DRAFT CLEANUP ACTION PLAN

New City Cleaners Site

Prepared for: HLH, Inc. c/o Beveridge & Diamond P.C., and Landye Bennett Blumstein, LLP

Project No. 090018 • December 21, 2020 FINAL

Aspect CONSULTING

earth + water

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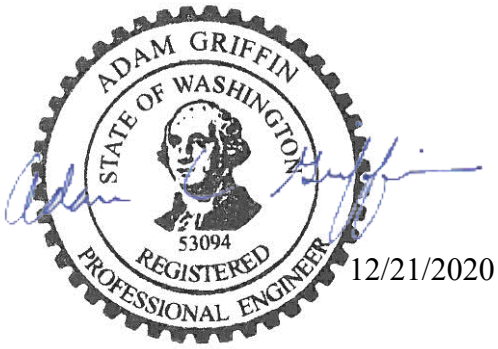

12/21/2020

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1 Introduction

This draft Cleanup Action Plan (dCAP), prepared by Aspect Consulting, LLC (Aspect) on behalf of HLH, Inc. c/o Beveridge & Diamond P.C., and Landye Bennett Blumstein, LLP, describes the cleanup action selected by the Washington State Department of Ecology (Ecology) for the New City Cleaners site (NCC; the Site), located in Richland, Washington. The Site includes the NCC property (the Property), a 0.5-acre parcel located at 747 Stevens Drive, and contiguous properties impacted by historical releases of dry cleaning chemicals, including tetrachloroethylene (PCE). Cleanup activities at the Site are being performed under Agreed Order No. DE6558 (Agreed Order) between Ecology and HLH, Inc., dated April 22, 2009). The Site is shown relative to surrounding physical features on Figure 1. The Site and the Property are shown on Figure 2. Ecology requested submittal of the dCAP to Ecology in a November 19, 2019 letter. The Remedial Investigation/Feasibility Study (RIFS) Report for the Site was published on December 20, 2019 for the public comment process (Aspect, 2019).

The FS evaluated remedial technologies for addressing soil and groundwater contamination at the Site. This dCAP describes the cleanup action selected by Ecology for the Site and provides additional information in accordance with Washington Administrative Code (WAC) 173-340-380(1)(a).

The selected cleanup action for the Site consists of full-scale implementation of enhanced anaerobic bioremediation (EAB) at the former source area of the NCC building, monitored natural attenuation (MNA), and institutional controls (IC).

2 Site Description

2.1 Site History

The Property has been used for commercial dry cleaning operations continuously since the late 1940s. Historical dry cleaning operations primarily used Stoddard solvent until 1974, when the use of PCE was initiated. A reported act of vandalism in 1975 released an unknown quantity of PCE onto the ground in the southwest corner of the Property. This release, along with other historical releases of PCE on the Property, have impacted soil and groundwater on the Property. Impacted groundwater has migrated onto adjacent properties to the south and east of the Property, including a property to the south occupied by the Richland School District (RSD) maintenance building and a vacant property to the east formerly occupied by an Albertsons grocery store (Figure 2). PCE and petroleum hydrocarbons have also been identified from a release on the RSD property.

2.2 Site Geology and Hydrogeology

The Site is underlain by unconsolidated fill and native deposits that extend to a depth of at least 60 feet below grade. Based on results of previous investigations and published information on regional geology, the Site soils include four soil units:

- **Fill soil** consisting of variable amounts of silt, gravel, and sand. This fill soil extends from about 2 to 7 feet below grade. Areas that have been excavated may have fill extending to approximately 12 feet below grade.
- An **Upper Silt Unit** comprises silt with fine to medium sand. This native unit underlies the fill soil and the base of this unit extends from 15 feet to as much as 25 feet below grade. The depositional history of this unit is unknown, it may be slackwater alluvial or lacustrine deposits of the Touchet Formation, or younger windblown loess deposits that are widespread regionally.
- A **Gravelly Sand Unit** consisting of sandy fine to coarse gravel and cobbles extends from the base of the Upper Silt Unit to approximately 55 feet below grade and is characterized for purposes of the RIFS as two units – the **Upper Gravelly Sand Unit** and **Lower Gravelly Sand Unit**. This native unit represents the Pasco facies of the Hanford Formation, and was deposited during periodic cataclysmic glacial flood events.

Groundwater is first encountered at the Site in the Upper Silt Unit, generally at a depth of between 12 and 14 feet below grade. Figure 2 shows the locations of Cross Sections A-A' (Figure 3), B-B' (Figure 4), and C-C' (Figure 5). Cross Section A-A' shows the geology along a transect oriented northwest to southeast across the Site. Cross Section B-B' shows the geology along a transect oriented north to south. Cross Section C-C' shows the geology along the same transect as Cross Section A-A', but extended northwest to the stormwater swale.

2.3 Remedial Investigation

The final RIFS Report was completed and approved by Ecology for the Site (Aspect, 2019). Environmental investigations on the Property identified PCE and its degradation products trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-DCE), and vinyl chloride (VC) in Site soil, groundwater, and soil gas. Diesel-range total petroleum hydrocarbons (TPH) occurs in soil at concentrations exceeding Washington State's Model Toxics Control Act (MTCA) Method A cleanup levels.

Low concentration soil exceedances occurred at sidewall and bottom confirmation samples collected from the 2000 removal action final extents. Higher concentration exceedances are limited to the western portion of the Property and are underneath the NCC building, and were inaccessible during the removal action.

Concentrations of PCE in groundwater on the Property have decreased since the *in situ* biostimulation (ISB) pilot testing in 2014. In the Upper Silt Unit, PCE concentrations in groundwater have decreased on the NCC property, and cleanup levels were exceeded at just one well (MW-08S) in the northeastern portion of the NCC Property in 2019. In the Upper Gravelly Sand Unit, PCE concentrations in groundwater have also decreased since 2014 and no longer exceed cleanup levels in any monitoring wells on the Property; however, an off-Property PCE plume in the Upper Gravelly Sand Unit remains. Concentrations of cis-DCE in groundwater, which increased due to the ISB pilot testing, occur downgradient of the NCC building on the northern portion of the RSD property. TCE and VC concentrations also exceed cleanup levels in groundwater, at locations within the same footprint of PCE and cis-DCE exceedances.

The detailed vertical and horizontal characterization of nature and extent for the Site is presented in the RIFS (Aspect, 2019). Section 6 of the RIFS presents the conceptual model for the Site, which discusses contaminant releases, contaminant fate and transport, exposure pathways, and potential receptors.

2.4 Interim Remedial Actions

Significant interim remedial actions have been conducted at the Site. PCE impacts at the Property were initially discovered when four underground storage tanks (USTs) and 75 to 100 cubic yards of contaminated soil were removed from the Property in 1992. Initial environmental investigations at the Site began in 1997 and environmental investigations have been ongoing since that time.

An interim soil removal action was conducted in 2000. The interim action consisted of excavation and off-Site disposal of approximately 5,100 tons of PCE-impacted soil. This action removed all contaminated soil, to the extent practicable, as constrained by the groundwater table at approximately 8 feet deep and the NCC building. Figure 5 show the vertical extent of the 2000 remedial excavation near the NCC building. A sewer line repair in 2011 resulted in removal of another 59 tons of soil containing PCE and degradation products.

ISB pilot testing was performed in the Upper Silt Unit and in the Upper Gravelly Sand Unit on the Property from 2014 through 2019. The ISB pilot test demonstrated that EAB

is a suitable technology for reducing concentrations in both soil and groundwater at the Site and enhancing natural attenuation of groundwater.

Soil Vapor Extraction (SVE) pilot testing was performed to evaluate potential effectiveness in treating contaminated soils remaining below the NCC building. The SVE Pilot Test was completed in September 2020 and all results from soil samples collected beneath the NCC building were less than cleanup levels. Therefore, there is no current basis for implementing SVE at the Site to address soil contamination under the building. Furthermore, mass removal by the SVE system was minimal. Therefore, the pilot test concludes SVE should be not be included in the Cleanup Action Plan.

On the neighboring RSD property, five USTs were removed in 1991 in addition to 324 cubic yards of petroleum contaminated soil. The RSD property was the subject of a cleanup action completed in 1993 to remove soil contaminated by releases of petroleum products and VOCs, including PCE (Scientific Ecology Group, 1993). During the 1993 cleanup action, another 1,600 cubic yards of soil was excavated from two areas on the RSD property after contamination was identified during a building renovation. Figure 6 shows the completed cleanup actions at the Site.

3 Cleanup Standards

The cleanup standards required under MTCA consist of remedial action objectives (RAOs); cleanup levels (CULs) for hazardous substances present at a site; the location where cleanup levels must be met (point of compliance); and other regulatory requirements that apply to a site (applicable state and federal laws.)

The cleanup standards for the Site are outlined below.

3.1 Remedial Action Objectives

The RAOs consist of chemical- and media-specific goals for protecting human health and the environment. The RAOs specify the media and contaminants of interest, potential exposure routes and receptors, and cleanup goals. In accordance with MTCA and other applicable regulatory requirements, the objective of the cleanup action at the Site is to eliminate, reduce, or otherwise control to the extent feasible and practicable, risks to human health and the environment posed by hazardous substances in soil, groundwater, and soil gas.

The FS Report (Aspect, 2019) established the following RAOs for the evaluation of remedial alternatives:

- Achieve soil cleanup standards
- Achieve groundwater cleanup standards
- Prevent exposure to soil and groundwater COCs through vapor intrusion

RAOs are generally achieved by eliminating the associated exposure pathways. Exposure pathways can be eliminated through contaminant removal or treatment to meet chemical- and media-specific cleanup standards at specified points of compliance, and/or through engineering controls, or institutional controls.

3.2 Media and Contaminants of Concern

Based on the data collected prior to and during the RI, the impacted media at the Site are soil, groundwater, and soil gas (Aspect, 2019). Contaminants of concern and their affected media are summarized in Table 1 below.

Table 1. Contaminants of Concern

Media	Contaminants of Concern
Soil	• PCE • TCE • cis-DCE • VC • Diesel-range petroleum hydrocarbons
Groundwater	• PCE • TCE • cis-DCE • VC
Soil Vapor & Indoor Air	• PCE • TCE • VC

3.3 Cleanup Levels

The CULs used in the RIFS have been approved by Ecology as the final CULs for the COCs at the Site. The MTCA Method B screening levels for subslab soil gas were selected as the screening levels for soil gas. These CULs are shown in Table 2.

Table 2. Site Cleanup Levels

Chemical Name	Soil Cleanup Levels (mg/kg)	Groundwater Cleanup Levels (µg/L)	Indoor Air Cleanup Levels ($\mu g/m^3$)[3]	Soil Gas Sub-slab Screening Levels ($\mu g/m^3$)[3]
Diesel-range TPH	2000	N/A	N/A	N/A
Tetrachloroethylene (PCE)	0.05[1]	5.0[2]	9.6	320
Trichloroethylene (TCE)	0.03[1]	5.0[2]	0.33	11
cis-1,2-Dichloroethylene (cis-DCE)	160[3]	16[3]	N/A	N/A
Vinyl chloride	0.67[3]	0.2[1]	0.28	9.5

Notes:
mg/kg – milligrams per kilogram, ug/L – micrograms per liter, ug/m^3 – micrograms per cubic meter
[1] MTCA Method A Cleanup Level.
[2] MTCA Method A Cleanup Level, per requirement in Agreed Order.
[3] MTCA Method B Formula Value from CLARC as of August 2020. Not adjusted for commercial use scenario in order to use most conservative value.

3.4 Points of Compliance

Under MTCA, the point of compliance is the point or location on a site where the cleanup levels must be attained. Points of compliance for Site groundwater, soil, and indoor air are as follows:

- **Groundwater.** The point of compliance is groundwater through the Site, which occurs in the Upper Silt and Gravelly Sand units.
- **Soil.** The points of compliance for soil, for groundwater protection, are all soils from the ground surface to the bottom of the Gravelly Sand Unit. The point of

compliance for soil, for direct contact protection, is from the ground surface to fifteen feet below grade.

- **Indoor Air.** The point of compliance for indoor air is inside of any occupied structure potentially impacted by Site COCs.

4 Applicable State and Federal Laws

MTCA (Chapter 70.105D RCW) requires that cleanup actions comply with applicable state and federal laws (WAC 173-340-360(2)a(iii)), which include legally applicable requirements, as well as requirements that Ecology determines are relevant and appropriate. The applicable or relevant and appropriate requirements (ARARs) for cleanup actions often include various construction-related permits, air emission requirements, water discharge requirements, off-site disposal requirements, and other issues related to impacts in and around the Site. The following ARARs for the Site are identified:

- The **State Environmental Policy Act** (SEPA) (Chapter 197-11 WAC) and the SEPA procedures (Chapter 173-802 WAC) ensure that state and local government officials consider environmental values when making decisions. The SEPA process begins when an application for determination is submitted to an agency, or an agency proposes to take some official action, such as implementing a MTCA Cleanup Action Plan. A SEPA determination by Ecology would be required prior to initiating CAP implementation activities.
- The **Washington Dangerous Waste Regulations** (Chapter 173-303 WAC) would apply if dangerous wastes are generated, and United State Department of Transportation and Washington State Department of Transportation regulations regarding transport of hazardous materials (49 Code of Federal Regulations [CFR] Parts 171-180). No excavation and removal of soil is planned for this cleanup action. The hauling, disposal, and reporting of investigation derived waste (IDW) from drilling and groundwater monitoring activities and the operation of SVE will be required to comply with this ARAR.
- **Occupational Safety and Health Administration** and Washington Industrial Safety and Health Act regulations (29 CFR 1910.120; Chapter 296-62 WAC) governing worker safety during cleanup action implementation.
- **Washington State Water Well Construction Regulations** (Chapter 173-160 WAC) regulating groundwater well installation and decommissioning as part of the cleanup action.
- The **Underground Injection Control (UIC) Program** (Chapter 173-218 WAC) regulates the operation of injection wells in the State of Washington. The proposed injection wells for the cleanup action are considered Class V underground injection wells and will be registered with the Underground Injection Control Program. Since the Site is being managed pursuant to the Agreed Order, the injection wells automatically meet the nonendangerment standard (WAC 173-218-080) and are rule authorized.

5 Selected Cleanup Action

The cleanup action was developed through evaluation of the Site areas targeted for remediation and the assembly of applicable remedial technologies into remedial alternatives. The remedial alternatives were evaluated with respect to minimum requirements, threshold requirements, and the cost to environmental benefit ratio (disproportionate cost analysis; DCA) in accordance with MTCA (WAC 173-340-360) for each of those remedial technologies.

5.1 Basis of Cleanup Action

The nature and extent of contamination at the Site is outlined in the Conceptual Site Model section of the RIFS (Aspect, 2019). Soil and groundwater at the Site are impacted by PCE released from the NCC dry cleaning operations. The following areas were defined for remedial action evaluation in the RIFS (Figure 7). These areas and their drivers for cleanup are as follows:

- **PCE in soil**: Soil impacted with PCE above CULs (and one exceedance of diesel-range TPH) was documented in the Upper Silt Unit (Figure 7) beneath the western half of the NCC building and to depths greater than 15 feet below grade during RI work from 2000 to 2009. There are no exceedances of the direct contact based cleanup level of 480 mg/kg. The 2020 SVE Pilot Test Results (Aspect, 2020b) did not detect any PCE in vadose soil beneath the NCC building. Therefore, soil compliance will be based on the protection of groundwater and indoor air.
    - All Upper Gravelly Sand Unit soils are saturated and in the presence of impacted groundwater; therefore, PCE is in soil-groundwater phase equilibrium.

  There are confirmation sidewall and bottom samples collected at the extents of the 2000 removal action; given this removal action was completed to the maximum extent practicable, compliance of these low-level vadose soil exceedances will also be demonstrated empirically through groundwater compliance well locations downgradient.

- **PCE, TCE, cis-DCE, and vinyl chloride in groundwater**: The dissolved-phase PCE plume in the Upper Silt Unit is limited to one well location, MW-08S, in the northeastern portion of the NCC property. VC exceedances in the Upper Silt Unit occur in MW-5S and MW-26S, which are both within the PCE and cis-DCE plumes near the NCC building.
    - In the Upper Gravelly Sand Unit, the highest concentrations of PCE, TCE, cis-DCE, and VC are found in the southwest portion of the NCC property and the northern portion of the RSD property. The extent of the off-property plume of exceedances (as defined by PCE concentration) in the Upper Gravelly Sand Unit is bound to the southwest by wells MW-12I and MW-25I, to the north by well MW-24I, to the northeast by MW-20I, to the east by MW-22I and MW-23I. The downgradient extent

of the groundwater plume, to the southeast, is bound by the locations of MW-33I and MW-34I. The extent of cis-DCE in groundwater above CULs is limited to the downgradient side of the NCC Building and the RSD property and is defined at MW-16I (Figure 7). Monitoring wells in the Upper Gravelly Sand Unit with TCE and VC exceedances fall within the footprint of PCE and cis-DCE exceedances. Therefore, PCE and cis-DCE are used as the primary basis of the cleanup action because the magnitude and aerial extent of their exceedances are greater than the TCE and VC exceedances.

5.2 Selected Cleanup Action

The selected cleanup action for the Site includes the components described in this Section and shown on Figure 8.

5.2.1 Enhanced Anaerobic Bioremediation

Implementation of EAB will be an expansion of the ISB pilot testing to achieve cleanup standards for the Site. The EAB engineering design will consist of a program of injection events that will maintain the highly anaerobic conditions necessary for complete reductive dechlorination of PCE to degradation products. The EAB implementation will significantly increase the scale of injection volume, with higher volumes to overwhelm the subsurface heterogeneities. This will establish a significantly larger reactive zone. The anticipated EAB implementation consists of the following activities:

- Install approximately 12 new injection wells, 10 to the west of the NCC building and 2 to the west of MW-08S (Figure 8).
- Install new performance monitoring wells.
- Conduct a total of approximately three injection events at an estimated frequency of every two years in the existing injection wells plus the 12 new injection wells. It is assumed that the 3DMe™ reagent used during ISB pilot testing will be used for the injections. The reagent design will be adapted based on the results of performance monitoring to optimize performance (Figure 8).
- Conduct performance monitoring for approximately four events after each injection event at approximately 7 performance monitoring wells.

5.2.2 Monitored Natural Attenuation

Natural attenuation of dissolved phase COCs in groundwater is already occurring at the Site and has been enhanced by the ISB pilot testing. The existing well network is complete for continued MNA monitoring of the groundwater plume, and access to these locations is maintained through third party agreements.

The anticipated MNA implementation consists of:

- Groundwater Compliance Monitoring at the locations presented in Table 3. This compliance monitoring network includes two new monitoring well locations, MW-35I and MW-8I, to supplement the well network in areas with soil exceedances and no downgradient monitoring well.

- Annually monitor groundwater until cleanup standards are achieved. This includes monitoring at approximately 21 wells on the NCC and surrounding properties, as shown on Figure 8.
- Annually report groundwater monitoring results to Ecology.
- Decommission the five monitoring wells that are in compliance with CULs: MW-11I, MW-12I, MW-20I, MW-22I, and MW24I.

5.2.3 Institutional Controls

An environmental covenant is likely necessary for the NCC property to prohibit groundwater use until groundwater cleanup levels are achieved. Additionally, environmental covenants for other properties within the groundwater plume footprint may be necessary to prohibit groundwater use until groundwater cleanup levels are achieved.

5.3 Other Remedial Technologies Evaluated

All potentially applicable remedial technologies for the Site in development of the remedial alternatives were evaluated in the FS Report (Aspect, 2019). The following remedial technologies were evaluated but not selected as an element of the selected cleanup action:

- **Excavation and Off-Site Disposal.** This technology has been implemented at the Site as interim remedial actions, discussed in Section 2.4. The completed removal actions have previously been implemented and the source soil has already been removed to the extent practicable.
- **Air Sparging (AS)** would be limited by the low pneumatic permeability of the saturated portion of the Upper Silt Unit and the confined nature of the Upper Gravelly Sand Unit. The confined nature of the Upper Gravelly Sand Unit would prevent vertical migration of volatized COCs to the vadose zone for recovery. The volatilization could potentially result in lateral migration of contaminants along the base of the Upper Silt Unit.
- ***In Situ* Chemical Oxidation (ISCO)** would be limited by the low permeability of the Upper Silt Unit, and injected ISCO reagent would likely distribute non-uniformly into preferential pathways, requiring repeat applications. ISCO would also be geochemically counter-productive relative to the biologically reducing conditions created through pilot testing. Additionally, the large area of dissolved-phase impacts would require a significant quantity of oxidant.
- ***In Situ* Chemical Reduction (ISCR)** would be more expensive and no more effective than EAB at the Site. Additionally, ISCR does not create a downgradient treatment zone like EAB, that enhances MNA of the off-Property plume.
- **Groundwater Pump and Treat** would not be effective for the removal of sorbed COCs, would not be practical for application to off-Property areas, and would require significant pumping rates and long-term operations & maintenance (O&M) that would be costly and disruptive.

- **Dynamic Groundwater Recirculation** would be difficult to implement due to the large volume of water being extracted and recirculated, which would require significant infrastructure to pre-treat and reinject the groundwater.
- **Soil Vapor Extraction.** The SVE Pilot Test was completed in September 2020 and no soil of soil cleanup levels were detected beneath the NCC building. Therefore, there is no basis for implementing SVE at the Site to address soil contamination under the building. Furthermore, mass removal by the SVE system was minimal. Therefore, the results of the pilot test do not support including SVE in the Cleanup Action Plan

5.4 Rationale for the Selected Cleanup Action

The contamination at the Site requiring active remediation is the remainder of the PCE in soil beneath the NCC building, and the PCE and cis-DCE groundwater plumes that extend off-Property. TCE and VC also require remediation; however, they are contained with the extents of the PCE and cis-DCE footprint of exceedances. The significant interim remedial actions successfully removed the source of PCE contamination at the Site, to the extent practicable. The selected cleanup action consists of enhancing MNA of groundwater through EAB to reduce the restoration timeframe, which will be determined by groundwater compliance. Cleanup of soil exceedances outside the footprint of the NCC building will be demonstrated empirically by groundwater compliance.

The ISB pilot testing demonstrated the applicability of the EAB technology at the Site. The technology is capable of degrading PCE through all degradation products to non-toxic end products. The EAB technology has been demonstrated to be effective at the Site through pilot testing. Full-scale implementation would expand the injection network to target the full extent of groundwater exceedances at the Property and maintain biogeochemical conditions sufficiently long enough to achieve complete reductive dechlorination of PCE to non-toxic end products.

Because of the completed interim remedial actions, Site groundwater quality suggests that no significant source to groundwater remains. The evaluation of natural attenuation in the RIFS demonstrated the groundwater plume is stable and/or decreasing and that MNA is an effective technology for the off-Property groundwater plume. The implementation of EAB will enhance MNA and reduce the restoration timeframe of the off-Property groundwater plumes.

5.5 Compliance with WAC 173-340-360

5.5.1 MTCA Threshold Requirements and Selection Criteria

As documented in Section 11.2 of the RIFS (Aspect, 2019), the cleanup action selected by Ecology for the Site meets the threshold requirements and satisfies selection criteria of WAC 173-340-360:

MTCA Threshold Requirements

- Protects human health and the environment
- Complies with cleanup standards
- Complies with applicable state and federal laws

- Provides for compliance monitoring

MTCA Selection Criteria

- Uses permanent solutions to the maximum extent practicable
- Provides for a reasonable restoration time frame
- Considers public concerns

5.5.2 Restoration Time Frame

As documented in Section 10.3.8 of the RIFS (Aspect, 2019), the cleanup action selected by Ecology for the Site provides for a reasonable restoration time frame as required by WAC 173-340-360(4). The cleanup action addresses the treatment of the former source area soil and groundwater on the NCC property, and therefore, the overall restoration time frame will be driven by achieving the CULs in groundwater. The restoration timeframe estimate is based on PCE and cis-DCE, due to their magnitude of concentration and larger aerial extent and are therefore expected to require a longer restoration timeframe than TCE and VC. The RIFS estimated a restoration timeframe of 13 years, based on off-Property PCE concentrations in groundwater. The restoration timeframe in the selected cleanup alternative for groundwater would address the cis-DCE groundwater plume on RSD property and the overall restoration timeframe would be based on MNA outside of this cis-DCE plume. For purposes of the FS Report and this dCAP, 15 years was assumed for MNA monitoring during the cleanup action.

6 Schedule

The implementation of the cleanup action will occur after a public comment period with the dCAP and Ecology issues the final CAP. The following schedule is estimated for a final CAP:

- **By February 2021 –** dCAP and SEPA Determination public comment

The CAP implementation will be performed according to a new agreement between the PLPs and Ecology (i.e., agreed order, or consent decree). This agreement would include the scope of work for final CAP implementation.

- **Spring 2021 –** PLPs and Ecology enter new agreement for CAP implementation.
- **Summer 2021 –** Initiate CAP implementation

7 References

Aspect Consulting, LLC (Aspect), 2019, New City Cleaners Site Remedial Investigation and Feasibility Study, Prepared for HLH, Inc. c/o Beveridge & Diamond P.C., and Landye Bennett Blumstein, LLP, Final Draft December 20, 2019.

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Scientific Ecology Group, Inc., 1993, Independent Cleanup Report and Plan for the Richland School District, 701 Stevens Drive, Richard, Washington. Richland, Washington. Unpublished Work. June 23, 1993.

Washington State Legislature, 2009, Washington Administrative Code (WAC), April 1, 2009.

8 Limitations

Work for this project was performed for HLH, Inc. c/o Beveridge & Diamond P.C., and Landye Bennett Blumstein, LLP (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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TABLE

Table 3. Groundwater Compliance Monitoring

Project No. 090018, New City Cleaners, Richland, Washington

Well	Annual Monitoring Frequency
Upper Silt Unit	
MW-5S	X
MW-8S	X
MW-26S	X
Upper Gravelly Sand Unit	
MW-8I*	X
MW-10I	X
MW-13I	X
MW-14I	X
MW-15I	X
MW-16I	X
MW-17I	X
MW-18I	X
MW-19I	X
MW-21I/2	X
MW-23I	X
MW-25I	X
MW-26I	X
MW-32I	X
MW-33I	X
MW-34I	X
MW-35I*	X
MW-03-LL (Former L&L Exxon)	X
MW-05-LL (Former L&L Exxon)	X

Notes

Samples will be analyzed for Chlorinated Volatile Organic Compounds (Method 8260B) and field parameters.

* = new monitoring well

FIGURES

Site Location Map

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect CONSULTING	FEB-2020	BY: AO / TDR	FIGURE NO. 1
	PROJECT NO. 090018-007-02	REVISED BY: ---	

Basemap Layer Credits || Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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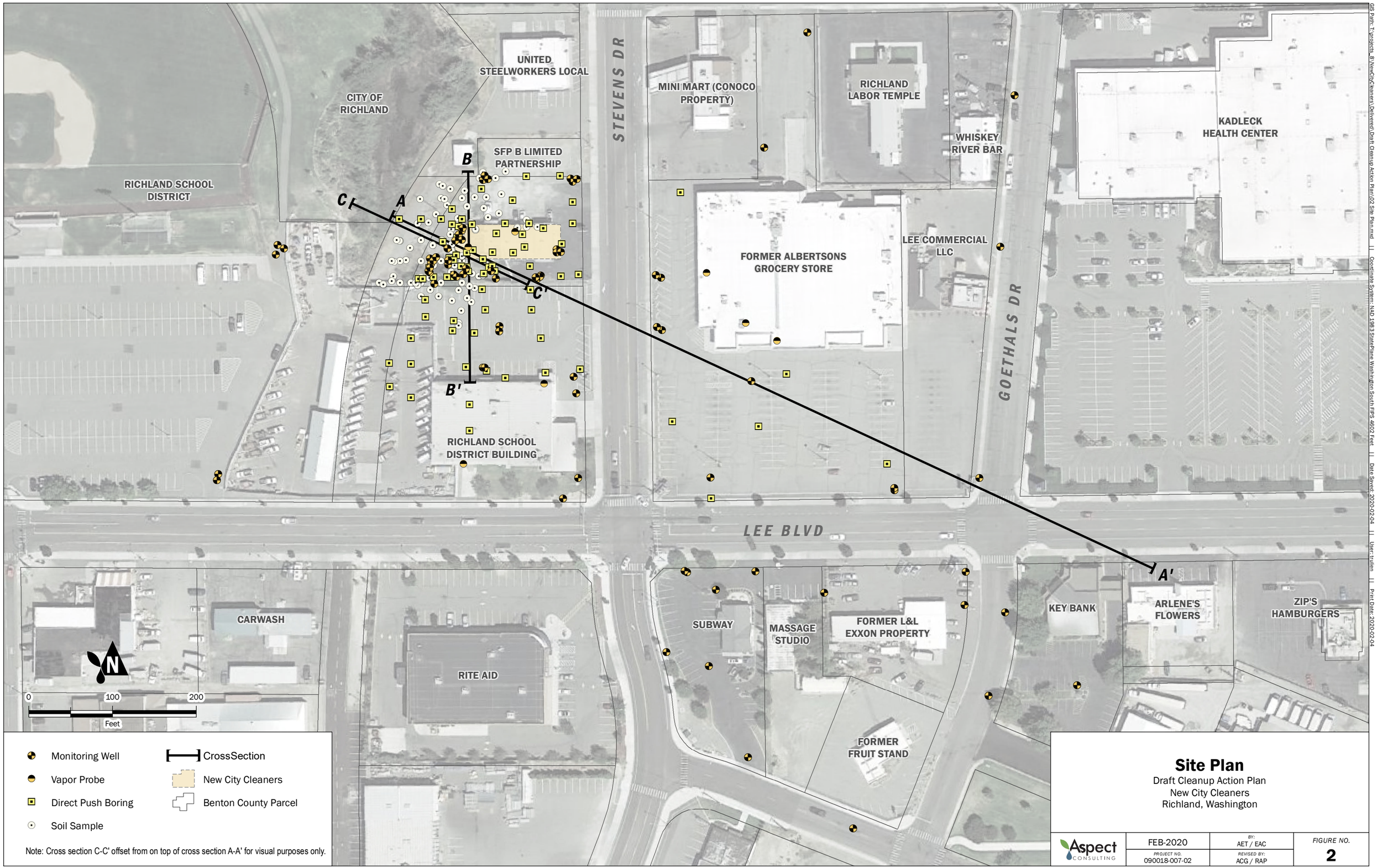


Note: Cross section C-C' offset from on top of cross section A-A' for visual purposes only.

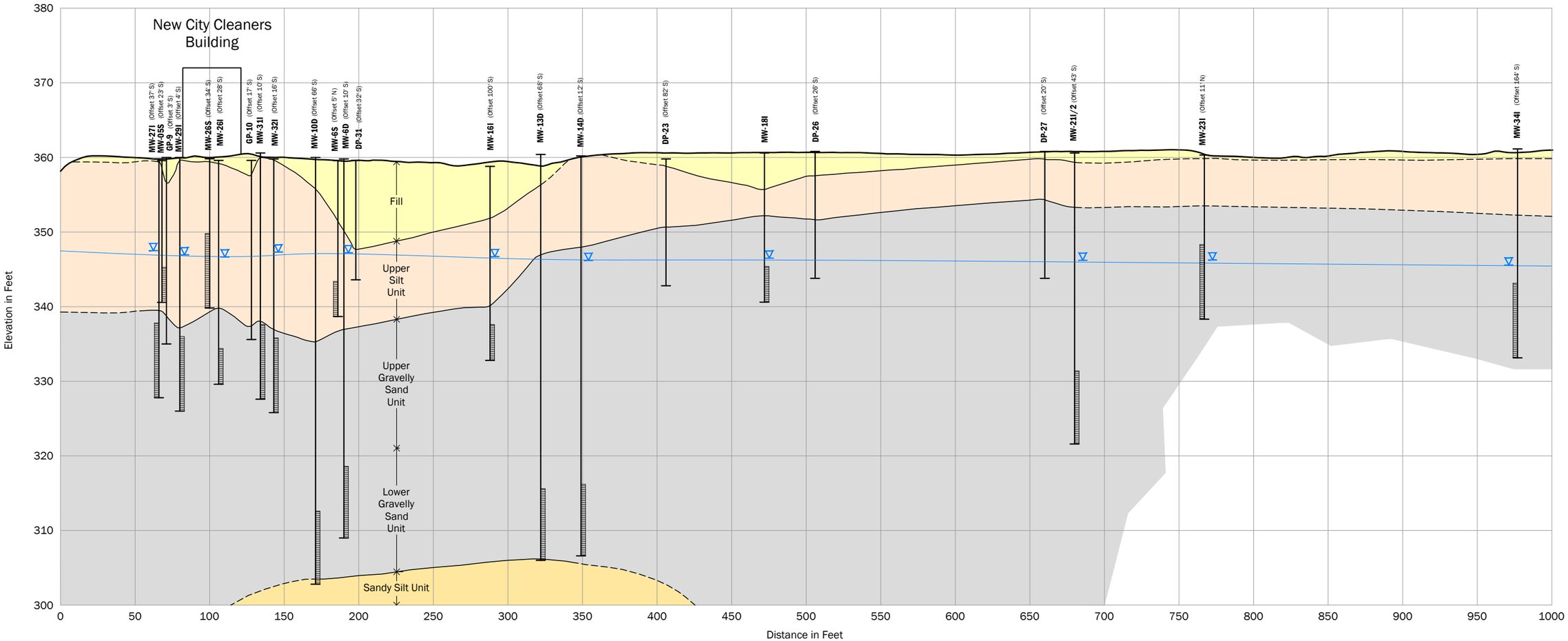
Site Plan

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect CONSULTING	FEB-2020	BY: AET / EAC	FIGURE NO. 2
	PROJECT NO. 090018-007-02	REVISED BY: ACG / RAP	

A
Northwest

A'
Southeast



Legend

- Fill
- Upper Silt Unit
- Gravelly Sand Unit
- Sandy Silt Unit
- Water Level - December 2014 (Upper Gravelly Sand Unit)
- Contacts Dashed Where Uncertain

Horizontal Scale: 1" = 70'
Vertical Scale: 1" = 14'
Vertical Exaggeration 5x

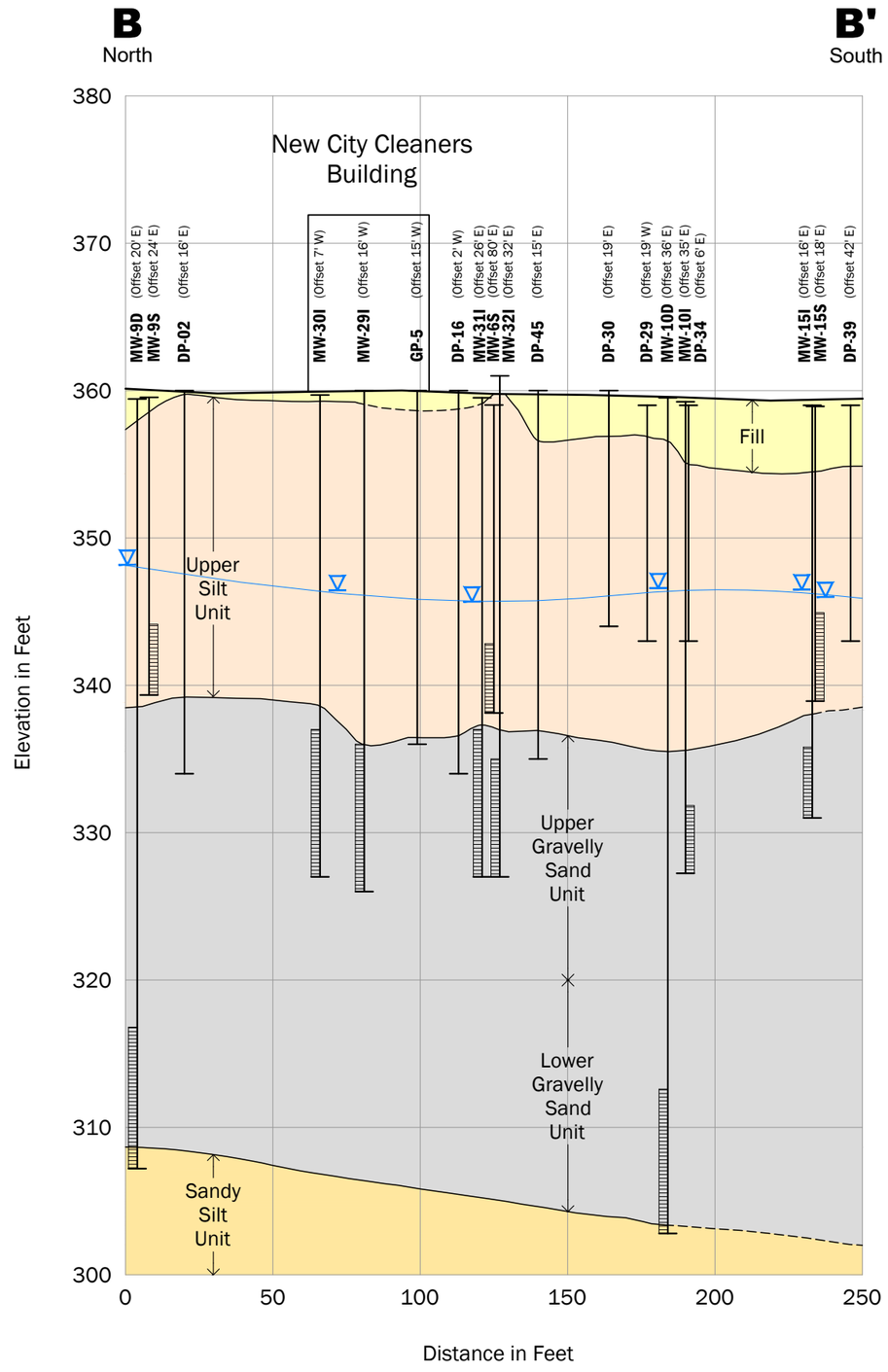
0 70 140 Feet

Cross Section A-A'

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect Consulting	Feb 2020	BY: AET/DIM	FIGURE NO. 3
	PROJECT NO. 090018	REVISED BY: SCC	

CAD Path: Q:\New City Cleaners\2019-12 Draft Cleanup Action Plan\090018-AA.dwg Section A-A' || Coordinate System: NAD 1983 State Plane Washington North FIPS 4601 Feet || Date Saved: Feb 04, 2020 1:51pm || User: scudd



Legend

- Fill
- Upper Silt Unit
- Gravelly Sand Unit
- Sandy Silt Unit
- Water Level - March 2019 (Upper Gravelly Sand Unit)
- Contacts Dashed Where Uncertain

Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'
Vertical Exaggeration 5x

0 50 100 Feet

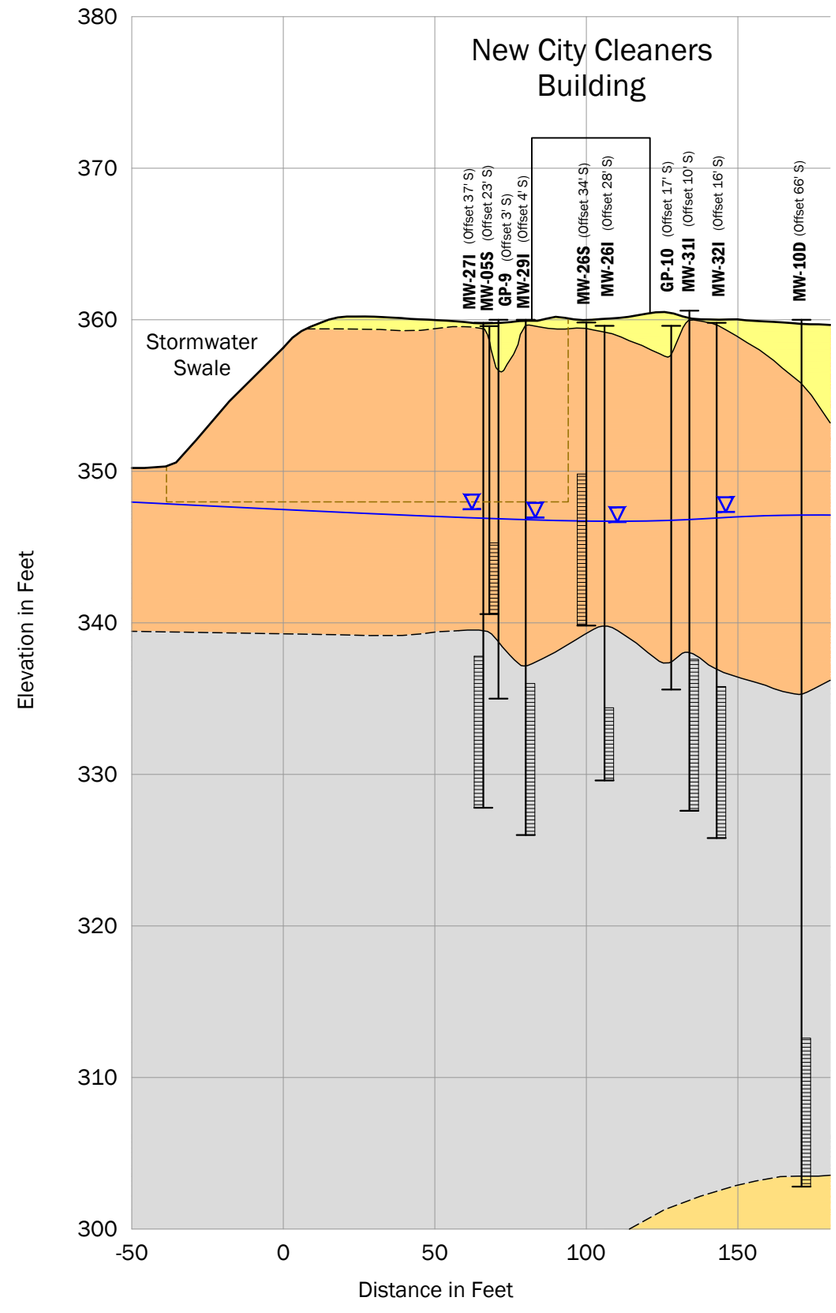
Cross Section B-B'

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect Consulting	Feb 2020	BY: AET/SCC	FIGURE NO. 4
	PROJECT NO. 090018	REVISED BY: SCC	

CAD Path: Q:\New City Cleaners\2019-12 Draft Cleanup Action Plan\090018-BB.dwg Section AA' || Coordinate System: NAD 1983 State Plane Washington North FIPS 4601 Feet || Date Saved: Feb 04, 2020 1:51pm || User: scudd

C Northwest → **C'** Southeast



Legend

- Fill
- Upper Silt Unit
- Gravelly Sand Unit
- Sandy Silt Unit
- Water Level - December 2014 (Upper Gravelly Sand Unit)
- Contacts Dashed Where Uncertain
- Extent of 2001 Remedial Excavation

Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'
Vertical Exaggeration 5x

0 50 100 Feet

Cross Section C-C'
Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect Consulting	Dec 2020	BY: AET/DIM	FIGURE NO. 5
	PROJECT NO. 090018	REVISED BY: BMG	

CAD Path: Q:\New City Cleaners\2019-12 Draft Cleanup Action Plan\090018-CC.dwg Section A-A' || Coordinate System: NAD 1983 State Plane Washington North FIPS 4601 Feet || Date Saved: Dec 21, 2020 4:07pm || User: bgreer

~5,000 tons of soil excavated
Max Depth: 10ft

~75 to 100 cubic yards of soil excavated
Max Depth: 10ft

~59 tons of soil excavated
Max Depth: ~4 ft

~1,600 cubic yards of soil excavated
Max Depth: 10ft

~324 cubic yards of soil excavated
Max Depth: 10ft

FORMER ALBERTSONS GROCERY STORE

RICHLAND SCHOOL DISTRICT BUILDING

STEVENS DR

LEE BLVD

?

N

0 50 100
Feet

Cleanup Actions

- NCC Remedial Excavation, 2001
- RSD Excavation Area 1, 1993
- RSD Excavation Area 2, 1993
- UST Excavations, 1992 (NCC)
- UST Excavations, 1991 (RSD)
- Sewer Line Replacement and Excavation, 2011
- Employee Restroom
- Floor Drain
- Sewer Cleanout
- Sanitary Sewer Line
- New City Cleaners
- Benton County Parcel

Note: The UST Excavations in 1992 and the Remedial Excavation in 2001 did not extend underneath the footprint of the building. The overlap with the building is due to roof overhang and a building addition on the western end.

Summary of Completed Cleanup Actions

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect Consulting	FEB-2020	BY: AO / TDR	FIGURE NO. 6
	PROJECT NO. 090018-007-02	REVISED BY: ---	

GIS Path: T:\projects_8\NewCityCleaners\Delivered\Draft Cleanup Action Plan\06 Summary of Completed Cleanup Actions.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 2020-02-04 || User: trullen || Print Date: 2020-02-04

STEVENS DR

GOETHALS DR

LEE BLVD

MW-08S
MW-30I
MW-29I
MW-28I
MW-05S
MW-27I
MW-11I
MW-07I
MW-06I
MW-32I
MW-26S
MW-26I
MW-31I
MW-10I
MW-15I
MW-16I
MW-12I
MW-25I
MW-24I
MW-17I
MW-20I
MW-13I
MW-22I
MW-14I
MW-18I
MW-19I
MW-21I/2
MW-21I
MW-23I
MW-03-LL
MW-05-LL
MW-34I
MW-33I

N

0 125 250
Feet

PCE Above Groundwater Cleanup Levels in Upper Gravelly Sand Unit Groundwater

Cis-1,2 DCE Above Groundwater Cleanup Levels in Upper Gravelly Sand Unit Groundwater

PCE Above Groundwater Cleanup Levels in Upper Silt Unit Groundwater

PCE Above Soil Cleanup Level

Existing Monitoring Well

Existing Injection Well

New City Cleaners

Benton County Parcel

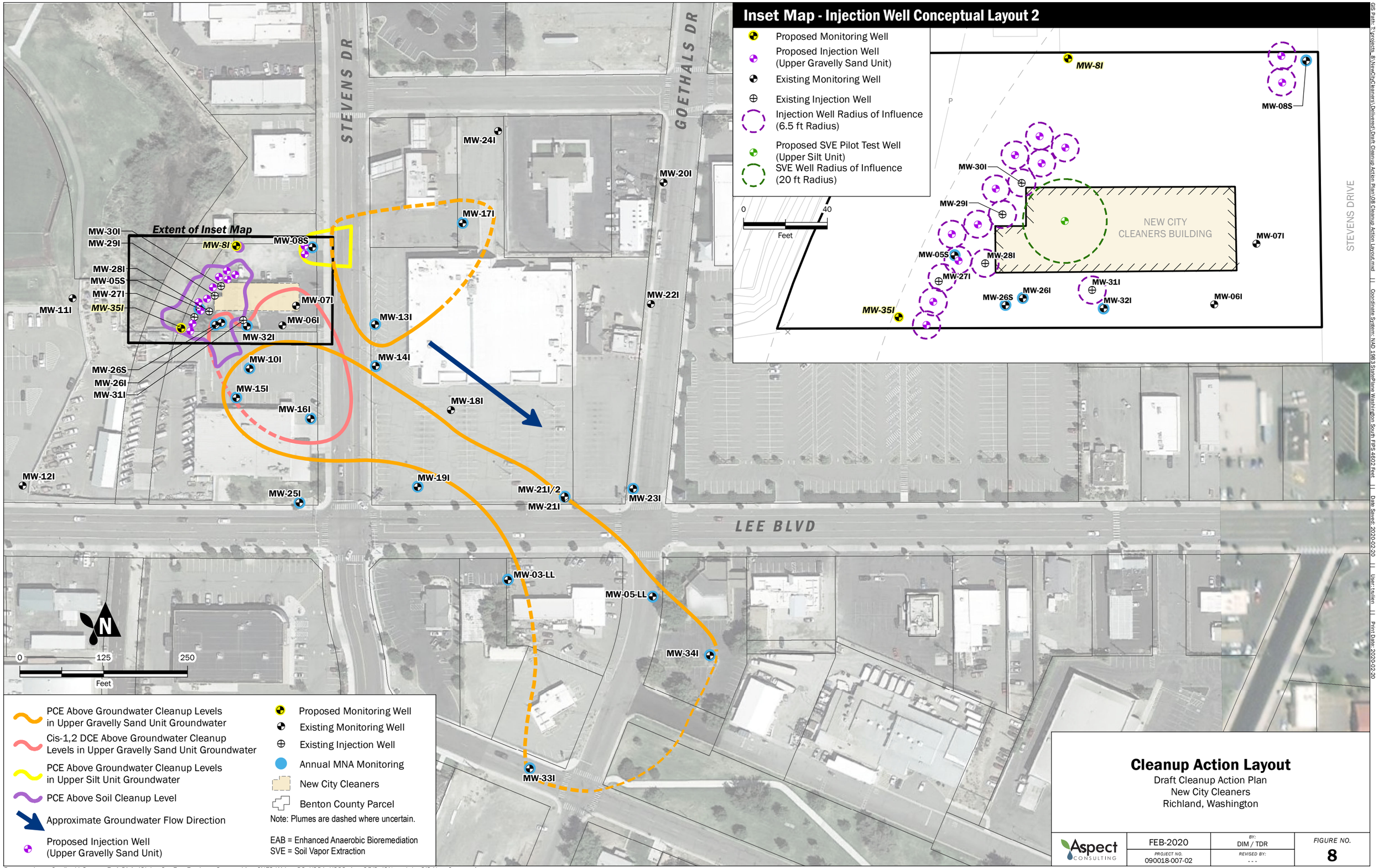
Note: Exceedances boundaries are dashed where they are inferred.

Soil and Groundwater Exceedances - Basis of Cleanup Action

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect CONSULTING	FEB-2020	BY: AO / TDR	FIGURE NO. 7
	PROJECT NO. 090018-007-02	REVISED BY: ---	

GIS Path: T:\projects_8\NewCityCleaners\Delivered\Draft Cleanup Action Plan\07 Soil and Groundwater Exceedances - Basis of Cleanup Action.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 2020-02-04 || User: trullen || Print Date: 2020-02-04



Inset Map - Injection Well Conceptual Layout 2

Cleanup Action Layout

Draft Cleanup Action Plan
New City Cleaners
Richland, Washington

Aspect Consulting	FEB-2020	BY: DIM / TDR	FIGURE NO. 8
	PROJECT NO. 090018-007-02	REVISED BY: ---	

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GIS Path: T:\projects_8\NewCityCleaners\Delivered\Draft Cleanup Action Plan\06 Cleanup Action Layout.mxd || Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet || Date Saved: 2020-02-20 || User: tuollen || Print Date: 2020-02-20