Site Management Plan for the Former Plant Site Area

Former Engelhard Facility
Salt Lake City, Utah
UTD009073800

November 11, 2008 – UPDATED JUNE 17, 2022
Terracon Project No. 61087229

Prepared for:
Ningret Technology Park, L.C.
1700 South 4650 West
Salt Lake City, Utah 84101

Prepared by:
Terracon Consultants, Inc.
Midvale, Utah
June 17, 2022

The Ninigret Group, L.C.
1700 South 4650 West
Salt Lake City, Utah 84104

Attn: Gary McEntee
T: (801) 973-9090
E: gary@ninigret.com

Re: Updated Site Management Plan
Former Plant Site Area
Former Engelhard Facility
Salt Lake City, Utah
UTD009073800
Terracon Project No. 61087229

Dear Mr. McEntee:

As requested, we are providing this updated version of the Site Management Plan (SMP) for the former plant site area. The original (2008) SMP for this area included language that referenced requirements for groundwater monitoring. The groundwater monitoring program has been discontinued, pending formal approval by the Utah Department of Environmental Quality (DEQ). This updated SMP is provided to remove language that had referenced groundwater monitoring obligations in the original SMP. Additionally, all references to the overseeing DEQ agency have been updated to indicate the current name of the agency, the Division of Waste Management and Radiation Control (DWMRC), and the SMP has been updated to reflect the fact that corrective action was completed and the site has since been redeveloped.

We appreciate the opportunity to be of assistance in this matter. If you should have any questions or need additional information, please contact me at (801) 746-5462 or at andy.king@terracon.com.

Sincerely,
Terracon Consultants, Inc.

Andy King, P.G.
Senior Project Manager - Environmental

Benjamin B. Bowers
Authorized Project Reviewer
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## APPENDICES

**APPENDIX A** Former Plant Site Area Map and Legal Description
1.0 INTRODUCTION

1.1 Scope

This Site Management Plan (SMP) describes site management actions for the former Plant Site Area of the former Engelhard facility (the Facility). This SMP is pursuant to Stipulation and Consent Agreement # 92060130 that governs corrective action at the site.

This SMP is based on the results of a baseline risk assessment submitted to the Utah Department of Environmental Quality, Division of Waste Management and Radiation Control (DWMRC) in accordance with the requirements at Utah Administrative Code (UAC) R315-101 (Glaser 2008). The rules at R315-101 establish standards to support risk-based cleanup and closure at sites for which remediation or removal of constituents to background levels will not be achieved. Preliminary human health risk estimates had indicated that the level of risk may exceed $1 \times 10^{-6}$ for carcinogens or a Hazard Index of one for non-carcinogens based on a residential exposure scenario. However, the actual and future land use conditions do not include residential land use, and offer a more protective exposure scenario than residential land use. Therefore, the risk assessment was conducted in accordance with Utah Administrative Code (UAC) R315-101-5.2 (b)(2) for actual and future land use conditions, based on site-specific physical and chemical information and the assumption that the affected media will not have undergone any remediation or controls to reduce exposure.

The site is in an area zoned for commercial/industrial (light manufacturing) land use, and the actual land use for the now-redeveloped site is commercial/light industrial. The redevelopment provides a more protective exposure scenario than the prior land use, as exposure pathways have been eliminated by placement of buildings, paved parking areas, and landscaped areas that prevent contact with constituents beneath the site. Furthermore, the site is not, and will not be, used in a residential land use scenario.

Because constituents at this site will not be remediated or removed to background levels, UAC R-315-101-6 requires a Site Management Plan and provides three options for the SMP. These SMP options are summarized as follows:

1) The SMP may contain a no further action option only if the level of human health risk present at the site is below $1 \times 10^{-6}$ for carcinogens and a hazard index (HI) is not "greater than one" for non-carcinogens based on a residential exposure scenario, and if ecological effects are insignificant.

2) The SMP must contain appropriate management activities e.g., monitoring, deed notations, site security, or post-closure care, if the level of human health risk present at the site is less than $1 \times 10^{-4}$ for a risk assessment based on actual land use conditions, but greater than $1 \times 10^{-6}$ for a risk assessment based on a residential exposure scenario, and the HI is not "greater than one"
using both exposure scenarios, or if ecological effects may be significant. In this case the SMP may, but is not required to, include corrective action.

3) The SMP must contain procedures for corrective action if the level of human health risk present at the site is greater than \(1 \times 10^{-4}\) for carcinogens, or an HI is "greater than one" for non-carcinogens, for a risk assessment based on the actual land use, or if corrective action is required to mitigate ecological effects.

As discussed in Section 2 of this SMP, for future onsite commercial workers and construction workers the calculated level of human health risk is less than \(1 \times 10^{-4}\) for carcinogens, the Hazard Index is not "greater than one" for non-carcinogens based on actual land use conditions, and there is not a significant potential for ecological effects. Therefore, an SMP is required for this site and it must include appropriate management actions, but it is not required to include corrective action.

1.2 Site Background

The former Engelhard plant site was located at approximately 2950 Andrew Avenue in western Salt Lake City. The plant site facility was constructed in the early 1950s by Filtrol Corporation, and was used to manufacture activated clay catalysts for the petroleum refining industry. By 1981, the plant had discontinued production of activated clay catalysts and had converted to production of fresh alumina catalyst and recycling of spent alumina catalysts. Engelhard Corporation acquired the facility in 1988, and continued the latter processes until the plant was closed in 2000. All buildings and structures associated with the former Engelhard facility have since been removed, and the plant facility and its waste-generating processes no longer exist. The surrounding area is zoned for commercial/light industrial land uses, and in recent years has experienced an increased pace in development for these uses. In 2001, Ninigret Technology ("Ninigret", a land developer) acquired the property. A plat map depicting the former plant site area is provided in Appendix A, along with a legal description.

1.3 Previous Studies

During the plant's operation, a number of features were suspected of being locations of potential chemical releases to the environment, and these features were designated as Solid Waste Management Units (SWMUs). Engelhard, Montgomery Watson (MW), Dames & Moore (D&M), and DWMRC conducted preliminary investigations at the facility in the late 1980s and early 1990s. The results of those investigations were detailed in the Current Conditions Report (MW, 1994) along with complete descriptions of the physical setting of the facility; history of the manufacturing processes, products and by-products; and detailed descriptions of each SWMU. After the plant was closed and substantially demolished, DWMRC observed conditions such as discarded debris, spilled catalyst materials, localized soil staining, catch basins, and degraded asphalt. Based on these observations DWMRC designated 8 additional areas as SWMUs. Also within or adjacent to several SWMUs, DWMRC later observed discrete features that could have conveyed
or received discharges of site constituents, and designated these features as areas of interest (AOIs).

1.4 RCRA Facility Investigation (RFI) and Interim Measure

In 2006, Ninigret conducted a comprehensive site investigation through an RFI, which involved extensive sampling and analysis of soils and groundwater at the designated SWMU and AOI locations throughout the site. The RFI results indicated the presence of several "hotspots" of soils containing high concentrations of metals. Throughout the remainder of the site, soils and groundwater were found to contain metals concentrations that are above background levels, but not at sufficiently high concentrations that result in excess risk to human health and the environment for the actual and future land use conditions. In order to prepare the property for redevelopment and a return to beneficial use, Ninigret conducted mitigation and further investigations under an RFI Addendum in late 2007 and early 2008. The RFI Addendum included limited corrective action as an Interim Measure, which consisted of removal and offsite disposal of "hotspot" soils that contained the high metals concentrations. These activities are detailed in two DWMRC-approved reports including the RCRA Facility Investigation - Site Investigation Report (MSE, 2006) and the RFI Addendum Report (MSE, 2008). The results were used in a baseline risk assessment to calculate site risks to human health and the environment.

2.0 REMAINING CONSTITUTEUTS

Metals remain in soils and in groundwater beneath the site at concentrations exceeding local background levels. However, as discussed below in Section 3, a baseline risk assessment has determined that the level of health risk to future workers is within the limits established at UAC R315-101 for current and future land use, assuming no controls to minimize exposure.

The risk assessment indicated that there does not appear to be a significant potential for adverse ecological effects from site constituents, assuming the site remains undeveloped. The planned redevelopment of the site further reduces the potential for exposure to human and ecological receptors.

3.0 SITE RISK

A baseline risk assessment was conducted for the former plant site area in accordance with the requirements of UAC R315-101 and consistent with U.S. Environmental Protection Agency (EPA) guidance. The baseline risk assessment (Glaser, 2008) evaluated both human health and ecological risks associated with the remaining site constituents. The baseline risk assessment was approved by DWMRC (Utah DEQ, 2008).
3.1 Human Health Risk

Three endpoints were calculated for the human health risk assessment (HHRA): the potential for people to develop cancer, the potential for health effects to occur other than cancer, and the potential for elevated blood-lead levels. If exposure to site constituents could result in greater than a one in ten thousand \((1 \times 10^{-4})\) chance of developing cancer, then corrective action is required as part of the SMP. The potential for non-cancer effects was evaluated with a hazard index (HI), which compares the amount of exposure that could occur to an estimate of the amount necessary to cause non-cancer health effects in humans. A HI greater than 1 also requires that corrective action be part of the SMP. Lead was evaluated by estimating blood-lead levels that could occur in the fetus of a pregnant worker. UAC R315-101 does not specify the blood-lead level that requires correction action as part of the SMP. However, U.S. EPA criteria indicate that blood-lead levels above 10 micrograms per deciliter (µg/dl) require attention.

These endpoints were calculated for receptors including a site worker and a construction worker, and for the Lee Drain (a canal along the southern boundary of the site), a teenage wader. Exposure pathways for the site worker included incidental ingestion of soil, dermal contact with soil, and inhalation of dust. These pathways apply to the construction worker as well. In addition, the construction worker has the potential for contact with groundwater. Groundwater exposure pathways for a construction worker included incidental ingestion of groundwater and dermal contact. For a teenage wader, exposure pathways included incidental ingestion and dermal contact with surface water and sediment.

Risks were calculated for the site and construction workers at each individual SWMU, and also for a site-wide construction worker. The maximum cancer risk was \(4 \times 10^{-5}\) for a site worker at one SWMU (SWMU 25). The maximum HI was 1 for a construction worker at 3 SWMUs (8, 16, and 25), and for a site-wide construction worker.

For a teenage wader in the Lee Drain, the estimated cancer risk was \(4 \times 10^{-7}\) and the HI was 0.3. The highest blood-lead estimate was 8.5 µg/dl for a construction worker at AOI B. None of these results exceed the criteria under UAC R315-101, and therefore corrective action is not required as part of the SMP.

3.2 Ecological Risk

UAC-R315-101 does not contain “bright-line” criteria analogous to those in the HHRA for the ecological risk assessment (ERA). Rather, an evaluation is made based on the ERA whether there is a significant potential for effects on ecological receptors.

Prior to site redevelopment, the habitat at the former Plant Site consisted primarily of weedy vegetation with limited ecological resources and poor structure. In addition, the Lee Drain (a canal used for flood-control purposes) borders the former plant site to the south. No threatened, endangered, or special-status species of wildlife or plants occur at the former plant site or in the
surrounding area. The actual land use involves the existing redevelopment of commercial/light industrial facilities. The ERA was performed as a modified screening-level ERA (SLERA), with no consideration of controls that provided by the site development that effectively displaces habitat. Assessment endpoints (valued ecological characteristics) for the site included populations of foraging terrestrial mammals and birds, and avian populations foraging on aquatic and benthic invertebrates from the Lee Drain.

Representative receptors identified for soil included the deer mouse, which was evaluated both as a herbivore and assuming a diet consisting solely of invertebrates; the American robin, whose diet contains a large proportion of invertebrates; and the California Quail, which is a herbivore. The spotted sandpiper was chosen as a representative receptor for the Lee Drain, as it forages on both aquatic and benthic invertebrates. Measures of effect (measurable characteristics related to the assessment endpoints) were toxicity reference values (TRVs) that were related to populations of these species (as opposed to individuals). An HI was calculated for each receptor by comparing estimated levels of exposure to the TRVs. The hazard indices each exceeded 1, but a detailed analysis diminishes the significance of the calculated HI values and, combined with the low value of the habitat, indicates no significant site-related risks to ecological receptors (Glaser, 2008, Section 6).

Based on the results of the ERA, there does not appear to be a significant potential for adverse ecological effects due to site constituents, and assuming the site were to remain undeveloped. However, the actual land use includes the existing redevelopment that has effectively displaced the already-limited habitat and further reduced the potential for such effects.

4.0 SITE MANAGEMENT REQUIREMENTS

The actual and future land use for the site is commercial/light industrial, and does not include use for residential purposes. Based on the level of risk at the site with respect to actual and future land use, R-315-101-6 requires that the SMP contain appropriate management actions to minimize the potential for exposure to constituents. The following site management actions are designed to control site risks by minimizing the potential for exposure to the remaining constituents.

4.1 Land Use Restrictions and Site Development

The site is in an area already zoned for commercial/industrial (light manufacturing) land use. As such, the current zoning precludes development for residential land use. Additional land use restrictions will be imposed to prevent residential development (and other sensitive uses including child care facilities and early education schools) and ensure that the property is used solely for commercial and industrial purposes in the future. Similarly, no edible crops will be grown on site without the approval of DWMRC. These restrictions will be imposed and enforced on the current property owner and subsequent property owners through an environmental covenant.
Direct contact, ingestion and inhalation exposures to site constituents by human and ecological receptors are further reduced by the existing site redevelopment for commercial/light industrial land use. Redevelopment has also displaced the previous limited habitat, thus further reducing the potential for ecological effects from site constituents.

No portions of any future surface waterway (such as re-routing of segments of the Brighton Canal, Lee Drain or similar features) shall be placed within the footprint of any plant site SWMU or AOI unless the waterway is lined or otherwise constructed such that a separation is maintained between the water within the waterway and soils within the SWMUs' or AOIs' footprint that contain metals concentrations above background levels. The integrity of this separation shall be maintained at all times.

4.2 Groundwater Use Restrictions

Restrictions will also be imposed to prevent use of groundwater from beneath the site.

This paragraph applies to cases in which groundwater is encountered during a normal work activity such as underground or in ground utility placement, where groundwater needs to be removed to facilitate that work activity. Groundwater management options are intended to comply with the principles of non-degradation in R315-101-3. In the event that temporary excavation dewatering is needed to facilitate a work activity, any groundwater to be extracted will be characterized for metals constituents and managed accordingly, unless it is to be returned directly to the aquifer from which it originated. Groundwater that is extracted may be returned directly to the aquifer from which it originated within the area adjacent to the ongoing work, so long as the return of that groundwater does not meet the criteria of an injection well as defined at Utah Administrative Code R317-7-2.53. Groundwater may be discharged offsite to a sanitary sewer system with prior approval from the system's Publicly Owned Treatment Works (POTW), and may be discharged offsite to a storm water system, the Lee Drain, or the Brighton Canal with prior approval from the Utah Division of Water Quality. Groundwater that does not exceed background concentrations of constituents does not have a restriction on its disposition by DWMRC.

4.3 Hazard Notification

Controls provided by the site development (buildings, paved areas, landscaping, etc.) will render all potential exposure pathways to future commercial workers incomplete. With no exposure, there is no risk. Therefore, no notification beyond implementation of all other requirements of this SMP is warranted for future commercial workers. If initial commercial workers occupy a portion of the site before the development establishes sitewide exposure controls, then potential exposure pathways may temporarily be complete (e.g., for commercial workers outside of buildings). Under these conditions, the risk levels for the commercial worker are well within the limits established at UAC R315-101 for current and future land use, assuming no controls to minimize exposure. However, because the potential for exposure will exist for the initial
commercial workers, these workers will be notified of the existing hazard, site controls, and methods to minimize exposure and risks associated with the hazard.

Future construction workers who excavate into subsurface soils and/or groundwater will be exposed to constituents by the exposure pathways evaluated in the risk assessment. Under these conditions, the risk levels are well within the limits established at UAC R315-101 for current and future land use, assuming no controls to minimize exposure. However, because the exposure pathways will be complete, future construction workers involved in excavation within the site shall be notified of the existing hazards and of procedures to minimize exposure to site constituents. This notification may be provided in the form of a fact sheet, developed by the Owner, to be incorporated into the construction worker’s health and safety program. A qualified person shall write the notifications.

4.4 Soil Excavation

Based on the risk levels estimated for future construction workers, exposure to constituents in soils through excavation for construction purposes will not result in risk levels exceeding the standards set forth in UAC R315-101-6(d). Therefore, restrictions on excavation are not necessary beyond hazard notification in accordance with Section 4.3 above.

However, soils excavated from the site must be properly managed to ensure that those soils containing constituent concentrations above background levels are not deposited at any offsite location where more exposure can occur. Therefore, all soils excavated from the site shall either remain on the property or be disposed offsite at an appropriately licensed treatment, storage, and disposal (TSD) facility, with the following exception. There is no restriction on disposition or usage of excavated soils that are determined (through sampling and laboratory analysis) not to contain constituent concentrations above background levels, subject to DWMRC’s review of the resulting soil data and concurrence that the constituents do not exceed background levels.

4.5 Enforcement

The above site management actions are intended to follow title to the land in perpetuity, and shall apply to and bind all subsequent property owners unless subsequent determinations by the DWMRC or its successors indicate that the remaining level of risk is sufficiently low that the site management requirements may be reduced or eliminated.

The above site management requirements shall be imposed and enforced on the current owner pursuant to an Environmental Covenant. Following approval of this Site Management Plan, the owner will file and record the Environmental Covenant, providing notice of its obligations concerning access and site management requirements on the property. Additionally, effective the date that this document is recorded in the Salt Lake County Recorder’s Office, each deed, title or other instrument of conveyance conveying an interest in the property executed by the owner or its successors in title to the property shall include a notice stating that the property is
subject to this Site Management Plan and shall reference the recorded location of the Site Management plan and the restrictions applicable to the property under the Site Management Plan. The above site management requirements are intended to follow title to land in perpetuity unless subsequent determinations by the DWMRC or its successors indicate that the remaining level of risk to human health and the environment on the site is sufficiently low that the site management requirements may either be reduced or eliminated in their entirety.

5.0 PROPERTY ACCESS

Commencing on the date of approval of this Site Management Plan and in accordance with Paragraph 59 of the Stipulation and Consent Agreement No 92060130 ("Consent Agreement") between the Utah Solid and Hazardous Waste Control Board ("Board") and Engelhard Corporation, the predecessor-in-title to the property, all activities conducted by the Property Owner under this Site Management Plan shall be subject to inspection and enforcement by the Board in accordance with procedures in the Utah Solid and Hazardous Waste Act, Section 19-6-101 et seq., Utah Code Annotated (1953 as amended). The Property Owner shall provide the Utah Department of Environmental Quality, Division Waste Management and Radiation Control and its representatives and its authorized contractors, with access at all reasonable times to the property for the purpose of monitoring, and observing activities carried out under the Site Management Plan. These individuals shall conduct themselves in a safe and prudent manner in accordance with the health and safety standards of the Utah Department of Environmental Quality, Division of Waste Management and Radiation Control and with any additional protocols as required by the Property Owner's operations.

6.0 MONITORING REQUIREMENTS

Monitoring to ensure compliance with land use restrictions, groundwater use restrictions, limited excavation restrictions, and hazard notifications shall be the responsibility of the Property Owner and/or its assigns. These site management actions will be implemented concurrently with the construction and development of the site. Documentation of the state of compliance with these site management requirements is to be updated annually and submitted to DWMRC upon request.

7.0 PROCEDURES IF SMP REQUIREMENTS ARE BREACHED

The stated site management requirements provide for continued protectiveness of human health and the environment based on current and future land use. If and when the Property Owner and/or its assigns (Property Owner) becomes aware of a deviation from the site management plan requirements the Property Owner shall notify DWMRC within five (5) calendar days of their becoming aware of the deviation. The Property Owner will submit to DWMRC a written report within twenty-five (25) days, detailing the nature of the deviation and the Owner's evaluation. The Property Owner and DWMRC will collectively re-evaluate whether the existing site management
practices compromise the level of protection afforded by the original site management requirements and, if so, the need for alternate site management requirements will be evaluated to provide a comparable level of protection. Any proposed modification to the site management plan requirements will require DWMRC approval.

8.0 REFERENCES

Glaser, Steven L. Environmental Consulting, 2010. *Baseline Risk Assessment for the Pyrite Impoundment Area, Solid Waste Management Unit 1, Former Engelhard Facility, Salt Lake City, Utah* (September 2010).


Terracon Consultants, Inc., 2009b. *Documentation of Sampling at Pyrite Area and Lee Drain, Pyrite Impoundment Area (SWMU #1), Former Engelhard Facility, Salt Lake City, Utah* Salt Lake City, Utah (October 2009)

APPENDIX A

Former Plant Site Area Map and Legal Description
A parcel land located in the Northeast Quarter of Section 17 and in the Northwest Quarter of Section 16, Township 1 South, Range 1 West, Salt Lake Base & Meridian, more particularly described as follows.

BEGINNING at a point on the Easterly boundary line of Gladiola Street as shown on that certain Official Map No. 6, 3230 West-Gladiola Connector recorded in Book 93-2P at Page 24 and the Southwest corner of Industrial Centre Park Phase 3 Subdivision as recorded in Book 97-8P at page 237 in the Office of the Salt Lake County Recorder, which is 1505.83 feet North 89°54'29" East along the Section line and 969.33 feet South 00°05'34" West and 48.91 feet North 89°54'47" East from the North Quarter corner of said Section 17 (the basis of bearings is North 89°54'29" East 2650.82 feet along said Section line between the North Quarter and Northeast corner of said Section 17, as shown on said Record of Survey Map), and running thence North 89°54'47" East 2242.55 feet along said Phase 3 Subdivision and the Southerly boundary line of Industrial Centre Park Phase 2 Subdivision, recorded in Book 89-6P at Page 60 to a point, which is 13.20 feet South 89°54'47" West from the Southeast corner of said Phase 2 Subdivision; thence South 00°14'55" East 46.80 feet along the East line of the property described in Book 8187 at Page 3208; thence South 70°38'29" West 171.24 feet along said property; thence South 00°19'39" East 546.19 feet to the Southeast corner of said property; thence South 72°47'05" West 1159.93 feet along the Southerly line of said property to the Southwest corner; thence South 70°17'04" West 53.49 feet along the Southerly line of the property described in Book 6031 at Page 2704 to said Easterly boundary line of Gladiola Street and a point on a 852.00 foot radius curve to the left; thence Northwesterly 459.80 feet along the arc of said curve through a central angle of 30°55'15" (chord bears North 33°39'19" West 454.24 feet) to a tangent line; thence North 49°06'57" West 693.73 feet to a point of curvature with a 768.00 foot radius curve to the right; thence Northwesterly 231.60 feet along the arc of said curve through a central angle of 17°16'43" (chord bears North 40°28'35" West 230.73 feet) to the POINT OF BEGINNING.

Contains 32 acres.