



FOCUSED FEASIBILITY STUDY AND DISPROPORTIONATE COST ANALYSIS

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ECOLOGY VCP No. NW2811**

**FOCUSED FEASIBILITY STUDY AND
DISPROPORTIONATE COST ANALYSIS**

**MAIN STREET APARTMENTS DEVELOPMENT
10505 MAIN STREET
BELLEVUE, WASHINGTON 98004**

JANUARY 18, 2017

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1 INTRODUCTION

The Riley Group, Inc. (RGI) is pleased to present this Focused Feasibility Study and Disproportionate Cost Analysis (FS/DCA) regarding the above-referenced Main Street Apartments property located at 10505 Main Street, Washington (herein referred to as the Property, Figure 1).

The Property is currently owned by Alamo Manhattan Bellevue, LLC and has been enrolled in the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) since December of 2013. The Property is identified by Ecology as the Alamo Manhattan Main Street project with VCP project number NW2811. All previous environmental investigation reports associated with the Property have been submitted to Ecology under the VCP.

RGI prepared this FS/DCA in accordance with regulatory requirements of the Model Toxics Control Act (MTCA), specifically WAC 173-340-350 and 173-340-360. This FS/DCA will be submitted to Ecology in support of a regulatory closure of the Property in the form of a No Further Action with an Environmental Covenant (NFA/EC).

2 PROPERTY AND SITE LOCATIONS

This section describes the locations of the Property and the Site. Figure 2 depicts the Property and Site locations.

2.1 PROPERTY LOCATION

The Property is located at 10505 Main Street in Bellevue, Washington and is located on the United States Geologic Survey (USGS) Bellevue South, Washington, 7.5-Minute Topographic Map at an elevation of approximately 100 feet above mean sea level (See Figure 1).

The Property is located in the southwest quarter of Section 32 of Township 25 North, Range 5 East of the Willamette Meridian. The King County tax parcel number associated with the Property is 5223300005 and the Property occupies approximately 1.45 acres of land.

Prior to the redevelopment of the Property in 2013 as the Main Street Apartments, the Property consisted of two King County tax parcels. Parcel 5223300005 (Parcel 0005) represented the eastern half of the Property and parcel 5223300015 (Parcel 0015) represented the western half of the Property.

The Property is generally flat except for a steep slope along the southern boundary of the Property. The surrounding area also slopes slightly to the northwest. Typical property use in the vicinity is a mixture of retail and residential properties.

According to the City of Bellevue Development Services Center, the zoning for the Property is listed as DNTN-MU (Downtown Mixed Use District). The DNTN-MU designation includes property uses for residential, commercial and retail purposes.

2.2 SITE LOCATION

The Site is defined as the location where soil and/or groundwater containing concentrations of contaminants of potential concern (COPCs) exceeding applicable MTCA cleanup levels have come to be located, irrespective to the Property boundary.

The Site consists of two Areas (Area 1 and Area 2), which are both situated on the southwestern portion of the Property. The locations of the Site and Property are displayed on Figure 2.

3 PROJECT BACKGROUND

Several previous investigations have been conducted on the Property and are described in the following documents:

- *Phase I Environmental Site Assessment Report (Phase I ESA); Aaron Bothers Retail Property* dated March 21, 2012 by RGI.
- *Phase II Subsurface Investigation Report (Phase II); Proposed Main Street Development* dated July 24, 2012 by RGI.
- *Additional Groundwater Monitoring Well Installation and Sampling Report (Well and Sampling Report) Proposed Main Street Development* dated June 19, 2013 by RGI.
- *Phase I Environmental Site Assessment Update Report (Phase I ESA Update) Main Street Development* dated June 26, 2013 by RGI.
- *Excavation Work Plan, Main Street Development (RA Work Plan)* dated July 17, 2013 by RGI.
- *Remedial Action Report (RA Report)* dated June 13, 2014 by RGI.
- *Groundwater Characterization Work Plan (GC Work Plan)* dated October 30, 2014 by RGI.
- *Groundwater Characterization Report (GC Report)* dated July 21, 2015 by RGI.
- *Further Action at the following Site: Alamo Manhattan Main Street (June 2016 Opinion Letter)* dated June 6, 2016 by Ecology.
- *Method B Groundwater Evaluation Technical Memorandum (GE Memorandum)* dated July 21, 2016 by RGI.
- *Supplemental Remedial Investigation Work Plan (SRI Work Plan)* dated August 11, 2016 by RGI.
- *Response to Ecology June 6, 2016 Opinion Letter Technical Memorandum (2016 Response to Opinion Letter Memorandum)* dated August 11, 2016. This document was included as Appendix A to the SRI Work Plan.
- *Draft Revised Supplemental Remedial Investigation Report (Draft SRI Report)* dated January 18, 2017 by RGI.

Details pertaining to previous investigations conducted on the Property, the history of the Property, and remedial actions performed at the Property have been summarized extensively in the aforementioned reports. Pertinent soil sample locations and analytical data obtained from previous investigations are summarized on Figure 3. All previous groundwater analytical results are summarized in Table 1 and post-2013 RA groundwater analytical results are displayed on Figure 5. All soil analytical data associated with the RA and subsequent investigations are summarized in the Draft SRI report.

As documented in the RA Report, the selected cleanup action alternative for the Property was direct excavation of contaminated soil with off-Property disposal in areas where concentrations COPCs in soil exceeded applicable MTCA soil cleanup levels.

The selected cleanup action alternative for remediating groundwater was source removal with natural attenuation.

Upon completion of the RA, all contaminated soil had been removed from the Property to the maximum extent practicable. Contaminated soil was removed from seven separate areas within

the Property boundary and a total of approximately 1,434 tons of contaminated soil was removed from the Property and disposed of in accordance with applicable regulations. Groundwater was not encountered during the RA to the maximum depth of soil remediation of approximately elevation 66' (approximately 31 feet below ground surface). Groundwater was encountered at approximately elevation 50' (approximately 48 feet below ground surface). After completion of the RA, two areas of soil contamination were left in place, which are now identified as Area 1 (formerly RA Area 3) and Area 2 (former location of well MW4). These locations are displayed on Figure 2.

Area 1 consists of an estimated 62 cubic yards (or 93 tons) of diesel-range total petroleum hydrocarbon (TPH) impacted soil that was left in place between elevations 74' and 62'. These elevations corresponded to approximately 4 to 16 feet below the redevelopment subgrade. During the RA, the onsite engineer would not allow excavation in this location due to the termination depth of the west shoring wall. Therefore, it was necessary to leave this contaminated soil in place.

Area 2 consists of an isolated area where an estimated 16 cubic yards (or 24 tons) of diesel-range TPH and Tetrachloroethene (PCE) impacted soils remain in place. This contaminated soil was identified during the installation of former groundwater monitoring well MW4 in 2013. Area 2 is situated between approximately elevations 62' to 59', which corresponded to depths of 16' to 19' below the redevelopment subgrade and was not accessible during the RA. Additionally, the vertical extent of this contamination was limited and only a few feet thick.

Groundwater is present beneath the Property between approximately elevations 48' and 56', which corresponds to approximately 42' to 50' below the grade at the surface of the Property. A total of four wells were installed during the RA and subsequent investigations to evaluate post 2013 RA groundwater concentrations of COPCs. Wells RW1, RW2 and MW6 were installed on the Property and MW5 was installed off-Property to the west on 105th Avenue Southeast. Groundwater concentrations of COPCs have been in compliance with the MTCA regulation for the past four consecutive quarters.

Data obtained during previous investigations is sufficient to adequately characterize soil and groundwater conditions on the Property. This FS/DCA uses the data presented in the above-referenced environmental investigation reports, with consideration of regulatory and engineering standards, to determine feasible post construction cleanup action alternatives that are appropriate to address the soil contamination that remains in Areas 1 and 2. Those cleanup action alternatives are then compared using a DCA to determine the preferred cleanup action alternative for the Property that meets the substantive requirements of MTCA.

4 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) identifies sources of contamination, affected media, possible fate and transport mechanisms, potential receptors, and exposure pathways. The CSM provides the basis for evaluating and selecting cleanup alternatives.

The RA Report documents the cleanup of the Property and the methodologies used to conduct remedial actions. Soil cleanup was completed on the Property to the maximum extent practicable. Two areas of soil contamination remain on the Property. Diesel-range TPH is present in Area 1 and diesel-range TPH and PCE are present in soil in Area 2. The estimated lateral and vertical extents of these Areas are presented on Figures 3 and 6, respectively.

Groundwater data obtained to date demonstrates that groundwater concentrations of COPCs have been in compliance with the MTCA regulation for the last four consecutive quarters. All

groundwater data for the Property is summarized in Table 1 and post-2013 RA groundwater data is presented on Figure 5.

Based on the above-mentioned factors, this CSM focuses only on current Property conditions, which consist of the impacted soils situated in Areas 1 and 2 on the southwestern portion of the Property. These are the only Areas on the Property where concentrations of COPCs in soil exceed applicable MTCA soil cleanup levels.

4.1 SOURCE OF CONTAMINANTS OF POTENTIAL CONCERN

The source of the remaining diesel-range TPH and/or PCE impacted soils associated with Areas 1 and 2 appears to be former use of the western portion of the Property (Parcel 0015) for dry cleaning and fuel storage purposes. Historical records obtained during previous investigations indicated that the building situated on Parcel 0015 was heated by an oil burner and a heating oil UST was encountered during the RA in Area 1 (former RA Area 3). Analytical data obtained from inside this UST along with soil analytical data obtained from beneath this UST indicated that this UST may have been used to store spent dry cleaning solvents at some point.

4.2 CONTAMINANT FATE AND TRANSPORT

Subsurface movement of contaminants depends on a variety of environmental, physical, chemical, and biological properties. Factors affecting fate and transport include solubility, volatilization, sorption, hydrolysis, oxidation reduction, and biodegradation. A detailed discussion of fate and transport is beyond the scope of this document and this section briefly discusses the general fate and transport characteristics of contaminants encountered in soil in Areas 1 and 2. Soil impacts in both locations are confined to the vadose zone. Therefore, the focus of this discussion pertains to the impacted soil present in the vadose zone.

Diesel-range TPH and PCE are the only contaminants that remain in soil on the Property at concentrations exceeding applicable MTCA soil cleanup levels.

4.2.1 DIESEL-RANGE TPH

Diesel-range TPH is present in both Areas 1 and 2 at concentrations exceeding applicable MTCA soil cleanup levels. In both locations soil contamination is confined to the vadose zone and has not migrated to groundwater.

The migration of diesel-range TPH through the subsurface is based on several factors including downward migration by gravity and lateral spreading in areas where low permeability soils are present. Migration is also influenced by a number of environmental, physical, and biological factors.

Concentrations of petroleum hydrocarbons in soil degrade over time through the natural attenuation/biodegradation process which involves interaction between contaminants and microbial populations and commonly results in innocuous end products such as carbon dioxide and water. The rate at which this biodegradation occurs depends largely on the type of microbial populations present in the subsurface and geochemical conditions.

In general, the lighter fraction TPH compounds (gasoline-range TPH) are more mobile due to increased solubility, higher volatility and lower partitioning coefficients. The heavier fractions (diesel and oil-range TPH) tend to be less soluble and mobile.

Diesel-range TPH typically has a vapor pressure of <1 mmHg at 20 degrees Celsius and will partition into the vapor phase, but not as readily as other more volatile contaminants, such as PCE. RGI evaluated the vapor pathway for the Property and determined that this pathway is not a concern for diesel-range TPH impacted soil on the Property.

4.2.2 TETRACHLOROETHENE (PCE)

PCE is present in Area 2 between approximately elevations 62' and 59' (an approximately 3' thick horizon) at concentrations exceeding the applicable MTCA soil cleanup level. These soil impacts are confined to the vadose zone and have not migrated to groundwater.

PCE is a dense non-aqueous phase liquid (DNAPL) and releases typically occur in either pure phase PCE or dissolved phase PCE. As PCE migrates downward through the subsurface by gravity, PCE molecules adsorb to soil particles. The migration of PCE will be further influenced by the permeability of the soils encountered and a variety of environmental, physical and biological properties.

Reductive dechlorination is the primary biological degradation process pertaining to PCE and degradation of PCE usually takes longer than degradation of diesel-range TPH. During this process, PCE is broken down into trichloroethene (TCE), cis-1,2-Dichloroethene (DCE), trans-1,2-DCE, 1,1-DCE, vinyl chloride and eventually into innocuous ethane through the successive removal of chlorine atoms and replacement of chlorine atoms with hydrogen atoms. The rate at which reductive dechlorination occurs is largely based on the environment, microbial populations and geochemical conditions. Since no PCE degradation compounds were detected in soil, it would appear that PCE is not readily degrading in the subsurface conditions present on the Property.

PCE has a vapor pressure of approximately 18 mmHg at 20 degrees Celsius and will readily partition into the vapor phase and migrate upward. RGI evaluated the vapor pathway and determined that this pathway is not a concern for PCE impacted soil on the Property.

4.3 TERRESTRIAL ECOLOGICAL EVALUATION (TEE) RESULTS

A TEE is required by WAC 174-340-7490 at any site where there has been a release of a hazardous substance to soil. The regulation requires that one of the following actions be taken:

- Documenting a TEE exclusion using criteria in WAC 173-340-7491;
- Conducting a simplified TEE as set forth in WAC 173-340-7492; or
- Conducting a site-specific TEE as set forth in WAC 173-340-7493.

The Property qualifies for a TEE exclusion since residual contaminated soil is covered by existing building, which would prevent wildlife or plants from being exposed to the contamination (WAC 173-340-7491). The TEE conducted by RGI was submitted to Ecology along with the VCP application in November of 2013.

4.4 EXPOSURE PATHWAYS FOR CONTAMINANTS OF POTENTIAL CONCERN

The types of potential exposure include terrestrial ecological risk and human health risk. Since the Property qualifies for a TEE exclusion (see section 4.3), mitigating the potential human health risk associated with the contaminants of concern (COCs) in the soil is the primary objective of the selected cleanup action. This section presents an evaluation of the potential exposure pathways at the Property.

4.4.1 SOIL DERMAL CONTACT AND INHALATION AND INGESTION

All contaminated soil is situated at least 24 feet below the surface of the Property (or 4 feet below the ground floor of the parking garage) and capped by the concrete floor of the parking garage which will prevent any exposure to this soil contamination. Therefore, the direct contact pathway is not considered a concern for the Property.

4.4.2 SOIL LEACHING TO GROUNDWATER

The soil leaching to groundwater is not considered a concern for the Property due the fact that both areas of contaminated soil are situated above the groundwater table. The vertical separation between the water bearing zone and the lowest elevation of contaminated soil is approximately 9 feet. Additionally, groundwater data obtained from nearby groundwater monitoring wells has demonstrated that these impacts have not impacted groundwater.

4.4.3 GROUNDWATER INGESTION AND INHALATION

Groundwater concentrations of COPCs have been in compliance with the MTCA regulation for the past four consecutive quarters. Therefore, this pathway is not applicable for the Property.

4.4.4 VAPOR PATHWAY

RGI evaluated the vapor pathway and determined that due to the location and/or concentrations of contaminants detected, a vapor intrusion concern does not exist for the Property. RGI's Vapor Intrusion Evaluation is presented in Section 7 of the Draft SRI Report.

5 PROPERTY CLEANUP REQUIREMENTS

The MTCA regulations (chapter 173-340 WAC) govern site cleanups and defines a two-step approach for establishing cleanup requirements for individual sites:

- Establishing Cleanup Standards.
- Selecting Cleanup Actions.

5.1 ESTABLISHING CLEANUP STANDARDS

The two primary cleanup standards pertaining to the cleanup of the Property include:

- Cleanup Levels (which determine at what concentration a particular hazardous substance does not pose a threat to human health and the environment).
- Point of Compliance (which designates the location where the cleanup levels must be met for a given media).

5.1.1 SELECTING CLEANUP LEVELS & IDENTIFICATION OF COCs

The MTCA regulation provides three options for establishing generic and site-specific cleanup levels for soil and groundwater. Method A cleanup levels are intended to provide conservative cleanup levels for sites undergoing routine site characterization or cleanup actions or for sites with relatively few hazardous substances. MTCA Method B and C cleanup levels are set using a site risk assessment, which focuses on the use of "reasonable maximum exposure" assumptions based on site-specific characteristics and toxicity of the COPCs.

During previous investigations, COPCs that were detected in soil and/or groundwater at concentrations exceeding the applicable MTCA soil or groundwater cleanup levels were identified as COCs for the Property.

Based on RGI's evaluation of previous soil analytical data for the Property, the MTCA Method A Soil Cleanup Levels For Unrestricted Land Uses were selected for determining if soil was in

compliance with the MTCA regulation during the 2013 RA. These cleanup levels are considered protective of groundwater and the direct contact pathway.

Historical COCs identified in soil on the Property during the 2013 RA were gas-, diesel-, and oil-range TPH, PCE, naphthalenes, ethylbenzene, xylenes, cadmium (Cd), and lead (Pb). However, after completion of the RA, the only remaining COCs for soil on the Property were diesel-range TPH and PCE. The locations where soil contamination remains on the Property with select soil analytical data are displayed on Figure 3.

Prior to June of 2016, groundwater on the Property was evaluated using MTCA Method A Cleanup Levels For Groundwater to determine if groundwater was in compliance with the MTCA regulation. The historical COCs identified in groundwater during the 2013 RA were diesel-range TPH and benzene. However, after the RA was completed, diesel-range TPH was the only COC that remained in groundwater at concentrations above applicable MTCA groundwater cleanup levels.

During a meeting with Ecology in June of 2016, it was agreed that site-specific MTCA Method B groundwater cleanup levels were appropriate for determining if diesel-range TPH concentrations in groundwater (if any) on the Property were in compliance with the MTCA regulation. Groundwater concentrations of COCs have been in compliance with the MTCA regulation for the past four consecutive quarters. Post 2013-RA groundwater analytical data obtained from existing groundwater monitoring wells is presented on Figure 5. All previous groundwater analytical data is summarized in Table 1.

5.1.2 POINTS OF COMPLIANCE

Points of compliance consist of standard and conditional points of compliance. The standard point of compliance is generally defined as throughout the site, and cleanup levels must be met at the standard point of compliance for each media (soil, groundwater, surface water, and air). On certain sites, a conditional point of compliance is granted. The point of compliance was determined for soil and groundwater on the Property. It was not necessary to determine the point of compliance for surface water and air as they are not applicable for the Property.

The standard point of compliance (throughout the Property) was selected for soil on the Property. For the direct contact pathway this refers to the area within the Property boundary from the ground surface to 15 feet below grade. For protection of groundwater, this refers to the entire soil profile within the Property boundary. For cleanup levels based on vapors, this refers to the ground surface to the uppermost groundwater saturated zone.

The point of compliance pertaining to protection of groundwater and vapors was met in all portions of the Property except for Areas 1 and 2, where additional soil remediation was not feasible during the RA. Soil contamination has not reached the level of groundwater in either of these locations. The vertical separation between the water bearing zone and the lowest elevation of contaminated soil is approximately 9 feet.

The point of compliance pertaining to direct contact was met in all areas of the Property except for Area 1, where contaminated soil remains in place approximately 4 feet below the parking garage floor. However, this area is capped by the concrete floor of the parking garage.

The standard point of compliance (throughout the Property) was selected for groundwater on the Property. This is defined as the entire area within the Property boundary extending from the uppermost level of the saturated zone to the lowest depth that could potentially be affected. The point of compliance for groundwater has been met throughout the Property for the past four consecutive quarters and no further groundwater investigation is necessary for the Property.

5.2 SELECTING CLEANUP ACTIONS

When selecting cleanup alternatives, the MTCA regulation specifies that certain minimum Threshold Requirements (WAC 173-340-360(2)) must be met and include the following:

- Protection of Human Health and the Environment
- Compliance with Cleanup Standards (if the cleanup action does not comply with standards it is considered an “interim action”)
- Compliance with Applicable State and Federal Laws
- Provide for Compliance Monitoring

Additional requirements after ensuring that the minimum Threshold Requirements are met consist of the following:

- Providing a Reasonable Restoration Time Frame
- Use Permanent Solutions to the Maximum Extent Practicable (to select the most practicable permanent solution from among cleanup action alternatives requires conducting a DCA, which involves comparing the costs and benefits of alternatives and selecting the alternative whose incremental costs are not disproportionate to the benefit). The DCA is presented in Section 8.
- Consider Public Concerns

Cleanup actions are generally divided into two categories: ex-situ and in-situ cleanup actions. Ex-situ remedial technologies consist of removal of contaminated soil or groundwater with subsequent transport off-Property of contaminated media for off-Property disposal or treatment at a permitted disposal or treatment facility.

In-situ remedial technologies typically include: 1) installing remediation systems to remediate soil and/or groundwater contaminants utilizing groundwater pump and treat, air sparge, soil vapor extraction, dual phase extraction, or a combination of these systems, or 2) introducing substances into the subsurface to facilitate the degradation of contaminants through chemical processes or enhance in-situ bioremediation by indigenous microorganisms in the subsurface. These two types of in-situ technologies are frequently used in conjunction with one another to accelerate the degradation of contaminants in soil and/or groundwater. In-situ technologies are typically reserved for projects where ex-situ cleanup actions are not a feasible option.

6 CLEANUP ACTION GOALS

The cleanup action was completed during the RA in 2013 to the maximum extent practicable. Soil on the Property was remediated by removing contaminated soil from seven different locations on the Property (RA Areas 1 through 7). Six of the seven areas (RA Areas 1, 2, 4, 5, 6, and 7) were completely remediated.

As previously indicated, an estimated 93 tons of diesel range TPH impacted soil was left in place in Area 1 (RA Area 3) and approximately 24 tons of diesel-range TPH and PCE impacted soil remains in place in Area 2 (former location of well MW4). These soils were situated between 4 and 19 feet below the redevelopment subgrade and were not considered accessible during the RA.

This selected cleanup action for the Property was highly effective, permanent, and demonstrated compliance with the MTCA regulation. Approximately 92% (1,434 tons) of the contaminated soil was removed from the Property during the RA, while only 8% (117 tons) of residual contaminated soil remains in place in Areas 1 and 2.

Four groundwater monitoring wells (RW1, RW2, MW5, and MW6) were also installed on- and off-Property during the RA and subsequent investigations for performance and compliance monitoring purposes. Compliance monitoring for the past four consecutive quarters demonstrates that groundwater concentrations of COCs are currently in compliance with the MTCA regulation. Therefore, no evaluation of cleanup action alternatives pertaining to groundwater is necessary.

The goal of the future cleanup action selection is to assess potential cleanup alternatives for the Property and determine which alternative is most appropriate for addressing the remaining soil contamination in Areas 1 and 2 on the Property. This process takes into consideration the substantial cleanup conducted on the Property to date.

7 CLEANUP ACTION ALTERNATIVES SELECTED FOR EVALUATION

The following section discusses the cleanup action alternatives selected for evaluation to address soil contamination that remains in Areas 1 and 2. RGI evaluated cleanup action alternatives using the criteria described above in Section 5.2.

7.1 ALTERNATIVE 1: SOIL CONTAINMENT WITH ENVIRONMENTAL COVENANT AND ENGINEERING CONTROLS

The residual soil contamination situated in Areas 1 and 2 does not pose a threat to human health or the environment and is currently situated beneath the newly constructed Main Street Apartments building and this soil would be left in place under Alternative 1. This soil contamination is situated approximately 4 to 19 feet below the ground floor of the parking garage, which contains a concrete floor slab that is considered an engineering control. Alternative 1 relies on the fact that the existing building will prevent any exposure to this soil contamination that would be considered a threat to human health and the environment.

Alternative 1 requires that the Property owner enter into an Environmental Covenant (EC) with Ecology to insure that the integrity of the engineering control is maintained and there is no risk of exposure to this contaminated soil. Under the EC (or institutional control), the Property owner may be required to excavate or treat contaminated soil if the Property is ever redeveloped and contaminated soil is accessible. However, given that the building was constructed in 2013 and there are no future plans for redevelopment of the Property. It would likely be a very long time before redevelopment occurs (if ever). This alternative also allows for, but does not rely on, natural attenuation of soil contaminants that occurs in part due to metabolic processes occurring between indigenous microorganisms found in the soil and the contaminants.

Alternative 1 also takes into consideration that during the 2013 RA, soil remediation was completed to the maximum extent practicable through considerable effort and expense and approximately 92% of the contaminated soil was removed from the Property.

Alternative 1 is readily implementable and considered protective of human health and the environment. The estimated cost for Alternative 1 is \$30,000.

7.2 ALTERNATIVE 2: REMEDIAL EXCAVATION WITH OFF-PROPERTY DISPOSAL OF CONTAMINATED SOIL AND CONFIRMATION SAMPLING

Alternative 2 entails removal of all soil containing concentrations of COCs exceeding applicable MTCA soil cleanup levels in Areas 1 and 2. This contaminated soil would be excavated using a combination of limited access excavation equipment and vacuum trucks. Contaminated soil would be transported off-Property to a permitted disposal/treatment facility. Confirmation soil samples would be collected at the limits of each remedial excavation in order to verify compliance with

the MTCA regulation. Once all contaminated soil is removed from Areas 1 and 2, the soil cleanup on the Property would be considered complete and the Property would qualify for an unrestricted NFA determination from Ecology.

While this alternative would provide a permanent response to the residual soil contamination, Alternative 2 would be very difficult and expensive to implement considering the relatively small amount of remaining soil impacts (approximately 117 tons or 8% of the total amount of contaminated soil). Alternative 2 would also require a major disruption to the residents of the Main Street Apartments and the public by removing resident parking for an extended period of time and the presence of construction related traffic and parking construction vehicles not capable of entering the garage outside of the building. This would also disrupt retail tenant spaces and may result in lost revenue.

This alternative would require designing and implementing a system to provide structural support for the building during remedial excavations and a large portion of the recently constructed concrete garage floor slab would need to be removed in order to access the soil contamination in Areas 1 and 2. The remedial excavations would also require shoring of the excavation in order to allow for vertical cuts that would be necessary to access contaminated soil situated approximately 3 feet away from the Property boundary. This alternative would also require restoration of the garage upon completion and documentation of the entire remedial action.

The estimated time frame to plan and implement Alternative 2 is approximately one year and the estimated cost for Alternative 2 is \$2,400,000.

7.3 ALTERNATIVE 3: ACTIVE IN-SITU SVE REMEDIATION WITH INJECTIONS AND CONFIRMATION SAMPLING

Alternative 3 includes design and installation of a soil vapor extraction (SVE) system to accelerate the degradation of COCs in soil in Areas 1 and 2. Substances (chemical or biological) would also be injected into the subsurface to assist with the degradation of COCs in soil.

This cleanup action alternative would also include confirmation soil sampling after remediation is considered complete, which is estimated to be 3 years.

Alternative 3 would likely address the soil contamination in Areas 1 and 2 in approximately 3 years. However, as with Alternative 2, Alternative 3 would also be logistically difficult and expensive to implement. This alternative would require installing injection and SVE wells in and around Areas 1 and 2 along with the associated SVE system piping.

The disruption to the residents of the Main Street Apartments and retail stores would be similar to those discussed under Alternative 2. A large portion of the recently constructed concrete garage floor would need to be removed in order to excavate trenches and lay the piping associated with the SVE system. Also, installing the SVE system equipment compound in a location close to Areas 1 and 2 may not be possible and extensive trenching and concrete removal may be required. Another logistical issue with Alternative 3 is that there is only approximately 7 feet of overhead clearance in the parking garage. This would require the use of limited access drilling technologies and it is unknown if these technologies would achieve the depths necessary for the SVE and injection wells to be installed or to collect confirmation samples required upon completion. It may be necessary to utilize vacuum trucks to install the wells.

The estimated time frame to plan and implement Alternative 3 is three years and the estimated cost is \$700,000.

8 DISPROPORTIONATE COST ANALYSIS

WAC 173-340-360(3)(e) describes the procedure for conducting a DCA. A DCA is an analysis where the difference in costs between more permanent remedy and less permanent remedies are compared to the differences between the remedies. The DCA involves ranking cleanup action alternatives against one another using the evaluation criteria describe below. The following section describes the DCA evaluation and the evaluation is summarized in Table 2.

8.1 DCA EVALUATION CRITERIA

WAC 173-340-360(3)(f) lists seven evaluation criteria used to evaluate and compare each cleanup alternative when conducting a DCA. A description of each evaluation criteria is included in the following sections.

8.1.1 PROTECTIVENESS

Overall protectiveness of human health and the environment includes the degree to which existing risks are reduced, and the time required to reduce risk and attain cleanup standards, onsite and offsite risks resulting from implementing the alternative, and improvement of the overall environmental quality.

8.1.2 PERMANENCE

The degree to which the alternative permanently reduces the toxicity, mobility or volume of hazardous substances includes the adequacy in destroying the hazardous substances, the reduction or elimination of the hazardous substance releases and sources of releases, the degree of irreversibility of waste treatment process, and the characteristics and quantity of treatment residuals generated.

8.1.3 COST

The cost to implement the alternative, including the cost of construction, the net present value of any long-term costs, the agency oversight costs that are cost recoverable, long term costs include operation and maintenance costs, monitoring costs, equipment replacement costs, and the cost of maintaining institutional controls.

8.1.4 EFFECTIVENESS OVER THE LONG TERM

Long-term effectiveness includes the degree of certainty that the alternative will be successful, the reliability of the alternative during the period of time hazardous substances are expected to remain onsite at concentrations that exceed cleanup levels, the magnitude of residual risk with the alternative in place, and the effectiveness of controls required to manage treatment residuals or remaining wastes. The following types of cleanup action components may be used as a guide, in descending order, when assessing the relative degree of long-term effectiveness: Reuse or recycling; destruction or detoxification; immobilization or solidification; onsite or offsite disposal in an engineering, lined and monitoring facility; onsite isolation or containment with attendant engineering controls and institutional controls and monitoring.

8.1.5 MANAGEMENT OF SHORT TERM RISKS

The risk to human health and the environment associated with the alternative during construction and implementation, and the effectiveness of measures that will be taken to manage such risks.

8.1.6 TECHNICAL AND ADMINISTRATIVE IMPLEMENTABILITY

Ability to be implemented including consideration of whether the alternative is technically possible, availability of necessary off-site facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction operations and monitoring, and integration with existing facility operations and other current or potential remedial actions.

8.1.7 CONSIDERATION OF PUBLIC CONCERNS

Whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns. This process includes concerns from individuals, community groups, local governments, tribes, federal and state agencies, or any other organization that may have an interest in or knowledge of the site.

8.2 DCA EVALUATION

In order to conduct the DCA evaluation, each cleanup action alternative was assigned a rank ranging from 1 to 10 with 10 indicating that the cleanup alternative was the most appropriate under a given evaluation criteria and 1 indicating the alternative was the least appropriate.

Each evaluation criteria was also assigned a weighting factor (10%, 20%, or 30%) based on its relative importance to the DCA evaluation. For each of the three cleanup action alternatives, a MTCA benefit score was calculated by multiplying the weighting factor by the rank of each cleanup alternative and taking the sum of these values. Weighting factors, ranks, and the MTCA benefit scores are summarized in Table 2.

8.3 ANALYSIS OF CLEANUP ALTERNATIVES UNDER THE DCA

The following sections present the comparison of the cleanup alternatives relative to each of the DCA criteria. Evaluation criteria was previously described in Section 8.1.

8.3.1 ALTERNATIVE 1: SOIL CONTAINMENT WITH ENVIRONMENTAL COVENANT AND ENGINEERING CONTROLS

Alternative 1 received the lowest MTCA benefit score of 6.6 due to the fact that impacted soil would be left in place and this alternative would take the longest timeframe to bring concentrations of COCs into compliance with cleanup standards and the time-frame for this to occur through natural attenuation is unknown.

The MTCA benefit score for Alternative 1 was not significantly lower than the other two alternatives due to the fact that this alternative is fully protective of human health and the environment since the building serves as an engineering control and this use will be monitored under an EC with Ecology. This alternative is also easily implementable and does not present any risks during implementation, is not anticipated to adversely affect the public, and is cost effective.

8.3.2 ALTERNATIVE 2: REMEDIAL EXCAVATION WITH OFF-PROPERTY DISPOSAL OF CONTAMINATED SOIL AND CONFIRMATION SAMPLING

Alternative 2 received the highest MTCA benefit score of 7.7 due to the fact that this alternative would take the least time (estimated 1 year) for concentrations of COCs to reduce to levels that are in compliance with cleanup standards. This alternative is also considered highly effective and permanent.

The reason the MTCA Benefit Score was not significantly higher than the other alternatives is due to the fact that there are several disadvantages with this alternative, including but not limited to

difficulty of implementation, which would include designing a system to support the building during remedial excavations and shoring of the excavations to allow for vertical cuts required to access contaminated soil situated a few feet from the western Property boundary. This also may require the use of slot excavations and backfilling with CDF. The excavation of contaminated soils would also be logistically challenging and require a combination of limited access excavation equipment and vacuum excavation of contaminated soils, which would be very time consuming.

There would also be risks to workers during implementation and significant disruption to the public with the removal of parking for numerous residents and retail stores associated with the Main Street Apartments building along with construction related traffic and parking of construction vehicles not capable of entering the garage outside of the building. Traffic and pedestrian control would also be needed during the work and a significant amount of the parking garage floor would need to be removed and subsequently restored.

In addition, Alternative 2 would be extremely costly to remove a relatively small amount of remaining impacted soil (estimated 117 tons), compared to the 92% (1434 tons) of the contaminated soil that was removed from the Property during the RA in 2013. Additionally, this contaminated soil does not present a threat to human health or the environment in its current location.

8.3.3 ACTIVE IN-SITU SVE REMEDIATION WITH INJECTIONS AND CONFIRMATION SAMPLING

The Alternative 3 received a MTCA benefit score of 6.9 due to the fact that concentrations of COCs in soil would be anticipated to be reduced to levels that are in compliance with cleanup standards in a relatively short time frame (estimated 3 years).

Alternative 3 has a lower score than Alternative 2 due to the fact that it would have a longer restoration time frame and be difficult to implement. Additionally, unlike Alternative 2, the time frame to bring the concentrations of contaminants into compliance with cleanup standards is uncertain.

Installation of the SVE remediation system would require extensive concrete cutting and trenching in the parking garage in order to install the SVE piping and equipment compound. Installation of wells associated with the SVE system and injections would require the use of limited access drilling technologies due to the limited overhead clearance in the parking garage. It is unknown if these limited access technologies could achieve the optimum depths required for installation of these wells or for confirmation soil sampling required after remediation is completed. It may be necessary to utilize vacuum trucks to vacuum excavate soil borings in order to install the wells or achieve the depths required for confirmation soil sampling.

Other disadvantages are similar to Alternative 2 and include risks to workers during implementation and significant disruption to the public with the removal of parking for numerous residents and retail stores associated with the Main Street Apartments building along with construction related traffic inside the parking garage and outside the building. Traffic and pedestrian control would also be needed during the work.

As with Alternative 2, this alternative would be very difficult to implement and be very costly to remediate the relatively small amount of remaining soil impacts (approximately 117 tons) that is not presenting a threat to human health or the environment in its current location.

8.4 EVALUATION OF COSTS & COST PER BENEFIT VALUES

The estimated costs to implement each cleanup action alternative are as follows:

- Alternative 1 - \$30,000
- Alternative 2 - \$2,400,000
- Alternative 3 – \$700,000

In order to conduct the DCA evaluation, the MTCA Benefit Score displayed on Table 2 was divided by the estimated cost of the alternative to provide an estimated cost per benefit value. The cost per benefit value calculated for each alternative was as follows:

- Alternative 1 - \$4,500
- Alternative 2 - \$312,000
- Alternative 3 – \$101,000

The cost per benefit value for Alternative 1 is over 22 times less than the next most cost effective alternative (Alternative 3) and over 69 times less than the cost per benefit for Alternative 2. Additionally, the MTCA Benefit Score for Alternative 1 was not substantially lower than the other two alternatives.

9 SELECTED CLEANUP ACTION ALTERNATIVE

The selected cleanup action alternative for the Property is Alternative 1 - Soil Containment with Environmental Covenant and Engineering Controls. Given the fact that the cost per benefit value was at least 22 times less costly than the other cleanup alternatives and the MTCA Benefit Score was not significantly lower, makes it apparent that Alternative 1 is the appropriate selection for the Property.

Alternative 1 is also the only alternative that is easily implementable and the limited amount of remaining contaminated soil underlying the parking garage in Areas 1 and 2 does not represent a threat to human health and the environment in its current location. Alternative 1 includes entering into an EC with Ecology to regulate the use of the building as an engineering control and therefore meets the substantive requirements of MTCA.

10 RECOMMENDATIONS

Based on the results of this Focused FS/DCA, RGI recommends that copy of this report be submitted to Ecology under the VCP with a request for a No Further Action with Environmental Covenant.

11 LIMITATIONS

This report is the property of RGI, Alamo Manhattan Bellevue, LLC, and their authorized representatives or affiliates and was prepared in a manner consistent with the level of skill and care ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. This report is intended for specific application to the Main Street Apartments property located at 10505 Main Street in Bellevue, Washington. No other warranty, expressed or implied, is made.

The analyses and recommendations presented in this report are based upon data obtained from our review of available information at the time of preparing this report. Conditional changes may occur through time by natural or human-made process on this or adjacent properties. Additional

changes may occur in legislative standards, which may or may not be applicable to this report. These changes, beyond RGI's control, may render this report invalid, partially or wholly. If variations appear evident, RGI should be requested to reevaluate the recommendations in this report.

We appreciate the opportunity to have been of service. Please contact the undersigned at (425) 415-0551 if you have any questions or need additional information.

Sincerely,

THE RILEY GROUP, INC.

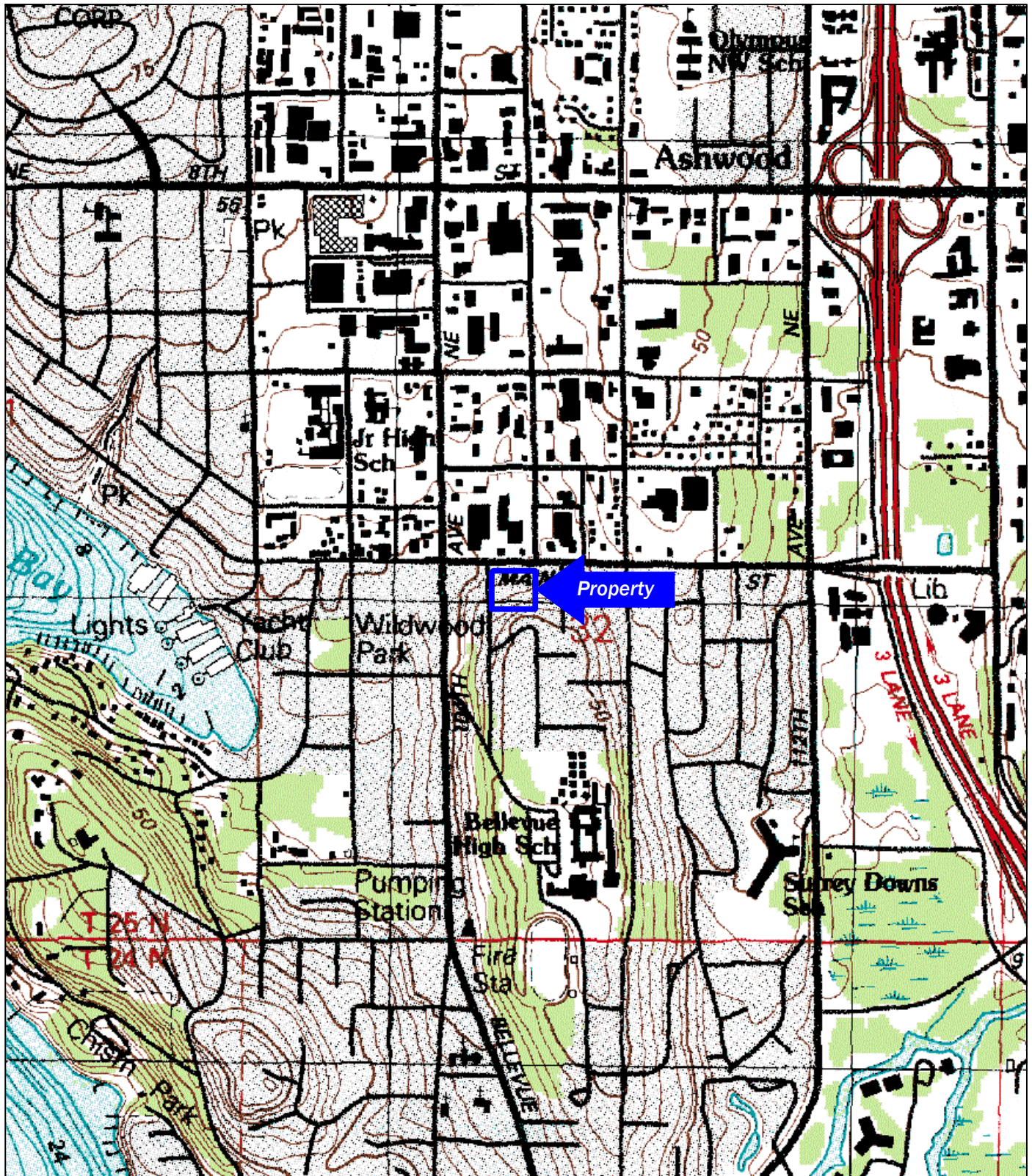


Jerry Sawetz
Senior Environmental Scientist



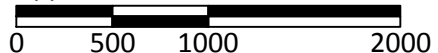
Paul D. Riley, LG, LHG
Principal

Report Distribution *Mr. Matt Segrest, Alamo Manhattan, LLC, (1 PDF copy)*
Mr. Michael Warfel, Ecology (1 hard copy and 1 PDF copy)



USGS, 1983, Bellevue South, Washington
7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



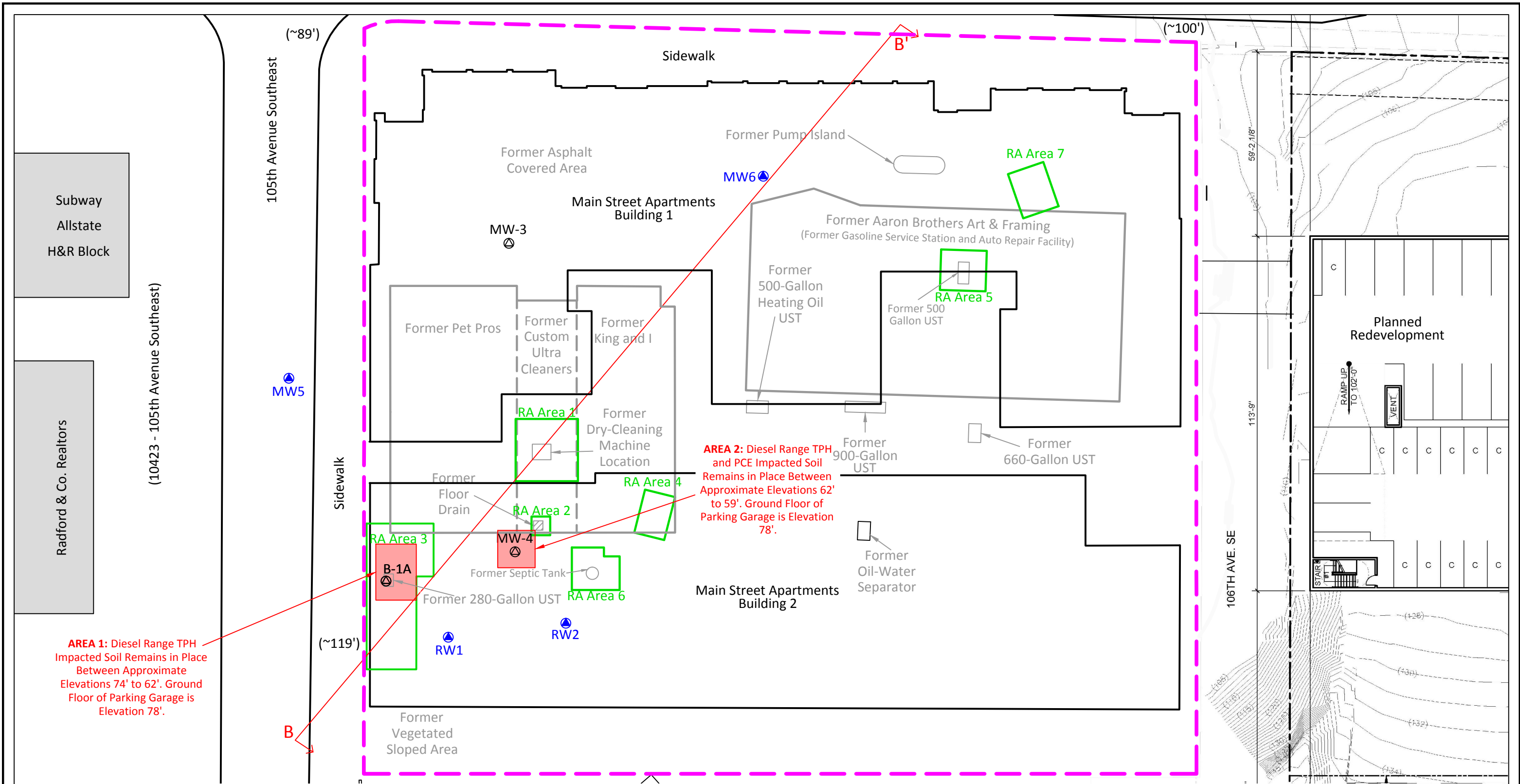
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Bothell, Washington 98011
Phone: 425.415.0551
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RGI Project Number
2012-107L

Main Street Bellevue
Property Vicinity Map

Figure 1
Date Drawn:
01/2017

Address: 10505 Main Street, Bellevue, Washington 98004

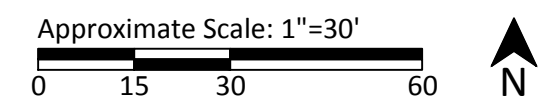


AREA 1: Diesel Range TPH Impacted Soil Remains in Place Between Approximate Elevations 74' to 62'. Ground Floor of Parking Garage is Elevation 78'.

AREA 2: Diesel Range TPH and PCE Impacted Soil Remains in Place Between Approximate Elevations 62' to 59'. Ground Floor of Parking Garage is Elevation 78'.

- = Cross section location
- = Area where soil was remediated during Remedial Action (RA) in 2013
- = Existing groundwater monitoring well location
- = Former groundwater monitoring well location
- = (in pink) Property boundary

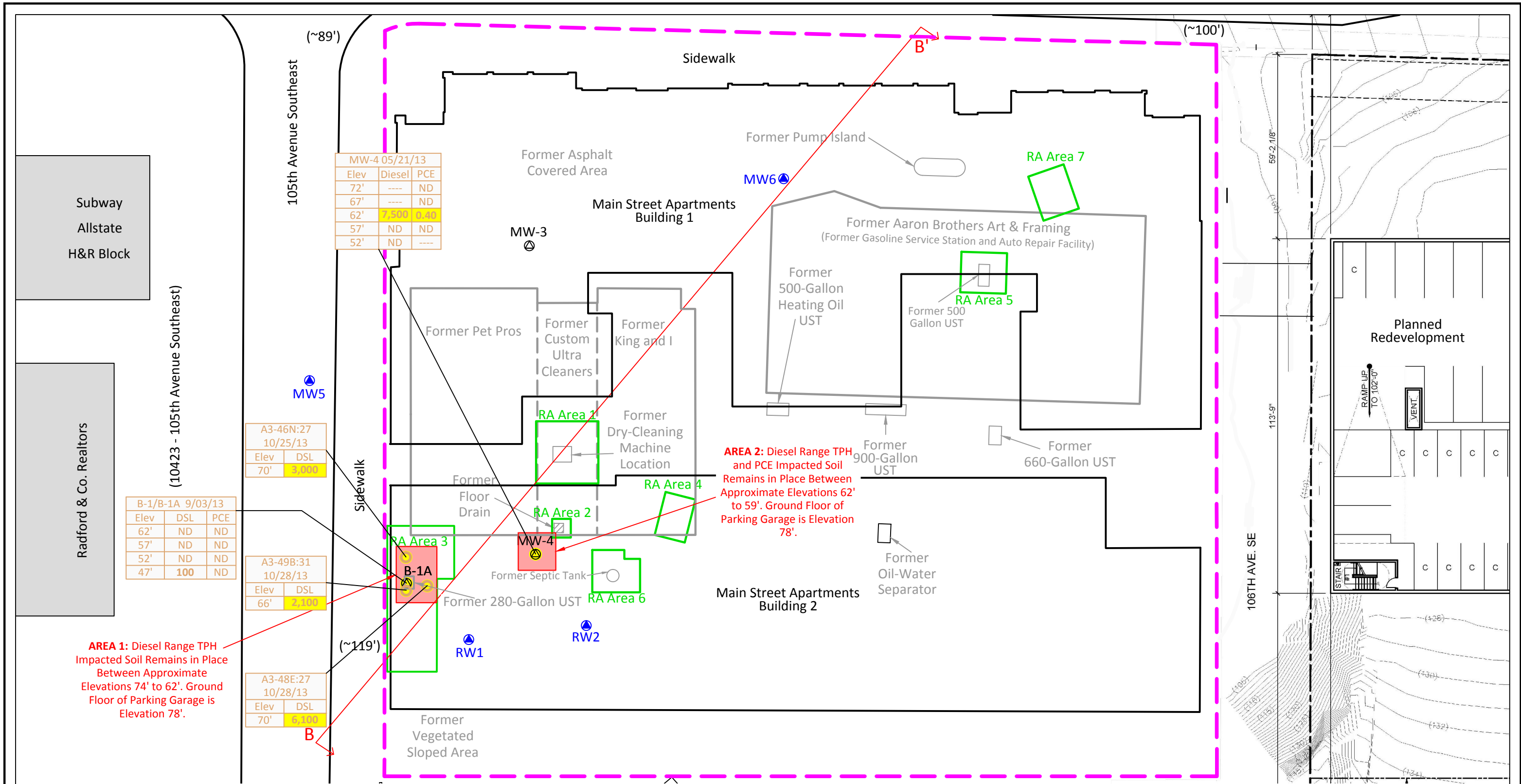
(~89) = Approximate surface elevation
 TPH = Total petroleum hydrocarbons
 PCE = Tetrachloroethylene



Drawn from Bush, Roed & Hitchings, Inc., ALTA/ACSM Land Title Survey, dated 03/2012 and HLR Architects, Overall Building Plan 'A' A2.1, 08/04/15.

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Main Street Bellevue		Figure 2
RGI Project Number 2012-107L	Property Representation with 2013 Remedial Excavation Areas and Areas Where Soil Remains Impacted	Date Drawn: 01/2017
Address: 10505 Main Street, Bellevue, Washington 98004		



AREA 1: Diesel Range TPH Impacted Soil Remains in Place Between Approximate Elevations 74' to 62'. Ground Floor of Parking Garage is Elevation 78'.

AREA 2: Diesel Range TPH and PCE Impacted Soil Remains in Place Between Approximate Elevations 62' to 59'. Ground Floor of Parking Garage is Elevation 78'.

MW-4 05/21/13		
Elev	Diesel	PCE
72'	----	ND
67'	----	ND
62'	7,500	0.40
57'	ND	ND
52'	ND	----

A3-46N:27 10/25/13	
Elev	DSL
70'	3,000

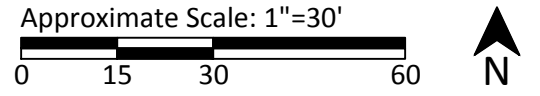
B-1/B-1A 9/03/13		
Elev	DSL	PCE
62'	ND	ND
57'	ND	ND
52'	ND	ND
47'	100	ND

A3-49B:31 10/28/13	
Elev	DSL
66'	2,100

A3-48E:27 10/28/13	
Elev	DSL
70'	6,100

- (~89') = Approximate surface elevation
- = For soil (brown data box, milligrams/kilogram), indicates location where concentrations of Contaminants of Concern (COCs) exceeded applicable MTCA soil cleanup levels after 2013 RA was completed.
- = Area where soil was remediated during RA in 2013
- = 2013 RA confirmation sample

Note: Only locations where concentrations of COCs in soil exceeded soil cleanup levels are displayed.

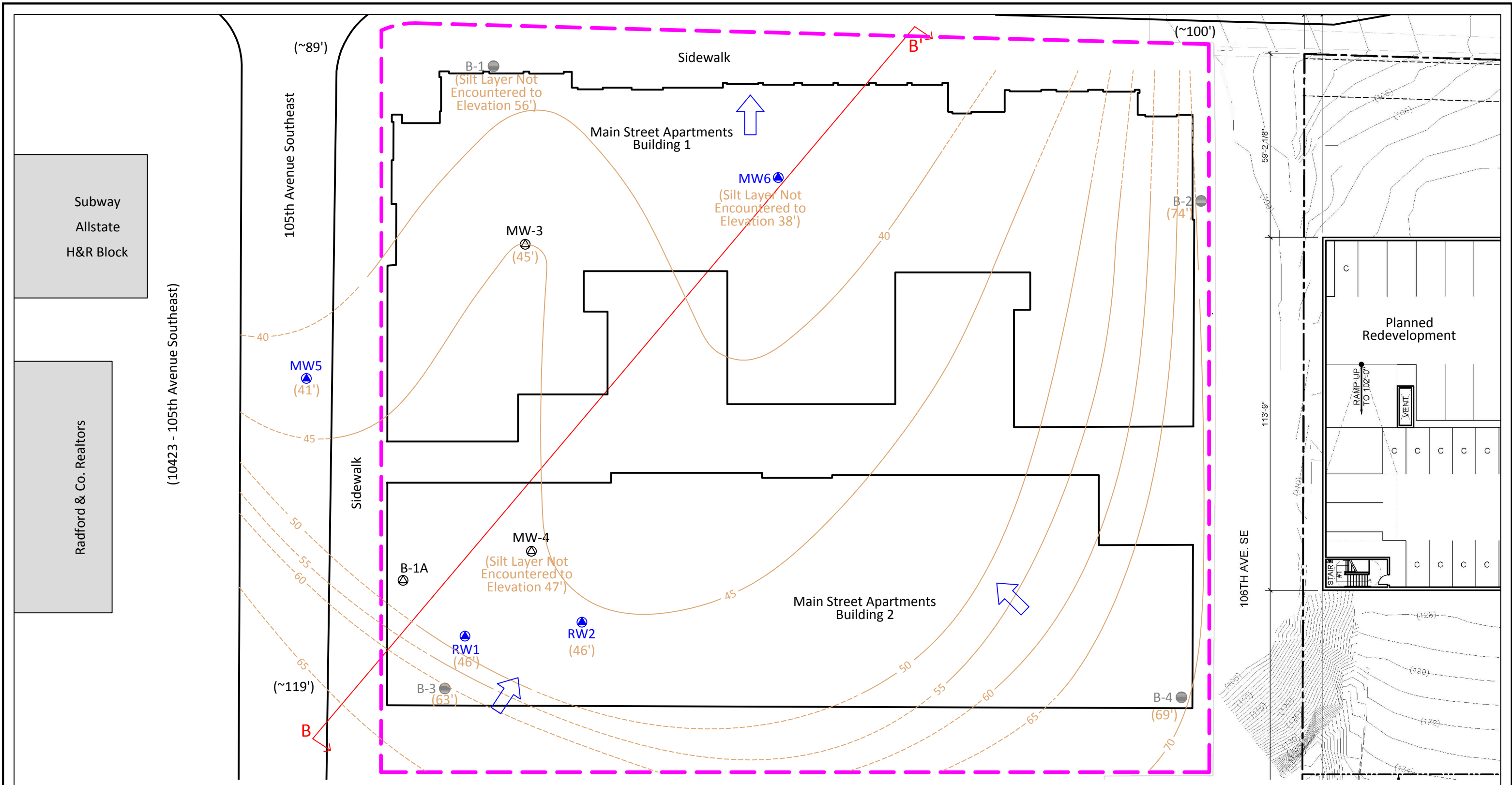


- DSL = Diesel-range total petroleum hydrocarbons
- PCE = Tetrachloroethylene
- ↕ B ↕ = Cross section location
- ⊕ = Existing groundwater monitoring well location
- ⊙ = Former groundwater monitoring well location
- (in pink) = Property boundary

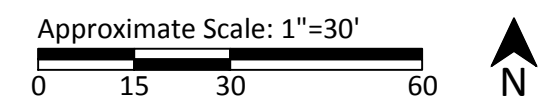
Drawn from Bush, Roed & Hitchings, Inc., ALTA/ACSM Land Title Survey, dated 03/2012 and HLR Architects, Overall Building Plan 'A' A2.1, 08/04/15.

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Main Street Bellevue		Figure 3
RGI Project Number 2012-107L	Estimated Extent of Remaining Soil Impacts with Select Analytical Data	Date Drawn: 01/2017
Address: 10505 Main Street, Bellevue, Washington 98004		



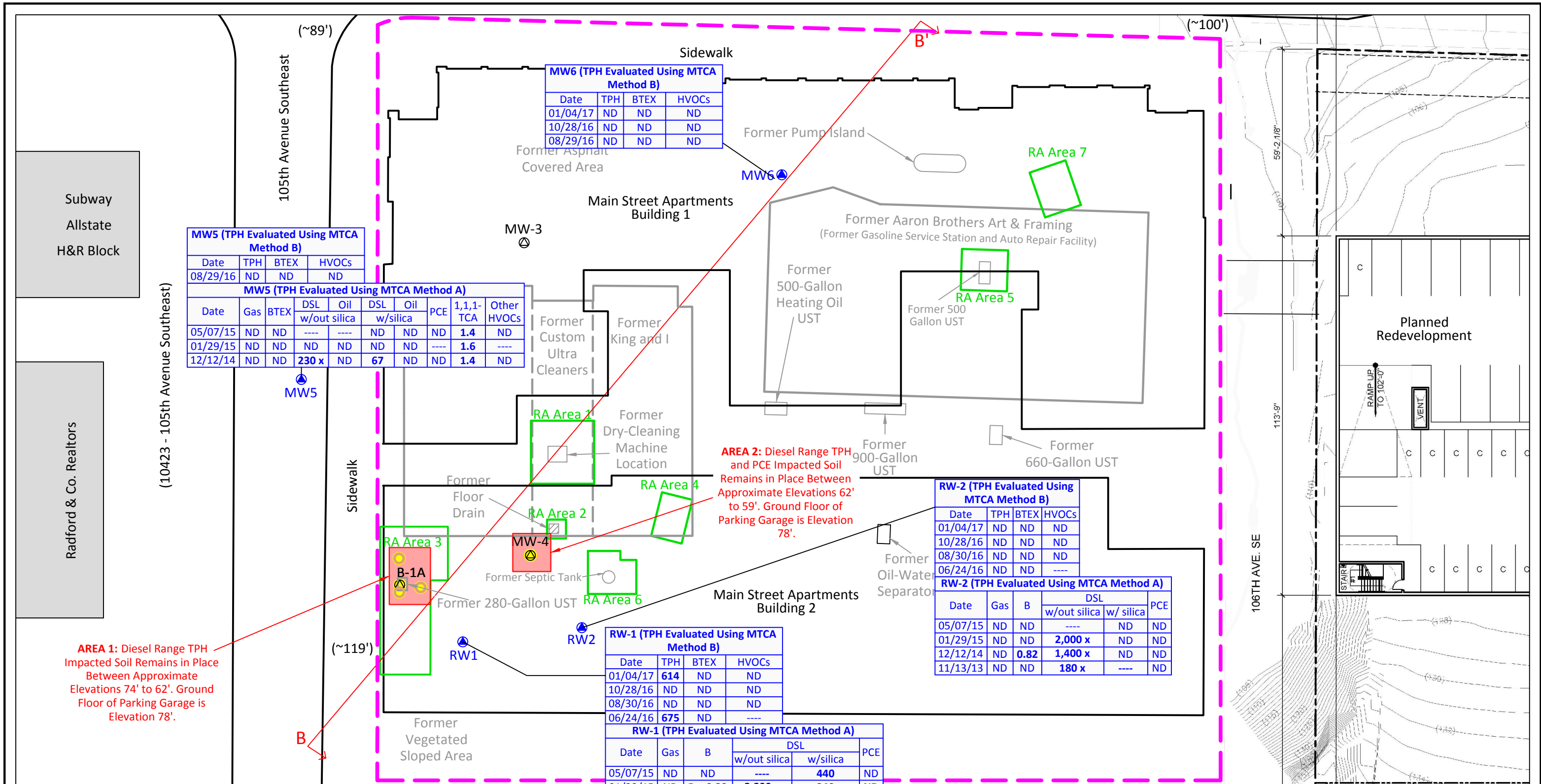
- = Cross section location
- = Existing groundwater monitoring well location
- = Former groundwater monitoring well location
- = Geotechnical boring location by RGI, 2012
- = (in pink) Property boundary
- (~89') = Approximate surface elevation
- 60 = Silt subsurface contours based on depth silt layer was encountered on borelogs. Dashed where inferred.
- (60') = Elevation at which silt was encountered.
- = Estimated groundwater flow direction based on elevation of silt layer



Drawn from Bush, Roed & Hitchings, Inc., ALTA/ACSM Land Title Survey, dated 03/2012 and HLR Architects, Overall Building Plan 'A' A2.1, 08/04/15.

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Main Street Bellevue		Figure 4
RGI Project Number 2012-107L	Property Representation with Subsurface Silt Contours and Estimated Groundwater Flow Direction	Date Drawn: 01/2017
Address: 10505 Main Street, Bellevue, Washington 98004		



MW5 (TPH Evaluated Using MTCA Method B)

Date	TPH	BTEX	HVOCs
08/29/16	ND	ND	ND

MW5 (TPH Evaluated Using MTCA Method A)

Date	Gas	BTEX	DSL		PCE	1,1,1-TCA	Other HVOCs
			w/out silica	w/silica			
05/07/15	ND	ND	---	ND	ND	1.4	ND
01/29/15	ND	ND	ND	ND	---	1.6	---
12/12/14	ND	ND	230 x	67	ND	1.4	ND

MW6 (TPH Evaluated Using MTCA Method B)

Date	TPH	BTEX	HVOCs
01/04/17	ND	ND	ND
10/28/16	ND	ND	ND
08/29/16	ND	ND	ND

RW-1 (TPH Evaluated Using MTCA Method B)

Date	TPH	BTEX	HVOCs
01/04/17	614	ND	ND
10/28/16	ND	ND	ND
08/30/16	ND	ND	ND
06/24/16	675	ND	---

RW-1 (TPH Evaluated Using MTCA Method A)

Date	Gas	B	DSL		PCE
			w/out silica	w/silica	
05/07/15	ND	ND	---	440	ND
01/29/15	ND	B = 0.39	2,800 x	240	ND
12/12/14	ND	ND	4,400 x	1,200	1.5
11/13/13	ND	---	190 x	---	ND

RW-2 (TPH Evaluated Using MTCA Method B)

Date	TPH	BTEX	HVOCs
01/04/17	ND	ND	ND
10/28/16	ND	ND	ND
08/30/16	ND	ND	ND
06/24/16	ND	ND	---

RW-2 (TPH Evaluated Using MTCA Method A)

Date	Gas	B	DSL		PCE
			w/out silica	w/silica	
05/07/15	ND	ND	---	ND	ND
01/29/15	ND	ND	2,000 x	ND	ND
12/12/14	ND	0.82	1,400 x	ND	ND
11/13/13	ND	ND	180 x	---	ND

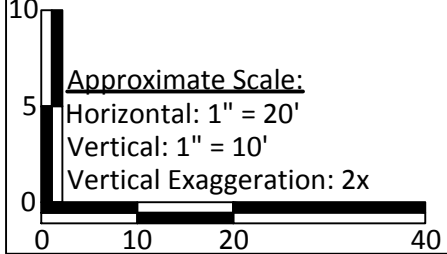
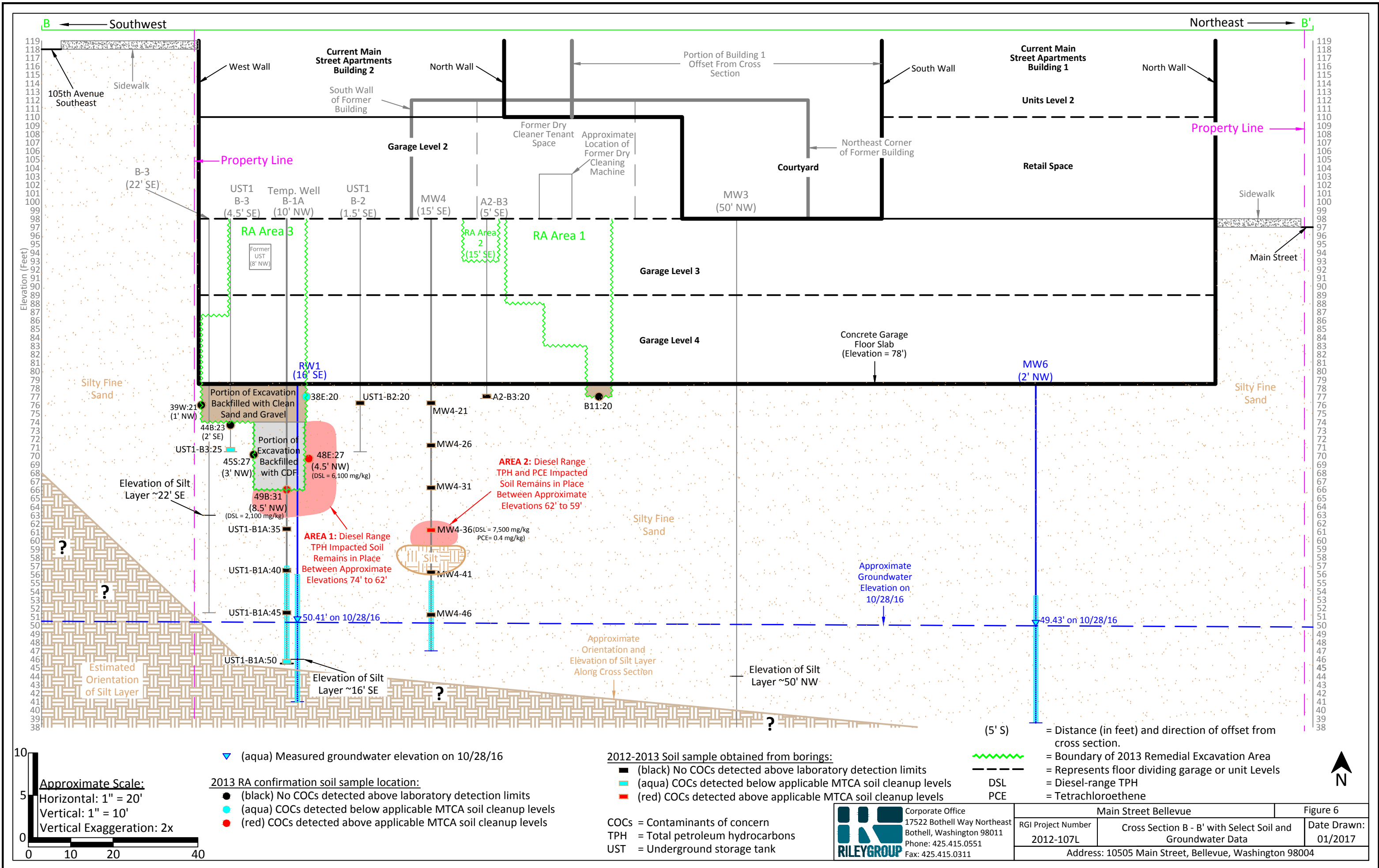
AREA 1: Diesel Range TPH Impacted Soil Remains in Place Between Approximate Elevations 74' to 62'. Ground Floor of Parking Garage is Elevation 78'.

AREA 2: Diesel Range TPH and PCE Impacted Soil Remains in Place Between Approximate Elevations 62' to 59'. Ground Floor of Parking Garage is Elevation 78'.

= Groundwater analytical results in micrograms/liter
 Gas/DSL/Oil= Gasoline-range/diesel-range/oil-range total petroleum hydrocarbons
 BTEX = Benzene, toluene, ethylbenzene, and xylenes
 PCE = Tetrachloroethylene, 1,1,1-TCA = 1,1,1-Trichloroethane
 HVOCs = Halogenated volatile organic compounds
 Silica = Silica gel cleanup
 ND = Not detected above laboratory detection limits.

Note: Flagged samples were not highlighted due to the fact that the laboratory report indicated that the chromatogram pattern did not resemble diesel-range TPH.

= Area where soil was remediated during RA in 2013
 = Existing groundwater monitoring well location
 = Former groundwater monitoring well location
 = (in pink) Property boundary
 = Cross section location
 Approximate Scale: 1"=30'
 0 15 30 60 N



- ▼ (aqua) Measured groundwater elevation on 10/28/16
 - (black) No COCs detected above laboratory detection limits
 - (aqua) COCs detected below applicable MTCA soil cleanup levels
 - (red) COCs detected above applicable MTCA soil cleanup levels
- 2013 RA confirmation soil sample location:

- 2012-2013 Soil sample obtained from borings:
- (black) No COCs detected above laboratory detection limits
 - (aqua) COCs detected below applicable MTCA soil cleanup levels
 - (red) COCs detected above applicable MTCA soil cleanup levels
- COCs = Contaminants of concern
 TPH = Total petroleum hydrocarbons
 UST = Underground storage tank

- (5' S) = Distance (in feet) and direction of offset from cross section.
- = Boundary of 2013 Remedial Excavation Area
- = Represents floor dividing garage or unit Levels
- DSL = Diesel-range TPH
- PCE = Tetrachloroethene

 Corporate Office 17522 Bothell Way Northeast Bothell, Washington 98011 Phone: 425.415.0551 Fax: 425.415.0311	Main Street Bellevue		Figure 6
	RGI Project Number 2012-107L	Cross Section B - B' with Select Soil and Groundwater Data	Date Drawn: 01/2017
	Address: 10505 Main Street, Bellevue, Washington 98004		

Table 1, Page 1 of 2. Summary of Current and Historical Groundwater Analytical Data

Main Street Apartments Development
 10505 Main Street, Bellevue, Washington 98004
 The Riley Group, Inc. Project No. 2012-107L

Sample Number	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Gas TPH	BTEX				Diesel TPH w/out silica gel	Oil TPH with silica gel	Diesel TPH with silica gel	Oil TPH with silica gel	C5-C8 ⁸ Aliphatics	C8-C12 ⁹ Aliphatics	C8-C12 ¹⁰ Aromatics	Total Naphthalenes ²	PCE	1,1,1-TCA	MTCA Method B for TPH ³	Other VOCs
						B	T	E	X												
Current Groundwater Monitoring Well Data																					
RW1, Screened from approximate elevation of 58.3' to 43.3', Total well length 35.5'																					
RW-1	01/04/17	78.78	28.71	50.07	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	1,200 h	280	----	----	ND	ND	ND	----	ND<2.0	----	614	ND
RW-1	10/28/16	78.78	28.37	50.41	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	470 h	ND<250	----	----	ND	ND	ND	----	ND<2.0	----	ND	ND
RW-1	09/21/16	78.78	28.33	50.45	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
RW-1	08/30/16	78.78	27.67	51.11	ND<50	ND<2	ND<2	ND<2	ND<6	700	ND<250	----	----	ND	ND	ND	----	ND<2	----	ND	ND
RW-1	06/24/16	78.78	27.17	51.61	----	ND<2	ND<2	ND<2	ND<4	----	----	----	----	ND	ND	ND	ND<0.02	----	----	675	----
RW1	05/07/15	78.78	26.49	52.29	ND<100	ND<0.35	ND<1	ND<1	ND<2	----	----	440	ND<250	----	----	----	ND<1	ND<1	ND<1	----	ND
RW1	01/29/15	78.78	27.08	51.7	ND<100	0.39	ND<1	ND<1	ND<2	2,800x	540x	240	ND<250	----	----	----	ND<1	ND<1	ND<1	----	ND
RW1	12/12/14	78.78	27.45	51.33	ND<100	ND<0.35	ND<1	ND<1	ND<2	4,400x	840x	1,200	ND<250	----	----	----	ND<1	1.5	ND<1	----	ND
RW1	11/13/13	78.78	27.57*	51.21	ND<100	ND<0.35	14	ND<1	ND<2	190 x	ND<250	----	----	----	----	----	ND<1	ND<1	ND<1	----	Acetone = 770 Chloroform = 13 ¹² 2-Butanone = 1,100
RW2, Screened from approximate elevation of 57.2' to 42.2', Total well length 37.3'																					
RW-2	01/04/17	79.46	31.39	48.07	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	330 h	ND<250	----	----	ND	ND	ND	----	ND<2.0	----	ND	ND
RW-2	10/28/16	79.46	31.23	48.23	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	400 h	ND<250	----	----	ND	ND	ND	----	ND<2.0	----	ND	ND
RW-2	09/21/16	79.46	30.96	48.5	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
RW-2	08/30/16	79.46	30.85	48.61	ND<50	ND<2	ND<2	ND<2	ND<6	500	ND<250	----	----	ND	ND	ND	----	ND<2	----	ND	ND
RW-2	06/24/16	79.46	30.56	48.90	----	ND<2	ND<2	ND<2	ND<4	----	----	----	----	ND	ND	ND	ND<0.060	----	----	ND	----
RW2	05/07/15	79.46	29.68	49.78	ND<100	ND<0.35	ND<1	ND<1	ND<2	----	----	ND<50	ND<250	----	----	----	ND<1	ND<1	ND<1	----	ND
RW2	01/29/15	79.46	29.87	49.59	ND<100	ND<0.35	ND<1	ND<1	ND<2	2,000x	360x	ND<50	ND<250	----	----	----	ND<1	ND<1	ND<1	----	ND
RW2	12/12/14	79.46	29.99	49.47	ND<100	0.82	3.1	1.8	9.7	1,400x	ND<250	ND<50	ND<250	----	----	----	2.2	ND<1	ND<1	----	1,3,5-TMB = 1.3 1,2,4-TMB = 4.0 Acetone = 110 BDM = 1.2 Chloroform = 26 ^{5/12} 2-Butanone = 170
RW2	11/13/13	79.46	30.68*	48.78	ND<100	ND<0.35	3.7	ND<1	ND<2	180 x	ND<250	----	----	----	----	----	ND<1	ND<1	ND<1	----	
MW5, Screened from approximate elevation of 51.4' to 36.4', Total well length 65'																					
MW-5	08/29/16	101.44	51.90	49.54	ND<50	ND<2	ND<2	ND<2	ND<6	ND<130	ND<250	----	----	ND	ND	ND	----	ND<2	----	ND	ND
MW5	05/07/15	101.44	50.91	50.53	ND<100	ND<0.35	ND<1	ND<1	ND<2	----	----	ND<50	ND<250	----	----	----	ND<1	ND<1	1.4	----	ND
MW5	01/29/15	101.44	51.31	50.13	ND<100	ND<0.35	ND<1	ND<1	ND<2	ND<50	ND<250	ND<50	ND<250	----	----	----	ND<1	ND<1	1.6	----	ND
MW5	12/12/14	101.44	51.59	49.85	<100	ND<0.35	ND<1	ND<1	ND<2	230x	ND<250	67	ND<250	----	----	----	ND<1	ND<1	1.4	----	ND
MW6, Screened from approximate elevation of 73' to 58', Total well length 40'																					
MW-6	01/04/17	78.7	29.32	49.38	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	ND<130	ND<250	----	----	ND	ND	ND	----	ND<2.0	----	ND	ND
MW-6	10/28/16	78.7	29.27	49.43	ND<50	ND<2.0	ND<2.0	ND<2.0	ND<6.0	ND<130	ND<250	----	----	----	----	----	----	ND<2.0	----	ND	ND
MW-6	09/21/16	78.7	28.96	49.74	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MW-6	08/29/16	78.7	28.75	49.95	ND<50	ND<2	ND<2	ND<2	ND<6	ND<130	ND<250	----	----	----	----	----	----	ND<2	----	ND	ND
Historical Groundwater Monitoring Well Data																					
B1A (Decommissioned) Screened from approximate elevation of 57' to 47', Total well length 50'																					
UST1-B1A-W	09/03/13	~97	43.5	~53.5	360	6.9	28	6.1	44	5,200 x	1,000 x	420	ND<300	----	----	----	2.3	ND<1	ND<1	----	ND
Groundwater Screening Levels	MTCA Method A Cleanup Levels for Ground Water				800/1,000 ¹	5	1,000	700	1,000	500	500	500	500	----	----	----	160	5	200	Not Applicable	Analyte Specific
	ARAR State and Federal Primary Maximum Contaminant Level (MCL)				----	5	1,000	700	10,000	----	----	----	----	----	----	----	----	5	200	Not Applicable	Analyte Specific
	MTCA Method B Cleanup Levels for Ground Water				5	5 ⁶	----	----	----	----	----	----	----	----	----	----	160	20.8	16,000 ⁴	795 ⁷ (6/24/16) 684 ⁷ (1/04/17)	1,3,5-TMB = 80 1,2,4-TMB = NVE
	Ecology Groundwater Screening Level Protective of Indoor Air (micrograms/liter) ¹¹				----	2.4	15600 ⁴	2780 ⁴	310 ⁴	----	----	----	----	140	2.9	1,300	8.93	22.9	5,240 ⁴	----	1,3,5-TMB = NVE 1,2,4-TMB = 28.4 2- Butanone = 1,740,000 ⁴ Acetone = NVE BDM = 1.84 Chloroform = 1.2

Table 1, Page 2 of 2. Summary of Current and Historical Groundwater Analytical Data

**Main Street Apartments Development
10505 Main Street, Bellevue, Washington 98004
The Riley Group, Inc. Project No. 2012-107L**

Sample Number	Sample Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Gas TPH	BTEX				Diesel TPH w/out silica gel	Oil TPH with silica gel	Diesel TPH with silica gel	Oil TPH with silica gel	C5-C8 ⁸ Aliphatics	C8-C12 ⁹ Aliphatics	C8-C12 ¹⁰ Aromatics	Total Naphthalenes ²	PCE	1,1,1-TCA	MTCA Method B for TPH ³	Other VOCs	
						B	T	E	X													
MW3 (Decommissioned), Screened from approximate elevation of 52.41' to 37.41', Total well length 60'																						
MW-3	06/11/13	97.41	43.44	53.97	ND<100	ND<1	ND<1	ND<1	ND<3	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	
MW-3	05/22/13	97.41	43.1	54.31	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW-3	05/14/12	97.41	50.51	46.90	----	----	----	----	----	----	----	----	----	----	----	----	----	ND<0.20	0.40	----	Chloroform = 0.24	
MW4 (Decommissioned), Screened from approximate elevation of 55.29' to 45.29', Total well length 53'																						
MW4	06/11/13	98.29	42.06	56.23	800	17	62	15	90	----	----	220 x	ND<250	----	----	----	----	----	----	----	----	
MW4	05/22/13	98.29	43.51	54.78	340	6	25	5.7	39	7,900 x	1,300 x	190	ND<250	----	----	----	----	ND<1	ND<1	----	ND	
Groundwater Screening Levels	MTCA Method A Cleanup Levels for Ground Water				800/1,000 ¹	5	1,000	700	1,000	500	500	500	500	----	----	----	160	5	200	Not Applicable	Analyte Specific	
	ARAR State and Federal Primary Maximum Contaminant Level (MCL)				----	5	1,000	700	10,000	----	----	----	----	----	----	----	----	----	5	200	Not Applicable	Analyte Specific
	MTCA Method B Cleanup Levels for Ground Water				5	5 ⁶	----	----	----	----	----	----	----	----	----	----	160	20.8	16,000 ⁴	795 ⁷ (6/24/16) 684 ⁷ (1/04/17)	1,3,5-TMB = 80 1,2,4-TMB = NVE	
	Ecology Groundwater Screening Level Protective of Indoor Air (micrograms/liter) ¹¹				----	2.4	15600 ⁴	2780 ⁴	310 ⁴	----	----	----	----	140	2.9	1,300	8.93	22.9	5,240 ⁴	----	1,3,5-TMB = NVE 1,2,4-TMB = 28.4 2- Butanone = 1,740,000 ⁴ Acetone = NVE BDM = 1.84 Chloroform = 1.2	

Notes:

Samples collected by RGI field staff using a submersible pump under low flow conditions.

Unless otherwise noted, all analytical results are given in micrograms per liter (ug/L), equivalent to parts per billion (ppb).

Gasoline-range TPH (total petroleum hydrocarbons) determined used Northwest Test Method NWTPH-Gx.

BTEX (benzene, toluene, ethylbenzene and xylenes) determined using EPA Test Method 8021B or 8260C.

Diesel and Oil-Range TPH determined used Northwest Test Method NWTPH-Dx with and without silica gel cleanup.

Silica gel = Sample extract is passed through a silica gel column prior to analysis. The silica gel column removes natural occurring biogenic material that can interfere with the TPH result when present.

PCE (tetrachloroethene), 1,1,1-TCA (1,1,1-trichloroethane), 2-butanone, acetone, BMD (Bromodichloromethane), chloroform, TMB (Trimethylbenzene), and other VOCs (volatile organic compounds) determined using EPA Test Method 8260C.

ND = Not detected above noted analytical detection limit.

NVE = No value established.

TOC = Top of casing. Depth to water measurements were obtained from TOC (in feet).

---- = Not analyzed or not applicable.

x = According to the analytical chemist, the sample chromatographic pattern does not resemble the fuel standard used for quantification.

h = Chromatogram indicates that it is likely that sample contains a diesel range product that is likely biased high due to biogenic interference.

* Depth to water measurements obtained on December 23, 2013.

¹ The higher cleanup level is allowed if no benzene is detected in the sample and the total of toluene, ethylbenzene and xylenes is less than 1% of the gasoline mixture.

² Analyzed using EPA Test Method 8260C.

³ Measured TPH groundwater concentration used for Method B evaluation (as approved in advance by Ecology). As discussed with Ecology and stated in the Ecology approved SRI Work Plan, beginning in June of 2016 MTCA Method B was used to evaluate total petroleum hydrocarbons (TPH) concentrations in groundwater.

⁴ The non-carcinogenic MTCA Method B value was referenced due to the fact that a carcinogenic Method B value does not exist.

⁵ No carcinogenic Method B was available in the searchable CLARC database at the time the Remedial Action report was prepared. Therefore, this concentration was compared to the Method B non-carcinogenic level of 80 micrograms/liter at that time.

⁶ RGI evaluated the cancer risk for the ARAR which was determined to be greater than 10⁻⁵. Therefore, the ARAR is adjusted down to a cancer risk of 10⁻⁵.

⁷ Method B groundwater cleanup level calculated using the Ecology *Worksheet for Calculating Potable Groundwater Cleanup Levels*. See Section 3.3 of the SRI Report and Appendix B of report for details. The calculated TPH cleanup levels were 795 ug/L for the 6/24/16 event and 684 ug/L for the 1/4/17 event.

⁸ Concentration obtained by adding the C5-6 and C6-8 aliphatic concentrations from the NWVPH analysis. ND indicates none of the indicated compounds were detected at a concentration above the laboratory detection limit.

⁹ Concentration obtained by adding the C8-C10 and C10-12 aliphatic concentrations from the NWVPH and NWEPH analyses. ND indicates none of the indicated compounds were detected at a concentration above the laboratory detection limit.

¹⁰ Concentration obtained by adding the C8-10 and C10-12 aromatic concentrations from the NWVPH and NWEPH analyses and subtracting the naphthalene concentration. ND indicates none of the indicated compounds were detected at a concentration above the laboratory detection limit.

¹¹ Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method B groundwater screening level considered protective of indoor air. Obtained from Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action dated October 2009 (Table B-1, amended April 6, 2015)

¹² Groundwater concentration exceeded Ecology's Screening Level Protective of Indoor Air.

Ecology Model Toxics Control Act Method A or B Cleanup Levels for Ground Water and groundwater ARARs obtained from WAC 173-340-900, Table 720-1 and CLARC database.

ARAR = Applicable or Relevant and Appropriate Requirement. ARARs for the Property are the Federal and State Primary Maximum Contaminant Levels (MCLs) as established under the Environmental Protection Agency (EPA) National Primary Drinking Water Regulations. ARARs are referenced in Ecology's CLARC database.

Bold results indicated concentrations above laboratory detection limits.

Bold and yellow highlighted results indicate concentrations (if any) that were not in compliance with MTCA Method A groundwater cleanup levels from May of 2013 to June of 2016 or Method B from June of 2016 to January of 2017.

Table 2, Page 1 of 2. Summary of Cleanup Action Alternatives & Disproportionate Cost Analysis

**Main Street Apartments Development
10505 Main Street, Bellevue, King County, Washington
The Riley Group, Inc. Project No. 2012-107L**

Cleanup Action Alternative	Alternative 1 Containment With Environmental Covenant and Engineering Controls Soil	Alternative 2 Remedial Excavation with Off-Property Disposal of Contaminated Soil	Alternative 3 Active In-situ Remediation with Injections and Confirmation Sampling
Cleanup Action Alternative Summary	Use the existing Main Street Apartments building as an engineering control to prevent any exposure to soil contamination that would be considered a threat to human health or the environment. This alternative would require that the Property owner enter into an Environmental Covenant with Ecology to regulate the use of the building as an engineering control. Natural attenuation may decrease concentrations of contaminants of concern (COCs) in soil over time, but the rate at which this would occur is unknown.	Remove of the estimated 117 tons of soil containing concentrations of COCs exceeding MTCA soil cleanup Levels situated in Areas 1 and 2 using limited access excavating equipment and/or vacuum trucks. This alternative would include designing and implementing a structural support system for the building and shoring the remedial excavations to allow for vertical cuts. Alternate slot excavations and backfilled with CDF may also be required. Confirmation soil samples would be collected and analyzed from the limits of each remedial excavations to determine if soil is in compliance with cleanup standards. Contaminated soil would be disposed of off-Property at a permitted disposal facility. Removal of a large portion of the concrete garage floor slab and subsequent restoration would be necessary along with traffic and pedestrian control.	Design and install a soil vapor extraction (SVE) system and perform associated operation and maintenance for 2 years after system installation. Substances(chemical or biological) would also be introduced into the subsurface through wells to accelerate degradation of COCs. This alternative would require removal of a large portion of the concrete garage floor slab to install the piping and equipment compound associated with the SVE system. Limited access drilling techniques and/or vacuum excavation would be required to install SVE and injection wells due to the limited overhead clearance in the parking garage. Restoration of the garage would be required upon completion. Confirmation soil samples would be collected and analyzed from known contaminated areas after operation of the SVE system to determine if soil was sufficiently remediated.
MTCA THRESHOLD REQUIREMENTS (WAC 173-340-360(2))			
Protection of Human Health and the Environment	Alternative 1 is protective of human health and the environment.	Alternative 2 is protective of human health and the environment.	Alternative 3 is protective of human health and the environment.
Compliance with Cleanup Standards	Under Alternative 1, soil containing concentrations of COCs exceeding MTCA cleanup levels would remain in place long term in Areas 1 and 2. Natural attenuation may decrease concentrations of COCs in soil to levels that comply with cleanup standards over time, but the rate at which this would occur is unknown. The Main Street Apartments building would prevent any exposure to this contaminated soil.	Alternative 2 would result in compliance with cleanup standards within approximately one year after commencing with the work. Confirmation soil samples would be collected and analyzed from the limits of each remedial excavation in order to determine if soil is in compliance with cleanup standards.	Under Alternative 3, the operation of the remediation system in conjunction with introducing substances (chemical or biological) into the subsurface would potentially decrease concentrations of COCs to levels that comply with cleanup standards in an estimated time frame of 3 years. Confirmation soil samples would be collected and analyzed from known contaminated areas after operation of the SVE system to determine if soil is in compliance with cleanup standards.
Compliance with Applicable State and Federal Laws	Soil containing concentrations of COCs exceeding levels compliant with applicable state and federal laws would remain in place. However, there would not be any threat of exposure to this contamination due to the presence of the parking garage of the Main Street Apartments building overlying the contamination. Additionally, the Property owner would enter into an Environmental Covenant with Ecology, which would regulate the use of the building as an engineering control and ensure protection of human health and the environment. Therefore, the Property would be in compliance with state and federal laws under Alternative 1.	Under Alternative 2, remedial excavations would reduce concentrations of COCs to levels compliant with applicable state and federal laws in a period of approximately one year after.	Under Alternative 3, the operation of the remediation system in conjunction with introducing substances (chemical or biological) into the subsurface would potentially decrease concentrations of COCs to levels that are compliant with applicable state and federal laws in an estimated time frame of 3 years.
Provide for Compliance Monitoring	Monitoring of engineering controls under the Environmental Covenant would be used for compliance monitoring.	Soil samples would be collected and analyzed from the limits of each remedial excavation for compliance monitoring purposes.	Soil confirmation samples would be collected and analyzed from previous known areas of soil contamination after operation of the SVE system for compliance monitoring.
ADDITIONAL MTCA REQUIREMENTS			
Provide a Reasonable Restoration Time Frame	Under Alternative 1, the restoration time frame is not defined as contaminated soil may remain in place for as long as the building remains in place. The building was constructed in 2013 and there are no plans for redevelopment of the Property. Under the Environmental Covenant treatment or excavation of contaminated soil may be required in the future if the Property is redeveloped. It is also possible that concentrations of COCs would be reduced to levels compliant with cleanup standards through natural attenuation prior to any potential redevelopment of the Property.	Under Alternative 2, the restoration time frame is estimated to be one year after commencing with the work.	Under Alternative 3, the restoration time frame is estimated to be 3 years after commencing with the work.
Permanent Solution to the Maximum Extent Practicable	Alternative 1 is considered permanent as use of the building as an engineering control will be effective for as long as the building remains in place. If the Property was to be redeveloped in the distant future, treatment or removal of this contaminated soil may be required. Redevelopment of the Property is not planned and it is also possible that soil would be remediated through natural attenuation processes over a long time frame.	Alternative 2 is permanent to the maximum extent practicable.	Alternative 3 is permanent to the maximum extent practicable.

Table 2, Page 2 of 2. Summary of Cleanup Action Alternatives & Disproportionate Cost Analysis
Main Street Apartments Development
10505 Main Street, Bellevue, King County, Washington
The Riley Group, Inc. Project No. 2012-107L

Cleanup Action Alternative	Alternative 1 Containment With Environmental Covenant and Engineering Controls	Soil	Alternative 2 Remedial Excavation with Off-Property Disposal of Contaminated Soil	Alternative 3 Active In-situ Remediation with Injections and Confirmation Sampling		
EVALUATION CRITERIA (WAC 173-340-360(3)(f))		Score		Score		
Protectiveness (30% Weighting Factor)	Alternative 1 is considered protective through the use of the building as an engineering control and an EC to regulate this use. Implementation of this alternative does not involve any construction related risks. Contamination is anticipated to remain in place long term (Rank = 6).	1.8	Alternative 2 would achieve overall protection in approximately 1 year. However, construction related risks will be increased during implementation (Rank = 9).	2.7	Alternative 3 is estimated to achieve overall protection in approximately 3 years. However, construction related risks will be increased during implementation (Rank = 8).	2.4
Permanence (20% Weighting Factor)	Natural attenuation is anticipated to decrease the toxicity and volume of hazardous substances over time. However, this would likely take a long time and the rate at which this will occur is unknown (Rank = 5).	1	Alternative 2 would permanently reduce the toxicity and volume of hazardous substances (Rank = 10).	2	Alternative 3 will decrease the toxicity and volume of hazardous substance over an estimated time frame of 3 years, which is less than natural attenuation (Rank = 8).	1.6
Long-Term Effectiveness (20% Weighting Factor)	This alternative would have the longest time frame to reduce concentrations of COCs in soil. However, the building would prevent any exposure to this contamination that would be considered a risk to human health or the environment (Rank = 4).	0.8	Alternative 2 would be highly effective over the long term (Rank = 10).	2	Alternative 3 is anticipated to be effective over the long term (Rank = 8).	1.6
Management of Short-Term Risks (10% Weighting Factor)	This alternative will not require any disturbance of impacted soils, construction related risks to workers or risks, to the public (Rank = 10).	1	Alternative 2 has construction related risks during implementation associated with providing structural support for the building and shoring the remedial excavation. Workers will also have exposure risks during remedial excavation of contaminated soil. Alternative 2 presents the maximum risks to workers and public risk would be increased by construction related traffic (Rank = 4).	0.4	Alternative 3 has moderate construction related risks during implementation associated with installation of the SVE system and the public risks would be increased by construction related traffic (Rank = 6).	0.6
Technical and Administrative Implementability (10% Weighting Factor)	Easily implemented (Rank = 10).	1	Implementation will be very difficult and will require design and implementation of a system to support the building during excavation and shoring excavations to allow for vertical cuts. Excavation of contaminated soils will also be logistically challenging (Rank = 2).	0.2	Implementation will be difficult and it is unknown if limited access drilling technologies will be capable of installing SVE and injection wells or collection of confirmation samples at optimum depths. Extensive removal of the concrete garage floor slab and associated trenching may be required to install the remediation equipment compound (Rank = 3).	0.3
Consideration of Public Concerns (10% Weighting Factor)	Alternative is not anticipated to cause public concern (Rank = 10)	1	Significant public concerns would include removing parking from many of the Main Street Apartment residents and retail stores. Construction related traffic and parking of vehicles may also disrupt the public. (Rank = 4)	0.4	Significant public concerns would include removing parking from many of the Main Street Apartment residents and retail stores. Construction related traffic and parking of vehicles may also disrupt the public. (Rank = 4).	0.4
MTCA BENEFIT SCORE		6.6		7.7		6.9
Approximate Cleanup Alternative Cost	\$30,000		\$2,400,000		\$700,000	

Notes:
Ranking = Evaluation criteria are ranked numerically from 1 to 10 with 10 being the most appropriate alternative under the given criteria and 1 being the least appropriate alternative.
MTCA Benefit Score is calculated by multiplying the weighting factor by the given rank for each of the evaluation criteria then adding these values together for the MTCA Benefit Score