

Wastewater - Its Journey to Treatment and Return to the Environment

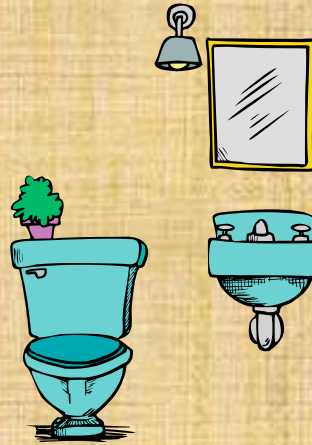


ESI

Where does it all go!



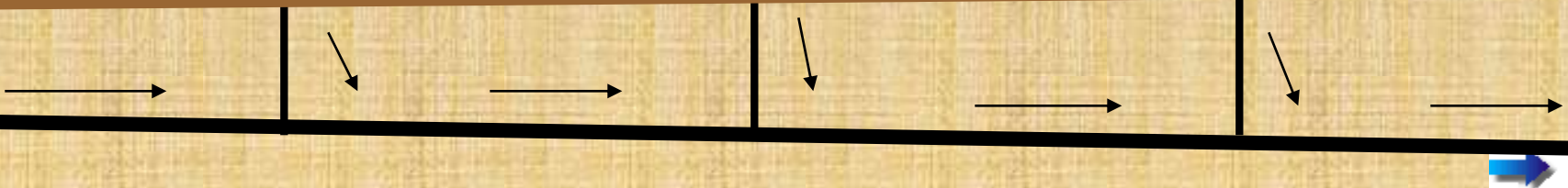
Where does the water from the washer go?



When you flush the toilet where does the contents go?



By gravity flow, the waste is on its way to your local wastewater treatment plant!



Why treat wastewater?

- Causes a demand for dissolved oxygen (lower DO levels of streams)
- Adds nutrients (nitrate and phosphate) to cause excessive growth
- Increases suspended solids or sediments in streams (turbidity increase)

Sewagesheds

- an area where
sewage is collected
and delivered to a
WWPT

Blue Plains
WWTP

Piscataway
WWTP

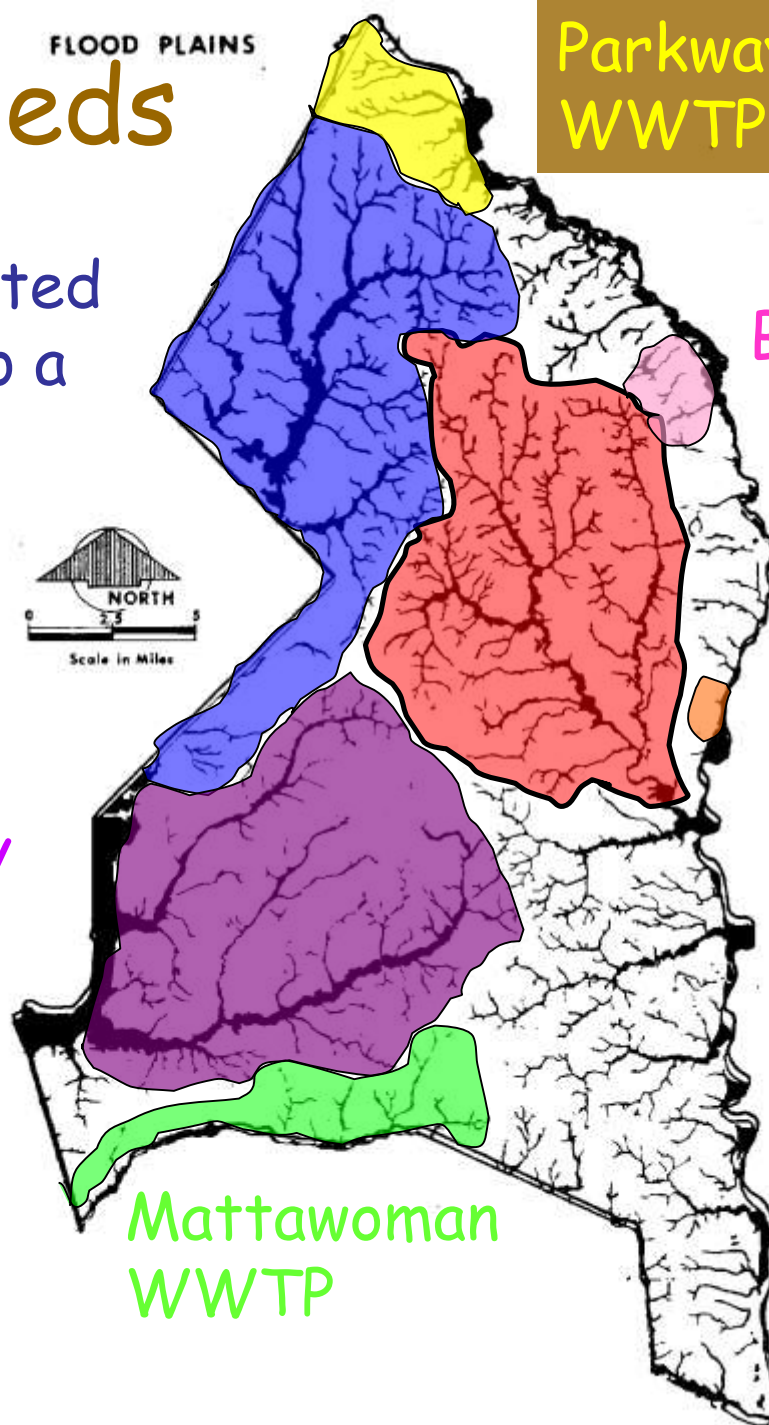
Mattawoman
WWTP

Parkway
WWTP

Bowie WWTP

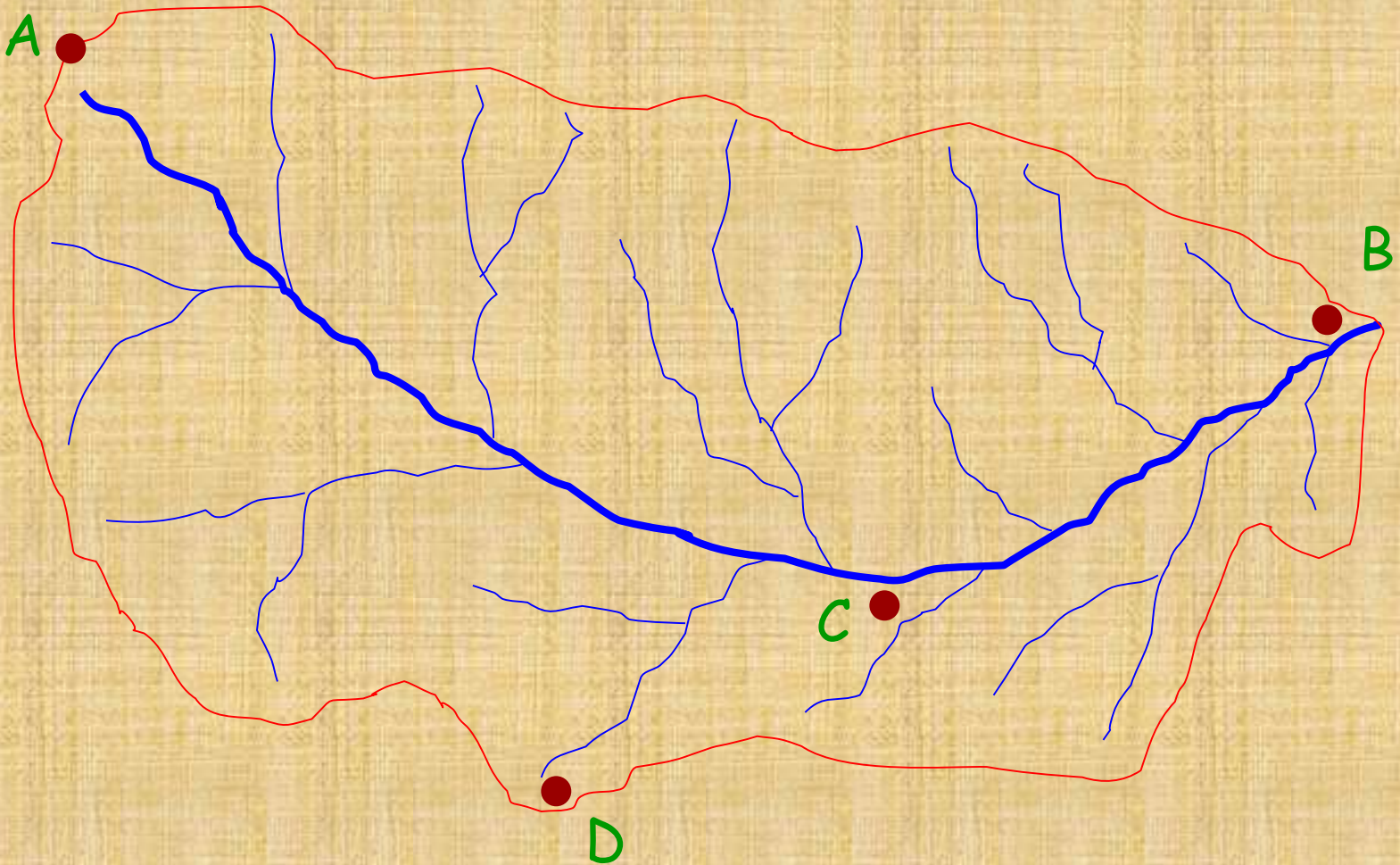
Western
Branch
WWTP

Marlboro
Meadows
WWTP



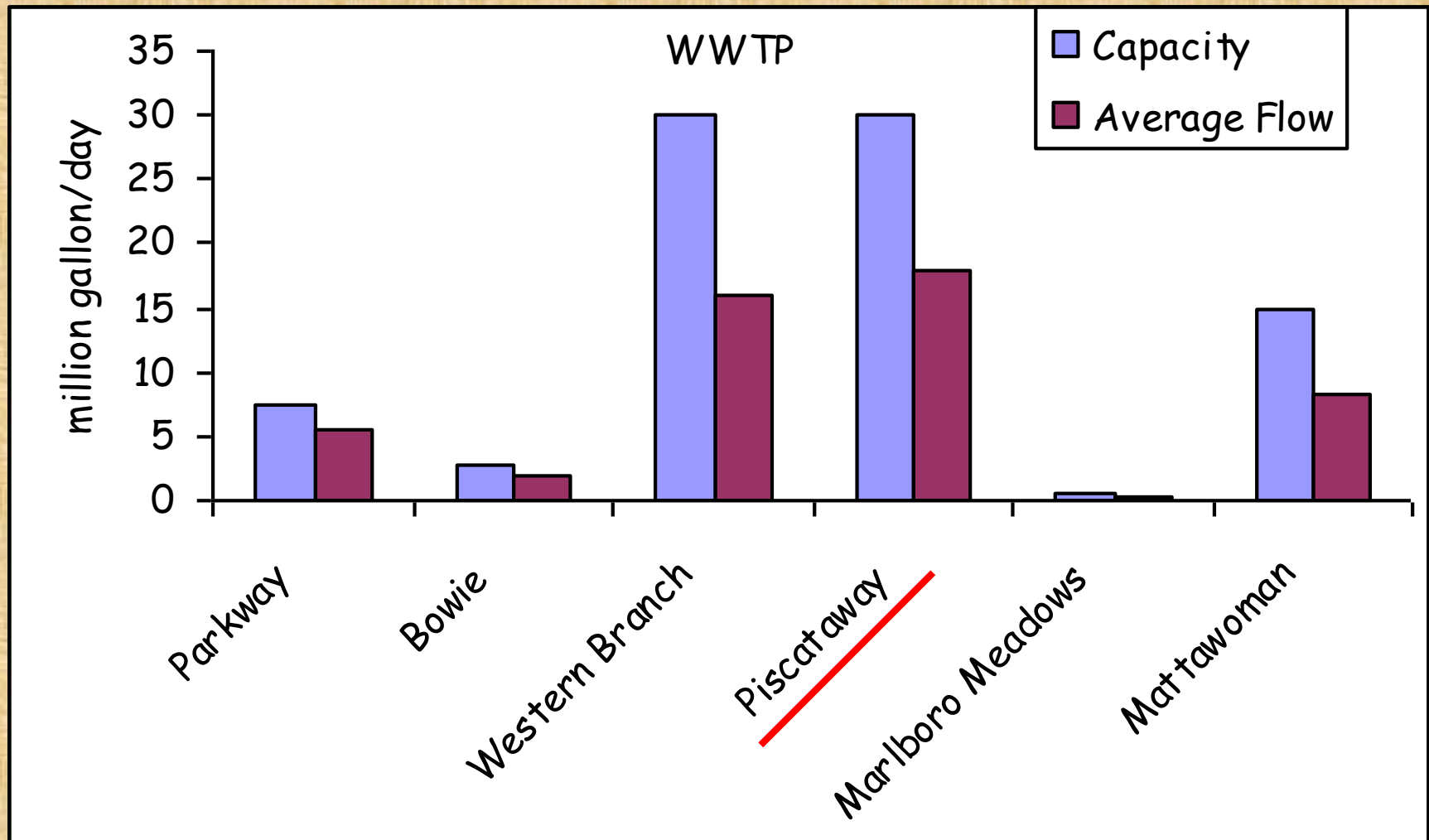
approximate
boundaries

Where do you locate the
WWTP in the watershed?



Consider the four possible sites.

The volume of wastewater



PGC 1992 Comprehensive Ten Year Water and Sewerage Plan

Levels of Treatment

Primary

- removal by physical separation of grit and large objects (material to landfill for disposal)

Secondary

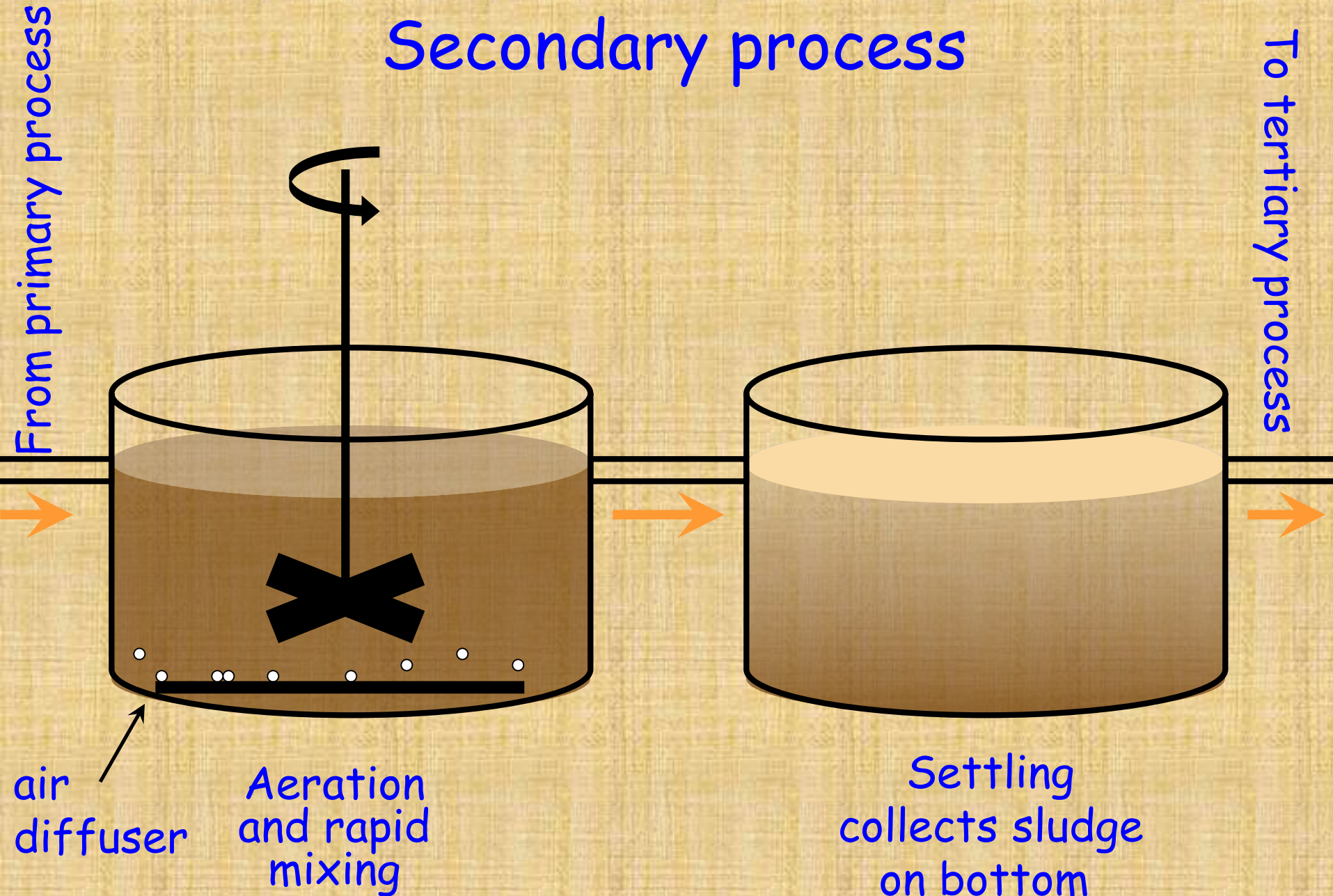
- aerobic microbiological process (sludge)



Mostly dead
microbes

- lowers suspended solids content (into sludge)

Secondary process



Levels of Treatment continued

Tertiary (advanced)

- anaerobic microbiological process with a different microbe where O_2 is toxic (more sludge)

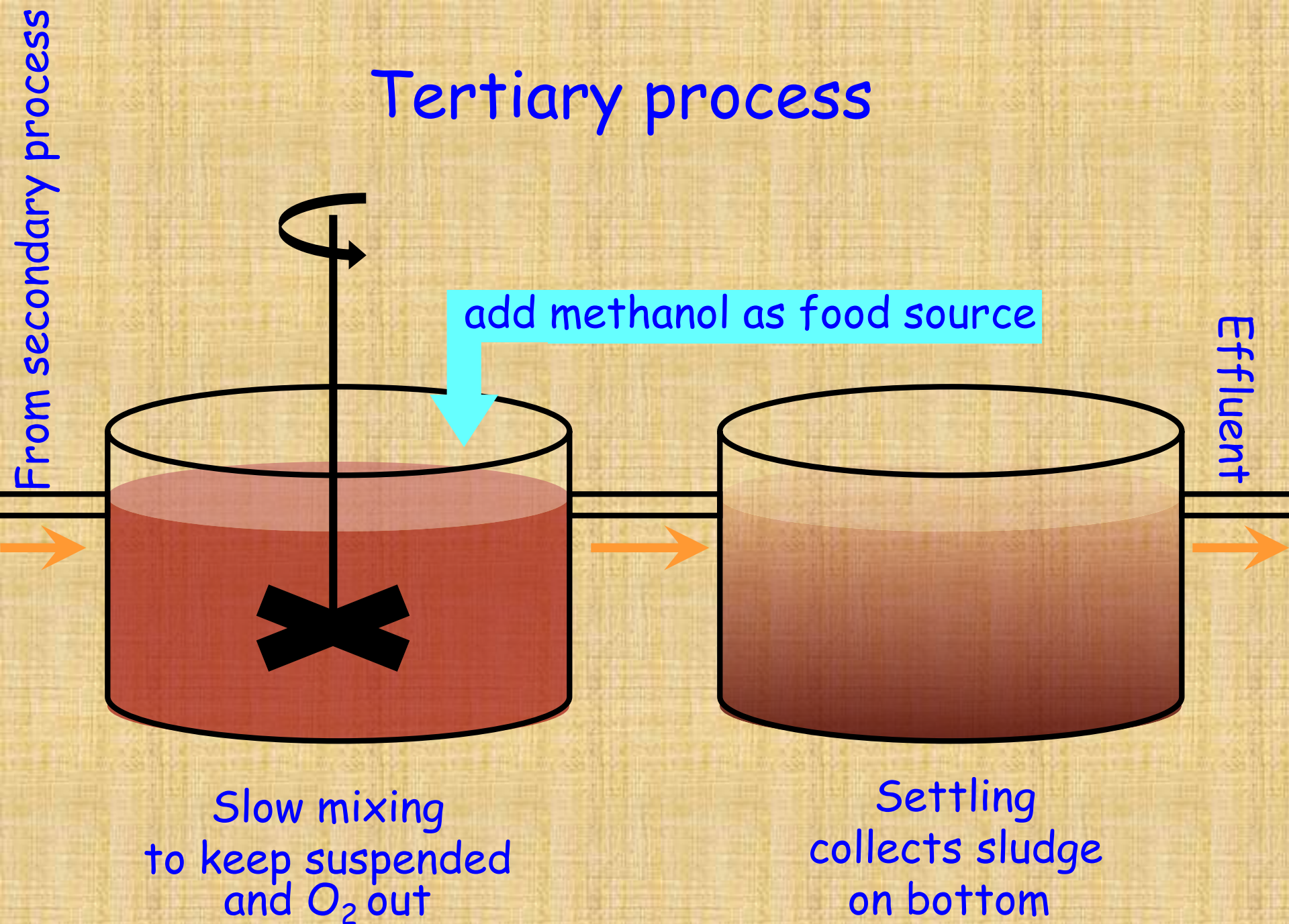


- PO_4^{3-} if not removed in sludge in secondary process



- aeration to strip N_2 and re-oxygenate (add DO)

Tertiary process



When the treatment is done...

- Effluent back to stream after
 - a final carbon filtration and
 - chlorination/dechlorination
- Sludge - very nutrient rich
 - applied directly to land as fertilizer
 - incinerated (good fuel after drying)
 - composted (Compro® from WSSC)

Note - Leafgro® is composted
leaves and grass from MES