

Environmental and Ecological Planning Advisory Committee

Report

7th Meeting of the Environmental and Ecological Planning Advisory Committee
June 21, 2018
Committee Rooms #1 and #2

Attendance PRESENT: S. Levin (Chair), E. Arellano, C. Dyck, P. Ferguson, S. Hall, B. Krichker, K. Moser, N. St. Amour, S. Sivakumar, C. Therrien, R. Trudeau and I. Whiteside and H. Lysynski (Secretary)

ALSO PRESENT: C. Creighton and A. Macpherson

REGRETS: A. Boyer, E. Dusenge, C. Evans, C. Kushnir and S. Madhavji

The meeting was called to order at 5:05 PM

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

None.

3. Consent

3.1 6th Report of the Environmental and Ecological Planning Advisory Committee

That it BE NOTED that the 6th Report of the Environmental and Ecological Planning Advisory Committee, from its meeting held on May 17, 2018, was received.

3.2 5th Report of the Trees and Forests Advisory Committee

That it BE NOTED that the 5th Report of the Trees and Forests Advisory Committee, from its meeting held on May 23, 2018, was received.

3.3 Municipal Council Resolution - 5th Report of the Environmental and Ecological Planning Advisory Committee

That it BE NOTED that the Municipal Council resolution adopted at its meeting held on May 8, 2018, with respect to the 5th Report of the Environmental and Ecological Planning Advisory Committee, was received.

4. Sub-Committees and Working Groups

4.1 William Street Storm Sewer Outfall (EIS)

That, the attached Working Group comments with respect to the William Street Storm Sewer Outfall Environmental Impact Statement BE FORWARDED to P. Yanchuk, Engineer in Training, for review and consideration.

5. Items for Discussion

5.1 Southdale Road West Environmental Assessment Study - Notice of Public Information Centre #2

That B. Huston, Project Manager, Dillon Consulting, BE ADVISED that the Environmental and Ecological Planning Advisory Committee (EEPAC) requests to be a participant in the review of the detailed design documents on the Subject Land Status Report for the Southdale Road West Environmental Assessment Study; it being noted that the EEPAC reviewed and received the following with respect to this matter:

- a Notice of Public Information Centre #2 from B. Huston, Project Manager, Dillon Consulting Limited and T. Koza, Transportation Design Engineer;
- slides from the public information centre held on May 31, 2018; and,
- the attached communication dated June 6, 2018, from B. Huston, Project Manager, Dillon Consulting Limited.

5.2 Broughdale Dyke Environmental Assessment

That P. Adams, Environmental Planner or A. Spargo, Project Manager, AECOM Canada, BE REQUESTED to attend a future meeting of the Environmental and Ecological Planning Advisory Committee (EEPAC) to present the Environmental Impact Study for the Broughdale dyke, when it is ready to be reviewed by the EEPAC; it being noted that the EEPAC reviewed and received the Notice of Public Information Centre with respect to this matter.

5.3 City of London - Long Term Storage - Municipal Class Environmental Assessment

That it BE NOTED that the City of London Long Term Water Storage Municipal Class Environmental Assessment Notice of Project Commencement and Public Information Centre #1, was received.

5.4 Parks and Recreation Master Plan Update - Discussion

That, further to the presentation to the Environmental and Ecological Planning Advisory Committee (EEPAC) with respect to the Parks and Recreation Master Plan update, the Civic Administration BE ADVISED that the EEPAC would like guidance as to how to assist staff to achieve the objective to, "improve awareness and understanding about the importance of the City's natural heritage system, the city's urban forest and their broader role within Carolinian Canada" as noted in the Master Plan; it being noted that this is in alignment with the EEPAC mandate.

5.5 Hydrogeological Desktop Study - Sunningdale Court

That the attached issues identified in the review of the Hydrogeological Desktop study for Sunningdale Court BE REFERRED to the Civic Administration for review and consideration.

5.6 Detailed Design Stage - 3612 and 3630 Colonel Talbot Road and 6621 Pack Road

That the attached, revised, Working Group comments with respect to the properties located at 3612 and 3630 Colonel Talbot Road and 6621 Pack Road BE FORWARDED to N. Pasato, Senior Planner, for review and consideration; it being noted that the Environmental and Ecological Planning Advisory Committee will provide hydrogeological comments at its next meeting.

5.7 Draft London Rapid Transit Environmental Impact Study - General Response to Comments from Environmental and Ecological Planning Advisory Committee

That it BE NOTED that the communication dated June 7, 2018, from J. Ramsay, Project Director, Rapid Transit, with respect to the response to the Environmental and Ecological Planning Advisory Committee Working Group comments, relating to the draft London Rapid Transit Environmental Impact Study, were received.

5.8 Summer Meeting Schedule

That it BE NOTED that the Environmental and Ecological Planning Advisory Committee will meet on July 19 and August 16, 2018.

6. Deferred Matters/Additional Business

6.1 (ADDED) ESA Management Committee Meeting Minutes

That it BE NOTED that the ESA Management Committee Meeting minutes from its meeting held on April 25, 2018, were received.

7. Adjournment

The meeting adjourned at 6:45 PM.

EIS (Draft) WILLIAM STREET STORM SEWER OUTFALL IMPROVEMENTS

Dillon Consulting, April 2018, received by EEPAC at its May 2018 meeting

Reviewers: S. Levin, Dr. K. Moser, C. Therrien

INVASIVE SPECIES

It is interesting to note that Dillon points out on page 9 the “coverage of several other non-native and/or invasive species typically associated with areas of cultural disturbance, such as trails and pathways. “

EEPAC is concerned that despite being in the study area, and despite the opportunity noted by Dillon on page 28, the area north of the channel works will not have an invasive species management plan (according to wastewater staff at the May EEPAC meeting). Given the pervasive buckthorn in this area, EEPAC is concerned that restoration works on the south side of the channel (currently Shallow Water Aquatic) will fail over time.

As well, phragmites is beginning to establish itself in this area. It is critical to deal with this within the project scope.

RECOMMENDATION 1: The proposed Invasive Species Management Plan mentioned on page 28 of the EIS include a buckthorn herbiciding program within the project budget for the city lands north of the channel within the study area.

RECOMMENDATION 2: The proposed Invasive Species Management Plan include eradication of phragmites.

RECOMMENDATION 3: The project budget include sufficient funds for monitoring of at least 5 years of the success of the site restoration and invasive species removal and control programs.

RECOMMENDATION 4: EEPAC receive the Plan for review and annually, receive a report on the progress of the implementation of the Invasive Species Management Plan.

EEPAC has yet to see any invasive species management plans despite many have been included as “to be developed and implemented” in many an EIS. Given this is a City project, there is an opportunity for EEPAC to provide its expertise in this matter as one of the current members of EEPAC is a PhD in plant biology and has extensive experience with management of some invasive species.

AQUATIC HABITAT

EEPAC supports the upgrading of the culvert under the TVP to four culverts of a larger size. This will greatly benefit fish. However, it is unclear why there is no recommendation to clear the blockage of Huron Creek that exists 550-560 m from the outfall (see page 15). Although it is outside the study area, there is no clear reason why

the blockage should remain. Removing it would result in a positive impact rather than “none” as shown in the Impact Assessment on page 23.

RECOMMENDATION 5: The culvert that is 90% by debris be cleared as this will remove a barrier to fish passage and regular inspections take place to ensure the culvert remains clear.

EEPAC is concerned that it appears that no water quality measurements have been taken of the Thames downstream of photo site 10. Measurements of water quality at high flows and low flows pre-construction and post-construction would demonstrate either no change or improvement particularly given the spiny soft shell turtle habitat downstream. This EIS focuses on the area directly affected, but will undoubtedly impact areas downstream of the input to the Thames. This needs to be considered as Huron Creek does not stop where the study area stops.

RECOMMENDATION 6: The project include monitoring of water quality in the Thames pre and post construction for a period including three years from the conclusion of the separation of the combined sewer.

MIGRATORY BIRDS

It is unclear to EEPAC why migratory bird surveys were not done. Orioles and rose breasted grosbeak nest in the area, and a variety of aquatic birds such as blue herons, American bittern, Green herons and Bald Eagles have been observed in the area.

RECOMMENDATION 7: EEPAC would appreciate a response from a City Ecologist on this matter.

BEAVERS

If beavers return to the area, will the City implement its current protocol for beavers? Dead beavers were noted in the area by an EEPAC member in the early spring of 2017 at or near photo site 9.

AMPHIBIAN SURVEYS

It is unclear why only one amphibian survey spot selected. This is inconsistent with the Marsh Monitoring Protocol. There are many frogs in the area - you can hear them and see tadpoles.

MAP 5 DESIGNATION

EEPAC continues to believe that the entire area west of Adelaide as studied by Dillon and by Duggan should be included in Map 5 as ESA.

June 6, 2018



Confidential

Sent via email

Corporation of the City of London
Environmental and Engineering Services
300 Dufferin Avenue, 8th Floor
London, Ontario
N6A 4L9

Attention: Mr. Sam Shannon, CET
Project Manager

Response to EEPAC Comments for Southdale Road West, Class Environmental Assessment Study – Subject Lands Status Report and Environmental Impact Study

Dear Mr. Shannon:

It is our understanding that the Southdale Road West, Class Environmental Assessment (EA) Study – Subject Lands Status Report and Environmental Impact Study (SLSR/EIS) was provided to the City of London's (the City) Environmental and Ecological Planning Advisory Committee (EEPAC) for review and comment. A document was provided to the City from EEPAC dated May 9, 2018, listing several themed comments and accompanying recommendations. Dillon Consulting Limited (Dillon) has reviewed these comments and prepared the following responses.

Comments Provided

Theme #1 – Bat Habitat (Recommendations #1 and #2)

As indicated under Section 5.5 of the SLSR/EIS, the entire woodland area to the north and south of the Southdale Road West right-of-way (ROW) was not assessed for cavity/snag density due to lack of access. On this basis, the feature is being treated as significant bat maternity colony habitat. In order to confirm significance, the City would require access to the woodland both north and south of Southdale Road West to undertake cavity/snag density surveys, which would be required to be undertaken during the leaf-off period (i.e., November to April) and not during the month of June when cavities could be obscured by leaf cover. Even if the density of cavity/snag trees is below the >10 trees/ha threshold for significance, woodland habitat still may be considered habitat for Species at Risk (SAR) bat species.

As indicated under Section 7.1.1 of the SLSR/EIS, Tree Cavity Assessments are to be performed on trees during the leaf-off period (e.g., fall and early spring) to confirm if suitable cavities for bats are present. Tree Cavity Assessments follow the criteria for

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**Dillon Consulting
Limited**



cavities as outlined in the MNRF documents, *Bat and Bat Habitat: Guidelines for Wind Power Projects*, (OMNR, 2011) and the *Bat and Bat Habitat Surveys of Treed Habitat Protocol*, (MNR 2014). Trees will be identified for removal during the Detailed Design stage. If potential cavities for bats are confirmed, consultation with the MNRF would be undertaken to outline the City's approach to mitigating removal of potential bat habitat (e.g., timing windows, installation of bat boxes). Through consultation, the MNRF may require acoustic surveys to confirm use by bats during the appropriate season (June) prior to removal of trees.

In our experience and based on recent MNRF regional guidance to the district offices, if tree removal can take place during the non-active season for bats, further surveys (e.g., cavity/snag and/or acoustic) may not be required. This approach can be confirmed with the local district office as part of continuing agency consultation during Detailed Design.

Theme #2 – Western Tributary and Culvert under Southdale Road (Recommendations #3 and #4)

A key recommendation from the current EA is to undertake a separate study of this tributary, to assess the current erosion issues in the tributary and make appropriate recommendations. Subject to the recommendations of this future study, it is recommended that the existing culvert size be maintained, to avoid changing the existing hydraulic conditions and flow characteristics downstream of Southdale Road. There is a small culvert downstream, outside of the Study Area, which also appeared to pose a barrier to fish migration. During Detailed Design, options will be considered for fish passage improvements including the lowering of water velocities to provide a net positive effect compared to existing conditions. Options for fish passage prepared as part of the Detailed Design stage will be reviewed with the Upper Thames River Conservation Authority (UTRCA) and applicable landowners.

Theme #3 – Wetland Management – Avoid, Minimize, Mitigate, Compensate (Offset) (Recommendations #5 - #8)

Consideration for long-term mitigation of the wetland features will be considered as part of Detailed Design. Further baseline information would require access onto the private property where the majority of the two feature's area is contained. Currently, the ecological land classification information does provide baseline information such as vegetation and abundance.



Further consultation with landowners is to be undertaken during Detailed Design which is to include considerations for enhancement of the valley corridor that leads from the eastern tributary outlet under Southdale Road West to Dingman Creek. If it is confirmed that avoidance of the wetland features is not possible through detailed design, the UTRCA will be consulted as a permit may be required from the UTRCA.

Theme #4 – Enhancing Wildlife Movement across Southdale Road (Recommendations #9 and #10)

Inclusion of a crossing structure in the design is to be explored and refined during Detailed Design. Crossing options may include a structure suitable for small to medium terrestrial wildlife located east or west from the drainage culvert. As outlined in the London Plan, the project Study Area is located on the City of London Urban Growth Boundary. The goal of the London Plan is to create a more compact city that is less reliant on transportation and encourages citizens to reduce reliance on cars. Because of this focus, and the lands south of the Study Area being outside of Urban Growth Boundary, there is no need to explore further widening or protection of land for transportation use at this time. Acquisition of property beyond the scope of the road improvement works is not included in the scope of this project. The improvements have been designed to meet the street classification design features laid out on Table 6 of the London Plan.

Theme #5 – Tree Removal and Compensation (Recommendations #11 - #13)

It should be noted that the area of potential impact, as presented in the SLSR/EIS, is based on preliminary design of the preferred option. As the project enters the Detailed Design stage, there may be opportunities to reduce the amount of vegetation removal required. The inventory of trees undertaken as part of the SLSR/EIS is to be used to inform the Detailed Design of the road improvements with a focus on reducing the number of trees to be removed.

Compensation plans are included as part of Detailed Design for when the exact number of trees to be removed is known. Areas for potential naturalization have been identified on Map 5 of the London Plan in proximity to the woodland areas and would be the focus for compensation/restoration plantings. Local landowners adjacent to the woodland areas have also expressed interest in having plantings occur on their properties. Further consultation with landowners is to occur during Detailed Design. Also note, the Net Effects table, presented in the SLSR/EIS, indicates an overall Low Net Effect due to the loss of trees and vegetation which is to be mitigated through a greater number of trees planted to compensate for this impact.



Theme #6 – Provincially Significant Bird Species (Recommendation #14)

Removal of <30 ha of Eastern Meadowlark habitat is permitted under *Endangered Species Act, 2007* as long as proper authorization is received from the MNRF in the form of registration confirmation. As part of this registration, compensation habitat is to be established prior to habitat removal. Consultation with landowners is an on-going process. The area of habitat potentially removed accounts for 0.5 ha in the form of thin linear areas adjacent to the Southdale Road West ROW. Removal of this small area of habitat would not be expected to detract Eastern Meadowlark from continuing to use the habitat.

Theme #7 – An Aggressive Invasive Species Strategy (Recommendation #15)

As the majority of European Common Reed is located on private property, control of this invasive species would require further consultation and cooperation with the landowner which is currently outside of the scope of a Class EA and subsequent SLSR/EIS. An Invasive Species Management Plan is to be prepared as part of the Detailed Design which will focus on pre-construction treatments to avoid further spread of the species.

We appreciate the comments and recommendations provided by EEPAC, which further inform the potential impacts and mitigation measures recommended for the project.

Sincerely,

DILLON CONSULTING LIMITED

Brandon Fox, BES
for Brian Huston, P.Eng.
Project Manager

JWH:tfk

Our file: 16-4360

Hydrogeological Desktop Study – Sunningdale Court (Corlon Properties Inc.)

Dated February 8, 2018 and received at EEPAC April 27, 2018

Reviewer: I. Whiteside and B. Krichker

The main issues identified in this report were as follows:

1. Quantification of flows to Medway Creek during a Major and Minor Storm event.
2. Long term efficacy of LID measures used to increase infiltration/ reduce overland flow to Medway Creek.

Theme #1 – Flows to Medway Creek

The water balance presented in the report calculates that the run-off to Medway Creek (including run-off via the Wonderland Tributary, which drains directly into Medway Creek) will increase by ~25% if LID measures are implemented (from the existing 39,522 m³/yr to 49,355 m³/yr), and by 208% (to 82,257 m³/yr). While the report highlights that the overall flow volumes are small relative to Medway Creeks overall (less than 0.01% with LID measures implemented), the increase in percentage terms is substantial. That said, our chief concern is that the report presents these as annual average increases in run-off, but does not indicate what will happen during major and minor flows; run-off from the subdivision will mostly occur during storm events, and the report does not evaluate the impact of elevated storm water run-off on Medway Creek as a result of these storm events. Our concern is that this increase in run-off could have an adverse impact on the creek via increased erosion (resulting in increased sediment flow) and water quality (flows above a certain level will bypass the oil-grit separator).

Recommendation:

Evaluate the impact from increase in surface water flow from the site to Medway Creek/ Wonderland Tributary during major and minor flow events. If the evaluation fails to demonstrate that overall water quality in Medway Creek will be improved or at minimum maintained to pre-development conditions, additional mitigation measures should be considered.

Theme #2 – Long Term Efficacy of LID Measures

The water balance management strategy is also predicated on the successful implementation of LID measures that are reliant on the eventual home owner of the site maintaining them. Given the low permeability of the underlying soils, these LID measures are critical to stormwater retention and thus, reducing peak flows to Medway Creek. Our concern is that the eventual homeowner may lack the desire or skill in maintain the LID measures (e.g. rain barrels, downspouts directed to swales, etc), and as such, run-off to Medway Creek (and the Woodland Tributary) may increase over time as the efficacy of the LID measures wane.

Recommendation:

Evaluate the use of LID measures on public property that can more easily be maintained in the longer term to ensure that their function is maintained.

EEPAC COMMENTS

Colonel Talbot Property, 3612 and 3630 Colonel Talbot, 6621 Pack Road

Environmental Impact Study by Natural Resource Solutions Inc. dated (May 2018), received by EEPAC at its May, 2018 meeting

Reviewers: S. Levin, S. Sivakumar, R. Trudeau

Submitted: June 21, 2018

BACKGROUND

This will be the third set of comments submitted by EEPAC, reviewing the plans for the Colonel Talbot/Pack Road development. In previous reports, concerns about existing wetlands, significant woodlands, bats and barn swallows were expressed. In this EIS, NRSI and Stantec have provided general details about a Wetland Compensation Plan (WCP). Wetland compensation has been supported in principle by agency staff (UTRCA, City of London) for the 3 wetland units proposed for removal within the subject lands. The following EEPAC comments are intended to help shape the nature of the wetland compensation plan.

Theme #1: Employ the Precautionary Principle

The following research should be considered when formulating and implementing the Wetland Compensation Plan.

- Very little is known about restoring inland freshwater wetlands, such as ponds, forested wetlands, bogs or fens (Kentula).
- The precautionary principle should be applied more rigorously in regards to wetlands where our knowledge of their functions and processes is limited. Instead, too much faith is put into the ability of restoration, relocation and recreation of wetlands to recover lost biodiversity (Maron et al., 2012).
- Time lags, uncertainty and problems with the measurability of the value being offset can seriously limit the technical success of offsets (Maron et al., 2012).
- It is the case that “project impacts cause immediate and certain losses, whereas the conservation gains of an offset are uncertain and may require many years to achieve” (McKenney and Kiesecker, 2010, p.171).
- Small wetlands may only be able to support a limited number of individuals and they may not be connected enough to larger systems for local biota to restore the wetland to pre-impact functioning (Moreno-Mateos et al., 2012).
- Nowhere is there a resounding success story, where offsetting has been demonstrated to achieve its full potential (Poulton and Bell, 2017, p. i).

- In a study by Suding (2011), reviewing the successes and failures of restoration projects around the world, it was found that only a third to a half of projects were successful where restoration was used to fix a degraded system, and that when restoration was used to re-create a habitat, the success rate was even lower (Maron et al., 2012).
- In a meta-analysis of restored wetland systems around the world by Moreno-Mateos et al. (2012), it was found that even after a century, the biological structure (i.e. plant assemblages) and biogeochemical functioning (storage of carbon in wetland soils) was on average 26 percent and 23 percent lower respectively than reference sites.
- Recovery is clearly very slow, or in some cases the post-disturbance systems move toward an alternate state that is different from the reference conditions (Moreno-Mateos et al., 2012).

Recommendation #1: Develop a WCP that assumes low or no impact is impossible and therefore the WCP should be enhanced with extraordinary features. (e.g. doubling wetland area, lengthy monitoring period, quantitative data collection)

Theme #2: Ensuring the survival of a relocated Significant Wildlife Habitat.

Provincial Policy Statement (PPS 2014)

Development and site alteration is not permitted within significant wildlife habitat “*unless it has been demonstrated that there will be no negative impacts on the natural features or ecological functions*”. Similarly, the PPS (2014) states that development is not permitted within adjacent lands to significant wildlife habitat “*unless ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*”

The WCP will be designed to limit the negative impact of the SWH relocation but what about future development on adjacent lands. For example, planners should account for known impacts in neighbouring developments and the cumulative amount of disturbed/converted habitat relative to the amount of undisturbed habitat (OMNR 2011). A water balance study needs to be undertaken to ensure that there will be no measurable change in the water table level or in surface water quality or quantity. Vegetation on adjacent land should never be removed if it is immediately adjacent to crayfish habitat, as this is important forage. Surface water runoff needs to be directed away from potential crayfish burrows to avoid sedimentation that adversely affects the crayfish’s ability to dig burrows. Maintenance of drainage ditches (e.g., clearing of ditches) should be scheduled for periods when the crayfish are less likely to be present (e.g., early spring, when adults are often found in streams, lakes, and rivers) (Crocker and Barr 1968). (SWHMiST 2014)

Recommendation #2: Adjacent landowner awareness about the presence of burrowing crayfish and the importance of maintaining their habitat is an important conservation strategy and should be included in the WCP.

Theme #3: Multiplier Ratios

To address the problem that restoration or re-creation projects rarely, if ever, produce an equally biodiverse and functional wetland, multipliers are used to determine the scope of an offset project. Since wetlands are particularly valuable, the offset multiplier for wetlands is usually higher compared to other areas. Specifically, a restoration area should be several times larger than the impact site to compensate for the very high risk of failure or low performance. The London Plan specifies that “mitigation shall mean the replacement of the natural heritage feature removed or disturbed on a one-for-one land area basis (The London Plan, 1401), which seems insufficient given the uncertainties of success and the goal of the provincial wetland strategy aiming for a net gain of wetland area. However, The London Plan goes on to say “compensatory mitigation shall mean additional measures required to address impacts on the functions of the Natural Heritage System affected by the proposed works. The extent of the compensation required shall be identified in the environmental impact study, and shall be relative to both the degree of the proposed disturbance, and the component(s) of the Natural Heritage System removed and/or disturbed” (The London Plan, 1401). And 1402 (3) does state that “replacement ratios greater than the one-for-one land area [are] required to mitigate the impacts of the proposed works” (The London Plan, 1402).

Recommendation #3: Considering the limited success of wetland offsetting, selecting 4x as the multiplier would create a medium-sized wetland of 4 hectares. Larger wetlands do better than small isolated ones. Create a medium sized wetland of 4 hectares including the buffer.

Theme #4: A Wetland Compensation Plan That Ensures Success.

No One-Size-Fits-All

There really is no one-size-fits all guidance for offset; local contexts can provide a variety of challenges. As McKenney and Kiesecker (2010) point out, no two areas are exactly ecologically identical and we cannot expect with relocation or re-creation to produce an exactly equivalent wetland. So then, how do we best create “equivalency” to address the losses of biodiversity and functionality? Questions that must be addressed prior to any relocation or offset project are: where should the offset be located, when and for how long should it be operational, how should we manage risk of failure, and what will we do if an offset fails to reach its goals (McKenney and Kiesecker, 2010).

Baseline Data

To create equivalency, measurable performance standards (baseline data) must be established followed by a detailed method of tracking, reporting and recordkeeping. Baseline data should consist of both qualitative and quantitative observations.

To provide a useful bank of baseline data, consider the following:

- Counting the actual number of crayfish chimneys will establish a baseline value for future comparison
- Three Western Chorus Frogs were documented in the general area and that is a baseline value that can be used by future monitors.
- The Great Lakes Marsh Monitoring Program should be used to collect baseline data on birds, amphibians and turtles. In the monitoring period, population trends, abundance and occupancy of different species can be compared.

- The Vascular Plant Species List (Appendix V) is for the entire study area. Specific Habitat Surveys as outlined in the Great Lakes Marsh Monitoring Program should be conducted for the 3 existing wetland features. The relocated wetland should closely resemble the wetlands lost, minus the invasive species. *Page 5, wildlife salvage, bullet 3 of the WCP does appear to suggest this.*
- As stated in the EIS, Tables 5 and 6 (page32-33) provide a characterization of water quality and quantity for the wetland feature, to be used as baseline data.
- **Use the Biological Monitoring and Assessment Program (BioMAP) to establish baseline conditions.**

Recommendation #4: Establish measurable baseline data that can be compared to data collected in the multi-year monitoring program.

Site Selection

EEPAC prefers that the WCP recommend that the relocated wetland be built within the subject lands and adjacent to the off-site area labeled FOD where a large wetland exists. Appendix IX, Map 1 designates two areas within the subject area that might be suitable. However, both are situated on the high point of the property, outside the fluvial terrace and groundwater connections are not indicated. They are situated close to tributaries. The more northern area is relatively adjacent to FOD.

Ontario is still determining the duration of wetland offsets, whether they should be for the duration of the negative impacts or whether they should be in perpetuity. Given the ongoing losses of wetlands across southern Ontario, it can be assumed that wetland restoration projects or relocation should continue in perpetuity, especially since it has been demonstrated that evidence does not exist that these wetlands recover full functionality. Moreover, once a wetland has been moved for one project, the “relocated” or offset wetland, should not then itself become the subject of another development project and be relocated again.

Recommendation #5: Multi-season data on ground water must be collected and the water balance calculated prior to a final site selection for the relocation.

Recommendation #6: Relocate the wetland as close to the FOD area as possible. This area is located on a fluvial terrace and appears to contain a healthy wetland.

Recommendation #7: The “relocated” or offset wetland should not itself become the subject of another development project and be relocated again.

Wildlife Salvage

A review of the Stantec ‘wildlife salvage’ at the 905 Sarnia Road project (2016) raised one significant question. What is a suitable time period between the construction of the compensation pond and the transfer of wildlife?

WCP-TOR, Sequencing and Phasing #3: “Relocation of salvaged wildlife into newly constructed wetland compensation area, with some vegetation established.”

Transferred amphibians lay their eggs among emergent and submergent plants. Tadpoles will feed on these same plants. Emergent plants are rooted in the marsh bottom and leaves and stems extend out of the water. Submergent vegetation is composed both rooted and non-rooted submergent plants and

rooted floating-leaved plants and non-rooted floating plants. Whether seeded or transferred, these plants will need time to become established.

Terrestrial crayfish scour the marsh bottom for edible organic matter. Sufficient time must be allotted for organic material to accumulate in the bottom of the newly constructed wetland.

Recommendation #8: Wildlife salvage and transfer should not occur until emergents and submergents are well-established in the compensation wetland.

Ecological Monitoring

Given that significant time lags occur before an offset project can be determined a success, the time scale must be seriously debated. Evidence has demonstrated that even 100 years after disturbance and restoration, the functions of a wetland may not have fully recovered. Indeed, to date, restoration ecologists have been unable to re-create full functional replacement; it may not even be possible to fully re-create all the functions of a wetland. Careful and regular monitoring over a long period of time is vital to catch any problems that may arise (wetland shrinkage, incursion by invasive species, deteriorating population trends) and to ensure greater probability of success. In the absence of sufficient monitoring and adaptive management, designing wetlands to be self-sustaining and self-managing will better guarantee that they succeed.

Recommendation #9: Obtain an irreversible commitment from the proponent to conduct assessment followed by monitoring enforcement, remedial measures and reporting for the relocated wetland for at least 5 years. Assessment intervals should be decided based on weather and ecological need (fall/spring/summer).

References

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Suding, K.A., 2011. *Toward an Era of Restoration in Ecology: Successes, Failures and Opportunities Ahead*. Annual Review of Ecology, Evolution and Systematics Volume 42:465-487