ALATHEIA RIDING CENTER

REMEDIAL ACTION PLAN FOR LEAD- AND ARSENIC-CONTAMINATED FORMER ORCHARD SOILS

PREPARED FOR:

ALATHEIA RIDING CENTER
2170 SLEEPY HOLLOW HEIGHTS
WENATCHEE, WA 98801

PREPARED BY:

GRETTE ASSOCIATES LLC
151 SOUTH WORTHEN, SUITE 101
WENATCHEE, WA 98801
(509) 663-6300

July, 2022

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

Remedial Action Plan

Report Version: V.1 July 29, 2022

Site Name:	Alatheia Riding Center
Site Address:	Unassigned Easy St. Wenatchee, WA 98801
Alternate Location Info:	Parcel #232018430156; 47.482 N Lat. / -120.376 W Long. T 23 N, R 20 EWM, Section 18, Quarter Section SE

Ecology Facility Site ID No:	**To Be Assigned**
Voluntary Cleanup Program Project No:	**To Be Assigned**
Order No:	N/A
Consent Decree No:	N/A

Prepared By:
Eron Drew, Biologist II Grette Associates, LLC

Reviewed By:
Glenn Grette, Principal Grette Associates, LLC
151 South Worthen Street, Suite 101 Wenatchee, WA 98801

Contents

Figures

Photographs

Executive Summary

This report summarizes the proposed conversion of former orchard lands to a commercial non-profit therapeutic horse-riding center on parcel #232018430156 near the City of Wenatchee in rural Chelan County, WA. The Project Site is located at Unassigned Easy St. approximately 1.7 miles northwest of Wenatchee. The applicant proposes to develop a segment of the subject parcel to a riding center and utilize the remainder of the parcel for agricultural purposes including horse pasture and undeveloped open space. During the initial planning phase of the riding center, it was determined that a portion of the subject parcel is mapped as former historic orchard lands on the Ecology Dirt Alert online mapping tool. Initial soil testing of the Site confirmed that the parcel contains surface soils contaminated with lead and arsenic levels above the Model Toxics Control Act (MTCA) Method A cleanup levels and remediation is required prior to development (See Attachment A for initial Site characterization testing results).

Because lead and arsenic soils, specifically on historic orchard lands, are regulated through the Washington Department of Ecology (Ecology) toxics cleanup division, the applicant is applying for inclusion in the Voluntary Cleanup Program (VCP) managed by Ecology. This document serves as the contaminated soils Remedial Action Plan (Plan) to be reviewed by Ecology during the VCP application process. The applicant will utilize the Ecology model remedies for former orchard lands, as described in *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington July 2021*; publication 21-09-006, to manage lead and arsenic soils at the Site. Lead and arsenic surface soils will be left onsite. The applicant will grade and excavate to clean soils where feasible based on the proposed grading plan for the riding center. Contaminated topsoil generated will be consolidated onto the northwest corner of the parcel. After consolidation has occurred, this area will be planted with pasture grasses and surrounded with electric fencing. Excavation to clean soil, hard and soft capping methods, and consolidation and capping of contaminated subsoils will be utilized across the remainder of the Site including the public spaces such as the parking areas, riding arenas, horse paddocks, riding trails and around the proposed caretaker residence. The ravine along the southern property boundary will be left in its existing state and will continue to function as undeveloped open space and support some horse grazing. To ensure compliance, institutional controls will be implemented as needed. The proposed remediation actions for the property are described in detail below. The Site qualifies for a TEE Exemption.

1 Introduction

The applicant proposes to develop a segment of the former orchard lands on parcel #232018430156 just outside of the city of Wenatchee, WA. Alatheia Therapeutic Riding Center is a 501 c (3) non-profit that provides equine-assisted services to children and adults with physical and/or developmental disabilities, and veterans struggling with PTSD or civilian life adjustments. The applicant proposes to develop a commercial riding center comprised of a large covered riding arena, a small covered riding arena, a horse barn with adjoining paddock area and manure handling area, a small hay barn, a caretaker's residence, paved and unpaved parking areas, and graveled riding trails. A grass pasture area will be located in the northeast corner of the parcel. During the initial design phase of the project, it was determined that the Site is contaminated with lead and arsenic surface soils due to historic lead arsenate pesticide use on former commercial orchard land.

The redevelopment of former orchard lands contaminated with lead and arsenic soils is overseen by Ecology toxics cleanup division through the VCP; to which the applicant is currently applying. As part of the VCP application process, the applicant is to provide to Ecology a Plan on how lead and arsenic soils will be managed and remediated. This document serves as that plan.

Grette Associates, LLC has prepared this Remedial Action Plan (Plan) on behalf of Alatheia Riding Center to present the proposed remediation actions to be conducted at the Project Site near Wenatchee, WA for the management of lead and arsenic surface soils associated with former historic orchard lands. This Plan meets the requirements outlined in the MTCA Cleanup Regulation (WAC 173-340) and utilizes the Ecology *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington July 2021*; publication 21-09-006 to manage lead and arsenic soils at the Site. This Plan summarizes the existing and proposed Site conditions, environmental characterization of the Site, and the proposed remediation actions.

The applicant is requesting that Ecology review the proposed Plan and issue a Letter of Opinion on the feasibility and completeness of the proposed remediation plan and the likelihood of receiving a No Further Action determination following successful implementation and verification of the approved remediation actions. Any additional comments and guidance from Ecology as part of the requested Letter of Opinion resulting from the submittal of this Plan will be implemented to ensure that the remediation complies with Ecology model remedy standards for managing lead and arsenic soils on former orchard lands. After the Plan has been implemented and cleanup of the Site is complete, the applicant will report back to Ecology with a Remedial Action Report (Report). At the time of Report submittal, the applicant will request a No Further Action Opinion Letter based on the information presented in the Report.

1.1 Site Information

The project Site is comprised of parcel #232018430156 located at Unassigned Easy Street just to the northwest of the City of Wenatchee, WA. The parcel is 11.83 acres and zoned both Rural Village (RV) and Rural Residential/Resource 5 (RR5). The parcel is roughly rectangular in shape, with the southern property line following the irregular ravine. The Site is bounded by Lower Monitor Road to the west and Easy Street to the east. It has been used as a commercial orchard. Trees were removed from the property in the spring of 2022 in anticipation of the proposed future development. There is a small garage located on the parcel that will be removed during construction. The parcel is surrounded by low and moderate density residential properties.

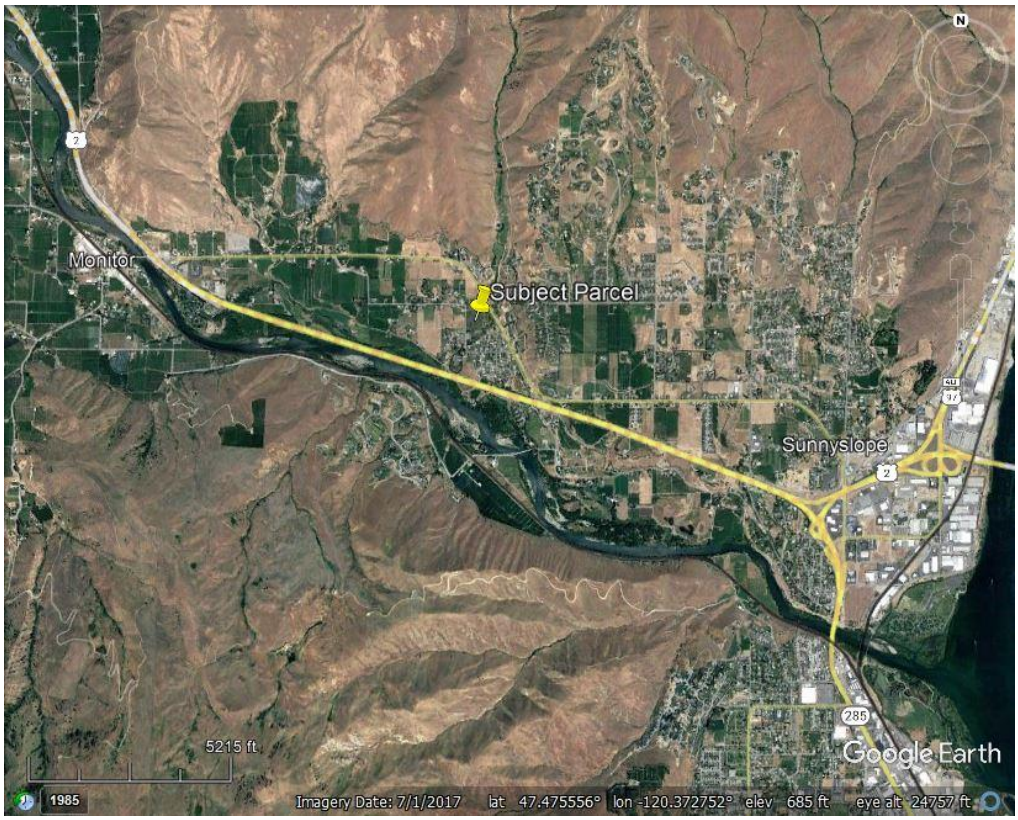


Figure 1. Vicinity Map of the subject parcel.

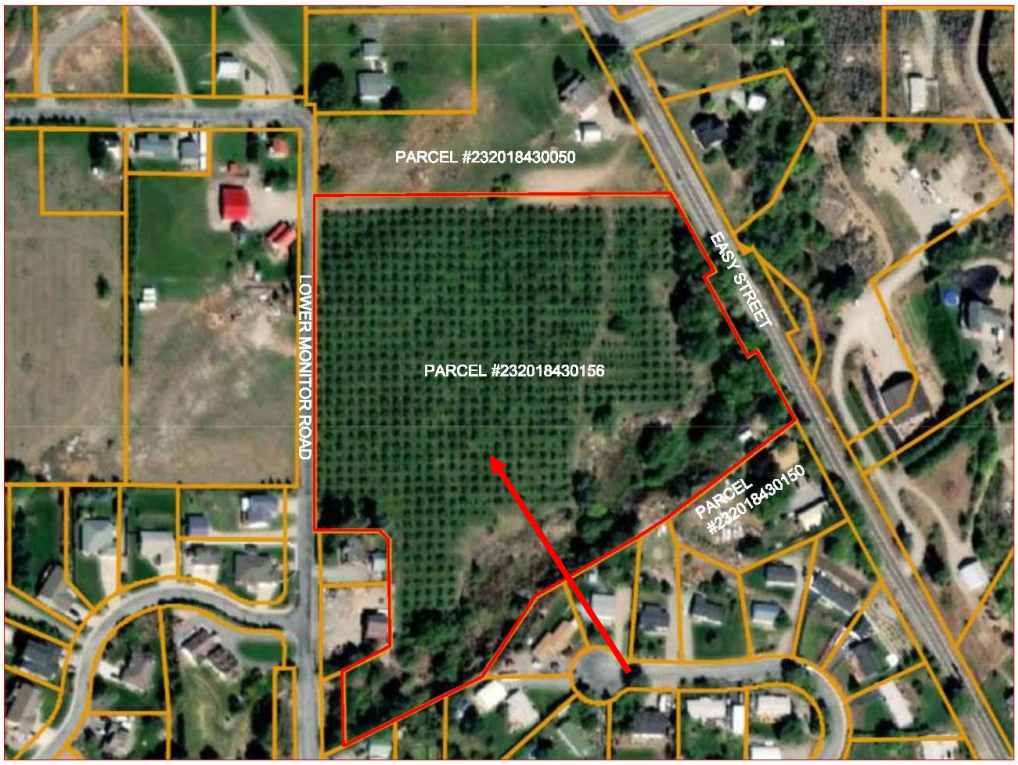


Figure 2. Map of subject parcel and the surrounding parcels.

1.2 Site History

The relatively level portions of the parcel have been a commercial orchard until the trees were cleared in the spring of 2022. The ravine located along the southern property boundary is undeveloped. Based on the Ecology Dirt Alert online mapping tool, a segment of the parcel may have been in commercial orchard when lead arsenate was still utilized as a pesticide (1890-1955).

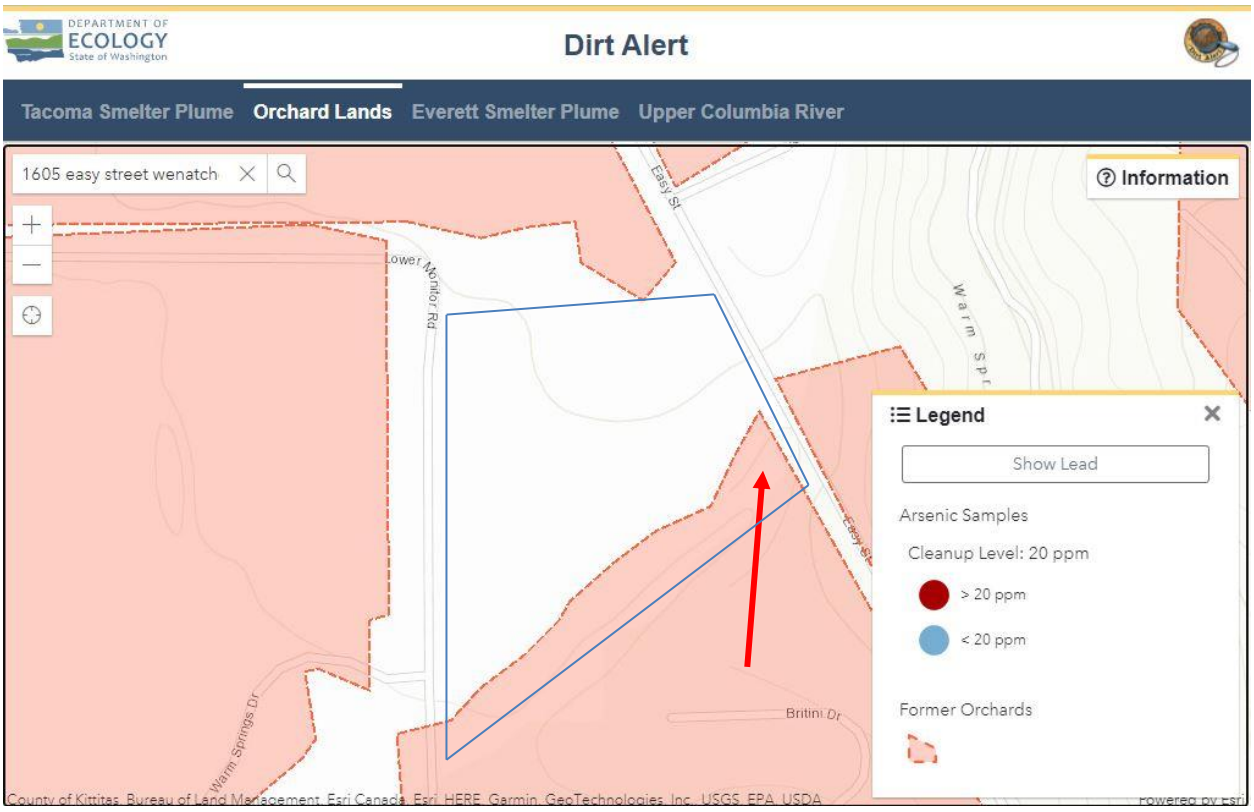


Figure 3. Dirt Alert mapping of the subject parcel.

1.3 Site Geology

According the USDA NRCS Websoil Survey (www.websoilsurvey.nrcs.usda.gov), the parcel is mapped as containing Cashmont sandy loam, 3 to 8 percent slopes (CcB), Cashmont gravelly sandy loam, 15 to 25 percent slopes (CdD) and Terrace escarpments (Te). Cashmont sandy loam and Cashmont gravelly sandy loam are formed on hillslopes, alluvial fans and terraces from alluvium, glaciofluvial deposits or ablation till. A typical profile contains either sandy loam or gravelly sandy loam from 0-8 inches and gravelly sandy loam from 8 to 60 inches. Depth to the water table is listed as more than 80 inches. Depth to a restrictive layer is listed as more than 80 inches.

According to Chelan County GIS, portions of the Site are mapped as containing erosive soils. The Site is not mapped for other known geo-hazard areas.

1.4 Site Hydrology

Groundwater is not expected to be encountered near the ground surface at the Site. It is anticipated based on publicly available well records that static water is present at least 118 ft below the ground surface. A ravine is located along the southern property boundary. According to the Washington Department of Natural Resources Forest Practices Application Mapping Tool, a Type F stream is located in the ravine. However, a stream typing evaluation was completed by Grette Associates in 2022. The evaluation concluded that no fish-bearing streams are present on the subject parcel. The applicant will apply for re-typing of the stream during SEPA review based on the results of the field investigation.

According to the USFWS National Wetlands Inventory, no wetlands are mapped within the vicinity of the subject parcel. Grette Associates conducted a wetlands reconnaissance in 2022 and no wetlands were found on the Site. That documentation will be provided during the SEPA review.

1.5 Previous Environmental Investigations

An abbreviated Site Characterization Report was completed by Grette Associates, LLC on July 7, 2022 (Attachment A). This report was produced to summarize the sampling data. Surface soils across the Site were sampled using an XRF analyzer to determine if lead and arsenic contamination was present. Sampling occurred across the entirety of the Site and included both Dirt Alert mapped and unmapped areas. Subsurface samples were collected at specific locations in conjunction with geotechnical investigations conducted by Nelson Geotech. Based on data gathered during the Grette Associates Site visit, it was determined that lead and arsenic contaminated surface soils are present throughout the parcel and are not limited to the Dirt Alert mapped area. Overall, based on the sampling this Plan was developed assuming that the entirety of the subject parcel contains levels of exceedances in lead and arsenic levels. Details on sampling methods and results are included in Attachment A and summarized below.

Lead and arsenic concentrations are typically above 250 ppm and 20 ppm (the MTCA Method A cleanup level as described below), respectively, at the soil surface with the highest concentrations being located within 1 foot of the surface. The top 1 foot is also good topsoil for supporting vegetation. Concentrations are typically below the MTCA cleanup level 3 ft below the ground surface.

2 Proposed Remediation Standards

Based on the information provided in the Grette Associates abbreviated Site Characterization Report, it was determined that remediation will focus on managing historic lead and arsenic orchard soils across all areas of commercial development on the subject parcel. Because of the relatively low hazard resulting from lead and arsenic soils on historic orchard land, the MTCA Method A cleanup level is appropriate for the Site, based on existing and future land use. Per WAC 173-340 Table 740-1, MTCA Method A cleanup levels for lead and arsenic for unrestricted land uses are as follows:

Hazardous Substance	CAS Number	Cleanup Level	PPM Conversion
Arsenic	7440-38-2	20 mg/kg	20 ppm
Lead	7439-92-1	250 mg/kg	250 ppm

Table 1. Summarized cleanup level values for lead and arsenic from WAC 173-340 Table 740-1.

These levels are considered conservative cleanup levels for Sites undergoing routine remediation actions with relatively few hazardous substances and that also qualify for an exemption from completing a simplified or Site-specific Terrestrial Ecological Evaluation (TEE). Such is the case for the subject parcel as demonstrated in the attached VCP application materials.

3 Remedial Design

Because only a portion of the subject parcel will be redeveloped with commercial uses and segments of the parcel will be left in agricultural uses or remain undeveloped, a combination of remediation actions will be utilized. The remediation actions for the parcel will include grading, excavation, and stockpiling; consolidation of contaminated topsoil and subsurface soil; permanent hard and soft capping; and institutional controls to limit access and exposure to lead and arsenic soils. These approaches are consistent with remediation options outlined in Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington July 2021; publication 21-09-006. The purpose of the remediation actions is to prevent exposure to contaminated soils. Remediation actions to be taken in each project area are summarized below.

Additionally, dust control methods will be implemented during project construction and erosion control BMPs will be utilized to prevent dirty water from leaving the property. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared for the project and reviewed by Ecology.

3.1 Remedial Action Areas

Below is a summary of each individual remedial action area and the steps that will be taken to manage lead and arsenic surface soils in that location. A Site map of the proposed action areas is included as Sheet 1 and cross sections are included as Sheet 2.

Due to the need for a level Site to facilitate access and accommodate the requirements of the Americans with Disabilities Act substantial Site grading is necessary to implement the proposed

project. The necessary grading provides the opportunity to manage the lead and arsenic soils at the Site while meeting design grades.

3.1.1 Pasture (Area 1)

The pasture will be located in the northeast corner of the parcel and be approximately 2.68 acres. The pasture will be used for limited grazing of the riding center's horses. During Site grading approximately 12 inches of topsoil will be graded from much of the Site and consolidated on the pasture to a varying depth above existing grade. After consolidation, the pasture will be top seeded with a pasture grass blend appropriate for horses. Irrigation is already available on the entire Site. The pasture will be surrounded by a four-strand electric fence (low amperage, but 5000 volts). Signage will be installed to direct the public away from the pasture and the pasture will only be accessed to the onsite caretaker and designated staff. The pasture will remain in agricultural use consistent with the existing Site designation. As such, the capping of contaminated soils is not proposed. The horses will be fed hay and typically reside in the barn and paddock area. Pasture grazing will be managed carefully to limit the potential for exposure of bare soil. Institutional controls will be utilized to identify on the title that remediation has not occurred within this area of the property.

3.1.2 Parking Areas (Areas 2 and 3)

Several designated participant and staff parking areas will be located on the eastern half of the parcel. These include .75 acres of paved parking (Area 2) and .25 acres of unpaved parking (Area 3). In parking areas to be paved, approximately 12 inches of contaminated top soil will be graded to and consolidated onto the pasture. After the topsoil is removed, contaminated subsoil will be graded to a temporary contaminated stockpile location at the Site of the small riding arena. Clean subsurface soils will then be excavated from 3 ft below the ground surface to develop a stockpile of clean material that will be used onsite as capping material in other portions of the Site. Clean soils will be verified using an XRF and lab testing. After clean soils are removed and stockpiled, the excavation will be backfilled with contaminated subsurface soils from other areas on the Site, bringing the parking areas up to grade. After backfilling, the paved parking areas will be temporarily soft-capped with mechanically compacted gravel to a depth of 4 inches. At completion of the project, the graveled parking areas will be hard-capped with an appropriate depth of asphalt to support the projected loads and contain the contaminated soil.

In the unpaved parking areas top soil will be graded as necessary (cut, fill, and minor consolidation) to meet grades. The remaining contaminated soil will be mechanically compacted and a geotextile fabric will be placed over the soil surface before adding an additional 8 inches of mechanically compacted gravel installed as a soft cap.

Institutional controls will be utilized to identify on the title that contaminated soils are still present underneath the soft-capped or hard-capped parking areas. In the soft-caped areas, the depth of the geotextile will be monitored and additional gravel will be added as needed to maintain the cap.

3.1.3 Sloped Transition Pasture (Area 4)

The sloped transition pasture is approximately .52 acres in size. Approximately 12 inches of contaminated top soil will be graded from this area and consolidated onto the pasture. The subsurface contaminated soils will be graded to the temporary contaminated stock pile to expose

clean soils. After exposure, clean soils will be graded and moved to the clean material stockpile. XRF testing will be utilized to ensure that excavation to clean soils has occurred throughout the slope on the leave surface. Lab testing will be utilized to test the clean soil stockpile before re-use as a cap material at the Site. After excavation and grading of the area is complete, the sloped transition pasture will be top seeded with a horse pasture mix and irrigated. As the Site will be excavated to clean soils no long-term monitoring of this location is proposed.

3.1.4 Large Covered Riding Arena (Area 5)

The large covered riding arena will be located toward the center of the parcel. The large arena area as shown on Sheet 1 is approximately .69 acres and located between the parking areas and the barn paddock area. Approximately 12 inches of contaminated top soil will be graded from this area and consolidated onto the pasture. The contaminated subsurface soil will then be graded and consolidated onto the contaminated stockpile area. Contaminated soils will be removed down to clean soils. This area will then be used for the clean material stockpile. Clean soils will be verified using an XRF, with lab testing of the stockpile before re-use as capping material at the Site. After excavation of the excess clean soils is completed, the arena riding surface of gravel and sand approximately 6 inches deep will be placed. As this area will be excavated to clean soils, no long-term monitoring of this location is proposed.

3.1.5 Small Covered Riding Arena (Area 6)

The small covered riding arena will be located south of the large covered arena and near the center of the parcel. This area is approximately .46 acres in size. Approximately 12 inches of contaminated top soil will be graded from this area and consolidated onto the pasture. The subsurface contaminated soil will remain and this Site will be used as the contaminated soil stockpile. Contaminated subsurface soils from the Site will be consolidated in the footprint of the small arena, which needs substantial net fill to reach final grade. The arena footprint will be mechanically compacted then covered with 18 inches of clean compacted soil before applying a geotextile fabric barrier and 6 inches of gravel and sand riding surface. As the Site will be covered with 18 inches of clean material (lab tested for verification) in addition to an Ecology approved geotextile fabric barrier, contaminated soils are expected to be adequately soft-capped in this location at a depth of 18 inches below the geotextile and 24 inches below the riding surface. The depth of the geotextile will be monitored and additional riding surface will be added if the fabric becomes visible. Institutional controls will be used to identify on the title that contaminated soils are still present underneath the soft-capped surface.

3.1.6 Barn and Paddock (Area 7)

This area covers approximately 1.27 acres. Approximately 12 inches of contaminated top soil will be graded from this area and consolidated onto the pasture. The subsurface contaminated soil will be graded down to clean soils and consolidated in either the paved parking area, the small arena or the driveway. After removal of the contaminated soils is complete, stockpiled clean soils (lab tested for verification) will be used to fill portions of the area to design grade. XRF testing will be utilized to ensure that excavation to clean soils has occurred throughout. After grading is completed, the paddock and stalls will be surfaced with an appropriate footing material. The barn driveway and manure handling area will be surfaced with either mechanically compacted gravel or asphalt. As the barn and paddock area will be graded and excavated to clean soils, no long-term monitoring of this location is proposed.

3.1.7 Play Area and Round Pen (Area 8)

A round pen is a temporary horse holding training pen. This feature will be located next to a children's play area to provide a focus for activities outside of the arenas and off the pasture. Combined, these features encompass .16 acres of the Site. Contaminated top soil will be graded from this area and consolidated onto the pasture. The contaminated subsurface soil will be graded to the contaminated soil stockpile then consolidated into an area designated for contaminated soil (the paved parking area, the small arena or the driveway). Grading will be down to clean soil through this area. XRF testing will be utilized to ensure that excavation to clean soils has occurred throughout the area. After excavation to clean soils is completed, an appropriate surface will be added for the activities. As the Site will be excavated to clean soils no long-term monitoring of this location is proposed.

3.1.8 Caretaker House (Area 9)

The caretaker house will be located near the southwest corner of the parcel. This high use area will be approximately .26 acres. After excavation and Site grading, contaminated soils are expected to remain in this location approximately 3 feet below the new ground surface. Both the caretaker house and the office will act as a hard-cap for the contaminated soils. The caretaker house will be accessible via a paved driveway. The driveway will act as a hard-cap over contaminated soils in this area. The lawn surrounding the house and office will be treated as a high use public space and will be soft-capped with clean material. The surrounding lawn areas will be back-filled with a minimum of 18 inches of clean material (lab tested for verification) and 6 inches of clean topsoil over any remaining contaminated soils. Typical depth to contamination is expected to range from 3 to 5 feet below final grade based on the grading plan. Grass will be top-seeded over the 24 inches of clean material. Institutional controls will be utilized to identify on the title that contaminated soils are still present underneath the soft- and hard-capped surfaces in this area.

3.1.9 Stormwater Pond and Swales (Area 10)

The stormwater pond will be located in the southwest corner of the parcel and will be approximately .32 acres. The stormwater pond will be graded down to clean soils. Berms around the pond will be constructed with clean material (lab tested for verification). Stormwater swales will also be excavated down to clean soils and backfilled with clean material. Stormwater management will be addressed in the SWPPP and will be reviewed by Ecology during the SEPA process.

3.1.10 Southern Slope (Area 11)

This area is .60 acres and will be graded by placing clean fill (lab tested for verification) from the stockpile to cap contaminated soils with a minimum of 18 inches of clean material. Institutional controls will be used to identify on the title that contaminated soils are still present underneath the soft-capped surface.

3.1.11 Main Driveway (Area 12)

The driveway will comprise approximately .49 acres of the subject parcel. The driveway within the Site will be graded to remove approximately 12 inches of contaminated topsoil which will be stockpiled on the pasture. The driveway will then be filled with contaminated soils from the stockpile during Site preparation. The driveway will be hard-capped with machine compacted

gravel and asphalt. Institutional controls will be used to identify on the title that contaminated soils are still present underneath the hard-capped surfaces associated with the driveway.

3.1.12 Ravine (Area 13)

The 2.99 acres of ravine will remain in undeveloped open space. As there will be no change in land use, no remedial actions are required in this area. The ravine will not be accessible to the general public aside from a future undefined riding trail. This trail will be built and managed similarly to the trail described below.

3.1.12.1 Riding Trails (Area 14)

Riding trails will be located adjacent to the ravine open space and will comprise approximately .28 acres of the subject parcel. The riding trails will be constructed over the top of contaminated soils. An approved geotextile fabric barrier will be applied over the contaminated soils and then topped with 6 inches of machine compacted gravel to form a permanent soft-cap. The depth of the compacted gravel will be monitored and additional gravel will be added as needed to ensure that no less than 6 inches of compacted clean material is present above the geotextile fabric barrier at all times. Institutional controls will be utilized to identify on the title that contaminated soils are still present underneath the soft-capped trails. Use of the riding trails will be limited to guided riders and will not be open to the general public outside of riding center operations. Additionally rides within the undeveloped open space will be limited to the built trail system. Participants will not be allowed to ride off-trail into un-remediated areas.

3.2 Geotextile Fabric

The underlying geotextile fabric used in all soft capping areas will act as a marker material; physically separating clean soils from the underlying lead and arsenic soils. The geotextile fabric used as an underlayment will be non-biodegradable and will conform to Ecology standards for this type of underground application.

3.3 Importing and Reuse of Soils

Soft capping will utilize clean soils either identified during deep excavation at the Site or imported from a reputable off-site location. All soft capping soils will be lab tested prior to application to ensure that lead and arsenic levels are below the threshold listed in Table 1.; <20 mg/kg (or <20 ppm) for arsenic and <250 mg/kg (or <250 ppm) for lead. Testing data sheets and chain of custody forms will be included in the final Report compiled at project completion.

3.4 Exporting of Soils

It is not expected that export of soils will occur as part of the proposed project. Earthwork at the Site will stay within the parcel boundaries. If for some reason export of soils becomes necessary, soils will be tested for lead and arsenic levels before off-site transport occurs to ensure that disposal complies with Ecology guidelines.

3.5 Remediation Levels

The required remediation levels for arsenic and lead soils per WAC 173-340 Table 740-1 and MTCA Method A for Sites with unrestricted land use, as cited in Section 2 above are as follows:

- Arsenic: 20 mg/kg or 20 ppm
- Lead: 250 mg/kg or 250 ppm

The primary pathway for exposure at the Site is direct contact with contaminated soils. The placement of engineered hard and soft caps with ongoing maintenance will eliminate the direct contact pathway at the Site and will prevent exposure to arsenic and lead soils. Groundwater is not expected to be affected by former orchard soils as the levels of arsenic and lead are relatively low and confined to near-surface soils.

During the implementation of this Plan, any soils imported to or re-used at the Site will meet the threshold of < 20 mg/kg for arsenic and < 250 mg/kg lead when analyzed in a lab. Initial testing for suitability will utilize an XRF analyzer. An XRF analyzer will be utilized for initial soil suitability analysis during Plan implementation as it is accurate, reliable, fast and portable. If soils are deemed suitable for soft capping utilizing an XRF analyzer, composite samples will be sent to a lab for verification prior to application at the Site, consistent with guidance in Ecology publication 21-09-006. Results and chain of custody forms of any lab tested capping soils will included in the final Site Report to ensure that the remediation has been properly executed and complies with the Ecology Model Remedy guidance document.

3.6 In-Progress Inspections

During the installation of the soft cap, the Site will be monitored by Grette Associates, LLC to observe and document the work, ensuring that the project is in conformance with this Plan. Results of the Site observations will be reported in the future Report that will be completed at the close of the project. Documentation will include photo and data sheets in addition to any results and chain of custody paperwork for laboratory soil testing.

3.7 Institutional Controls

In addition to hard and soft capping and the excavation to clean soils, institutional controls will be implemented as part of the proposed remediation. Institutional controls will include:

An Environmental Covenant will be prepared for the subject parcel, pursuant to the Model Toxics Control Act (MTCA) chapter 70.105D RCW and the Uniform Environmental Covenants Act (UECA) chapter 64.70 RCW. The Covenant will demonstrate to Ecology that there will be no interference with the remedial action, that human health and the environment will remain protected, that the Site will remain in a state of continued compliance and that future property owners are made aware of the necessary remedial action and this Covenant.

3.7.1 Stormwater Management

All stormwater at the Site will be managed to ensure that contaminated water does not leave the Site. The project has been designed to utilize an on-site stormwater pond and swales. A SWPPP will be prepared for the Site and will be reviewed by Ecology during the SEPA process.

Additionally, dust control methods will be implemented at the Site during project construction and erosion control BMPs will be utilized to prevent dirty water from leaving the project area.

3.7.2 On-going Maintenance

Visual inspections of the hard- and soft-capping areas will occur on an annual basis to ensure that the Site is still in compliance with the Ecology Model Remedy guidance and MTCA Method A requirements. If damage to the hard- or soft-cap or the underlying geotextile fabric is found, repairs will occur immediately to re-establish compliance. The stormwater management features will also be inspected to ensure that dirty water is not leaving the Site. Ecology will perform a Site inspection every five years to ensure that institutional controls are still effective.

4 Conclusion

The applicant is proposing to convert a segment of the subject parcel from agricultural uses to a commercial non-profit riding center. According to the Ecology Dirt Alert online mapping tool, the subject parcel contains areas that are mapped as being located on former orchard land that may contain lead and arsenic soils from the allowed use of the historic lead arsenate pesticide at the Site. Lead arsenate use occurred prior to 1950. The presence of contaminated soils was confirmed during the initial abbreviated Site Characterization Report written by Grette Associates, LLC (See Attachment A). This initial sampling confirmed that lead and arsenic levels occur above MTCA Method A cleanup levels across the parcel and is not confined to the Dirt Alert mapped area.

In order to move forward with the proposed project, the applicant is applying to the VCP and prepared this Plan to demonstrate how lead and arsenic soils will be managed and remediated utilizing the model remedies described in the Ecology publication *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington July 2021*; publication 21-09-006. This Plan is being submitted along with the VCP application materials. The applicant requests that Ecology review the Plan and issue a Letter of Opinion on the feasibility and completeness of this Plan and the likelihood of receiving a No Further Action letter at the completion of the remediation actions. At the completion of the remediation actions, the applicant will submit to Ecology a Remedial Action Report demonstrating how the Plan was effectively implemented and request a No Further Action Opinion Letter from Ecology at that time.

5 Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report are derived, in part, from data gathered by others and from conditions evaluated when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We do not warrant and are not responsible for the accuracy or validity of work performed by others or for the impact of changes in environmental standards, practices, or regulations.

Further, this report is limited in scope to the remediation of lead and arsenic in surface soils based on sampling and guidance set forth in Ecology publication *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington*, April 2021; publication number 21-09-006. This document serves as guidance in supporting the implementation of an appropriate model remedy for remediation of lead and arsenic soils on former orchard lands and does not constitute a formal environmental Site analysis.

6 References

Chelan County GIS. Zoning online mapping tool. Chelan County GIS

Google Earth Pro. Current and historical aerial photography. https://www.google.com/earth ..

Grette Associates, LLC. 2022. Alatheia Site Characterization Report dated July 5, 2022. See Attachment A.

United States Department of Agriculture, Natural Resources Conservation Services Web Soil Survey. Online mapping tool. Web Soil Survey - Home (usda.gov)

United States Fish and Wildlife Service. National Wetlands Inventory. Online mapping tool. National Wetlands Inventory (fws.gov)

Washington State Department of Ecology (Ecology), 1994. Natural Background Soil Metal Concentrations in Washington State. Ecology Publication #94-115. 94115.pdf (wa.gov)

Ecology, 2013. Model Toxics Control Act (MTCA) Regulation and Statute, Chapter 173-340 WAC, Publication No. 94-06, revised 2013. 9406.pdf (wa.gov)

Ecology, 2021. Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington. Sampling and Cleaning Up Arsenic- and Lead-Contaminated Soils. July 2021, Publication 21-09-006. Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington.

Ecology, 2022. Dirt Alert. Online mapping tool. Updated 20220608. Former Orchard Lands (wa.gov)

Ecology, 2022. Well Construction and Licensing online mapping tool. Well Report Map Search (wa.gov)

Nelson Geotechnical Associates, INC. Geotechnical Engineering and Infiltration Evaluation; Alatheia Riding Center. April 4, 2022. 21 pp.

Washington State Department of Natural Resources. Forest Practices Application Mapping Tool. Forest Practices Application Mapping Tool (FPAMT) (wa.gov).

7 Sheets

PURPOSE: VCP REMEDIAL ACTION PLAN

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

VICINITY

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

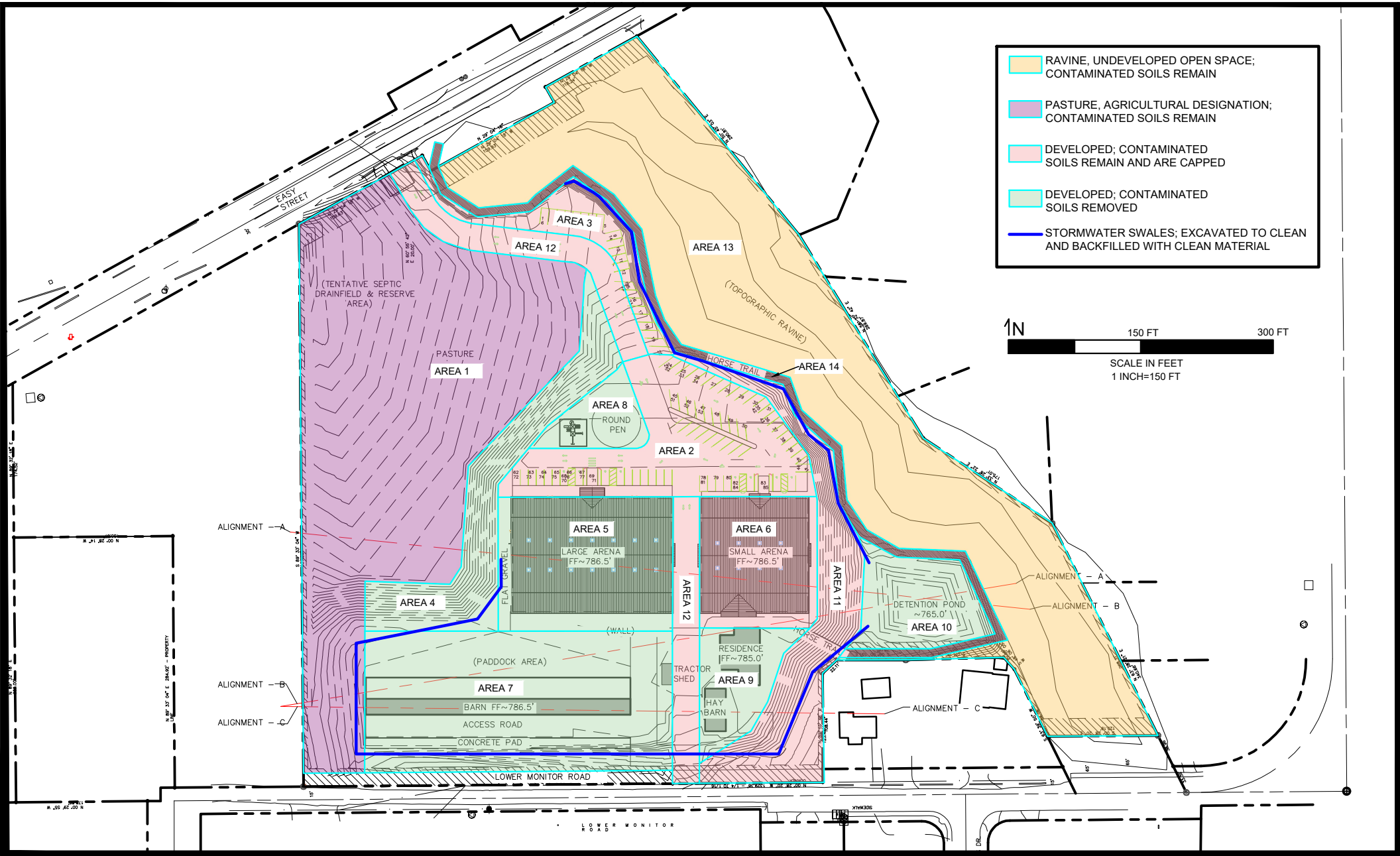
N 47.482; W −120.376

PARCEL #232018430156

AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

SHEET NO. 1 OF 3 DATE: 07/29/22



PURPOSE: VCP REMEDIAL ACTION PLAN

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

SITE MAP

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

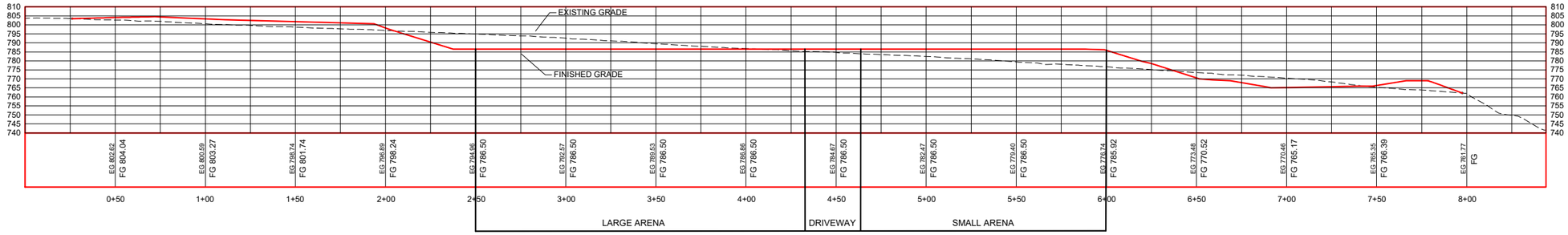
N 47.482; W −120.376

PARCEL #232018430156

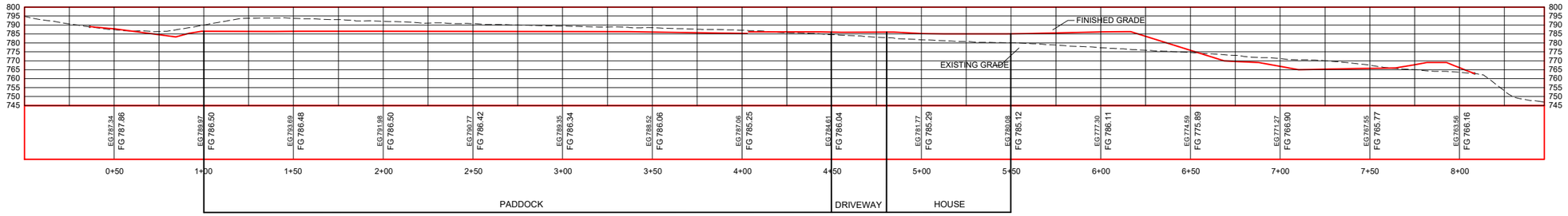
AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

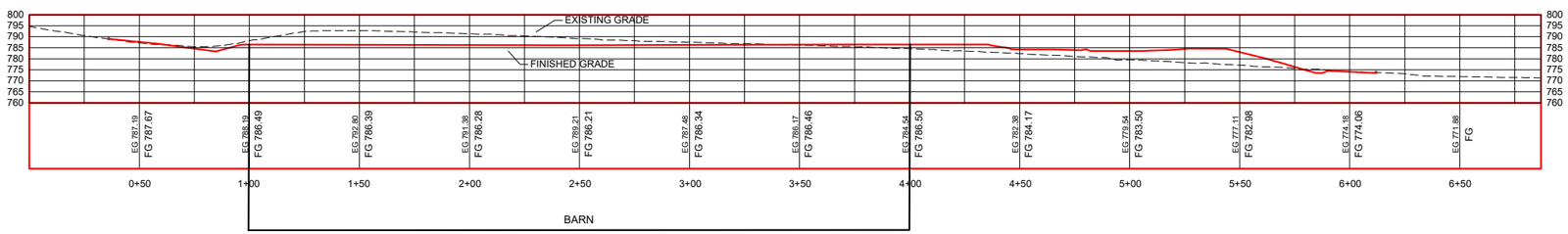
SHEET NO. 2 OF 3 DATE: 07/29/22



GRADING PROFILE - A
SCALE: 1" = 30'



GRADING PROFILE - B
SCALE: 1" = 30'



GRADING PROFILE - C
SCALE: 1" = 30'

PURPOSE: VCP REMEDIAL ACTION PLAN

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

CROSS SECTIONS

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

N 47.482; W −120.376

PARCEL #232018430156

AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

SHEET NO. 3 OF 3 DATE: 07/29/22

8 Photos

Photograph 1. The Alatheia Riding Center Site; looking north.

Photograph 2. The Alatheia Riding Center Site; looking east.

Photograph 3. The Alatheia Riding Center Site; looking south.

9 Attachment A: Grette Associates, LLC Site Characterization Report

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

SITE CHARACTERIZATION REPORT

To: Alatheia Riding Center; Glenn Grette
2170 Sleepy Hollow Heights
Wenatchee, WA 98801

July 5, 2022

From: Eron Drew, Biologist II
151 South Worthen, Suite 101
Wenatchee, Washington 98801

File No.: Alatheia Riding Center

Re: **Alatheia Riding Center Initial Lead and Arsenic Soil Sampling; Parcel #232018430156**

INTRODUCTION

This abbreviated Site Characterization Report (Report) has been prepared by Grette Associates, LLC to present the findings of the initial lead and arsenic soils testing of former orchard lands on parcel #232018430156 in rural Chelan County Washington. The initial sampling of soils on the subject property occurred on March 15, 2022. Soils were tested in anticipation of the conversion of a portion of the site from agricultural to residential and commercial uses. This abbreviated Report has been prepared to present the methodologies of data collection and the results of the surface soil sampling on the subject property.

SITE DESCRIPTION

The subject property is currently undeveloped and was historically utilized as commercial orchard. A majority of the site is mapped on the Department of Ecology (Ecology) Dirt Alter online mapping tool as having been in historic use as commercial orchard prior to 1955 (Figure 1). Ecology utilizes this mapper to identify historic orchards that are likely to contain elevated levels of lead and arsenic in the surface soils due to the allowable use of lead arsenate pesticide prior to 1955. Sampling efforts for the presence and/or absence of lead and arsenic focused on the entirety of the parcel including both mapped and unmapped areas.

SUMMARY

Soil samples were tested utilizing an Olympus Vanta Element XRF analyzer. Testing of the surface soil samples on the subject property confirmed that elevated lead and arsenic levels are present in excess of MTCA Method A cleanup levels for both arsenic (>20 mg/kg or 20 ppm) and lead (>250 mg/kg or 250 ppm). Due to the sampled levels, it is assumed that a majority of the property contains soils with levels of lead and arsenic exceedance (Sheet 3). Sampling and results are discussed in detail below.

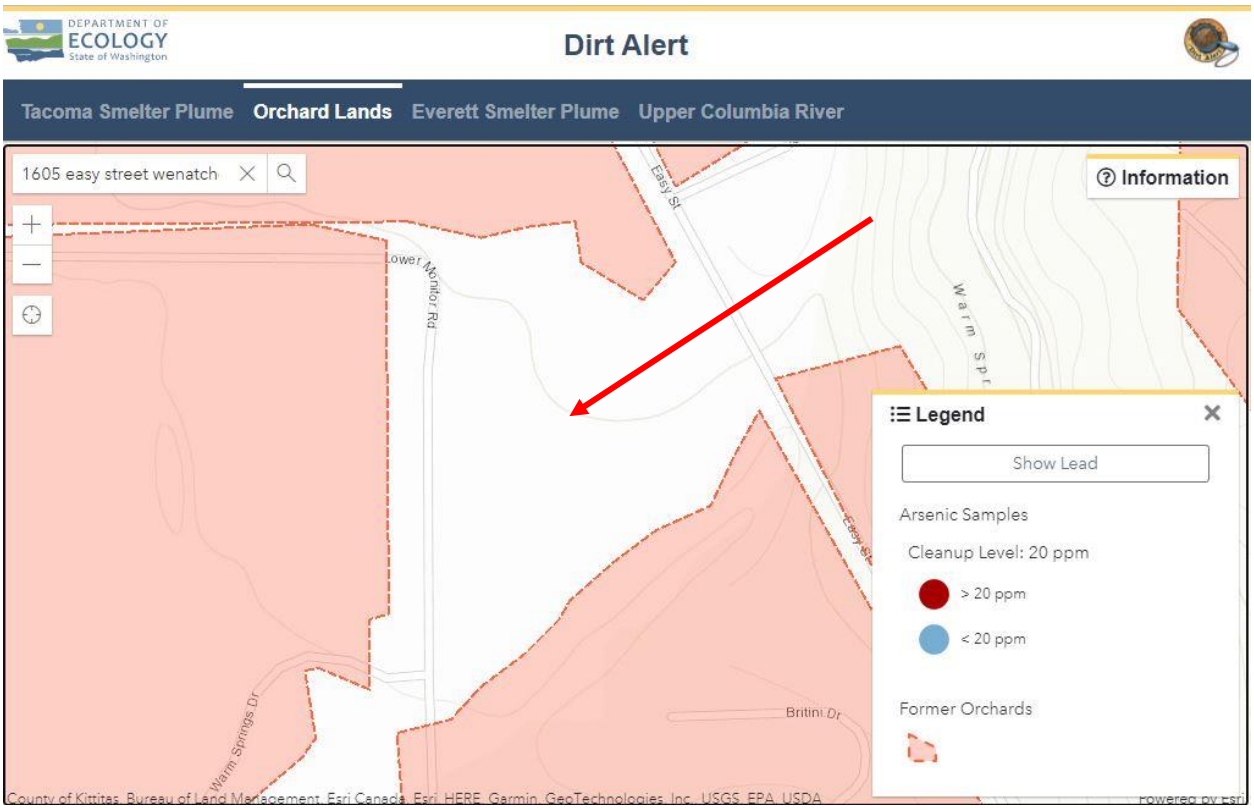


Figure 1. Dirt Alert mapping of the subject parcel and surrounding vicinity.

METHODS

Grette Associates visited the subject parcel on March 15, 2022 in order to determine the presence and/or absence of elevated levels of lead and arsenic above MTCA Method A cleanup levels on the subject property. Prior to conducting the site visit, aerial photographs were analyzed, development concept drawings were consulted and parcel data was collected in order to determine the appropriate sampling protocol consistent with Ecology publication *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington*, April 2021; publication number 21-09-006. Thirty (30) sample locations were chosen across the proposed development site with samples collected between 0-6 inches of depth at all 30 locations and samples collected between 6-48 inches in depth at 11 of the locations (36% of the samples at the site). Shallow sample locations were established to capture at least one surface sample in each of the individual agricultural and/or land use blocks in order to generate an accurate profile of the overall extent of lead and arsenic across the entire parcel. Deep sample locations were dictated by infiltration testing and the geotech sampling requirements of Nelson Geotechnical Associates, Inc.

Sampling occurred utilizing an Olympus Vanta Element handheld XRF analyzer. The XRF was calibrated to detect both lead and arsenic levels in the soil. Detection limits of the Olympus Vanta Element XRF are approximately 1 to 2 ppm for arsenic and approximately 1 to 5 ppm for lead, which is well below the MTCA Method A cleanup levels. This assures that XRF sampling results are comparable to lab testing in regard to accuracy.

At each deep testing location, pits were dug to 4 ft utilizing a track-mounted excavator. The excavated soil profile was further prepared using a hand trowel to cut horizontally across the face; exposing a fresh even surface at each of the predetermined sampling depths to ensure that the XRF analyzer had 100% contact with an uncontaminated soil surface during sampling. Measurements were taken at 6-inch depth increments utilizing the XRF. Sample depths extended to as much as 48 inches below the soil surface, depending on the measured concentration of lead and arsenic. Results of the sampling were recorded on the Ecology-formatted Site Characterization Datasheet included in the publication number 21-009-006 (Attached below).

The shallow sampling location soils (0-6 inches in depth) were dug utilizing a long narrow bladed shovel. The hole was prepped to ensure a clean even surface for sampling. The hole was also dug to be large enough so that the XRF analyzer had 100% contact with the soil surface during sampling. Results of the sampling were recorded on the same data sheets as the deeper samples. Additionally, soil texture, weather and environmental conditions were noted at the time of sampling. Each site location was also recorded using a dGPS with submeter accuracy. The dGPS locations with general sampling results were plotted onto an aerial photograph of the site (Sheet 3).

RESULTS AND RECOMMENDATIONS

Based on the XRF sampling of the site, it was determined that elevated levels of lead and arsenic are present across a majority of the subject parcel. Elevated levels of lead and/or arsenic above the Ecology threshold (250 ppm Pb / 20 ppm As) were detected at twenty-nine (29) sampling locations. These results confirm that lead arsenate was utilized as part of the former commercial orchard activities on the subject property. As a result, remediation for lead and arsenic will be required as part of the conversion of the subject property to other uses. Potential remediation actions are provided in Ecology publication 21-09-006 *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington*. Typical remediation would entail onsite soft or hard capping of contaminated soils. Soft capping would require importing clean material to utilize as a shallow cap over the exposed contaminated soils in the areas of residential or commercial use on the subject property. Impervious surfaces such as buildings, paved roads, and concrete sidewalks would act as a permanent hard cap.

Based on the data collected in the 11 deep sample locations it is likely that at depth uncontaminated soils may be present at the site. If during earthwork at the site clean soils are identified at depth below the contaminated surface soils, these soils should be stockpiled away from contaminated soils if intended for use in soft capping. Before any soils on site can be re-used for soft capping, they must first be lab-tested to confirm that lead and arsenic levels are below MTCA Method A cleanup levels. Guidance on required lab testing for the re-use of onsite clean soils or the import of soils from offsite is available in Ecology publication 21-09-006. It should be assumed that all excavated soils are contaminated unless lab testing can confirm otherwise. If after excavation, clean soils are not identified at the site, it is recommended that soils for soft capping are imported to the site from a reputable offsite location that is free from contamination, based on lab sampling.

DISCUSSION

This document serves as an abbreviated Site Characterization Report of lead and arsenic soil testing for parcel #232018430156 associated with the proposed Alatheia Riding Center. Based on the analysis of thirty (30) sampling locations it was determined that a majority of the project site contains elevated levels of lead and arsenic above MTCA Method A cleanup levels (Ecology threshold) from the use of lead arsenate pesticide related to historic commercial orchard production. Because of elevated lead and arsenic levels in the surface soils it is recommended that a remediation plan be developed consistent with Ecology publication 21-09-006. This plan should be adhered to during the development of the subject property. It is recommended that any soils used in the remediation either utilize on-site clean soils excavated from depth or clean soils imported from a reputable uncontaminated offsite location, following lab verification. However, no soils should be utilized for remediation without first lab verifying that the soils are below the MTCA Method A cleanup levels; <20 mg/kg (or 20 ppm) for arsenic and <250 mg/kg (or 250 ppm) for lead.

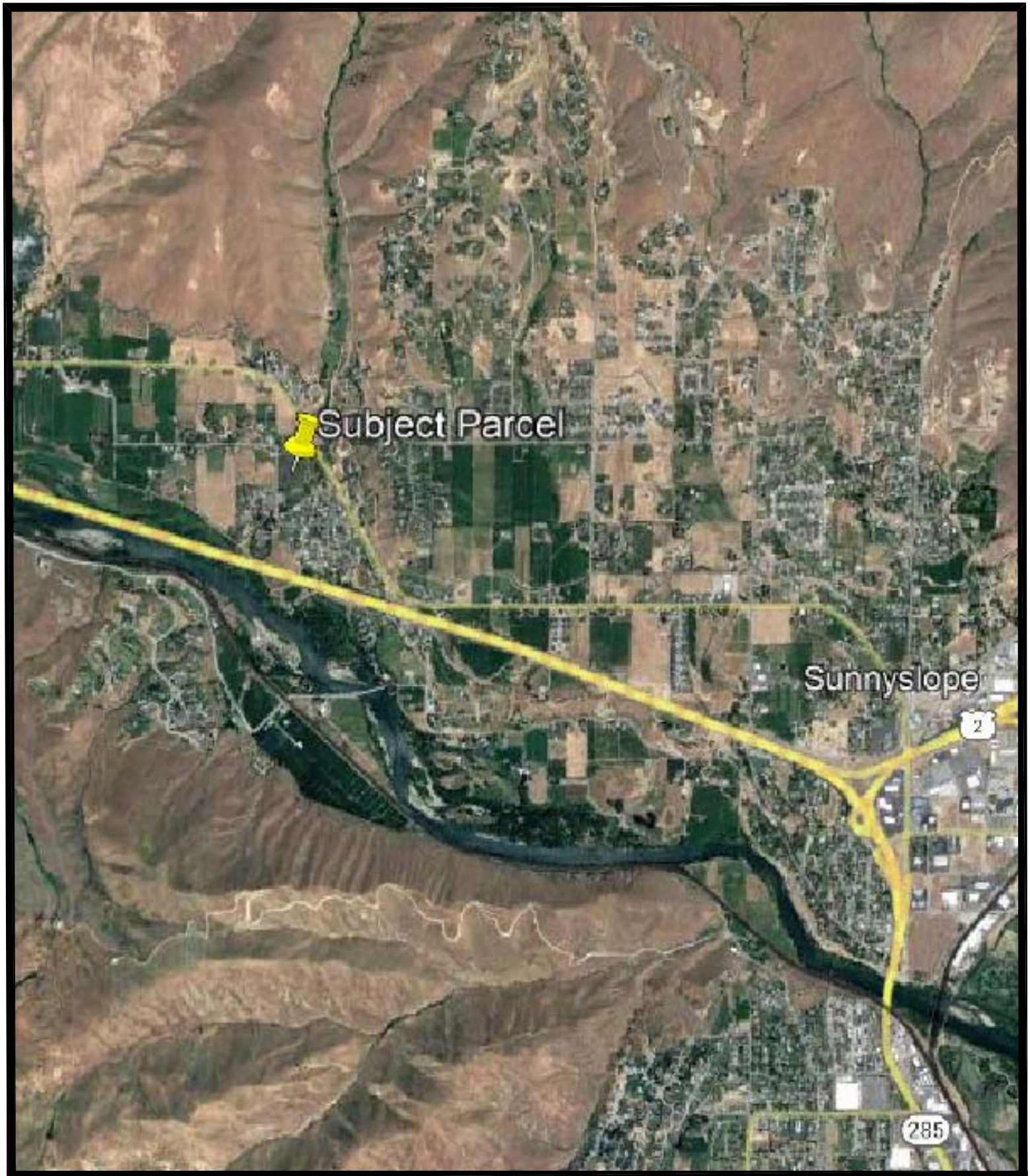
LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report are derived, in part, from data gathered by others and from conditions evaluated when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We do not warrant and are not responsible for the accuracy or validity of work performed by others or for the impact of changes in environmental standards, practices, or regulations.

Further, this report is limited in scope to the analysis of lead and arsenic in surface soils based on sampling and remediation guidance set forth in Ecology publication *Model Remedies for Cleanup of Former Orchard Properties in Central and Eastern Washington*, April 2021; publication number 21-09-006. This document serves as guidance in supporting the selection of an appropriate model remedy for remediation of lead and arsenic soils on former orchard lands and does not constitute a formal environmental site analysis.

SHEETS



PURPOSE: SITE CHARACTERIZATION REPORT

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

VICINITY MAP

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

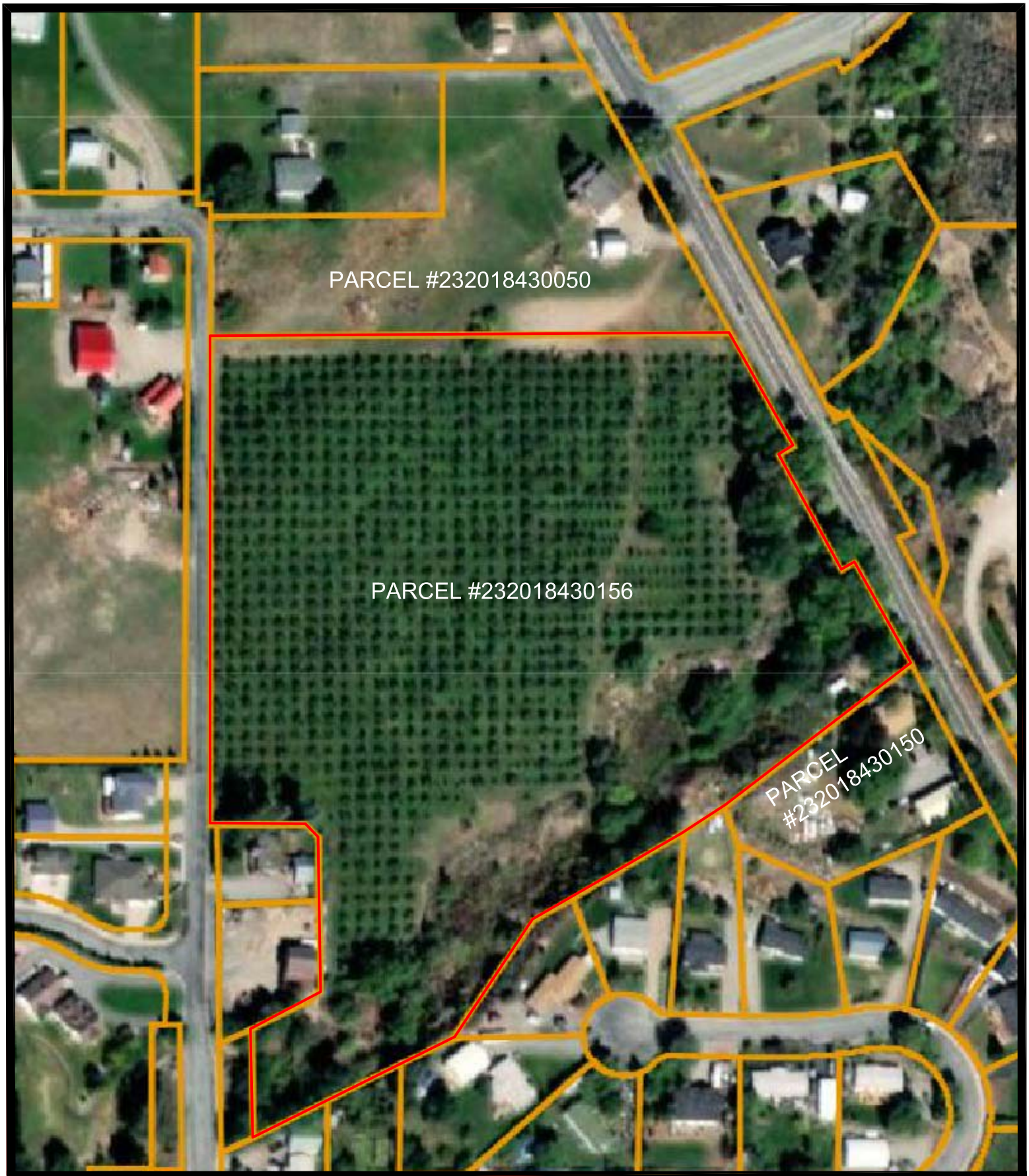
N 47.482; W −120.376

PARCEL #232018430156

AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

SHEET NO. 1 OF 3 DATE: 07/05/22



PURPOSE: SITE CHARACTERIZATION REPORT

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

SITE MAP

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

N 47.482; W −120.376

PARCEL #232018430156

AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

SHEET NO. 2 OF 3 DATE: 07/05/22

PURPOSE: SITE CHARACTERIZATION REPORT

ADJACENT PROPERTY OWNERS:

1. SHILOH SCHAUER
   1605 EASY ST
   WENATCHEE, WA 98801

2. ALVARO TLACHI
   1505 EASY ST
   WENATCHEE, WA 98801

SAMPLE LOCATIONS

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

N 47.482; W −120.376

PARCEL #232018430156

AT: UNASSIGNED EASY ST
WENATCHEE, WA 98801

COUNTY OF: CHELAN
STATE: WA
APPLICATION BY: ALATHEIA RIDING CENTER

SHEET NO. 3 OF 3 DATE: 07/05/22

DATASHEETS

Soil Characterization Sampling Inventory Sheet									
Property Address:				Alatheia Riding Center Unassigned Lower Monitor Road Monitor, WA		Testing Parameters (ppm): Utilizing Olympus Vanta Element XRF			
Phone:				509-663-6300		Lead 250 ppm			
Sampled By:				ED; Grette Associates, LLC		Arsenic 20 ppm			
DU no.	Sample no.	Soil depth/duff	Date	Time	Comments	Arsenic	DU Avg. arsenic	Lead	DU Avg. lead
	1	5"	3/15/2022	9:00 AM	sandy silt	170		968	
	2	6"			sandy silt	121		314	
	3A	6"			sandy silt	131		639	
	3B	12"			sandy silt	65		ND	
	3C	18"			sandy silt	44		12	
	3D	24"			sandy silt	24		14	
	3E	30"			sandy silt	30		ND	
	3F	36"			sandy silt	18		ND	
	4	5"			sandy silt-few rock to 2"	158		532	
	5A	6"			sandy silt	83		ND	
	5B	12"			sandy silt	77		12	
	5C	18"			rock to 1"+	66		ND	
	5D	24"			rock to 4"+	69		ND	
	5E	30"			rock to 4"+	45		ND	
	5F	36"			rock to 4"+	16		ND	
	6A	6"			sandy silt	114		332	
	6B	12"			sandy silt	100		25	
	6C	18"			rock to 1"	57		32	
	6D	24"			rock to 1"	52		58	
	6E	30"			rock to 2"	29		ND	
	6F	36"			rock to 2"	ND		ND	
	7A	6"		10:40 AM	sandy silt	211		957	
	7B	12"			sandy silt	101		16	
	7C	18"			rock to 2"	90		27	
	7D	24"			rock to 4"+	61		16	
	7E	30"			rock to 4"+	28		14	
	7F	36"			rock to 4"+	21		ND	
	7G	42"			rock to 4"+	14		ND	
	8	5.5"			sandy silt	253		1574	
	9	6"			sandy silt	135		687	
	10	5.5"			sandy silt rock to 1"	96		687	
	11A	6"			sandy silt	108		95	
	11B	12"			sandy silt	113		277	
	11C	18"			sandy silt	69		ND	
	11D	24"			rock to 2"	42		15	
	11E	30"			rock to 2"	ND		19	
	12	5.5"			slope- near toe. 2 ft up headwall	115		742	
	13	5"			sandy silt-in swale	141		1259	
	14	5.5"			sandy silt	143		1139	
	15	5.5"			sandy silt	143		1037	
	16A	6"		1PM	sandy silt	209		1825	
	16B	12"			sandy silt	330		222	
	16C	18"			sandy silt	185		48	
	16D	24"			sandy silt	41		27	
	16E	30"			sandy silt	55		23	
	16F	36"			stones/change soils	41		ND	
	16G	42"			stony	30		ND	
	16H	48"			subsurface drainage, wet, very rocky	34		17	
	17A	6"			sandy silt	158		568	
	17B	12"			sandy silt	68		26	
	17C	18"			stone to 1"	63		ND	
	17D	24"			stone to 1"	28		17	
	17E	30"			stone to 1"	25		ND	
	17F	36"			increasing stone, very wet, large rock	17		13	
	18A	6"			sandy silt	173		597	
	18B	12"			sandy silt	78		49	
	18C	18"			sandy silt	ND		22	
	18D	24"			sandy silt	19		ND	
	19A	6"		2:45 PM	sandy silt	263		1091	
	19B	12"			sandy silt	101		26	
	19C	18"			sandy silt	78		17	
	19D	24"			sandy silt	80		14	
	19E	30"			bed rock/rock at 36"	17		ND	
	20A	6"			sandy silt	86		32	
	20B	12"			sandy silt	78		ND	
	20C	18"			sandy silt	35		13	
	20D	24"			rock to 2" in 6" band	26		ND	
	20E	30"			sandy silt	34		14	
	20F	36"			sandy silt	ND		13	
	21A	6"			sandy silt	90		578	
	21B	12"			sandy silt	50		12	
	21C	18"			sandy silt	63		ND	
	21D	24"			sandy silt	49		14	
	21E	30"			sandy silt	59		150	
	21F	36"			sandy silt	34		ND	
	21G	42"			sandy silt	33		ND	
	21H	48"			sandy silt	15		ND	
	22	6"			sandy silt	179		841	
	23	5"			sandy silt	100		465	
	24	6"			sandy silt; 6 ft off valley floor	268		1788	
	25	5"			sandy silt	160		1312	
	26	5.5"			sandy silt	35		248	
	27	5"			above drainage on side wall; gravelly	ND		39	
	28	5"			at large fruit tree	186		1248	
	29	5"			gravelly sandy silt	259		1553	
	30	5"			gravelly sandy silt	70		398	