Co-op Refinery Complex
Wastewater Improvement Project, Phase 2

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Hyperion Water Reclamation Plant
Los Angeles, California
August 13, 2019
Co-op Refinery Complex

- Operates on 800 acres in Regina, Saskatchewan, Canada
- Employs >1,000 people
- Processes 130,000 bpd
- Distributes up to 17 million liters of fuel daily (4.5 million gallons) in western Canada
Water Reuse Project – the Expansion

› Phase V major expansion: 100,000 bpd to 130,000 bpd ($2.8B)

› High quality water needs for boilers, cooling towers, powering equipment, hydrogen production
› Water supply: onsite groundwater wells supplemented by City water – insufficient for expansion
› Provincial Water Security Agency strictly regulates water allocation
› Wastewater pre-treated before sending to City’s WRF not of reuse quality
2-mgd Membrane Bioreactor Plant

- Two 1-mg membrane bioreactor tanks
- Dissolved gas flotation
- Permeate and oily sludge tank
- Biosolids stabilization tank
- Dewatering centrifuges
- Chemical feed
- Piperacks
- Firewater system, electrical/controls, buildings, site work
- HERO (High Efficiency Reverse Osmosis) process downstream for reuse at demineraliser plant

https://www.youtube.com/watch?v=KO9zYiQDU_0&feature=youtu.be
Water Reuse Project – Challenges

› Oily substances in the water; very high quality reuse water required
› Fast track construction with sequencing constraints
› Poor soils
› Site safety
Results

› Project completed in 2016
› CRC: only refinery in North America to reuse wastewater for steam production
› Freshwater consumption reduced by 28%, equivalent to 3,100 households
› Multiple awards
Questions?

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