Introduction

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Presentation Overview

- Project Context and Background
- Public Involvement Program
- Alternative Selection Process
- Stormwater Treatment System
Project Context and Background

Project Goal

• Identify and design a comprehensive stormwater and deicing management system to address concerns and ensure long-term compliance with NPDES requirements.
Project Context and Background

De-icing Fluid Components
- Freezing-point depressant (FPD)
- Water
- Additives

Environmental Implications
- B.O.D.
- Biofilms
- Odors
- Foaming
- Toxicity (additives)
Project Context and Background

Challenges

• Deicers & practices are regulated
• Materials are widely dispersed
• Deicing runoff is stormwater
• Controls much less than 100% effective
• Wide range of organizations involved in deicing operations
Project Context & Background

MDEQ Mandates
- BMPs
- Water Quality & Material Usage Monitoring
- Annual Reporting and Evaluation
- Refinements to improve overall performance
Project Context & Background

Biofilms remain an issue
Project Context & Background

NPDES

Additional Monitoring

Deicing Runoff Management Improvements

Long-Term Deicing Runoff Management Program Development Study

- Elimination of GFIA’s contribution to biofilm in the Unnamed Tributary
- October 1, 2015 completion
Public Involvement Program

GFIA/KCDA
- Open Book
- Education and Continuous Improvement
- Information on Web Site (flygrandrapids.org)
- Presentations and Tours (Staff)
- Newsletters, Annual Reports
- Social Media

NPDES and MS4 Permit Requirements
- Public Education
- Public Involvement/Outreach

NPDES Permit (2010)
- Study to determine the appropriate solution
Alternative Selection Process

Conduct Study to Select Alternative (September 2011)

Reviewed System Performance Requirements:
  Literature Review
  System Review
  Regulatory Review

Planning Charrette: (December 1-2, 2010)
  GFIA Stakeholders, MDEQ
  10 Alternative Concepts

Stakeholders Advisory Committee Process: (Not Required)
  Governing Agencies, Environmental Groups,
  Neighbors, Tenants, Airline Environmental Staff
Alternative Evaluation

- Eliminate GFIA’s contribution
- Environmental permitting
- Long-term reliability
- Implementation challenges

- Industry application
- Impact on operations
- Long-term reliability
- Training requirements
- Adaptability
- Implementation challenges

- Industry application
- Capital Costs
- O&M Costs
- Adaptability
Alternative Selection Process

From 10 to 4

- Relocate outfall to river & base-flow treatment
- Relocate outfall to river & continue collection
- CDFs and relocate outfall to river
- Seasonal high BOD flows diverted to river

Selected Alternative

- Incorporated components from each of the four alternatives and other voluntary measures

Design Commitments Made During Process

- Relocate outfall to river (guarantee compliance)
- Natural Treatment System (NTS)
- Base Flow Diversion (non-deicing season)
- Sedimentation Control/Maintenance
- Trash Collection
Selected Alternative

Relocate Discharge to Thornapple River with Treatment

Advantages:

• Eliminates GFIA contribution to nuisance biofilm in Unnamed Tributary
• Meets environmental standards
• Low complexity/high reliability
• Integrates with current operations
• Adaptable to change
Stormwater Treatment System

Components:
- Detention Basin
- Sedimentation Removal
- Trash Removal
- Natural Treatment System
Fly Smart. Fly Ford.
Detention Basin

- Restricted discharge (0.12 cfs per acre)
- 100 year flood combined capacity
- 900 acre tributary area
- 185 acre-ft storage volume
- Sediment and Trash Removal occurs in the basin
- Treats all flows from Primary Basin
Sediment Removal

Check Dams
- Remove first flush sediment
- Trap behind berms
- First berm has concrete pad for easy maintenance
Trash Removal

Trash Rack
- keeps solids out
- Removes submerged debris
- Large and small screens over inlet

Floating Log Boom
- Series of floating “logs”
- Block flow of floating debris
Natural Treatment System
Diffuser Discharge
Questions?