Sequencing batch reactor design for upgrade of Morristown wastewater treatment plant

Ashish Mehna, P.Eng.

PREMIER TECH AQUA

Project summary

- Project location – Village of Morristown
- Client – Village of Morristown
- Consultant – Burley-Guminiak & Associates, NY 13617
- Biological treatment selection – Sequencing Batch Reactor (SBR)
- Phase-1, Plant commissioned - 1994
- Phase-2, Plant Commissioned - 2011


MORRISTOWN


VILLAGE OF MORRISTOWN
WASTEWATER TREATMENT FACILITY

Design philosophy

- Efficient / reliable wastewater treatment quality;
- Sludge treatment / management;
- Lack of attention from a competent operator.

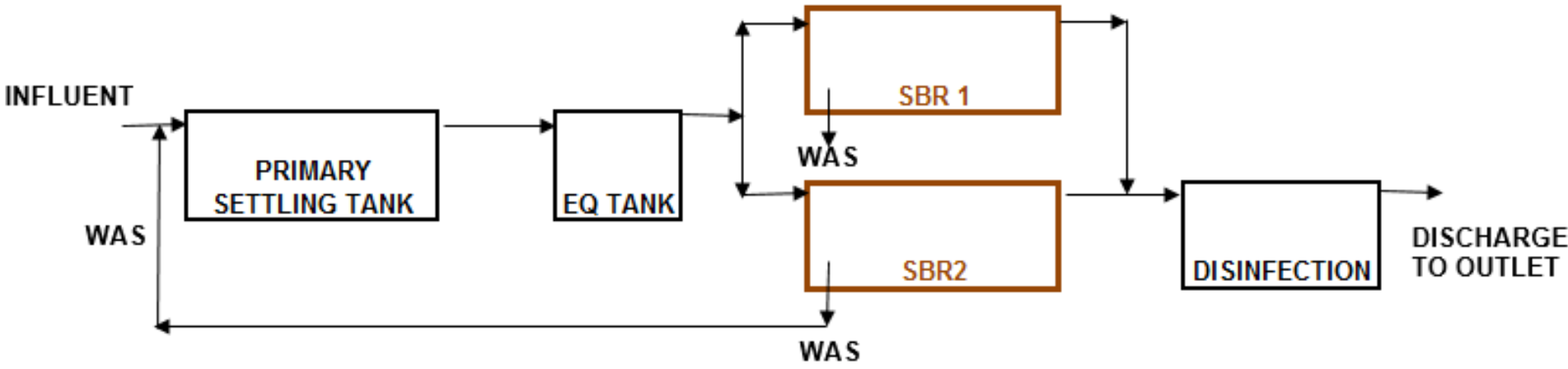
Proposed system

- Integrated function for grit removal;
- Integrated function for oil and grease removal;
- Integrated function of primary clarification;
- Integrated function of sludge storage over long period of time;

Existing Treatment Plant (Phase-1)

- Average design flow = 60000 GPD
- Peak flow = 136000GPD
- BOD: 200mg/L
- TSS: 135mg/L

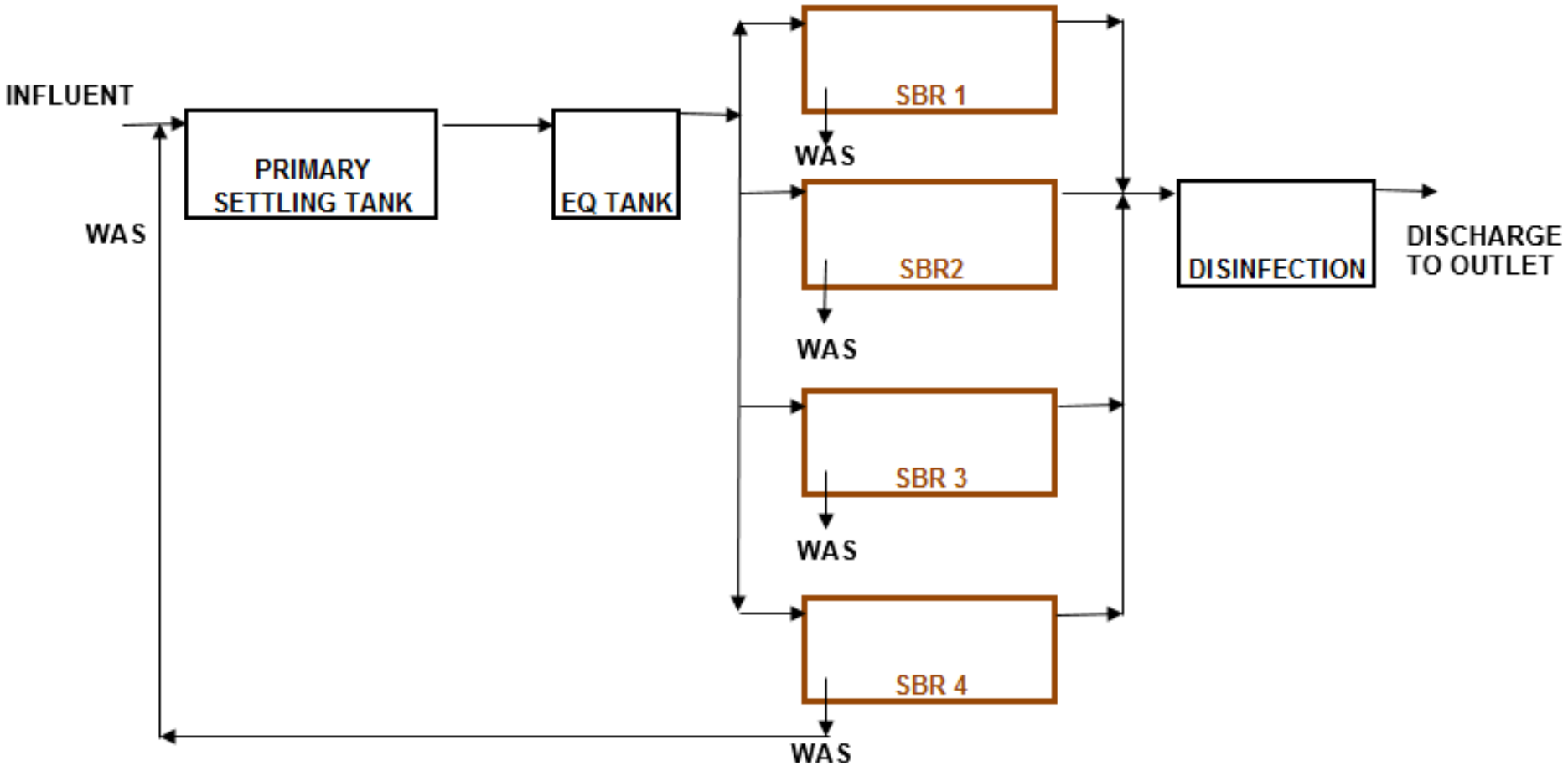
Process schematic (Phase-1)



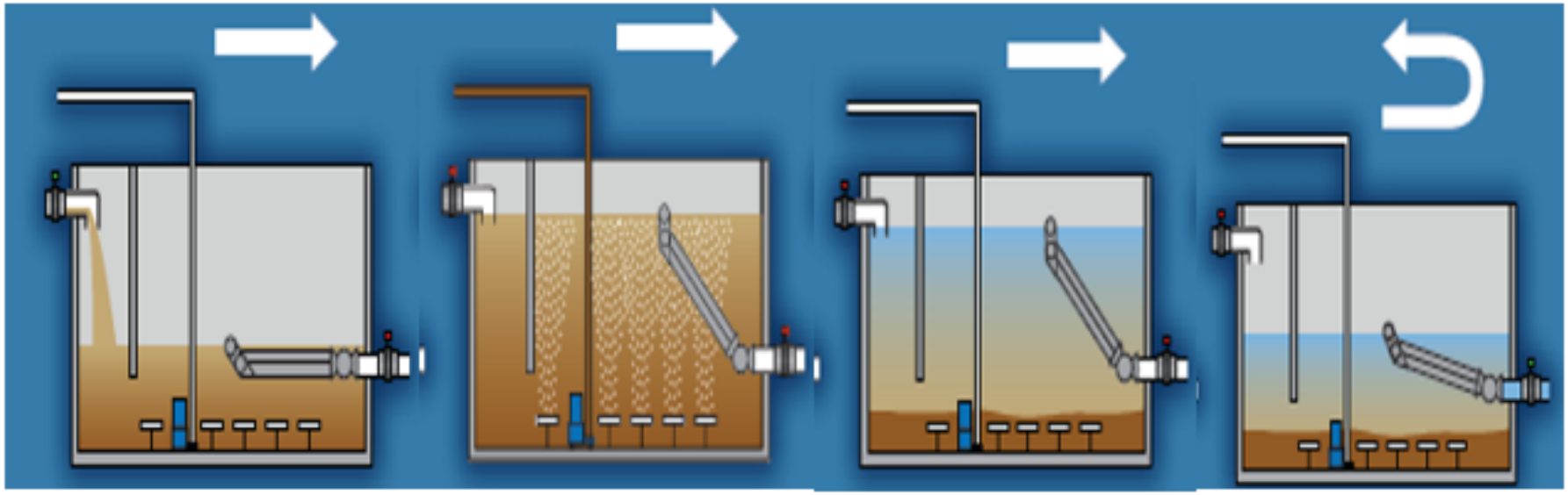
Design issues

- Village was extending wastewater collection system.
- New Average design flow = 120000GPD
- New Peak flow = 200000GPD

Process schematic (Phase-2)



Basic Sequence at average flow

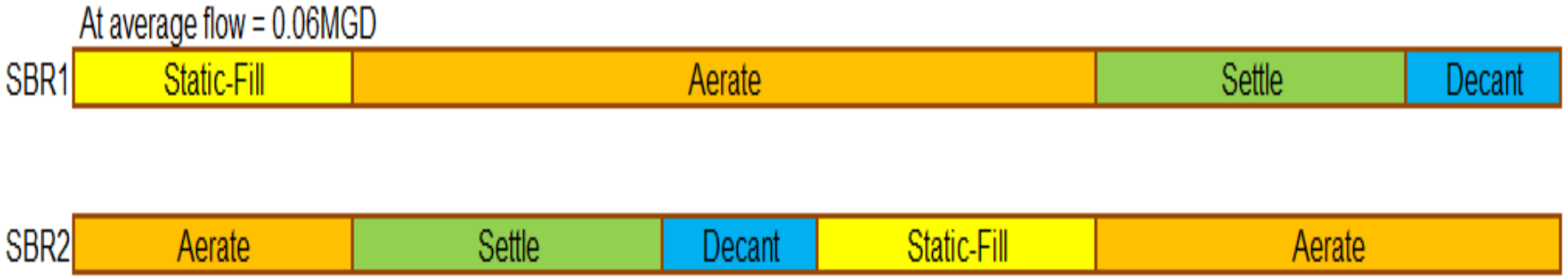


STATIC FILL AERATE SETTLE DECANT

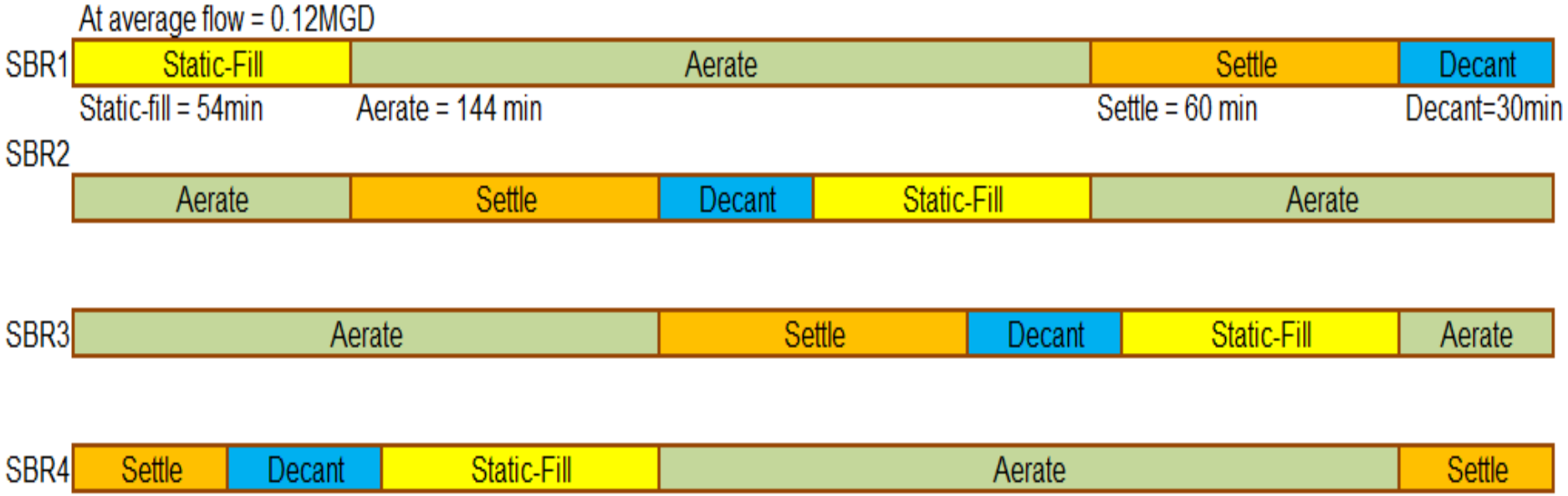
Sequence at average flow

- Static fill = 54 min
- Aerate =144 min
- Settle = 60 min
- Decant = 30 min
- Total cycle time = 4.8 hours

Basic Sequence at average flow Phase-1



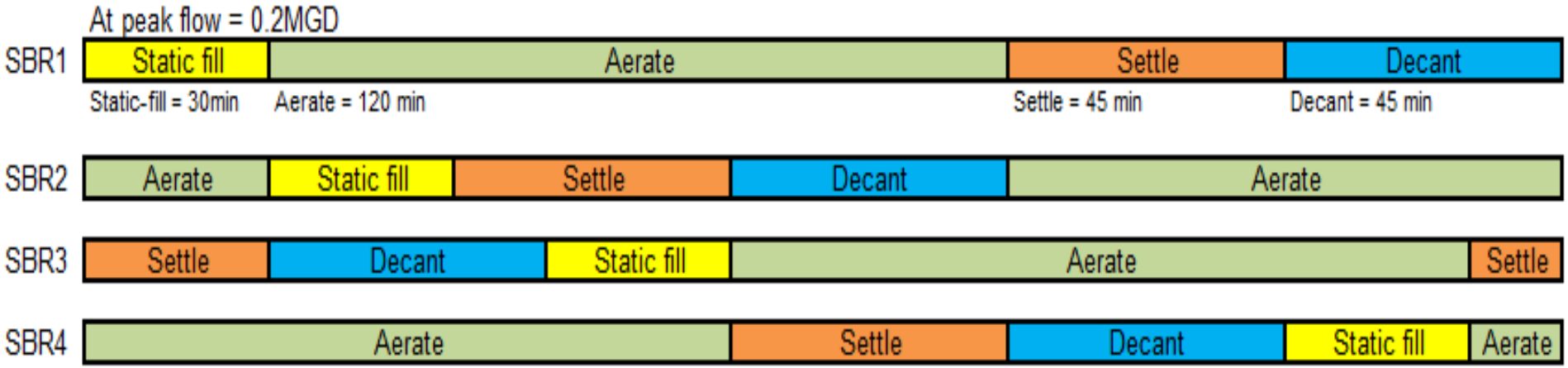
Basic Sequence at average flow Phase-2



Sequence at peak flow

- Static fill = 30 min
- Aerate =120 min
- Settle = 45 min
- Decant = 45 min
- Total cycle time = 4 hours

Basic Sequence at peak flow Phase-2



Influent characteristics

	Unit	Value
BOD_5	**Mg/L**	**170**
TSS	**Mg/l**	**270**

Effluent analysis

Effluent Parameter	Effluent objectives	Analysis results
BOD_5 (mg/L)	30	8.4
TSS (mg/L)	30	4

Summary

- Sludge issues can be managed by having primary settling tank
- SBR can be used for small flow treatment plant
- Minimum daily monitoring

Thank you!

Questions?

PREMIER TECH AQUA
1, Avenue premier, Riviere -Du –Loup
Quebec G5R 6C1 Canada
Ph.: 418 867-8883
Toll free: 1 800 632-6356
Fax: 418 862-6642
www.premiertechaqua.com
meha@premiertech.com