Junction Creek Stewardship Committee Inc.
30 Ste. Anne Road, #B4
Sudbury, Ontario, P3C 5E1
T: 705-525-8736 F: 705-674-7939
E: info@junctioncreek.com
W: www.junctioncreek.com

Comité d'intendance du ruisseau Junction
30 Rue Ste. Anne, #B4
Sudbury, Ontario, P3C 5E1
T: 705-525-8736 F: 705-674-7939
E: info@junctioncreek.com
W: www.junctioncreek.com

February 10th, 2020

Paul Javor, MASc, P. Eng.
Drainage Engineer
City of Greater Sudbury
200 Brady Street, 2nd Floor
Sudbury, ON P3A 5P3
Tel: 705.674.4455 x 3691
E-mail: Paul.Javor@greatersudbury.ca

Mauricio Del Olmo Gil, M.Eng., P.Eng.
Consultant Project Manager
Wood Environment & Infrastructure Solutions
131 Fielding Road
Lively, ON P3Y 1L7
Tel: 705.682.2632
E-mail: mauricio.delolmogil@woodplc.com

RE: Junction Creek Subwatershed Study and Stormwater Master Plan – Final Report

Dear Sirs,

Thank you for the opportunity to provide comments on the 'Junction Creek Subwatershed Study and Stormwater Master Plan Report', and for committing to continue community engagement throughout the study process.

Streams, lakes and their riparian systems provide essential natural features and values to society. By promoting a clean, healthy environment it also promotes long-term economic viability. The Junction Creek Stewardship Committee recognizes the importance of watershed planning for the long-term ecological and economic integrity of our urban water bodies, and offers a perspective from the ongoing struggles of the restoration and protection of the Junction Creek watershed.

Over the past 20 years, the Junction Creek Stewardship Committee has established long-term monitoring programs and research to build a database and gain a better understanding of the restoration needs of the Junction Creek watershed. We offer natural heritage knowledge about the watershed and provide educational awareness programs to the public. It is through collaborative work with local experts and the community that we credit our achievements - involving the community and sharing resources is integral to the long-term growth and rejuvenation of Greater Sudbury. We welcome the opportunity to act as a community partner to offer expert input and assistance throughout the planning, execution, and monitoring of projects in the Junction Creek watershed.

We would like to provide the following comments for consideration in regards to the Junction Creek Subwatershed and Stormwater Master Plan Report (SWSMP). Our comments consist of

recommendations for further protection and enhancement of the watershed, as well as suggestions for improving the effectiveness and clarity of the watershed plan.

Recent review of the Provincial Watershed Planning guides has provided insight into the components that make a successful watershed plan. Keeping in mind the role and purpose of a watershed plan during the review of the presented SWSMP, there were sections that lacked clarity and presented opportunities for improvement.

Summary of comments and recommendations

- We applaud the Natural Heritage Study and support the recommendations and programs.
- Additional information to include in the Junction Creek Subwatershed Study.
- Subwatershed Steering Committee that encompasses watershed custodians.
- Develop set action plans and targets to fulfill Study objectives.
- Guiding principles focused on proactive, innovative, and adaptive approaches.
- Being a leader in environmental rehabilitation, protection, and enhancement.
- Integrate climate resilience.
- Align Master Plan with goals and objectives.
- Handle Stormwater Master Plan Options (section 11.0) on a case-by-case basis in a separate document.
- Establishing policies to protect and enhance the watershed.
- Focus on ecosystem based projects that go beyond engineered proposals.
- The project options need to clearly outline: how they relate to the Master Plan objectives (water quantity, water quality, and natural environment); how they address identified areas of concern and recommendations; and what their implications are.
- Options should neither result in the impairment of water quality nor degradation of riparian and aquatic habitat.
- Cold water seeps/springs need to be identified and protected prior to the commencement of any projects in the vicinity of habitat identified for re-establishing Brook Trout, in particular Twin Forks, Maley, and Garson.
- Rehabilitation projects that will help cool the water temperatures and improve fish habitat in the upper reaches of Junction Creek should be a priority to support the re-establishment of Brook Trout.
- Option ‘E’ negatively impacts a Highly Sensitive Natural Feature that needs protection and does not align with the objectives of the Master Report, and should therefore be removed as an option from the project list.
- Proactive strategies to manage siltation should be a main focus for reprofiling Junction Creek downstream of Ponderosa, paying special attention to: the protection and enhancement of in-stream and shoreline habitat; preservation of mature trees; and maintaining connectivity of the Junction Creek Waterway Park trail during and after construction.
- We are pleased to see the inclusion of re-greening in the options, and fully support it as the top priority.
- More options that address water quality and the natural environment.
- A more extensive list of criteria to evaluate project options.
- Clarity needed for decision makers and the public.

I. JUNCTION CREEK SUBWATERSHED STUDY

Having a thorough understanding of the subwatershed is integral for watershed management and conservation. Even a small change in one location within a watershed has potential implications to many other natural features and processes that are linked by the movement of surface and ground water.

We applaud the Junction Creek Subwatershed Study as it will prove to be a valuable resource in many aspects of watershed management, enhancement and protection. The Study will be beneficial: as an educational tool for informing stakeholders and the community; a reference source for focusing future monitoring and research efforts to fill data gaps; and to assist in science-based decisions to plan restoration projects. **We support the recommendations derived from the Study and the programs listed in section 12.3.**

Additional information to include in the Junction Creek Subwatershed Study:

It is important to identify areas of concern in order to prioritize and focus management efforts. Having the following information illustrated on the watershed map would prove useful:

- Conditions of riparian habitats to depict locations and extent of any known areas of degradation that require restoration
- Pollution sources (point and non-point), including stormwater systems and their rating as a pollution source
- Water quality and stream health (based on water chemistry and bio-indicators)

Subwatershed Steering Committee that encompasses watershed custodians

Based on the extensive data that various groups have contributed to the Study, it is apparent that a dedicated team is required to coordinate data collection in the Junction Creek watershed. **Developing a strategy that organizes stakeholders and offers opportunities to network, access data, coordinate research projects and long-term monitoring programs would be more efficient and cost-effective**.

A steering committee, consisting of a diverse representation of local experts and community partners that have the capacity, knowledge, and/or skills to contribute to the study, would allow for the effective planning of natural heritage assessment and monitoring of the Junction Creek watershed. By working together, the committee would ensure unnecessary replication of field work, delegate roles for watershed custodians to fill data gaps, and share resources and equipment. Their responsibilities could also extend to the Watershed Plan to integrate recommendations from the Study, set action plans and targets, review and endorse project opportunities and implications for the protection, enhancement, rehabilitation and development of the Junction Creek watershed, and develop a method for project monitoring and compliance with the Master Plan.

Develop action plans and targets to fulfill Study objectives

Upon reviewing the report, there was an apparent disconnect between the Subwatershed Study and Stormwater Master Plan. Part of this reason is that there are no set action plans and targets provided to ensure that objectives and goals are fulfilled.

Goals and Objectives as Stated in the Study

"The main intent of the Study is to establish measures to protect, maintain and enhance surface and groundwater quantity and quality through the implementation of integrated strategies and policies to support the realization of a practical and executable management plan."

"The main objectives of this Study are to:

i. Protect and manage quantity and quality of surface water and groundwater resources;
ii. Mitigate or minimize the risk of flooding and erosion in the Subwatershed;
iii. Preserve natural hydrological and hydrogeological systems;
iv. Identify the aquatic, wetland and terrestrial resources that should be protected or enhanced;
v. Produce an implementation plan and identify specific projects needed to achieve the goals identified by the Subwatershed Study;
vi. Provide recommendations for the responsible management of the ecosystem on a subwatershed level;
vii. Develop a monitoring plan, including key indicators needed to assess the measures implemented to allow for adaptive management and to guide future activities in the subwatershed; and
viii. Develop a reporting plan to communicate the results of the study, plan implementation, monitoring and future activities."

The presented SWSMP lacks detail and clarity for steps being taken to reach objections 'v' (implementation plan), 'vii' (monitoring plan), and 'viii' (reporting plan). **Establishing targets for all objectives and providing more detail about the implementation, monitoring, and reporting plans as set-out in the Study objectives, should be completed prior to accepting proposed project options.**

II. STORMWATER MASTER PLAN

A watershed plan protects and enhances the form and function of the aquatic environment. Long-term sustainability, and the anticipation and prevention of environmental issues are important features of watershed planning for both the benefit of the environment and economy.

The Stormwater Master Plan under review is only a fraction of what is required for a complete watershed management plan. **It is recommended that an all-encompassing Watershed Management Plan be developed;** in which stormwater would be one of the subsections.

The plan should provide directions for screening and selection of Best Management Practices for the watershed, and include principles for guidance. Commonly accepted principles to consider include:

- Ecosystem based approach
- Landscape based analysis
- Precautionary approach
- Adaptive management
- Sustainable development
- Collaboration and engagement
- Recognition of indigenous communities

Emphasis should be made in developing proactive, adaptive, and innovative approaches to consider the unique dynamics of Sudbury's landscape and ecosystem.

Being a leader in environmental rehabilitation, protection, and enhancement

Recovering from a black, barren landscape, Sudbury has been an exceptional and inspirational example of environmental restoration; using innovative techniques and skilled local experts to continue to attain the inconceivable while thriving as a community. Sudburians take pride in being part of the success story and subsequently they put great value on the protection of natural features. This environmental leadership should be continued in Sudbury's watershed management.

Climate Resilience

Watershed planning should be done for worst case scenarios under the most accepted climate change predictions. Accurate modeling and planning is critical for validating projected outcomes of proposed projects. It is recommended to undertake additional climate change studies to address the limited understanding of the anticipated influence of climate change on precipitation projections, and to plan for climate resilience.

Align Master Plan with goals and objectives

A watershed management plan is shaped by the results and recommendations of the Subwatershed Study, outlining the steps that will be taken to meet the plan's objectives. The actions and deliverables established in the plan can then be used to assess the suitability of proposed watershed management projects.

Goals and Objectives as Stated in the Report

"The main goal of the Junction Creek Subwatershed Study and Stormwater Master Plan is to develop a longterm plan that will provide policy and management actions to protect, maintain and enhance the surface water, groundwater and natural resources of Junction Creek and its tributaries.

The objectives of the Junction Creek Subwatershed Study and Stormwater Master Plan include the following:

Water Quality

- *Improve surface water and groundwater quality.*
- *Minimize pollutant loadings to surface water and groundwater.*
- *Improved aesthetics of Junction Creek and its tributaries.*

Water Quantity

- *Preserve and re-establish the natural hydrologic processes to protect, restore, and replenish surface water and groundwater resources.*
- *Reduce the impacts of erosion on aquatic and terrestrial habitats and property.*
- *Minimize the threats to life and property from flooding.*

Natural Environment

- *Protect, enhance and restore natural features and functions of wetlands, riparian and ecological corridors.*
- *Improve warmwater and coldwater fisheries as appropriate."*

To align Master Plan with stated goals and objective, it is recommended that action plans for each objective be clearly outlined with set targets and restraints, and that an evaluation system be developed to assess suitability of proposed projects in relation to the objectives.

To save time and allow for adaptability, it is suggested that the proposed projects listed in the Stormwater Mater Plan Options (section 11.0) be handled on a case-by-case basis in a separate document.

III. PROJECT OPTIONS

To ensure protection and enhancement of the environment, projects should align with watershed plan objectives and neither result in the impairment of water quality nor degradation of riparian and aquatic habitat. Prior to being listed as options, proposed projects should first be evaluated by a steering committee to assess their compatibility with watershed plan objectives and potential implications.

With the exception of the re-greening and restoration options, most of the proposed project options listed in section 11.0 contradict the Plan's objectives, creating a disconnection between the Subwatershed Study and Stormwater Master Plan. **The project options should clearly outline: how they relate to the Master Plan objectives (water quantity, water quality, and natural environment); how they address identified areas of concern and recommendations; and what their implications are.**

Establishing policies to protect and enhance the watershed

Set policies are important to protect sensitive and valued features identified in the Study and to enhance the watershed. Policies should coincide with requirements for Environmental Assessments, project monitoring, auditing, mitigation strategies, and maintenance plan. Recommended policies to protect and enhance the watershed include:

- Protection of Sensitive Natural Features.
- Preservation of tree cover and riparian habitat.
- Retaining permeable surfaces.
- Enhancing stormwater capture and infiltration.
- Prevention of runoff contaminants.
- Promotion and support of green infrastructure and low impact design solutions.
- Water reclamation through increased efficiency and water conservation.
- Enhancing stream and riparian habitat.
- Project restoration and rehabilitation activities should consult with local experts and watershed custodians in the design and implementation process.
- Restricting projects in areas in which data gaps need to be filled to identify important habitat features (ex. cold water seeps and springs, which are critical for Brook Trout survival and spawning habitat).
- Integration of targeted citizen stewardship, public engagement and educational programs.

Feedback for Proposed Options

As suggested in the Ontario Ministry of Environment Subwatershed Planning guidance documents, it is strongly recommended that projects utilize environmentally responsible approaches which are

ecosystem based and go beyond engineered proposals. This will help to ensure relevant ecosystem considerations and natural processes are captured.

Most of the proposed options lack clarity in how they alignment with the watershed plan objectives and will integrate subwatershed study recommendations. Including a distinct section listing these features would be helpful for decision makers.

'Social/cultural considerations' for proposed options could be explored further to include more information, such as the implications to the Junction Creek Waterway Park trails,

Option A, B1 and B2: Garson Facility, Twin Forks and Maley Facility

The Garson, Twin Forks and Maley sections of the creek includes Sensitive Natural Features and Brook Trout habitat. Cold water seeps and springs are crucial habitat features for Brook Trout survival and spawning. The coordinates of these habitat features is currently unknown in Junction Creek and discerned as a data gap in the Study. **Cold water seeps/springs need to be identified and protected prior to the commencement of any projects in the vicinity of habitat identified for re-establishing Brook Trout, in particular Twin Forks, Maley, and Garson.**

In addition, infiltration techniques as well as preserving and enhancing tree cover and riparian habitat are particularly important in these areas. They improve water quality, cool water temperatures and offer habitat features for Brook Trout and other fish communities. Current stream conditions are close to the 'tolerance levels' for supporting Brook Trout and are vulnerable to exceeding lethal limits. **Rehabilitation projects that will help cool the water temperatures and improve fish habitat in the upper reaches of Junction Creek should be a priority to support the re-establishment of Brook Trout.**

Option E: Diversion & Facility East of Ponderosa

Option 'E' would cause disruption to a Provincially Significant Wetland, which has been identified as a Highly Sensitive Natural Feature in Junction Creek. This project would cause serious ecological and economic implications and can have irreversible negative effects on the function and form of the watershed - we cannot afford to cause further degradation to such an integral, natural asset.
Option 'E' negatively impacts a Highly Sensitive Natural Feature that needs protection and does not align with the objectives of the Master Report, and should therefore be removed as an option from the project list.

Option G: Restoration and Reprofiling of Junction Creek Downstream of Ponderosa

Option 'G' has high environmental and social/cultural implications. **Proactive strategies to manage siltation should be a main focus of the project, paying special attention to: the protection and enhancement of in-stream and shoreline habitat; preservation of mature trees as much as possible; and maintaining connectivity of the Junction Creek Waterway Park trail during and after construction.** Collaboration with local experts and watershed custodians is strongly encouraged to ensure ecological integrity.

Option H: Re-greening

Re-greening aligns with several objectives related to water quantity, quality, and the natural environment. **We are pleased to see the inclusion of re-greening in the options, and fully support it as the top priority.**

Recommendations to consider:

- Detailed plan which identifies and prioritizes target locations for re-greening and preservation of tree cover.
- Soil sampling and contaminant remediation to ensure planting success.
- Planting diverse range of native species.
- Focusing on planting mature trees and shrubs to ensure survivorship and greater impact.
- 2-year monitoring and maintenance plan for planted sites.
- Measuring the impact of re-greening to obtain quantitative information to include in stormwater management planning.
- Integrating riparian rehabilitation and shoreline stabilization projects.

Additional Projects Recommended

There are numerous objectives related to water quality and the natural environment that are not addressed in the proposed projects, in particular methods to reduce water contaminants and mitigate source pollution. A few examples of additional project options to explore include:

- Rehabilitating natural stream geomorphology to address issues of erosion, such as stream bank stabilization projects using bioengineering solutions (ex. willow fascines and root wad systems).
- Proactive stormwater quality control projects that integrate green infrastructure and filtration, such as the alternatives listed in section 9.2.2.
- Procuring homes in the immediate vicinity of high flood risk areas.
- Urban naturalization to restore environmental integrity to impervious surfaces in high flood-risk areas. This will both reduce flooding risks and improve water quality.
- Proactive projects that reduce urban runoff at the source.

Small scale projects and educational opportunities at the community level are also needed for more rapid solutions that address water management needs and provide immediate benefit to residents.

Criteria to Assess Proposed Options

We recommend a more extensive list of criteria that reflect Study objectives in order to fully evaluate project options.

The current criteria used to assess the project options in section 11.3.13 include:

- *Implementation cost*
- *Construction/implementation feasibility*
- *Adverse effects to residents*
- *Natural and ecological benefits*
- *Technical and engineering potential*
- *Social or cultural benefits*
- *Ability to manage flow*

It is recommended to also include the following criteria:

- Implications to water quality
- Adverse effects to the environment
- Carbon footprint (projected carbon emissions for project, and carbon mitigation)
- Potential for flood mitigation and climate resilience
- Level of confidence in modeling and outcome
- Maintenance requirements and costs
- Longevity of structures, expected timeframe for repairs/replacement
- Monitoring requirements and costs

Taking time to produce a thorough evaluation of the proposed options will reduce costly mistakes that would otherwise need to be fixed in the future. We would also like to reiterate the importance to reflect project alignment with watershed plan objectives, and that they neither contribute to further degradation nor impairment of the watershed. Including all key criteria is crucial for a full representation of the projects' implications in order to offer clarity during evaluation by decision makers.

Clarity needed for decision makers and general public

It is recommended to use science communication techniques to clearly articulate simplified summaries of the Study, Watershed Plan, and proposed Options for decision makers and the general public. It would be beneficial to develop a series of simplified fact sheets and an interactive map that is accessible online. This will also prove beneficial for continuing efforts in community involvement and feedback.

Thank you again for the opportunity to comment. We look forward to offering further assistance as needed.

Sincerely,

Miranda Virtanen, Executive Director
On behalf of the Junction Creek Stewardship Committee

Greater Sudbury Watershed Alliance

The GSWA mission
is to protect, promote and advocate for sustainable improvements in water quality and healthy watersheds.
gswa.ca

February 10, 2020

Paul Javor, MASc, P. Eng.
Drainage Engineer
City of Greater Sudbury
200 Brady Street, 2nd Floor
Sudbury, ON P3A 5P3
Tel: 705.674.4455 x 3691
E-mail: Paul.Javor@greatersudbury.ca

Mauricio Del Olmo Gil, M.Eng., P.Eng.
Consultant Project Manager
Wood Environment & Infrastructure Solutions
131 Fielding Road
Lively, ON P3Y 1L7
Tel: 705.682.2632
E-mail: mauricio.delolmogil@woodplc.com

GSWA submission in response to the Junction Creek Subwatershed Study and Stormwater Master Plan

The Greater Sudbury Watershed Alliance appreciates the opportunity to provide feedback on the Junction Creek Subwatershed Study and Stormwater Master Plan document.

General Comments

The study indicates a projected climate change impact from negligible to a 250% increase in precipitation and notes that this "range represents a significant challenge to the municipality to understand and integrate into its planning decision making processes." Given this range, it would seem appropriate to provide analysis for a "worst case" scenario and include consideration of a 1 in 1000 storm event. Severe weather events are increasing in frequency, duration and intensity. It would have been helpful if the study considered data analysis from weather events that produced greater impact than a 1 in 100 or Timmins storm event. The potential effects of climate change should be considered in the modelling given that we could experience a 250% increase in precipitation.

The study indicates that the climate change recommendation of the Stormwater Background Study has not been implemented by the CGS. It will be important to integrate this information with all of the other subwatershed studies so that a functional comprehensive plan can be developed that seriously considers the impacts of climate change.

It would be helpful to have a more detailed cost benefit analysis of the proposed stormwater project options so that citizens, city staff and elected government officials would have an easier way to evaluate the recommendations. An interactive map visually showing the effects of each of the recommendations with different levels of storm intensity would be an excellent way to present the data.

Response to the Study Recommendations

12.1 Recommended Stormwater Master Plan Projects

We strongly support option H, Regreening, ranked number one in the Option Evaluation Summary. Increasing natural vegetative buffers for water retention and flooding control would have numerous health, environmental and community benefits and, as noted, could be implemented in the near future.

Option G, Creek Restoration and Reprofiling, ranked number two, is also a preferred recommendation provided that it is accomplished with minimal disturbance to the existing ecosystem. Preserving the mature trees and minimizing sediment dispersal would be important considerations. The Junction Creek Stewardship Committee has provided thousands of volunteer work hours and considerable financial resources improving the watershed such that substantive negative consequences from creek restoration and reprofiling cannot be justified. This committee must have equal involvement in the planning and implementation of this recommendation. Anything less would destroy public confidence in the process.

We consider option E, Diversion and Facility East of Ponderosa, to be a problematic recommendation. The Ponderosa's natural habitat is already providing flood mitigation. Compromising an existing natural ecosystem would seem contradictory and we would strongly encourage the CGS to pursue other options.

12.2.2 Water Quality Techniques for Road Reconstructive Projects

Permeable pavers/pavement is listed in this chart but is referenced sparingly in the study with little detail. We find this surprising given that the study identifies considerable mitigation measures that must be undertaken to reduce expected flooding from 5- and 10-year events, let alone from a 100-year event. Based on information provided by the CGS, 635.19 hectares of impervious area are projected within the Junction Creek Watershed. Although 60% will be from residential development, 40% will be commercial which will include parking lots. Surely, given this current analysis, the CGS must encourage/recommend/enforce the construction of permeable hard surfaces wherever new development occurs. Increasing impermeable surface area within a compromised ecosystem when the technology already exists to significantly reduce the negative effects of this type of development seems incomprehensible. If the CGS wants to build resiliency as part of its approach to climate change, permeable hard surfaces must be implemented into all new development and redevelopment of the existing infrastructure.

12.3.1 Septic System Maintenance and Inspection

We are encouraged to read the recommendations regarding septic system maintenance and inspection. GSWA has advocated for mandatory septic system inspections for a number of years and we are pleased that this is now occurring within the Source Water Protection Area. However, there are many other lakes within Greater Sudbury where residents using private drinking water systems have no protection whatsoever and there is no mandatory monitoring of septic systems. The study notes that numerous other municipalities have implemented mandatory inspection programs, such as, the town of Innisfil's program demonstrating a thorough and comprehensive approach. Unfortunately, within the CGS, it is Public Health Sudbury and Districts that is the primary authority responsible for septic systems and the GSWA has been unable to persuade them to implement such a policy outside of the Source Protection Area.

We fully support creating a data base of local septic systems and inspection dates. One way of initiating this process would be to mandate pumping companies to create an inspection report whenever they pump out household systems. Since all

GSWA is dedicated to healthy, dynamic and sustainable watersheds within and around the City of Greater Sudbury
1081 Sunnyside Road, Sudbury, ON P3G 1J2 – (705) 522-9209 gswalliance@gmail.com

sewage pumping companies are required to dispose of their waste at the Biosolids Management Facility, the CGS could require that they complete and submit an inspection report of the system they pumped before being permitted to discharge the sewage. This data could then be digitalized and compared against the septic system data currently on file with Public Health Sudbury and Districts. This would be an important contribution to building a comprehensive data base that could be later used to identify potentially problematic septic systems and we strongly encourage the CGS to implement this recommendation.

12.3.2 Stormwater Public Education and Outreach

The study notes that the lack of LID sites within Greater Sudbury and the Junction Creek Subwatershed necessitates greater public education and awareness as being especially important at this stage. We would agree that "implementing a public awareness campaign to help citizens understand what stormwater is and why it is important to manage it," is an important first step. But it could also include more detailed information regarding specific solutions that could provide immediate benefit to local residents such as onsite landscaping, regreening, bioswale installations, wet floodproofing homes, downspout placement etc. This would be especially useful to the residents in the Flourmill area where flooding is currently most significant and where mitigation measures will take many years to put into place. It would also be useful to residents if the information contained in the study was split up into concise pieces that could be discussed and distributed in small pamphlets. The study is large and not easily understood by individuals not versed in the subject. Breaking it up into "chunks" would make the information more easily accessible.

12.3.3 Winter Maintenance

The study states correctly that "it has been proven that road salt negatively impacts vegetation, aquatic life, water and soil quality, human health and the structural integrity of roads and associated structures, and that it causes rusting of cars." The effects on aquatic and human health is becoming a significant problem in Greater Sudbury. Concentrations of sodium and chloride levels are continuing to rise in local watersheds. Testing by the GSWA in October of 2019 indicate Lake Ramsey has levels of sodium at 56.4 mg/L and chloride at 93.3 mg/L. Lake Nepahwin is even higher with sodium at 97.0mg/L and chloride at 163.0 mg/L.

Sodium levels in drinking water is an important issue. When government water systems contain sodium concentrations higher than 20 mg/L, the local Medical Officer of Health must be advised who in turn notifies health practitioners. For individuals with chronic diseases requiring a sodium restricted diet, the intake of sodium could be significant.

Moreover, the Canadian Water Quality Guideline to protect aquatic life is 120 mg/L of chloride. Recent research has indicated that zooplankton, the microscopic organisms that feed on algae may be negatively affected by chloride levels much lower than 120 mg/L. Reductions in the zooplankton populations significantly impact the food web creating critical imbalances in the ecology of watersheds.

The study describes the measures the CGS has taken to reduce the amount of road salt used and the monitoring of the winter road maintenance program. We commend the CGS for significant reductions since 2007. However, studies from the Lake Simcoe Watershed and the state of New Hampshire indicate that from 18 to 49% of road salt entering the environment comes from parking lots. This is a significant amount of contamination coming from private sources. We strongly encourage the CGS to implement strategies that dramatically reduce this source of road salt. Compelling all snow

GSWA is dedicated to healthy, dynamic and sustainable watersheds within and around the City of Greater Sudbury
1081 Sunnyside Road, Sudbury, ON P3G 1J2 – (705) 522-9209 gswalliance@gmail.com

removal companies within the CGS to be certified under a recognized program (e.g. Smart About Salt) is a necessary first step.

Shifting to the use of alternatives to road salt is equally important. The report lists a number of products that can be used, such as, beet juice, organic waste, pickle and cheese brine, brewing by-products and potato juice. It does note that no-de-icing agent is without drawbacks including environmental effects, storage difficulties and cost. However, given the continually increasing levels of sodium and chloride in the watersheds of the CGS, it is imperative that alternatives to road salt be tested, evaluated and implemented as soon as possible. The Swiss have been using wood chips impregnated with manganese chloride on roads in the Alps since 2008 and several municipalities in Quebec are turning to this option. Obviously wood chips are a readily available local resource. Furthermore, for the past few years municipalities in Quebec, Ontario, and Alberta have been testing a number of other road salt alternatives. We strongly encourage the CGS to research these options and test the most promising alternatives so that we can switch to methods that reduce the amount of sodium and chloride entering Sudbury watersheds.

12.3.4 Enhanced Lake Water Quality Program

Expansion of the current Lake Water Quality Program is an important initiative. Although there is data on spring phosphorus levels, secchi depth, sodium and chloride levels there is insufficient data to provide any longitudinal analysis to identify trends on any of the watersheds. Data on calcium levels, E. coli, algae and cyanobacteria blooms, heavy metals and other contaminants would allow CGS to more fully understand how the watersheds are changing and would help to identify potential problems in a timely manner. We believe that the lake stewardship committees could be encouraged to participate in this analysis and help defray the costs of mounting a far more ambitious monitoring plan. The study does reference the Lake Partners Program which is an excellent example of citizen science where long term data is collected on many Ontario lakes. However, this program is currently in jeopardy because of the provincial government's ideological stance and may not be continued. We would encourage CGS to strongly lobby the province to maintain this important program since the collection of data by volunteers saves the province hundreds of thousands of dollars in employee costs.

12.4 Recommended Future Studies

All of the recommended future studies would provide useful data for planning and monitoring purposes. Due to budgetary restraints it would make sense to prioritize the recommendations through a community engagement process so that a comprehensive and long-term plan be developed that is coordinated with other city and community organization initiatives.

Thank you for the opportunity to provide a response to the Junction Creek Subwatershed Study and Stormwater Master Plan

Sincerely,

Richard Witham

Chair, GSWA

GSWA is dedicated to healthy, dynamic and sustainable watersheds within and around the City of Greater Sudbury
1081 Sunnyside Road, Sudbury, ON P3G 1J2 – (705) 522-9209 gswalliance@gmail.com

Coalition for a Liveable Sudbury

Making connections. Working toward sustainability.

February 10, 2020

Coalition for a Liveable Sudbury
Written submission – Junction Creek Subwatershed Study and Stormwater Master Plan

Thank you for the opportunity to provide feedback on the Junction Creek Subwatershed Study and Master Plan. Here are our main comments.

In summary:
-Climate change is not incorporated into the modelling. This will underestimate flooding and means we do not have a realistic measure of the impact of proposed stormwater management projects.
- The Master Plan does not provide sufficient information for decision makers to make informed decisions for best outcomes for residents
- The Master Plan does not provide sufficient information to approve many of the Class B EA stormwater management projects.
- Problematic flooding has not been resolved.
- We fully support re-greening as the number 1 ranked option.
- Retaining tree cover and permeable surfaces should also be included as stormwater management options.
- We support implementation of the subwatershed study, including the Natural Heritage System.
- The subwatershed study and stormwater management master plan need to be integrated.
- Monitoring, evaluation and compliance are crucial.
- We support the recommended programs.
- Community value of Junction Creek & other comments.

Climate change is not incorporated into the modelling

Stormwater modelling is done with historic data for 5, 10, 25, 50, 100 year and regional (Timmins) storms. Storm sewers are planned to accommodate 5 or 10 year storms. Overland systems (water running in the roads up to the curb) are planned to accommodate 100 year storms.

However, climate change has shifted rainfall and extreme weather events. A five year storm can be expected to happen much more frequently than every five years on average. A 100 year storm may be expected to happen multiple times in our life time, or even every few years, as experienced by some communities in Ontario, Québec and New Brunswick. We can expect even more extreme weather events (large rainfalls in short periods) and rain on snow, that will cause flooding. The benchmark regional storm is no longer representative and a new design storm may be needed to reflect the more intense rain events we can expect.

Because climate change has not been incorporated into the modelling, we can reasonably expect more flooding and more frequent flooding than predicted in this study. We have no modelled results for the performance of the proposed stormwater management projects under the conditions we will experience with climate change.

Our stormwater management plan should plan for more frequent storms, bigger rain events, more rain on snow and swings in temperature, and failure of storm sewers and stormwater management systems (and electric). This planning is needed to mitigate impacts on residents, property and infrastructure, as well as to communicate realistic expectations to residents and property owners.

Planning should be done for worst case scenarios under the most accepted climate change predictions.

The Master Plan notes that the climate change recommendation of the Stormwater Background Study has so far not been implemented by the CGS. Greater Sudbury should be proactively preparing for accommodating climate change now. This should include updated standards for stormwater management.

Our stormwater management plan and subwatershed study should also take into account the direct impacts of climate change on water quality, as well as on watershed health (terrestrial and aquatic components) that will ultimately also lead to water quality and quantity impacts. Climate change resilience should be an objective of this study/plan, and should be integrated into the recommendations.

The Master Plan does not provide sufficient information for decision-makers to make informed decisions for best outcomes for residents

To make in informed decision, members of Council will want to know the real impact on flooding of each of the stormwater project options and combination of options. How many lots will be flooded? Which lots? How severe will the flooding be? How will these metrics change/improve with the implementation of the project(s)? Flooding equates real suffering for residents, and they need clear information and solutions.

The Master Plan does not provide clear answers to these questions, and even less so with climate change conditions.

The Master Plan states, “beyond the review of technical issues, a review of projected rainfall scenarios will also require discussion of community risk tolerance levels and the fiscal realities of attaining a defined level of service in this context. This in-depth review and analysis are more than can be completed within the work scope for a subwatershed study.” However, this is precisely the review and analysis needed to make informed decisions about the proposed projects.

Many projects have a localized effect only, while others may interact. However, a clear picture is not available in the report. This information should be clearly presented to inform decisions that will be

weighing financial cost, effectiveness in addressing flooding in problem areas, and ecological and social impacts. I.e. Decision makers should be aware of the impact on flooding of individual projects, and combinations of projects. There is an immediate interest in knowing the individual and collective impacts of the four funded projects. This should include easy to read maps of the proposed project locations, areas currently flooding & areas projected to flood if projects are completed (for each project and for different storm events), and NHS designation.

The Master Plan does not provide sufficient information to approve many of the Class B EA stormwater management projects.

It is unclear from the information presented why some of the stormwater management projects are recommended, given the limited benefits or high cost listed. This is especially concerning because most of the projects are listed as Class B EA, which means they would have met EA requirement with this Master Plan.

We are not comfortable with many of these projects being approved, subject to no further environmental assessment.

For example:

-The Garson Facility ($2.6M) has very limited potential for flood mitigation and no effects downstream of O'Neil Drive, but has a very high ecological cost (Sensitive Natural Area).

-There is no information on the expected impact on flow for the Twin Forks facility ($5.6M), where there are technical challenges (and high groundwater limiting storage capacity), and a high social impact, and NHS linkage impacts.

- The Gravel Pit diversion ($28.2M) provides no benefit downstream of the immediate area (Falconbridge railway), and impacts NHS linkages.

High groundwater is a challenge for many of the proposed projects, which limits storage capacity.

When the information provided in the Master Plan indicates little benefit and high costs (financial, ecological or social), projects should not be on a list of recommended projects that will be approved for implementation with the approval of the Master Plan. Built stormwater management facilities with a poor ability to manage flow (their primary function) seem especially difficult to justify. A clear shortlist of recommended projects, clearly justified is needed.

Option E: Diversion & Facility East of Ponderosa would cause serious negative impacts to a provincially significant wetland and result in loss of habitat for species at risk. It also disrupts a well used recreational trail and commuter routes. We do not feel this is an acceptable option, regardless of any benefits, which are limited in any case. (The Ponderosa Diversion ($24M) is modelled to significantly reduce flow in a problem area, but not to reduce the number of lots flooded.) This project would be subject to an Environmental Assessment before proceeding. However, we feel that this intense disruption to a provincially significant wetland, habitat for species at risk, and natural water storage and water quality improvement functions should be taken off the table altogether.

Proposed stormwater management projects within the provincially significant Ponderosa wetland should be removed from the project list.

Note that Option G: Restoration and Reprofiling of Junction Creek Downstream of Ponderosa will have large impacts on the creek, vegetation in the riparian zone (planted by the community), and the Junction Creek waterway trail. Special attention should be paid to: avoid the removal of mature trees as much as possible; include the Junction Creek Stewardship Committee and other local expertise and stakeholders in the design and implementation process; protect and enhance in-stream and shoreline habitat; maintain connectivity of the Junction Creek Waterway Park trail during and after construction; design and resource maintenance so that silting does not reoccur.

Problematic flooding has not been resolved

A community priority driving the Junction Creek Stormwater Master Plan is the need to solve flooding in the watershed, most especially in the Flour Mill area, where it causes on-going stress and harm to residents and their homes.

It is important to note that even if/when all the recommended stormwater management projects are completed, neighbourhoods in the floodplain or otherwise vulnerable to flooding will still flood in larger storms (50-100+ year storms) which will become more frequent with climate change. Many of the stormwater management projects also have long timelines to study and implement, which means a long wait for flood mitigation for residents.

The Master Plan states, "No solution, or combination of solutions, has been seen to be sufficient to relieve the flooded condition on all of the residential properties near Junction Creek."

Residents should be fully aware of this information and the implications for their homes, and for insurance coverage.

This also underlines the importance of more localized and more rapid solutions that could provide immediate benefit to residents. These could include:

- Lot-specific measures to direct water away from homes (e.g. landscaping, downspout placement) and/or store or absorb rainwater, on-site landscaping (e.g. trees, rain gardens)
- Neighbourhood level efforts to increase rainwater retention capacity (e.g. regreening of neighbourhood uplands contributing to run-off; neighbourhood-wide rain garden and bioswale installations).
- Wet floodproofing homes

We would like to see recommendations for these more localized and rapid solutions included, to reduce the wait for residents impacted by flooding.

The Master Plan states, "No solution, or combination of solutions, has been seen to be sufficient to relieve the flooded condition on all of the residential properties near Junction Creek. As such, in addition to the Stormwater Master Plan projects selected for implementation, it is recommended that a risk-based approach for over-control of new-development on greenfield lands be established based on key infrastructure within the Junction Creek Subwatershed." Given the importance of these measures to the quality of life of residents, they should be summarized in the Master Plan and included in the implementation plan.

This could include by-laws mandating permeable surfaces and trees in parking lots and other built surfaces, and larger shoreline buffers.

We fully support Re-greening as the number 1 ranked option

The Master Plan states, "It is certain that since the preparation of the original floodplain mapping in the early 1980's the amount of impervious areas and associated runoff generation has increased within the CGS, but the floodplain has largely remained the same which in part reflects the magnitude of the regulatory event. Further, this suggests that re-greening initiatives have had hydraulic benefits by reducing the runoff generation potential and improving the infiltration and retention of precipitation. The reduction in runoff generation also has positive effects on the environment reducing potential erosion and transport of pollutants to the creek through drainage infrastructure. While having major direct benefits to the ecosystem over the past 40 years (i.e., diverse vegetation and wildlife habitat in the region), re-greening has also supported the reduction of runoff to drainage infrastructure by converting a portion of the historical bare bedrock to a topsoil and tree cover."

Regreening is a 'no regrets' option. It reduces flooding, while also providing many co-benefits: ecological, social, public health, and aesthetic.

Note that regreening is also a goal in Greater Sudbury's Community Energy and Emissions Plan. Regreening efforts for flood mitigation, watershed health, water quality and carbon sequestration should be coordinated to best meet these interconnected objectives. **A detailed plan for regreening should be prepared.**

It is important to measure the impact of regreening (at planting and over time as trees grow and absorb more water), so that this effect can be quantified and included more precisely in stormwater management planning.

Surfaces in the Junction Creek Subwatershed are 25.4% impervious, 50.3% semi-pervious, and 24.3% pervious. Anything greater than 10% impervious impacts water quality. Therefore, reducing the percentage of impervious surfaces will both reduce flooding risks and improve water quality.

Soil building (in addition to planting) should be part of regreening efforts.

Retaining tree cover and permeable surfaces should also be included as stormwater management options

Just as planting trees has been shown to reduce flooding risks, so too does retaining existing trees, while replacing natural areas with impermeable built/paved surfaces will increase flooding risks.

The Master Plan states, "Future development to the ultimate growth forecast projects that 959.42 hectares of growth will occur within the Junction Creek Subwatershed, which will include 635.19 hectares of impervious area." This increase in impervious surfaces increases flooding risks, and impacts watershed health.

How much would flood risk be reduced to existing properties, and what would be the cost of acquiring some or all of this land to maintain it in a natural state? How does this compare to other options? We do not have the answers to these questions because the scope of the subwatershed study did not include examining changing land use. However, these questions are well worth answering.

Leaving undeveloped lands in a natural state should be assessed as options.

We support implementation of the subwatershed study, including the Natural Heritage System

The subwatershed study includes some very important information and recommendations. Natural heritage features and sensitive features are identified, as are core areas and linkages for a natural heritage system, and areas requiring further study. We support the recommendation to complete Natural Heritage System mapping for Greater Sudbury. The importance of all wetlands for this watershed is highlighted, as well as the importance of regreening the riparian zone. There are recommendations for areas that should be protected, as well as enhancement and restoration recommendations such as increasing natural vegetation in the riparian zone, and reforestation in the watershed.

The Ramsey Lake subwatershed is omitted from this analysis since a separate Ramsey Lake subwatershed study is being conducted. It should be ensured that this same NHS work is done for the Ramsey Lake subwatershed, and is incorporated in a holistic NHS for the entire Junction Creek watershed.

These are important recommendations for natural health, climate resilience, and water quality and quantity. They should be acted on, and incorporated into policy, including the Official Plan.

The Study finds that based on the definition of significance in the Provincial Policy Statement, the Urbanized Area contains wetlands, forested areas, watercourses, and riparian areas that are important natural features in the Province of Ontario that require special consideration. They also find that all watercourse and lakes in the subwatershed, and all wetlands, watercourses and riparian areas within the urbanized area require particular consideration. **This should be followed up by including appropriate land use designations in the Official Plan and Zoning By-law. Other supportive policies (such as not building on floodplains) should be put in place and enforced.**

“Sensitive natural features and areas make up the backbone of the NHS, with large continuous natural areas, habitat mosaics, and highly sensitive features constituting the Core Areas, and smaller sensitive features being captured within Linkages…Linkages consist of watercourses and their riparian areas, narrow or small wooded features, and hydro-corridors.” This NHS mapping work should be further enhanced through consultation with Junction Creek Stewardship Committee, local experts and the community. For example, by including Brook Trout spawning habitat in the NHS. **The NHS recommendations should be included in an implementation plan for this Study.**

It would also be good to see goals for reducing the percent impervious cover in each subwatershed. Anything greater than 10% impacts water quality.

Climate resilience should also be incorporated.

Recommendations from the subwatershed study part of the Study should be clearly listed in an implementation section, with a clear process for these projects to move ahead and be included in the municipal budget.

The subwatershed study and stormwater management master plan need to be integrated.

Implementation plans for the subwatershed study and stormwater management plan should be integrated. Ideally, the best solution to meet all objectives (including flood prevention and ecological health) should be found. Currently, recommendations are listed separately for each, and there are conflicts between these two sets of recommendations.

There is a strong connection between improving ecological health and reducing flooding. One of the striking findings during this study is that the regreening already done has increased rainwater storage capacity more than enough to off-set the large amount of urbanization (increase of hard surfaces) in the watershed. ***Without the regreening efforts, flooding would be considerably worse today in the Junction Creek watershed.*** Trees and soil absorb and hold rainwater that would otherwise quickly run off bald rock.

One result of the lack of integration between the subwatershed study and the stormwater management study is the conflict between the recommendations. Most notably, several of the recommended stormwater management projects are located in sensitive areas of natural significance to the watershed. There are a number of examples, the most problematic being the project located in/impacting the Ponderosa wetland. The Ponderosa wetland is a provincially significant wetland, habitat for species at risk, with a high ecological value, as well as a high social and recreational value (with the trail also filling an active transportation need).

Just as removing many homes from the floodplain is not seen as a viable or acceptable option, damaging or significantly altering some natural features should not be seen as options for consideration (the Ponderosa wetland being one clear example). From a practical standpoint, choosing a provincially significant wetland as a proposed project site also comes with many barriers, which may be insurmountable, or at the very least cause lengthy delays, not desirable for a potential solution to flooding issues residents wish to see resolved as quickly as possible.

Monitoring, evaluation and compliance are crucial

Monitoring and evaluation will be crucial to assess performance and make informed decisions for further work.

Implementation plans should always include maintenance plans (including resourcing and enforcement), and incorporate measures to prevent recurrence of problems. Large, disruptive projects to remove silt should not have to be repeated in the future. Ecological recovery from dredging and disruption to the shoreline takes a very long time.

We support the recommended programs

We support the recommended programs of:

- septic system maintenance and inspection (will require collaboration with PHSD);
- stormwater public education;
- winter maintenance (reduce salt use);
- enhanced lake water quality program;
- future studies

The subwatershed study contains historical and natural heritage information of great interest to the community, as well as important information on water quality. It would be good to follow up this report with a leaflet or series of fact sheets summarizing this information in an accessible manner.

Community value of Junction Creek

In all projects, the full value of Junction Creek should be included, including ecological, social, recreational, connectivity, as well as its value for sense of place and community pride. The community ownership of Junction Creek, grown through two decades of stewardship, has a high value in Greater Sudbury that is currently not evident in the Master Plan.

Other comments

The importance of consultation and collaboration on design and implementation of the recommendations and projects cannot be overstated, both to include community expertise, and to have community buy-in.

Implementation of some of the recommendations of the subwatershed study will be much more successful and possible with the involvement and in some cases leadership of the community.

Communication with stakeholders has been poor during the completion of this Master Plan, and should be improved during the next stages.

We support the submissions of the Junction Creek Stewardship Committee, Greater Sudbury Watershed Alliance, and Vermilion River Stewardship.

Regards,

Naomi Grant
Co-Chair, Coalition for a Liveable Sudbury
grant_naomi@hotmail.com