Construction Management Plan For Source Water Protection Area

MacEwen Petroleum Fuel Dispensing Facility

5546 Albion Road South
Ottawa (Gloucester), Ontario

Prepared for:

MacEwen Petroleum Inc.
18 Adelaide Street, PO Box 100
Maxville, Ontario
K0C 1T0

Attention: Mr. Roch Lortie, Site Development Manager

LRL File No.: 01348

December 2024

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1 INTRODUCTION

The following Construction Management Plan for Source Water Protection has been prepared to address the high sensitivity and elevated risk presented at the MacEwen Petroleum Fuel Dispensing Facility, located at 5546 Albion Road in Ottawa, Ontario (herein referred to as the 'Site').

The Site is located within the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system.

This communal well is located downgradient (south) of the subject Site, following Mitch Owens Road and is sourced by the shallow bedrock aquifer which is hydraulically connected to the sand/gravel/till overburden recharge zone.

The proposed re-development and anticipated remediation activities are anticipated to include:

- Demolition of existing site features (i.e. store, fuel dispensing features, septic disposal system); and
- Excavation of impacted subsurface materials, and for the installation of utilities and infrastructure.

It is anticipated that the existing fuel dispensing facility will be re-developed to include new fuel storage and dispensing equipment, and convenience store serviced by a private water supply well and sewage disposal system.

This document is intended to provide the details of the procedures to be followed prior to and during demolition of the existing Site features, and general construction of the new features, as well as the procedures required during remediation and/or dewatering during the construction and redevelopment activities.

2 SITE CONTACTS

For additional information relating to the history of the Site, the current and proposed use of the Site, or details related to the demolition, construction and remediation of the subject property, the following may be contacted for assistance:

Emergency Contact	Construction / Re-Development Contact
Roch Lortie, Site Development Manager	*(To be Confirmed at the time of the work)*
MacEwen Petroleum Inc.	MacEwen Petroleum Inc.
Mobile: 613-227-0264	Mobile: 613-551- 2279
Office: 613-527-2100 (ext. 309)	Office: 613-527-2100
Email: r.lortie@macewen.ca	Email: d.ranger@macewen.ca

Environmental Concerns	Construction Engineering Concerns
Jessica Arthurs, Environmental Engineering Manager	Maxime Longtin, Civil Engineering Technologist and Team Manager
LRL Engineering	LRL Engineering
Mobile: 613-978-0658	Mobile: 613-915-8043
Office: 613-842-3434	Office: 613-842-3434
Email: jarthurs@lrl.ca	Email: mlongtin@lrl.ca

3 WELL HEAD PROTECTION AREA – RISK MITIGATION CONSTRUCTION MANAGEMENT PROCEDURES

Well Head Protection Area – Identified Risk	Risk Management Measure	Discussion
Underlying sand and gravel unit (which acts a recharge area for the contact aquifer) impairment through: • Spills or Accidental Release; or • Introduction of Foreign Chemicals/Material.	Restricted and limitations to excavation activities across the site.	• Excavation activities should not extend beyond a depth greater than 4.2 m (14 feet) to protect the underlying aquifer confining layer. • The Site workers during construction, including the excavation equipment operators must be informed of this limitation by the Site lead (MacEwen Petroleum Inc.). • Only excavate where and as needed. Should remediation efforts be required, alternative techniques such as in-situ operations, should be considered to prevent over-excavation, or damage to the confining layer.
	Maintain equipment in good working order to prevent potential spills or releases of potentially contaminates during the re-development work.	Establish dedicated re-fuelling areas on the Site, limited to locations where a known clay protective barrier is present, as presented in the following **Figure 6**.
	No equipment maintenance or re-fueling is to be performed in the vicinity of open excavations, or within 15 m of the existing supply well.	The greatest distance possible shall be maintained from these activities and the supply well. The limits of the 15 m setback from the well are presented in **Figure 7**.
	Any underground storage tanks installed within the 10-year 'Time-of-Travel' capture zone for the Albion Sun Vista wells should be equipped with interstitial monitoring systems and the tanks and associated piping should have leak detection systems in place	These monitoring and detection systems must be maintained according to applicable provincial requirements, as governed by the Technical Standards and Safety Authority.
	A monitoring program should be established to provide on-going water quality information upgradient of the site.	A Monitoring Plan has been prepared under a separate cover.

Well Head Protection Area – Identified Risk	Risk Management Measure	Discussion
	The supply well at the MacEwen Petroleum station at 5446 Albion Road should be monitored on an annual basis for general water quality parameters plus petroleum hydrocarbon and volatile organic compounds.	Annual monitoring and reporting will be completed as indicated in the Monitoring Plan.
Compromising the underlying low permeable protective clay layer.	The north-central portion of the Site has been identified to have a clay layer acting as a protective boundary from possible surficial impacts and the supply aquifer to the Site and neighbouring wells. Damage to this layer through excessive remediation, or protrusions, can result in increased pathways of potential contaminates into the underlying aquifer.	Excavation activities are limited the materials over the low permeable clay layer.
Existing supply well damage	Damage to the existing supply well can result in immediate impacts to the aquifer. Such impairment can travel through the supply aquifer, resulting in possible detrimental conditions of neighbouring supply wells.	During construction and re-development of the Site, the supply well must be protected from potential damage by all parties involved.
		At no time shall snow be piled or stored within 15 m of the supply well.
		Construction fencing must be maintained around the perimeter of the supply well.
		At no time, shall the well casing or area within 15 m of the structure be altered, damaged or excavated, with the following exception: i. A licenced individual, under O. Reg. 903, is retained to extend the casing accordingly so that it is at least 40 cm above final grade; ii. A licenced individual, under O. Reg. 903, is retained to disinfect the supply well post repair or alterations to the structure; iii. The installation of protective bollards to prevent damage to

Well Head Protection Area – Identified Risk	Risk Management Measure	Discussion
		the well during typical Site operations; iv. The removal of asphalt surfacing, and curbing, and re-instatement, within 15 m of the well; v. Should a spill occur or accidental release occur within 15 m of the supply well, the Site specific Spill Management Plan must be followed, including notification of the respective parties and subsequent monitoring of the aquifer.

It is the responsibility of the Owner, MacEwen Petroleum Inc., and their authorized agents, to ensure the above measures are met. This includes staff training to recognize these set recommendations, and ensure a clear understanding is maintain by staff and sub-contractors.

4 SITE MANAGEMENT & CONTACT INFORMATION

The subject site is owned, and will be operated by MacEwen Petroleum Inc. They are refereed to as the 'Owner'.

The Site contact information, and general Site description, is as follows:

Owner Name	MacEwen Petroleum Inc.
Owner Representative	Roch Lortie
Owner Contact Information	18 Adelaide Street, P.O. Box 100 Maxville, Ontario K0C 1T0 Office Phone : 613-527-2100 Mobile : 613-227-0264
Site Location	5546 Albion Road South, Ottawa (Gloucester), Ontario Northwestern corner of the Mitch Owens Road and Albion Road intersection.
Site Mailing Address	5546 Albion Road South, Ottawa (Gloucester), Ontario
Site Legal Description	Part of Lot 30, Concession 3 (Rideau Front), Geographic Township of Gloucester, City of Ottawa
Site Access	One (1) entrance along Mitch Owens Road, and one (1) entrance along Albion Road, southern and eastern extents of the Site, respectively.

5 TYPICAL CONSTRUCTION AND OPERATION CONSIDERATION

Construction and Operation Activity	Consideration	Discussion
Fencing	Construction ('modu-loc' temporary fencing) will be added across the extents of Site included in the proposed re-development (fencing enclosure). The fencing will be 1.8 m in height and erected accordingly to prevent destruction by winds. The fencing will be maintained throughout the re-development activities, especially when open excavations and heavy machinery are present or operating. The anticipated fencing details are presented below in **Figure 1**.	Individual segments of fencing will be maintained a distance of 3.0 m along the west, north and south of the existing supply well to act as a protective barrier during construction. • The eastern protective barrier of the Supply Well will be that of the subject Site enclosure. Due to the limited risk of impacts from the east during construction, it is not considered a requirement during construction activities. • Open excavations, greater than 1.2 m in depth, will have an individual fence erected surrounding its perimeter to comply with the Ministry of Labour, Immigration, Training and Skills. The location of this fencing will be dependant on the extents of the excavation, and location of the excavation.
Hoarding	Storage of the equipment and construction supplies will be kept within fenced area in locked storage containers. The anticipated hording locations are presented below in **Figure 1**.	Larger equipment which cannot be enclosed in the storage container will be stored when not in use in a secure locations, away from the open excavation (when applicable) and as far as practically possible from the supply well on the Site, or other sensitive features (i.e. ditches which empty into the water course identified, or in the proximity of the water course). Liquids, chemicals or solvents must be clearly labeled, securely sealed and isolated, with Material Data Sheets available on Site by the Site Development Manager, or Site Development Foreman.

Construction and Operation Activity	Consideration	Discussion
Construction Trades parking	**Figure 2** depicts the inferred available trades parking locations during the proposed construction work. The locations are considered suitable based on the geological conditions, and distances from potential sensitive receptors (supply well or open excavation) in the event there becomes an issue or incident with a parked vehicle or machinery.	Parking for trades and those associated with the re-development efforts on the site will be available on the site. Although the locations may be changed throughout the process, depending on the level of activities and location of the work. No parking on the side of Mitch Ownes Road of Albion Road will be allowed by site visitors, workers or suppliers. Equipment which contains lubricants, or fuels which are not in use should abide by these procedures also, which is described in greater detail below. All visitors to the site will be required to report to the site trailer and may be instructed to park at an alternative location.
Machinery Parking	When machinery, namely those which contain petroleum-based fuels and lubricants, must be parked as far from the supply well as possible. At all times during construction, it is required that a minimum 15 m setback from the supply well.	The 15 m setback, as shown in **Figure 3A**, is intended to prevent potential damage to the intercepted aquifer in the event of an incident and is referred to herein as the 'NO PARKING ZONE'. The "no parking zone" is presented in the following image (**Figure 3A**) as a blue hatched area. A more detailed view of the 15 m setback is presented in **Figure 3B** below. Additional prohibited activities in this area include: • Vehicle or equipment repair; • Vehicle or equipment fueling; • Storage of solutions, chemicals or products which could leak or spill such as oils or fuels; • The stockpiling of contaminated soils during the remediation activities; • The storage or stockpile of asphalt debris; • Snow stockpiling or storage of de-icing products; • Cutting, grinding or manipulating metal products or components; and • The placement of the on-site sanitary station.

Construction and Operation Activity	Consideration	Discussion
		• MacEwen Petroleum must mark this location daily, or as often as required, with spray paint to indicate the extents of the No Parking Zone.
Machinery Maintenance, Repairs or Re-Fueling	No machinery maintenance (other than cleaning tracks, removing snow, idling to reach optimal operational temperature during winter months) is permitted on site. As both Mich Owens Road and Albion Road are highly traveled, it is not advisable to complete additional tasks off-site.	The following activities will be permitted on site, but at a safe distance from potentially sensitive receptors (open excavation, supply well), and should be completed in the area of the site identified as including a clay low permeable barrier – protective clay layer, which can act as a limiting factor to aquifer impairment in the event of a spill or incident: • Re-fueling; • Lubricating components; • Adjusting hydraulic hoses; • Checking fluids and 'topping'-off; • Changing implements which includes attaching hydraulic hoses or removing pins. The activities listed above (small maintenance operations) are permitted in this location, as presented in the subsequent image. Prior to these activities, the Spill & Risk Management Plan should be considered in the event of an incident. Staff must also be trained, as included in the Training Plan, to complete these activities according to prevent and minimize risk to the site and the sensitive receptors.
Stormwater Management, Erosion and Sediment Control	There is an existing roadside ditch along Mitch Owens Rd. at the south extent of the Site. In the current conditions of the Site, the stormwater runoff would flow uncontrolled overland and via existing storm sewers to the existing ditch along Mitch Owens Road. It is anticipated that this will remain true throughout the majority of the re-development activities. The existing development also incudes stormwater catchment basins, which currently drains uncontrolled and eventually outlet to	During construction, erosion and sediment controls are to be provided primarily via a sediment control fence to be erected along the perimeter of the Site where runoff has the potential of leaving the property. These controls will be maintained and monitored by the constructor throughout the proposed construction activities. Inlet sediment control devices are also to be provided in any catch basin and/or manholes in and around the Site that may be impacted by the proposed construction (i.e. silt fencing cloth over the catchment basin covers). Construction and maintenance requirements for erosion and sediment controls are to

Construction and Operation Activity	Consideration	Discussion
	the existing ditch along Mitch Owens Road.	comply with Ontario Provincial Standard Specification OPSS.MUNI.805. It should also be noted fill material brought to the Site for use, or excavated material, susceptible of increasing runoff, should be covered in the event of a forecasted precipitation event.

Figure 1: Anticipated construction fencing placement and hording locations.

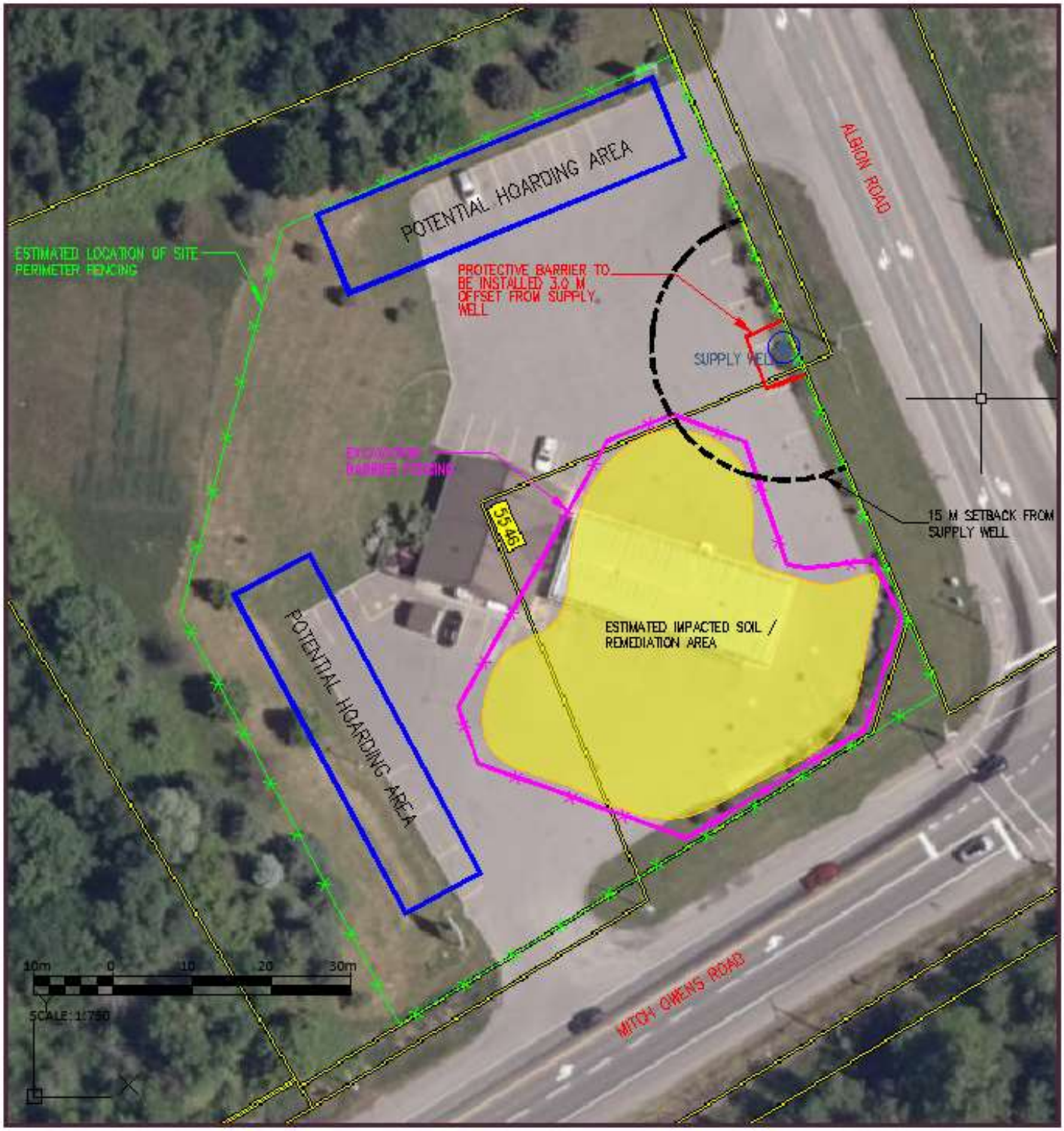


Figure 2: Construction and trades parking.

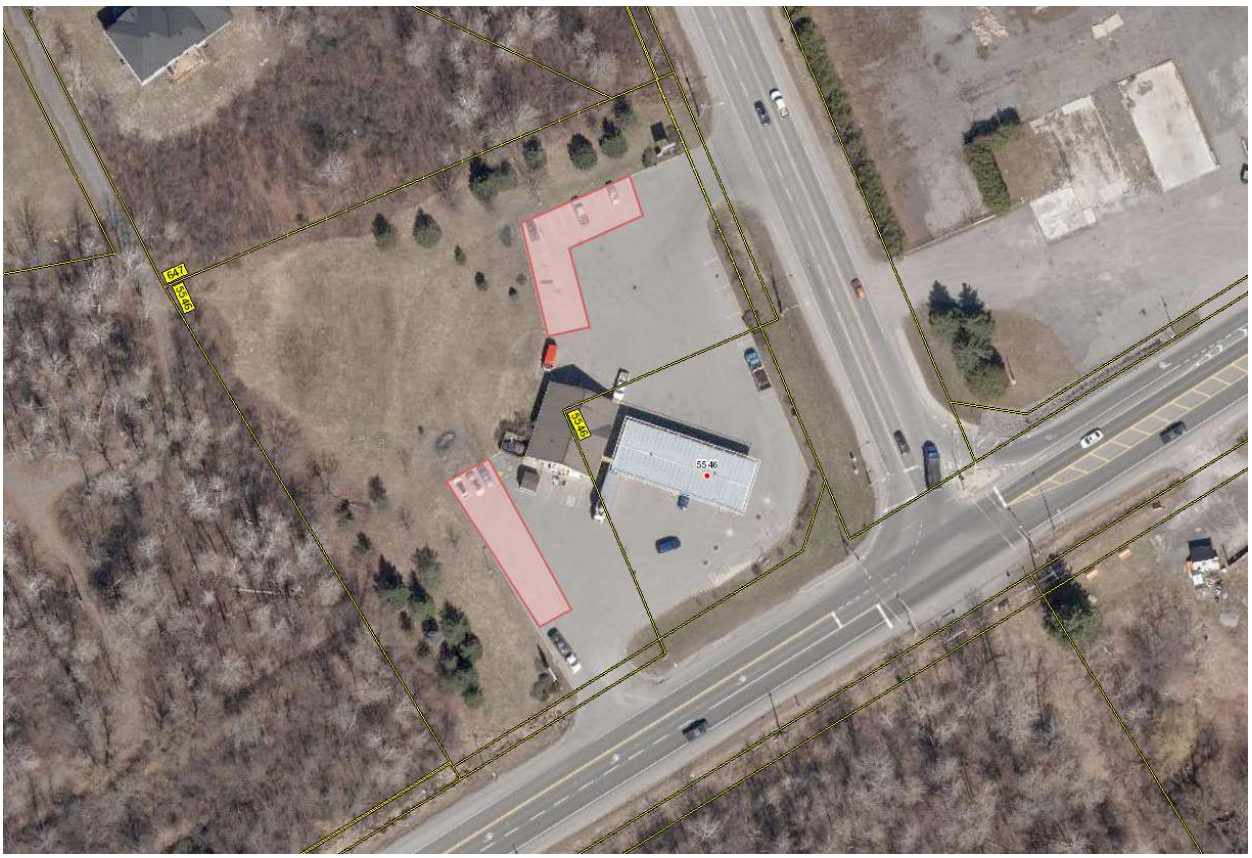


Figure 3A: General Extents of No Parking Zone

Figure 3B: Enhanced View of 15 m Setback

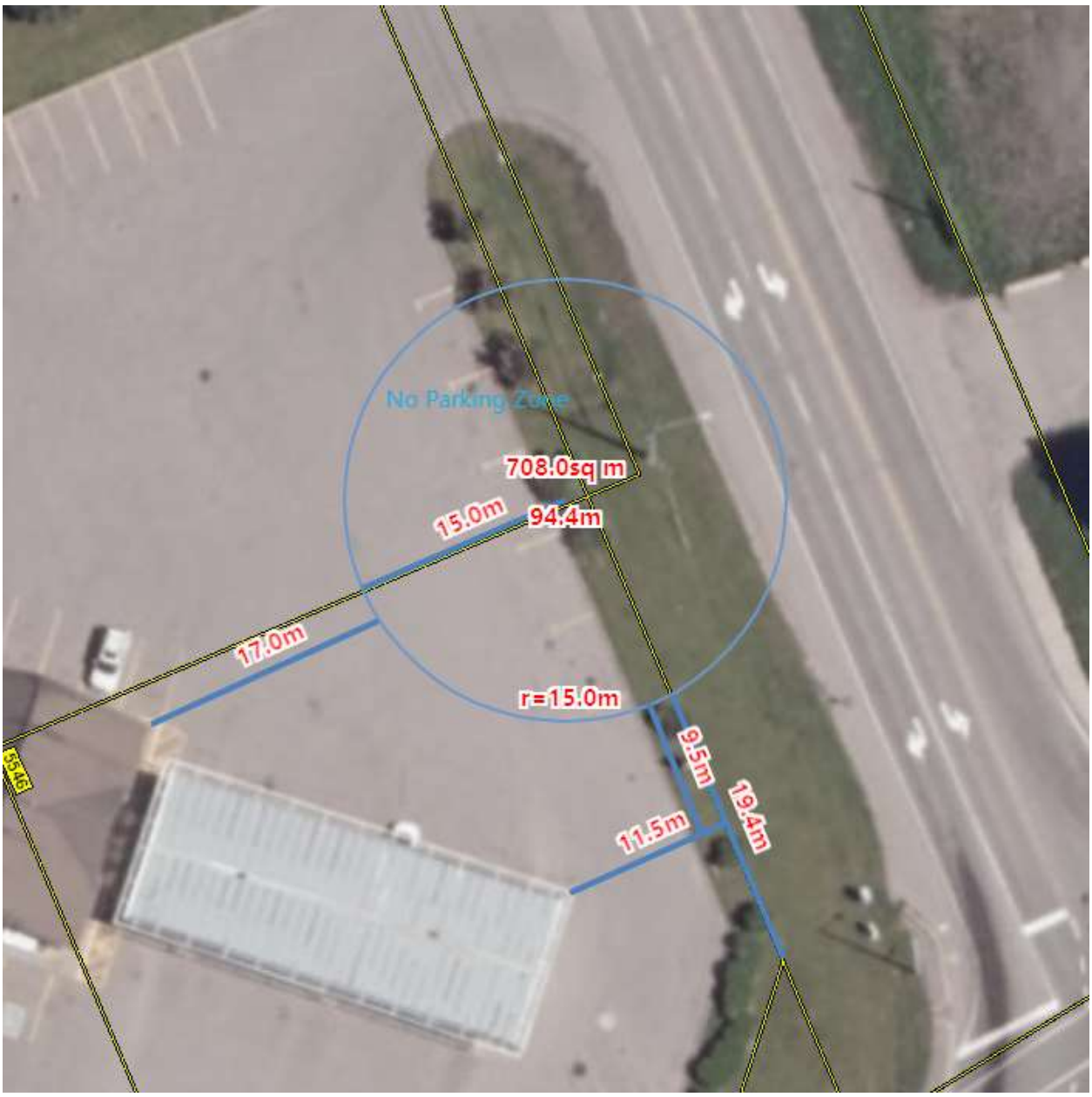
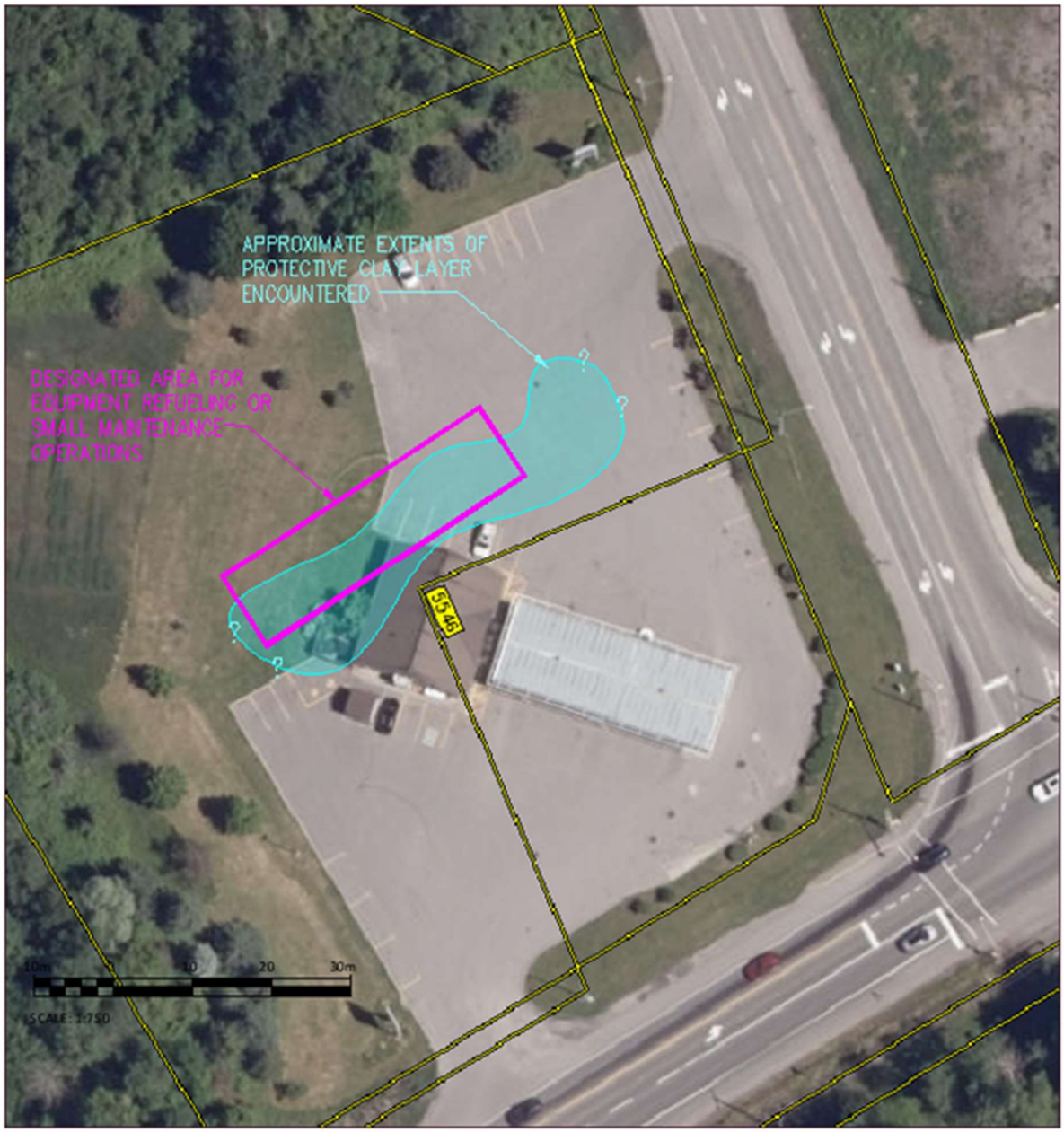


Figure 4: Approximate Extents of Clay Barrier



6 IMPACTED SOIL REMEDIATION

MacEwen Petroleum Inc. (MPI) had retained LRL Engineering (LRL) to complete a Phase II Environmental Site Assessment (ESA) on the Site (Report Dated March 2023). The purpose of a Phase II ESA is to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. The potential environmental concerns (PECs) identified that requires investigation include:

- Petroleum handling and dispensing facility operations and associated equipment on the Site;
- Aggregate extraction facility located approximately 390 m northeast and 600 m east of the Site; and
- The historical industrial/commercial development previously occupying the property located immediately east of the Site.

Regulatory requirements for assessing environmental conditions of a Site are established by Ontario Regulation 153/04 – Records of Site Conditions, Part XV.1 of the Environmental Protection Act (O. Reg. 153/04). Site condition standards are set out in the MECP's" Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act", April 15, 2011, as amended. The applicable SCS used was the Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, commercial property use and coarse-textured soils.

Contaminants of potential concern (COPCs), for the soil and groundwater on the Site, include Petroleum Hydrocarbon Compounds (PHCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAH), metals, and inorganics.

The soil and groundwater across the Site generally meet the applicable SCS with the following exceptions:

- Conductivity impacts to the surface soil in the southeast portion of the Site; and
- Sodium and chloride impact in the groundwater across the Site.

The conductivity impacts in the soils are found to encompass an area of approximately 490 m² and are likely limited to the upper 2.0 m of overburden. The vertical, and horizontal extents of the impacted groundwater have not been established at this time.

Although not confirmed through the corresponding intrusive investigation and associated sampling, it is anticipated that petroleum impacted are present within the existing underground storage tank installation nest extents and underlying the existing concrete apron and fuel dispensing pump.

At the time of re-development, impacted soil should be removed from the Site in general accordance with Technical Standards and Safety Authority's (TSSA) Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), in addition to the following provincial regulations:

- O. Reg. 406/19: On-Site and Excess Soil Management
- O. Regulation 558/00: General -Waste Management; and
- O. Reg. 153/04: Record of Site Condition.

6.1 Environmental Remediation Options

6.1.1 'Dig and Dump' Methodology

The general procedures to be followed during on-site environmental remediation activities, through excavation or 'dig and dump' procedures shall include the following.

- Excavation and remediation efforts must follow the requirements set out in the Technical Standards and Safety Authority's (TSSA) Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), as well as in accordance with current Ontario Ministry of the Environment, Conservation and Parks regulations (O. Reg. 406/19: On-Site and Excess Soil Management; O. Regulation 558/00: General -Waste Management; and O. Reg. 153/04: Record of Site Condition);
- A qualified person representative, as defined under the O. Reg. 153/04, as amended, shall be present for the operations to:
    - Inspect the soils and groundwater uncovered, and collect soil samples from excavation limits and groundwater samples (if encountered);
    - Screen soil samples for combustible soil vapours using a combustible gas detector, as well as for visual and olfactory evidence of contamination in order to identify worst-case soil samples;
    - Sample number and location submitted for laboratory analysis were selected based on Table 4.1.A of Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, August 2012;
    - Submit soil and groundwater samples for chemical analyses of contaminates of concern, which typically include Petroleum Hydrocarbons (PHC) Fractions 1 through Fraction 4; Volatile Organic Compounds (VOCs); Polycyclic Aromatic Hydrocarbons (PAH); General Inorganics and Heavy Metals, for fuel handling facilities;
    - Assess subsurface conditions with respect to contaminants of concern in accordance with the Ontario Ministry of Environment and Climate Change's Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act, April 15 2011;
        - The applicable site condition standards for the Site are the Table 2 Full Depth Generic Site Condition Standards (SCS) in a potable groundwater condition, commercial property use and coarse textured soils as set out in the O. Reg. 153/04; and
    - Prepare a reporting letter detailing site activities and findings to be submitted to the respective review authorities, and the client for their records.
- The contractor performing the excavation activities must be aware of the risks associated with the proximity of the site to local communal supply well sources, as well as the excavation restrictions with respect to protective clay barriers on the site.
    - The excavation work shall not penetrate the underlying clay confining layer if encountered. It is anticipated that it is limited to the north northern portion of the site;
    - The excavation should be limited to the maximum depth required for construction purposes (4.2 m for the installation of underground storage tanks, and 2.6 m for convenience store foundation). In the event impacted materials are still present, alternative clean up methods will be investigated (i.e. chemical injections, or pump and treatment trailer).

- Protection to the clay layer is highly important for this site.
- Open excavations should be limited. The excavation work should be implemented in phases with limited open holes. Open excavations can act as pathways for contaminates to enter into the supply aquifer on the site.
- Stock piles of impacted soils should be limited and short term. Contaminated soils should be excavated directly into dump trucks for off-site disposal. If stock piling is absolutely required, it must be short term, set on a 6 mm thick plastic barrier, and covered with a 6 mm plastic barrier to limited potential runoff or seepage.
    - The stock pile must be at least 30 m from the on-site supply well, and should be up-gradient on the site where the protective clay layer has been identified.
- Strategic grading away from open excavations should be maintained, or clean soil berms should be placed along the up-gradient perimeter of the excavation, to manage and divert surface runoff into the excavation. This can be used to limit potential contaminants from entering the aquifer during rainfall events.
- The excavated area must be re-instated as quickly as possible.

6.1.2 Remedial Injection and Permeable Reactive Barrier (PRB) Methodology

- A remedial injection contractor will be retained to plan and execute the program. The remedial contractor will complete the necessary permitting including:
    - Submission of Notice of Intended Location (NOIL) to activate Mobile ECA for the Site;
    - Completion of a Pre-Injection Site inspection; and
    - Development of a Site-specific Remedial Work Plan, Monitoring Plan & Spill Response Plan limited to the intended products and procedures to be used.
- The exact details related to the program is limited and are based on the site conditions. The remedial contractor, under their mobile Environmental Compliance Approval (ECA), will complete the injection of the remedial reagents into the injection wells under the supervision of LRL personnel.
- The products, detailed injection locations and schedule will be dependant on MECP approval and impacted overburden conditions.
- Reporting will be completed at the specified rate as established through the ECA and the regulatory authorities involved in the remediation program, by a qualified person, as defined in O. Reg. 153.04.

6.1.3 Pump & Treatment System Methodology

- A treatment trailer unit, operated under a designated Environmental Compliance Approval, can be used to operate the system. The conditions of the Environmental Compliance Approval will be followed, including sample frequency and respective parameters to be analysed.
- If the anticipated daily flow is in excess of 50,000 L/day, an Environmental Activity and Sector Registry (EASR) will be obtained. It is anticipated that no more than 35,000 L will be removed in one day. It is not anticipated that daily volumes will be in excess of 400,000 L/day, therefore a Permit To Take Water is unlikely required.
- The pump and treat method can be employed to remove identified contaminates of concern, such as PAHs, VOCs, and PHCs from the groundwater. Additional vessels and media can be implemented to clean various contaminates of concern.

- The treatment trailer will be equipped with a pump to draw the water from pre-determined recovery or collection points, and into a primary oil/water separator unit.
- The water will then continue through a bag filter to remove particulate and sediment, followed by a series of clay and carbon vessels. Additional vessels and media can be implemented to clean various contaminates of concern.
- Pre- and Post- treatment sampling will be initiated daily for the first week of operations to ensure the unit and systems are operating accordingly. Samples will be collected for the parameters of concern.
- There after sampling will be weekly from the pre- and post- treatment locations.
- Reporting will be completed at the specified rate as established through the ECA and the regulatory authorities involved in the remediation program, by a qualified person, as defined in O. Reg. 153.04.

7 NATURAL HERITAGE AND WILDLIFE

The Ministry of Natural Resources and Forestry (MNRF) and the City of Ottawa identified an unevaluated wetland and an unnamed ditch located west of the Site boundary. The ditch is noted as a watercourse according to the corresponding conservation authority. An Environmental Impact Statement (EIS) was completed to address the potential impacts of the proposed development to the identified natural features (un-evaluated wetland and watercourse to the east of the Site). The EIS was completed in December 13, 2023 (revised February 23, 2024).

The mitigation measures presented in this previously prepared report must be followed during, and post re-development of the Site to preserve the natural features and wildlife in the vicinity or on the subject property.

8 DEWATERING PLAN

The groundwater is anticipated to be encountered at depths of between approximately 1.6 and 1.9 m below grade (existing grade). Excavation below the water table is anticipated in certain areas of the Site, including the existing underground storage tank location, the proposed and existing convenience store footprint, and the septic disposal systems and associated fixtures and components. Therefore, dewatering will likely be required during work below the water elevation.

It is anticipated that pumping from open sumps or excavations should be sufficient to control groundwater inflow. Any groundwater seepage or infiltration entering the excavation should be removed from the excavation by pumping from sumps within the excavations. Surface water runoff into the excavation should be minimized and diverted away from the excavation if possible.

A permit to take water (PTTW) is required from MECP, Ontario Reg. 387/04, if more than 400,000 litres per day of groundwater will be pumped during a construction period less than 30 days. Registration in the Environmental Activity and Sector Registry (EASR) is required when the takings of ground water and storm water for the purpose of dewatering construction projects range between 50,000 and 400,000 litres per day.

Based on the field investigation through localized borings, it is anticipated that pumping of groundwater will not exceed 50,000 litres per day. As such, no PTTW nor registration in the EASR is anticipated to be required for the construction of the proposed buildings at this Site.

Groundwater discharge must be directed away from the existing supply well present on the Site to prevent the potential introduction of contaminates or sediment into the structure or supply aquifer.

8.1 Treatment System Requirements

Mobile water treatment trailers are well-suited for small-volume environmental dewatering or groundwater remediation projects where groundwater impacts are assumed or known. As discussed above, the groundwater across the Site has elevated concentrations of sodium and chloride, and based on the current Site activities, additional petroleum-based may be present. Therefore, should the groundwater removed as part of the dewatering program be discharged across grade, treatment would be required.

Treated groundwater must comply with the City of Ottawa Storm Sewer Use Guidelines (By-Law No. 2003-514) prior to releasing it into the natural environment.

Sampling from the discharge of the treatment system will follow the City of Ottawa requirements, as well as those specified in the treatment units Environmental Compliance Approval certification.