

Contaminated Media Management Plan

Former Senz Automotive Service Station

210 S. Maple Street

Yamhill, Oregon

Oregon DEQ ECSI No.: 4923

HydroCon Project Number: 2022-061

Prepared for:

E&M Concrete

16498 Brown Road

Dallas, Oregon

August 31, 2022

Prepared by:



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1.0 INTRODUCTION

This Contaminated Media Management Plan (CMMP) has been prepared for the Former Senz Automotive Service Station located at 210 S. Maple Street in Yamhill, Oregon (the site). The CMMP is intended be used during future redevelopment activities in order to (1) protect future construction, excavation, and trench workers; (2) facilitate management of petroleum-contaminated soil (PCS) and groundwater that may be encountered during trenching / excavation operations at the site; and (3) present the design and specifications for the proposed vapor mitigation system that will be installed at the site. Compliance with this CMMP will be required in future subsurface activities involving excavations and/or trenches which encounter groundwater or contaminated soil (bgs) and during installation of the proposed vapor mitigation system.

1.1 *Site History*

The discussion below is based on information presented in GeoEngineers¹ CMMP dated January 17, 2011. Additional details on site history and previous investigations can be found in that CMMP (Appendix A).

The future development activities are likely to encounter soil and groundwater that was historically impacted by a release of gasoline, including separate-phase gasoline. Groundwater at the site has been observed to be as shallow as approximately 2-feet in the past. The historical release of gasoline from a former clay drainage pipe (Figure 2) had occurred during the historical operation of the Senz Automotive Service Station. The former station and related infrastructure were later decommissioned and removed in December 2009. While the free-phase gasoline and much of the contaminated soil has been previously removed, residual concentrations in soil and groundwater are likely remaining. The currently understood Locality of Facility (LOF) in which contaminated media may be encountered is shown on Figure 2, Attachment A. The LOF was previously established based on several previous site investigation and remediation efforts.

A Consent Judgement (Yamhill County Case No. 17CV30011) related to the site that was issued in 2022 requires a site-specific HASP and a CMMP be prepared before any site redevelopment activities are conducted. As described above, a CMMP was previously prepared by GeoEngineers (Appendix A). However, thDEQ has recently requested that an updated CMMP be submitted to include the potential for vaporization risks at the site, and to describe the planned mitigation design and specifications. Concurrent with this HASP, Hydrocon is preparing the updated CMMP for DEQ review.

2.0 CONTAMINANT SOURCES AND MAGNITUDE

¹ GeoEngineers, 2011a. *Contaminated Media Management Plan, Senz Automotive Service, Yamhill, Oregon*. January 17, 2011.



This Section identifies the source and type of contaminants at the site, as well as describes the extent of soil and groundwater contaminants.

2.1 Source and Contaminants of Potential Concern

Soil and groundwater contamination at the site is the result of the historical release of gasoline from the underground fuel supply lines in 1988 and 2006 - both occurred in the eastern portion of the property. Details of the releases are described in GeoEngineer’s *Site Investigation* report, dated April 8, 2010.² In addition to gasoline-range hydrocarbons and related constituents, some isolated detections of diesel- and oil-range hydrocarbons that have been detected at the site are likely from the long history using the site as automotive service and fueling station. However, none of the diesel- and oil-range detections exceed relevant DEQ risk-based concentrations (RBCs) and therefore are not considered further in this CMMP. Contaminants of potential concern (COPCs) that have exceeded one or more RBC as presented in GeoEngineer’s most recent investigations^{2,3} are listed below:

COPC	Soil	Groundwater
GRPH		X
Benzene	X	X
Toluene		X
Ethylbenzene	X	X
Xylenes		X
Isopropylbenzene		X
Methyl tert-butyl ether (MTBE)		X
Naphthalene	X	X
1,2- Dichloroethane	X	X
1,2,4-Trimethylbenzene	X	X
1,3,5-Trimethylbenzene	X	X
Xylenes		X

2.2 Estimated Extent of Petroleum Contamination

The estimated extent of contamination is described below.

Soil. Gasoline-range hydrocarbons and VOCs in soil are present between the surface and approximately 14-feet below ground surface (bgs). Maximum concentrations are near the former clay drain pipe in the southwester portion of the site, including at the fire station parking lot.

² GeoEngineers, 2010. *Site Investigation, Senz Automotive Service, Yamhill, Oregon.* April 8, 2010.

³ GeoEngineers 2011b. *Quarterly Groundwater Monitoring, Stormwater Conveyance Piping Services, Remediation System Removal, and Well Decommissioning Service; Senz Automotive Service, Yamhill, Oregon.* June 28, 2011.

Groundwater. Gasoline-range hydrocarbons and VOCs are present in groundwater near the southwest portion of the former service station and near the former drain pipe. Groundwater is typically encountered at less than four feet bgs at the site.

2.3 Contaminated Media Management Area

The Contaminated Media Management Area (CMMA) is defined as the estimated extent of petroleum contaminated soil and groundwater beneath the subject property and is composed of the a portion of the LOF. The CMMA shown on Figure 2, includes the estimated groundwater and soil contamination and is based on the previous investigations and remedial efforts conducted by GeoEngineers. Petroleum-contaminated soil (PCS) may be encountered at depth ranging from 1- to 14-feet bgs. Based on historical monitoring data, groundwater beneath the CMMA ranges from 1- to 6-feet bgs.

3.0 PROPOSED VAPOR MITIGATION SYSTEM

DEQ has requested that this CMMP include the design and specifications for the proposed vapor mitigation system that is planned for the future site building. The system will be concurrent with building construction. The proposed system is depicted in Figures 3 and 4.

The proposed vapor mitigation system will be constructed with sub slab perforated piping in the subbase gravel. A chemically resistant vapor barrier will be installed under the floor slab on top of the compacted gravel subbase. A sand bedding or geotextile fabric will be installed first over the gravel subbase to protect the vapor barrier from damage during installation. The vapor barrier is designed to prevent VOC permeation and movement into the building space. The product is Perminator™ EVOH manufactured by W.R. Meadows®. The product specifications and installation guidance are included in Appendix B.

Piping for vapor collection in the subbase gravel will be 4-inch nominal diameter perforated PVC pipe installed at a 10-foot spacing parallel to the long axis of the slab. Piping will be manifolded below grade with one pipe exiting the slab to be reserved as a stack for an active venting system if active venting is determined to be necessary after construction (see discussion in following paragraph).

Vapor monitoring will be performed after construction to evaluate the effectiveness of the vapor barrier in preventing vapor intrusion. This monitoring will consist of one year of quarterly vapor sampling (i.e., four sampling events) from a sample port installed on the sub slab piping manifold. The vapor sampling events will occur during periods of lower relative barometric pressure to the extent practicable. The analytical results will be compared to the contaminant specific Occupational ODEQ risk-based concentrations for soil gas (RBC_{sv})⁴. If sub slab soil vapor contaminant concentrations do not exceed an RBC_{sv} during any quarterly monitoring event, quarterly monitoring will be discontinued.

⁴ ODEQ. 2018. *Risk-Based Concentrations for Individual Chemicals*. Oregon Department of Environmental Quality, Environmental Cleanup Program. Revised May 2018. Accessed at: <https://www.oregon.gov/deq/hazards-and-cleanup/env-cleanup/pages/risk-based-decision-making.aspx>

If any sub slab vapor contaminant concentration exceeds its respective RBC_{sv} during quarterly monitoring, indoor ambient air sampling would be recommended to determine if indoor air concentrations exceed any risk-based air inhalation standards (RBC_{air})⁴. If indoor air sampling detects an exceedance of any RBC_{air} standard, measures will be taken to upgrade the vapor mitigation system to include active venting. Active venting would involve installing a radon-type venting fan and vacuum measurement (i.e., manometer) to the stack. Active venting would be initiated and maintained with periodic vapor monitoring as required by the ODEQ.

4.0 HEALTH AND SAFETY PLAN

A site-specific health and safety plan (HASP) is concurrently being developed by Hydrocon to provide and maintain effective safeguards for subsurface worker health and safety when conducting planned and defined subsurface work in the CMMA.

This HASP conforms to the requirements of the Occupational Safety and Health Rules identified in Oregon Administrative Rule (OAR) Chapter 437, Division 2, Subdivision H–Hazardous Materials; and the Occupational Safety and Health Administration (OSHA) standards outlined within 29 CFR Part 1910 and 29 CFR Part 1926, including *Hazardous Waste Operations and Emergency Response* regulations (29 CFR 1910.120 and 29 CFR 1926.65).

The components of the HASP include:

- The use of appropriately trained site workers;
- Assignment of site-safety officer's authority and responsibilities, and personnel roles;
- Pre-entry briefing;
- Identification and evaluation of contaminated media and site hazards;
- Establishment of Hazard Communication Policy
- Job Site Protection Policy
- Identification of operational hazards (e.g., heavy equipment operation);
- Identification of chemical hazards and permissible exposure levels (PELs);
- Confined space entry policy and procedures;
- Excavation / Trenching safety procedures and requirements;
- Personal Protective Equipment (PPE) requirements;
- Field monitoring methods and action levels for implementing additional safety precautions;
- Conceptual site layout;
- Decontamination procedures;
- Hospital Route Map/Emergency plan; and

- Plan review and daily health and safety log.

The HASP requires workers involved in subsurface work to use a minimum level of personal protective equipment (PPE) such as protective clothing, chemically-resistant gloves and boots, hard hats, etc., which are consistent with protection against the chemicals of concern within the media at the site (i.e., petroleum contamination). The HASP also defines appropriate protocols for air monitoring, action level upgrades, and worker decontamination, and augments the Contractor's standard HASP for normal subsurface work.

Potential petroleum-contaminated media is expected to be encountered within the CMMA at depths between 1- and 14-foot bgs. Detected petroleum concentrations in soil and groundwater may exceed applicable RBCs, including the RBC for construction and/or excavation worker direct contact. Therefore, all contractors conducting subsurface work within the CMMA are responsible for the safety of their workers, and shall provide training for their employees on how to identify characteristics of contaminated media. Prior to conducting construction and excavation work within the CMMA, the work area should be secured from access by the general public. When PCS or contaminated groundwater is encountered during subsurface operations within the CMMA, the Construction and Excavation Contractors shall perform the following:

- Stop all work in that area, and notify the property owner immediately.
- Remove workers from the immediate area of the contaminated area until conditions can be evaluated in accordance with the HASP and this CMMP.
- Ensure that no contaminated material is removed, or leaves the site.

5.0 CONTAMINATED SOIL MANAGEMENT

When removal of petroleum-impacted soil from the site is planned, the Construction and Excavation Contractors shall perform the following:

- Upon initiation of work, conduct work in accordance with the project HASP.
- Select a location for temporary storage of the contaminated soil.
- Excavate and separate contaminated soil in a manner that prevents co-mingling with non-contaminated soil with the assistance of an Environmental Consultant. The Contractors shall minimize dust during excavation, and the Environmental Consultant shall monitor according to calculated dust action level. Dust action level exceedances shall necessitate cessation of activities and stabilization of the dust release mechanism. Soils excavated from areas outside of the CMMA are not likely to encounter petroleum-contaminated soil. Non-contaminated media and can be handled as native soil outside the scope of the CMMA.
- Place contaminated soil in portable drop boxes or other suitable receptacles with lids (supplied by Contractor), or place soil on top of an impervious lined surface and cover with a minimum of 6-

mil plastic sheeting (supplied by Contractor). Fugitive dust should be minimized, and erosion and runoff prevented from stockpiled contaminated soil by use of berms and other stabilization measures.

- Collect an appropriate number of waste profile samples to characterize contaminant concentrations in the waste pile and provide data for waste code determination, categorization, and disposal requirements. Typically, three soil samples for every 100 cubic yards is representative. Soil samples should be collected at least 12 inches below the surface of the pile.
- Contaminated soil material may not be stored onsite longer than 30 days without authorization issued by the DEQ. If the material is stored on-site, a temporary barrier should be placed around the waste with visible hazardous waste signs. The barrier should be of sufficient height to prevent unauthorized access and should completely surround the drop box or covered soil. In addition, the barrier should be placed around the contaminated soil excavation until backfilling has occurred to prevent accidental injury.
- Arrange for transport of the contaminated soil to a pre-approved treatment or disposal facility in accordance with applicable environmental laws.
- Trucks surfaces and tires shall be swept free of soil to avoid tracking of contaminated soil off-site. Trucks shall not leave the site with free liquids draining from the contaminated soil.
- Arrange for backfilling of excavation with certified clean fill under specifications for the intended surface use and mechanical soil loads.
- Maintain file of all contaminated soil disposal receipts.
- Decontaminate equipment that has come into contact with contaminated soil by scrubbing and high temperature pressure wash (supplied by Contractor). Decontamination will occur in a pre-approved decontamination area with secondary containment. Rinsate generated during decontamination will be collected and disposed of at a pre-approved disposal facility (as determined by Environmental Consultant) in accordance with applicable environmental laws.

When contaminated soils are removed from the CMMA, the Environmental Consultant shall perform the following:

- Environmental Consultant will advise the Contractor on which excavated materials to segregate.
- Environmental Consultant will determine the disposal method(s) and location(s) of the contaminated soil based on sample analytical results.
- Environmental Consultant will collect discrete soil samples from the segregated materials for submittal to an analytical laboratory for testing. The samples will be tested for gasoline-range TPH per Northwest Method NWTPH-Gx, diesel-range TPH per Northwest Method NWTPH-Dx,

VOCs per EPA Method 8260B, lead by EPA Method 6010, and any additional analyses required by the disposal facility.

- Environmental Consultant will obtain disposal or treatment permit(s) and DEQ authorization as necessary.
- Environmental Consultant will provide the Contractor with a copy of the approved soil disposal/acceptance permit and manifest.

6.0 CONTAMINATED GROUNDWATER MANAGEMENT

Based on existing data from the Site, groundwater may be encountered at depths between 1- and 6-foot bgs. All groundwater encountered in the CMMA shall be considered contaminated until analytical testing confirms otherwise. If dewatering activities occur any groundwater generated in the CMMA will need to be managed appropriately. Depending on anticipated volumes and/or duration, temporary storage and transport to a disposal facility or securing a permit to treat and discharge to either the storm or sanitary sewer are possible options.

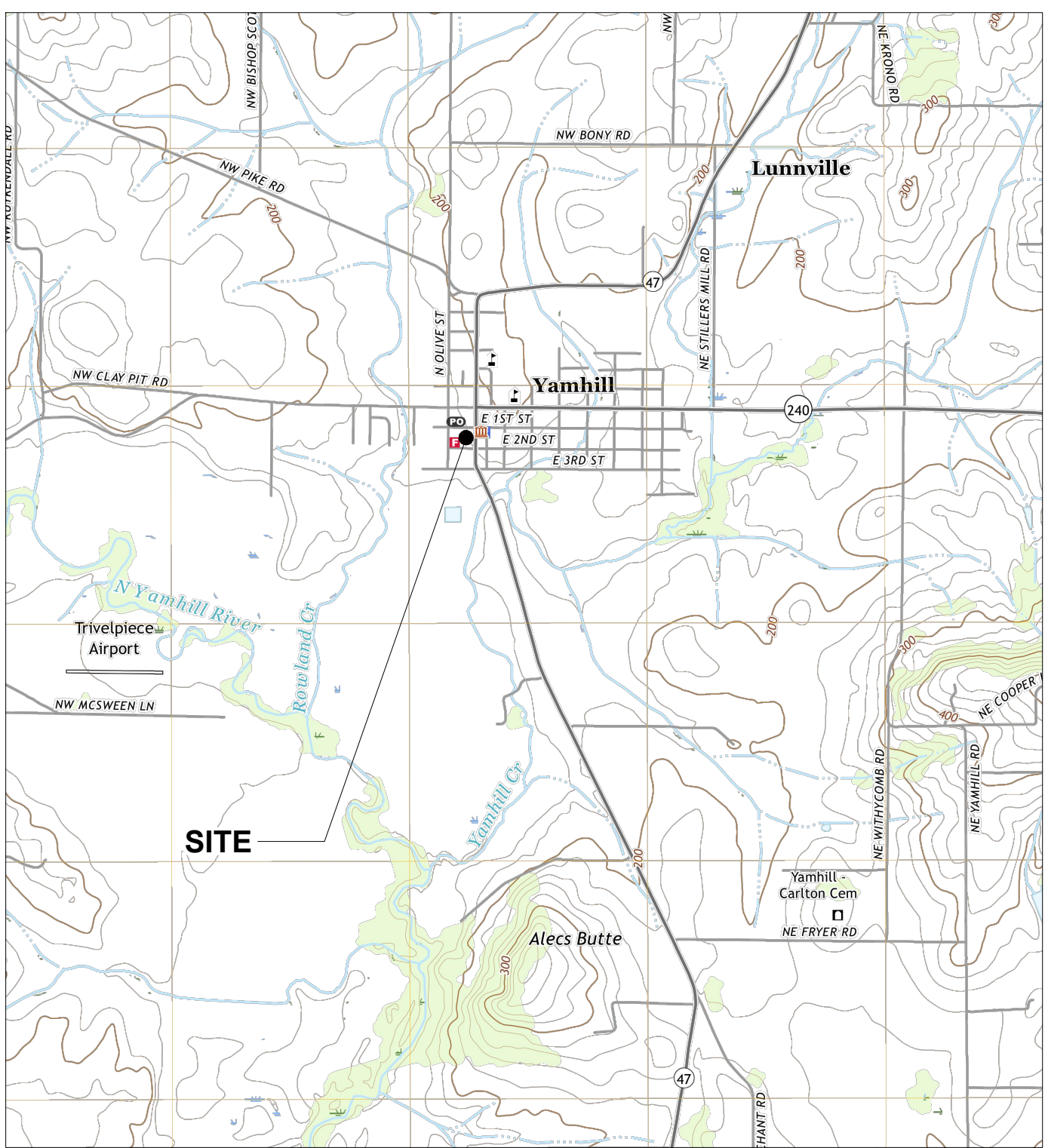
In the event that contaminated groundwater is encountered during excavation within the CMMA, and removal is required, the following should be conducted:

- Contractor shall conduct work in a manner that is protective of human health and the environment, and in accordance with the HASP.
- Contractor will select a location for temporary storage of pumped excavation water.
- Contractor will supply equipment including but not limited to pump, generator, hosing, and holding tank or other appropriate container(s).
- Environmental Consultant will collect a sample of the containerized water for submittal to an analytical laboratory for testing of gasoline-range TPH per Northwest Method NWTPH-Gx, diesel-range TPH per Northwest Method NWTPH-Dx, VOCs per EPA Method 8260B, and lead by EPA Method 6010.
- Environmental Consultant will determine regulatory waste status and disposal method/location for contaminated water based on the analytical test results.
- Environmental Consultant will obtain disposal/treatment/discharge permits and will provide Contractor with a copy of the approved disposal/treatment/discharge/acceptance permit or manifest.
- If discharge to the sewer system is permissible, Contractor will provide equipment to discharge from container(s) to sewer access under city permit.

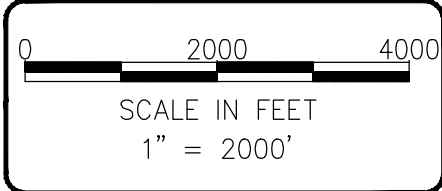
7.0 RECORD KEEPING

The contractor or environmental consultant will keep daily records of site safety briefings regarding work in the CMMA, as well as prepare daily reports to document management of contaminated media. The contractor shall use a waste manifest or bill of lading for each off-site shipment of contaminated media. The waste manifest or bill of lading shall include the date and time of shipment, the name of the transportation company, the name of the truck driver, the treatment of disposal site, and a brief description of the contaminated media (e.g., soil, groundwater).

FIGURES



NOTE(S):
 CARLTON QUADRANGLE,
 OREGON - YAMHILL COUNTY
 7.5 MINUTE SERIES (TOPOGRAPHIC)



314 W 15th Street, Suite 300, Vancouver, Washington 98660
 Phone 360.703.6079 Fax 360.703.6086

DATE: 8-30-2022
 DWN: LC
 CHK: CS
 APPROVED: CS
 PRJ. MGR: CS
 PROJECT NO:
 2022-061

FIGURE 1
 SITE LOCATION MAP
 CONTAMINATED MEDIA MANAGEMENT PLAN
 E&M CONCRETE
 210 S MAPLE STREET
 YAMHILL, OREGON


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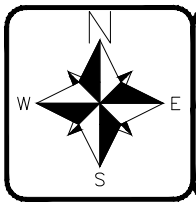
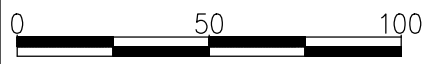


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Legend



Contaminated Media Management Area

SCALE IN FEET
1" = 50'



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Phone 360.703.6079 Fax 360.703.6086

DATE: 8-30-2022
DWN: LC
CHK: CS
APPROVED: CS
PRJ. MGR: CS
PROJECT NO:
2022-061

FIGURE 2
SITE PLAN
CONTAMINATED MEDIA MANAGEMENT PLAN
E&M CONCRETE
210 S MAPLE STREET
YAMHILL, OREGON

W 1st St

W 1st St

47



90° ELBOW W/ CAP
(STACK PIPE TO BE CONNECTED AT ELBOW IF NEEDED)

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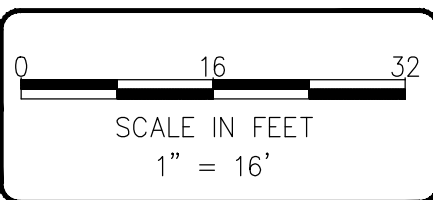
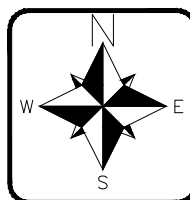
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Legend

--- 4-inch Diameter Perforated PVC Vapor Collection Piping

— 4-inch Diameter Solid PVC Manifold Piping

Proposed Slab



HydroCon

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FIGURE 3
VAPOR BARRIER LAYOUT
CONTAMINATED MEDIA MANAGEMENT PLAN
E&M CONCRETE
210 S MAPLE STREET
YAMHILL, OREGON

ATTACHMENT A
CMMP (GeoEngineers, 2011)

Contaminated Media Management Plan

Senz Automotive Service
Yamhill, Oregon

for

Oregon Department of Environmental Quality

January 17, 2011



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**Contaminated Media Management Plan
Senz Automotive Service
Yamhill, Oregon**

File No. 2787-039-01

January 17, 2011

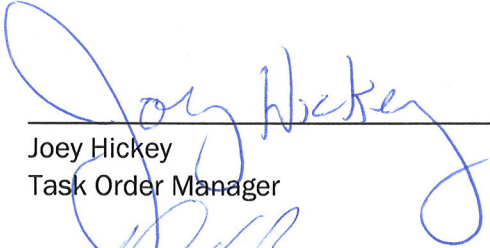
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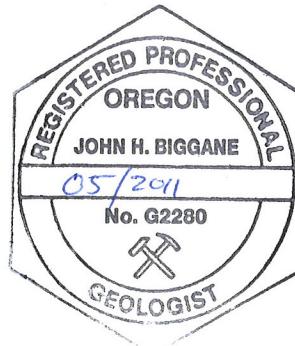
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JFH:JHB:jrm

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1.0 INTRODUCTION

This Contaminated Media Management Plan (CMMP) has been prepared for the Oregon Department of Environmental Quality (DEQ) for the Senz Automotive Service facility (former Senz station) and surrounding properties (off-site; collectively, the “site”) in Yamhill, Oregon. The location of the site relative to surrounding physical features is shown in Figure 1. The general layout of the site is presented in Figure 2. GeoEngineers completed the services described herein under Oregon Department of Environmental Quality (DEQ) Task Order No. 58-08-16.

This plan is intended to minimize risks to worker health and the environment due to contaminants, and outlines procedures for the handling and disposal of petroleum contaminated soil (PCS) and groundwater that may be encountered during future earthwork-related construction activities. It is our understanding that the DEQ will provide the site owner and property owners within the locality of the facility (LOF) a copy of this CMMP for use at the site during future earthwork-related activities (such as utility work) that may encounter contaminated soil or groundwater. An electronic copy of the CMMP will also be placed on the DEQ project web page.

The LOF is defined in DEQ rules as – “any point where a human or an ecological receptor contacts, or is reasonably likely to come into contact with, facility-related hazardous substances.” (See Oregon Administrative Rules [OAR] 340-122-0115 and related). For the purposes of this CMMP, any ground disturbing work within the LOF as shown on Figure 2 should be considered a location where contaminated groundwater or soil could be encountered, but the boundary of the LOF is only an estimate based on the information available at the time this CMMP was developed (December 2010) and does not account for other possible sources of contamination.

GeoEngineers prepared this CMMP in accordance with generally accepted professional practices related to the nature and extent of contamination at the time of the preparation of this CMMP. This CMMP must be modified as necessary to reflect the specific project and conditions expected to be encountered. Future parties conducting work within the LOF must retain an environmental professional to modify, interpret and implement the requirements of this CMMP.

2.0 BACKGROUND

The former Senz station consists of an approximately 30,800 square foot parcel at 210 South Maple Street, in Yamhill, Oregon. Contamination released from the former Senz station has impacted properties to the west and south and some portions of First Street and Maple Street.

The former Senz station included a service station building, a gasoline dispenser island, a diesel dispenser island, propane aboveground storage tank (AST) and dispenser, and a gasoline/diesel AST. These facilities were removed during December 2009 during the Interim Removal Action Measure (IRAM) (GeoEngineers, 2010).

The former Senz station property is currently vacant and gravel-covered. The surface of the former Senz station slopes gently downward to the west and southwest.

The former Senz station property is bounded by First Street on the north and Maple Street (Oregon Highway 47) on the east. A restaurant is located adjacent and south, a fire station is located to the southwest, and a mostly vacant lot (which includes a fire department storage building) is located adjacent and west of the former Senz station property. Residential properties are located further west and south of the former Senz station and other commercial properties are located further to the north, east, and south.

Numerous environmental assessments and investigations have been completed that have documented the presence of petroleum-related contamination in the soil and groundwater beneath the site. A more complete summary of previous work at the site can be found in GeoEngineers' Site Investigation Report, dated April 8, 2010, and GeoEngineers IRAM report, dated April 12, 2010. This information is available for review at the DEQ office in Salem, Oregon in the Western Region Environmental Cleanup Leaking Underground Storage Tanks (LUST) cleanup files, under the site number, LUST #36-88-4062 (Senz Automotive Service) and LUST #36-06-2111 Yamhill Station.

3.0 SOIL AND GROUNDWATER CONDITIONS

Soil within the LOF consists of brown silt with some clay between the surface and approximately 15 feet below ground surface (bgs). The brown silt and clay is underlain by greenish-gray clay and very stiff silt, which extends to at least 34 feet bgs. The depth to shallow groundwater beneath the site generally ranges between approximately 1 and 12 feet bgs. The inferred direction of shallow groundwater flow is to the southwest, which is generally parallel to the topographic gradient.

4.0 CONTAMINANT INFORMATION

Gasoline, diesel and oil-range hydrocarbons and their associated constituents are generally present in soil between the surface and approximately 14 feet bgs. The highest concentrations of gasoline-range hydrocarbons and volatile organic compounds (VOCs) are present in soil at the southwest portion of the former Senz station and near the alignment of the former clay drain pipe that is located north of the fire station parking lot. Gasoline-range hydrocarbons and VOCs are also present in shallow groundwater at the site. The approximate extent of PCS and groundwater contamination at the site is presented in Figure 2.

The LOF is defined as the area that is currently impacted or is reasonably likely to be impacted in the future by contaminants released at the site.

The LOF consists of soil between approximately 1 and 14 feet bgs, and shallow groundwater. The LOF includes the former Senz Automotive Service station property (tax lot 2900), small areas in the First Street and Maple Street rights-of-way; most of the Yamhill Fire Department properties (including tax lots 2800 [west of the former gas station]; a portion of tax lot 2801 [west of tax lot 2800] & 3500); the Pythian Hall property (tax lot 3400); a portion of the

restaurant (tax lots 3000 & 3100 [south of the former gas station], a portion of residential properties (tax lots 3600, 3700 [South of the Fire Station and across 2nd Street]), and possibly, a small part of tax lots 3200 and 3300. Figure 2 shows the locations of the tax lot and the estimated lateral extent of the LOF. DEQ recommends that personnel that may encounter contaminated soil and/or groundwater review this CMMP to familiarize themselves with the guidance provided herein prior to beginning activities that require disturbance or management of potentially contaminated soil and/or groundwater. All soil/groundwater determined to be potentially contaminated during construction shall be handled and characterized as described in this CMMP.

Soil and groundwater that is contaminated at any concentration and removed from the subsurface during construction must be handled in accordance with State of Oregon regulations. Additional information regarding recognition and management of contaminated soil and groundwater is presented in Section 6.0.

5.0 WORKER SAFETY

Each involved entity is responsible for the safety of their respective workers. This includes implementation of any training requirements, safety plans, monitoring, certifications and any other action or requirement that may be required or prudent prior to beginning site activities. This CMMP or other notification must be provided to employees who will be working on-site. Prior to any ground disturbing activities, a utility locate should be performed to identify potential utilities in proposed work areas.

Each involved party will make preliminary assessments of potentially contaminated media as it relates to worker safety. Occupational health guidelines for chemical hazards (i.e., Occupational Safety And Health Administration [OSHA] and National Institute for Occupational Safety and Health [NIOSH] can be used to evaluate site conditions. The evaluation should consider exposure limits (i.e., time weighted average [TWA], short term exposure limit [STEL], permissible exposure limit [PEL]), exposure symptoms, and personal protection equipment. Specific recommendations should be provided to protect worker safety.

All entities are responsible for notifying and updating their employees of potential site hazards that may be encountered during the project. A health and safety plan (HASP) will be required to perform excavation and/or dewatering within contaminated areas of the site. Each involved entity will prepare and be solely responsible for implementation of a site-specific HASP in accordance with requirements of the Oregon Occupational Safety and Health Administration (OR-OSHA).

6.0 HANDLING AND DISPOSITION PLAN FOR CONTAMINATED SOIL AND GROUNDWATER

This section provides guidance for the following: 1) identification; 2) characterization; 3) handling; and 4) disposal of contaminated soil and groundwater that may be encountered during earthwork-related construction activities at the site.

All parties involved shall be solely responsible for all matters related to the identification of contaminated soil and groundwater encountered during the earthwork-related construction. Earthwork contractors must provide a contaminant awareness training program for their on-site workers. As part of the contractor's contaminant awareness training program, workers will be advised on basic methods and techniques in detecting hazardous soil and/or groundwater during earthwork construction activities. Contaminant awareness training should include discussion of the nature and extent of contamination, the hazards posed by contamination and risk mitigation measures.

The contractor shall monitor soil, groundwater and waste materials by instructing workers in observing and reporting questionable materials, oily or chemical odors, and oily sheen or color on soil and water. If unexpected hazardous or contaminated materials are encountered, the contractor shall:

1. Stop all work in that area.
2. Notify the property owner immediately.
3. Ensure no contaminated material is removed from the site.
4. Remove the work force from the immediate area of the contaminated area.
5. Secure the area from access by the public until such time as all parties involved have verified that site work can be completed in accordance with the Site Specific HASP and this CMMP (modified as necessary to reflect the specific project and conditions expected to be encountered).

6.1 Identification of Potentially Contaminated Soil and/or Groundwater

1. All parties involved will review this plan to familiarize themselves with the presumed location of contamination, prior to beginning the earthwork-related construction activities.
2. If site personnel observe soil and/or groundwater that exhibits one or more of the following field screening characteristics, the soil and/or groundwater shall be identified as potentially contaminated and will be handled and characterized as described below. Note that the absence of these characteristics does not necessarily imply that soil or groundwater does not contain contaminants.
 - staining
 - chemical or petroleum odors
 - a sheen on groundwater and/or
 - a sheen from soil when placed in contact with water
3. In addition, field screening with a photoionization detector (PID), or similar field screening instrument can be used to assess whether volatile chemical compounds are present.

6.2 Handling of Contaminated Soil, Groundwater and Clean Overburden

1. Soil and groundwater that is contaminated requires special handling. Workers are required to be provided with contaminant awareness training.

2. To mitigate potential risks to workers, care should be taken to minimize worker exposure to soil and groundwater during all subsurface earthwork-related activities in contaminated areas (see the LOF as shown in Figure 2) in accordance with the project-specific HASP.
3. A project-specific HASP will be required to perform earthwork-related activities within contaminated areas. The HASP shall be prepared in accordance with the requirements identified in Section 5.0. The contractors shall develop and be solely responsible for implementation of their own site-specific health and safety plan for site workers in accordance with these and any other applicable requirements.
4. Potentially clean overburden should be segregated from contaminated soil. Care should be taken to avoid mixing clean and contaminated soil and thereby paying to send clean overburden soil to the permitted landfill for disposal.
5. Sampling and chemical analysis may be required by the receiving facility (landfill) to obtain their approval for disposal. Existing analytical data may be adequate, although landfill operators may require more recent data for profiling. As such, a representative sample of the contaminated soil typically will need to be obtained for chemical analysis.
6. Transportation of contaminated soil off the site requires specific manifesting, licensing, and insurance requirements. Under no circumstances will contaminated soil leave the site without acceptance by the off-site disposal facility or written authorization from regulatory authorities (local land use, DEQ, etc.) for other treatment and/or disposal. Contaminated soil must be loaded and transported using procedures to prevent its release or spread to other areas of the property or off-site locations. Loading of soil must be performed in a manner that maintains a condition of no visible dust in the work area. Prior to departure from the loading location, all loose soil must be brushed from the truck and returned to the stockpile. Loads leaving the property must be covered by a tarp or other appropriate containment.
7. PCS can be loaded directly into trucks for transport to a facility that is able to accept PCS. Alternatively, PCS can be stockpiled on-site in accordance with the instructions below.
8. Contaminated soil can be secured on-site by placing it either: 1) in a designated stockpile area that is lined and covered by durable plastic sheeting, and bermed to control run-on/runoff; or 2) in labeled roll-off containers, or other covered containers. Access to the secured soil must be restricted by fencing or other physical barriers to prevent unauthorized personnel from contacting the soil. Site workers must comply with Best Management Practices (BMP) for erosion and sediment control.
9. The extent of contaminated soil excavated shall be determined based on field screening, analytical testing and project requirements.

6.3 Analytical Protocols

Samples should be stored in a cooler below 4° Celcius until submitted to analytical laboratory certified by the Oregon and/or National Environmental Laboratory Accreditation Program (ORELAP and NELAP, respectively). Any facility receiving soil from the site (e.g., landfill) should be contacted as to their requirements for acceptance. Samples should be analyzed for suspected contaminants including total petroleum hydrocarbons (TPH) by Northwest Methods NWTPH-Gx and NWTPH-Dx. If volatile compounds are indicated by field screening, samples

should be analyzed for VOCs by Environmental Protection Agency (EPA) Methods 8021, 8260, or a comparable method. If petroleum-related contaminants are detected, additional follow-up analyses (e.g., metals, polynuclear aromatic hydrocarbons) may also be necessary.

Quality control and quality assurance protocols should be followed (see DEQ LUST Quality Assurance Program Plan revised September 9, 2010). Chain-of-custody documentation needs to be maintained. Analytical method reporting limits need to be less than regulatory screening criteria.

6.4 Erosion Control

Based on the nature of the future site work, the appropriate regulatory agency may require an erosion control plan or permit. The contractor must take appropriate steps to prevent the erosion of soil in and from contaminated areas including temporary stockpiles. Erosion control methods may include one or more of the following:

1) Installation of silt fence; 2) use of filter bags and/or fabric; 3) scheduling of activities to avoid rainy periods; and 4) other methods as necessary and appropriate.

6.5 Disposal Options for Soil

1. Transport of soil shall be conducted in accordance with local, state and federal regulations.
2. Trucks shall be loaded in a manner that prevents the spilling or tracking of contaminated soil. Loose material falling onto the exterior of the truck shall be removed before the truck leaves the loading area. On-site truck routes shall be established to minimize or prevent movement of trucks over contaminated areas. All trucks shall be covered before they leave the loading area. The contractor shall be responsible for ensuring that loaded truck weights are within acceptable limits.
3. Trucks shall be decontaminated prior to leaving contaminated areas. Decontamination will consist of sweeping loose soil with brooms and removing significant quantities of adhered soil using hand tools. Trucks that have driven over contaminated unpaved areas shall pass through a wheel wash before entering public rights-of-way.
4. Clean overburden soil can be reused on-site if suitable for construction, or taken off-site for disposal at a non-hazardous landfill facility.
5. Soil with detected contaminants will be transported off-site for permitted disposal at a Resource Conservation and Recovery Act (RCRA) Subtitle D municipal and/or non-hazardous waste landfill facility unless written authorization from regulatory authorities (local land use, DEQ, etc.) for other treatment and/or disposal has been obtained (see DEQ guidance [Petroleum-Contaminated Soils Handling Options](#)).

6.6 Handling Contaminated Groundwater

Similar to the handling of contaminated soil, groundwater encountered during excavation dewatering activities will need to be characterized as a non-hazardous waste. A representative water sample will need to be analyzed for petroleum constituents.

Treatment options for handling contaminated groundwater include: 1) containment in storage tanks and off-site disposal at a permitted facility for treatment or recycling; 2) containment in storage tanks with limited treatment (aeration, etc.); and/or 3) discharge of treated water into a nearby sanitary system only if authorized by the owner and regulatory agencies.

If applicable, the contractor may pursue an option with regulatory agencies to discharge construction generated wastewater to the storm sewer system. Once dewatering activities have commenced, the contractor shall perform daily inspection of the effluent to confirm the effectiveness of treatment and determine the water's cleanliness, in accordance with the permit.

6.7 Permits and Approvals

Involved parties will be responsible for obtaining permits for earthwork activities at the project site. For contaminated soil, approvals and permits will be required from off-site disposal facilities for disposal of contaminated soil. Existing data may be accepted by the landfill, although more recent data may be required for profiling. Sampling for profiling is discussed in this CMMP. Off-site disposal facilities should be contacted regarding their specific requirements.

7.0 LIMITATIONS

This CMMP has been prepared for the use of DEQ. No other party may rely on the product of our services unless GeoEngineers and DEQ agree in advance and in writing to such reliance. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this CMMP was prepared. No warranty or other conditions expressed or implied should be understood.

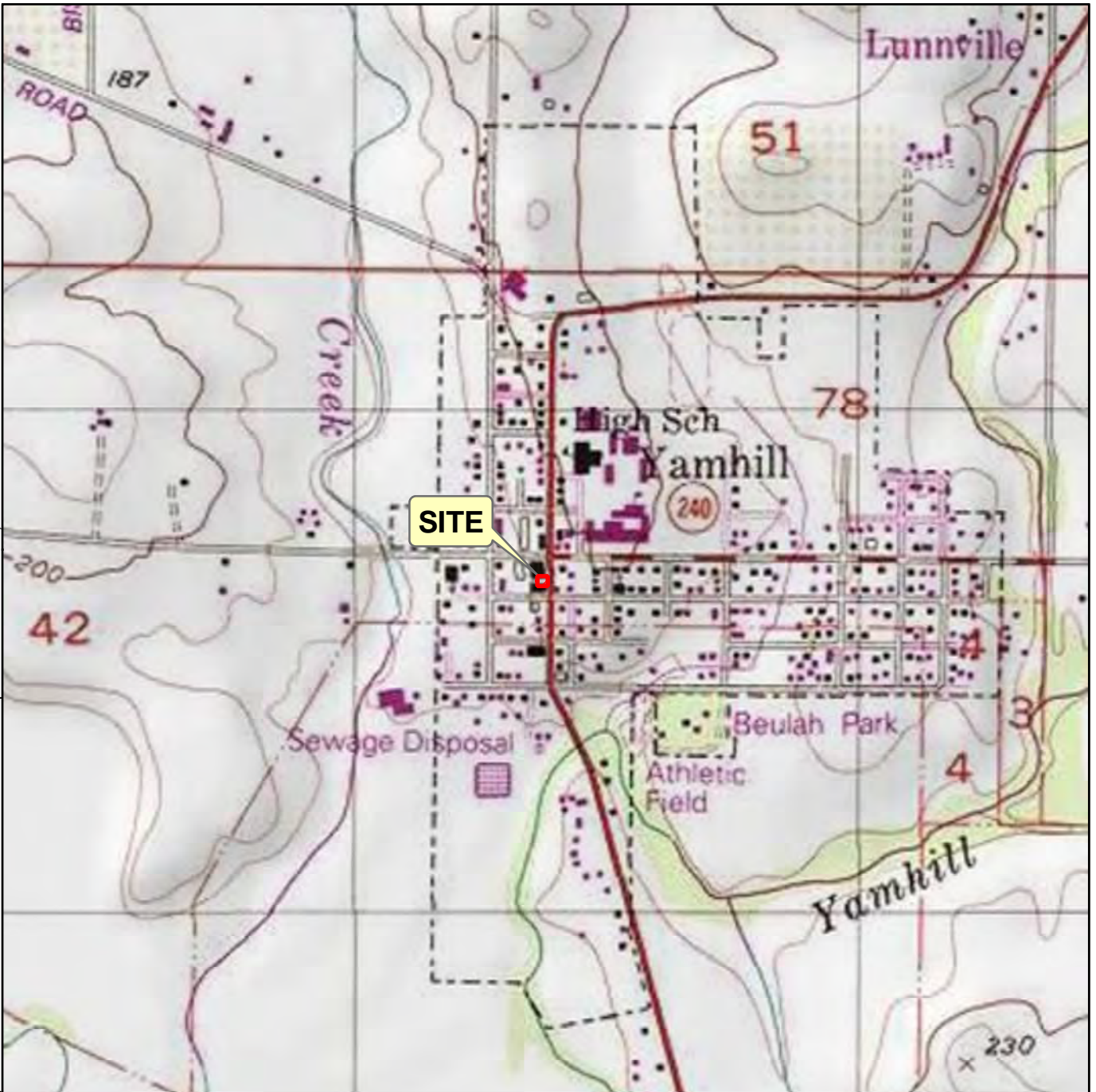
The nature of future development at the site was not known at the time of preparation of the CMMP. This CMMP must be modified as necessary to reflect the specific project and conditions expected to be encountered.

This CMMP was developed based on the investigation of conditions at the property. No study can wholly eliminate uncertainty regarding environmental conditions at a property. There is always a potential that areas of contamination exist that were not identified during the past studies. Further evaluation of such potential would require additional research, subsurface exploration, sampling and/or testing.

Map Revised: October 15, 2010

Path: P:\2\2787039\01\GIS\278703901_Figure1.mxd

Office: PORT



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

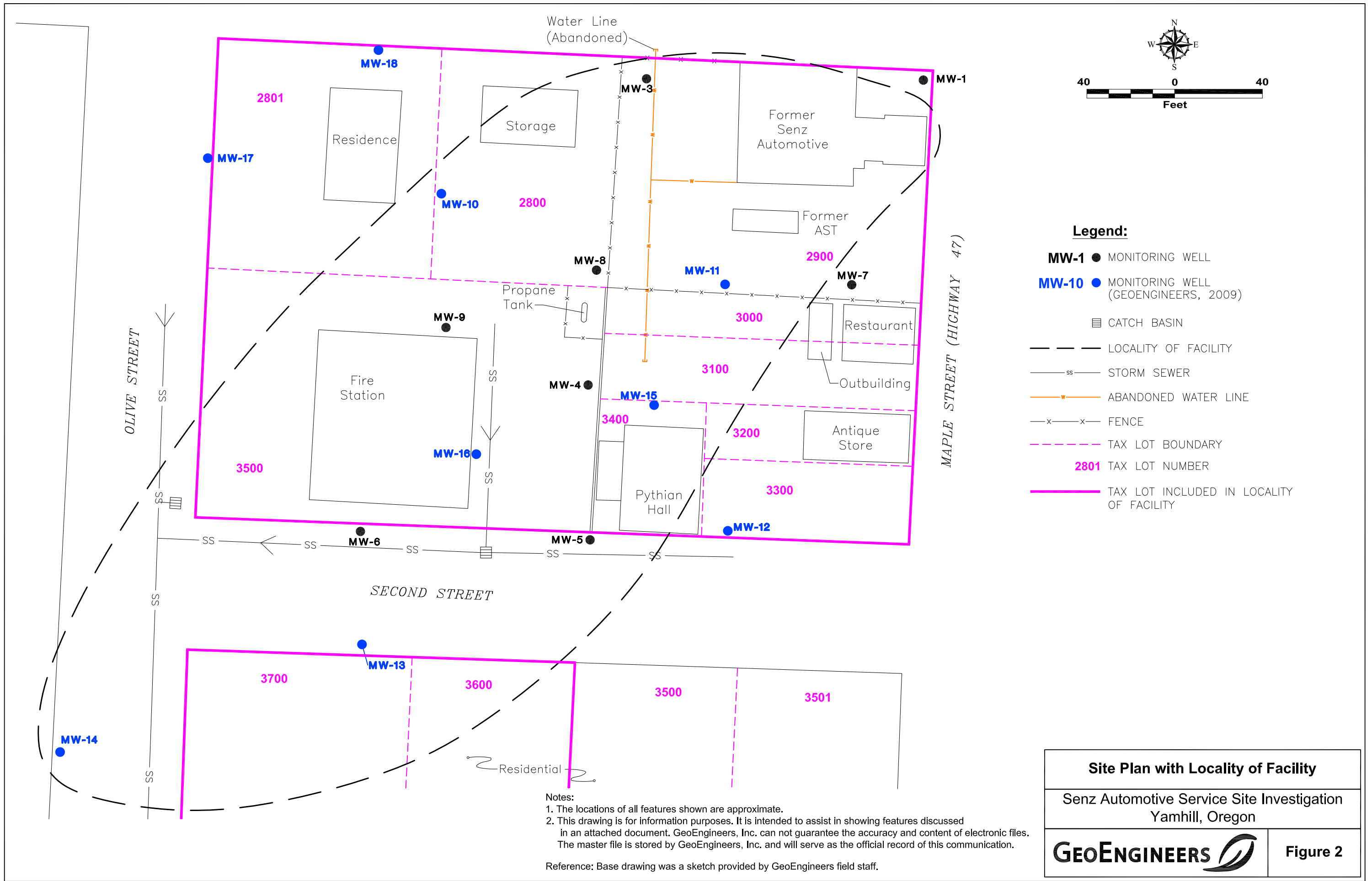
US Topographic Map from National Geographic Services
 (March 2008 - ArcWeb Extension)
 ESRI Data & Maps, Street Maps 2008
 Transverse Mercator, Zone 10 N North, North American Datum 1983
 North arrow oriented to grid north

Vicinity Map

Senz Automotive Service Site
 Yamhill, Oregon



Figure 1



- Legend:**
- MW-1** ● MONITORING WELL
 - MW-10** ● MONITORING WELL (GEOENGINEERS, 2009)
 - ▢ CATCH BASIN
 - LOCALITY OF FACILITY
 - ss— STORM SEWER
 - w— ABANDONED WATER LINE
 - x—x— FENCE
 - - - - TAX LOT BOUNDARY
 - 2801 TAX LOT NUMBER
 - TAX LOT INCLUDED IN LOCALITY OF FACILITY

Notes:
 1. The locations of all features shown are approximate.
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base drawing was a sketch provided by GeoEngineers field staff.

Site Plan with Locality of Facility	
Senz Automotive Service Site Investigation Yamhill, Oregon	
GEOENGINEERS	Figure 2

ATTACHMENT B
Vapor Barrier Specifications



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MAY 2018
(Supersedes July 2017)**PERMINATOR® EVOH****Underslab Gas Vapor Barrier****DESCRIPTION**

PERMINATOR EVOH is a seven-layer co-extruded barrier manufactured from state-of-the-art polyethylene and EVOH resins. Designed to provide superior resistance to gas and moisture transmission, PERMINATOR EVOH is a highly resilient underslab gas/vapor barrier designed to restrict naturally occurring gases, such as radon, methane, gasoline, solvents, oils, and hydrocarbons, from migrating through the ground and into the concrete slab.

USES

When properly installed, PERMINATOR EVOH resists gas and moisture migration into the building envelope to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building, including floors, walls, and crawl spaces. PERMINATOR EVOH protects flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold, and degradation.

FEATURES/BENEFITS

- Resistant to gasoline, oils, solvents, hydrocarbons, radon, and methane.
- Available in 150' (45.7 m) long rolls.
- Helps reduce the penetration of moisture and water vapor through the slab into the structure.
- Helps reduce fungus, mildew, and mold.
- Tough enough to withstand normal construction jobsite conditions and traffic ... will not crack, puncture, snag, split, or tear easily.
- Seven-layer construction with EVOH gas barrier core.

PACKAGING

10' (3 m) x 150' (45.7 m) Rolls

SPECIFICATIONS

- Meets or exceeds all requirements of ASTM E 1745-11 Class A, B & C.

APPLICATION

Surface Preparation ... Level, tamp, or roll earth or granular material beneath the slab base as specified by supplied architectural drawings. Follow ASTM E-1643-10 (standard practice and procedure for installation of vapor retarder used in contact with earth or fill under concrete slabs). Reference American Concrete Institute (ACI) 302.1R-15 Section 6.1.4 – Base Material for sub-grade preparation prior to placement of PERMINATOR.

Horizontal Application ... Unroll 150' (45.7 m)

PERMINATOR EVOH over the area where the slab is to be poured. Cut to size if necessary. PERMINATOR should completely cover the pour area. All joints/seams, both side and end, should be overlapped 12" (304.8 mm) and taped using 4" (101.6 mm) wide PERMINATOR EVOH TAPE. (Note: The PERMINATOR EVOH TAPE area of adhesion should be free from dust, dirt, and moisture to allow maximum adhesion of the pressure-sensitive tape.) To ensure placement of laps, PERMINATOR BUTYL TAPE should be used underneath the overlap area to hold membrane in place as PERMINATOR EVOH TAPE is applied.

The most efficient installation method includes placing PERMINATOR EVOH on top of the footing and against the vertical wall. This will sandwich PERMINATOR EVOH between the footing, vertical wall, and poured concrete floor. This will help protect the concrete slab from external moisture sources once the slab has been placed.

Before placing concrete slab, make sure all penetrations, block outs, and damaged areas are repaired/addressed. For detailed information on detailing penetrations, such as pipe clusters, please refer to INSTALLATION GUIDELINES: PERMINATOR EVOH PENETRATIONS available at www.wrmeadows.com.

Numerous municipal building codes do not allow the placement of vapor barriers over the footing, due to breaking of the bond between the wall and footing. Although this is not an optimal application method, W. R. MEADOWS approves this alternate method when required by building code.

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TECHNICAL DATA

Properties	Test Method	Result
Appearance		White/Green
Thickness, Nominal		20 Mil (0.51 mm)
Weight		102 lb./MSF (498 g/m ²)
Classification	ASTM E 1745	Class A, B, and C
Tensile Strength	ASTM E 154, Section 9, (D-882)	58 lbf (10.2 Kn/m)
Impact Resistance	ASTM D 1709	2600 g
Permeance (New Material)	ASTM E 154, Section 7 ASTM E 96, Procedure B	0.0098 Perms grains/(ft ² ·hr·in·Hg) [0.0064 Perms g/(24hr·m ² ·mm Hg)]
Permeance (After Conditioning) (Same Measurement as Above Performance)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 (0.0052) 0.0079 (0.0052) 0.0097 (0.0064) 0.0113 (0.0074)
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr·ft ² (0.0028 gm/hr·m ²)
Benzene Permeance	Aqueous Phase Film Permeance	1.57E-10 m/s
Toluene Permeance	Aqueous Phase Film Permeance	2.18E-10 m/s
Ethylbenzene Permeance	Aqueous Phase Film Permeance	1.71E-10 m/s
M & P Xylenes Permeance	Aqueous Phase Film Permeance	1.62E-10 m/s
O Xylene Permeance	Aqueous Phase Film Permeance	1.53E-10 m/s
Perchloroethylene (PCE)	Aqueous Phase Film Permeance	1.5 x 10 ⁻⁹ m/s
Trichloroethylene (TCE)	Aqueous Phase Film Permeance	2.4 x 10 ⁻⁹ m/s
Radon Diffusion Coefficient	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s
Methane Permeance	ASTM D 1434	3.68E-12 m/s Gas Transmission Rate (GTR): 0.32 mL/m ² ·day·atm
Maximum Static Use Temperature		180° F (82° C)
Minimum Static Use Temperature		-70° F (-57° C)

LEED INFORMATION

May help contribute to LEED credits:

- EAp2: Minimum Energy Performance
- EA2: Optimize Energy Performance
- MRc9: Construction and Demolition Waste Management

For CAD details, most current data sheet, further LEED information, and SDS, visit www.wrmeadows.com.

**LIMITED WARRANTY**

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.



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JANUARY 2020
 (Supersedes December 2018)

PERMINATOR® EVOH TAPE

Underslab Gas Vapor Barrier

DESCRIPTION

PERMINATOR EVOH TAPE is a single-sided, seven-layer gas barrier tape with a release liner for ease of installation. The backing contains a layer of highly impermeable EVOH. This backing is designed to block migration of radon, methane, and VOCs. An aggressive acrylic adhesive in PERMINATOR EVOH TAPE provides outstanding adhesion to PERMINATOR EVOH over a wide temperature range.

USES

PERMINATOR EVOH TAPE is used overlaps and joints of PERMINATOR EVOH. PERMINATOR EVOH TAPE should be used in all installations to ensure complete sealing overlaps, joints, and penetrations. The use of PERMINATOR EVOH TAPE helps ensure a complete gas barrier in critical overlaps and joins where harmful gasses could escape if not properly addressed.

FEATURES/BENEFITS

- Easy to install.
- Helps block radon, methane, and VOC migration.
- Strong adhesion and bond.

PACKAGING

4" x 160' rolls (101.6 mm x 48.8 m) Rolls (12/Carton)

COVERAGE

One roll of tape will adhere approximately one roll of PERMINATOR EVOH.

TECHNICAL DATA

Property	Typical Test Results	Test Method
Perms	0.014 g/(24h*100 in ²)	ASTM E96, Procedure B

APPLICATION

Surface Preparation ... The PERMINATOR EVOH TAPE area of adhesion should be free from dust, dirt, and moisture, to allow maximum adhesion of the pressure-sensitive tape.

Application Method

... All PERMINATOR EVOH membrane joints/seams, both side and end, should be overlapped 12" (304.8 mm) and taped using 4" (101.6 mm) wide PERMINATOR EVOH TAPE. To ensure proper placement of the PERMINATOR EVOH laps, PERMINATOR BUTYL TAPE should be used underneath the overlap area to hold membrane in place as PERMINATOR EVOH TAPE is applied.

LEED INFORMATION

May help contribute to LEED credits:

- EAp2: Minimum Energy Performance
- EAc2: Optimize Energy Performance
- MRc9: Construction and Demolition Waste Management

For most current data sheet, further LEED information, and SDS, visit www.wrmeadows.com.

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LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.



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NOVEMBER 2019
(Supersedes September 2019)

PERMINATOR® BUTYL TAPE

Double-Sided Butyl Tape

DESCRIPTION

PERMINATOR BUTYL TAPE is a double-sided, reinforced, aggressive, black, butyl rubber tape used in all installations of PERMINATOR EVOH.

USES

PERMINATOR BUTYL TAPE is used to reinforce overlaps of PERMINATOR EVOH. PERMINATOR BUTYL TAPE should be used in all installations to ensure overlaps of the gas barrier are held in place for the next application of PERMINATOR EVOH TAPE and also to help with reinforcement during concrete placement.

FEATURES/BENEFITS

- Non-hardening.
- Flexible.
- Strong adhesion and bond.
- Provides increased permeability.

PACKAGING

2" x 50' (50.8 mm x 15.2 m) Rolls (12/Carton)

COVERAGE

One roll of PERMINATOR EVOH will require just over three rolls of tape for the overlap detailing. Actual quantities may vary based on the amount of additional detailing required.

SHELF LIFE

When stored indoors in original, unopened containers at temperatures between 40° - 90° F, optimum performance and best use is obtained within two years of date of manufacture.

APPLICATION

Surface Preparation ... The PERMINATOR BUTYL TAPE area of adhesion should be free from dust, dirt, and moisture, to allow maximum adhesion of the pressure-sensitive tape.

Application Method... To ensure placement of PERMINATOR EVOH laps, PERMINATOR BUTYL TAPE should be used underneath the overlap area to hold membrane in place as PERMINATOR EVOH TAPE is applied. PERMINATOR EVOH TAPE should be placed in the middle of the overlap. Once overlaps of PERMINATOR EVOH are held in place by PERMINATOR BUTYL TAPE, the application of PERMINATOR EVOH TAPE on the outside of the overlap can be applied.

LEED INFORMATION

May help contribute to LEED credits:

- MRc9: Construction and Demolition Waste Management

For most current data sheet, further LEED information, and SDS, visit www.wrmeadows.com.

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