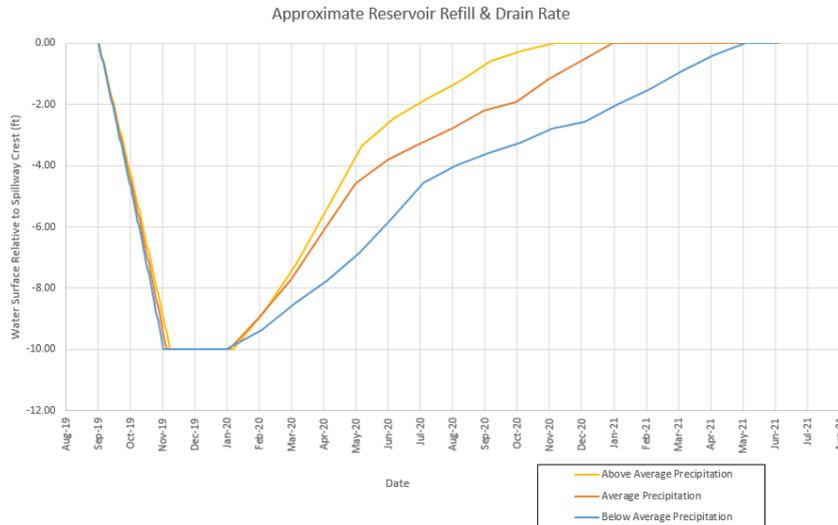


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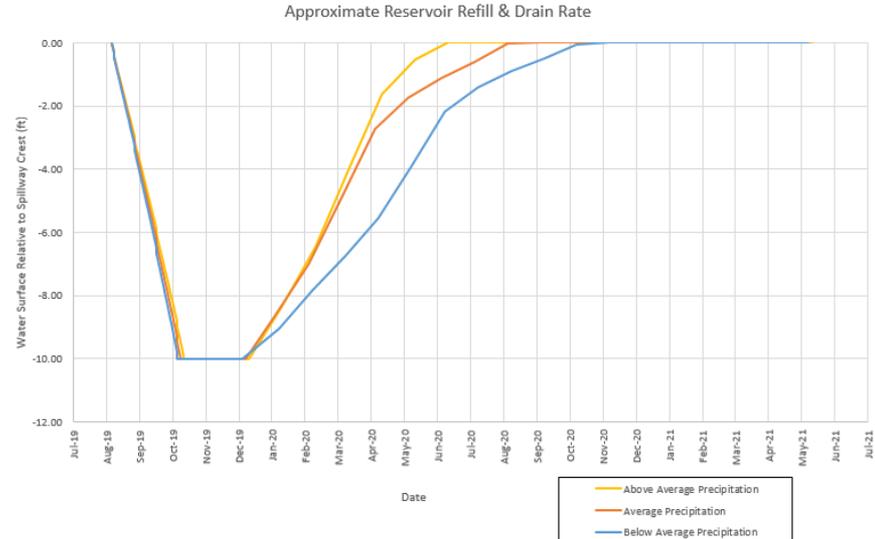
Inlet Diversion Feasibility Review

Why reactivate the inlet? Truncates time at reduced pool levels mitigating recreational, environmental and other impacts to the reservoir and surrounding community

DeRuyter Drainage Basin Only



W/ Tioughnioga Creek Diversions



Community Impacts

This project will have varying impacts to people with connections to the dam:

1. **Reservoir Residents and Renters**
2. **Downstream Residents**
3. **Transient Users** (Fishermen, Kayakers, Hikers, Birders, Nature Lovers)

Balancing the impact to these groups is the goal.

1. **Reservoir Residents and Renters** – Water level of the reservoir is likely the largest impact overall. Construction traffic, lighting and noise will have varying impact depending on location.
2. **Downstream Residents** – Provide for safety both for the dam in its permanent condition and during construction. This is the main reason for the project.
3. **Environmental/Recreation/Nature** (Fishing, Kayaking, Hiking, Birding, etc.) – Minimize impact on wildlife during construction and after the project.

Other Construction Impacts

Road Impacts/Traffic – The project requires a significant amount of fill material to be placed on site to buttress/fortify the embankment.

- *We anticipate including language and payment items to direct the contractor to minimize the impact in construction and repair any damage inflicted on local roadway infrastructure.*

Construction Noise and Light – There will be temporary changes to noise levels and lighting due to increased activity and the use of machinery.

- *The contract will include provisions such as work hour restrictions and machinery requirements to minimize the impact on the surrounding public.*

Dust & Debris – There will likely be some level of additional dust generated.

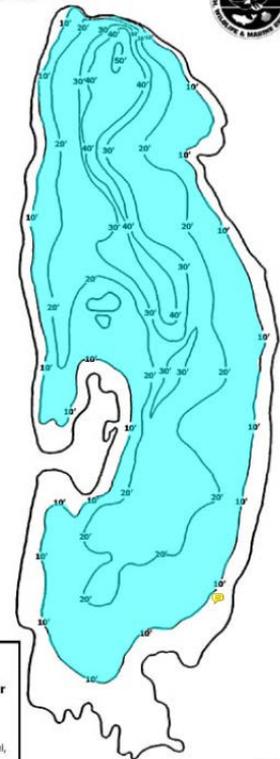
- *One of the important requirements for earthwork on a dam is the moisture content of the soil.*

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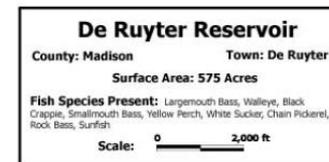


Region 7

De Ruyter Reservoir



Not For Use in Navigation



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Next Steps

Late February/ early March, 2019 – Public information meeting

May, 2019 – Second public information meeting

June, 2019 – Project Bid Advertisement

August, 2019 – SEQR and Permit Review Process Completion

August, 2019 – Contract Award

September, 2019 – Begin Reservoir Drawdown and Mobilization

Summer, 2020 – Reservoir water level restored