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October 26, 2015

File: 2014-4531.000.E.400

Ms. Tracey Braun, M. Sc.
Director, Environmental Approvals
Manitoba Conservation
123 Main Street, Suite 160
Winnipeg Manitoba, R3C 1A5

**Re: TOWN OF VIRDEN WWTF
NOTICE OF ALTERATION**

Dear Ms. Braun:

In accordance with the Environment Act (Section 14), this submission is a request for a minor alteration to the new Licence being prepared for the Town of Virden Wastewater Treatment Facility (WWTF).

Due to budget constraints, there were a few changes made to the Phase 1 work program from what was proposed in the EAP submitted in January of 2014. The following is summary of the alterations describing what was actually provided in the Phase 1 works completed on April of 2015.

In the EAP, the new Headworks proposed for Phase 1 was a concrete and masonry structure with tankage below grade for septage receiving and chlorine contact. The original proposed treatment consisted of a fine screen in a concrete trough, followed by grit removal and primary treatment through a belt filter.

To accommodate the available budget, the actual Headworks building was designed as a pre-engineered building on a structural slab. There is no tankage below grade; the septage receiving system is deferred to Phase 2, and the existing chlorine contact chamber was re-utilized in place of building a new one. The proposed design was also an elevated two-storey structure that provided sufficient hydraulic gradient to flow by gravity to the future SBRs. The actual Headworks is now a single storey structure that will require a new lift station as part of Phase 2 to pump effluent up to the future SBRs.

Treatment now consists of a packaged fine screen system that receives piped flow from the lift station and the screened wastewater flows by gravity to the new belt filter. The grit removal systems were deferred to Phase 2. The removal of the existing chlorine contact chamber was also deferred to Phase 2. Chlorine (Sodium Hypochlorite) and Sodium Bisulfite are now fed neat from 250L barrels in the old wastewater facility. The original chlorine dosage system was maintained along with the original contact chamber. A new bisulfite feed system was added in Phase 1 and doses downstream of the chlorine contact chamber.

The original proposal also had the new Headworks build's electrical service sub-fed from the old plant. In actuality the new Headworks now has its own electrical service.



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In general, the Phase 2 works has not changed from what is proposed, other than the inclusion of those works that were deferred from Phase 1. The proposed new lift station that will pump to the SBRs will be located in the old wastewater plant; built in conjunction with the other tankage proposed for this area.

Based on the aforementioned alterations, the following revisions are made in reference to the Draft EAL that was circulated by Mr. Boswick earlier this year.

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"Phase One" means all activities and components of the Development associated with the following:

...

- d) ~~new electrical service entrance in the headworks and sub-feed service back to the old wastewater treatment plant;~~

revise to:

- d) *new electrical service that enters one CSTE and it then splits into two services; one feeding the old wastewater treatment plant one feeding the new headworks building.*

- g) ~~relocation of the effluent line away from future related construction areas.~~

Delete from Phase 1. This work will be included in Phase 2.

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16. ~~The Licencee shall, during Phase One operation, utilize a hypochlorite solution that will provide a chlorine dose to achieve effective primary effluent disinfection process with two pass channels with length to width ratio of 40:1 and minimum contact times of 30 minutes at design average daily flow and not less than 15 minutes at design peak hourly flow or maximum rate of pumping.~~

revise to:

16. *The Licencee shall, during Phase One operation, utilize a hypochlorite solution that will provide a chlorine dose to achieve effective primary effluent disinfection process with the existing chlorine contact chamber.*



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Respecting Operation – Phase One

23. The Licencee shall, during Phase One operation, not discharge effluent from the wastewater treatment plant, as sampled at the monitoring station located after chlorination/dechlorination, where:
- ...
- b) the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample, as determined by the monthly geometric mean of 1 grab sample collected at equal intervals on each of a minimum of 3 consecutive days per week;

Over the last several months the Town has been trying to increase chlorine dosage to reduce the fecal coliform content of the effluent. At one point they were dosing nearly two 250L barrels per day and the fecal concentration was only reduced to 15,000 to 20,000 per 100 ml. Although there is a sodium bisulfite feed to de-chlorinate prior to the outfall, the Town was concerned with dosing this amount of chlorine into the effluent. It does not seem feasible for the town to achieve the 200 per 100 ml MPN limit with chlorine at this time given that they only have primary treatment in place.

The Town and MB Conservation will likely need to have further discussion on this issue. With the announcement of funding for Phase 2, it is anticipated that the full treatment system will be in place by early 2017, and the new system will then meet the disinfection targets.

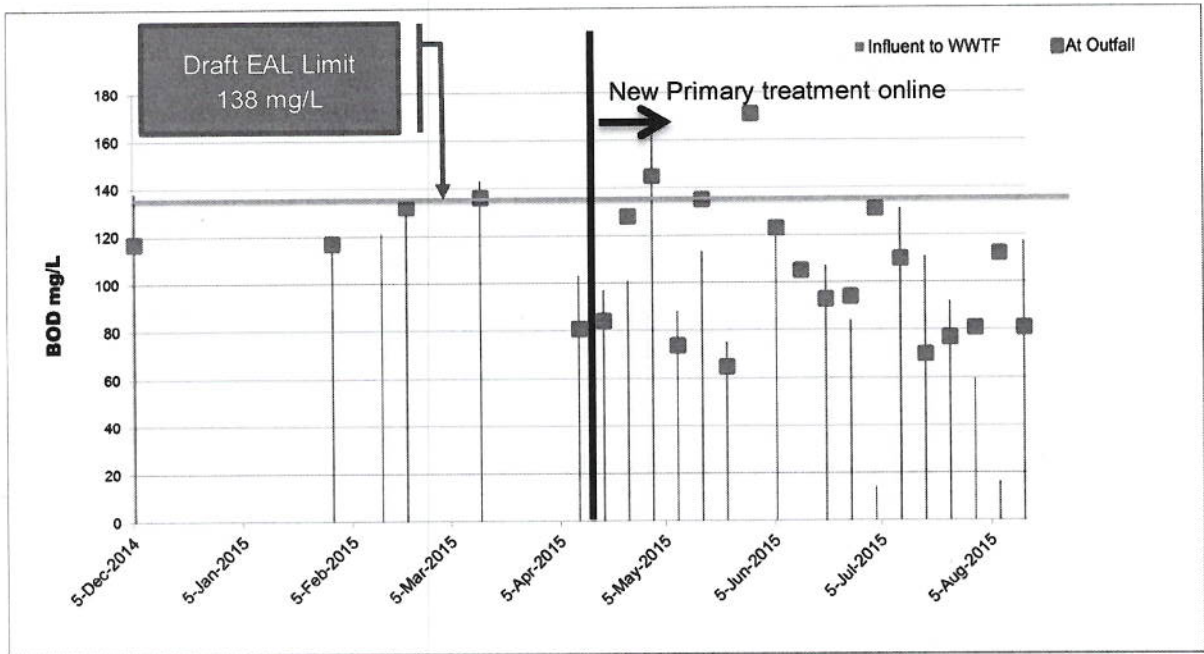
As additional information, included are the lab summary results from December 2014 through to August 2015. The results show that in general the new primary treatment process is performing as expected with a moderate reduction in TSS and a minor reduction in BOD through the process.

Given that this is only primary treatment, there is no reduction in pathogens to be expected through the Salsnes; this will need to be treated through chlorine addition. The amount of chlorine required to provide sufficient pathogen kill (<200 MPN) is extremely high and concerning to the Town. As the flowing charts show, the Fecal count was reduced to near 230 MPN at one time, but at the cost of two sodium hypo barrels per day. The Town feels this amount of chlorine, even when suitably countered with de-chlorination, can be more harmful to the environment than the elevated Fecal counts. Thus, they are currently dosing a barrel every one to two days.

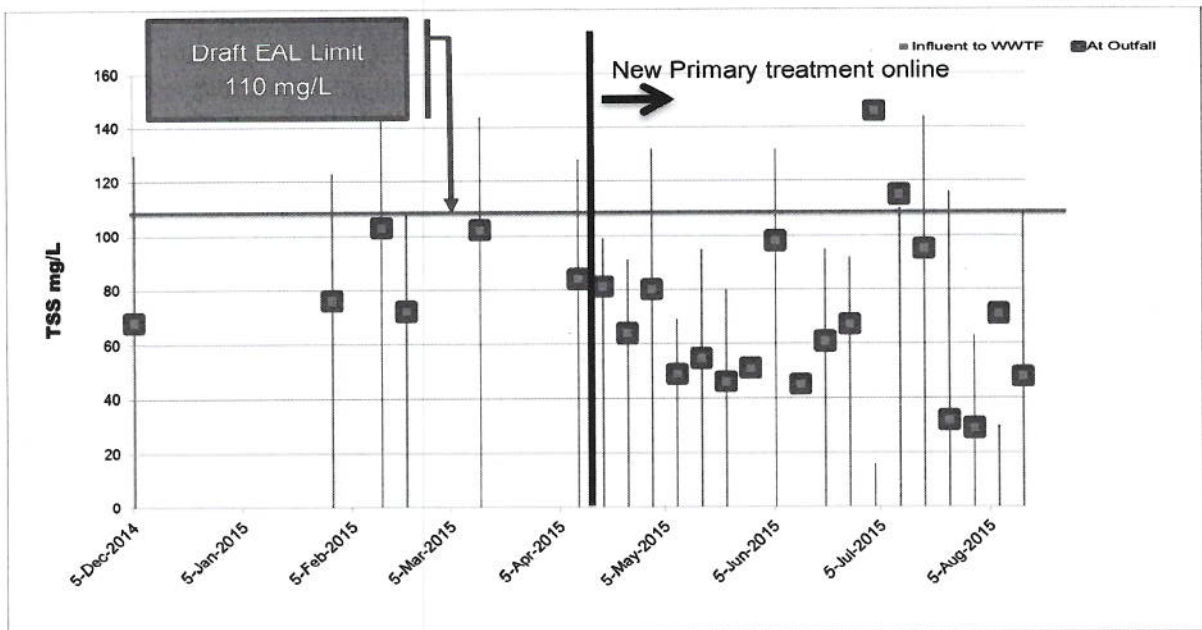


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Viriden BOD Results



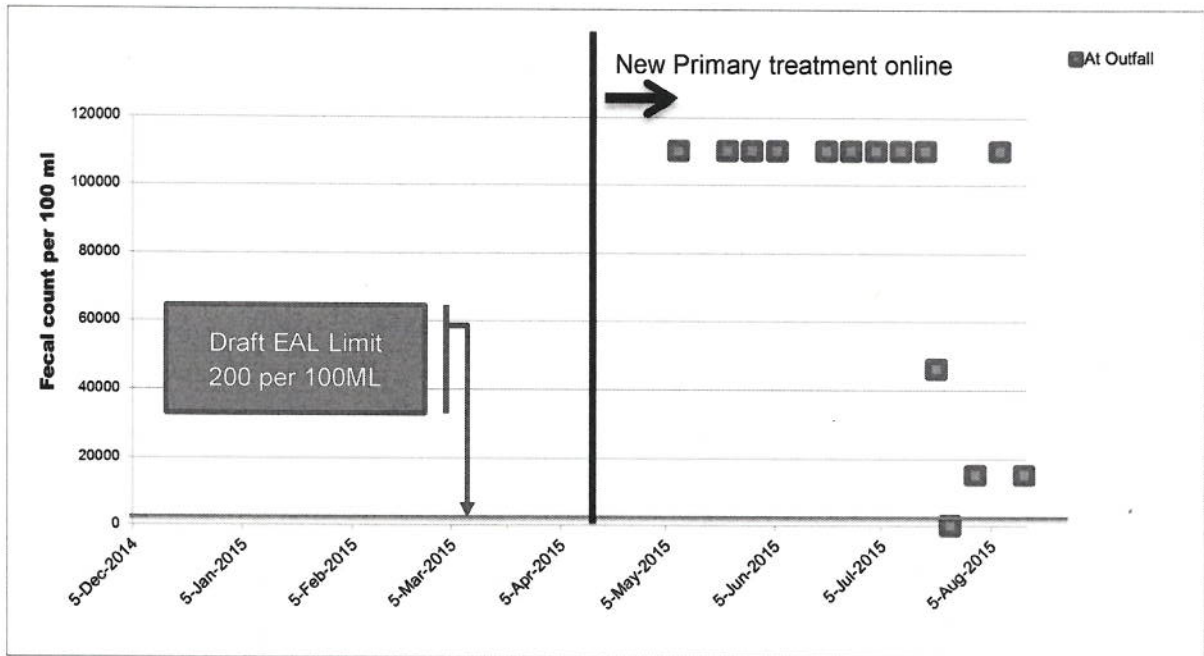
Viriden TSS Results





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Viriden Fecal Results



If there are any questions regarding this submission, please contact the undersigned.

Yours truly,
Associated Engineering Ltd.

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