Cost Savings, Recycling and a Lower Carbon Footprint

Onsite Management of Hydrovac Slurry and Waste Water

Proactive Environmental Rentals Inc.

Presented by: Kale Haupt



Onsite Management of HydroVac Slurry and Waste Water

- Overview of waste management principles
- HydroVac Slurry Lowering the cost of doing business
- Waste Water Management Utilizing High Flow medias for treatment in varying scenarios and difficult conditions
- Waste Minimization Give more back, take less away with integrated services

Waste Minimization

- Most processes create waste (byproducts)
- During construction & operation, wastes become a C.O.B.
- Waste management measures must be encouraged, innovative or significant
- Socio-economics create jobs while saving money



HydroVac Slurry

Management

Solids & Water separation for re-use



HydroVac Waste Regulation Changes

- 1. Minimization initiatives Encouraging pre-planning, green technologies, mechanical separation
- 2. Non-impacted slurry can be dewatered and used as onsite backfill, no notification required
- 3. Onsite, mechanical separation does not require approvals, only disposal

Lowering the cost of doing business

- Disposal rates can fluctuate
- Disposal facilities can handle varying volumes
- Transport rates by HydroVac are costly
- Contaminated slurry can only be hauled by certain trucks (valve & tank types)
- Some treatment options and facilities offer water fill-ups after disposal

Waste	Non-Cont.	Cont.
Municipal	\$80	N/A
Private	\$80-\$250	\$180+
HVDPS*	\$40-\$50	\$50-\$60

*Range depends on water re-use option

Comparing Projects

Excavate and Haul

- Offsite disposal, offsite water
- Additional trucks due to travel
- Travel is added expense, risk and carbon output
- Doesn't require a onsite footprint

Mobile HydroVac Waste Treatment

- Nearby dumpsite and water (if requested)
- No lost time waiting at disposal
- Minimal excavation downtime
- Less trucks on the road
- Water recycling, backfill available
- 20m³/hr throughput with varying waste compositions
- Requires minimum volume to justify

Modular HydroVac Processing Unit

- 1. Debris receiving tank Load rated ramp, soil ramp, low-profile or buried
- 2. Course filtration large debris and particles (Solids)
- 3. Medial Filtration 60 Micron down to 25 Micron in water
- 4. Water treatment (optional for H/C removal)
- 5. Fine Filtration 25 Micron down to 1 Micron (water re-use)
- 6. Solids storage and Handling

Mobile HydroVac Layout





HVDPS – Small volume, batch testing case study

- Client wanted to validate the service for larger projects in the Calgary area
- 1 week, sporadic deliveries of virgin and disturbed soils loads with cobble, roots, clay, silts and some sand
- Client stated that previous projects with centrifuge technologies could not maintain throughputs they hoped for due to variability
- Volumes were batch treated (minimum 20m³)
- All batches were able to be treated in one hour or less, from slurry form to stackable solids and a liquid stream filtered to discharge or re-use specifications.
- Sustained deliveries equal a 15m³/hr throughput



HVDPS Summary

- Maintained 15m³/hr throughput
- Provided stackable solids
- Water available for re-use 40%
- Segregation available to handle contaminated loads (permit)



Water Treatment and Recycling Active Flushing – Treatment and re-use



Water Treatment Objectives and Tactics

- 1. Project specifics C.O.C, fluid dynamics, forecast & background
- 2. Select equipment for application
- 3. Mobilization Small footprint, readiness is key
- 4. Set-up
- 5. Optimization and Proving
- 6. On-going operations



Condensate release – active flushing operations

- Offsite condensate impacts to small stream, late fall
- Treatment requested during emergency phase and continued into operational phase
- Removal of BTEX, first defensive tactic, then offensive, utilized zeolite medias
- Agitation and ongoing flushing were creating BTEX exceedances and TSS issues
- Volumes varied and were delivered to treatment via vacuum truck and stored in onsite tankage
- Intermittent treatment onsite minimized loads offsite to disposal due to water re-use



Condensate release – active flushing operations

- 120m3 water was treated and released over a 6 day period
- Intermittent deliveries, flow rates of 2m3/hr
- Media allowed for the capability to treat at 10m3/hr
- Additional filtration onsite never utilized due to volumes



Produced water – SAGD facility TAR

- Client turnaround required inspection of a 200' diameter produced water tank (20,000m³)
- Past TAR, disposal of the water was the solution, almost 500 loads hauled from FMM to Elk point
- Disposal took 10 days
- Water treatment option on this project allowed for 275m³/hr, > 0.5ppm BTEX, > 2ppm total h/c
- Utilized 6000lbs of zeolite media, and dual 18 bag filter skid (duty & standby), treated 16,500m³
- Treatment project took 6 days due to clients operational delays, 24/7 operation would have been 2.5 days.
- Removed 412 B-trains from the roads



Operational summary of waste minimization

- Change our ways waste can become a commodity, and be cost saving
- Mechanical separation of Hydrovac slurries leads to lower risk and cost savings
- Water treatment medias can be utilized for more scenarios at higher flows
- Custom blends can remove H/C, metals, ion exchange from water
- Glycol treatment removes impurities and ions, avoid disposal
- Treatment of water onsite reduces truck traffic (risk, carbon footprint, cost)
- Better to plan ahead and look at your options, use the waste minimization model