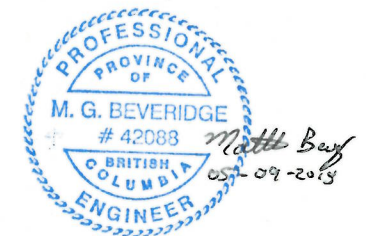


Site Location



Legend

Site Location

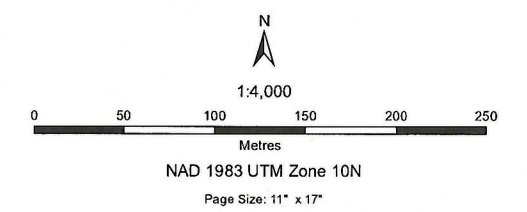


Notes

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Sources

- Aerial Imagery: District of North Vancouver, 2013  
- Inset Basemap: ESRI World Topographic Map



102655-52      Production Date: Jun 11, 2018      Figure 1

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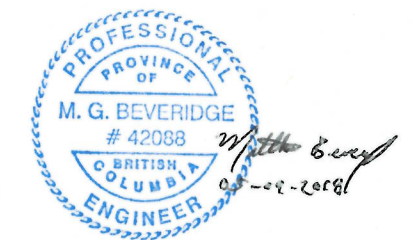




**PEC Site Road Routing and  
Health & Safety Features**

**Legend**

- Fence
- [ ] Site Location
- [ ] Proposed Contractor Support Zone
- [ ] Site Support Zone
- [ ] New Pavement
- [ ] Wheel Wash
- [ ] Access Roads

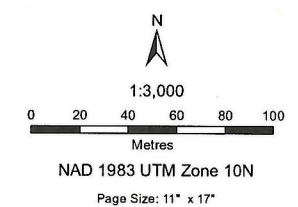


**Notes**

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**Sources**

- Site Imagery: Trevita Survey orthophoto, March 2015
- Off-Site Imagery: District of North Vancouver, 2013



**NOTES:**

1. The Contractor may use the east room of the PEC Site office for general meetings and project co-ordination.
2. If the Contractor requires additional office facilities, including meeting/project management space, phone and fax facilities, the Contractor shall supply and maintain temporary site facilities as noted on the figure.
3. The Contractor may use the existing personnel decontamination facility. If the Contractor requires additional decontamination facilities the Contractor shall supply and maintain it at a location adjacent to the Site Support Zone.
4. The Contractor may use the existing portable toilet facilities. If the Contractor requires additional toilet facilities the Contractor shall supply and maintain temporary toilet facilities adjacent to the Contractors support facilities.
5. Electrical power is available to the PEC Site via primary overhead electrical transmission lines that are located along the MV right of way. There is a 30 amp service at the proposed contractor support zone available for Contractor to use. Contractor is responsible for modification to the existing services to meet their needs. Alternatively, Contractor may supply their own generators.
6. Location of proposed site facilities mentioned above shall be discussed with the Departmental Representative before commencing. The Departmental Representative may restrict the location for Contractor work areas (e.g. location of field offices).
7. The existing gravel/cobble stockpiles on-site are not available for Contractor use.
8. The Contractor shall supply and operate a water truck/mobile street washer (or equivalent) for the purposes of dust suppression and control.



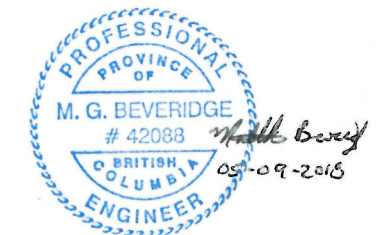
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Site Control Zones

Legend

- Fence
- Site Location
- Work Exclusion Zone
- Work Zone
- Contractor Support Zone
- Site Support Zone
- New Pavement Area
- Wheel Wash
- Access Roads

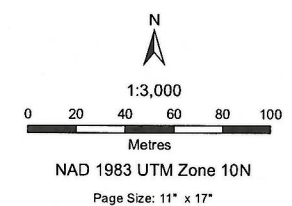


Notes

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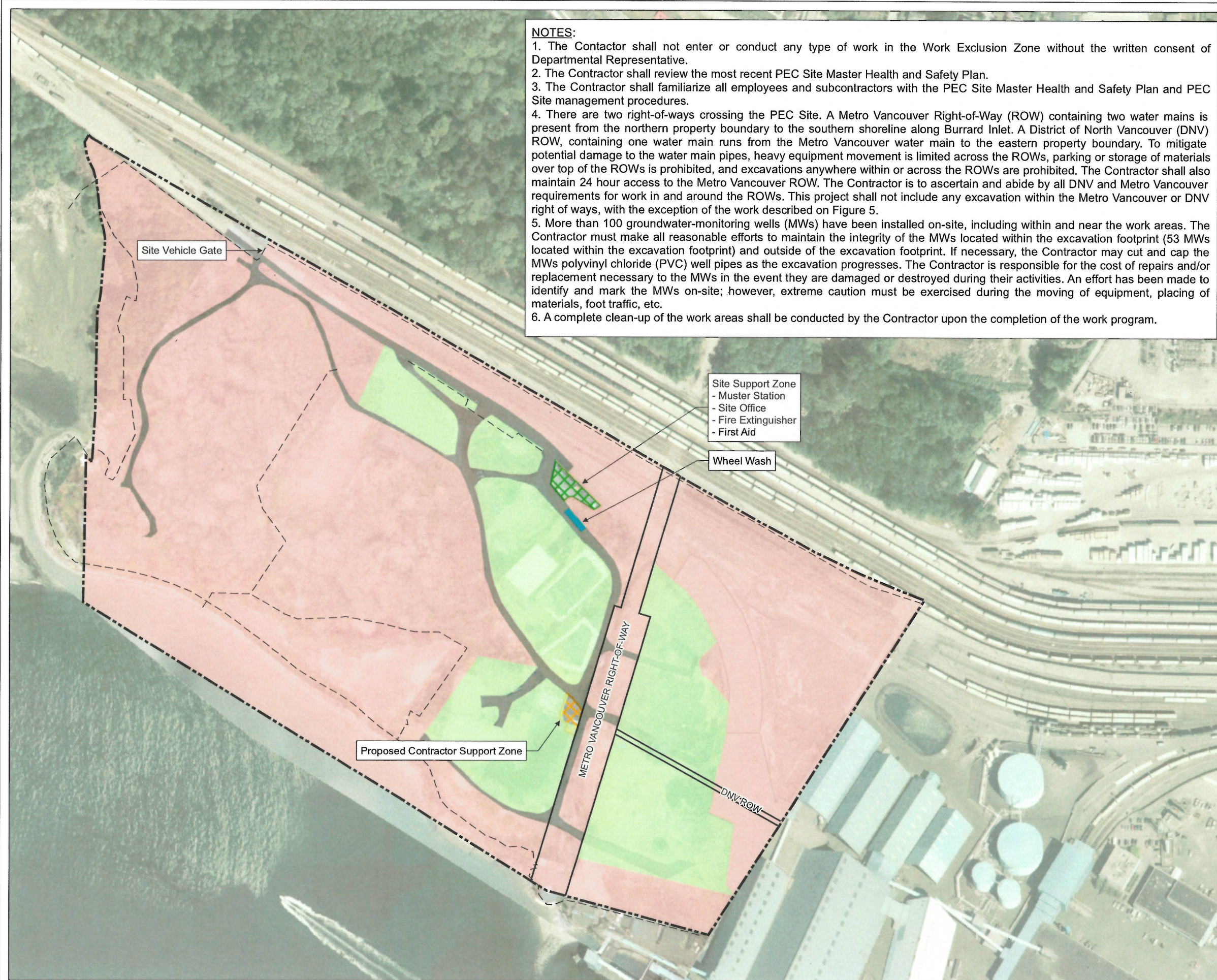
Sources

- Site Imagery: Trevita Survey orthophoto, March 2015
- Off-Site Imagery: District of North Vancouver, 2013



NOTES:

1. The Contractor shall not enter or conduct any type of work in the Work Exclusion Zone without the written consent of Departmental Representative.
2. The Contractor shall review the most recent PEC Site Master Health and Safety Plan.
3. The Contractor shall familiarize all employees and subcontractors with the PEC Site Master Health and Safety Plan and PEC Site management procedures.
4. There are two right-of-ways crossing the PEC Site. A Metro Vancouver Right-of-Way (ROW) containing two water mains is present from the northern property boundary to the southern shoreline along Burrard Inlet. A District of North Vancouver (DNV) ROW, containing one water main runs from the Metro Vancouver water main to the eastern property boundary. To mitigate potential damage to the water main pipes, heavy equipment movement is limited across the ROWs, parking or storage of materials over top of the ROWs is prohibited, and excavations anywhere within or across the ROWs are prohibited. The Contractor shall also maintain 24 hour access to the Metro Vancouver ROW. The Contractor is to ascertain and abide by all DNV and Metro Vancouver requirements for work in and around the ROWs. This project shall not include any excavation within the Metro Vancouver or DNV right of ways, with the exception of the work described on Figure 5.
5. More than 100 groundwater-monitoring wells (MWs) have been installed on-site, including within and near the work areas. The Contractor must make all reasonable efforts to maintain the integrity of the MWs located within the excavation footprint (53 MWs located within the excavation footprint) and outside of the excavation footprint. If necessary, the Contractor may cut and cap the MWs polyvinyl chloride (PVC) well pipes as the excavation progresses. The Contractor is responsible for the cost of repairs and/or replacement necessary to the MWs in the event they are damaged or destroyed during their activities. An effort has been made to identify and mark the MWs on-site; however, extreme caution must be exercised during the moving of equipment, placing of materials, foot traffic, etc.
6. A complete clean-up of the work areas shall be conducted by the Contractor upon the completion of the work program.



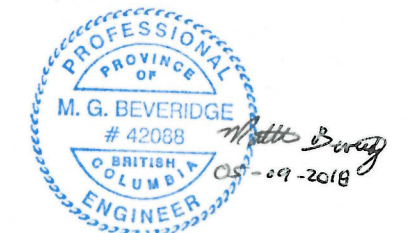
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Site Layout

Legend

- Fence
- Site Location
- Final excavation area for the former Heede Crane Area Remediation Base Work
- Final excavation area for the former Heede Crane Area Remediation Optional Work
- Empty storage cell
- Filled storage cell
- Transfer facility
- Site Support Zone
- Lysimeter Pad
- New Pavement Area
- Wheel wash
- Water holding cell
- Leftover Treatment Wall Media
- Imported backfill stockpile area
- Gravel, cobble, soil, and debris stockpile
- Gravel and cobble stockpile
- Metals contaminated soil stockpile
- Gravel and cobble screened from hazardous waste and waste quality soil
- Gravel and cobble screened from hazardous waste soil
- Hydrocarbon impacted soil stockpile
- Access road
- Underground diesel storage tank - concrete filled (removed and disposed of offsite)

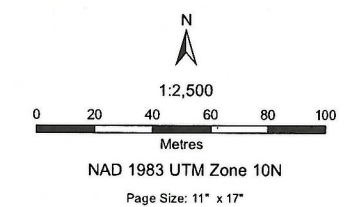


Notes

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Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



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Site Facility Maintenance

Legend

- Fence
- Water Service Repair
- Road Relocation
- Road Repair Area
- Fence Section to be Replaced
- Site Location
- Access Road
- Wheel Wash

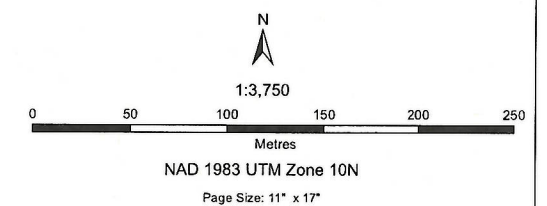


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- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



NOTES:

**Fence Repairs**

1. The Contractor shall repair fence section A to close the opening to the satisfaction of the Department Representative.
2. The ground below fence section B has eroded leaving a gap between the bottom of the fence and the ground surface. The Contractor shall repair or replace this section of the fence to eliminate the gap to the satisfaction of the Department Representative.

**Wheel Wash Cleanout**

3. The Contractor shall clean out the existing wheel wash and maintain it during the project in a condition (by controlling water level, water quality and sediment accumulation) to the satisfaction of the Department Representative such that it performs adequately and prevents contamination outside of the containment area. The Contractor must completely clean the wheel wash at the project completion. Wheel wash sediments and wastewater must be managed by the Contractor. Sediments may be disposed of on site within one of the waste cells.

**Water Service Repair**

4. A four inch diameter water supply line has previously been installed within the District of North Vancouver water Right or Way (DNV ROW) directly east of the 60 inch diameter Metro Vancouver ROW. The Contractor shall complete the following two items:
  - a. A damaged gate valve installed on the four inch water supply line shall be repaired or replaced to the satisfaction of the Department Representative; and
  - b. The 12 inch diameter DNV ROW shall be exposed, cut and capped directly east (as close as possible) of the four inch water supply line. This pipe is 12 inch steel with 3/8 inch wall thickness throughout.

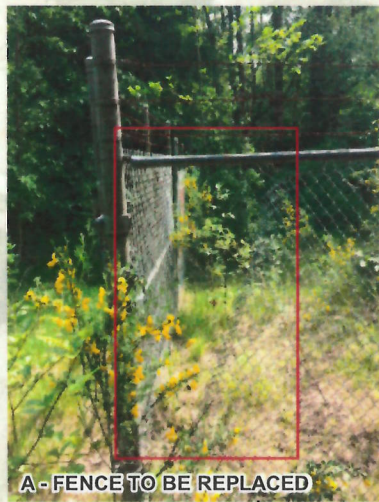
5. Detailed drawings are available to the contractor upon request.

**Road Repair**

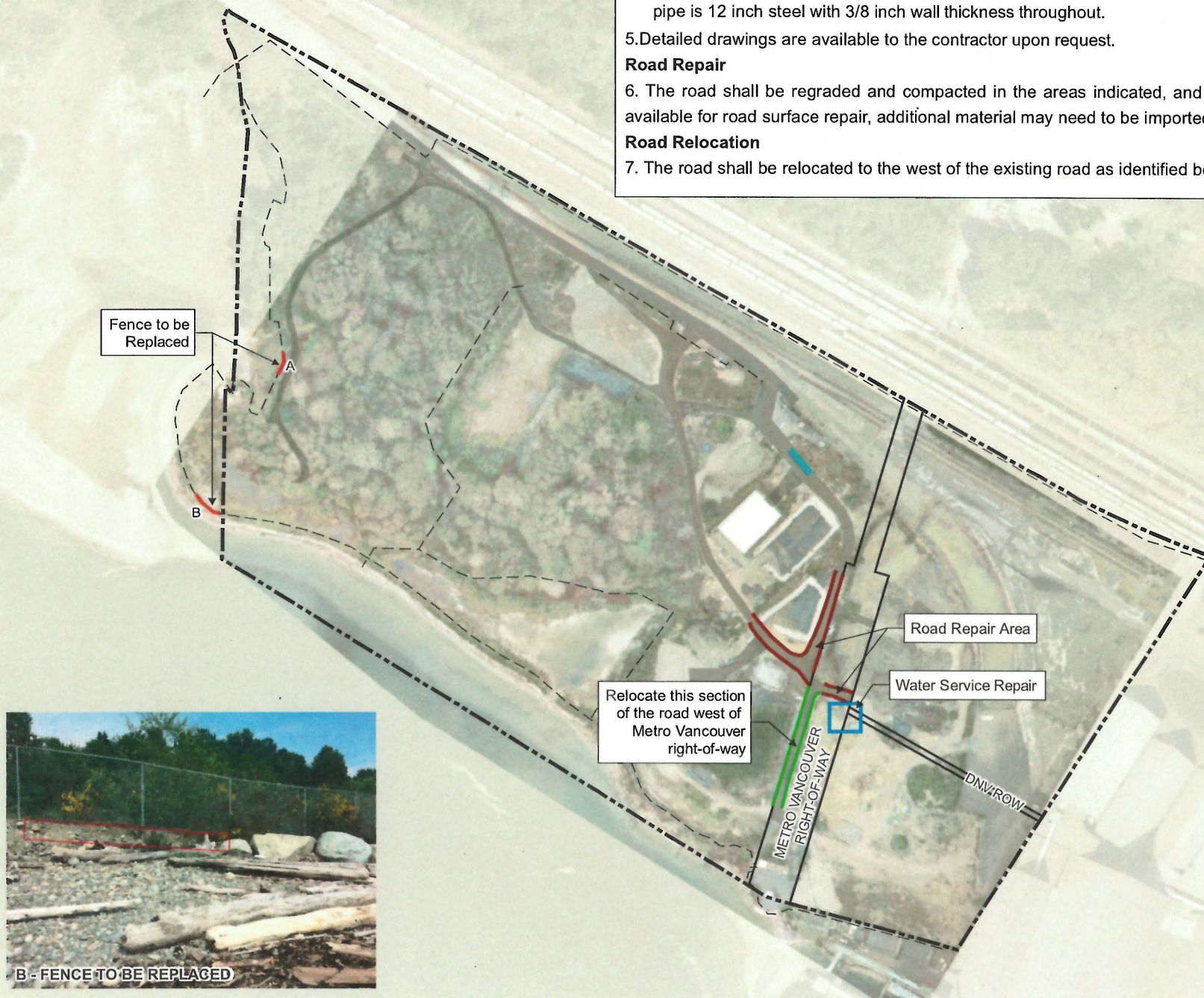
6. The road shall be regraded and compacted in the areas indicated, and left in this condition at the end of the project. Onsite stockpiles are not available for road surface repair, additional material may need to be imported and must meet backfill environmental quality requirements.

**Road Relocation**

7. The road shall be relocated to the west of the existing road as identified below, such that it is no longer above the Metro Vancouver right-of-way.



A - FENCE TO BE REPLACED




B - FENCE TO BE REPLACED

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**Stockpile - Hydrocarbon**

**Legend**

 Hydrocarbon impacted soil stockpile



METRO VANCOUVER RIGHT-OF-WAY

HC #1

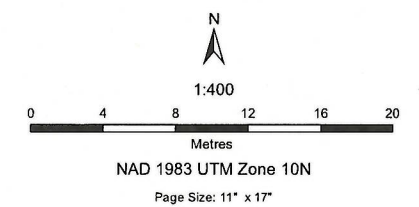
HC #2

**Notes**

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**Sources**

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009





**Stockpile - Amended Hazardous Waste Soil**

**Legend**

Amended Hazardous Waste Soil Location



Additional amended hazardous waste soil is located in the Transfer Facility to the northwest, as shown on Figures 4 and 8

Amended Hazardous Waste Soil from Cell 4

Amended Hazardous Waste Soil from Cell 3 (3b)

Amended Hazardous Waste Soil from Cell 3 (3b)

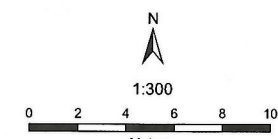
Amended Hazardous Waste Soil from Cell 4

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**Sources**

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



NAD 1983 UTM Zone 10N

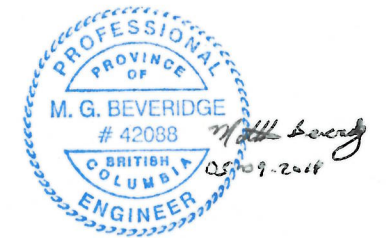
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Transfer Facility Soils

Legend

-  Amended Hazardous Waste Soil Exceeded BC Hazardous Waste Regulation - Leachate Quality Standards
-  Hazardous Waste Soil Exceeded BC Hazardous Waste Regulation - Leachate Quality Standards - suspected Sulphur contamination
-  Amended Hazardous Waste Soil Exceeded BC Hazardous Waste Regulation - Leachate Quality Standards - Stabilized
-  Transfer Facility
-  Amended Hazardous Waste Soil from Cell 3 (3a)



Transfer Facility Soils

TF #1

TF #2

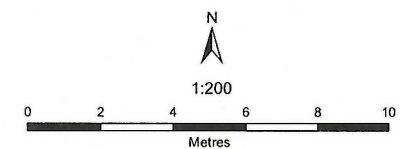
Amended Hazardous Waste Soil from Cell 3 (3a)

Notes

1. Aerial image used for general reference only - may not be representative of post-soil disposal phase.
2. CSR = Contaminated Sites Regulation  
CL = Commercial Land Use
3. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Trevita Survey orthophoto - March 2015








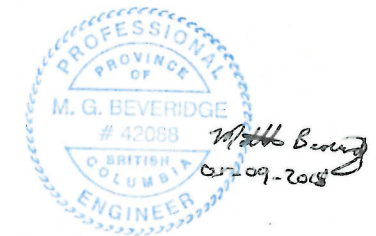
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Stockpile - Cell #5

Legend

-  Cell #5 - Field storage cell
-  Subcell
-  Exceeds CSR CL Standards
-  Previously Disposed of Off Site
-  Partially Disposed of Off Site

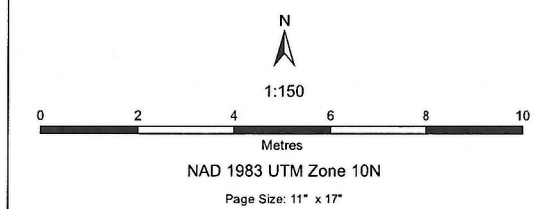


Notes

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Sources

- Site Imagery: Trevisa Survey orthophoto, March 2015





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**Stockpile - HCC and K**

**Legend**

-  Gravel and cobble screened from hazardous waste and waste quality soil
-  Gravel and cobble screened from hazardous waste soil

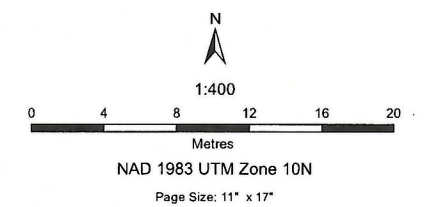


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**Sources**

- Trevisa Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009







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**Contaminated Soil Storage Areas**

**Legend**

- - - Fence
-  Site Location
-  Transfer Facility
-  Future Stockpile
-  Access Road



**NOTES:**

1. During the remediation, there will be five empty storage cells and one temporary transfer facility available for the Contractor to store excavated soils with an approximate total capacity of 16,575 cubic metres.
2. One additional cell must be created to accommodate for the additional 3,425 cubic metres of excavated soils. This storage cell shall be placed as directed by the Department Representative.
3. The Contractor must inspect the condition of and repair the storage cells prior to usage, if damaged. The Contractor must remove and dispose of the existing storage cell liners (where present) and supply and install new liners. The Contractor must supply any products required for the repair of the storage cells. The storage cells shall be constructed with new 30 mil LLDPE liners or approved equivalent. The dimensions of the required storage cell liners should be measured by the Contractor, and are approximately:
  - Cell #1: 60 x 50 m
  - Cell #2: 66 x 36 m
  - Cell #3: 75 x 35 m
  - Cell #4: 45 x 40 m
  - Cell #5: 50 x 45 m
4. The storage cells must meet the following requirements:
  - A berm 0.75 metre in height is to be maintained using suitable clean material.
  - The base of the containment cell shall be graded such that the positive drainage of water/sludge to one low area will occur. The low area shall contain a sump with a slotted pipe such that drained water can be pumped from the containment cell.
  - The liner is to extend up and over the containment berm, covering 75% of the downward slope.
  - A suitable layer of bedding sand (150 mm thick) shall be placed in the containment cell prior to the placement of contaminated soil.
  - The storage cells shall include a suitably sized cover of 20 mil woven polyethylene (WPE) or approved equivalent and shall be anchored down with boulders and rocks. Additionally, clean soil must be placed around the base of the storage cell to further secure the cover.
  - An access ramp shall be constructed to allow excavator and tandem axle dump truck access during filling.
5. Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by Department Representative.

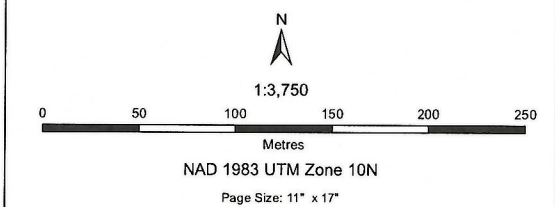


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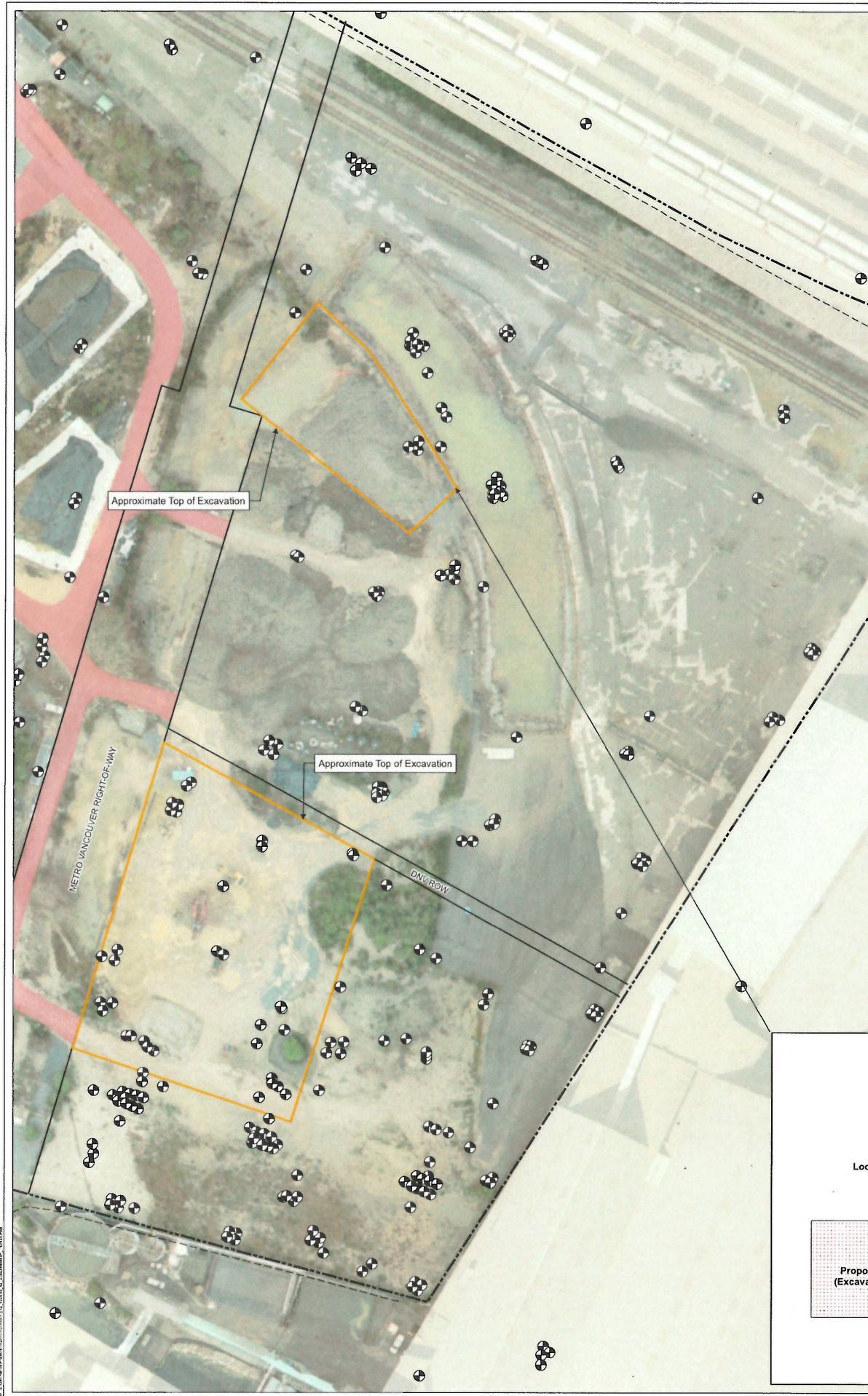
**Sources**

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



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**NOTES:**

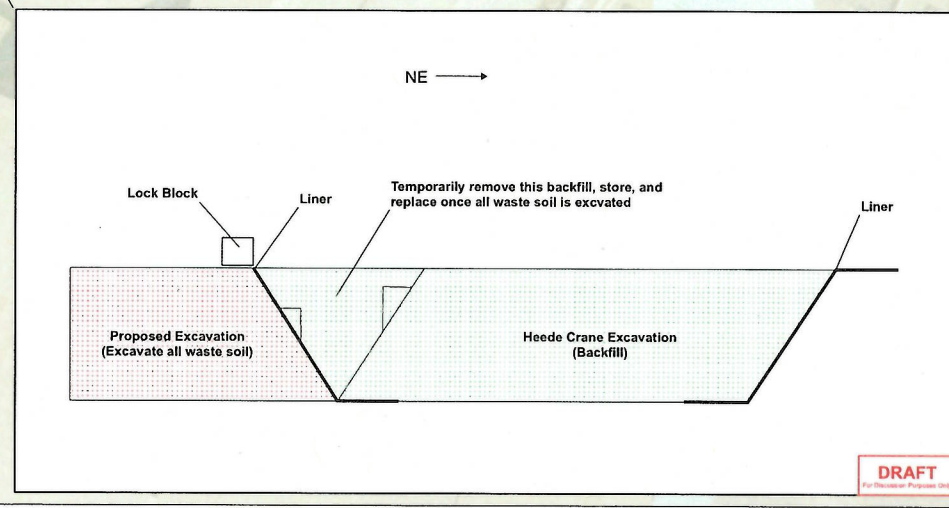
- The depth of excavation from the existing grade to the groundwater table is approximately 3.5 m below grade, and is expected to fluctuate with the tide.
- The excavation walls must be sloped 1 horizontal (H) to 1 Vertical (V).
- To protect poles within the excavations limits, there must be a 3 m setback at surface with a stable excavation slope not exceeding 1:1 from the poles.
- Other wastes (asphalt, concrete, wood, metal and general waste) excavated shall be stockpiled by the Contractor in designated areas approved by the Department Representative.
- Utility lines which are abandoned and not in use may be removed during excavation activities.
- More than 100 groundwater-monitoring wells (MWs) have been installed on-site, including within and near the work areas. The Contractor must make all reasonable efforts to maintain the integrity of the MWs at the site, including those within the excavation footprint (approximately 53 MWs located within the excavation footprint). If necessary, the Contractor may cut and cap the MWs polyvinyl chloride (PVC) well pipes as the excavation progresses. The Contractor is responsible for the cost of repairs and/or replacement necessary to the MWs in the event they are damaged or destroyed during their activities. An effort has been made to identify and mark the MWs on-site; however, extreme caution must be exercised during the moving of equipment, placing of materials, foot traffic, etc.
- Currently there are no known recorded archaeological deposits within the proposed excavation area. If, while conducting the excavation, the Contractor finds anything of an unusual nature within the fill that cannot be identified, and which they have any reason to suspect may be an archaeological deposit, work must be stopped. The Contractor is responsible for informing the Department Representative of the situation. In such cases, an archaeologist may be required to inspect the site, and advise of appropriate measures to be taken prior to the resumption of work on-site.
- Any schedule changes, work plan changes or additional costs related to archaeological interruptions shall be approved by the Department Representative prior to undertaking alterations to the work plan or schedule.
- The excavation of material shall continue until the limits of the excavation are reached based on visual observation of groundwater table by the Department Representative. A limited quantity of hazardous waste and suspect hazardous waste soils will be removed as part of the excavation program. The suspect hazardous waste soils must be segregated from the waste soils during excavation and stockpiled in a designated soil storage cell determined by the Department Representative. Borehole logs from select monitoring wells within the excavation area are attached for soil stratigraphy reference purposes only (see Appendix B).
- The Contractor's excavator will be required to retrieve soils for sampling activities conducted by the Department Representative. It is expected that the Contractor is aware that the progress of the remedial excavation may be slower than typical construction excavations on sites where contaminated soils are not anticipated to be present. A minimum of two excavation floor confirmatory soil samples will be collected from within a grid of 10 m increments. The time required to retrieve samples using the excavator shall be built into the Contractor's excavation and management costs in the Schedule of Items and Prices.
- Slope protection of excavated areas shall not proceed until approved by the Department Representative.
- Groundwater and surface water may be encountered during the proposed excavation. Active dewatering for the purposes of lowering the water table during excavation is not part of the project.
- No contaminated soil may remain between the current excavation and the former Heede Crane excavation to the northeast. This will require temporarily removing some of the backfill placed in the former Heede Crane excavation, removing the slope protection and lock blocks, and replacing the backfill once all contaminated soil has been excavated.
- The approximate sizes of each excavation are as follows (L x W x D):  
North: 62 x 36 x 3.5m  
South: 92 x 70 x 3.5m

**Work by Others**

A. The Department Representative will be on-site during the excavation program to verify and document the excavation procedures, confirm the Contractor's adherence to their construction plans and their methods to limit overall excavated soil volumes, maintain project quality assurance/quality control (QA/QC), and other Department Representative requests. PWGSC will be in contact with the Department Representative to monitor and address any issues that may impact the budget, schedule and technical aspect of the project. Any potential changes to the contract will be discussed for recommendation and final approval by PWGSC in consultation with the Department Representative.

B. The Department Representative will identify suspect waste, and suspect hazardous waste soils requiring segregation during the excavation and stockpiling of excavated soil.

- The Contractor is required to backfill both excavations to pre-excavation surface elevations using backfill materials imported by the Contractor. The excavation walls must be protected with 20 mil LLDPE or approved equivalent. No liner is required between the former Heede Crane Excavation and the proposed excavation backfills.
- The liner is to extend approximately 1.0 m onto the excavation floor and existing ground surface, and must be secured by placing lock blocks (blocks sized 2.5' x 2.5' by 5') spaced evenly every 10 m on the ground surface.
- The backfill should be compacted in place in controlled lifts not exceeding 0.5 metres in thickness. Compaction should be done using large ride-on compaction equipment.
- The backfill materials shall be placed to a minimum of 95 percent of their Modified Proctor Maximum Dry Density (ASTM D1557) while at a moisture content within 2 percent of optimum for compaction.
- The Contractor shall coordinate third party density testing services to provide quality assurance of the work.



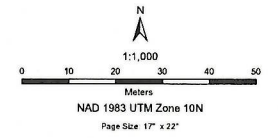
Proposed Soil Excavations

- Legend**
- Monitoring Well Location
  - Site Location
  - Approximate Top of Excavation
  - Access Road



- Notes**
- All mapped features are approximate and should be used for discussion purposes only.
  - This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
  - Inset not drawn to scale.

- Sources**
- Trevita Survey orthophoto - March 2015
  - ESRI World Imagery - Vancouver 2011, North Vancouver 2009



DRAFT  
For Discussion Purposes Only



**Backfill Storage Area**

**NOTES:**

1. Backfill shall only be stored within the two areas identified.
2. Backfill shall be mixed with cobbles identified by the Department Representative before placement into the excavation with a ratio of 25% cobbles to 75% backfill by weight.
3. The Contractor shall demonstrate to the Department Representative that this ratio is being measured and adhered to.

**Legend**

- Fence
- Site Location
- Transfer Facility
- Site Support Zone
- Wheel Wash
- Imported Backfill Stockpile Area
- Access Road

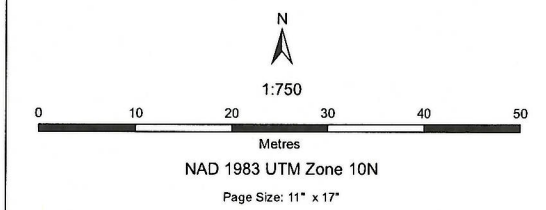


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**Sources**

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- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



NAD 1983 UTM Zone 10N  
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Waste Material Pile Locations for Disposal

Legend

- - - Fence
- Site Location
- Waste Material Pile
- Access road

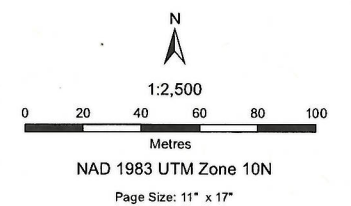


Notes

1. Aerial image used for general reference only - may not be representative of post remediation phase.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described

Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009



Path: G:\Data\GIS\Projects\102655-52\Map\Map14\_102655-52\_WestVancouver\Bul\contour\_10267.mxd