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Water Quality Monitoring Review

Presentation to the Regional Watersheds Advisory Board

September 20, 2017

Agenda / Discussion Points

- Summary of Monitoring Projects
- Key Questions for Board

Monitoring Activity 1- Summary

Activity Name:	HRM Corporate Monitoring Program
Duration:	2006 - 2011
Monitoring Frequency:	3 times annually – spring, summer, fall
# Sample Stations:	70
Parameters:	Nutrients, Inorganics, Metals, Biologicals
Purpose:	To establish current conditions of selected lakes and rivers, to assess changes in conditions over time, identify locations with water quality issues, among 8 other stated “benefits”
Description:	Water samples collected by HRM personnel to support infrastructure, planning, land use planning, and municipal operations
Uses:	No defined uses or processes applied to make data available for opportunistic use

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Monitoring Activity 1 - cont'd

Uses

- Data were formerly posted to the Halifax.ca website, making them publicly accessible
- Data analysis was performed on request but not formally part of program operations
- Formal data analysis was conducted after the program concluded
- Data stored predominantly in MS Excel files;
  - In latter years, data were also posted to a web-based data management system

Monitoring Activity Summary - 2

Activity Name: HRM Watershed Studies Program

Duration: 2006 – (last completed: 2015)

Monitoring Frequency: From 1 – 6 monitoring events, typically spring, summer, & fall

Sample Stations: Variable

Parameters: Nutrients, Bacteria, Metals

Purpose: To determine the carrying capacity of watersheds to meet water objectives defined in the studies

Description: Intended to serve as technical resources to guide community planning processes, to avoid problems with inadequate water sources (quality or quantity) for new developments and unacceptable impacts to watercourses resulting from them

Uses: Presented to Community Councils for approval as background to future “secondary planning processes” – i.e., the development of new community planning strategies or amendment of existing ones, and associated land use by-laws

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Monitoring Activity 2 – cont'd

Uses

- All studies were accepted as intended by Community Councils
- Approved watershed studies were published online and were regularly consulted by planning staff as needs arose
- In no areas were water quality objectives formally adopted by HRM Policy or were recommended water quality monitoring programs put in place
- In some cases recommendations could not be adopted because: they had not been made part of Planning policy, or because the Municipality's corporate monitoring program had ceased operations

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Monitoring Activity Summary - 3

Activity Name:	Blue Flag Beach Monitoring Program
Duration:	2013 - ongoing
Monitoring Frequency:	Once weekly during summer season, July 1 – August 31
# Sample Stations:	1 or 2
Parameters:	Enterococci
Purpose:	To meet Canadian Blue Flag criteria guidelines, to qualify Birch Cove Beach for annual re-certification
Description:	Collection and reporting of Enterococci results at Birch Cove Beach
Uses:	to meet the standard requirements for Blue Flag Criteria 7 & 8

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Monitoring Activity Summary - 4

Activity Name:	Development Monitoring
Duration:	Dependent on development phasing and timeline
Monitoring Frequency:	Typically seasonal – 3 or 4 times annually
# Sample Stations:	4 (Russell Lake); 11 (Bedford West)
Parameters:	Nutrients, Inorganics, Metals, Biologicals
Purpose:	To determine a pre-development baseline, identify water quality changes during and immediately following the development period, and assess any apparent trends
Description:	Contractors completed sampling activities and submitted seasonal reports based on prescribed project requirements. Trophic level exceedances reported to Developers & Community Council
Uses:	To assess whether the development is negatively impacting the monitored watercourse, to identify any contaminant sources, and to prompt changes to development practices as required based on findings and assessments
Notes:	Monitoring also conducted at Brunello Estates, Twin Brooks, Lost Creek Village

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Monitoring Summary 4 – cont'd

Russell Lake Monitoring Summary

- Ran 2006-2013
- Water quality results exceeding the Dartmouth MPS TP objectives triggered a Policy Review by DLAB in 2012
- DLAB noted that existing MPS policy is progressive but could be improved in two main areas:
  - Erosion & Sediment Control
  - Green Infrastructure / Remediation
- Select Recommendations:
  - WQM should include deep TP, DO/temp profiles, flow rates
  - Future WQM programs should include a mechanism to provide more specific and forensic data for decision support if program indicates objectives compromised

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Monitoring Summary 4 – cont'd

Bedford West Monitoring Summary (Kearney + Paper Mill)

- Initiated 2008 and still underway
- 8 of 12 sub areas already under development
- High TP levels 2010-2013 triggered a watershed assessment
- Watershed Assessment recommendations:
    1. Use Chlorophyll A as trophic state indicator, not TP
    2. Resume deep station sampling
    3. Developments shouldn't be regulated based on trophic state indicators in a lake
    4. Undertake targeted studies to validate
        1. P export coefficients
        2. BMP treatment performance

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Monitoring Activity Summary - 5

Activity Name:	Planning Processes Supplement
Duration:	2015 - 2017
Monitoring Frequency:	3 x annually (spring, summer, fall)
# Sample Stations:	Approximately 15 per year
Parameters:	Nutrients, biologicals, TSS, chloride, DO, pH, conductivity, temperature
Purpose:	To provide water quality data to Planning & Development staff in support of scheduled community planning processes, supplementing the results of the former corporate program
Description:	Contractors collected water quality samples at designated sites within 1 or 2 communities per yr
Communities:	Port Wallace(Dartmouth), Regional Centre, Fall River, Porters Lake, Middle Sackville

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Questions for Consideration

1. Why should HRM have a water quality monitoring program?

2. If a program is developed, what should it achieve?

3. If a program is developed, how should HRM assess whether the program is achieving its aims?