

<b>to:</b>	Mark Motors of Ottawa - <b>Mr. Michael Mrak</b> - mmark@markmotorsofottawa.com
<b>re:</b>	Environmental Remedial Action Plan <b>Proposed Site Redevelopment - 1125 to 1149 Cyrville Road - Ottawa</b>
<b>date:</b>	February 12, 2020
<b>file:</b>	PE2374-RAP.02
<b>from:</b>	Carlos P. Da Silva

Further to your request, Paterson Group (Paterson) completed a remedial action plan and incremental cost estimate, for the proposed redevelopment at the aforementioned site.

The proposed re-development of the subject site has not been finalized at this time. It's expected that a hi-rise development will most likely be implemented with one or two levels of underground parking.

## **Environmental Remedial Action Plan**

The proposed remedial program will consist of the following:

- The delineated area marked out in **red** on Drawing PE2374-2, has petroleum hydrocarbon impacted soil ranging in depth from ground surface to approximately 2.5 to 3 m below the existing grade. It should be noted that petroleum hydrocarbon impacts were noted in the overburden, as well as within the shale. The upper shale layer is heavily fractured and weathered from approximately 1 to 3 m below grade.
- The delineated area marked out in **blue** on Drawing PE2374-2, has heavy metal impacted soil (both fill and native material) from ground surface to a depth of approximately 2 m below grade. Additional pockets of fill material impacted with heavy metals, are also expected to be encountered within the proposed building footprints. It is anticipated that up to 50% of the soil within the building footprints will require off-site disposal at a registered waste disposal facility, during construction activities.
- Groundwater impacted with petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs) that will require special attention during the soil excavation program, is shown in **blue** on Drawing PE2374-3.

The proposed residential development will require a RSC due to a land use change and for meeting City of Ottawa Brownfield Grant program. To meet the conditions of a RSC, the suggested remedial action plan is as follows:

- A remedial program using a full depth approach will be used. This will involve the excavation of all hydrocarbon and/or heavy metal impacted soil and bedrock from within the boundaries of the subject site.

- Any free product that may be encountered in the groundwater within the excavation will be pumped by an MECP licensed pumping contractor for off-site transfer and disposal.
- The groundwater in the vicinity of the former underground storage tank (UST) nest, is expected to be impacted with VOCs and PHCs above the MECP Table 7 standards and City of Ottawa sewer use by-law standards. A portable treatment system will be installed to treat on-site accumulated groundwater by means of granular activated carbon. The groundwater treatment system will consist of one unit and will remain in place until the on-site groundwater concentrations are in compliance with both the MECP Table 7 standards and City of Ottawa sewer discharge standards.
- Carry out a confirmatory sampling program to ensure that the site meets MECP Table 7 standards.
- Backfill the excavations in the vicinity of the existing garage structure and adjacent the proposed Audi dealership, using clean excavated material, if suitable from a geotechnical perspective, or using engineered fill, to the underside of the pavement structure. Engineered fill will consist of OPSS Granular B Type II crushed stone.
- Prepare a summary report along with a RSC application for the entire site and submit to the MOE for acknowledgement.

## Quantities and Cost Estimate

The remediation program for the entire site will consist of a generic approach with the removal of all petroleum hydrocarbon and heavy metal impacted soil which will be disposed off site at an approved waste disposal facility. Estimated quantities would be as follows:

- Excavation and segregation of material . . . . . 2,100 m<sup>3</sup>
- Impacted soil to be transferred to an approved waste disposal facility. . . . 6,300 m<sup>3</sup>
- Disposal at an approved waste disposal facility . . . . . 12,600 mt
- Management of impacted groundwater . . . . . 50,000 L

The cost estimate for this approach will be approximately **\$471,000** using **2020 dollars** and is detailed in the table below.

Mr. Michael Mrak  
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We trust that this information satisfies your requirements.

Best Regards,

**Paterson Group Inc.**



Carlos P. Da Silva, P.Eng., ing., QP<sub>ESA</sub>

## **Paterson Group Inc.**

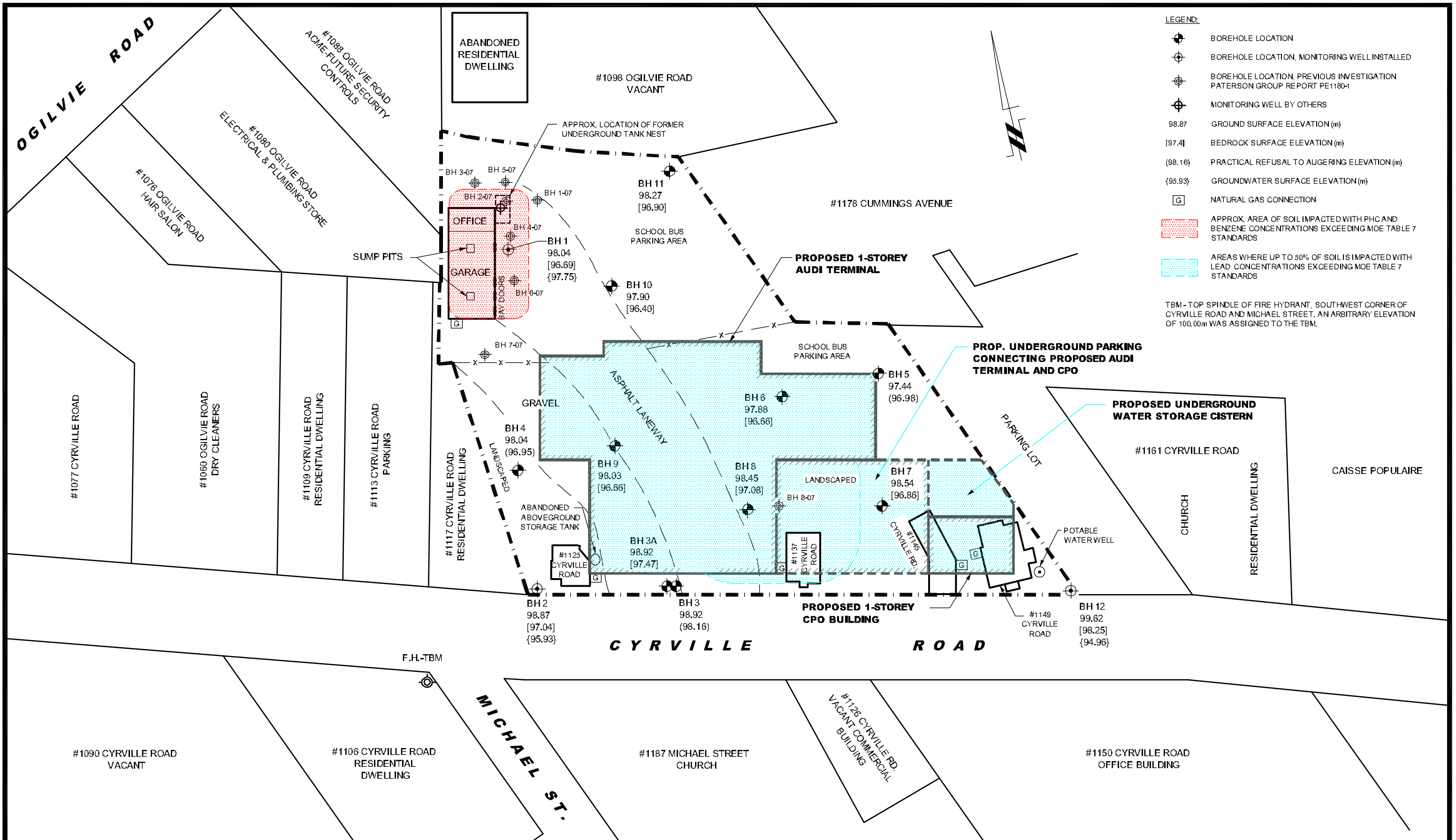
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**Generic Approach for Entire Site  
1125 to 1149 Cyrville Road - Ottawa**

<b>Item and Estimated Quantity</b>	<b>Unit Rate</b>	<b>Estimated Cost</b>
<b>Remediation Contractor Estimated Incremental Costs</b>		
Incremental costs associated with dust control as well as cleaning and maintenance of roadway due to construction activities when removing contaminated soil.	lump sum	\$10,000
<b>Removal of Impacted Soil</b>		
Excavation and segregation of impacted and non-impacted soil (approximately 2,100 m <sup>3</sup> )	\$10/m <sup>3</sup>	\$21,000
Transfer and disposal of impacted soil at an approved waste disposal facility (approximately 6,300 m <sup>3</sup> or 12,600 mt)	\$25/mt	\$315,000
<b>Control and Treatment of Impacted Groundwater</b>		
Pumping and treatment of impacted groundwater (using one treatment unit - initial installation cost and approximately one month of treatment)	\$20,000 installation + \$15,000/month of treatment	\$35,000
<b>Contractor Sub-Total (excluding applicable taxes)</b>		<b>\$381,000</b>
<b>Engineering Costs</b>		
Remedial program supervision, sample screening, analytical testing, meetings and consultation, monitoring well installation and groundwater monitoring events, final report preparation and RSC.		\$90,000
<b>TOTAL (excluding applicable taxes)</b>		<b>\$471,000</b>
<b>Brownfield Grant Recovery Cost (approximately 50% of total cost)</b>		<b>\$235,500</b>
<b>TOTAL Net Cost</b>		<b>\$235,500</b>



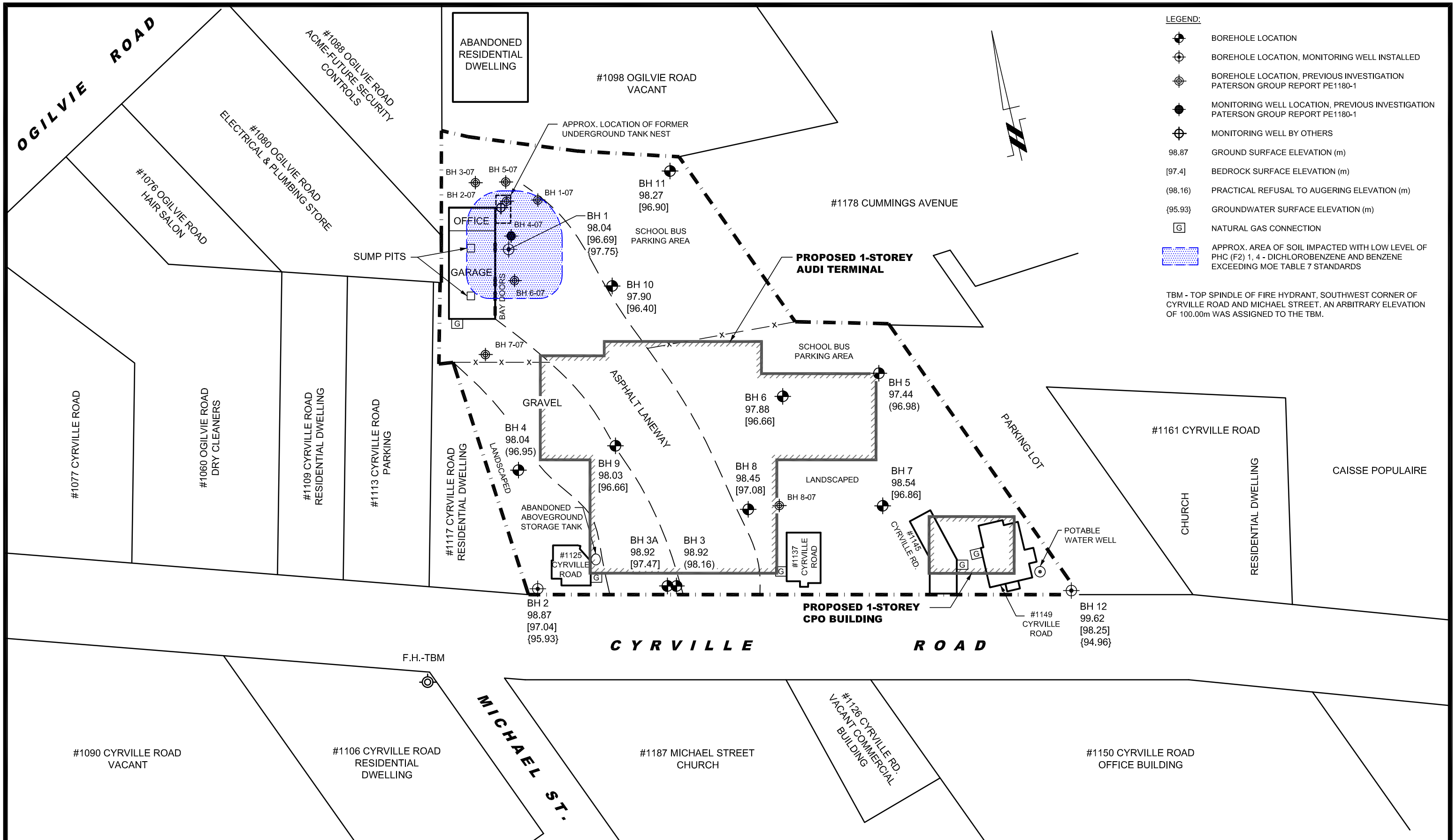
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 Dwn: MPG  
 Chkd: MSD

MARK MOTORS  
 REMEDIAL ACTION PLAN  
 1125 TO 1149 CYRVILLE ROAD  
 OTTAWA, ONTARIO

**IMPACTED SOIL**

Dwg. No. **PE2374-2R**  
 Report No.: PE2374-RAP.01R  
 Date: 04/2014



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 REMEDIAL ACTION PLAN  
 1125 TO 1149 CYRVILLE ROAD  
 OTTAWA, ONTARIO

IMPACTED GROUNDWATER

Dwg. No. **PE2374-3**  
 Report No.: PE2374-RAP.01R  
 Date: 02/2014