

Resource Management Plan

City of Brockton, Massachusetts

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**CDM
Smith**



Meeting Goals

- Provide an overview of the City of Brockton/Monponsett Pond Administrative Consent Order (ACO)
- Provide an in-depth review of the proposed DRAFT Scope of Work (SOW) for the Monponsett Pond Resource Management Plan (RMP)
- Respond to questions related to the RMP DRAFT SOW to ensure there is a clear understanding of its Goals and Deliverables
- Receive public comment related to the RMP DRAFT SOW

Agenda

- Issues facing Monponsett Pond
- Background
- Administrative Consent Order
- Resource Management Plan Scope of Work
- Questions and Comments



Issues Facing Monponsett Pond

Monponsett Pond

- Location
 - Halifax and Hanson, MA
- Area
 - East: ~250 acres
 - West: ~280 acres
- Depth
 - Average: ~7 feet
 - Maximum: ~13 feet
- Outlets
 - West: Stump Brook dam
 - East: Diversion to Silver Lake
- Culvert connects East and West ponds



Monponsett Pond

- Valuable Resource
 - Water Supply
 - Recreation
 - Agriculture
 - Ecological Habitat
 - Waterfront Residential Development
 - Aesthetic/Scenic



Monponsett Pond

- Issues
 - Water quality/public health (cyanobacteria blooms)
 - Flooding
- Impacts all uses
- Pond temporarily closed when cyanobacteria $\geq 70,000$ cells/ml
 - No bathing/boating/fishing
 - No water supply diversion



Monponsett Pond

- Pond impairment related to land uses
- Releases and withdrawals impact flushing
- TMDL (Draft) issued in 2016

Potential Nutrient Sources

- Septic systems/groundwater
- Stormwater runoff/fertilizers
- Cranberry bog discharges
- Natural forested wetlands
- Pond sediments

Monponsett Pond

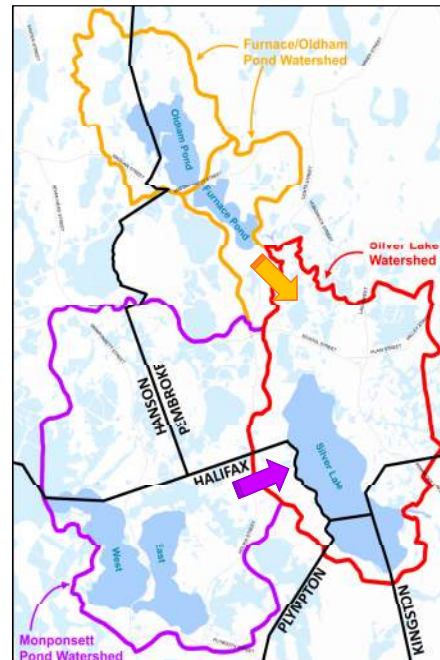
- Pond management
 - Reduce nutrient load
 - Balance uses
- Collaborative multi-faceted approach toward protecting/restoring pond uses
- Using available data to make informed decisions
- Shared resource/shared solution



Background

Silver Lake System

- Silver Lake System
 - Silver Lake
 - Monponsett Pond
 - Furnace Pond
- Water diverted from Monponsett Pond and Furnace Pond to Silver Lake for treatment and distribution
- Provides most of the water supplied to Brockton and others



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Monponsett Pond

- Withdrawals managed as required by the Acts
- Flood control assistance, at request of towns
- No diversions to Silver Lake if cyanobacteria $\geq 70,000$ cells/ml
- Installed new diversion control valve
- Improved stop logs in diversion structure, installed when not in operation
- Installed new solar gate actuator for Stump Brook fish ladder



New solar actuator

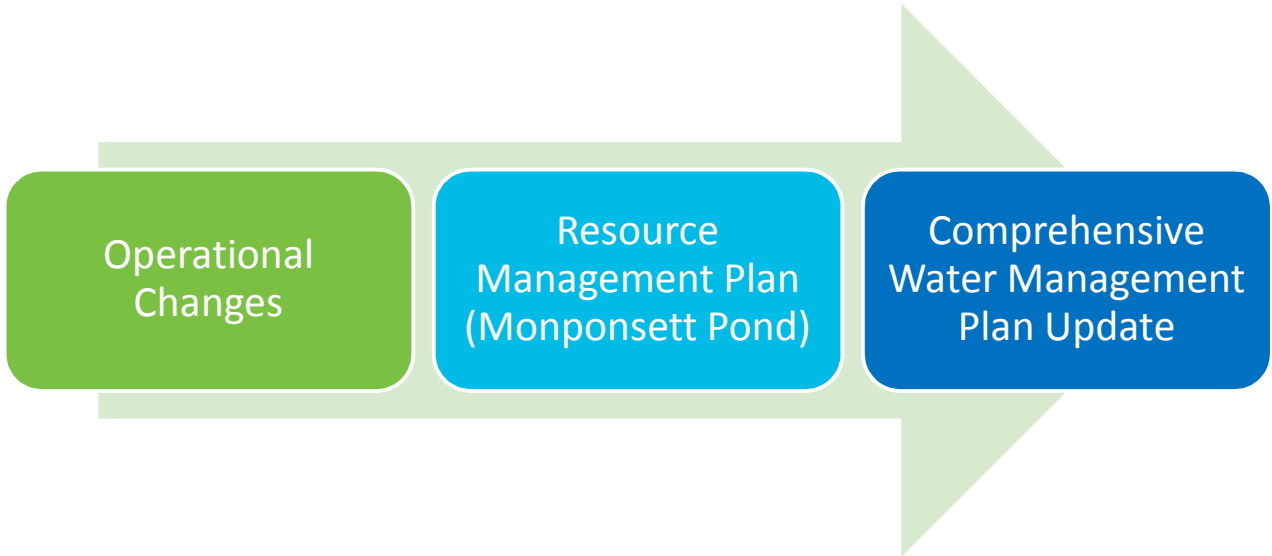


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Resource Management Plan

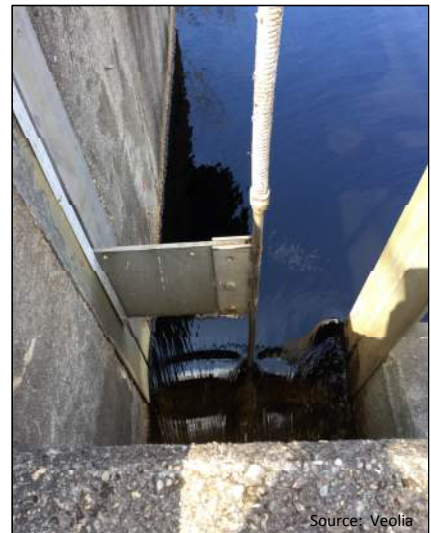
Administrative Consent Order



Administrative Consent Order

Operational Changes

- Documents modified operations
 - No diversions to Silver Lake if cyanobacteria $\geq 70,000$ cells/ml
 - Stop log improvements at diversion structure
- Continuous Stump Brook discharge of $\geq 900,000$ gpd
 - Acts require during diversions only
- Reduce diversion rate to 12 to 14 mgd
 - Roughly 50% of maximum rate
 - Reduces potential for flow from West pond to East pond



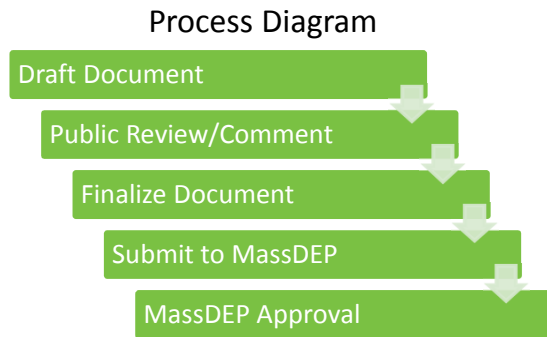
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Release to Stump Brook Fish Ladder

Administrative Consent Order

Resource Management Plan (Monponsett Pond)

- Plan to optimize pond level control and water supply withdrawals to protect all uses
 - Scope of Work
 - Plan Preparation



Administrative Consent Order

Comprehensive Water Management Plan (CWMP) Update

- Update 2009 CWMP data and findings
- Integrate use of all sources to minimize impacts
- Incorporate Resource Management Plan findings

Comprehensive Water Management Plan

- Water Supply Operations
- Demand Management
- Drought Management
- Emergency Response
- Environmental Protection

Administrative Consent Order – Deliverables

- Draft RMP Scope of Work/Public Comment
 - Final RMP Scope of Work Submittal
 - Draft RMP/Public Comment
 - Final RMP Submittal and DEP Review/Determination
 - Final RMP Implementation
- CWMP Update Scope of Work Submittal
 - CWMP Update Submittal for DEP Review/Determination



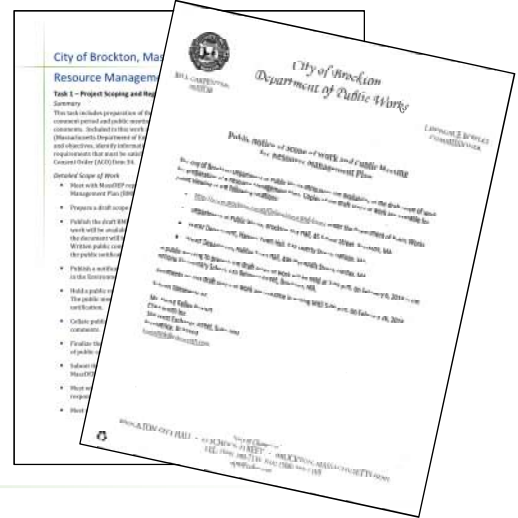
Resource Management Plan Scope of Work

The full scope of work can be viewed on the City's website at:
<http://www.brockton.ma.us/Online/docs-and-forms>
under the heading Department of Public Works

Resource Management Plan

Task 1 – Project Scoping and Regulatory Coordination

- Prepare and issue the draft scope of work for public review/comment
- Publish a public notice
- Hold a public meeting
- Receive public comments
- Finalize and submit the scope of work to DEP



Resource Management Plan

Task 2 – Document Target Pond Water Levels

- Define water level requirements for pond uses
 - Consult with state and local resources
- Review operating practices
- Recommend monthly target pond elevations and/or triggers to accommodate uses

Pond Uses

- Water supply
- Recreation (bathing, boating, fishing)
- Flood control/prevention
- Residential Development
- Support of cranberry cultivation
- Ecological habitat
- Aesthetic/scenic

Resources

- MassDEP
- MA Department of Fish and Game
- MA Department of Public Health
- Towns of Halifax and Hanson
- University of Massachusetts
- USGS
- Local watershed associations

Resource Management Plan

Task 3 – Research Historical Pond Elevations

- Compare historical pond elevations
 - Before use as water supply
 - During use as water supply

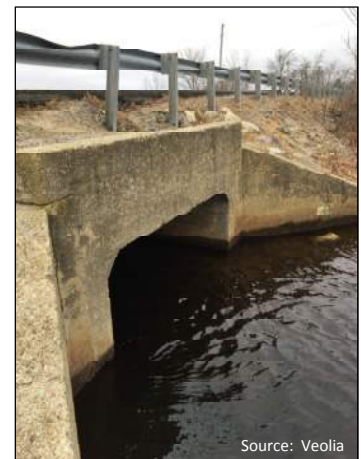
Hanover, MA USGS Quadrangle (1940)



Resource Management Plan

Task 4 – Collect Flow Data at the Route 58 Box Culvert

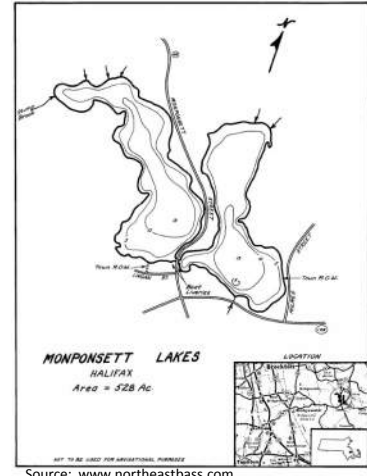
- Estimate flows and direction through the box culvert under varied conditions and seasons
 - Varied Stump Brook releases
 - Varied Silver Lake diversion rates
 - Flood control and/or pond flushing scenarios (as approved)
- Tabulate/graph findings
- Some studies considered could include brief periods of no release to Stump Brook



Resource Management Plan

Task 5 – Estimate Seasonal Releases to Stump Brook

- Evaluate impoundment and large springtime flushing releases to Stump Brook to minimize summertime blooms
- Estimates based on field reconnaissance and desktop assessment
 - Pond depth to volume relationship
 - Culvert role in flow patterns between ponds
 - Estimated surface and groundwater inflow rates



Resource Management Plan

Task 6 – Operating Procedures for Silver Lake Diversion and Stump Brook Dam

- Prepare separate documents for Stump Brook Dam and Silver Lake diversion structure
 - Based on Tasks 2 through 5
- Modify and expand current operating policies and procedures
 - Monthly target elevations
 - Operations goals, timeframes and triggers
 - Procedures and determinations (as required)



Resource Management Plan

Task 7 –Report Preparation and Public Comment

- Prepare draft Resource Management Plan
 - Based on Tasks 2 through 6
- Publish the draft document for public review/comment
- Publish a public notice
- Hold a public meeting
- Receive public comments
- Finalize and submit the RMP to DEP for review/determination



Questions? Comments?

Submit written comments by February 26, 2018:

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