# DESIGN/BUILD - ROCK BAY
# REMEDIATION PROJECT STAGE 3

REMTECH
OCTOBER 2015

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# PRESENTATION OVERVIEW

- Brief Background and Site History
- Remedial Objectives
- Project Design
- Construction Plan
- Challenges and Changes to Design
- Work to be Completed

# SITE LOCATION



TRANSPORT CANADA & BC HYDRO
ROCK BAY PROPERTIES

- Location:

  – Victoria Harbour

  – 1.7 km to BC Legislature

  – 1.1 km to Downtown Victoria

  – Commercial / Industrial Area

- Transport Canada land (red)

  – Uplands (1.7 ha)
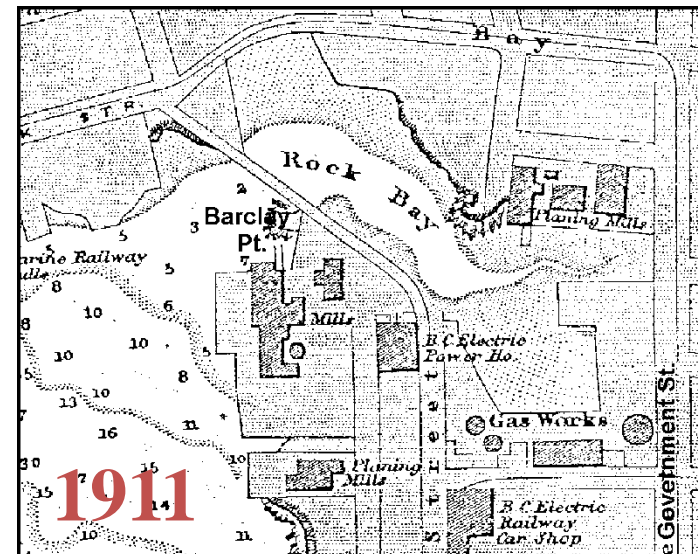
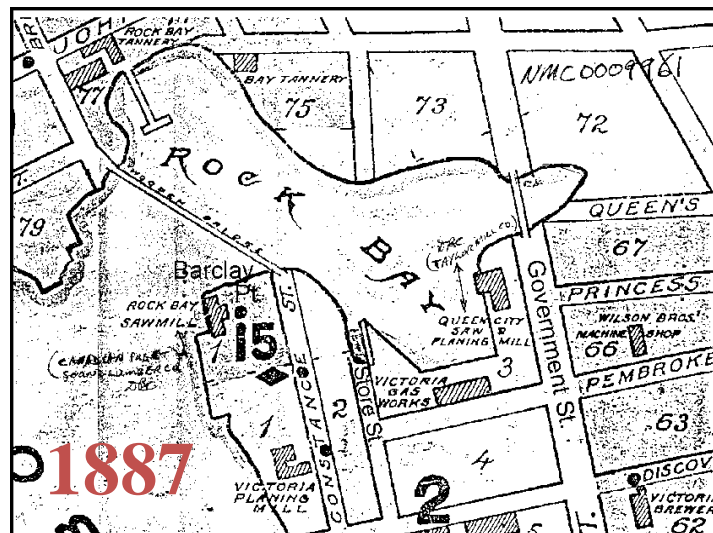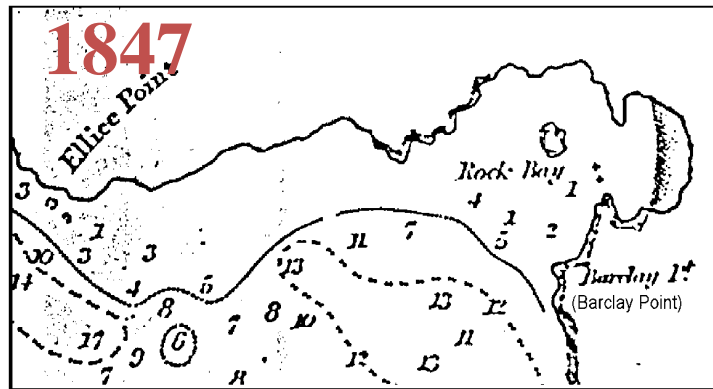  – Harbour Floor (2.0 ha)

# SITE HISTORY



- 1862 – 1953: coal gasification plant in operation

  – Provided gas for street lighting and heating

- Afterwards, light industrial and commercial operations; last used as a school bus parking lot.
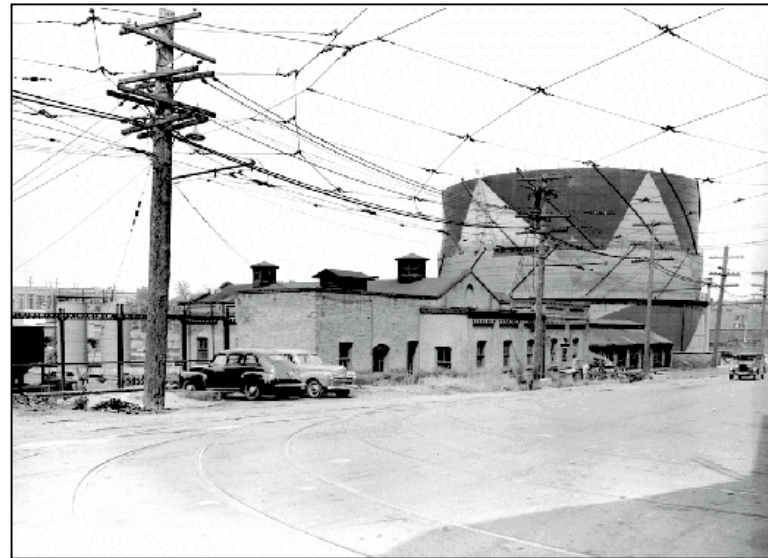
# INFILLING OF ROCK BAY



- One Rock Bay"

- 1924 Six Harbours Agreement

  - Established boundary of federal/provincial property in Victoria Harbour

# OTHER SITE HISTORY

North area

Late 1800s – tannery                    Early 1900s - sawmills

Early 1960s - sawmill closed        1973 - concrete plant opened


West area

Early 1900s to 1948 - sawmill at Barclay Pt.

1949 - propane tanks                1992 - propane tanks removed



Rock Bay Bridge, pre-1900. Demolished. Collection Barrie McClung

# SITE CONTAMINATION

## Soil and Sediments:

PAHs > CSR CL and Hazardous Waste (HW)

Metals and hydrocarbons > CSR CL.

# SITE CONTAMINATION

South uplands
(Stage 1)

S

Rock Bay
(Stage 3)

North uplands



Weathered Victoria Clay

Sand seam

Victoria Clay
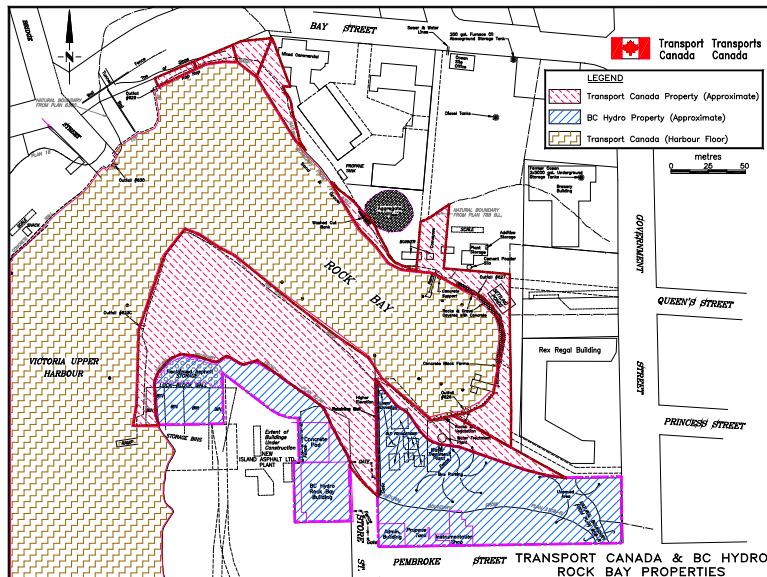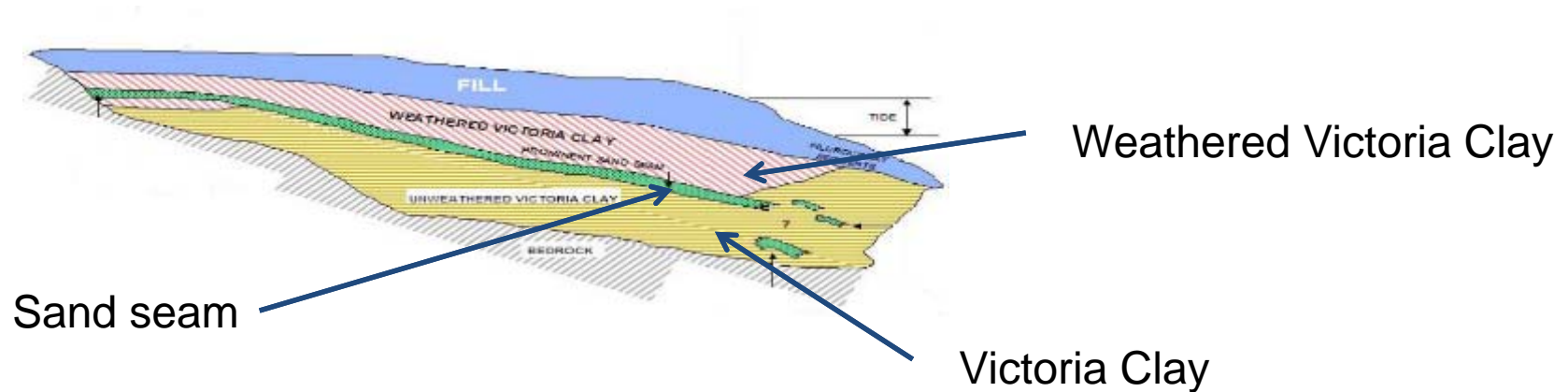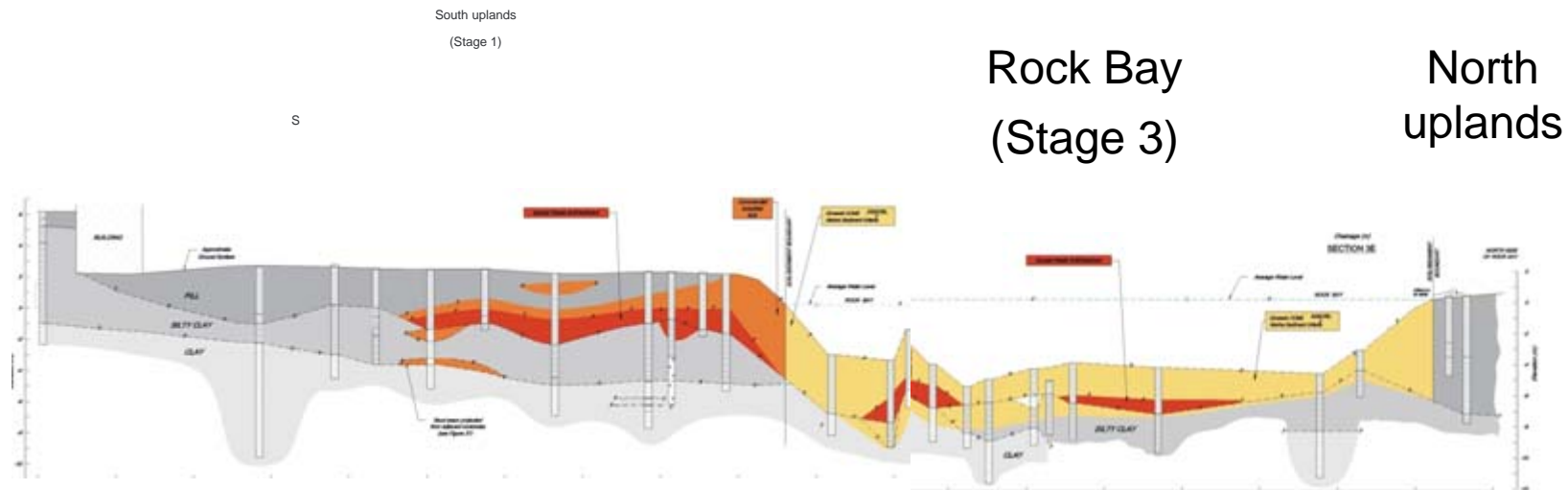
# REGULATORY INVOLMENT

1996 – Transport Canada and BC Hydro notified of a potential order to remediate contamination identified on site.

2003 *Revised Recommended Remedial Strategy* accepted by BC MOE, DFO and Environment Canada

> Uplands:  remove soil > CL

> Marine:  remove sediment > hazardous waste

# ROLES & RESPONSIBILITIES

- Transport Canada
  - Custodial department
- PWGSC
  - Project management and contracting authority
- Quantum Murray LP
  - Design Build / Prime contractor
- Anchor QEA
  - Construction monitoring
- Hemmera
  - Environmental monitoring
  - Confirmation sampling
  - Neighborhood Air Quality Monitoring Program
- Golder Associates
  - Quality assurance
  - Construction risk assessment
  - Budget estimation and schedule assessment

# ORGANIZATION CHART

QUANTUM MURRAY
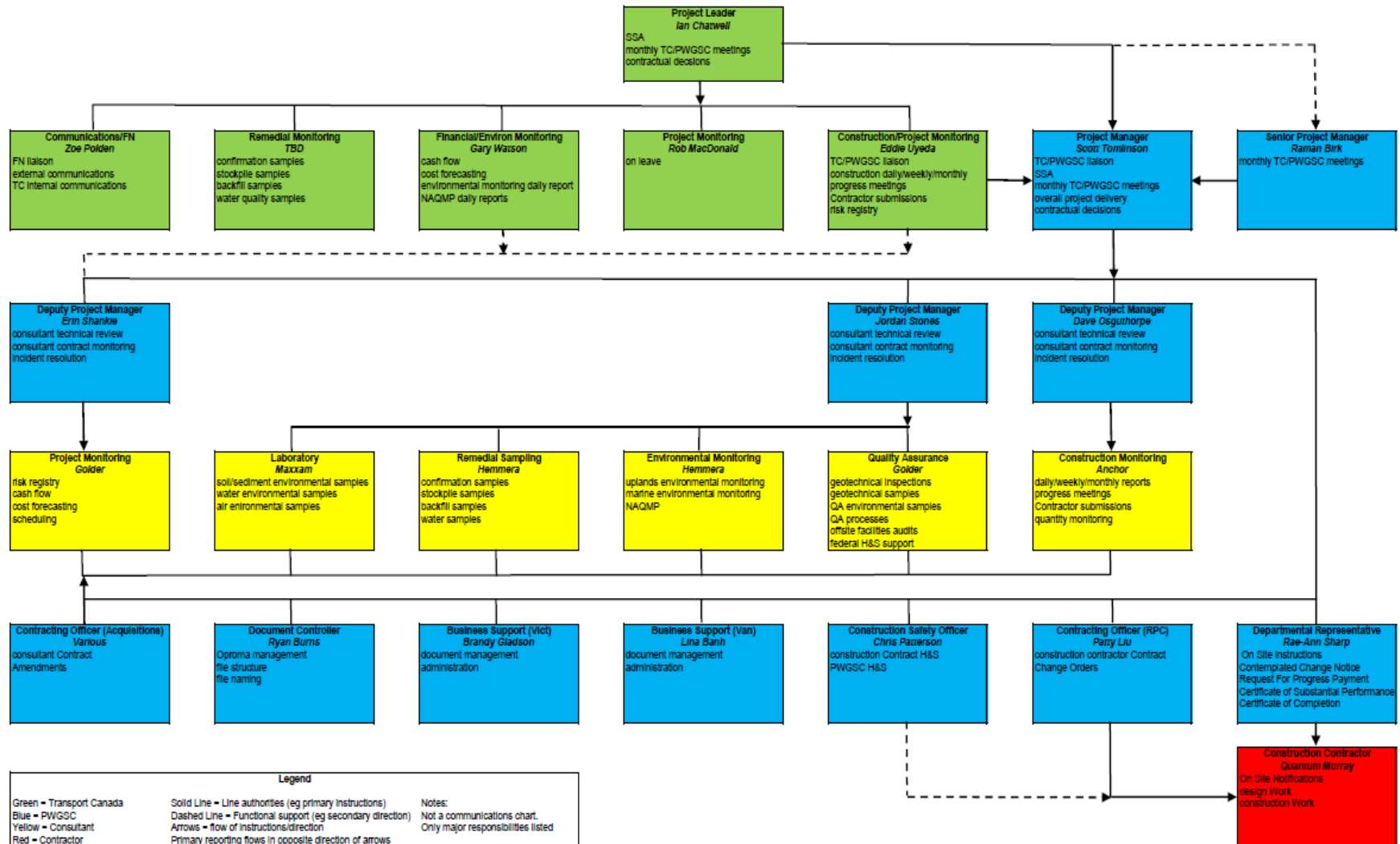RESPOND. RECLAIM. RENEW.

**Project Leader**
*Ian Chatwell*
SSA
monthly TC/PWGSC meetings
contractual decisions

**Communications/FN**
*Zoe Polden*
FN liaison
external communications
TC internal communications

**Remedial Monitoring**
*TBD*
confirmation samples
stockpile samples
backfill samples
water quality samples

**Financial/Environ Monitoring**
*Gary Watson*
cash flow
cost forecasting
environmental monitoring daily report
NAQMP daily reports

**Project Monitoring**
*Rob MacDonald*
on leave

**Construction/Project Monitoring**
*Eddie Uyeda*
TC/PWGSC liaison
construction daily/weekly/monthly
progress meetings
Contractor submissions
risk registry

**Project Manager**
*Scott Tomlinson*
TC/PWGSC liaison
SSA
monthly TC/PWGSC meetings
overall project delivery
contractual decisions

**Senior Project Manager**
*Raman Birk*
monthly TC/PWGSC meetings

**Deputy Project Manager**
*Erin Shankie*
consultant technical review
consultant contract monitoring
incident resolution

**Deputy Project Manager**
*Jordan Stones*
consultant technical review
consultant contract monitoring
incident resolution

**Deputy Project Manager**
*Dave Osguthorpe*
consultant technical review
consultant contract monitoring
incident resolution

**Project Monitoring**
*Golder*
risk registry
cash flow
cost forecasting
scheduling

**Laboratory**
*Maxxam*
soil/sediment environmental samples
water environmental samples
air environmental samples

**Remedial Sampling**
*Hemmera*
confirmation samples
stockpile samples
backfill samples
water samples

**Environmental Monitoring**
*Hemmera*
uplands environmental monitoring
marine environmental monitoring
NAQMP

**Quality Assurance**
*Golder*
geotechnical inspections
geotechnical samples
QA environmental samples
QA processes
offsite facilities audits
federal H&S support

**Construction Monitoring**
*Anchor*
daily/weekly/monthly reports
progress meetings
Contractor submissions
quantity monitoring

**Contracting Officer (Acquisitions)**
*Various*
consultant Contract
Amendments

**Document Controller**
*Ryan Burns*
Oproma management
file structure
file naming

**Business Support (Vict)**
*Brandy Gladson*
document management
administration

**Business Support (Van)**
*Lina Banh*
document management
administration

**Construction Safety Officer**
*Chris Patterson*
construction Contract H&S
PWGSC H&S

**Contracting Officer (RPC)**
*Parry Liu*
construction contractor Contract
Change Orders

**Departmental Representative**
*Rae-Ann Sharp*
On Site instructions
Contemplated Change Notice
Request For Progress Payment
Certificate of Substantial Performance
Certificate of Completion

**Construction Contractor**
*Quantum Murray*
On Site Notifications
design Work
construction Work

**Legend**

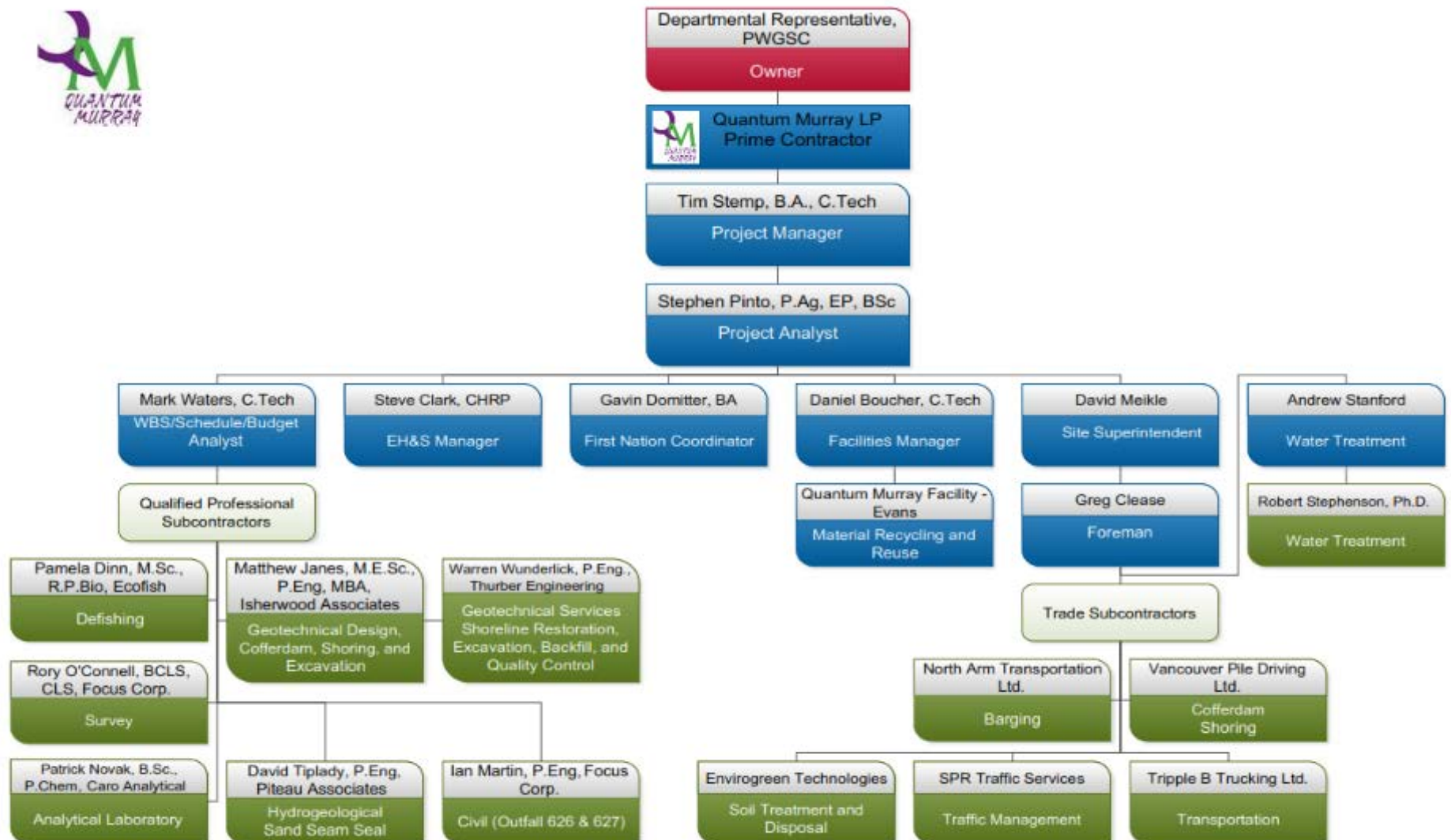| | | |
|---|---|---|
| Green = Transport Canada | Solid Line = Line authorities (eg primary instructions) | Notes: |
| Blue = PWGSC | Dashed Line = Functional support (eg secondary direction) | Not a communications chart. |
| Yellow = Consultant | Arrows = flow of instructions/direction | Only major responsibilities listed |
| Red = Contractor | Primary reporting flows in opposite direction of arrows | |

# QMLP TEAM

# STAGE 3 REQUIREMENTS

Transport Canada required that:

All excavation to be conducted in the dry; eliminate risk of mobilization and residual contamination

Excavation of contaminated soils up to upland property lines .

Excavation of the sand seam within the clay along the south property line  and installation of a sand seam seal plug ($1\times10^{-8}$m/sec)

Treatment and/or destruction of waste and hazardous waste material

No intrusion on neighboring properties

Backfilling and shoreline restoration

# CONSTRUCTION PLAN

- Site preparation
- Cofferdam to seal off the bay
- Bypasses for the 626 and 627 storm sewers
- Shoring along upland property lines
- Draining of the bay
- Excavation and transport of an estimated 90,000 tonnes of material
- Treatment and disposal of contaminated soils
- Backfilling and shoreline restoration
- Construction Submittals
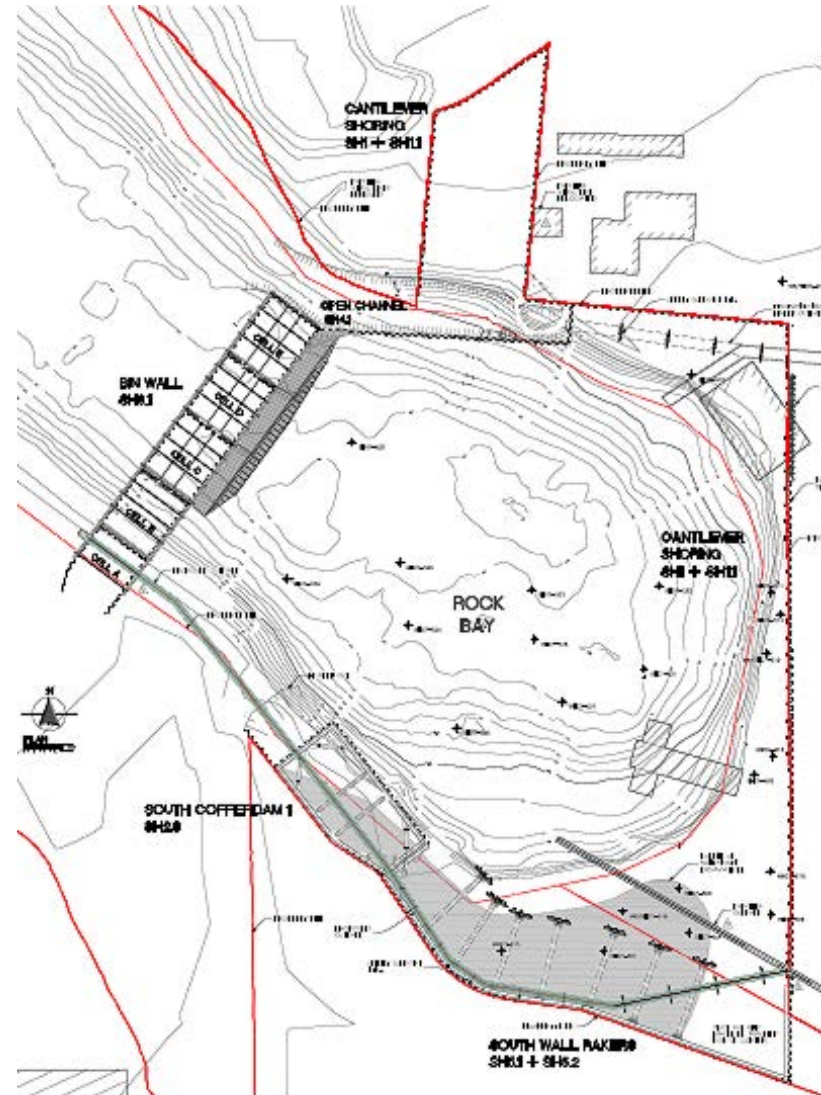
# PROJECT SCHEDULE

- **In water works end – February 15, 2015**

- **In water works start – July 1, 2015 (meaning we can pull sheets)**

- **Site works complete by November 30, 2015**

- **All treatment by January 30, 2016**

- **Closeout Submissions Due – February 15, 2016**

# PROJECT SCHEDULE
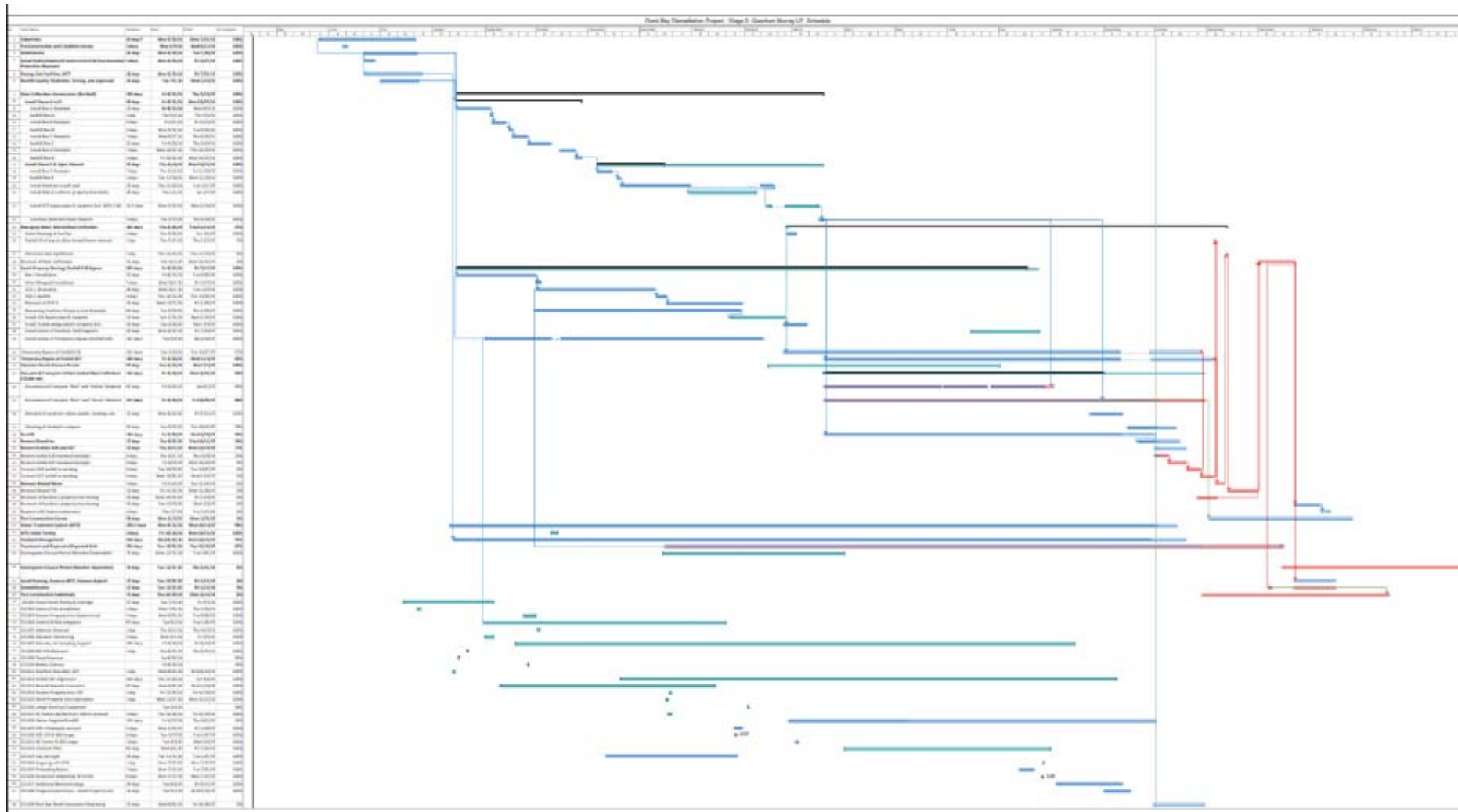
# SITE PREP

- Jun 2014 – mobilization

- Jun to Jul 2014

  – Clearing and Grubbing

  – Paving of stockpile storage area

  – Site trailers

  – Services and Facilities

  – Security

# SITE PREP

- Truck Washes
- Scales
- Grading and catch basins
- Water Services

# SITE PREP

- Jul 2014 – Crane mobilized to site.

# SHORING & COFFERDAM BOX

# SHORING & COFFERDAM BOX



SHORING

W690 WALER AS REQUIRED

AZI4 SSP
PROPERTY LINE

10mm PLATE, FULL DEPTH + 1500 x 900mm WIDE
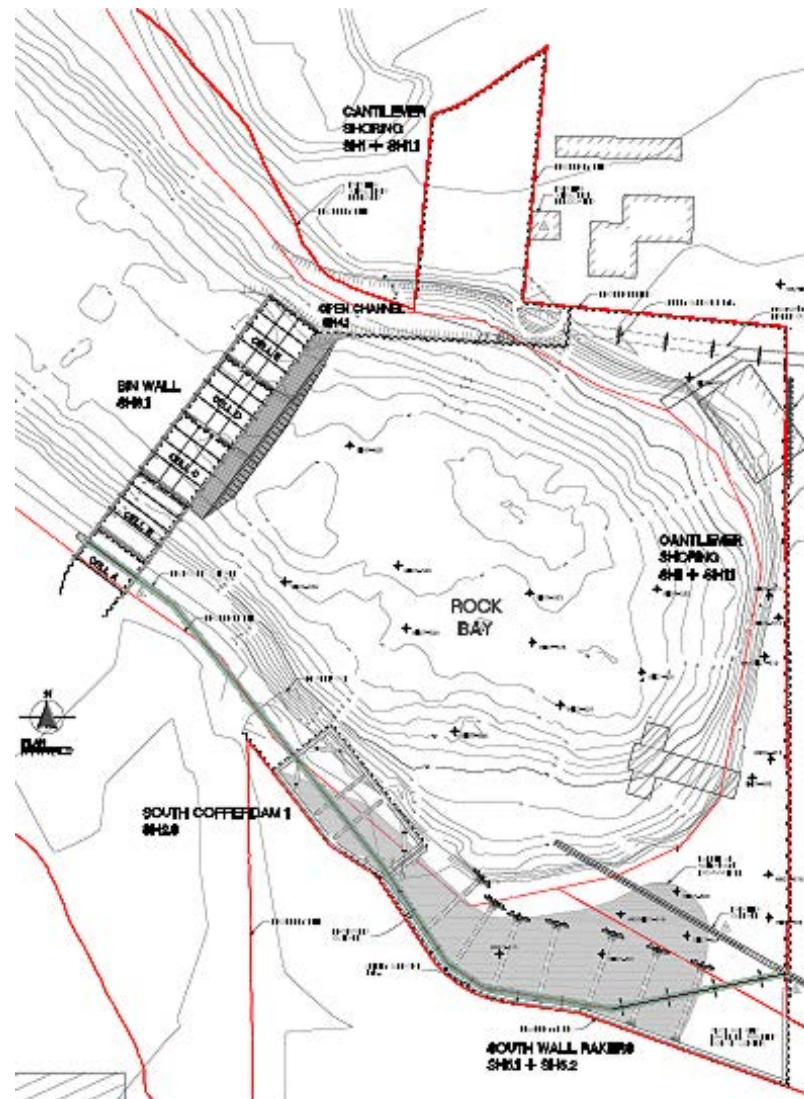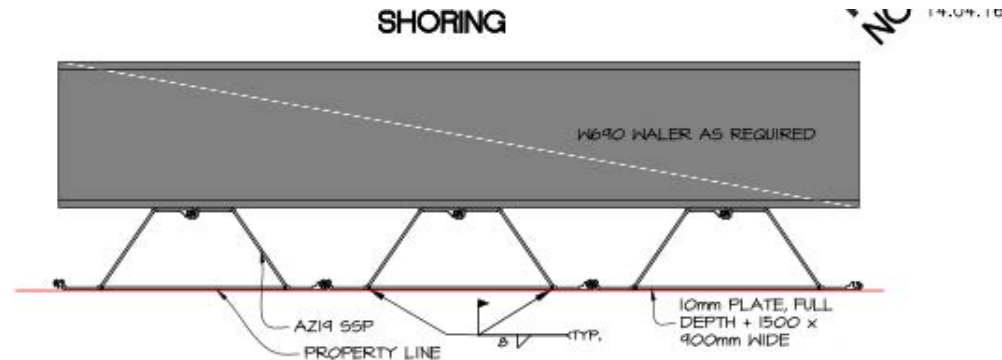
TYPICAL SHEETPILE DETAIL AT PROPERTY LINE
SCALE 1:25

TYPICAL SHEETPILE SECTION
1:25

10000±    5500 TYP.

HSST50x12 PIPE STRUT

AZI4-700 SSP

HSS508x12 CORNER BRACE

W690x152 WALER

18000±

30m TOTAL LENGTH

PLATED SHEETPILE AT PROPERTY LINE
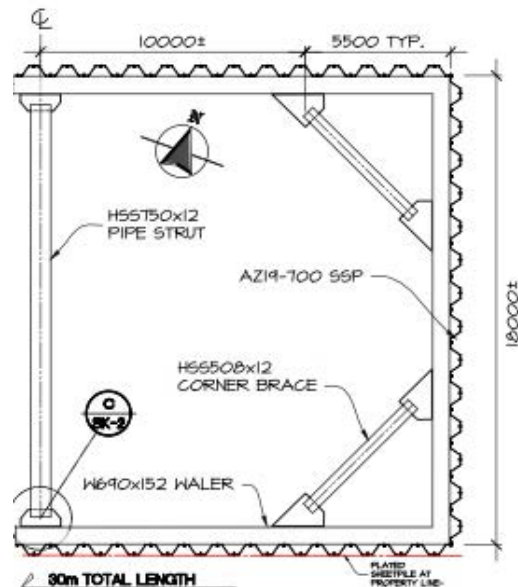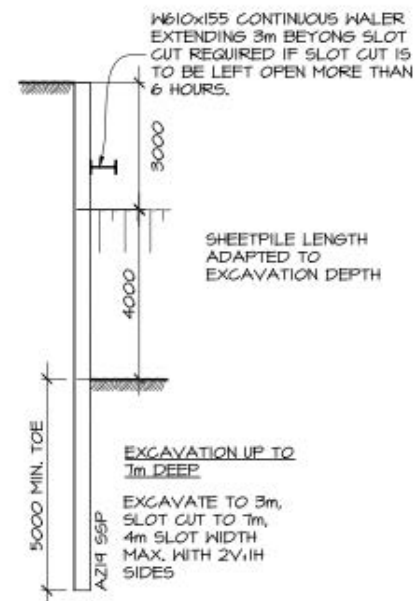
TYPICAL COFFERDAM BOX HALF PLAN
1:200

W610x155 CONTINUOUS WALER EXTENDING 3m BEYONG SLOT CUT REQUIRED IF SLOT CUT IS TO BE LEFT OPEN MORE THAN 6 HOURS.

3000

4000

SHEETPILE LENGTH ADAPTED TO EXCAVATION DEPTH

5000 MIN. TOE

AZI4 SSP

EXCAVATION UP TO 7m DEEP

EXCAVATE TO 3m, SLOT CUT TO 7m, 4m SLOT WIDTH MAX. WITH 2V:1H SIDES

# SHORING ON PROPERTY LINE

- Aug to Dec 2014 – shoring along south property line

- Sept 2014 to Feb 2015 – 626 storm sewer bypass construction

- Dec 2014 - excavation and backfilling in SCD1

# SHORING ON PROPERTY LINE

# COFFERDAM CONSTRUCTION
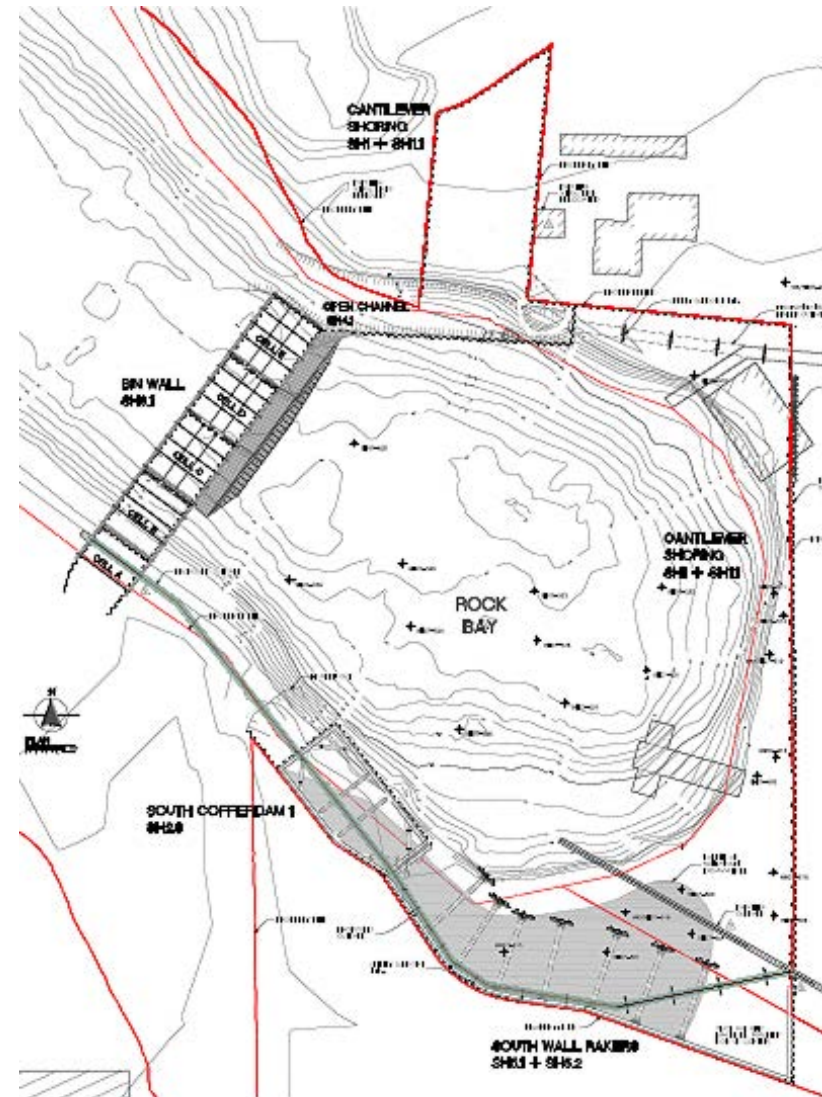
# COFFERDAM CONSTRUCTION

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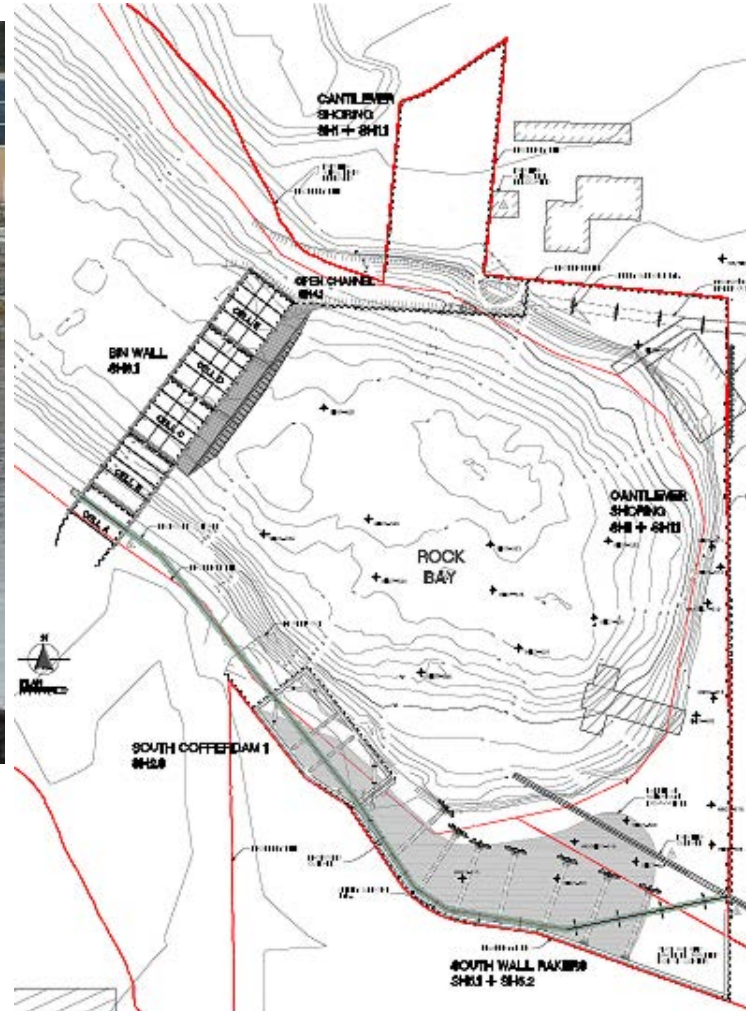**QUANTUM MURRAY**
RESPOND. RECLAIM. RENEW.

- Aug to Nov 2014 – main cofferdam construction

- Nov 2014 to Feb 2015 – northern cut-off wall

# OUTFALL BYPASS

# OUTFALL BYPASS

# OUTFALL BYPASS

# OUTFALL BYPASS/SHORING
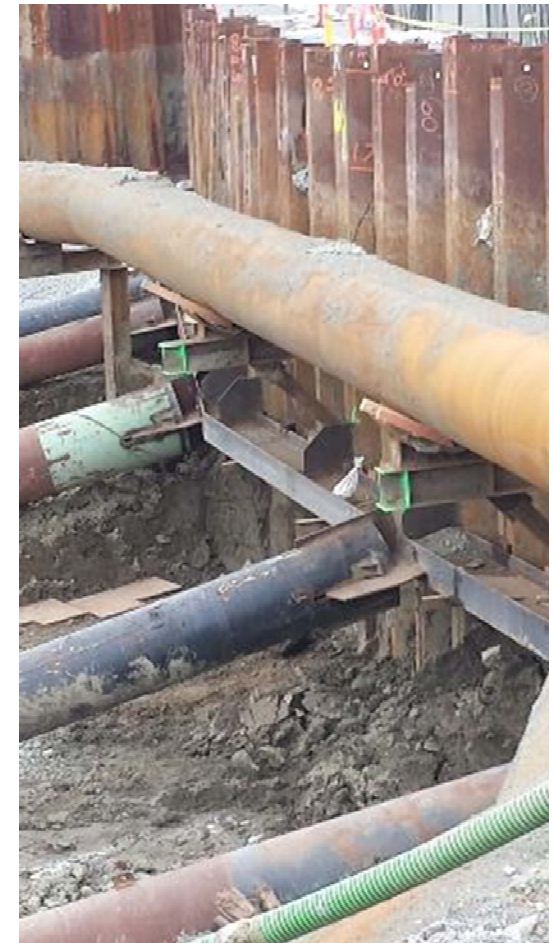
# OUTFALL BYPASS

# CLOSING OFF THE BAY

Feb 2015 – closing off of the bay
and draining

# FISH REMOVAL

- Approximately 3,600 fish removed
- Stickleback, surf smelt, sculpin and halibut

# DEWATERING

# COAL TAR

# BULK EXCAVATION

March 2015 – Bulk Excavation Begins
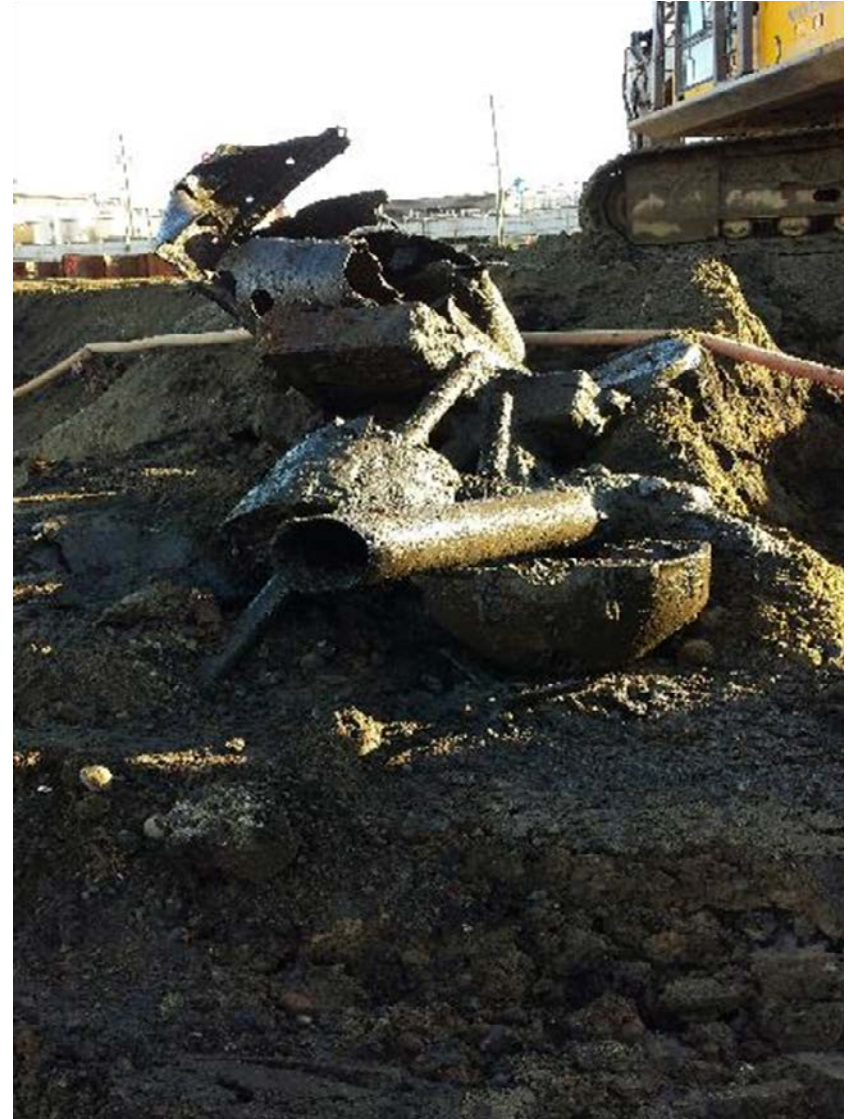




Coal Tar Seeping out of Geoduck Hole

# BULK EXCAVATION

# DEBRIS

# BULK EXCAVATION
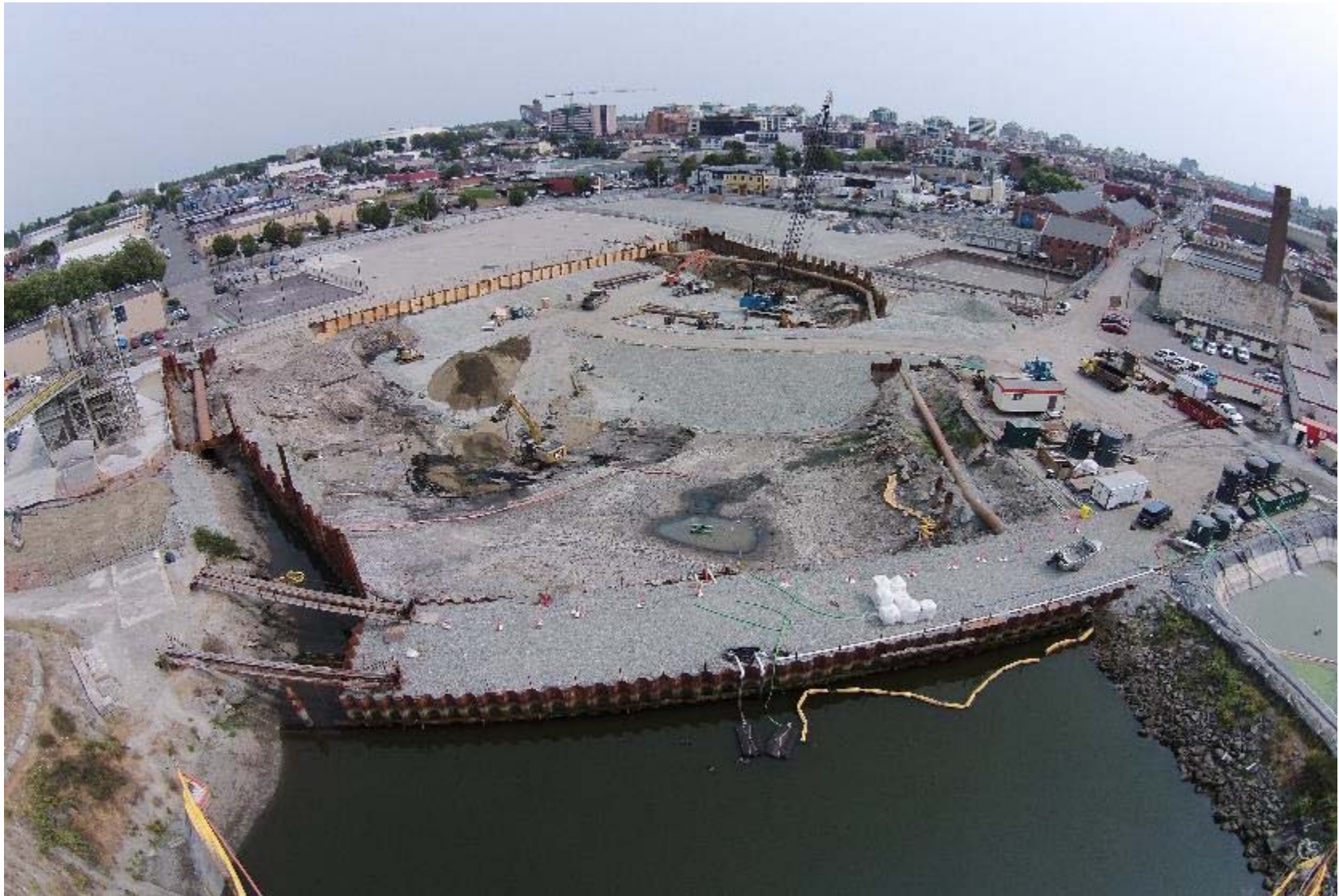
# EXCAVATION & BACKFILL

# BACKFILL

# BACKFILL

# BACKFILL

# BACKFILL & STOCKPILE

# BACKFILL & RESTORATION

# TRANSPORTATION



23 Barges Exported

6,700 Trucks

# TREATMENT & DISPOSAL

# WORKS TO BE COMPLETED

2015

- Shoreline restoration; restore 626 and 627 storm sewer outfalls; re-flood the bay.

- Removal of main cofferdam and perimeter shoring

- Treatment and disposal of contaminated soil and sediment

- Demobilization

2016

Post Construction Sumbittals

# DOCUMENTATION

Pre-construction Submittals – 17

On-Site Notification – 365

On Site Instructions – 260

Post Construction Submittals -

# SPECIAL THANKS



PWGSC
Transport Canada
Isherwood Engineering
WSP Engineering
Envirogreen Technologies
Volk Transport
Thurber Engineering
To All the Rock Bay Staff

# QUESTIONS?

Stephen Pinto,
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250-889-3944