

ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES



**The Landing – Mt. Shasta Business Park
Former Roseburg Lumber “Old Mill”
Mt. Shasta, California**

PREPARED FOR:

**SISKIYOU COUNTY ECONOMIC DEVELOPMENT COUNCIL
1512 S. OREGON STREET
YREKA, CALIFORNIA 96097
EPA GRANT NUMBER: BF-00T69101-0**



PREPARED BY:

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Project No. S9717-06-01
December 1, 2014

Robert Coox, Program Manager
Siskiyou County Economic Development Council
1512 S. Oregon Street
Yreka, California 96097

Subject: ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES
THE LANDING – MT. SHASTA BUSINESS PARK
FORMER ROSEBURG LUMBER “OLD MILL”
MT. SHASTA, CALIFORNIA

Dear Mr. Coox:

In accordance with your request, Geocon Consultants, Inc. has prepared this Analysis of Brownfields Cleanup Alternatives (ABCA) for The Landing – Mt. Shasta Business Park, formerly the Roseburg Lumber “Old Mill” (the Site) located west of the intersection of South Mt. Shasta Boulevard and Loveta Lane in Mt. Shasta City, California. The ABCA was prepared for the Siskiyou County Economic Development Council who is working with the City of Mt. Shasta (the City) to apply for a Brownfields Cleanup Grant from the U.S. Environmental Protection Agency (EPA).

It is our understanding that this ABCA will be submitted with the City’s Brownfields Cleanup Grant proposal to the EPA. This ABCA includes a summary of site background information, results of previous environmental investigations, the planned development and use of the Site, and a preliminary evaluation of appropriate cleanup alternatives.

We appreciate the opportunity to work with you on this project. Please contact us if you have any questions concerning this evaluation or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.


Matthew Lesh, PG
Senior Project Geologist



Jim Brake, PG
Senior Geologist/Vice President

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ANALYSIS OF BROWNFIELDS CLEANUP ALTERNATIVES

1.0 INTRODUCTION AND BACKGROUND

Geocon Consultants, Inc. prepared this Analysis of Brownfields Cleanup Alternatives (ABCA) for The Landing – Mt. Shasta Business Park, Former Roseburg Lumber – Old Mill, (the Site) located west of the intersection of South Mt. Shasta Boulevard and Loveta Lane in Mt. Shasta City, California (Figure 1). The ABCA was prepared at the request of the Siskiyou County Economic Development Council (SCEDC) who is working with the City of Mt. Shasta (the City) to apply for a Brownfields Cleanup Grant for the Site from the U.S. Environmental Protection Agency (EPA).

This ABCA will be included with the City’s Brownfields Cleanup Grant proposal submitted to the EPA. The ABCA includes a summary of: site background information, results of previous environmental investigations, the planned development and use of the Site, and a preliminary evaluation of appropriate cleanup alternatives. This ABCA is intended to be a brief, preliminary evaluation of cleanup alternatives to address each area of concern on the Site. It is not intended to take the place of a comprehensive remedial alternatives screening, evaluation, and selection as would be presented in a Removal Action Workplan or Feasibility Study/Remedial Action Plan (FS/RAP).

Included in the ABCA are a Vicinity Map (Figure 1), a Site Plan (Figure 2) that depicts the three areas of concern that are being targeted for cleanup prior to redevelopment and the approximate boundaries of proposed land uses on the Site, and several maps depicting previous sampling locations and analytical data (Figures 3-1 through 3-6). Photographs 1 through 4 show the areas of concern as observed during the most recent field investigation in December 2013.

1.1 Site Location and Description

The Site is located west of the intersection of South Mt. Shasta Boulevard and Loveta Lane in Mt. Shasta City, California (Figure 2). There is no street address associated with the Site, but it is identified by Siskiyou County Assessor’s Parcel Number (APN) 067-010-010. The Site is in the southern portion of the City within a commercially and residentially developed area.

The Site encompasses approximately 20 acres and is approximately 1,800 feet long in the north-south direction and 500 to 750 feet wide in the east-west direction. A former log pond occupies the northern portion of the Site, and the base of the pond is approximately 10 feet below the surrounding grade of the Site. An intermittent stream, locally referred to as Mill Creek, that originates offsite to the east, flows onto the Site through a culvert beneath South Mt. Shasta Boulevard, flows west through the former log pond, and flows off the Site through a culvert at the western edge of the pond (Figure 2).

Structures associated with historical mill operations have been removed, and the Site is currently vacant. Remnants of former structures are present in the form of concrete pads and foundations, but much of the Site is covered in dense vegetation.

1.2 Operational History

The Site was first developed by the Pioneer Box Company in 1900. Lumber mill operations were reportedly conducted by several parties, most recently Roseburg Forest Products (RFP), at the Site from 1900 until the late 1960s when operations were moved south to the “New Mill.” Historical mill operations at the Site included the use of a dip tank, where lumber was treated with pentachlorophenol (PCP) and placed into an adjacent transfer pit, a boiler room, refuse burner, and a log pond (Figure 2).

According to City representatives, the Site was deeded to the City in 1989. At the time of the property transfer, all of the former mill structures at the Site had been removed and the log pond had been filled with wood debris. During future inspections and assessment, the debris was referred to locally as the “wood pile.”

1.3 Previous Investigations/Regulatory Agency Involvement

This section provides a summary of previous environmental investigations and/or activities conducted at the Site involving regulatory oversight.

1.3.1 Regulatory Inspections and Wood Pile Cleanup

According to reports of previous investigation at the Site available on the Department of Toxic Substances Control (DTSC) EnviroStor website, the Central Valley Regional Water Quality Control Board (CVRWQCB) periodically conducted inspections at the Site from 1964 to 1995 to observe and document waste discharge practices. During an initial site inspection in 1964, the CVRWQCB noted that PCP was used in the dip tank at the Site and that the tank was cleaned three times per year by discharging the liquid to the ground. They also noted that the log pond was full of water, used to store logs, and continuously drained to an offsite drainage west of the Site. In subsequent inspection reports, the CVRWQCB noted that by 1974, the log pond was dry and the wood pile occupied the pond.

In 1988, at the direction of the CVRWQCB, three groundwater monitoring wells were installed in the vicinity of the wood pile. Groundwater samples were collected on a quarterly basis until at least 1993 and analyzed for metals and phenols (including PCP). PCP was reportedly not detected in the samples, and detected metals appeared to be consistent with local background concentrations.

In 1991, the City retained Metcalf and Eddy (M&E) to develop a mitigation plan for the wood pile. M&E collected three surface debris samples from the pile and submitted them for analysis of gasoline-range organics (GRO), benzene, toluene, ethylbenzene, total xylenes (BTEX), oil and grease, and phenols (including PCP). With the exception of BTEX, each of the analytes were detected in the samples. The City subsequently arranged for the wood pile to be transported offsite for use as cover at a local landfill. The CVRWQCB issued a letter in October 1995 indicating that the wood pile removal was nearly complete and further mitigation regarding the wood pile was not required.

1.3.2 1998 and 2005 Targeted Site Assessments

In 1998 and 2005, the EPA conducted Targeted Site Assessments (TSA) at the Site under their Regional Brownfields Program. The assessments were conducted by Ecology and Environment's (E&E) Superfund Technical Assessment and Response Team on behalf of the EPA. The assessments focused on areas of historical lumber mill operations and included soil, sediment, surface water, and groundwater sampling. Samples were analyzed for petroleum hydrocarbons, volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), dioxins/furans, and metals. VOCs were not detected in any of the samples analyzed. Analytical results from the TSAs showed the following areas of the Site had been impacted by historical operations:

- The area of the former dip tank and transfer pit (Figures 3-1 and 3-2) where PCP- and petroleum hydrocarbon (diesel and oil)-impacted soil and groundwater were encountered.
- The area of the former boiler room (Figure 3-3) where shallow soils had been impacted with petroleum hydrocarbons (diesel and oil).
- The northeastern and southeastern portions of the former log pond (Figure 3-4) where shallow soils had been impacted with petroleum hydrocarbons (diesel and oil).
- The former refuse burner (Figures 3-5 and 3-6) where shallow soils had been impacted by dioxins/furans and petroleum hydrocarbons (diesel and oil).
- The convergence of three drainages southwest of the former log pond where elevated concentrations of beryllium and nickel were detected in a surface water sample (WT-2-B on Figure 2).

1.3.3 2007 Targeted Site Investigation

In 2007, URS conducted a Targeted Site Investigation to further assess the extent of PCP- and diesel-impacted soil and groundwater west of the former dip tank and transfer pit. PCP and diesel were detected in a shallow soil and a groundwater sample collected from boring ODT-3 at the western edge of the former dip tank (Figures 3-1 and 3-2). Due to the presence of dense vegetation adjacent to the west of the former dip tank, URS collected "step-out" groundwater samples (ODT-4 and ODT-5) approximately 130 feet downgradient (west) of the former tank. Although PCP and diesel were not detected in either step-out sample, the lack of data for areas closer to the likely source area represented a significant data gap.

1.3.4 2013 Phase II Environmental Site Assessment

In December 2013, we conducted a Phase II Environmental Site Assessment (ESA) to further assess the extent of impacts (fill data gaps) identified during previous environmental assessment of the Site. The Phase II ESA included the advancement of direct-push and hand-auger borings, collection of soil and groundwater samples, and laboratory analysis of samples for constituents of potential concern (COPC) identified at the Site. Soil and groundwater sampling locations and analytical results are shown on Figures 3-1 through 3-6. The Phase II ESA also included collection of a sediment sample from the drainage in closest proximity to the previous surface water sample containing elevated concentrations of beryllium and nickel (Figure 2).

The results of the Phase II ESA showed the following:

- PCP in soil to depths of 8 feet within the footprint and southwest of the former dip tank. The deepest impacts appear to be at the southern end of the dip tank and likely extend to groundwater, which was also found to be impacted with PCP in this area (Figure 3-1).
- Diesel in soil in the central portion of the former transfer pit to a depth of 2 feet. The apparent localized extent of impacts suggests that the source of diesel-range organics (DRO) in soil at this location may be due to a historical spill or dumping of diesel fuel (Figure 3-2).
- Diesel and oil in soil and decomposed wood debris in the area of the former boiler room to a depth of approximately 6 feet (Figure 3-3). The extent of impacts is currently undefined but likely corresponds to the estimated extent of the wood debris in the vicinity of this former feature as shown on Figure 2. The presence of these compounds in soil appears to have also impacted groundwater to the west of the former boiler room.
- Diesel and oil in groundwater in the eastern portion of the former log pond (Figure 3-4). The source of petroleum in groundwater in this area is currently unknown as significant impacts were not found in soil samples collected from this area. It is possible that residual impacts from the former wood pile (Section 1.3.1) have affected groundwater in the former pond, but additional assessment will likely be needed in the future.
- Dioxins/furans and diesel in soil and decomposed wood debris in the area of the former refuse burner to depth of at least 6 feet (Figures 3-5 and 3-6). The extent of impacts is currently undefined but likely corresponds to the estimated extent of the wood debris in the vicinity of this former feature as shown on Figure 2.
- Metal concentrations in a sediment sample (SS-1) collected from a drainage southwest of the former log pond closest in proximity to previous surface water sample WT-2-B were within the range of published background levels. As such, it is likely that the elevated concentrations of beryllium and nickel reported for sample WT-2-B are due to naturally occurring metals in sediment.

The Phase II ESA results indicate that soil at the Site has been impacted by COPCs at concentrations that exceed conservative (residential or “unrestricted” land use-based) project action levels (PAL). The PALs were developed in consultation with EPA based on potential future land uses proposed for the areas of the former dip tank and transfer pit, boiler room, and refuse burner. Concentrations of COPCs in soil exceeding the PALs are a potential threat to human health and the environment and cleanup of soil in the vicinity of these former features would be appropriate prior to redevelopment of these areas. The presence of COPCs in groundwater is not expected to pose limitations on the redevelopment of the Site, however it is likely that additional assessment/monitoring and/or remediation will be necessary to address this issue in the future.

1.4 Project Goal

The goal of site cleanup is to render the Site suitable for redevelopment by minimizing potential health risks to future users of the property from exposure to COPCs in soil. The Site has been targeted for redevelopment with land uses that promote the historical, recreational, and tourism aspects of the City and the Mt. Shasta region including:

- A recreational vehicle (RV) park in the area of the former log pond. This will likely involve filling a portion of the pond to provide a sufficient number of RV spaces.
- A community park/green space area south of the log pond. This area is anticipated to include walking paths, trails, and community use areas.
- A park entrance and interpretive center/trail east of the log pond along Mt. Shasta Boulevard. The center/trail is anticipated to include information, activities, and historical artifacts of the former lumber mill uses and the timber industry in Siskiyou County.

The approximate boundaries of proposed land uses on the Site are shown on Figure 2. Applicable regulations and cleanup standards and an evaluation of site cleanup alternatives are discussed in the following sections.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

This section includes information on the regulations and cleanup standards that are applicable to site cleanup.

2.1 Cleanup Oversight Responsibility

Prior to implementation of site cleanup, the City plans to enter into a Voluntary Cleanup Agreement (VCA) with the DTSC. Under a VCA, the DTSC would provide regulatory oversight of the cleanup, including review/approval of cleanup plans such as a Removal Action Workplan (RAW), community involvement, implementation of the approved remedial alternative, confirmation sampling and analytical testing, and site restoration/closure activities. When the cleanup is complete, the DTSC will issue either a site certification of completion or a “No Further Action” letter indicating that the project site is suitable for its proposed uses.

2.2 Cleanup Standards for Major Contaminants

Cleanup standards will be specified in a RAW and approved by the DTSC. It is anticipated that the following health risk-based screening levels will be used as guidance to indicate that cleanup goals have been attained:

- California EPA’s (Cal/EPA) California Human Health Screening Levels (CHHSL).
- San Francisco Bay Regional Water Quality Control Board’s Environmental Screening Levels (ESL) for petroleum hydrocarbons.
- EPA’s Regional Screening Levels (RSL).

These screening levels were used to develop the PALs referenced in our Phase II ESA (Section 1.3.4) and they are anticipated to be used as cleanup levels for the Site. Specific cleanup levels for site COPCs will be detailed in the RAW.

2.3 Laws and Regulations Applicable to the Cleanup

The cleanup will comply with the U.S. EPA Brownfields Program requirements (e.g. cleanup oversight, public participation, the Davis-Bacon Act, etc.). Applicable requirements with respect to cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations are promulgated under Federal or State law that specifically apply to site cleanups. The more stringent of State or Federal requirements will apply to the cleanup. Typically, California requirements are more stringent than Federal requirements.

Applicable permits will be obtained from the City of Mt. Shasta and/or the Siskiyou County Department of Public Health - Environmental Health Division, as appropriate. Prior to field work, the cleanup areas will be marked on the surface with spray paint, and Underground Service Alert will be contacted, as required by law, to notify subscribing utility companies to locate underground utilities in the vicinity of cleanup areas. The health and safety requirements and procedures for the cleanup will be documented in a site-specific health and safety plan prepared by a Certified Industrial Hygienist (or other qualified professional).

3.0 EVALUATION OF CLEANUP ALTERNATIVES

This section provides a preliminary evaluation of potential cleanup alternatives for the Site. This evaluation considered the effectiveness, implementability, and estimated costs of implementation of each alternative. A more detailed evaluation would be performed and presented in a RAW to be submitted to the DTSC for their review and approval and made available to the public for their review and comment. Based on the redevelopment plans for the Site and the location of historical lumber mill operational areas where significant COPC impacts have been identified, three areas of concern have been targeted for cleanup prior to redevelopment to minimize the threat to human health and the environment. As shown on Figure 2, these areas include the former dip tank, former boiler room, and former refuse burner.

It is likely that the DTSC will allow each area of concern targeted for cleanup to be addressed as a distinct, separate area and require a separate RAW for each one. The cleanup alternatives discussed below are applicable to each of the three areas of concern as potential routes of exposure for site users to the COPCs are similar for each.

3.1 Cleanup Alternatives Considered

The following alternatives have been considered to address soil contamination at the Site:

1. **No Action:** This alternative does not include any cleanup activities.
2. **Combined Targeted Excavation/Disposal and Capping:** This alternative would involve the excavation and offsite disposal of PCP-impacted soil at the southern end of the former dip tank that appears to be in contact with groundwater and an isolated area of diesel-impacted soil in the central portion of the former transfer pit.

This alternative would also involve placement of a layer (typically 1 to 2 feet thick) of low-permeability soil over the remainder of the footprint of the former dip tank and the estimated extent of wood debris containing dioxins/furans, diesel, and oil in the vicinity of the former boiler room and refuse burner.

3. **Excavation/Disposal:** This alternative would involve the excavation and offsite disposal of the entire extent of soil impacted by COPCs at concentrations exceeding PALs from each area of concern including the former dip tank, boiler room, and refuse burner.

3.2 Effectiveness, Implementability, and Cost of Cleanup Alternatives

3.2.1 Effectiveness

1. **No Action:** This alternative would not be effective in controlling or preventing the potential for exposure of site users to contamination during redevelopment or subsequent use of the Site.
2. **Combined Targeted Excavation/Disposal and Capping:** Targeted excavation of PCP-impacted soil from the southern end of the former dip tank and offsite disposal in an appropriate landfill would be effective in reducing the volume of source-area material that is likely the primary contributor to PCP-impacted groundwater in this area.

Targeted excavation of diesel-impacted soil from the central portion of the former transfer pit and offsite disposal in an appropriate landfill would be effective in mitigating the risk of exposure to diesel in soil and would eliminate the need for construction of a cap over a localized and somewhat isolated area.

Capping of the remainder of the footprint of the former dip tank and the estimated extent of wood debris containing dioxins/furans, diesel, and oil in the vicinity of the former boiler room and refuse burner would be an effective way to minimize health risks at the Site because potential exposure pathways to COPCs would be eliminated. In addition, capping with low-permeability soil would be effective in minimizing surface water infiltration that could potentially leach COPCs to shallow groundwater.

3. **Excavation/Disposal:** Excavation of the entire extent of contaminated soil and offsite disposal in an appropriate landfill would be effective in eliminating the health risk associated with potential exposure to COPCs at the Site because impacted soil would be removed and potential exposure pathways during site development and future site use would be eliminated. This alternative would be particularly well-suited for the Site if structures were planned to be constructed in the areas of concern which would then require removal of geotechnically unsuitable material (i.e. fill soils and woody debris). To our knowledge, no structures are planned for the areas of concern, but rather trails and a community park/green space where capping is more suitable.

3.2.2 Implementability

1. **No Action:** Implementability analysis is not applicable because under this alternative, no action would be taken.
2. **Combined Targeted Excavation/Disposal and Capping:** This alternative would be readily implemented, although the cap would need to be maintained indefinitely and would require a deed restriction on land use. Targeted excavation is anticipated to generate approximately 200 cubic yards of soil that would be disposed of at an offsite landfill and it is likely that onsite non-impacted soils would be used for backfilling. These activities are anticipated to be completed over a two-week period and would be conducted in accordance with a DTSC-approved cleanup plan.
3. **Excavation/Disposal:** Excavation of the entire extent of contaminated soil and offsite disposal would be less implementable than capping and targeted removal. Excavation/disposal activities would require disturbance of the Site for approximately 6 weeks during which time soil would be excavated, field screened, segregated, and stockpiled. Excavation confirmation and stockpile characterization sampling would also be required. Truck loading/unloading of contaminated soil and import backfill would be required. Airborne dust suppression activities (e.g., watering) would be required during soil removal and backfill placement. Although this alternative is a proven technology for remediating impacted soil, the anticipated costs associated with the excavation of an estimated 7,000 cubic yards of contaminated soil and disposal at appropriate landfills is not economically feasible for the City nor is it the most appropriate alternative considering the future uses of the Site.

3.2.3 Cost

1. **No Action:** No costs are associated with this alternative.
2. **Combined Targeted Excavation/Disposal and Capping:** It is estimated that designing and constructing an approximate 12-inch-thick low-permeability soil cap and excavation and disposal of 200 cubic yards of impacted soil would cost approximately \$430,000. This would include the anticipated DTSC oversight fees, preparation of three cleanup plans and completion reports, and earthwork equipment and labor. Since the specific scope of work for this alternative has not yet been specified in cleanup plans or approved by the DTSC, this cost estimate should be used for planning purposes only. Estimates for general categories of work are indicated below:

Cleanup Plans, DTSC oversight, project management, reporting: \$80,000
Targeted excavation, site preparation and cap construction: \$250,000
Field oversight and analytical testing: \$50,000
Soil characterization, disposal, and backfill: \$50,000

3. **Excavation/Disposal:** It is estimated that this alternative would cost approximately \$1,700,000. Since the specific scope of work for this alternative has not yet been specified in cleanup plans or approved by the DTSC, this cost estimate should be used for planning purposes only. Estimates for general categories of work are indicated below:

Cleanup Plans, DTSC oversight, project management, reporting, etc.: \$130,000
Field work, excavation, screening/sampling, loading, analytical testing: \$460,000
Soil characterization and disposal: \$950,000
Site backfill, compaction, and restoration: \$160,000

3.3 Recommended Cleanup Alternative

1. **No Action:** Not recommended. As previously indicated, this alternative would not be effective in minimizing the potential for exposure to COPCs during redevelopment or subsequent use of the Site.
2. **Combined Targeted Excavation/Disposal and Capping:** Recommended. This alternative is recommended because: (1) it will be effective in minimizing health risk and reducing potential groundwater impacts at the Site, (2) it is a proven remediation technology that is readily implementable under DTSC oversight, and (3) the end result of the cleanup is consistent with the City's goals of providing a community recreational area.
3. **Excavation/Disposal:** Not recommended. As previously discussed, although this alternative is also a proven remediation technology, the anticipated costs associated with this alternative would not be economically feasible for the City, nor is it the most appropriate alternative considering the future uses of the Site.

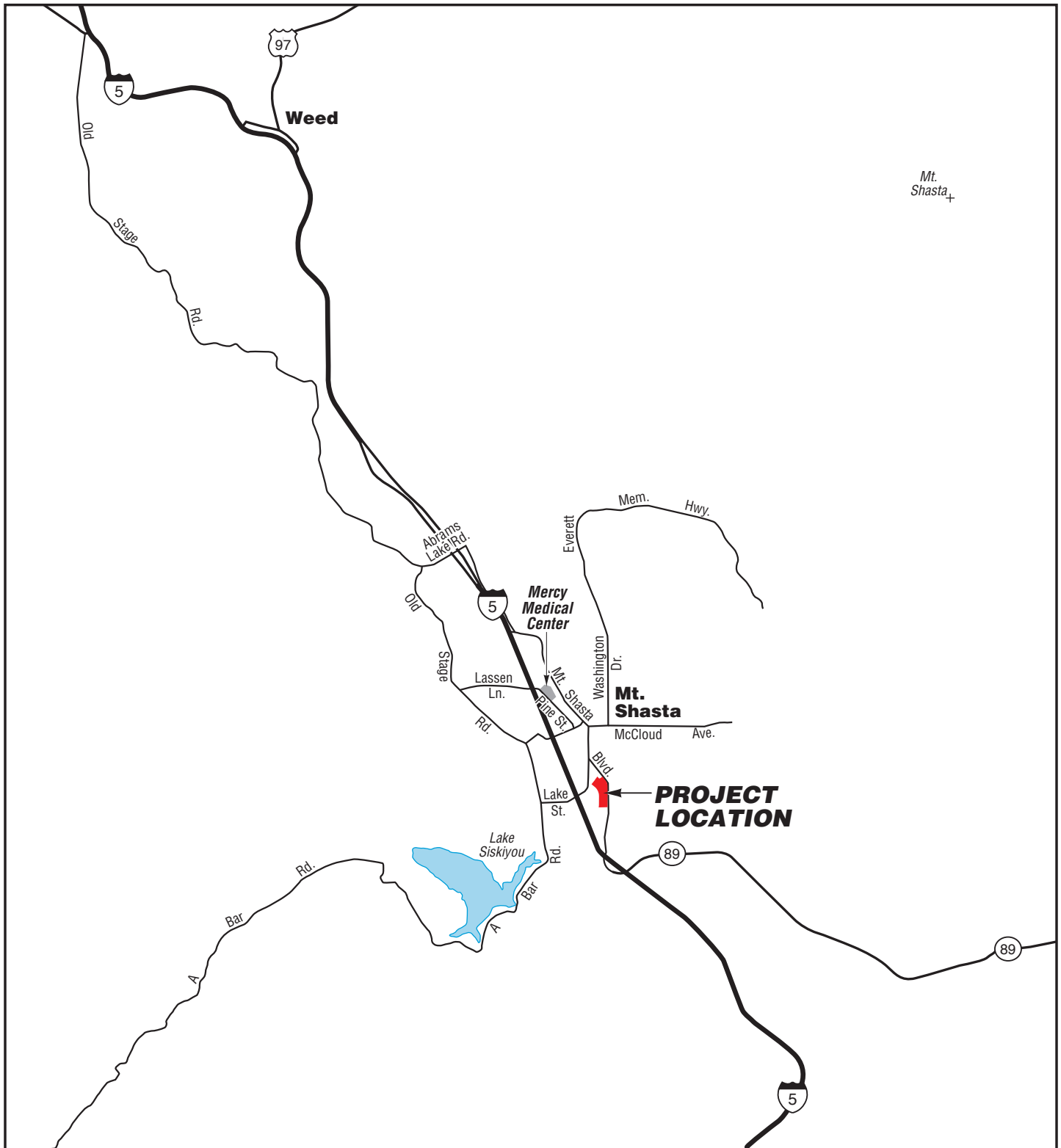
4.0 SUMMARY AND CONCLUSION

This ABCA is a preliminary evaluation of cleanup alternatives for the Site for inclusion with the City's Brownfields Cleanup Grant proposal submitted to the EPA. The City plans to transform the Site into an RV Park, interpretive center/trail, and community park/green space that highlights the historical, recreational, and tourism aspects of the City and the Mt. Shasta region.

Results of previous investigations indicate that historical lumber mill operations at the Site have impacted soil at several onsite locations with PCP, petroleum hydrocarbons, and dioxins/furans at concentrations potentially detrimental to human health and the environment and cleanup of the impacted areas would be appropriate prior to redevelopment of the Site.

Three cleanup alternatives were evaluated as part of this ABCA (No Action, Combined Targeted Excavation/Disposal and Capping, and Excavation/Disposal). The "No Action" alternative is not recommended because it would not be effective in minimizing exposure to COPCs during redevelopment or future uses of the Site. The "Excavation/Disposal" alternative, while a proven remediation technology, is also not recommended due to the anticipated costs associated with this alternative and the availability of more appropriate options considering the future uses of the Site.

The "Combined Targeted Excavation/Disposal and Capping" alternative will mitigate health risks as well as minimize surface water infiltration that could leach to shallow groundwater. This alternative also effectively reduces source-area material in close proximity to shallow groundwater. This alternative is recommended because: (1) it will be an effective way to minimize health risk and potential impacts to groundwater at the Site, (2) it is a proven remediation technology that can be readily implementable under DTSC oversight, and (3) the end result of the cleanup will enable the Site for redevelopment for recreational uses which are consistent with the City's goals.



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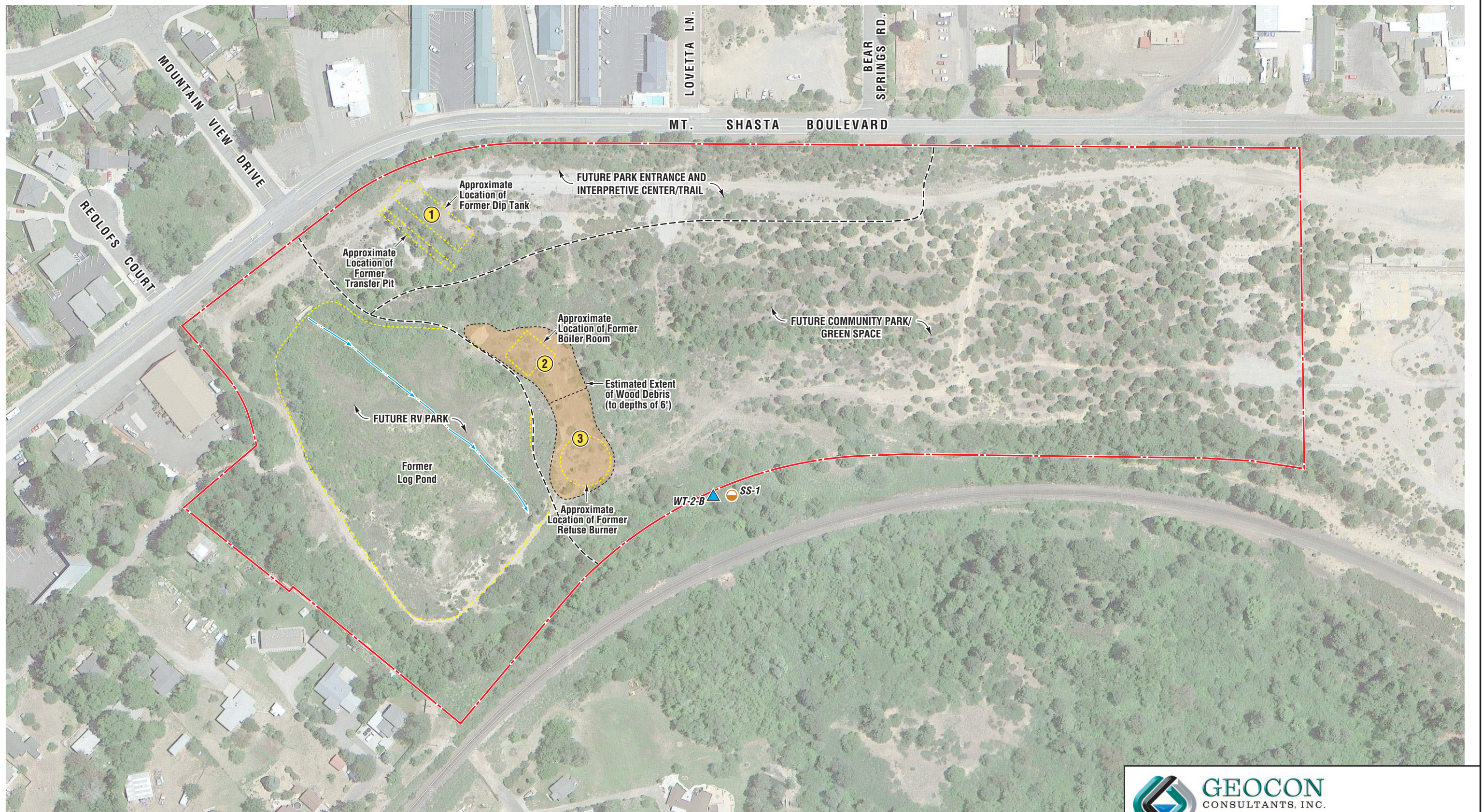
Mt. Shasta, California

VICINITY MAP

S9717-06-01

December 2014

Figure 1



LEGEND:

- WT-2-B ▲ Approximate Surface Water Sample Location (2005)
- SS-1 ○ Approximate Sediment Sample Location (2013)
- Intermittent Drainage

Conceptual Site Development Plan

- ① Cleanup Area – Former Dip Tank
- ② Cleanup Area – Former Boiler Room
- ③ Cleanup Area – Former Refuse Burner



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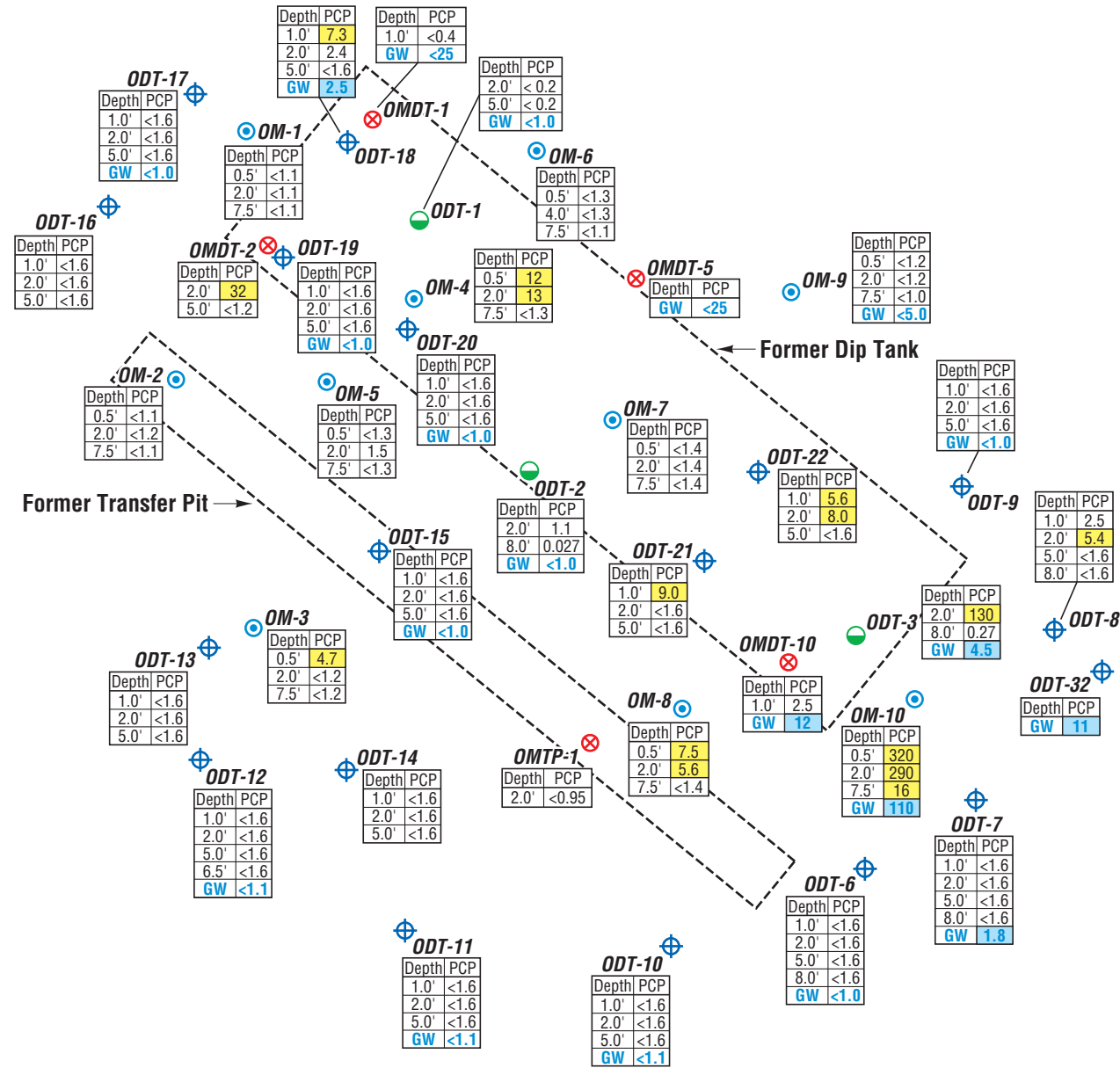
Mt. Shasta, California

SITE PLAN

S9717-06-01

December 2014

Figure 2



LEGEND:

- ⊗ Approximate Boring Location (1998)
- ⊙ Approximate Boring Location (2005)
- ⊙ (green) Approximate Boring Location (2007)
- ⊕ Approximate Boring Location (2013)
- ⊓ Exceeds Project Action Levels (Soil: 4.4 mg/kg, GW: 1.0 µg/l)

PCP = Pentachlorophenol
 GW = Groundwater
 Soil Concentrations in Milligrams per Kilogram (mg/kg)
 GW Concentrations in Micrograms per Liter (µg/l)



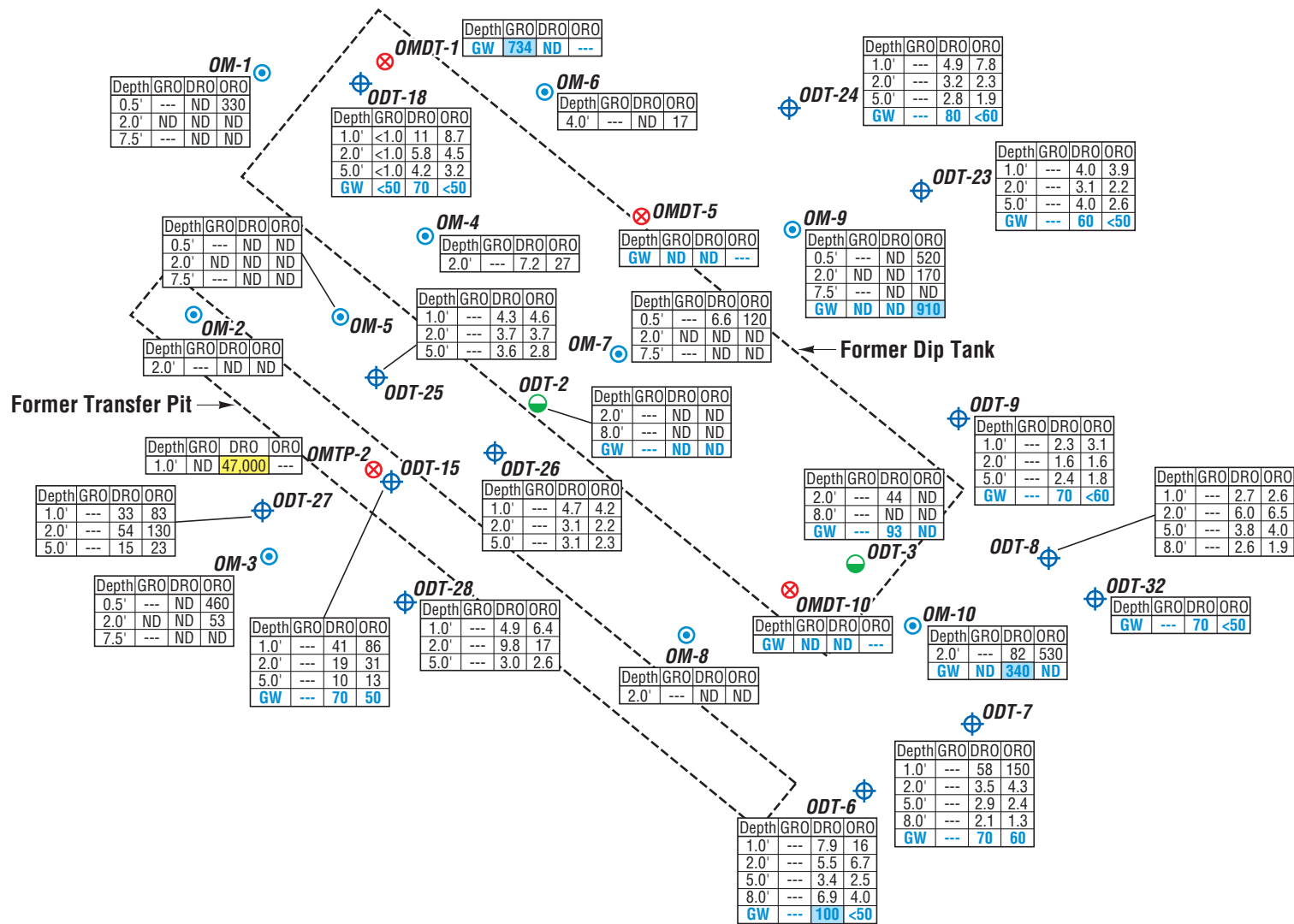
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The Landing – Mt. Shasta Business Park
 Former Roseburg Lumber “Old Mill”

Mt. Shasta, California

**PCP in Soil and Groundwater –
 Former Dip Tank and Transfer Pit**

Ref: Ecology and Environment, Inc., 2005 and URS, 2007



LEGEND:

- ⊗ Approximate Boring Location (1998)
- ⊙ Approximate Boring Location (2005)
- Approximate Boring Location (2007)
- ⊕ Approximate Boring Location (2013)

Exceeds Project Action Levels
 (GRO - Soil: 770 mg/kg, GW: 100 µg/l)
 (DRO - Soil: 240 mg/kg, GW: 100 µg/l)
 (ORO - Soil: 10,000 mg/kg, GW: 100 µg/l)

GRO = Gasoline Range Organics
 DRO = Diesel Range Organics
 ORO = Oil Range Organics
 GW = Groundwater
 --- = Not Analyzed
 ND = Not Detected
 Soil Concentrations in Milligrams per Kilogram (mg/kg)
 GW Concentrations in Micrograms per Liter (µg/l)

Ref: Ecology and Environment, Inc., 2005 and URS, 2007

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The Landing - Mt. Shasta Business Park
 Former Roseburg Lumber "Old Mill"

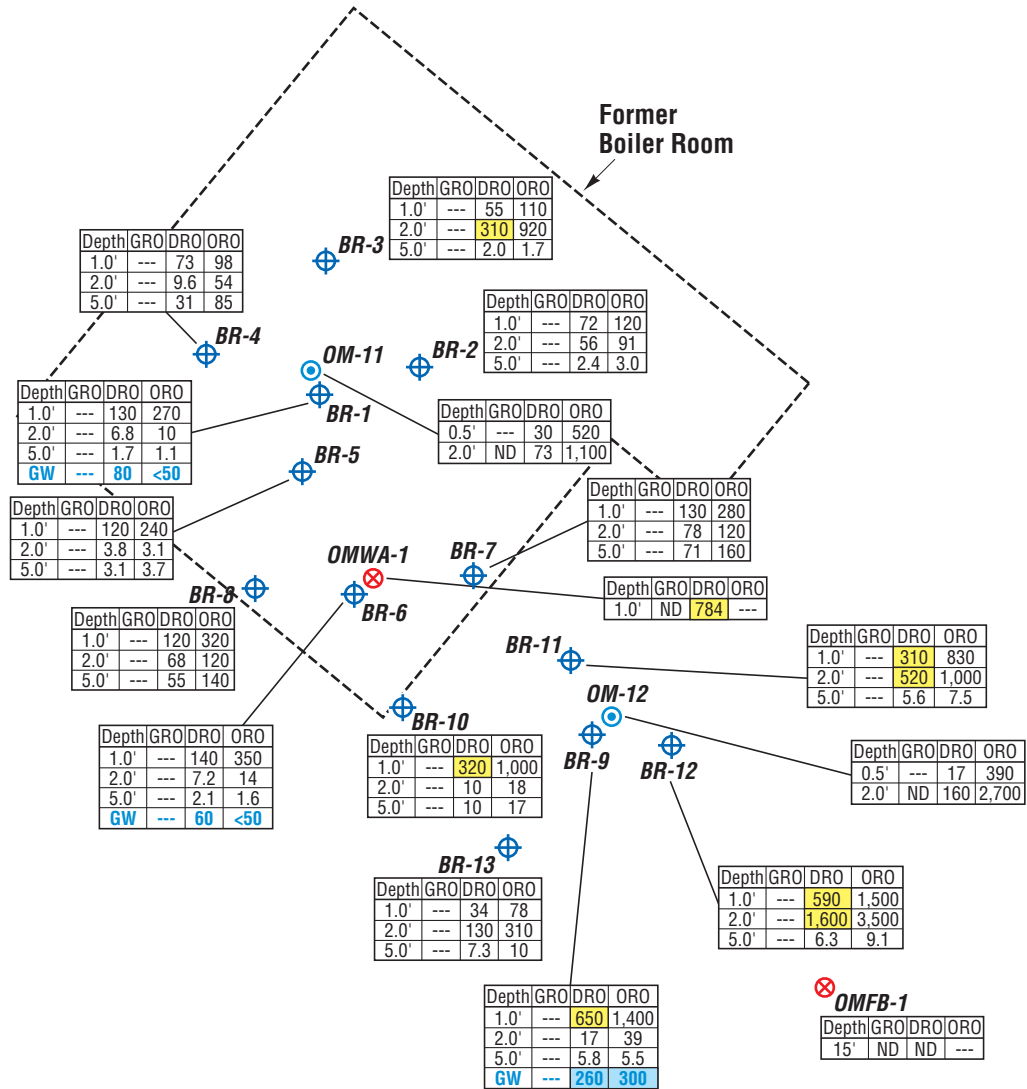
Mt. Shasta, California

**Petroleum Hydrocarbons in Soil and Groundwater -
 Former Dip Tank and Transfer Pit**

S9717-06-01

December 2014

Figure 3-2



LEGEND:

- ⊗ Approximate Boring Location (1998)
- ⊙ Approximate Boring Location (2005)
- ⊕ Approximate Boring Location (2013)

Exceeds Project Action Levels
(GRO - Soil: 770 mg/kg, GW: 100 µg/l)
(DRO - Soil: 240 mg/kg, GW: 100 µg/l)
(ORO - Soil: 10,000 mg/kg, GW: 100 µg/l)

GRO = Gasoline Range Organics
 DRO = Diesel Range Organics
 ORO = Oil Range Organics
GW = Groundwater
 --- = Not Analyzed
 ND = Not Detected
 Soil Concentrations in Milligrams per Kilogram (mg/kg)
 GW Concentrations in Micrograms per Liter (µg/l)



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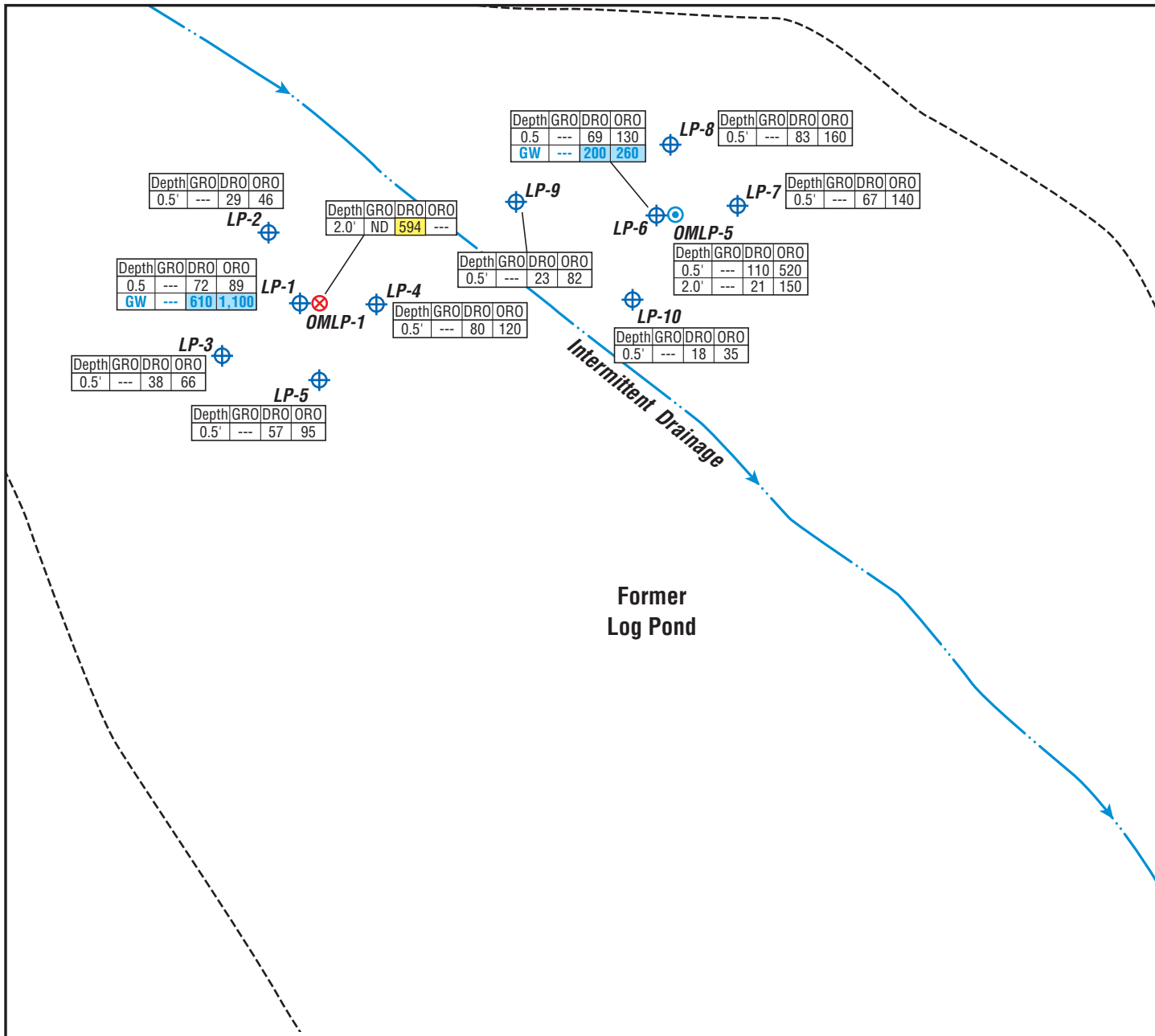
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 PHONE 916.852.9118 - FAX 916.852.9132

The Landing – Mt. Shasta Business Park
Former Roseburg Lumber “Old Mill”

Mt. Shasta, California

**Petroleum Hydrocarbons in Soil and
Groundwater – Former Boiler Room**

| | | |
|-------------|---------------|------------|
| S9717-06-01 | December 2014 | Figure 3-3 |
|-------------|---------------|------------|



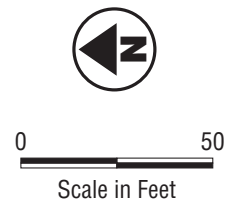
LEGEND:

- ⊗ Approximate Boring Location (1998)
- ⊙ Approximate Boring Location (2005)
- ⊕ Approximate Boring Location (2013)
- Exceeds Project Action Levels
 (GRO - Soil: 770 mg/kg, GW: 100 µg/l)
 (DRO - Soil: 240 mg/kg, GW: 100 µg/l)
 (ORO - Soil: 10,000 mg/kg, GW: 100 µg/l)

GRO = Gasoline Range Organics
 DRO = Diesel Range Organics
 ORO = Oil Range Organics
GW = Groundwater
 --- = Not Analyzed
 ND = Not Detected
 Soil Concentrations in Milligrams per Kilogram (mg/kg)
 GW Concentrations in Micrograms per Liter (µg/l)

OMLP-3 ⊙

| Depth | GRO | DRO | ORO |
|-------|-----|-----|-----|
| 0.5' | --- | ND | ND |
| 2.0' | --- | ND | ND |

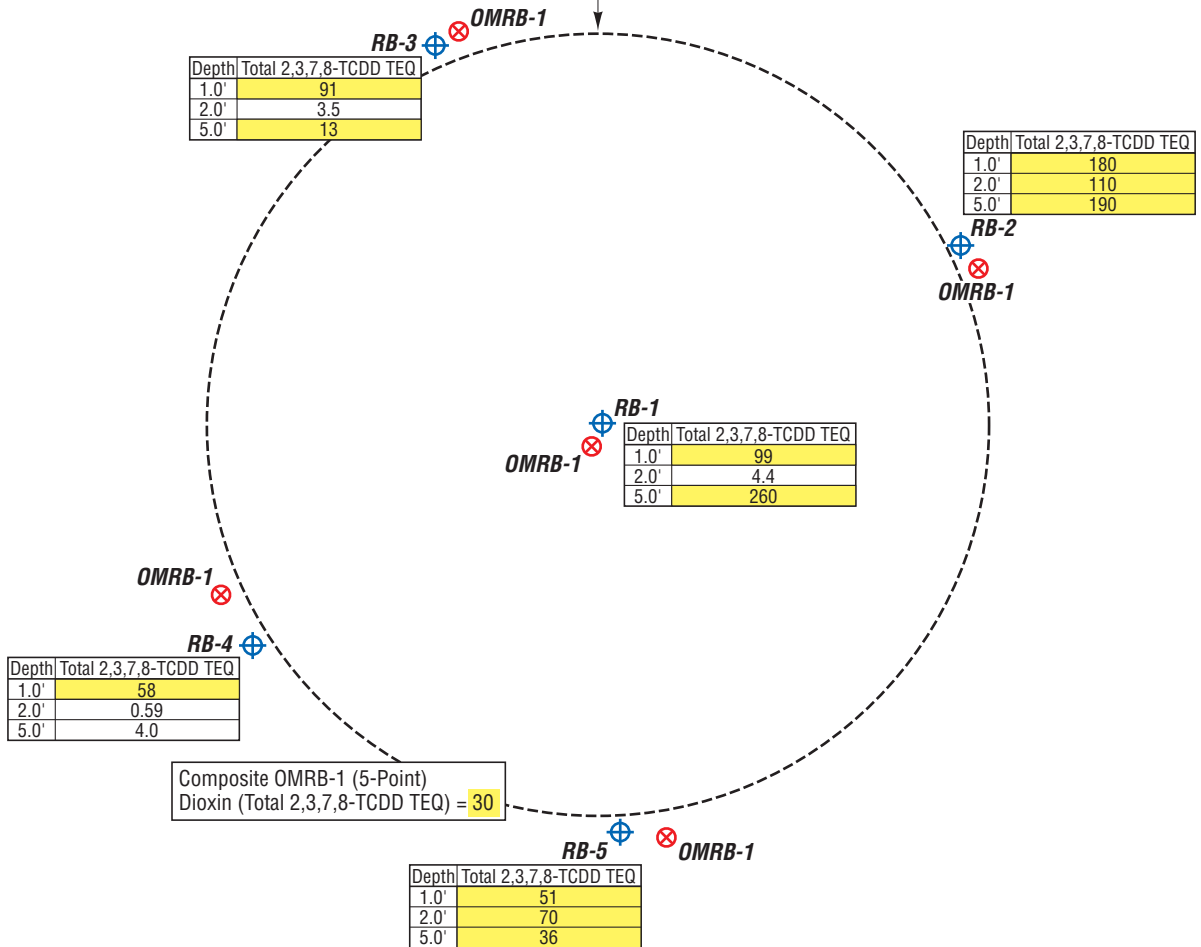


Ref: Ecology and Environment, Inc., 2005

| | | | |
|--|---------------|---------------|------------|
| <p>GEOCON CONSULTANTS, INC. 3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742 PHONE 916.852.9118 - FAX 916.852.9132</p> | | | |
| <p>The Landing – Mt. Shasta Business Park Former Roseburg Lumber “Old Mill”</p> | | | |
| <p>Mt. Shasta, California</p> | | | |
| <p>Petroleum Hydrocarbons in Soil and Groundwater – Former Log Pond</p> | | | |
| <table style="width: 100%; border: none;"> <tr> <td style="border: none; width: 33%;">S9717-06-01</td> <td style="border: none; width: 33%;">December 2014</td> <td style="border: none; width: 33%;">Figure 3-4</td> </tr> </table> | S9717-06-01 | December 2014 | Figure 3-4 |
| S9717-06-01 | December 2014 | Figure 3-4 | |



Former Refuse Burner



LEGEND:

- ⊗ Approximate Sample Location (1998)
- ⊕ Approximate Boring Location (2013)
- Yellow background Exceeds Project Action Levels (Soil: 4.6 ng/kg)

TEQ Toxicity Equivalence

Soil Concentrations in Nanograms per Kilogram (ng/kg)

Ref: Ecology and Environment, Inc., 1998



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**Dioxins / Furans in Soil –
Former Refuse Burner**

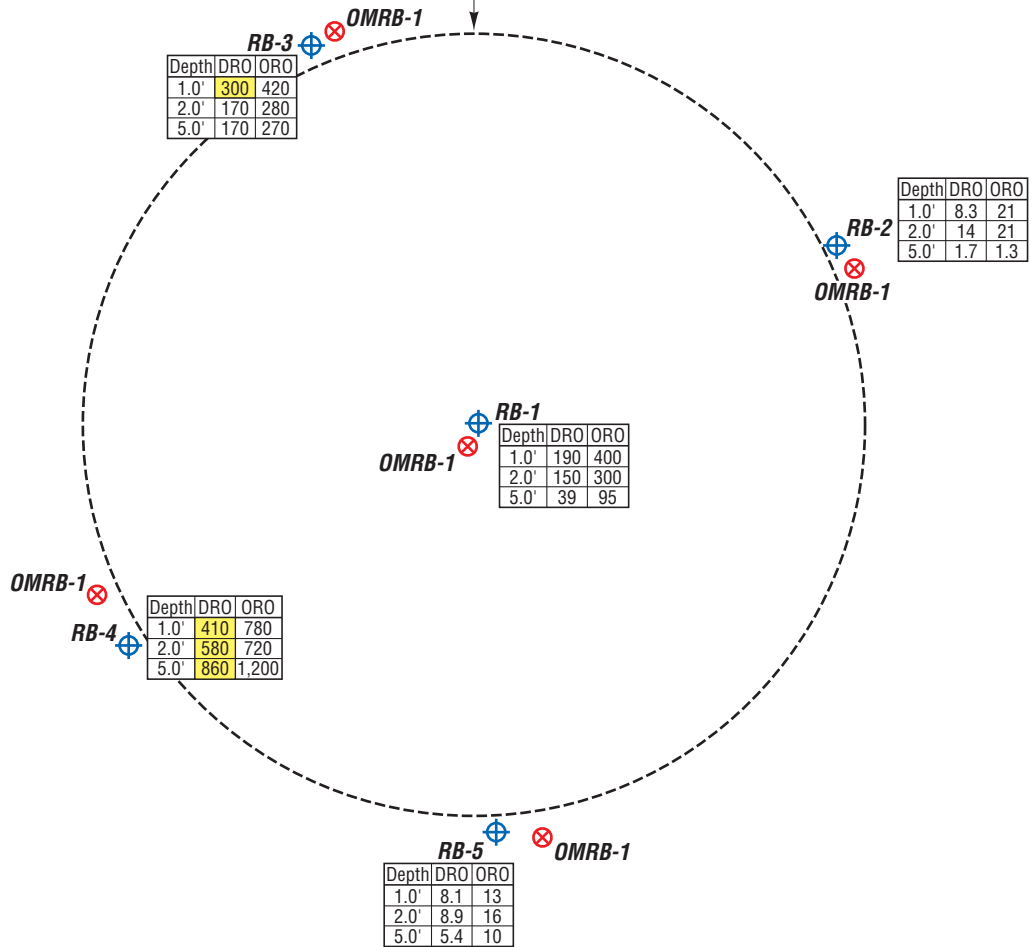
S9717-06-01

December 2014

Figure 3-5



Former
Refuse
Burner



LEGEND:

- ⊗ Approximate Sample Location (1998)
- ⊕ Approximate Boring Location (2013)
- Exceeds Project Action Levels
(DRO - Soil: 240 mg/kg)
(ORO - Soil: 10,000 mg/kg)

Soil Concentrations in Milligrams
per Kilogram (mg/kg)



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**Petroleum Hydrocarbons in Soil –
Former Refuse Burner**



Photo No. 1 Area of former dip tank looking west from the approximate eastern limit of this feature

Photo No. 2 Area of former transfer pit



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PHOTOS NO. 1 & 2

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Mt. Shasta, California

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December 2014



Photo No. 3 Area of former boiler room



Photo No. 4 Area of former refuse burner



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PHOTOS NO. 3 & 4

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