UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: Santa Clara County Department of Environmental Health (Santa Clara County)	Address: 1555 Berger Drive, Suite 300 San Jose, CA 95112-2716
Agency Caseworker: Lani Lee	Case No.: 07S1E29L01f

Case Information

USTCF Claim No.: 7596	Global ID: T0608500225
Site Name: Former Beacon Station No. 439	Site Address: 2112 Lincoln Avenue San Jose, CA 95125 (Site)
Petitioner: Ultramar Inc. Attention: Roger Levin	Address: 5590 B Havana Street Denver, CO 80239
USTCF Expenditures to Date: None	Number of Years Case Open: 22

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0608500225

Summary

The Low-Threat Underground Storage Tank Case Closure Policy (Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Low-Threat Policy. This Site does **NOT** satisfy **GENERAL CRITERIA b** of the Policy, which requires the unauthorized release to consist only of petroleum. This Site meets all of the required criteria of the State Water Resources Control Board Resolution 92-49. A summary evaluation of compliance with the Resolution 92-49 is shown in **Attachment 1: Compliance with State Water Board Policies and State Law.** The Conceptual Site Model (CSM) upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Site Information.** Highlights of the CSM upon which the evaluation of the Case has been made are as follows:

The release at this Site was discovered when one of the former underground storage tanks (USTs) was removed from the Site in August 1991. All remaining Site facilities, including the UST systems, were demolished and removed in 1992. The amount of impacted soil removed from the Site during the 1991 UST removal and 1992 station demolition was not reported. The Site is currently a day care center. The Site property was vacant and undeveloped after demolition of the former gas station in 1992 until 2000 when a day care center was constructed and opened at the Site. The Site is located in a mixed commercial and residential area.

During the soil vapor extraction (SVE) test in July 1993, approximately 230 gallons of total petroleum hydrocarbons as gasoline (TPHg) were removed. An SVE system operated between August 2000 and

October 2005 and removed approximately 1,658 pounds of TPHg and 4.4 pounds of benzene. Between November 2005 and October 2006, an in-situ submerged oxygen curtain mass transfer unit operated at the Site to supersaturate the groundwater with oxygen to enhance biodegradation of the residual dissolved-phase petroleum hydrocarbons. The remediation effort was discontinued to evaluate whether dissolved hydrocarbons in the groundwater would rebound beneath the Site. In August 2009, a high-vacuum dual-phase extraction (HVDPE) remedial event was performed at the Site. Approximately 82 pounds of TPHg and 1,428 gallons of processed groundwater were removed during this event.

Tetrachloroethene (PCE) was detected in only one shallow soil sample at a low concentration during the 1991 waste oil tank removal. Limited PCE impacted soil was removed after the waste oil tank area was over-excavated in the same event. Subsequently, a soil sample was collected in the same waste oil tank pit during station demolition in 1992 and the result was non-detect for PCE. Groundwater samples from on-Site wells were analyzed for PCE during the December 2012 sampling event and the results were non-detect. TPHg, benzene, and methyl tert-butyl ether (MTBE) in the groundwater are either non-detect or have established a decreasing concentration trend in all wells.

The primary source has been removed and the secondary source has been removed to the extent practicable through excavation at the time of UST removal and subsequent SVE system operation. Soil and groundwater have been evaluated to determine the extent and mobility of the release. Minimal residual mass remains beneath the Site. Remaining petroleum constituents are limited, stable, and declining. Remedial actions have been implemented and further remediation would not change the CSM and would be expensive. Natural attenuation will reduce residual petroleum constituents to background in decades to hundreds of years. Remaining petroleum constituents do not pose significant risk to human health, safety, or the environment.

Objections to Closure

Santa Clara County staff objected to UST case closure because PCE was reported in a soil sample collected from 1-2 feet bgs following removal of a waste oil tank in 1991. The former location of the waste oil tank and the positive PCE soil detection are located directly beneath the floor of a current child day care building.
RESPONSE: There was only one shallow soil sample that was detected at a low concentration for PCE during the 1991 waste oil tank removal. Limited PCE impacted soil was removed as evidenced by the non-detectable results for PCE after the waste oil tank area was over-excavated in the same event.

Subsequently, a soil sample was collected in the same waste oil tank pit during station demolition in 1992 and the result was non-detect for PCE. Even in the unlikely scenario that PCE soil vapor existed, the low soil vapor level would likely have been removed by the SVE system that was operated from 2000 through 2005.

PCE has not been detected in the groundwater as well. Therefore, PCE is not an issue for this Site because the limited extent of PCE in soil was removed and the groundwater has not been impacted by PCE.

Recommendation for Closure

The corrective action performed at this Site ensures the protection of human health, safety, the environment and is consistent with chapter 6.7 of the Health and Safety Code and implementing regulations, applicable state policies for water quality control and the applicable water quality control plan, and case closure is recommended.

Prepared By: Trinh pham 9/18/2013
Trinh Pham Date
Water Resource Control Engineer

Reviewed By: 9/18/2013
George Lockwood, PE No. 59556 Date
Senior Water Resource Control Engineer

ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW
The Site complies with State Water Board policies and state law. Section 25296.10 of the Health and Safety Code requires that sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the Site do not pose significant risk to human health, safety, or the environment.

The Site complies with the requirements of Resolution 92-49 as described below.

Will corrective action performed ensure the protection of human health, safety, and the environment? The information included in this UST Case Closure Summary supports a determination that corrective action performed at this Site will ensure the protection of human health, safety, and the environment.	☒ Yes ☐ No
Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations? The corrective action provisions contained in Chapter 6.7 of the Health and Safety Code and the implementing regulations govern the entire corrective action process at leaking UST sites. If it is determined, at any stage in the corrective action process, that UST case closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this Site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this Site meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this Site?	☐ Yes ☒ No
Are corrective action and UST case closure consistent with State Water Board Resolution 92-49?	☒ Yes ☐ No
Is achieving background water quality feasible? To remove all traces of residual petroleum constituents at the Site would require significant effort and cost. Removal of all traces of residual petroleum hydrocarbon constituents (if present) that contribute to detectable concentrations in shallow groundwater can be accomplished, but would require excavation of additional soil as well as additional remediation of shallow groundwater. If complete removal of all detectable traces of petroleum constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous. Because of the high costs involved and minimal benefit of attaining further reductions in concentrations of petroleum constituents at this Site, and the fact that beneficial uses are not threatened, attaining background water quality at this Site is not feasible.	☐ Yes ☒ No

If achieving background water quality is not feasible: **Is the alternative cleanup level consistent with the maximum benefit to the people of the State?** It is impossible to determine the precise level of water quality that will be attained given the uncertainties about the rates of dissolution and degradation. In light of all the factors discussed above and the fact that the residual petroleum constituents will not unreasonably affect present and anticipated beneficial uses of groundwater, an acceptable level of water quality will be attained that is consistent with the maximum benefit to the people of the state.	☒ Yes ☐ No
Will the alternative cleanup level unreasonably affect present and anticipated beneficial uses of water? The aquifer beneath the Site is at or near WQOs and the surrounding aquifer is below WQOs. Groundwater concentrations will continue to reduce through natural attenuation.	☐ Yes ☒ No
Will the alternative level of water quality result in water quality less than that prescribed in applicable Basin Plan? The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this Site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant basin plan. Pursuant to State Water Board Resolution 92-49, a site may be closed if the basin plan requirements will be met within a reasonable time frame. Natural attenuation will continue to reduce groundwater concentrations.	☐ Yes ☒ No
Have factors contained in title 23 of the California Code of Regulations, section 2550.4 been considered? In approving an alternative level of water quality less stringent than background, the State Water Board considers the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). The adverse effect on shallow groundwater will be minimal and localized, and there will be little adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents, the hydrogeological characteristics of the Site and surrounding land. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of the groundwater supply wells, the current and potential future uses of groundwater in the area, the existing quality of groundwater, the potential for health risks caused by human exposure, the potential damage to wildlife, crops, vegetation, and physical structures, and the persistence and permanence of potential effects. Finally, a level of water quality less stringent than background is unlikely to have any impact on surface water quality, in light of the volume and physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the Site and surrounding land; the quantity and quality of groundwater and direction of groundwater flow, the patterns of precipitation in the region, and the proximity of residual petroleum to surface waters.	☒ Yes ☐ No

Will the requisite level of water quality be met within a reasonable time? Although WQOs may not have been met at the Site, the approximate time period in which the requisite level of water quality will be met for constituents of concern is decades to hundreds of years. This is a reasonable period in which to meet the requisite level of water quality because current and future beneficial uses are not impaired. Impacted groundwater is not currently being used as a source of drinking water and it is highly unlikely that impacted groundwater will be used as a source of drinking water in the future. Residential and commercial water users are currently connected to the municipal drinking water supply. Public supply wells are constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. The site conditions do not represent a substantial threat to human health, safety, or the environment, and case closure is appropriate.	☒ Yes ☐ No

ATTACHMENT 2: SUMMARY OF BASIC INFORMATION (Conceptual Site Model)

Site Location/ History

- Location: The Site is located on the southeastern corner of the intersection of Lincoln Avenue and Terra Bella Avenue.
- Nature of Contaminants of Concern: Petroleum constituents and PCE.
- Primary Source of Release: UST system.
- Discovery Date: 1991.
- Release Type: Petroleum[1] and PCE.
- Free Product: Free product has noted in well MW-2 in November 1992 with a thickness of 0.01 feet; however, free product has not been recorded at the Site since the first detection.

Table A: USTs

Tank	Size in Gallons	Contents	Status	Date
1	550	Waste Oil	Removed	1991
2	550	Waste Oil	Removed	1992
3	10,000	Gasoline	Removed	1992
4	10,000	Gasoline	Removed	1992
5	10,000	Gasoline	Removed	1992

Receptors

- Groundwater Basin: Santa Clara Valley.
- Groundwater Beneficial Uses: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).
- Designated Land Use: Commercial, Residential.
- Public Water System: San Jose Water Company.
- Distance to Nearest Supply Wells: An inactive domestic well is located approximately 750 feet north of the Site.
- Distance to Nearest Surface Waters: More than 1,000 feet from the Site.

Geology/ Hydrogeology

- Average Groundwater Depth: ~ 46 feet.
- Minimum Groundwater Depth: ~ 45 feet.
- Geology: Site overlies fine-grained soils, consisting predominantly of silty clay to sandy silt at depths ranging from the ground surface to approximately 25 ft below ground surface (bgs). Coarser-grained sediments consisting primarily of silty to sandy gravel are encountered below the average depth of 25 ft bgs.
- Hydrology: The groundwater flow direction is to the north.

[1] "Petroleum" means crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute.
(Health & Safety Code, § 25299.2)

Corrective Actions

- One UST was removed and replaced in 1991 and four USTs were removed in 1992 as part of the station demolition. The amount of impacted soil that was excavated and over-excavated from the Site was not reported.
- An SVE test was performed in July 1993. Approximately 230 gallons of TPHg were removed during an SVE test.
- An SVE system operated between August 2000 and October 2005 and removed approximately 1,658 pounds of TPHg and 4.4 pounds of benzene.
- Between November 2005 and October 2006, an in-situ submerged oxygen curtain mass transfer unit operated at the Site to supersaturate the groundwater with oxygen to enhance biodegradation of the residual dissolved-phase petroleum hydrocarbons. The operation was discontinued to evaluate if dissolved hydrocarbons in the groundwater would rebound beneath the Site.
- A HVDPE remedial event was performed in August 2009. Approximately 82 pounds of TPHg and 1,428 gallons of processed groundwater were removed during this event.

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	0.089	0.084
Ethylbenzene	0.088	0.055
Naphthalene	Not Analyzed	Not Analyzed
PAHs*	Not Analyzed	Not Analyzed

*Poly-aromatic hydrocarbons as benzo(a)pyrene toxicity equivalent

Table C: Concentrations of Petroleum Constituents in Groundwater (December 2012)

Well ID	TPHg (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-1	**200**	**3.6**	<0.5
MW-2	--	--	--
MW-3	<50	<0.5	<0.5
MW-4	**84**	<0.5	<0.5
MW-5	**52**	<0.5	<0.5
MW-6	<50	<0.5	<0.5
MW-7	<50	<0.5	<0.5
MW-8	<50	<0.5	<0.5
MW-9	--	--	--
MW-10	--	--	--
MW-11	--	--	--
MW-12	--	--	--
RW-1	**250**	**11**	0.61
WQOs	**5**[1]	**1**[2]	**5**[3]

See notes on the next page

Notes:

--	Inaccessible
<	Less than indicated detection level
1	Taste and odor threshold (McKee and Wolf)
2	California Primary Maximum Contaminant Level (MCL)
3	California Secondary MCL

Groundwater Trends
Reported concentrations of benzene and MTBE at the Site are either non-detect or have demonstrated decreasing trends over time.

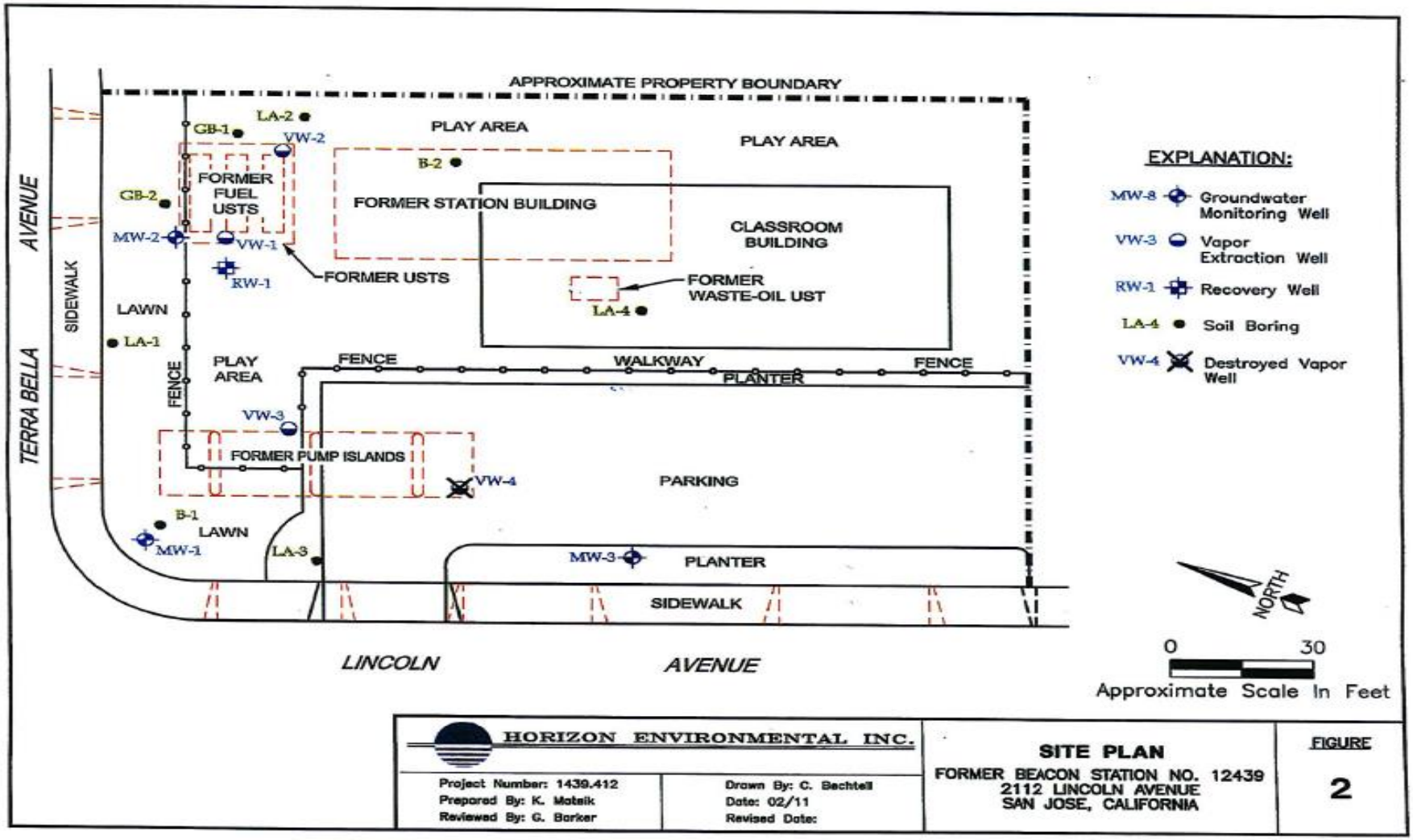
Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: TPHg groundwater plume length is ~ 220 feet, benzene groundwater plume length is ~ 110 feet.
- Petroleum Constituent Plume Determined Stable or Decreasing: Yes.
- Soil/Groundwater Sampled for MTBE: Yes, see Table C above.
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No.
- Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: No. Petroleum constituents most likely to pose a threat for vapor intrusion were removed during soil excavation and over-excavation. Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance[2] at the Site: No.
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No. Site-specific conditions satisfy all of the applicable characteristics and criteria for petroleum vapor intrusion to indoor-air under Class a, Scenario 4.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No. There are no soil samples results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene concentrations can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

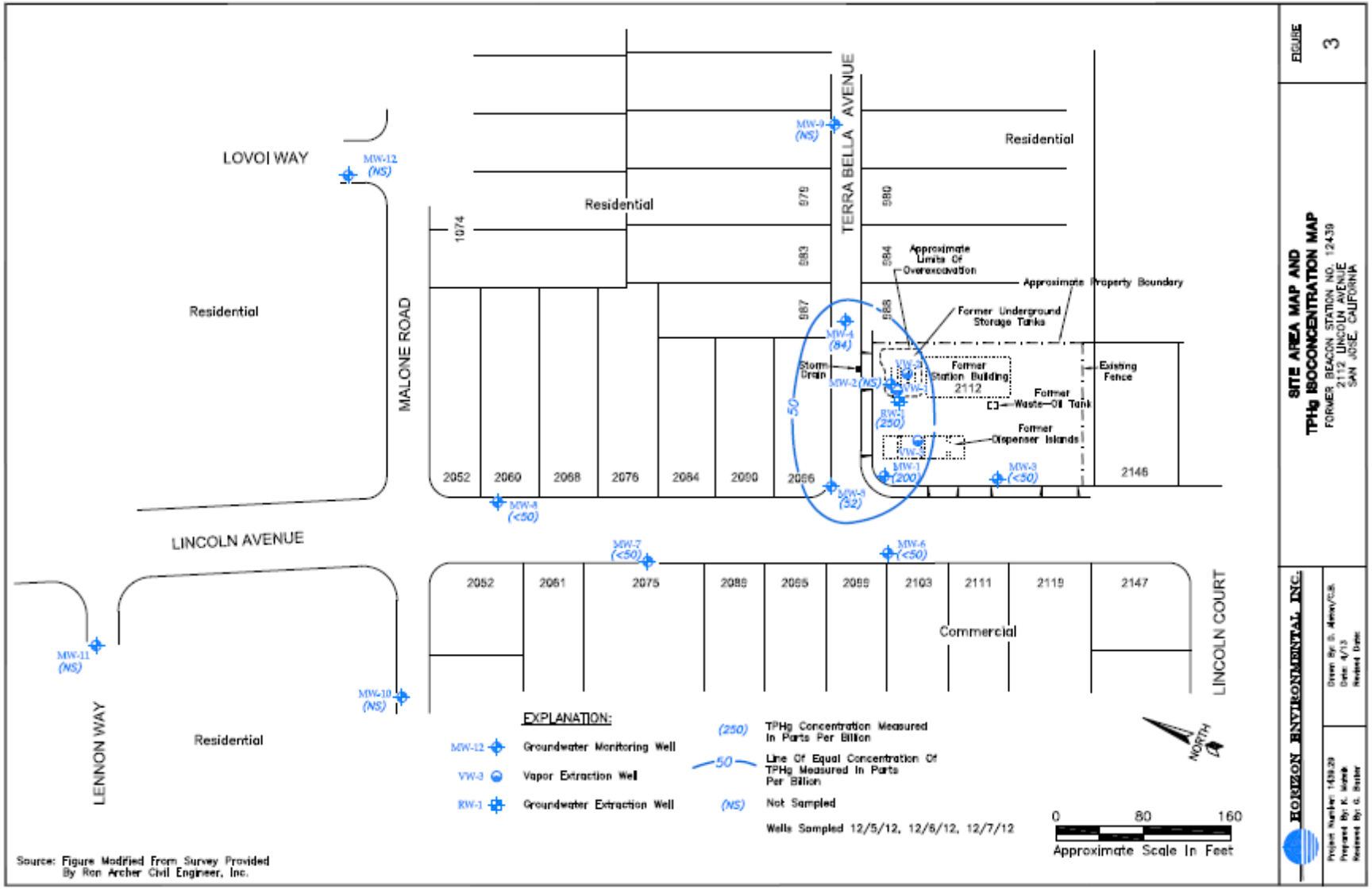
[2] Nuisance as defined in California Water Code, section 13050, subdivision (m).

Former Beacon Station No. 439
2112 Lincoln Avenue, San Jose

PLOT PLAN



TPHg IN GROUNDWATER (µg/L) – DECEMBER 2012



BENZENE IN GROUNDWATER (µg/L) – DECEMBER 2012