



Responses to Public Information Centre Questions – November 29, 2018
Mountview Wastewater Treatment Plant (WWTP) to Golden Pheasant WWTP Conveyance Strategy

Environmental Assessment Process and Consultation

1. *Is this Study subject to another Ministry review?*

Yes. An Addendum to Environmental Study Report (ESR) is prepared under the Ontario *Environmental Assessment Act*. Once the work on the addendum is complete, it will be filed for review. The Addendum is filed with the ESR and Notice of Filing of Addendum is distributed to all potentially affected stakeholders and review agencies as well as those who were notified in the preparation of the original ESR. Key provincial review agencies include the Ministry of the Environment, Conservation and Parks (MECP), Ministry of Natural Resources and Forestry (MNRF), and the Ministry of Transportation (MTO). The Addendum is available for a period of 30 calendar days for review and comment, during which time the public has a right to request a Part II Order if concerns cannot be resolved. The District may proceed with implementation following completion of the 30-day review period if no requests have been received.

Water Quality and Natural Environment

2. *Are there any effects on fish and wildlife? Specifically, what about the effect of higher wastewater effluent temperature on lake trout?*

Effluent quality standards and MECP's policies governing the Provincial Water Quality Objectives (PWQOs) are established to protect all uses of the water body including recreation, municipal drinking water supply, and aquatic life. Regulatory compliance ensures that the level of water quality is protective of all forms of aquatic life and all aspects of the aquatic life cycle during indefinite exposure to the water.

In addition, the District conducts testing to measure acute lethality of wastewater treatment plant effluent using rainbow trout according to the methods recommended by Environment Canada. Results show that Golden Pheasant WWTP effluent is not acutely toxic.

A profile of the natural environment was prepared as part of the ESR, including definition of fisheries and fisheries habitat in Fairy Lake (Section 4.3.4.1). The dispersion of the effluent at the proposed outfall location does not interfere with known lake trout spawning areas.

3. *What modelling technology did we use?*

The Cornell Mixing Zone Expert System (CORMIX) was used for the conceptual diffuser design and near-field dispersion modelling. The MIKE3 Flow Model FM was used for far-field hydrodynamic dispersion modelling and thermal modelling of the lake with atmospheric input. Further details on the modelling techniques are documented in Fairy Lake Dispersion Modelling Study, available electronically on the District's webpage.



4. What is the 1 percent versus 5 percent threshold and comparison to drinking water?

Dilution Thresholds

A 1 percent concentration means a dilution of 1 part in 100 parts (1 part effluent, 99 parts lake water), whereas a 5 percent concentration means a dilution of 5 parts in 100 parts (5 parts effluent, 95 parts lake water). As an example, if a parameter is measured at 100 mg/L concentration in the effluent and the background concentration for that parameter in the lake is 0 mg/L, the 1 percent dilution at the edge of the mixing zone for that parameter is 1 mg/L.

Drinking Water Standards

Drinking water quality standards are prescribed by Ontario Regulation 169/03. The Maximum Allowable Concentration (MAC) for nitrate (as nitrogen) is 10.0 mg/L per the drinking water standards. For the protection of recreational water uses (swimming and bathing), the MAC for nitrate (as nitrogen) will be met at the point of discharge (i.e., no dilution) with an effluent concentration of 10 mg/L in the non-freezing period. The drinking water standard for *E.coli* is not detectable. The PWQO for *E.coli* is 100/100 mL. The PWQO for *E.coli* is a guideline published by the Ministry of Health for application to swimming and bathing beaches. The proposed Golden Pheasant effluent objective for *E.coli* is <2/100 mL, with an effluent limit of <80 per 100 mL. The *E.coli* effluent limit is less than the PWQO at point of discharge (i.e., no dilution).

Application of dilution to typical effluent parameters with respect to PWQOs and drinking water standards is provided in Section 7.3 of the Fairy Lake Dispersion Modelling Report, available electronically on the District's webpage.

5. Are there dispersion maps for summer and winter available on the website?

The outputs of all scenarios considered are available in Appendix C of the Fairy Lake Dispersion Modelling Study, available electronically on the District's webpage. Summer scenario outputs are shown on Figure C.4 for the typical summer scenario and Figure C.5 and Figure C.6 for the worst-case summer scenario. The various scenarios are defined in Table 6.3.

6. Did you take into consideration the water level fluctuation?

Yes. The lake level fluctuation used for the various modelling scenarios is defined in Table 6.3. Lake levels are based on the historical record of Fairy Lake water level data at Water Survey Canada (WSC) Station 02EB016 for the period 2002 to 2017.

7. Was climate change considered in this model?

Climate change was not considered in the modelling scenarios conducted to date. However, the District has now extended GHD's scope of work to include climate change scenarios (with and without the proposed outfall) based on data available in the Muskoka Watershed Council report "Planning for Climate Change in Muskoka", January 2016.



8. *Should I be worried about the effect on Mary Lake of current Mountview WWTP effluent because of storms?*

Storm events enhance the dispersion of effluent discharge. Storm events affect any body of water in various ways, including wind and wave action, precipitation amount and temperature, residual surface water and storm collection system runoff. It is expected that storm events introduce uncontrolled surface water discharge (i.e., from streams and rivers) to the lake, while at the same time enhance the dispersion of effluent discharge.

9. *What are the details of the District's effluent monitoring program?*

The District monitors the effluent of all WWTPs as required in the MECP's approval documents, including Mountview WWTP and Golden Pheasant WWTP. Annual compliance reports are prepared and these reports are available on the District's website at the following link:

https://www.muskoka.on.ca/en/live-and-play/Water-and-Wastewater-Compliance-Reports.aspx?_mid_=635#

Outfall Location and Proposed Routes

10. *Can you provide further information on the cliff/outfall area?*

The outfall location as shown on the map is at a water depth of approximately 12 m. Moving south from the outfall location, the water depth increases rapidly to 18 m, which is a drop-off of 6.3 m (approximately 20 feet). Moving further south to the center of the channel coming from Peninsula Lake, the water depth increases further to the range of 24.4 m to 30.5 m. The contours near the outfall are shown on the map and the lake bathymetry is shown on Figure 6.1 of the Fairy Lake Dispersion Modelling Report, available electronically on the District's webpage.

11. *Could the water intake be moved (to change the Intake Protection Zone (IPZ) location) so that outfall could be moved further away from shore?*

Moving the water intake would require additional technical study, capital cost, and regulatory approval steps. The proposed outfall location prevents adverse impacts to the shoreline and the mixing zone to 1 percent concentration does not interfere with the IPZ-1.

12. *Could the outfall be moved further out into the lake?*

Moving the outfall further out into the lake (south) is not recommended because of the depth drop-off. Discharge into the hypolimnion (i.e., the dense bottom layer of water in a thermally stratified lake) is not recommended as the discharge is then isolated from mixing processes and becomes encapsulated.

13. *Could the outfall be moved by approximately 20 m to the west?*

It is apparent that the extent of the mixing zone to 1 percent concentration at the proposed outfall location is approximately 50 m from the edge of the IPZ-1 for the "worst case - winter" scenarios (bottom layer



only). Some minor adjustment (<50 m) of the outfall location can be considered. This would be subject to final design requirements, but a relocation could be possible and will be examined as part of the process.

14. *Has a route been determined from Golden Pheasant WWTP to the proposed outfall location?*

No. Various considerations for the selection of an outfall route include legal, property designations, natural environment, cost, engineering, and constructability.

Project Cost

15. *How confident is the District in the cost saving of this alternative?*

The District's confidence in the cost saving of this alternative is high. Capital costs of both alternatives were developed based on detailed engineering estimates for all components of the project. In the District's experience, there is greater risk for cost increases associated with open cut excavation and the proposed alternative significantly reduces the extent of open cut excavation by use of slip-lining technology. In addition, there is operational cost savings associated with the use of a new gravity-flow outfall pipe as proposed in this alternative in comparison to pumping effluent from Golden Pheasant WWTP through the existing outfall pipe.

Project Schedule

16. *How quick can the transition be to decommission Mountview WWTP?*

A sequenced approach is required to decommission the Mountview WWTP, consisting of the following steps:

1. Build and commission new Golden Pheasant WWTP outfall
2. Convert existing Golden Pheasant WWTP outfall to new forcemain
3. Construct new Mountview Sewage Pumping Station (SPS) and decommission Mountview WWTP

The Mountview WWTP will be decommissioned by year 2022.

Construction Impacts

17. *What will happen to Mountview site? What's the process of decommissioning a plant?*

A new Sewage Pumping Station (SPS) will be constructed on the existing Mountview WWTP site to convey flows to Golden Pheasant WWTP. The Mountview WWTP will be decommissioned by the removal of process equipment, buildings, and structures. Soil, groundwater, and sediment conditions on the site will be assessed to the applicable standards and remedial measures will be undertaken if required to restore site conditions. Since the existing site is larger than needed for the new Mountview pumping station, it is possible that the District will redevelop some portions of the site (i.e., from industrial use to



park/green space). If so, the District's land use approval process will require Environmental Site Assessment to be conducted with filing of a Record of Site Condition under Ontario Regulation 153/04.

18. *Will there be any effects to Fairy Vista Trail?*

There may be some temporary disruption of the Fairy Vista Trail near the Golden Pheasant WWTP. Use of slip lining technology to convert the existing Golden Pheasant WWTP outfall to a conveyance forcemain will limit the construction disturbance (i.e., along Highway 60) to the extent possible. The trail will be fully restored following any construction disturbance.

General

19. *Do we capture methane from Golden Pheasant WWTP?*

Yes. Treatment of wastewater solids produces biogas in the anaerobic digestion process. Biogas is comprised of approximately 60 percent methane. Biogas generated at the Golden Pheasant WWTP is captured and currently used for building and process heating. Excess biogas that is not needed in the plant operation is burned in a waste gas burner device.