Southeast Collector Trunk Sewer

ENVIRONMENTAL MANAGEMENT

March 26, 2013

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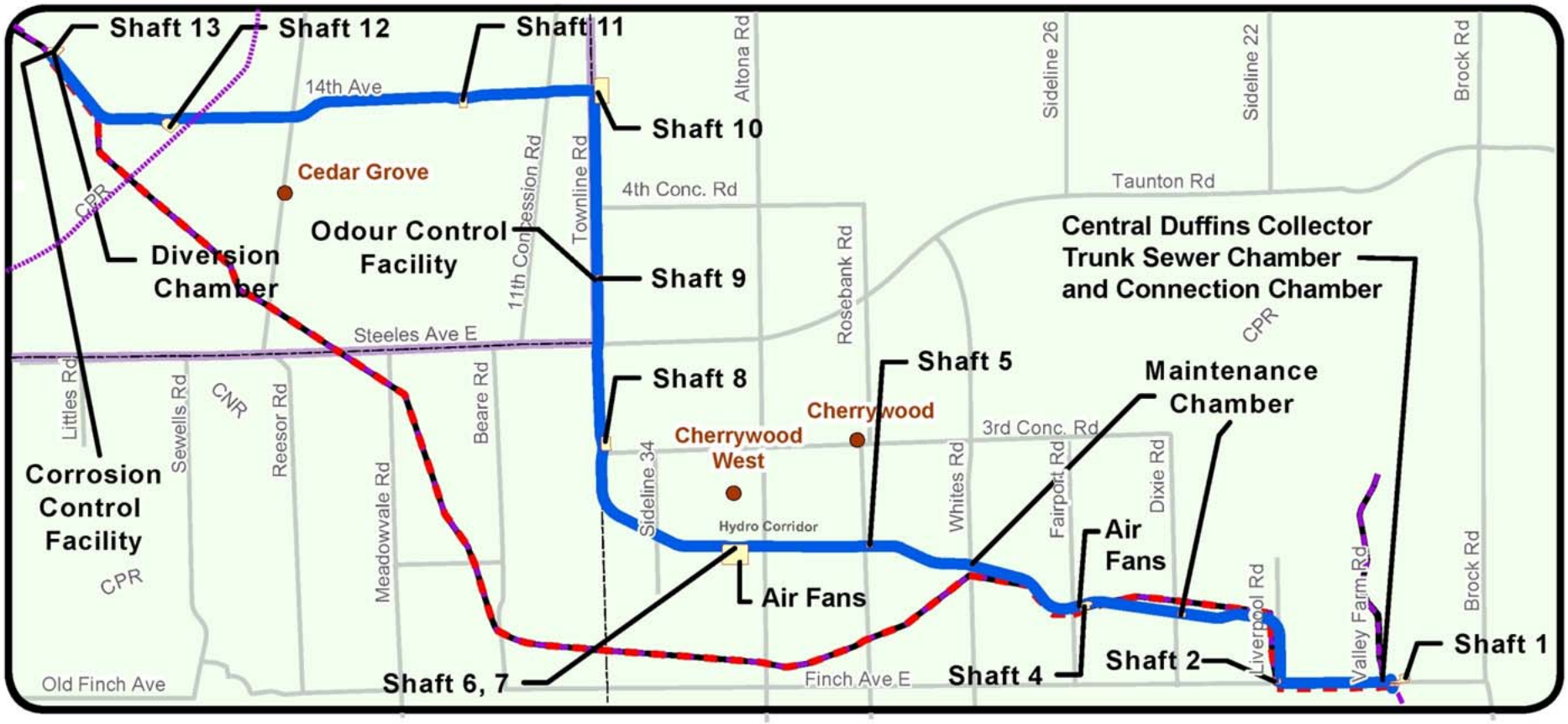
SEC ROUTE


Shaft 13
Shaft 12
Shaft 11
Shaft 10
Shaft 9
Shaft 8
Shaft 6, 7
Shaft 5
Shaft 4
Shaft 2
Shaft 1
Air Fans
Air Fans
Diversion Chamber
Odour Control Facility
Corrosion Control Facility
Central Duffins Collector Trunk Sewer Chamber and Connection Chamber
Maintenance Chamber
Cedar Grove
Cherrywood
Cherrywood West
Hydro Corridor
14th Ave
4th Conc. Rd
3rd Conc. Rd
Taunton Rd
Steeles Ave E
Finch Ave E
Old Finch Ave
Townline Rd
11th Concession Rd
Sideline 34
Sideline 26
Sideline 22
Altona Rd
Rosebank Rd
Whites Rd
Fairport Rd
Dixie Rd
Brock Rd
Littles Rd
Sewells Rd
Reesor Rd
Meadowvale Rd
Beare Rd
Liverpool Rd
Valley Farm Rd
CPR
CNR

CURRENT PROGRESS STATUS

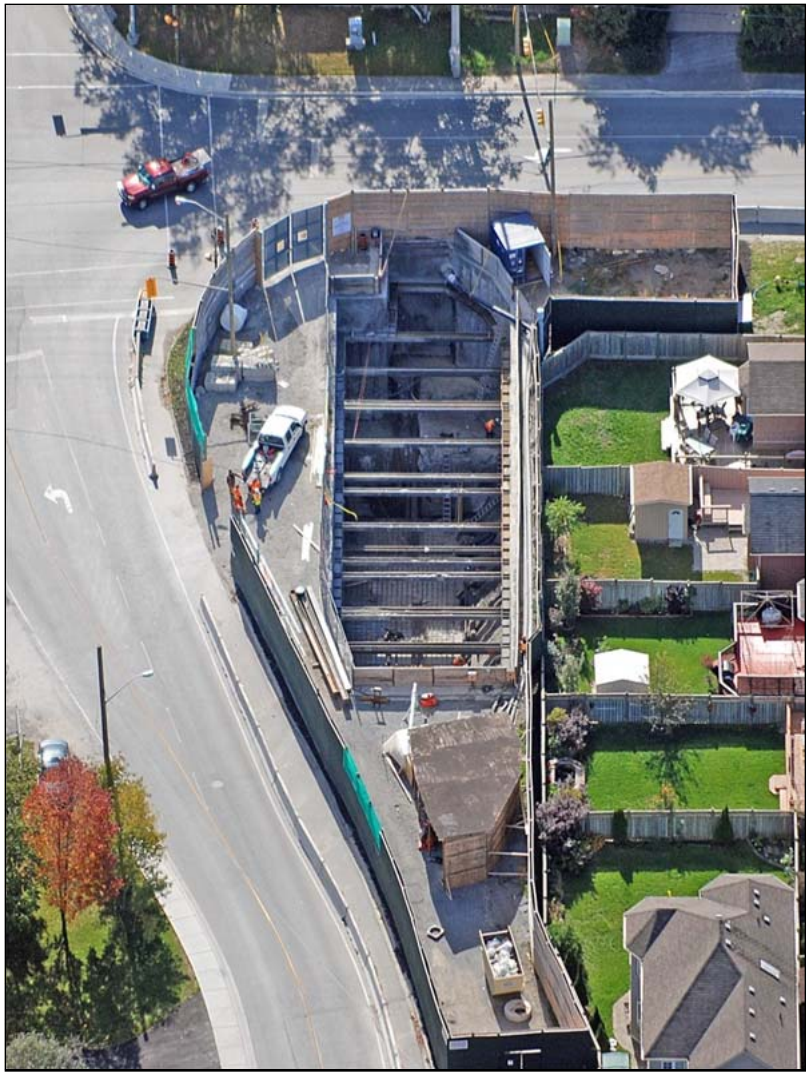
Construction works are underway at over a dozen separate locations:

- Shaft 13A – Slurry wall construction
- Shaft 13B – Base shaft preparation
- Shaft 12 – Plugging existing borehole and shaft excavation
- Shaft 11 – Base slab construction
- Odour Control Facility – Construction ongoing
- Shaft 9 – Shaft wall construction
- Shaft 8 – Concrete block construction for TBM arrival
- Shaft 6/7 – Air Handling Facility construction ongoing
- Shaft 5 – Shaft excavation
- Shaft 4 – Air Handling Facility construction ongoing
- Shaft 4W – Shaft wall construction
- Shaft 4E – Shaft excavation
- Shaft MS1 – Ground freezing
- Central Duffin Connection (CDC) Chamber – Chamber construction ongoing; by-pass in place
- Tunnelling Drive A1 (S10 to S13) – TBM mining between S10 and S11
- Tunnelling Drive A2 (S10 to S 7) – TBM mining between S10 and S9
- Tunnelling Drive B1 (S6 to S4) – TBM mining between S6 and S5
- Tunnelling Drive B2 (S1 to 4E) – TBM mining between S2 and YDSS crossing

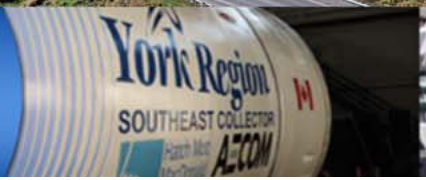
Drill rig fitted with auger for non-vibratory secant pile shaft wall construction

SHAFT 1

CENTRAL DUFFIN'S COLLECTOR CHAMBER



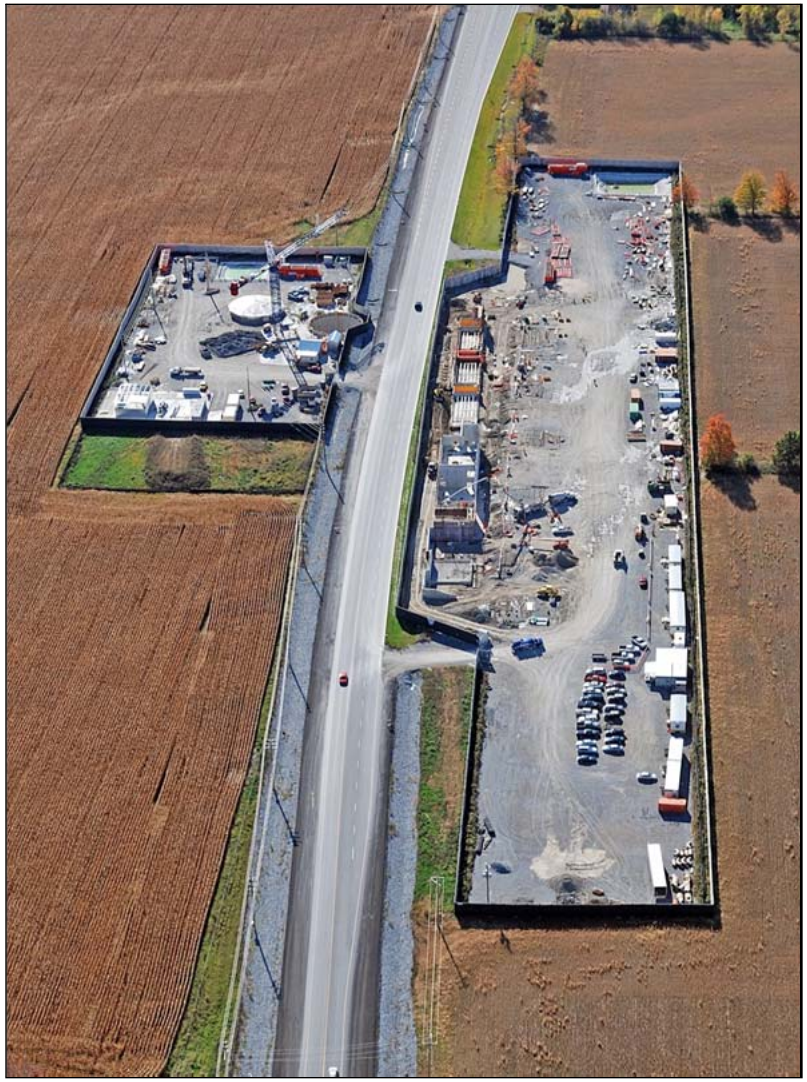
SHAFT 6/7



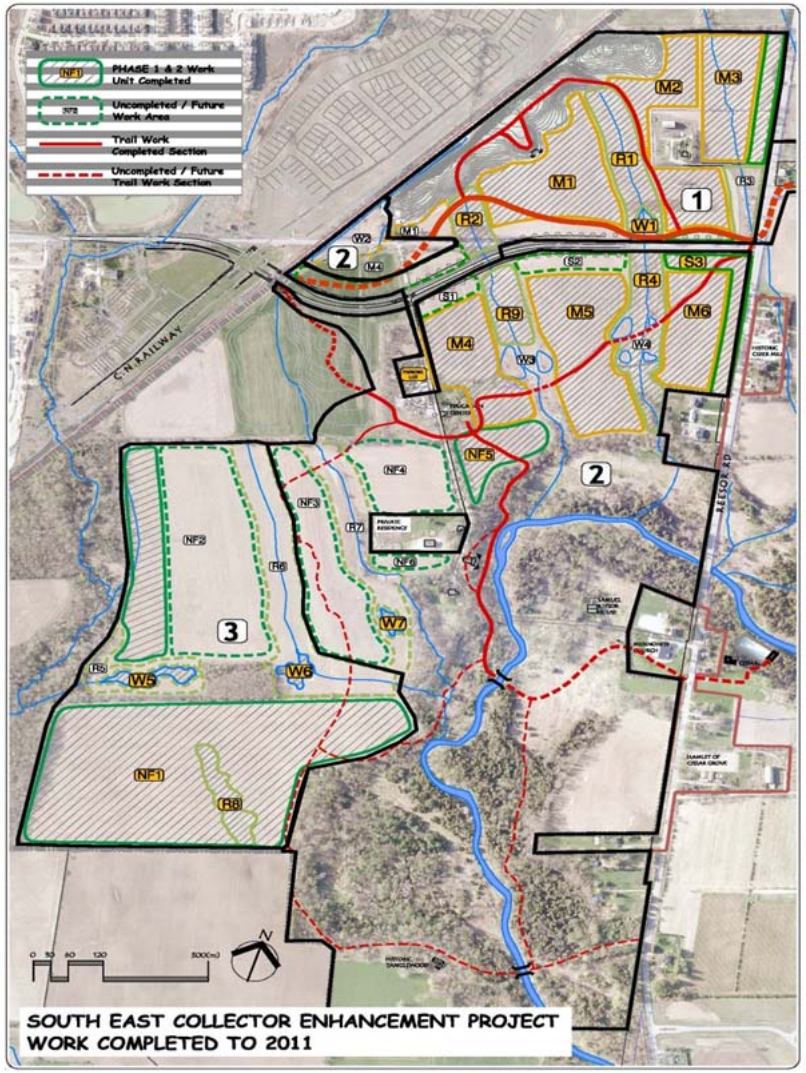
SHAFT 9

ODOUR CONTROL FACILITY

SHAFT 9 & ODOUR CONTROL FACILITY



BOB HUNTER MEMORIAL PARK



- New wetlands
- Tree planting
- Meadow creation

Holder for picture of tree plantings

BOB HUNTER MEMORIAL PARK – PROGRESS TO DATE

New wetlands

Meadow creation

ODOUR CONTROL FACILITY

Architectural renderings of completed OCF

- Building will have a green roof
- site to be restored with extensive vegetation

OCF with mature vegetation

OCF shortly after completion

DESIGNATED SOIL DISPOSAL SITE

•Located minutes northeast of tunnel mining compounds
•All material from site works, shaft excavation, and tunnelling works are disposed of at DSD
•This parcel of TRCA owned land, formerly a gravel pit, will be rejuvenated as an off-leash dog park and conservation area.
•Forecasted disposal of 35,000 truck loads of material.

DESIGNATED SOIL DISPOSAL SITE

DESIGNATED SOIL DISPOSAL SITE

•Due to the immense size of the site, and long, steep grades, and perpetual physical changes, project staff constantly monitor and enhance environmental controls to contain tunnel muck and to mitigate against environmental damage.

•The following are some of the measure taken to manage the site:

- Triple layered silt fence at most susceptible locations
- Hundreds of loads of shale hauled in to build quality roads on site
- Terraseeding of 20% of site to reduce and slow runoff
- Heavy duty rock check dam to attenuate heavy flows from damaging silt fences
- Due to muddy site conditions, DSD has it's own wheel wash station and a dedicated street sweeper.

DESIGNATED SOIL DISPOSAL SITE

DESIGNATED SOIL DISPOSAL SITE

Rip rap check dam to reduce velocity of surface runoff

Terraseed revegetation

REGULAR ENVIRONMENTAL MONITORING

Construction monitoring

- Contractor has retained services of environmental consultant
- Focus on erosion and sediment control measures at all Shafts
  - Inspect silt fences every 2 days;
  - Specifically pre and post storm event
  - Weekly status report w/photographs
  - Daily pH and turbidity testing
  - Monthly sanitary and storm water sampling (submitted to applicable Municipality)
- Regular environmental inspection by Contractor
  - Flow meter water taking
  - Weekly soil sampling from all sites
  - By-weekly TSS samples
  - Monthly noise monitoring on construction equipment

REGULAR ENVIRONMENTAL MONITORING

Monitoring of the environment

- groundwater, surface water, wetlands, terrestrial, aquatics
- Weekly reports to TRCA and weekly site visits with TRCA
- Consultant responsible for Noise & Vibration monitoring
  - Noise & vibration monitors installed along entire sewer alignment – extra monitoring points at socially and environmentally susceptible areas
  - Produces a monthly report

Noise & Vibration Monitor

HOARDING AND SILT FENCE

- All project sites are surrounded with 3.6m sound attenuating hoarding.

- All sites were specified to have double layered, heavy duty silt fence with straw bales between layers
- Locations most susceptible to high flows and/or have the likelihood to displace higher amounts of sediment had a third layer installed

MUCK & SEDIMENT CONTROL PONDS
ENVIROTANKS

Muck pond with enviro-tank system at Shaft 4

- All 13 sites have runoff water capture system
- Sites properly graded to ensure runoff is captured in storm pond
- Water is pumped to envirotank for treatment via:
  - flocculation tank – triple weir settling tank – 3 pod sand filter
- Treated storm water is discharged to natural environment .
- Water is tested monthly to ensure compliance with the storm sewer use by law and twice a month for total suspended solids.
- In events that sampling results indicate exceedences, the storm water is pumped to the sanitary sewer until levels return to normal

- Mining sites manage SEP water (sump and excess process)
- SEP water is directed to muck pond for temporary detention, then pumped through envirotank via:
  - flocculation tank & – triple weir settling tank
- Water is discharged to sanitary sewer system and tested once a month to ensure compliance with Ontario Sewer Use By-law
- In addition to lab testing, all envirotanks are field tested daily for pH and turbidity (NTU) and inspected for oil sheen

SEDIMENT POND ENVIROTANK

SEDIMENT CONTROL POND DISCHARGE

Additional environmental controls manage storm water before discharge from site

SEDIMENT POND DISCHARGE

SEDIMENT POND DISCHARGE – FILTREX LOGS

MUCK POND ENVIROTANKS

SEP WATER PONDS

pH CONTROL – SULFURIC ACID DOSING

Acid dosing at Shaft 1 muck pond envirotank

SULFURIC ACID DOSING

Acid dosing drip tube and nipple (right) and mixer (left)

SEP POND ENVIROTANKS

Water control baffles inside SEP envirotank

MUCK POND ENVIROTANKS

Outlet pumps

Outlet pipe to sanitary MH

HDPE HORIZONTAL DIRECTIONAL DRILLING

Mobile HDPE fusing machine

Horizontal Directional Drill rig installing SEP watermain pipe along Altona Rd

WHEEL WASH UNITS

DSD Wheel wash unit in operation

Wheel wash units are utilized at every construction site and compound.

- Heavy duty units are present at mining compounds (Shaft 1, 6/7, 10) and the DSD where truck traffic is highest.
- Light duty units are present at remaining compounds where construction vehicle traffic is much lower

The wheel was units are effective at removing large debris lodged between wheels and stuck to the undercarriage of trucks.

SITE DRAINAGE, STREET SWEEPERS

Street Sweeper

Mining Compounds that experience the most traffic (Shaft 1, 6/7, and 10) have all been paved to ensure sites are clean as possible. Not only does it reduce the mud that vehicles track around the site, but it also makes cleaning and maintenance much easier.

All compounds constructed with sub-drainage system to manage storm water.

The Contractor has retained the full time services of 3 street sweeper trucks. The sweepers continually maintain road conditions to mitigate against mud/dust and keep roads as safe and pleasant to drive on as possible.

Strabag has also lent the services of their sweepers to neighbouring contractors when conditions of shared roads require immediate maintenance ☺

THANK YOU


Southeast Collector
Trunk Sewer Project
York Region
York Region
SOUTHEAST COLLECTOR
AECOM