Greater Sudbury
Watershed Alliance

2013 09 30

Terry Kett, Councillor

City of Greater Sudbury

Dear Terry,

Thank you for your attendance at the GSWA Storm Water Management sub-committee meeting on Monday September 16, 2013. Your input was invaluable and it was obvious you were looking for some solution to the storm water management issue regarding the Woodland St. development. We also appreciate your invitation to Ron Norton, City of Greater Sudbury Drainage Engineer. His presence helped us all see the issue from both sides. We are aware the issues are complex.

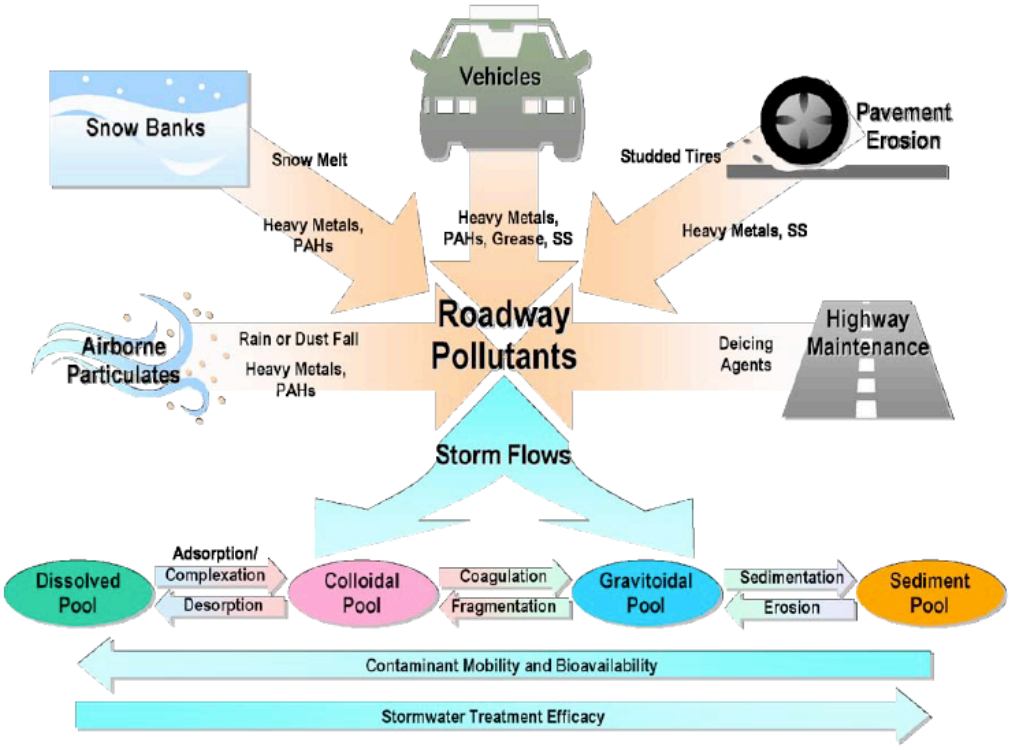
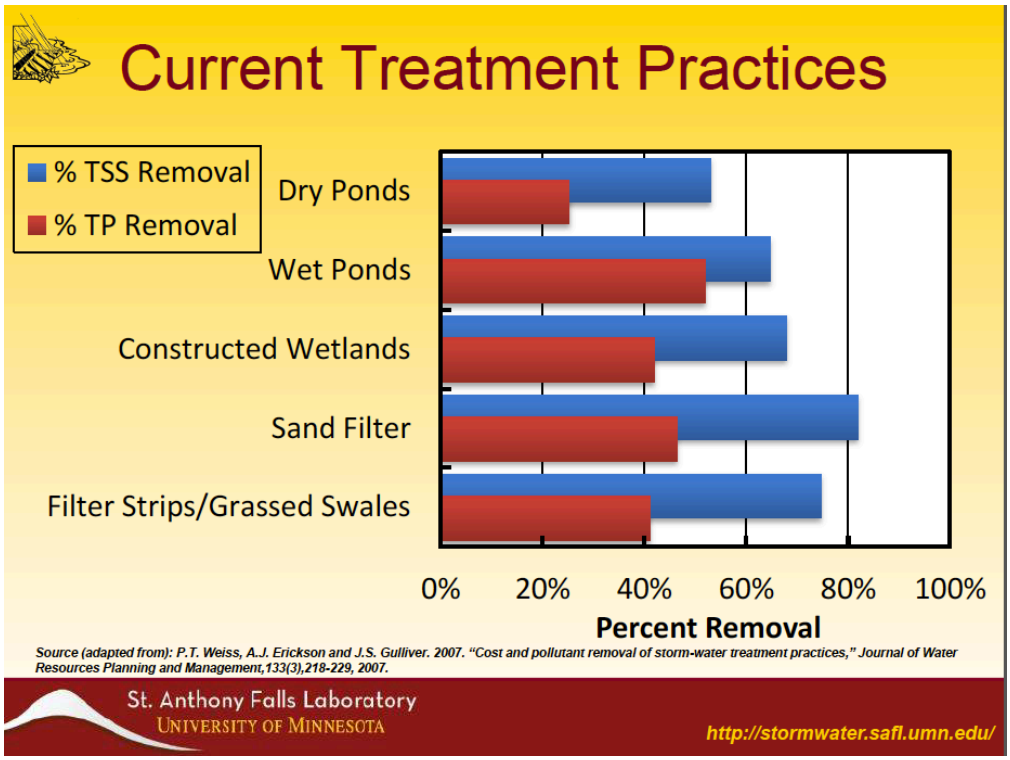


Figure 1.3
Conceptual framework for the role particles play in affecting the fate, Transport, and environmental impact of contaminants in stormwater.

As seen in the diagram above, there are many polluting components in storm water runoff which storm water management facilities help to address. Here is the situation as we see it:

- According to the MOE **Storm water Management Planning and Design Manual, 2003, "Urban development without watershed/sub watershed planning is discouraged because of the difficulty in addressing many environmental impacts at a plan of subdivision or site plan level."** Ramsey Lake does not have a watershed plan at present.
- Also, the Greater Sudbury Drinking Water Source Protection Plan has identified Microcystin LR as a drinking water issue. Microcystin LR is a toxin produced by some cyanobacteria (also known as blue-green algae) and is listed as parameter in the Ontario Drinking Water Quality Standards. High levels of phosphorus tend to promote cyanobacteria growth, therefore phosphorus inputs to Ramsey Lake are associated with this issue. (Greater Sudbury Source Protection Area – Proposed Source Protection Plan July 9, 2012 – Section 6.2.2 Drinking Water Quality Threats – Issues Evaluation)
- Ontario Ministry of the Environment **Enhanced Protection** corresponds to the end-of-pipe storage volumes required for the long-term average removal of 80% of suspended solids. **This should be the standard for the entire Ramsey Lake watershed.**
- The results of Storm water Management Facilities performance studies indicate a fair consistency for most end-of-pipe SWMP types (typically 60-80% total suspended solids (TSS) removal and 40-50% total phosphorus (TP) removal).



- The *Stormceptor* has mixed reviews in some of the literature regarding their effectiveness. See attached Fact Sheet published by the State of Massachusetts. Removal efficiencies of Total Suspended Solids have been tested at between 52 and 77 percent. Many recommend that Stormceptor systems be used in combination with other BMPs to remove 80 percent of the average annual load of TSS to achieve MOE enhanced treatment standards.

- A colloid is a solution that has particles ranging between 1 and 1000 nanometers in diameter. These particles are so small that they remain dispersed and do not settle. The colloid phase contains phosphorus and heavy metals. Unfortunately, pollutants in dissolved form or associated with colloids are especially mobile in the aquatic ecosystem, are more available for biological uptake and do consequently have a higher potential for causing eco-toxic impacts on the receiving water bodies and contributing to blue-green algal blooms.
- There is a mixture of views on the effectiveness of sand filters for removal of colloids. One study by David H. Manz, P.Eng. 2073 Cannon Rd., Calgary AB T2L 1C5, reports that both slow sand filters and demand operated sand filters show limited ability to remove colloid-sized particles. According to a CMHC publication sand filters might be effective in removing colloids but are said to be problematic in the winter (www.cmhc-sch.gc.ca).
- Maintenance of sand filters and other nonstandard measures for water quality control, on the part of the city is difficult in that it imposes a time commitment and is not necessarily built into present budgets.
- Wet ponds for storm water treatment have an excellent pollutant removal performance with respect to particulate matter. However, the removal rate of dissolved and colloidal pollutants is comparatively low (Vollertsen et al., 2007).

It would seem that no one storm water management system can effectively protect Ramsey Lake from all storm water pollutants. As a consequence, the GSWA would like to suggest that the following ideas be considered:

The planned Watershed Study of Ramsey Lake should begin immediately, build on any existing data and:

1. **The best option would be to have development await the completion of the watershed study.** But, if development is to go ahead, we recommend that a minimum of 80% of TSS be removed by any adopted system to be used in the Ramsey Lake watershed and that a consortium of the City of Greater Sudbury Drainage Department, Lake Water Quality Program, the Source Protection Authority, Living with Lakes scientists and the developer work together to set up a systematic monitoring approach to assess the effectiveness of removal of Total Suspended Solids and, more importantly, colloids. We are recommending this trial as a beginning of serious investigation of the Best Management Practices for storm water for the City of Greater Sudbury. Our thin soil, rocky shores, current smelting operations and historically degraded environment make this area unique, so our strategies for storm water management will need to be unique as well.

2. The Lake Water Quality Program become involved in more intensive monitoring of Lake Nepahwin at the outflow of the *Stormceptor* enhanced storm water outlets. This monitoring could include the same methods used to monitor Ramsey Lake and likely include total phosphorus and heavy metal analysis. Again this would give a research based answer to the effectiveness of the *Stormceptors* in our area and help create a 'Made in Sudbury' solution.

Please contact me if you wish to discuss this further.

Sincerely,

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cc: Ron Norton, City of Greater Sudbury Drainage Engineer
Tony Cecutti, City of Greater Sudbury Manager of Infrastructure
Stephen Monet, Manager of Environmental Initiatives
Source Water Protection Committee, c/o Judy Sewell
Sig Kirchhefer, Consulting Engineer to Woodland St. Development