Regulatory Applications of Real-time Water Quality Data in Newfoundland and Labrador

8th National Monitoring Conference
Portland, Oregon
April 30th – May 4th, 2012

Presented by: Ryan Pugh
Newfoundland and Labrador ... most days are beautiful!!!!!
Newfoundland and Labrador......

when Andy Ziegler visited in June 2011!!
Expanding Development in Newfoundland and Labrador

Photo from Teck webpage

Photo from Vale Newfoundland & Labrador webpage

Photo from IOC webpage

Photo from Labrador Iron Mines webpage

Photo from Tata Steel Minerals Canada webpage
If you cannot measure you cannot manage
Partnership and Collaboration
Early Warning System

![Graph showing turbidity levels with alerts]
Regulatory Tools

► Systematic QA/QC Program
► Transparent Web-based Reporting
► Automated Email Alert System
► Categorization of Risk Associated with Alerts
► Prediction of Non-measured Parameters (Turbidity vs. TSS)
► Calculation of Site-specific Guidelines for pH
► Compliance Monitoring around Tailing Impoundment Areas
Systematic QA/QC Program

Transparent Web-based Reporting

Transparency and accountability is the cornerstone of the NL Real-time Water Quality Monitoring Program

Automated Email Alert System

► Implemented an auto-alert system (through email) that notifies industry and government personnel when turbidity values have risen above a specified trigger.

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Station Number &amp; Name</th>
<th>Turbidity Value Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Jan-05-2010 2:30:09 AM</td>
<td>WFO22K0023 - Rattling Brook below Bridge</td>
<td>113,9000</td>
</tr>
</tbody>
</table>
Categorization of Risk Associated with Alerts

Categorization of Turbidity Alerts

- Category 1
- Category 2
- Category 3

Alert Limit = 40 NTU
Prediction of Non-measured Parameters
Turbidity vs. TSS

- There is no regulatory limit established in NL for turbidity, however there is a compliance limit in receiving waters for total suspended solids (TSS) – 30 mg/L.

- Using statistical analysis, turbidity measured from the continuous monitor can be used to predict the approximate TSS concentration.

- This work has led to a new policy being implemented on select industrial sites whereby Environmental staff are required to investigate and collect additional grab samples when predicted TSS values are approaching the regulatory limit.
NL water bodies are naturally acidic thus site-specific guidelines were calculated and applied to the reporting mechanism to better understand when water quality events are occurring.
Compliance Monitoring around Tailings Impoundment Areas

► Groundwater wells that monitor water quality and level in real-time are being installed around Tailings Impoundment Areas associated with major industrial operations.
Partnership between government and industry can minimize the impact to aquatic ecosystems due to surrounding development.
Path forward
4th Real-Time Water Quality Workshop
to be hosted in
St. John’s Newfoundland & Labrador
in June 2013

All Are Welcome!!!

Previous workshop proceedings can be viewed at:

In Newfoundland and Labrador you never know what you will encounter in the field...
Some days are brighter than others…
...but the work continues!!!
It’s a team effort!!!!
Thank You

Various program supplementary documentation is currently in preparation and will be posted to the following webpage as they become available: