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# Site Management Plan for the Former Pyrite Impoundment Area

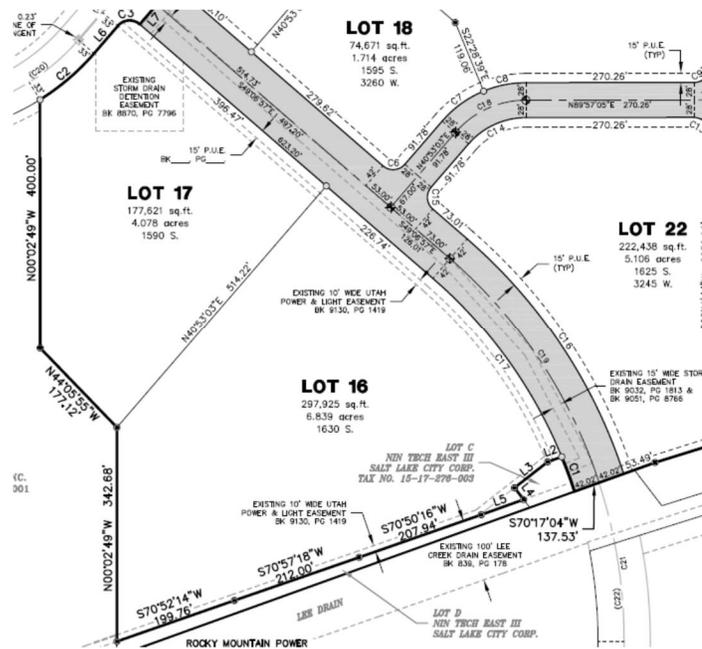
Former Engelhard Facility

Salt Lake City, Utah

UTD009073800

April 27, 2011 – UPDATED JUNE 17, 2022

Terracon Project No. 61087229



**Prepared for:**

Ninigret Technology Park, L.C.  
1700 South 4650 West  
Salt Lake City, Utah 84101

**Prepared by:**

Terracon Consultants, Inc.  
Midvale, Utah

terracon.com

**Terracon**

Environmental



Facilities



Geotechnical



Materials



June 17, 2022

The Ninigret Group, L.C.  
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Salt Lake City, Utah 84104

Attn: Gary McEntee  
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**Re: Updated Site Management Plan  
Former Pyrite Impoundment 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 pyrite impoundment area. The original (2011) 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 SMP is updated primarily 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 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](mailto: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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## **1.0 INTRODUCTION**

### **1.1 Scope**

This Site Management Plan (SMP) describes site management actions for Solid Waste Management Unit (SWMU) #1, the former Pyrite Impoundment Area (the site) of the former Engelhard facility (the Facility). This SMP is pursuant to the Utah Solid and Hazardous Waste Control Board's Stipulation and Consent Agreement # 92060130 that governs corrective action at the site. Three other portions of the Facility are also subject to site management actions as described in SMPs for the respective areas (MSE, 2004a and 2004b; Terracon, 2008).

This SMP is based on the results of a baseline risk assessment (Glaser, 2010) 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. 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 screening-level risk estimates previously indicated that the level of site 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. The Glaser baseline 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 (M-1, light manufacturing; Salt Lake City, 2010) land use, and the actual land use for the now-redeveloped site commercial/light industrial. The redevelopment eliminates exposure pathways to onsite commercial workers due to placement of buildings, paved parking areas, and landscaped areas that prevent contact with near-surface and subsurface constituents. The site is not, and will not be, used for residential land use.

Because constituents at this site will remain at concentrations higher than 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

$1 \times 10^{-4}$  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.

The results of the human health risk assessment indicated that for most affected media at the site, the level of human health risk is less than  $1 \times 10^{-4}$  for carcinogens and the Hazard Index is not "greater than one" for non-carcinogens for future onsite commercial workers and construction workers. However, for one affected medium (the "restricted pyrite"), the carcinogenic health risk was calculated to exceed  $1 \times 10^{-4}$  for onsite commercial workers and the Hazard Index was "greater than one" for future onsite commercial workers and construction workers. The results of the ecological risk assessment indicated a limited potential for effects to ecological receptors due to constituents associated with SWMU 1, assuming that the site remains undeveloped.

Therefore, based on the results of the risk assessment, an SMP is required for this site and it must include appropriate management actions, although it is not required to include corrective action except for one affected medium (the restricted pyrite). The required site management actions and corrective action are detailed in Section 4.0 of this SMP.

## **1.2 Site Background**

The site was part of the former Facility which was located at approximately 2950 West Andrew Avenue in Salt Lake City, Utah. The former Facility began operations in 1951 under the ownership of the Filtrol Corporation; Engelhard Corporation acquired the Facility in 1988 and continued operations until 2000. During its period of operation from 1951 to 2000, the Facility manufactured catalysts for the petroleum refining industry. These included clay and metal-impregnated alumina catalysts that stripped unwanted sulfur compounds from petroleum during petroleum refining processes. In addition, the plant received spent catalyst material from which it regenerated new catalysts. The Facility was closed in 2000, all buildings and structures have since been removed, and the former operations and its waste-generating processes no longer exist. The property and 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.

The pyritic material of SWMU 1 originated as by-products of past catalyst manufacturing processes. Clay slurries containing sulfates of iron and other metals, silicates, and low-pH water were periodically deposited at SWMU 1 from approximately 1951 to 1975. The deposited material eventually formed a dry surface impoundment, which was bounded by berms along the eastern

and southern boundaries of the SWMU. The material reportedly reached a maximum thickness of approximately 12 feet above the original ground surface. From these boundary berms, the accumulated pyrite extended on the surface several hundred feet to the north and west, where its thickness decreased to zero.

Investigations into environmental releases have been conducted throughout the former Facility since the late 1980s. A summary of the investigations conducted prior to 2006 is referenced in the RCRA Facility Investigation Report (MSE, 2006).

The first investigation of the Pyrite Impoundment Area began in 1990 (Montgomery Watson, 1994). Over a three year period, samples were collected of the pyritic material, of the berm, and of groundwater. Samples were analyzed for total metals and for metals by the toxicity characteristic leaching procedure (TCLP). The pyrite material was further investigated in 2001 and 2002 under an approved Sampling and Analysis Plan (SAP) and an Addendum to the SAP (MSE, 2001a and 2001b). A small percentage of pyrite waste samples collected within the southeastern portion of the pyrite impoundment exhibited the hazardous waste characteristics of corrosivity ( $\text{pH} < 2$ ) and/or toxicity (TCLP-lead  $> 5$  mg/l). Based on these results, a portion of the pyrite material was designated as "restricted" with respect to removal for recycling, while the remainder of the pyrite material (the "unrestricted pyrite") was released for a removal/recycling effort.

A portion of the unrestricted pyrite material was removed and recycled between 2001 and 2003. The remaining unrestricted pyrite was later excavated and stockpiled in the western portion of SWMU 1. In late 2004, the entire volume of the restricted pyrite material was moved within the SWMU boundaries to allow for installation of infrastructure. The restricted pyrite was stockpiled on a constructed liner in the eastern portion of SWMU 1. The restricted and unrestricted pyrite piles each include some native soil material, which was scraped from beneath the original location of the respective pyrite materials. Excavation stopped when a hardpan was encountered, and the area was backfilled with clean imported fill material.

The area of the restricted pyrite stockpile previously extended to within the boundaries of the former Plant Site. In order to complete the sale of the former Plant Site in late 2008, the restricted pyrite was moved back to the west side of SWMU 1. The residual soil on the east side of the SWMU was then investigated, and two soil removals were performed where indicated by the data. Following the removal actions, the remaining site soil was evaluated in a risk assessment memorandum (Glaser, 2008b), and that area was then brought under the umbrella of the Site Management Plan for the Plant Site area (Terracon, 2008). At this time, all of the SWMU 1 materials, which are subject to the requirements of this SMP, are located either within Lots 16 and 17 of the Nin Tech East VII plat, or beneath the adjoining segment of Gladiola Street, and a small amount of the SWMU 1 materials may also remain beneath a lift station near the southeast corner of Lot 16. A plat map depicting the affected area including Lots 16 and 17 is provided in Appendix A.

The most recent SWMU 1 investigation was conducted in 2009 under an approved workplan (Terracon, 2009a and 2009b). Each feature of SWMU 1 [e.g., pyritic material (both restricted and unrestricted)], the berm pile, subsurface soil underlying the unrestricted pyrite material, areas of elevated concentrations near the unrestricted pyrite, groundwater, and the adjacent Lee Drain was sampled to provide data representative of current conditions. The resulting data takes into account the movement and disturbance of pyrite and soil that had occurred since the original explorations and testing and acts as the chemical baseline.

The data resulting from the 2009 SWMU 1 investigation were used in a baseline risk assessment, which was completed in 2010 to evaluate human health and ecological risks (Glaser, 2010).

Because the calculated cancer risk levels, hazard index, and blood lead levels associated with the restricted pyrite material exceeded the UAC R315-101 criteria, corrective action was required for this medium. Since none of the other media exceeded the UAC R315-101 criteria, corrective action was only required for the restricted pyrite material, and was not required for any other medium or material at the site.

Corrective Action for the restricted pyrite was completed, as documented in Ninigret correspondence dated April 27, 2011. Corrective action consisted of removal of this material for offsite disposal as non-hazardous solid waste at an appropriately permitted disposal facility. Ninigret conducted this removal action with approval and oversight by DWMRC representatives. During the removal action, appropriate dust control measures were implemented along with procedures to minimize workers' personal exposure to dust, primarily through work practices. These practices included dust suppression as needed, working on the upwind side of the disturbance to the extent practical, and using respiratory protection as needed.

## **2.0 REMAINING CONSTITUENTS**

Metals remain in the pyrite materials and in soils and groundwater beneath the site at concentrations exceeding local background levels. However, as discussed below in Section 3, the baseline risk assessment has determined that for most areas and media within the site, 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 baseline risk assessment also indicated a limited potential for effects to ecological receptors due to site constituents, assuming the site were to remain undeveloped. However, the actual land use includes the completed site redevelopment which has effectively eliminated the previously limited habitat, further reducing the potential for such effects to ecological receptors.

### 3.0 SITE RISK

This section summarizes the results of the baseline risk assessment. Details of the risk assessment procedures and results are provided in the *Baseline Risk Assessment for the Pyrite Impoundment Area, Solid Waste Management Unit 1, Former Engelhard Facility, Salt Lake City, Utah* (Glaser, Steven L. Environmental Consulting, September 2010).

#### 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 ( $\mu\text{g}/\text{dl}$ ) require attention.

These endpoints were calculated for receptors including a site worker and a construction worker and a teenage wader for the Lee Drain (a canal along the southern boundary of the site). Exposure pathways for the site worker included incidental ingestion of soil, dermal contact with soil, and inhalation of dust. These soil pathways were also used for the construction worker. 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 for each individual feature medium within SWMU 1. A site-wide construction worker was included in the HHRA, as well as a construction worker exposed to both the unrestricted pyrite material and the subsurface soil beneath this material. In some instances when the site worker deterministic cancer risk exceeded the UAC R315-101 cancer risk benchmark for corrective action, a probabilistic risk assessment was performed. The probabilistic risk assessment used exposure parameter distributions to refine the estimate of the potential risk.

Based on the results of the HHRA, corrective action was required only for the restricted pyrite material. The restricted pyrite exceeded the UAC R315-101 criteria for the cancer risk, hazard index, and blood lead level. For the restricted pyrite, the cancer risk for a site worker equaled  $4 \times 10^{-4}$ , the hazard index was 4 for a site worker and 5 for a construction worker, and the blood lead level for the fetus of a pregnant female worker was estimated to equal 11  $\mu\text{g}/\text{dl}$  for a site worker and 19  $\mu\text{g}/\text{dl}$  for a construction worker.

For all other features and receptors at SWMU 1, risks were less than the DWMRC corrective action benchmarks: the cancer risk was less than  $1 \times 10^{-4}$ , the hazard index did not exceed 1, and the calculated estimates of blood levels did not exceed 10  $\mu\text{g}/\text{dl}$ . Thus, while site management is required for these other features, corrective action was not a required component. For the Lee Drain, the cancer risk was less than  $1 \times 10^{-6}$ , and no further action is necessary to address human health risks.

### 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 site consisted primarily of weedy vegetation with limited ecological resources and poor structure. The Lee Drain, a canal used for flood-control purposes, borders the site to the south. No threatened, endangered, or special-status species of wildlife or plants occur at the 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 provided by the site development that effectively displaces habitat. Assessment endpoints as 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 only a limited potential for ecological effects.

Based on the results of the ERA and assuming the site were to remain undeveloped, there appears to be a limited potential for effects to ecological receptors due to site constituents, in the absence of any controls to prevent the establishment of habitat over time. 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

### 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 portion of any future surface waterway (such as re-routing of segments of the Brighton Canal, Lee Drain or similar features) shall be placed within Lots 16 and 17 or elsewhere within the footprint of SWMU 1, unless the waterway is lined or otherwise constructed such that a separation is maintained between the water within the waterway and soils within Lots 16 and 17 or elsewhere within the footprint of SWMU 1 that contains 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 corrective action, for the restricted pyrite only, and by the site development as buildings, paved areas, landscaping and other infrastructure will render potential exposure pathways to future commercial workers incomplete. Without exposure, chemical risk is not realized. Notification beyond implementation of all other requirements of this SMP is not required for future commercial workers. If initial commercial workers occupy a portion of the site before the development establishes site wide 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 within the limits established at UAC R315-101 for current and future land use, assuming no controls to minimize exposure. The potential for exposure will exist for the initial commercial workers, so 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 4.4 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 through a deed notice and shall apply to and bind all subsequent property owners unless subsequent determinations by the Utah Division of Waste Management and Radiation Control 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 of 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 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).

Glaser, Steven L. Environmental Consulting, 2008a. *Baseline Risk Assessment for the Former Plant Site, Former Engelhard Facility, Salt Lake City, Utah* (August 2008).

Glaser, Steven L. Environmental Consulting, 2008b. *Addendum to the Former Engelhard Plant Site Risk Assessment, East Side Pyrite Area* (December 2008).

Millennium Science & Engineering, 2006. *RCRA Facility Investigation Site Investigation Report, Former Engelhard Plant Site Area, Salt Lake City, Utah* (December 2006)

Millennium Science & Engineering, Inc. 2004a. *Site Management Plan for the Western Alum Ponds (Western Portion of SWMU #20), former Engelhard Facility, Salt Lake City, Utah* (June 2004)

Millennium Science & Engineering, Inc. 2004b. *Site Management Plan for the Eastern Alum Ponds (Eastern Portion of SWMU #20), former Engelhard Facility, Salt Lake City, Utah* (July 2004)

## Site Management Plan, Former Pyrite Impoundment Area

Former Engelhard Facility ■ Salt Lake City, Utah

June 17, 2022 ■ Terracon Project No. 61087229



Millennium Science & Engineering, Inc. 2001a. *Sampling & Analysis Plan/Quality Assurance Plan for Characterization of Solid Waste Management Units #1, #2, and #20, Engelhard Facility, Salt Lake City, Utah* (June 2001).

Millennium Science & Engineering, Inc. 2001b. *SAP/QAP Addendum #1 - Additional Sampling and Analysis of the Pyrite Pile & Surface Impoundment (SWMU #1) at the former Engelhard Facility, Salt Lake City, Utah* (September 2001).

Montgomery Watson, 1994. *Engelhard Corporation Current Conditions Report for the RCRA Facility Investigation Salt Lake City Facility* (April 1994)

Ninigret, 2011. *Documentation of Restricted Pyrite Pile Removal and Disposal (Correspondence dated April 27, 2011)*

Terracon Consultants, Inc., 2011. *Site Management Plan for the Former Pyrite Impoundment Area, Former Engelhard Facility, Salt Lake City, Utah* (April 2011)

Terracon Consultants, Inc., 2010. *Sitewide Groundwater Monitoring Plan, Former Engelhard Facility, Salt Lake City, Utah* (September 2010)

Terracon Consultants, Inc., 2009a. *Proposed Sampling Approach, Pyrite Impoundment Area (SWMU #1), Former Engelhard Facility, Salt Lake City, Utah* (April 2009)

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)

Terracon Consultants, Inc., 2008. *Site Management Plan for the Former Plant Site Area, Former Engelhard Facility, Salt Lake City, Utah* (November 2008)

## **APPENDIX A**

### **Former Pyrite Impoundment Area Map and Legal Description**

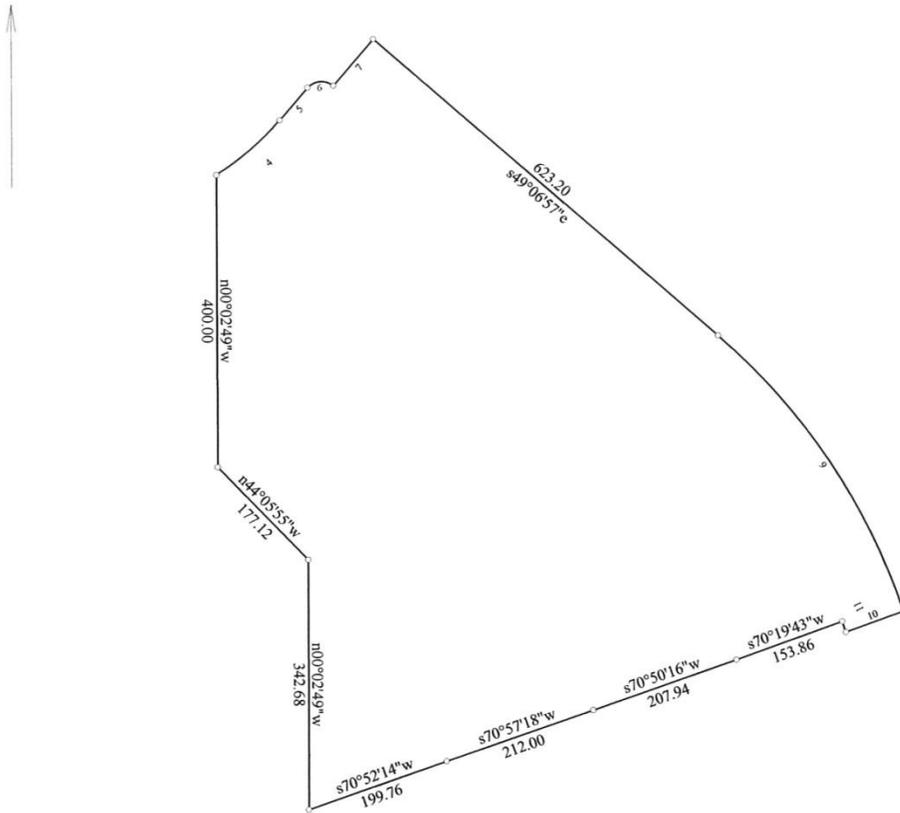


### **[Property Description]**

A parcel of land including all of Lot 16 and 17, Nin Tech East VII and Lot C, Nin Tech East III and also the adjacent area of Gladiola Street in the Northeast Quarter of Section 17, Township 1 South, Range 1 West, Salt Lake Base and Meridian, Salt Lake County, Salt Lake City, Utah, more particularly described as follows:

BEGINNING at the Southwest corner of said Lot 16, which is 1664.23 feet South 89° 54'29" West along the Section line and 2245.64 feet South 00°05'34" East from the North Quarter corner of said Section 17, and running thence North 00°02'49" West 342.68 feet to the northeast corner of said Lot 16; thence North 44°05'55" West 177.12 feet along said Lot 17; thence North 00°02'49" West 400.00 feet along said Lot 17 to a point on a 383.00 foot radius curve to the left and Ninigret Drive; thence Northeasterly 114.67 feet along the arc of said curve through a central angle of 17°09'17" (chord bears North 49°27'42" East 114.24 feet) along said street; thence North 40°53'03" East 58.57 feet along said street to a point of curvature with a 25.00 foot radius curve to the right; thence Easterly 39.27 feet along the arc of said curve through a central angle of 90°00'00" (chord bears North 85° 53'03" East 35.36 feet); thence North 40°53'03" East 84.00 feet to the northeasterly boundary line of Gladiola Street; thence South 49°06'57" East 623.20 feet along said street to a point of curvature with a 852.00 foot radius curve to the right; thence Southeasterly 459.80 feet along said street and the arc of said curve through a central angle of 30° 55'15" (chord bears South 33°39'19" East 454.24 feet); thence South 70°17'04" West 84.04 feet to the southwesterly boundary of said street and a point on a 768.00 foot radius curve to the left; thence Northwesterly 15.39 feet along the arc of said curve through a central angle of 01°08'54" (chord bears North 18° 36'10" West 15.39 feet); thence South 70°19'43" West 153.86 feet; thence South 70°50'16" West 207.94 feet; thence South 70°57'18" West 212.00 feet; thence South 70°52'14" West 199.76 feet to the POINT OF BEGINNING.

Contains 13.036 acres



Title: FORMER PYRITE AREA - DESCRIPTION		Date: 03-31-2011
Scale: 1 inch = 200 feet	File:	
Tract 1: 13.036 Acres: 567844 Sq Feet: Closure = n84.1044e 0.01 Feet: Precision = 1/285975: Perimeter = 3172 Feet		
001=n00.0249w 342.68	007=n40.5303e 84.00	013=s70.5016w 207.94
002=n44.0555w 177.12	008=s49.0657e 623.20	014=s70.5718w 212.00
003=n00.0249w 400.00	009: Rt, R=852.00, Delta=30.5515	015=s70.5214w 199.76
004: Lt, R=383.00, Delta=17.0917 Bng=N49.2742E	010=s70.1704w 84.04	
005=n40.5303e 58.57	011: Lt, R=768.00, Delta=01.0854 Bng=N18.3610W	
006: Rt, R=25.00, Delta=90.0000	012=s70.1943w 153.86	