ENHANCED TERTIARY SEDIMENTATION FOR PHOSPHOROUS REMOVAL

Enhanced Tertiary Sedimentation For Phosphorous Removal

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Susan Atlin

Deseronto WWTP

- Package Sewage Treatment Plant
- Constructed in Two Modules
- 1600 m³/day Capacity
 - Extended Aeration
 - Contact Stabilization

Existing Plant Process Schematic

Plant No. 2 (288 m³/day)



Plant No. 1 (1,251 m³/day)

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Deseronto WWTP



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Grit Removal



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Package Plant



Existing Process Performance

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Flows (m³/day) Average Peak	1,139 3,043
CBOD (mg/L) Influent Effluent	95.1 6.7
Suspended Solids (mg/L) Influent Effluent	117 9.3
Total Phosphorous (mg/L Influent Effluent) 3.0 0.41

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Bay of Quinte RAP

- Effects all sewage plants discharging to the Bay and Trent River
- Bay of Quinte Total Phosphorous Limit
 - Not to be exceeded Load Limit
 - Based on 0.3 mg/L Times the Hydraulic Capacity
 - Implemented by 2001
- Trent River
 - Load Limit Based on 0.5 mg/L Total Phosphorous
- Recommends Elimination of Winter Spreading of Biosolids

Phosphorous Removal Technologies

- Chemical Addition
 - Dual Point Alum Addition
 - Polymers

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Lars Stern

Susan Atlin

- Biological Phosphorous Removal
- Filtration
 - Fixed Bed Sand Filters
 - Moving Bed Sand Filters
 - Cloth Filters
 - **Tertiary Sedimentation**
 - Ballasted Assited Flocculation
 - Solids Contact Reactors
- Membrane Processes

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Short Listed Technologies

- Tertiary Filtration
- Tertiary Sedimentation
- Membrane Reactors

Evaluation of Short Listed Technologies

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- Installation Costs
- Building Costs
- Operating and Maintenance Costs
- Operating Experience
- Process Stability
- Plant Foot Print
 - Effect on Shore Line
 - Rock Excavation
- Holistic Evaluation





Figure 3 -Tertiary Treatment Process Schematic



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Summary

- Evaluated Available Options for TP Removal
- Short Listed Technically Acceptable Technologies
 - Holistic Evaluation of Technologies
 - Tertiary Sedimentation Chosen as the Most Appropriate Technology
- Construction Start Spring 2000

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