

MADAWASKA WATER DISTRICT ST. JOHN RIVER WATERSHED

EXECUTIVE SUMMARY

The Madawaska Water District serves approximately 3,000 people from its water supply intake located in the St. John River in the Town of Madawaska, Maine. The entire river watershed extends into northern and western Maine and into Canada. The large watershed results in significant flows down the river past the area of the intake. The local watershed in Madawaska and Frenchville up to one mile upriver from the intake is approximately 85 percent forested. Roadways and rail lines, which follow along the river shoreland, represent the main corridors of mixed residential and commercial development. Residential land uses also extend back up into portions of the watershed and in some areas have displaced agricultural uses.

Land uses in the local watershed include potential threats from both point and non-point sources. Potential releases from bulk product rail cars due to mechanical failure or derailment pose a threat. Runoff from sites identified along Route 1 as potential threats include auto service facilities, an auto salvage yard, petroleum storage and mining. Throughout the larger river drainage basin are other urban centers, which contribute runoff impacts and discharges from wastewater treatment plants. Turbidity and color become elevated in the river in the summer and fall and is likely related to runoff conditions in the watershed. Bacteria may be present in the event of poorly operated wastewater treatment facilities. The river meets the Class B water quality classification.

Land areas in the local watershed in Madawaska have little protection other than 250-foot Shoreland Zoning. Land is held mostly in private ownership except for a small parcel of Water District property located along the shore at the intake pump station. The area upriver from the intake is used on a limited basis for recreational activities.

Based on the SWAP evaluation, the overall susceptibility of water quality in the river is ranked low to moderate. The low ranking relates to the general rural character of the region and low density of development. In addition, the susceptibility is mitigated by high volume flows, which buffer runoff water quality through dilution. The moderate ranking is related to diminished water quality at low flow, active rail traffic near the intake, upstream wastewater treatment plant discharges and the presence of limited land use controls in the local watershed. The overall susceptibility is also related to the fact that potential land use threats located throughout the river basin in Maine and Canada are outside the limits of local community controls.

SWAP RANKING AND RECOMMENDATIONS

The SWAP assessment factors indicate that overall susceptibility of the water quality in the river is low to moderate. This ranking is based on the available water quality information (e.g., turbidity and color), proximity of rail line service to the intake, wastewater treatment plant discharges located on the river and the lack of local land use controls (i.e., ownership and zoning). The susceptibility is mitigated, in part, by the large size of the river and large volume of flow, which buffers water quality through dilution. In addition, a majority of the river drainage basin is largely undeveloped. Specific factors considered in assessing the overall risk are summarized below.

ST. JOHN RIVER SURFACE WATER ASSESSMENT

| Zone | Measure | Findings | Risk Level |
|----------------|--|--|---------------------|
| Watershed | Ambient Water Quality Existing Conditions | Attains Class B Local runoff from commercial, residential and agricultural areas. Watershed land use controls lacking. Wastewater treatment plant discharges upstream. | Low Low-Moderate |
| | Future Development | River flows provide dilution buffer. Future development potential along roads located close to the urban center; mostly rural setting with low pressure. Zoning controls and land under protective status lacking. | Low-Moderate |
| | Overall | | Low-Moderate |
| Shoreland | River Classification Soils | Undetermined Steep slopes and soil types are prone to erosion, (Allagash 2-8%, Plaisted 25-45%). No identified exposures of erodible soils. | N/A Low-Moderate |
| | Activities Posing a Threat | Rail line use with bulk chemical transport. Direct runoff from Route 1 and commercial areas. | Low-Moderate |
| | Potential for Future Threats | Growth outward from urban areas; limited shoreland zoning controls. | Low-Moderate |
| | Overall | | Low-Moderate |
| Intake | Raw Water Quality | Turbidity and color are identified problems in the summer and fall; these conditions vary with river flows. | Low-Moderate |
| | Ownership/Control | Intake area shoreline with limited ownership and control. Access by water is not limited, but recreational use is minimal. | Low-Moderate |
| | Activities Posing a Threat Potential for Future Threats | Limited recreation. Unrestricted access. | Low Low |
| | Overall | | Low-Moderate |
| Overall | | | Low-Moderate |

Recommendations

The overall ranking for the source susceptibility to potential threats is low to moderate. The Water District can provide added protection to the source water quality as follows:

- Continue to monitor raw water quality and consider expanding the list of test parameters to more fully characterize the source.

- Consider placing one or more signs on the shore near the intake area and along Route 1 to make the public aware of the water supply and need for protection.
- Develop an understanding with the railroad to protect the water supply from potential spills of bulk products (e.g., fuels, chemicals, etc.) from rail cars traveling along the tracks upstream from the intake.
- Work with the local community to establish more comprehensive water resource zoning protection and other strategies (i.e., easements, agreements, etc.) to control and mitigate development impacts on surface runoff.
- Maintain an awareness for land use and potential new threats that may develop in the greater watershed area in the U.S. and Canada in order to be recognized as a stakeholder in the decision making process.

MARCH 2003

prepared for

Source Water Assessment Program
 Drinking Water Program
 Maine Department of Human Services
 11 State House Station
 Augusta, Maine 04333



prepared by

Drumlin Environmental, LLC
 15 Franklin Street, P. O. Box 392
 Portland, Maine 04112-0392
 (207) 771-5546