Appendix G

Soil and Groundwater Management Plan

FARALLON CONSULTING

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SOIL AND GROUNDWATER MANAGEMENT PLAN

Bayer Campus Parcels 1, 2, 3, and 4
820 Parker Street
Berkeley, California

Submitted by:
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Oakland, California 94607

Farallon PN: 2483-001

For:
Bayer U.S. LLC
820 Parker Street
Berkeley, California

December 28, 2020

Prepared by:

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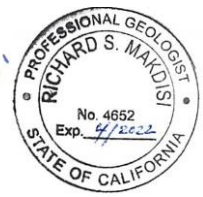
Reviewed by:



Richard Makdisi. P.G.
Principal Geochemist

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ACRONYMS AND ABBREVIATIONS

2020 Phase I ESA	*Phase I Environmental Site Assessment Report, Bayer Campus Parcels 1, 2, 3, and 4 820 Parker Street, Berkeley, California* dated October 21, 2020, prepared by Farallon Consulting, L.L.C.
2020 UST Closure Report	*Underground Storage Tank Closure Report, Bayer Healthcare Campus, Berkeley, California* dated August 18, 2020, prepared by Farallon Consulting, L.L.C.
APN	Alameda County Assessor's Parcel Number
Bayer	Bayer U.S. LLC.
bgs	below ground surface
CCR	California Code of Regulations
COCs	constituents of concern
CY	cubic yards
ESLs	San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels for soil and groundwater dated January 2019 (Rev. 2)
Farallon	Farallon Consulting, L.L.C.
HASP	Health and Safety Plan
North Campus	Parcels 1, 2, and 3
NPDES	National Pollutant Discharge Elimination System
µg/l	micrograms per liter
mg/l	milligrams per liter
mg/kg	milligrams per kilogram
Proposition 65	California Safe Drinking Water and Toxic Enforcement Act of 1986
RCRA	Resource Conservation and Recovery Act
RWQCB	San Francisco Bay Regional Water Quality Control Board

SGMP	*Soil and Groundwater Management Plan, Bayer Campus Parcels 1, 2, 3, and 4, 820 Parker Street, Berkeley, California* dated November 15, 2020, prepared by Farallon Consulting, L.L.C. (this document)
Site	Parcels 1, 2, 3, and 4 on the Bayer Campus at 820 Parker Street in Berkeley, California
South Campus	Parcel 4
TCE	trichloroethene
TCA	trichloroethane
Title 22 metals	CCR Title 22 Division 4.5 metals, including arsenic, silver, barium, beryllium, copper, cadmium, chromium (total), hexavalent chromium, mercury, molybdenum, nickel, lead, selenium, titanium, vanadium, and zinc
TMP	Construction Traffic Management Plan
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons in the diesel range
TPHg	total petroleum hydrocarbons in the gasoline range
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

Farallon Consulting, L.L.C. (Farallon) has prepared this Soil and Groundwater Management Plan (SGMP) on behalf of Bayer U.S. LLC (Bayer) for Parcels 1, 2, 3, and 4 on the Bayer Campus at 820 Parker Street in Berkeley, California (herein referred to as the Site) (Figure 1). The purpose of this SGMP is to provide protocols for managing confirmed and potentially contaminated soil and groundwater that may be encountered during future improvement activities involving subsurface work at the Site. The SGMP is a requirement of the City of Berkeley Toxics Management Division to address future development environmental issues associated with the Bayer Campus 2020 Development Agreement with the City of Berkeley.

This document has been organized into the following sections:

- **Section 2, Site Description and Background,** provides a description of the Site and its historical use, the general Site setting, regional geology and hydrogeology, and the Site regulatory status.
- **Section 3, Known Environmental Conditions,** summarizes environmental investigations previously conducted at the Site, the defining regulations applicable to the Site, the constituents of concern (COCs), and the areas where COCs have been detected at or are suspected to be detected at concentrations exceeding the defining regulations.
- **Section 4, Soil and Groundwater Management Plan,** presents the details of this SGMP, including the requirements for communication, health and safety, and reporting; and management of soil, groundwater, stormwater, and unanticipated subsurface conditions.
- **Section 5, Modifications to the Soil and Groundwater Management Plan,** presents the conditions under which modifications to this SGMP may be required.
- **Section 6, Scope, Representations, and Limitations,** provides the details of these subjects under this SGMP.
- **Section 7**, **References**, lists the documents cited in this SGMP.

2.0 SITE DESCRIPTION AND BACKGROUND

This section provides a description of the Site and its historical use, the general Site setting, regional geology and hydrogeology, and the Site regulatory status.

2.1 SITE DESCRIPTION AND HISTORICAL USE

The Site is developed as the Bayer Campus with manufacturing, utility, storage, and administration buildings supporting production of pharmaceuticals. The Site is divided into the North Campus and the South Campus and consists of four parcels totaling approximately 46 acres of land developed with 35 single- or multi-level buildings that were constructed between 1917 and 2020. The North Campus is composed of Parcel 1 (Alameda County Assessor's Parcel No. [APN] 054-1773-3-4), Parcel 2 (Alameda County APN 054-1770-8-1), and Parcel 3 (Alameda County APN 54-1777-1). The North Campus is largely located between Dwight Way to the north, Seventh Street to the east, Carleton Street to the south, and the Southern Pacific railroad tracks to the west. The North Campus also includes the parking lot south of Dwight Way between Seventh Street and Eighth Street (Parcel 3). The South Campus consists of Parcel 4 (Alameda County APN 054-1748-2-1), which is located between Carleton Street to the north, Seventh Street to the east, Grayson Street to the south, and the Southern Pacific railroad tracks to the west. The remaining areas of the Site consist of paved parking, parks, and landscaped areas.

During the site reconnaissance completed as part of the Phase I Environmental Site Assessment, outlined in the *Phase I Environmental Site Assessment Report, Bayer Campus Parcels 1, 2, 3, and 4, 820 Parker Street, Berkeley, California* dated October 21, 2020, prepared by Farallon (2020 Phase I Report) (Farallon 2020b), Farallon observed multiple aboveground storage tanks, including nine tanks used to store diesel for generators and various industrial process tanks used to store water, acids, bases, and gases. Minor amounts of hazardous materials, including industrial process supplies, janitorial cleaning supplies, and maintenance-related products, were present on the exterior of the Site and in multiple Site buildings. The materials were observed to be properly labeled and stored in designated areas of the Site buildings. No evidence of releases was observed in or around the containers at the time of the site reconnaissance. According to the Site representative, a release of hydraulic fluid is known to have occurred at building B57 due to a leaking elevator. The release does not pose a significant risk to human health or the environment and is therefore considered a de minimis condition in connection with the Site. Farallon also observed de minimis petroleum staining throughout paved areas of the Site that appeared to be from parked vehicles on the Site.

Cutter Laboratories manufactured penicillin, vaccines, and animal health medicines, and was the owner of a portion of the current Site beginning in 1917. By 1931, the portion of the Site south of Parker Street was developed with various buildings (B44, B56, and B56A) and a portion of the Site north of Parker Street was developed. Between 1956 and 1973, nine additional buildings (B83, B84, B85, B56B, SC-6, B47, B28, and B28A) were constructed at the Site. Two of the buildings were apparent on the southeastern portion of the Site and used by Colgate-Palmolive, a former soap

manufacturing company, that occupied a portion of the Site from 1939 to 1980. Bayer acquired Cutter Laboratories in 1974. By 1980, the Site was developed with four additional buildings (B53, B54, B57, and B58) north of Parker Street. In 1992, building B59 was constructed, and in 1995, four additional buildings (B61, B62, B63, and B60) were apparent on the Site. Bayer also made purchases in 1992 and 1999 of contiguous land formerly occupied by various parties, including the Gary Steel Company, the City of Berkeley School Bus Yard, and Western Intermodals. In 2000, Bayer purchased properties on Parcel 4 on the southern portion of the Site. From 2000 to 2020, buildings B64, B80, B81, B66, B62A, B88, B87, B68, and CCTC were developed on the Site. Several buildings have been demolished since 1911 and converted into parking lots for the Site.

2.2 GENERAL SITE SETTING

The Site is at an elevation of approximately 32 feet above mean sea level. The Site topography in the general vicinity of the Site is relatively flat. Regional topography is relatively flat with a slight slope down to the west. The water body nearest the Site was identified as Aquatic Park approximately 200 feet west of the Site.

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Site is in the central portion of the Coast Ranges geomorphic province of California. The Site is in the East Bay Plain, a broad alluvial plain formed by streams flowing from the East Bay Hills on the east to San Francisco Bay on the west. The Site is located at the Bay margin at the western foot of the East Bay Hills, and is composed of broad alluvial fan deposits that have accumulated from erosion of the surrounding hills.

Structurally, the Site is on top of the eastern edge of the fault-bound Marin-San Francisco block. The block tilted eastward between the San Andreas and Hayward faults, creating a deep trough along the base of the uplifting East Bay Hills. This trough was filled with alluvial deposits of the Alameda formation during the Pleistocene epoch of geologic time (roughly 11,000 to 1.5 million years before the present). Uplift and erosion of the East Bay Hills produced large streams depositing broad fans along the Bay margin, including the San Antonio and Temescal formations.

Shallow soils consist of fine- to medium-grained alluvial, fluvial, and marginal marine clastic deposits of Holocene age (less than 11,000 years old). An upper 15- to 20-foot-thick clay unit is underlain by an approximately 5- to 8-foot-thick heterogeneous gravelly and clayey silt and sand unit, which grades locally into a sandy gravel unit. The base of this silt and sand unit is generally encountered at a depth of approximately 20 to 25 feet below ground surface (bgs), corresponding to the top of a clay unit, which is most likely Younger Bay Mud.

The Site is in the Santa Clara Valley Groundwater Basin and East Bay Plain Sub-Basin. Groundwater in the Site area of the sub-basin is mapped as unlikely to be used for drinking water (San Francisco Bay Regional Water Quality Control Board Groundwater Committee 1999), although the Basin Plan considers all groundwater to have potential and existing beneficial use as

a municipal drinking, process, industrial, and/or agricultural water source (California Water Quality Control Board, San Francisco Bay Region No Date).

Soil and groundwater data for the property show that the lithology is composed of brown sandy silt to a depth of approximately 5 feet bgs, underlain by dark brown clay. Groundwater was encountered at a depth of approximately 10 feet bgs during underground storage tank (UST) closure activities and groundwater monitoring events at the Bayer Campus, which are discussed in Section 3.1, Previous Environmental Studies. Based on the topography of the Site and vicinity and the historical record of groundwater monitoring at the Site, groundwater flow is to the west toward San Francisco Bay.

3.0 KNOWN ENVIRONMENTAL CONDITIONS

This section summarizes environmental investigations previously conducted at the Site and identifies the defining regulations applicable to the Site. The COCs and the areas where they have been detected at concentrations exceeding the defining regulations also are discussed.

3.1 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

According to the 2020 Phase I Report, an oil-water separator sump and 26 USTs containing petroleum hydrocarbons, waste oil, acetone, or denatured alcohol were present on the Bayer Campus. The oil-water separator sump and 20 USTs were discovered on the North Campus and six USTs were discovered on the South Campus. A total of 18 of the USTs and the oil-water separator sump were removed from the North Campus between 1986 and 1995, and the final two USTs were removed in 2012 and 2020. All six of the USTs were removed from the South Campus between 1984 and 1990. The Site received case closure status from San Francisco Bay Regional Water Quality Control Board (RWQCB) for the leaking USTs in August 2016.

Groundwater monitoring on the Bayer Campus was conducted from 1986 to 2009 using a network of 21 monitoring wells. All remaining monitoring wells were decommissioned in November 2009 as a requirement by the RWQCB for case closure, which was issued in August 2016.

A soil gas survey was conducted at the QC Building off of Carleton Street on the Bayer Campus in June 2015 to evaluate vapor intrusion risk. Chlorinated and hydrocarbon-related volatile organic compounds (VOCs) were detected at trace or low concentrations; the detected concentrations did not exceed the RWQCB commercial Environmental Screening Levels (ESLs) in effect in 2015 and do not exceed the 2019 updated ESLs for a commercial/industrial property. Soil profiling also was conducted. Analytical results indicated that the soil was suitable for either on-Site reuse, off-Site unclassified soil disposal, or Class II nonhazardous waste disposal.

The area of west Berkeley up-gradient of the Site is associated with a regional chlorinated VOC groundwater plume originating from a variety of point and non-point sources. Low concentrations of VOCs, particularly trichloroethene (TCE), have been detected on the Site in the plume at less than 30 micrograms per liter (µg/l) for TCE, which exceeds the regulatory drinking water standard of 5 µg/l. VOC concentrations at the Site are less than 2019 ESLs for vapor intrusion risk for commercial/industrial land use.

The locations of Site features are shown on Figure 2, as applicable. Site closure documents are presented in Appendix A.

3.1.1 Parcel 1 Underground Storage Tank Removal and Remediation History

The former Berkeley Unified School District Bus Maintenance Facility and the former Gary Steel property (Parcel 1) contained an oil-water separator sump and seven USTs used to store total petroleum hydrocarbons (TPH) in the diesel range (TPHd) or in the gasoline range (TPHg). A total

of 1,845 cubic yards (CY) of TPH-impacted soil and 2,700 gallons of groundwater were removed from the Site during post-UST removal remediation of the combined excavations of UST-13 through UST-16. An additional 18 CY of TPH-impacted soil from the UST-17 excavation and 15 CY of TPH-impacted soil from the oil-water separator sump excavation were removed from the Site. Confirmation samples collected from the UST-17 and oil-water separator sump excavations indicated that TPH was not present in soil at concentrations exceeding the Tier 1 ESLs. Confirmation samples collected from the combined UST-13 through UST-16 excavation sidewalls above the saturation zone contained TPHg and TPHd at concentrations of 130 milligrams per kilogram (mg/kg) and 370 mg/kg, respectively. The TPHg concentration in the excavation sidewall was less than the residential and commercial/industrial ESLs for direct exposure. The TPHd concentration in the excavation sidewall exceeded the residential ESL but was less than the commercial/industrial ESL. Approximately 7,500 square feet of TPH-impacted soil in an area west of the UST excavation was left in-place due to cost constraints. Grab groundwater samples collected from the excavation indicated that TPHg and TPHd were present in concentrations that did not exceed the Tier 1 ESLs. UST-18 was removed from Parcel 1 in 1986 and UST-19 was removed from Parcel 1 in 1995. During removal of UST-19, evidence of a leak from the former UST-18 was observed. Approximately 60 CY of TPHg-impacted soil was removed from the Site. Confirmation samples collected in the excavation indicated that TPHg and lead were not detected at concentrations exceeding the Tier 1 ESLs

3.1.2 Parcel 2 Underground Storage Tank Removal and Remediation History

UST-1 through UST-3 were removed from Parcel 2 in 1986. TPHd was detected at concentrations exceeding 1,500 mg/kg in soil during removal of UST-1. A subsequent soil and groundwater investigation completed in 1987 found that TPH impacts to soil extended to an approximately 425-square-foot area to the west of UST-1 and was largely confined to a 2- to 5-foot-thick lens of sand at a depth of approximately 15 feet bgs. TPHd was not detected at concentrations exceeding the Tier 1 ESL for groundwater. A remedial excavation to a depth of approximately 20 to 22 feet bgs to address TPH-impacted soil was completed in 1988. Approximately 900 CY of TPHd-impacted soil was removed from the UST-1 excavation and disposed of off the Site. Confirmation soil samples indicated that soil containing TPHd at concentrations of up to 960 mg/kg, which exceeds the residential ESL, were left in-place at depths of 9 feet bgs or deeper.

UST-4, UST-5, and UST-7 were removed from Parcel 2 in 1989; no significant signs of leakage were observed, and ethanol was reported non-detect in a confirmation soil sample collected from the UST-7 excavation. UST-8 and UST-9 were colocated in the UST-4 excavation, but were temporarily closed in-place because access was limited due to the presence of a cooling system. UST-10 was removed from the Site in 1990, and UST-8 and UST-9 were removed from the Site in 1991, along with approximately 160 CY of acetone-impacted soil. Confirmation soil samples collected in the UST-8 and UST-9 excavation contained acetone at a concentration of 420 mg/kg. Soil collected from borings in the vicinity of the UST-8 and UST-9 excavation contained acetone at a concentration of 1,100 mg/kg and TPHg at a concentration of 660 mg/kg; the latter exceeds the RWQCB ESLs for residential direct exposure but is less than the ESL for industrial/commercial direct exposure. Acetone and TPHg were detected in groundwater at

concentrations of 1,300,000 µg/l and 1,800 µg/l, respectively. The detected concentrations of both acetone and TPHg exceed the priority maximum contaminant levels for direct exposure but do not exceed the ESLs for residential or commercial vapor intrusion.

UST-6 was removed from Parcel 2 in 1989. Soil samples collected from the original UST excavation indicated that TPHd was present at a concentration of 220 mg/kg. Subsequent soil and groundwater investigations in the area occurred in 1990 and 1991, and a remedial excavation was completed in 1992. Approximately 1,400 CY of TPH-impacted soil was removed from the Site. Confirmation soil samples collected from the excavation indicated that TPHd was not present in soil at concentrations exceeding the Tier 1 ESL.

UST-11 was removed from Parcel 2 in 1990. One soil sample collected from the original UST-11 excavation contained TPHd at a concentration of 9,200 mg/kg. A soil investigation was completed in the UST-11 area in 1991, and a follow-up remedial excavation was completed later in 1991. Approximately 330 CY of TPH-impacted soil was removed from the Site as part of the remediation. Some visually impacted soil was left in-place because of proximity to utilities and a building. Confirmation soil samples indicated that TPHd was present at concentrations of up to 2,000 mg/kg at a depth of 11 feet bgs in the central portion of the UST-11 excavation, which exceeds the commercial/industrial ESL.

In May 2020, an additional UST was discovered at the building B49 project area of the Bayer Campus, east-adjacent to the Site. The UST was reportedly used for gasoline and was suspected to be UST-12 in the building B49 project area. This UST had not been located in the early 1990s, and its disposition was listed as unknown until its discovery and removal. The *Underground Storage Tank Closure Report, Bayer Healthcare Campus, Berkeley, California* dated August 18, 2020, prepared by Farallon (2020a) (2020 UST Closure Report), was submitted to the City of Berkeley Toxics Division and Berkeley Fire Department on behalf of Fluor Corporation. That report documented the removal of the UST and surrounding TPH-impacted soil at the building B49 site. Approximately 65.3 tons of TPH-impacted soil was removed from the UST excavation and disposed of off the Site. TPHg and TPHd were not detected at concentrations exceeding the residential or commercial/industrial ESLs in the final UST excavation confirmation sample collected. The 2020 UST Closure Report is currently under review by RWQCB.

3.1.3 Parcel 3 Underground Storage Tank Removal and Building 38 Subsite

The former building 38 area (Parcel 3) was used as a solvent mixing and storage area. Site soil near Building 38 was impacted with TPHd and lead. Approximately 230 CY of soil was excavated from the area in 1991. An additional 72 CY of non-Resource Conservation and Recovery Act hazardous waste soil containing soluble lead at a concentration of 14 milligrams per liter and 540 CY of nonhazardous soil was removed from the Site in 1993. Confirmation samples in the remedial excavation indicated that TPH, VOCs, and lead were not present at concentrations exceeding the Tier 1 ESLs.

A 1,000-gallon diesel UST was discovered on Parcel 3 during construction activities in December 2011. The UST was removed from the Site, along with approximately 15 CY of TPHd-impacted

soil, in January 2012. Confirmation soil samples collected at the base of the UST excavation after removal of the visibly stained soil indicated that TPH was not present at concentrations exceeding the Tier 1 ESLs.

Groundwater samples collected from monitoring well MW-8 near building 38 indicated that TCE was present at a concentration of 5 µg/l and likely came from an off-Site source. The building 38 "Subsite" was granted closure by the RWQCB in 1993.

3.1.4 Parcel 4 Underground Storage Tank Removal and Remediation History

The Colgate-Palmolive Company plant (Parcel 4), which operated at the Site from 1916 to 1981, produced soaps and household cleaning products. The property consisted of 27 buildings, a tank farm, several individual storage tanks, and other structures. A leaking 6,500-gallon UST was reported in 1989, and a site assessment followed. Soil and groundwater investigations at the property occurred from 1981 to 2020, trichloroethane (TCA) and TCE, lead, mercury, and nickel contamination were identified at the property. Conditional case closure from RWQCB dated November 18, 1992 stated that "there is strong evidence that the TCA and TCE pollution migrated from off-site source(s)" and also confirmed that soil with high concentrations of metals was removed from the property and soil with low concentrations of metals was left in-place. The configuration of the VOC plume indicates that the source of organic priority pollutants originates off of the Site to the east, and the plume moves westward across the Site. The Site was listed as "case closed" in 2020 with a deed notice that includes a warning "to prevent breeching the asphalt cover in such a manner as to allow polluted soils to be carried to surface water by rain runoff to allow accelerated leaching of metals to groundwater." Once the area in question is capped as specified, no further action is required.

The exact location of areas with COCs that exceed the commercial/industrial screening levels is not documented.

3.2 DEFINING REGULATIONS

For the purposes of this SGMP, the defining regulations for determining known environmental conditions at the Site are the presence of COCs in subsurface media at concentrations exceeding published regulatory guidelines for commercial and industrial use. The published regulatory guidelines considered applicable to the Site for evaluating COCs in soil, soil gas, and groundwater are the 2019 RWQCB ESLs.

The disposition of soil and groundwater removed from the Site will be performed in accordance with the regulations discussed in Sections 4.4, Soil Management, and 4.5, Groundwater Management.

3.3 CONSTITUENTS OF CONCERN AND AREAS EXCEEDING DEFINING REGULATIONS

Based on findings from previous environmental investigations at the Site, known COCs applicable to the Site include TPH and VOCs. While not identified at concentrations exceeding defining regulations during previous environmental investigations, metals including lead, mercury, and nickel are also considered COCs for the Site based on historical use. Previous environmental investigations identified the following areas and media containing COCs at concentrations exceeding defining regulations:

- Soil containing TPHd at concentrations of up to 2,000 mg/kg, which exceeds the commercial/industrial ESL, were left in-place at depths of 11 feet bgs or deeper in the former UST-11 excavation area;
- TPH in soil on Parcel 4;
- Metals, including lead, mercury, and nickel on Parcel 4; and
- TPH and VOCs in groundwater throughout the Site.

While not considered to be exceeding defining regulations, the following areas and media containing COCs at concentrations exceeding residential ESLs should be noted:

- Soil containing TPHd at concentrations of up to 960 mg/kg, which exceeds the residential ESL, were left in-place at depths of 9 feet bgs or deeper in the former UST-1 excavation area;
- Soil containing TPHg at concentrations of up to 660 mg/kg, which exceeds the residential ESL, were left in-place approximately 60 feet west of the former UST-12 excavation area at former well MW-7; and
- Soil containing TPHd at concentrations of up to 370 mg/kg, which exceeds the residential ESL, were left in-place at depths of 10 feet bgs or deeper in the former UST-13 through UST-17 excavation area.

VOCs were not identified in soil gas at concentrations exceeding potentially applicable defining regulations throughout the Site.

4.0 SOIL AND GROUNDWATER MANAGEMENT PLAN

This SGMP was developed to provide protocols for managing soil and groundwater that are known to be or potentially are chemically impacted that may be encountered during future improvements or redevelopment activities conducted at the Site. This SGMP is applicable to earthwork activities performed throughout the Site. Elements of this SGMP include:

- Communication requirements;
- Health and safety requirements;
- Soil management;
- Groundwater management;
- Stormwater management;
- Unanticipated subsurface conditions; and
- SGMP reporting requirements.

The objective of this SGMP is to minimize risk to human health and to ensure protection of the environment during activities associated with improvements or redevelopment of the Site. Before any earthwork activities commence at the Site, this SGMP should be made available to workers to address possible environmental risks associated with chemically impacted soil or unanticipated subsurface conditions.

The terms below as used throughout this SGMP are defined as follows:

- Contractor: The party appointed by Bayer or by another party(ies) to conduct Site improvements or redevelopment; and
- Environmental Professional: The engineer or environmental consultant appointed by Bayer and/or the Contractor to assist in monitoring environmental conditions or activities.

4.1 MANAGEMENT OF UNANTICIPATED SUBSURFACE CONDITIONS

It is unknown whether the locations of all utilities at the Site have been identified and marked. Unknown historical features or other structures also may be present at the Site and may be encountered during construction activities. Unanticipated subsurface features or conditions that may be present at the Site include:

- USTs;
- Concrete vaults;
- Underground piping containing chemicals; and
- Chemically impacted soil and/or groundwater

In the event that the Contractor encounters an unanticipated condition, the Contractor will stop work, secure the work area, and notify Bayer within 24 hours of discovery of the condition. Bayer will identify and contact the appropriate entity to respond to the unanticipated condition. If an unanticipated subsurface structure is discovered, the following procedures will be used:

- The Contractor and/or Environmental Professional will remove residual liquid, sludge, or sediment in the subsurface structure, and will containerize and characterize the residual material(s) as required by the waste-receiving facility(ies);
- If required, regulatory authorization will be obtained from the permitting agency prior to clearing the work area and initiating the removal action;
- The Contractor will remove the subsurface structure in compliance with applicable laws and regulations, and under permit from and oversight by the applicable regulatory agency, if required; and
- Soil-removal actions will be performed in accordance with the procedures outlined in this SGMP.

The Contractor will ensure that the health and safety requirements detailed in Section 4.3, Health and Safety Requirements, are met at all times, which will prepare Site workers for encountering unanticipated conditions during construction activities.

4.2 COMMUNICATION REQUIREMENTS

Chemically impacted soil and groundwater encountered under anticipated conditions during subsurface activities conducted at the Site will be managed in accordance with the procedures described in this SGMP. No specific notification requirements exist for this voluntary cleanup of chemically impacted soil and/or groundwater. In the event unanticipated conditions are encountered, earthwork should be stopped, and Bayer should be notified within 24 hours of discovery of such conditions. Any reuse of suspect contaminated soil to backfill excavations on the Site requires prior laboratory analysis, as outlined in Section 4.4.5, On-Site Reuse of Soil and Off-Site Disposal of Soil, and subsequent written approval by Bayer. Reporting requirements related to earthwork activities are described in Section 4.7, Soil and Groundwater Management Plan Reporting Requirements.

4.2.1 Notifications

The City of Berkeley Toxics Management Division will be informed of any soil or groundwater removal related work schedule before commencement of the field activities and be informed within 24 hours of the discovery of encountering onsite media contamination.

4.2.2 Security and Fencing

During any project excavation work, the development area will be fenced off with temporary construction chain-link fencing or similar by the prime contractor or its designees. The need for additional on-Site security will be established by Bayer. The Bayer campus is a secure Site and

will be locked at the end of each day. Site access will be restricted to Bayer security-approved personnel only. All traffic will be monitored and controlled by Bayer, the Contractor, or designees.

The project areas on the Site to be used for construction equipment storage and use will be underlain with rock and fabric to collect oil and hydraulic drips. All equipment will be fueled in a manner to protect against environmental contamination.

4.2.3 Work Hours

All hours will be subject to City of Berkeley ordinances, which state that operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work before 7:00 a.m. on a weekday (or before 9:00 a.m. on a weekend or holiday) or after 7:00 p.m. on a weekday (or after 8:00 p.m. on a weekend or holiday) is prohibited insofar as such construction activities exceed certain decibel levels specified in Chapter 13.40 of the Berkeley Municipal Code. This schedule may be amended pending the issuance of a permit or variance, as specified in the City of Berkeley ordinances. Entities that are part of the project work are noted below.

Company/City and Project Role	Contact Name(s)	Contact Information
Bayer Healthcare (Site Owner Representatives for SGMP)	Jeffery Bowman	(510) 705-4870 jeffery.bowman@bayer.com
	Jessica Hays	(510) 705-4345 .jessica.hays@bayer.com
Contractor	TBD	
Farallon Consulting, L.L.C. (Environmental Professional)	Steffany Aguilar	(510) 789-7184 (cell)
	Vince Tilotta, P.E.	(510) 999-2142 (cell) vtilotta@farallonconsulting.com
	Richard Makdisi, P.G.	(510) 812-6314 (cell) rmakdisi@farallonconsulting.com
Architect/Planners	TBD	
City of Berkeley Toxics Management Division (Planner)	Karl Busche	(510) 981-7466 kbusche@cityofberkeley.info

4.2.4 Control and Road Maintenance

Demolition and subsequent construction phases to be conducted by the designated hauling company, and any other owner trucking companies, will need to be familiar with this SGMP and may be required to develop and implement a Construction Traffic Management Plan (TMP) approved by the City of Berkeley. If a project-specific TMP is not required by the City of Berkeley for a construction or demolition project, the below minimum standards should be followed.

All trucks will enter the Site via the agreed-upon entrance to be established by the Contractor. A dedicated flagger will be present on all haul days, as needed. This flagger will operate the entrance and monitor traffic entering and leaving the Site. Additional flaggers may be necessary depending on the entrance-egress pattern and busyness of the haul days. The number of flaggers that are appropriate will be dependent to a large extent on the volume of truck traffic. Street-cleaning equipment will be provided to ensure that adjacent streets remain clear of project-related soil for all haul days requiring additional cleanup.

If a project-specific TMP is required by the City of Berkeley for a construction or demolition project, the TMP shall include (but not be limited to) the following:

- Approved truck routes;
- Locations of staging areas;
- Identification of arrival and departure times for trucks and construction workers to minimize traffic affects;
- Locations of employee parking and methods to encourage carpooling and use of alternative transportation;
- If necessary, methods for partial and complete street closures (e.g., timing, signage, location and duration restrictions) and identification of detour routes for pedestrians, bicyclists, and automobiles;
- If necessary, provisions for relocation of bus stops;
- Use of flaggers and other traffic controls;
- Preservation of safe and convenient passage for bicyclists and pedestrians around construction areas;
- Roadbed damage monitoring and timing for completing repairs along the approved truck routes;
- Preservation of emergency vehicle access; and
- Provision of a point of contact for residents, workers, and visitors to obtain construction information, ask questions, and convey complaints.

4.2.5 Record Keeping

The designated trucking firm for a given part of the development will track all dumping locations with the use of a load-counting log sheet, dispatch log, and truck tags. All records will be kept at the Contractor's office; copies of all dumping locations and truck tags will be provided to the Environmental Professional to complete the documentation after the excavation phase of the project is completed.

4.3 HEALTH AND SAFETY REQUIREMENTS

The Contractor or the Environmental Professional is responsible for preparing a Health and Safety Plan (HASP) for all tasks performed that require subsurface work at the Site, with the exclusion of general maintenance activities (e.g., landscaping). The HASP will provide the following information based on currently applicable legal requirements, including California Division of Occupational Safety and Health regulations without limitations:

- The health and safety considerations for the specific COCs detected or potentially present at the Site;
- Personal protective equipment and monitoring requirements; and
- The physical hazards associated with the planned tasks.

The HASP will detail all planned construction activities and will describe standard safety precautions (e.g., protective gear for workers, proper soil-handling techniques). The HASP also will describe the minimum safety measures to be implemented at the Site during all activities. The Contractor or the Environmental Professional is responsible for ensuring that the safety precautions detailed in the HASP are implemented and monitored during all activities at the Site.

The Contractor or the Environmental Professional will abide by all applicable federal, state, and local regulations and codes relating to health and safety, and will adhere to all California Occupational Safety and Health Administration regulations contained in Title 8 of the California Code of Regulations (8 CCR), as they apply to the Site activities. In conjunction with other SGMP protocols discussed herein, adherence to regulations in 8 CCR will reduce risks and provide a methodology to decrease any impacts to a less than significant level. Applicable regulations may include but are not limited to the following:

- Injury and Illness Prevention Program (8 CCR 1509 and 3202);
- Hazardous Waste Operations and Emergency Response (8 CCR 5192);
- Hazard Communication (8 CCR 5194);
- Personal Protective Equipment (8 CCR 10);
- Respiratory Protective Equipment (8 CCR 5144);
- Control of Noise Exposure (8 CCR 5095 through 5100);
- Excavations (8 CCR 1503 and 1539 through 1547);
- Fire Prevention and Suppression Procedures (8 CCR 4848);
- Portable Fire Extinguishers (8 CCR 6151);
- Cleaning, Repairing, Servicing, and Adjusting Prime Movers, Machinery, and Equipment Lockout/Tagout (8 CCR 3314); and
- Medical Services and First Aid (8 CCR 3400).

Detected and potential chemicals in soil and groundwater at the Site have been identified under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) and are known to cause cancer and reproductive toxicity. Proposition 65 warnings are required if the estimated exposure to a person exceeds the California Office of Environmental Health Hazard Assessment "safe harbor level." The safe harbor level terms for carcinogens and chemicals with reproductive end points are "no significant risk levels" and "maximum allowable dose levels," respectively. The Contractor or Environmental Professional is responsible for conducting an independent evaluation to identify the on-Site presence of chemicals set forth on the Proposition 65 list and determine the need for notifications to workers who might be exposed to these chemicals, consistent with Proposition 65.

Although there are no known Site conditions that warrant a baseline air monitoring plan, the Contractor or Environmental Professional involved in earthwork activities may conduct air monitoring in areas of the Site development where there is the potential presence of VOCs in soil gas at the Site. This protocol would apply in the unlikely event that unknown VOC contamination is encountered. Details of the air monitoring plan would be consistent with Occupational Safety and Health Administration regulations outlined in the HASP and would include sampling frequency and required documentation. It is recommended that a photoionization detector be used to monitor for VOCs in the area where work is performed. Action levels would be established in the HASP by the Contractor or Environmental Professional.

Any equipment that has been in contact with known contaminated soil or groundwater during work conducted at the Site requires decontamination before being used at another location at the Site or before being removed from the Site. Equipment should be rinsed with a non-phosphate detergent. The exterior of any vehicle that have been exposed to contaminated soil requires decontamination using brooms or brushes to remove loose soil. If soil remains after brushing, the contaminated surfaces should be washed until loose soil is no longer present.

4.4 SOIL MANAGEMENT

This section describes the procedures for handling soil during earthwork activities conducted at the Site. These procedures do not apply to routine maintenance activities at the Site such as landscaping.

4.4.1 Site Access

A fence, k-rail, or other appropriate means will be used to surround and limit access to construction areas or soil stockpiles where potentially contaminated soil is exposed.

4.4.2 Soil Excavation

A HASP prepared by the Contractor or the Environmental Professional is required for all earthwork activities conducted in the areas outlined on Figure 2, as specified in Section 4.3, Health and Safety Requirements. In the event that contaminated soil is brought to the surface by grading, excavation, or trenching, provisions stipulated in state of California and/or federal law will be

followed. Any stockpiling or on-Site reuse of excavated soil will be performed in accordance with the procedures described in this section.

4.4.3 Soil Confirmation Sampling

Soil confirmation sampling is defined as collecting soil samples at the limits of an excavation for laboratory analysis. Soil confirmation sampling typically is performed to document removal of chemically impacted soil to a specific cleanup level. Because soil removal actions anticipated by this SGMP are limited to improvements such as utility trenching and do not include soil remediation activities, soil confirmation sampling is not required by this SGMP, unless contaminated soil is encountered. Soil suspected of being contaminated based on visual and olfactory observation will be sampled for the Site-specific COCs as described in Section 4.4.5, On-Site Reuse of Soil and Off-Site Disposal of Soil.

In the event contaminated soil is encountered and documented through laboratory analysis, Bayer and the Environmental Professional will be notified within 24 hours. The Environmental Professional will direct contaminated soil removal and at a minimum will collect confirmation soil samples for analysis of COCs from the base and four sidewalls of the excavation to document removal of soil to the defining regulations.

4.4.4 Soil Stockpiling

Stockpiled soil originating at the Site is required to be covered at the end of each workday. Practical considerations (e.g., the size of the stockpile, weather conditions, the length of time the stockpile will remain) will be used in determining the appropriate covering method. In the event that soil in the stockpile is known or has the potential to be chemically impacted, the stockpile will be fenced and otherwise protected to avoid incidental contact by Site workers or the public. Stormwater management with regard to sediment runoff will be consistent with local, state, and federal rules and regulations, including those set forth by the City of Berkeley Toxics Management Division and RWQCB.

4.4.5 On-Site Reuse of Soil and Off-Site Disposal of Soil

It is anticipated that soil excavated from the Site can be reused as backfill material. Excavated soil that does not show evidence of chemical impact based on visual, olfactory inspection, or photoionization detector screening can be reused on the Site without laboratory analysis. The basis for comparison is RWQCB ESLs. Soil that shows evidence of chemical impact requires laboratory analysis prior to reuse at the Site as described in Section 4.4.3, Soil Confirmation Sampling. The frequency and specific laboratory analyses to be conducted will be established by the Environmental Professional on a case-by-case basis with approval by Bayer.

The laboratory analysis should include the Site-specific COCs using the following methods:

- VOCs by U.S. Environmental Protection Agency (EPA) Method 8260B;
- Title 22 metals by EPA Methods SW6020 and 7471; and

- Petroleum hydrocarbons by EPA Method 8015 (C10-C42).

Following analysis, if COCs are detected at concentrations less than the RWQCB ESLs for commercial/industrial direct exposure, the soil may be reused on the Site. Soil containing COCs at concentrations exceeding RWQCB ESLs for commercial/industrial direct exposure will be disposed of at a facility permitted to receive the soil for disposal. All soil that is classified under the Resource Conservation and Recovery Act (RCRA) or California non-RCRA hazardous waste regulations removed from the Site for disposal at a landfill must be shipped with a hazardous waste manifest.

4.4.6 Off-Site Reuse of Soil

Written approval from Bayer is required for any off-Site reuse of soil generated from earthwork activities or excavated at the Site. All soil slated for removal from the Site is required to be characterized by Bayer's Health, Safety, Environmental and Security (HSES) department, by an engineering firm with a Professional Engineer, or by an HSES-approved contractor. Soil intended for off-Site reuse must be sampled and meet the characterization requirements outlined in Section 4.4.5, On-Site Reuse of Soil and Off-Site Disposal of Soil. Consistent with common industry practices, the sampling frequency for soil being removed from the Site will be determined by the Environmental Professional on a case-by-case basis and by the receiving facility and will be appropriate for the media type based on applicable regulations. All soil removed from the Site for reuse must be shipped with a bill of lading.

4.4.7 Imported Fill Material

Written approval from Bayer is required for any fill material imported to the Site. All imported fill is required to meet the minimum profile requirements outlined in the *Information Advisory, Clean Imported Fill Material* dated October 2001, prepared by the California Department of Toxic Substances Control (2001), which is provided in Appendix B. The origin of and any analytical data for imported fill material must be provided for Bayer review and approval prior to import of fill material.

4.4.8 Dust Control

Implementation of dust-control measures to minimize dust generation is required during earthwork activities conducted at the Site. Basic dust-control measures described in the *California Environmental Quality Act, Air Quality Guidelines* dated May 2017, prepared by the Bay Area Air Quality Management District (2017) must be followed. It is the responsibility of the Contractor to ensure that the presence of dust is minimized during construction activities, and that all applicable local and state dust-control requirements are met. Should construction activities result in observable dust at the boundary of the Site, enhanced control measures will be performed by the Contractor.

4.5 GROUNDWATER MANAGEMENT

Groundwater at the Site has been documented to be impacted by VOCs and TPH. In the event that redevelopment plans require subsurface construction to depths at which groundwater may be encountered and dewatering is required, effluent should be minimized to the extent possible. Any dewatering effluent generated is to be pumped into holding tanks and sampled to determine treatment requirements or appropriate disposal methods.

Samples of dewatering effluent will be analyzed for parameters required for the selected discharge point (e.g., storm drain, sanitary sewer), and the Site COCs. Dewatering effluent discharged into storm drains requires a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering effluent discharged into the sanitary sewer requires permits from the municipal water and sewage treatment works, East Bay Municipal Utility District. The Contractor and/or environmental consultant will be responsible for determining and complying with all permit requirements for groundwater extraction and disposal.

Before dewatering effluent is discharged, analyses required by a receiving facility appropriate for the groundwater media type will be conducted. The Contractor and/or Environmental Professional is responsible for determining the analyses required by the receiving facility. Concentrations of any contaminant detected will be compared to the limits established by the receiving facility. If detected concentrations are less than receiving facility limits and all other requirements (e.g., turbidity) are met, the dewatering effluent will be discharged. If detected concentrations exceed receiving facility limits, the effluent must be either disposed of at a licensed off-Site disposal facility, or treated, and discharged on the Site after subsequent sample analysis confirms that treatment was successful and is less than applicable facility limits. In the event that long-term dewatering is required (e.g., over the duration of construction), sample analysis will be conducted by the Contractor to determine whether treatment is necessary or direct discharge is possible depending on whether contaminant levels exceed or are less than and permit requirements. Under no circumstances is dewatering effluent to be used for dust control at any location on the Site.

4.6 STORMWATER MANAGEMENT

Runoff of sediment in stormwater to nearby storm drains will be minimized by implementing applicable stormwater pollution controls, including those addressed in Section 4.4.4, Soil Stockpiling, and the Site Stormwater Pollution Prevention Plan. The Contractor is required to obtain all necessary stormwater permits and to implement best management practices during construction activities conducted at the Site. Stormwater runoff observed to be leaving areas of uncapped soil will be sampled, documented, and addressed in accordance with the Site Stormwater Pollution Prevention Plan.

4.7 SOIL AND GROUNDWATER MANAGEMENT PLAN REPORTING REQUIREMENTS

Any earthwork that involves chemically impacted soil or any unanticipated condition will be documented and reported to Bayer. Minimum reporting requirements will consist of tabulated analytical results compared to commercial and industrial land use objectives, scaled Site plans depicting sampling locations, disposal manifests, and descriptions of methods used. All activities involving removal of chemically impacted soil will be performed under the oversight of a California State Professional Geologist or Professional Engineer.

5.0 MODIFICATIONS TO THE SOIL AND GROUNDWATER MANAGEMENT PLAN

This SGMP has been developed based on currently known environmental conditions at the Site and current applicable regulations, and the SGMP protocols are designed to address immediate concerns. Although it is not anticipated or foreseeable based on available information, this SGMP may require modification for reasons including but not limited to the following:

- A change in Site use from manufacturing and manufacturing-related uses that Bayer has proposed;
- Receipt of additional information pertaining to Site environmental conditions;
- Updated chemical toxicity information for contaminants detected at the Site based on revised regulatory screening levels; and
- New legal or regulatory requirements applicable to the Site.

Future soil and groundwater management protocols the Contractor or Environmental Professional determines are necessary to address newly discovered conditions will be incorporated into this SGMP and will comply with all applicable federal, state, and local regulations.

6.0 SCOPE, REPRESENTATIONS, AND LIMITATIONS

This SGMP was developed exclusively to address the chemical constituents identified or potentially present during environmental investigations of the Site, as summarized in Section 3.0, Known Environmental Conditions. Other chemicals or media that may be encountered or generated during construction projects (e.g., demolition and construction debris, asphalt, concrete, asbestos-containing materials, lead-based paint) are not addressed in this SGMP. In the event that hazardous construction materials are encountered or generated, it is the responsibility of the Contractor to ensure the proper handling and disposal of such materials. To the extent that soil and groundwater impacts are encountered or generated by such construction activities, it is recommended that the Contractor follows the protocols described herein or that are equivalent to the those in this SGMP.

Current Site conditions, laws, policies, and regulations were used to develop this SGMP. No representation is made to any present or future developer or owner of the Site or portions of the Site with respect to future Site conditions, other than those specifically identified in this document.

This SGMP was prepared for the sole use of Bayer U.S. LLC. Unless specifically agreed to in writing, all other such use is unauthorized. Any use or interpretation of or reliance on this SGMP is at the sole risk of the unauthorized user, for which Farallon will bear no liability to any party, including any present or future developer, owner, Contractor, agent, occupant, consultant, Environmental Professional, or any other party owning or visiting the Site or portions of the Site based on or arising out of implementation of this SGMP. It is expressly understood that although this SGMP is intended to provide guidance and establish a framework for management of residual chemicals at the Site to protect human health and the environment, it in no way creates any warranties or obligations by Farallon as to the implementation, adequacy, or success of protective measures under this SGMP.

7.0 REFERENCES

Bay Area Air Quality Management District. 2017. *California Environmental Quality Act, Air Quality Guidelines*. May.

California Department of Toxic Substances Control. 2001. *Information Advisory, Clean Imported Fill Material.* October.

California Regional Water Quality Control Board, San Francisco Bay Region. No Date. *San Francisco Bay Basin (Region 2) Water Quality Control Board (Basin Plan)*. Revised May 4, 2017.

Farallon Consulting, L.L.C. (Farallon). 2020a. *Underground Storage Tank Closure Report, Bayer Healthcare Campus, Berkeley, California*. Prepared for Fluor Corporation. August 18.

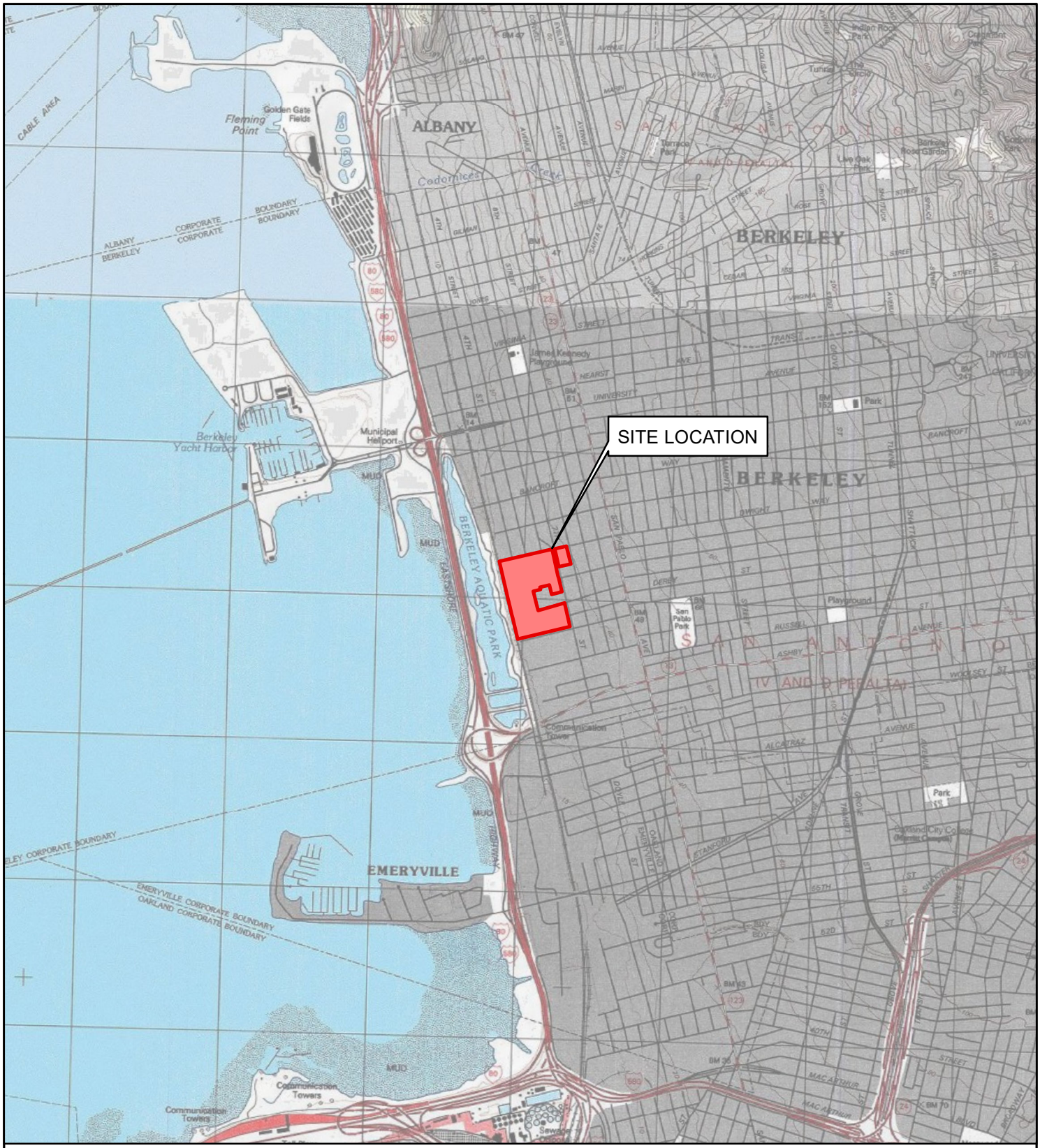
———. 2020b. *Phase I Environmental Site Assessment Report, Bayer Campus Parcels 1, 2, 3, and 4, 820 Parker Street, Berkeley, California.* Prepared for Bayer U.S. LLC. October 21.

San Francisco Bay Regional Water Quality Control Board Groundwater Committee. 1999. *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report*. July 7.

FIGURES

SOIL AND GROUNDWATER MANAGEMENT PLAN
Bayer Campus Parcels 1, 2, 3, and 4
820 Parker Street
Berkeley, California

Farallon PN: 2483-001



REFERENCE: 7.5 MINUTE USGS QUADRANGLE OAKLAND WEST, CALIFORNIA, DATED 2013

N

0 3,000

SCALE IN FEET

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Issaquah | Bellingham | Seattle

Oregon
Portland | Baker City

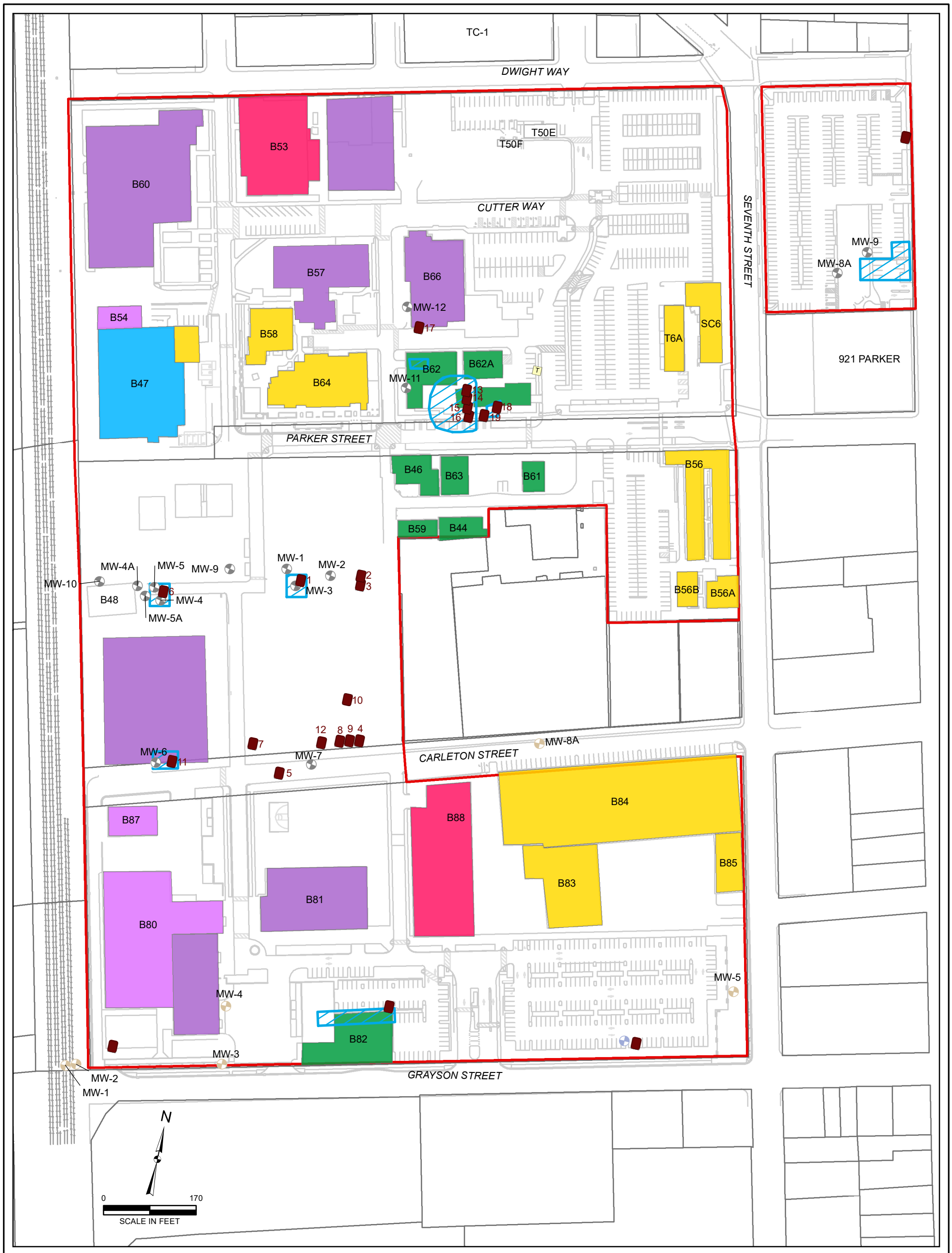
California
Oakland | Folsom | Irvine

FIGURE 1

SITE VICINITY MAP
BAYER CAMPUS PARCELS 1, 2, 3, AND 4
820 PARKER STREET
BERKELEY, CALIFORNIA

FARALLON PN: 2483-001

Drawn By: vpehlivan Checked By: VT Date: 11/12/2020 Disc Reference:
Q:\Projects\2483 Bayer Campus Parcels 1, 2, and 3\002 Soil and Groundwater Management Plan\Mapfiles\Figure-01_SiteVicinityMap.mxd



LEGEND

- MONITORING WELL DESTROYED (COLGATE-PALMOLIVE SITE)
- FORMER WATER SUPPLY WELL (CLOSED JULY 2001)
- MONITORING WELL DESTROYED
- FORMER UST
- TRANSFORMER
- REMEDIATED SOIL SITE
- ADMINISTRATION
- MAINTENANCE
- MANUFACTURING LABS
- PRODUCTION
- UTILITIES
- WAREHOUSE
- SITE BOUNDARY
- ALAMEDA COUNTY PARCEL BOUNDARY

B82 = BUILDING IDENTIFIER
UST = UNDERGROUND STORAGE TANK

NOTES:
1. ALL LOCATIONS ARE APPROXIMATE.
2. FIGURES WERE PRODUCED IN COLOR. GRAYSCALE COPIES MAY NOT REPRODUCE ALL ORIGINAL INFORMATION.

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FIGURE 2

SITE PLAN
BAYER CAMPUS PARCELS 1, 2, 3, AND 4
820 PARKER STREET
BERKELEY, CALIFORNIA

FARALLON PN: 2483-001

Drawn By: vpehlivan | Checked By: VT | Date: 11/12/2020 | Disc Reference:

Path: Q:\Projects\2483 Bayer Campus Parcels 1, 2, and 3\002 Soil and Groundwater Management Plan\Mapfiles\Figure-02_SitePlan.mxd

APPENDIX A
CASE CLOSURE DOCUMENTS

SOIL AND GROUNDWATER MANAGEMENT PLAN
Bayer Campus Parcels 1, 2, 3, and 4
820 Parker Street
Berkeley, California

Farallon PN: 2483-001

June 30, 2017
File No. 01-0972 (KEB)

Bayer HealthCare LLC
Attn.: Mr. Jeffrey Bowman
800 Dwight Way, P.O. Box 1986
Berkeley, California 94710
Sent Via Email: Jeffrey.Bowman@bayer.com

SUBJECT: Closure Letter – Former Petroleum USTs on Bayer, Former Miles/Cutter/Berkeley Unified School District Parcels - 800 Dwight Way, Berkeley, Alameda County

Dear Mr. Bowman:

This letter confirms the completion of a site investigation and corrective action for the underground storage tank(s) formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (g) of Section 25296.10 of the Health and Safety Code.

Please be aware that claims for reimbursement of corrective action costs submitted to the Underground Storage Tank Cleanup Fund more than 365 days after the date of this letter or issuance or activation of the Fund's Letter of Commitment, whichever occurs later, will not be reimbursed unless one of the following exceptions applies:

- Claims are submitted pursuant to Section 25299.57, subdivision (k) (reopened UST case); or
- Submission within the time-frame was beyond the claimant's reasonable control, ongoing work is required for closure that will result in the submission of claims beyond that time period, or that under the circumstances of the case, it would be unreasonable or inequitable to impose the 365-day time period.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Bruce H. Wolfe
Executive Officer

CITY OF BERKELEY
Planning and Development Department
Toxics Management Division

June 5, 2009

Cherie McCaulou
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Subject: Site Closure Request
Former Miles/Cutter Laboratory
731 Carleton Street

Dear Ms. McCaulou:

The City of Berkeley, Toxics Management Division (TMD), has concluded the site investigation, remedial actions, and groundwater monitoring for this project. The TMD recommends that the case be considered for no further action. The attached Site Closure Summary (SCS) was prepared by TMD and includes a summary history of the underground tank systems that have been investigated at the site. Attached to the SCS is a copy of Stellar Environmental Solutions' (Stellar), "Petition for "No Further Action" Letter" dated May 15, 2002. The Stellar report summarizes the site environmental history with respect to the investigation of 17 underground storage tanks. These tanks sites have been acquired by Bayer HealthCare, LLC, Biological Products Division (Bayer) during the development of their Berkeley facility. The tank contents and closure histories are included in attachments to the SCS. The Stellar report provides an accurate summary of the investigation, corrective actions, and groundwater monitoring used to develop the site conceptual model and rationale for a determination of no significant potential for human or environmental impacts.

Groundwater quality data suggest stable, decreasing, or non-detected concentrations of the primary constituents of concern in soil and groundwater. Primary constituents include diesel, gasoline, used oil, ethanol, denatured alcohol, and acetone. Chlorinated compounds (VOCs) were detected during various site investigations at the site. Residual concentrations of TCE, 8 micrograms per liter (ug/L), DCE – 11 ug/L, and vinyl chloride – 79 ug/L are representative of sampling efforts conducted prior to 2002. The TMD concurs with Stellar's conclusion that these constituents are not related to a known activity, process, or release.

The VOC constituents appear primarily as degradation products and further degradation of these constituents is anticipated to continue to insignificant levels in the future. The distribution of constituents does not suggest a source for these constituents. Furthermore, the VOC constituents are located within the property boundaries of Bayer are not evident in downgradient monitoring well locations.

The Regional Board, July 6, 1993, (attached to SCS) offered a letter concluding an investigation of VOCs at that the Building 38 Sub-Site. The Board found that "...further investigation and/or cleanup of the soil and groundwater is not ...are not necessary. The Building 38 Sub-Site and Bayer property VOC concentrations are limited to on-site areas with no significant potential for off-site migration.

The existing residual concentrations in soil and groundwater associated with releases from the referenced underground storage tanks (USTs) has been shown to be of limited extent, with no significant potential for migration to sensitive surface waters (Aquatic Park Lagoon) or to significant groundwater resources. Furthermore, residual, diffuse, and degraded chlorinated compounds, alcohols, gasoline, diesel, and BTEX are relatively absent in groundwater and do not represent a significant vapor intrusion concern for the continued industrial use of the property.

The TMD is satisfied that the known potential sources of contamination have been appropriately investigated and that the residual soil and groundwater contamination resulting from leaks from the former historic fuel use represents a low to insignificant potential to impact human health or the environment. The TMD has placed a notice (flag) in the City of Berkeley's building permit system to indicate there is residual contamination in the subsurface. The tank locations and investigations referenced in this report have been acquired by Bayer Healthcare, LLC. For this reason, the flag will be recorded in the address location, 800 Dwight Way. The flag consists of a notice requiring building permits to be routed through the TMD for review and approval prior to issuing building, construction, or other permits for the property. Future construction activity will be evaluated for soil or groundwater concerns related grading and excavation activities. Work proposed for these areas will require a TMD-approved plan of action for disposal and/or treatment of soil or discharges of groundwater.

The TMD determination of no further action is based on the subsurface conditions as presented in the reports characterizing the site conditions and on TMD's observations during site visits and inspections. The determination is further based on existing site use and an understanding that the site will remain in industrial use for the foreseeable future. Significant changes in the site conditions, site development, or changes in zoning designation are required to be reported to the TMD to allow review of this no further action recommendation.

June 5, 2009

The SCS and attachments provide a synopsis of the characterization and remediation processes conducted for the project. Complete copies of the summarized reports and this letter have been uploaded to GeoTracker. The complete record of the case history is maintained in the TMD library. Please give me a call if you have questions.

Find Them

Sincerely,

Geoffery A. Fiedler
Hazardous Materials Specialist, II

Cc: (without Stellar, 5/1/2002 report)
Bayer HealthCare LLC, Biological Products Division, Attn: James Breitlow, Environmental Manager,
800 Dwight Way, P.O. Box 1986, Berkeley, CA 94701-1986
Stellar Environmental Solutions, Attn: Richard Makdisi, 2198 Sixth Street, Berkeley, CA 94710

Attached: City of Berkeley, Site Closure Summary

CITY OF BERKELEY
SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: June 5, 2009

Agency Name: **Toxics Management Division**	Address: **2118 Milvia Street, Suite 200**
City/State/Zip: **Berkeley, CA 94704**	Phone: **(510) 981-7460**
Responsible Staff Person: **Geoffery Fiedler**	Title: **Hazardous Materials Specialist II**

II. SITE INFORMATION

Site Facility Name: Bayer HealthCare, LLC, Biological Products Division		
Site Facility Address: 800 Dwight Way, Berkeley, Ca, 94710		
RB LUSTIS Case No.: 01-972	Local or LOP Case No.:	Priority: Low
URF Filing Date:	SWEEPS No.: UNK	

Responsible Parties (include addresses and phone numbers)
Bayer Healthcare, LLC, Biological Products Division
Attn: James Breitlow
800 Bancroft Way
PO Box 1986
Berkeley, California 94701-1986

Tank No.	Size in Gallons	Contents	Closed In—Place/Removed?	Date
			See Attachment I for UST info	

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Undetermined		
Site characterization complete? Yes	Date Approved By Oversight Agency:5-27-09	
Monitoring wells installed? Yes	Number: 15	Proper screened interval? Yes
Highest GW Depth Below Ground Surface: 6 ft	Lowest Depth: 9 ft	Flow Direction: West-SW
Most Sensitive Current Use: No current use		
Most Sensitive Potential Use: Surface Water impact		
Are drinking water wells affected? No	Approximate Yield: Unk., Low gpd. T.D.S.: ppm Unk.	
Is surface water affected? No	Nearest SW Name: Aquatic Park Lagoon	
Off-Site Beneficial Use Impacts (Addresses/Locations): Nne		
Report(s) on file? Yes	Where are reports filed? City of Berkeley, Toxics Division	

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does corrective action protect public health for current land use? Yes		
Site Management Requirements: The Toxics Management Division will place a note in the building permit application system. Building permit applications will be reviewed for underground work, excavation, and dewatering activities. Additional project costs for mitigations may be incurred as a result. Hourly fees for the Toxics Division review of plans will also apply.		
Monitoring Wells Decommissioned: 6 (estd.)	Number Decommissioned:	Number Retained: 15
List Enforcement Actions and NOVs issued: None		
List Enforcement Actions and NOVs rescinded: None		

IV. TECHNICAL REPORTS, CORRESPONDENCE ETC. THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

May 15, 2002, Stellar Environmental Solutions, "Petition for "No Further Action"…"
July 6, 1993, Regional Water Quality Control Board, "Case Closure for Miles, Inc. Building 38 Sub-Site…"
Note: Stellar Environmental Solutions contains extensive history of reports and monitoring results for this case. The case files are maintained by the City of Berkeley, Toxics Management Division.

V. ADDITIONAL COMMENTS, DATA, ETC.

Attachment I Summary Table of UST Systems
Attachment II RWQCB, "Case Closure for Miles, Inc., Building 38 Sub-Site…",7/6/1993
Attachment III Stellar, "Petition for "No Further Action" Letter", 5/12/02

STATE OF CALIFORNIA

PETE WILSON, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, SUITE 500
OAKLAND, CA 94612
(510) 286-1255

July 6, 1993

Slic Files (JMJ) and
File No. 2198.17

Mr. Hugh Beattie
Safety and Environmental Manager
Miles Inc.
4th and Parker Streets
P. O. Box 1986
Berkeley, CA 94701

Dear Mr. Beattie:

SUBJECT: Case Closure for Miles, Inc. Building 38 Sub-Site, Berkeley, Alameda County

Engineering-Science, Inc. (ES), consultants for Miles Inc., has submitted reports dated February 10, 1993 and May 14, 1993 which summarized the investigation and the cleanup of soil pollution resulting from spills in an open area near Building 38 that contained the mixing and solvent storage area for veterinary pharmaceutical research between the mid-1940s and early 1950s. ES recommends that this sub-site be closed. Regional Board staff have reviewed these reports and concurs with ES's recommendation. Therefore, based on the available information for the above site, it appears that further investigation and/or cleanup of the soil and groundwater pertaining to the subject mixing and storage area are not necessary. Further work could be required if conditions change or a water quality threat is discovered at the site.

If you have any questions, please call John Jang of my staff at (510) 286-0554.

Sincerely,

Steven R. Ritchie
Executive Officer

cc: Mr. Bruce Rucker, ES
Ms. Jennifer Krebs, City of Berkeley's Toxics Program

Duplicate

CASE CLOSURE SUMMARY
Case No. 01-0972 and 01S0045

I. Agency Information — August 11, 2016

Agency Name: San Francisco Bay Regional Water Quality Control Board	**Address:** 1515 Clay Street, Suite 1400
City/State/Zip: Oakland, California 94612	**Phone:** (510) 622-2358
Responsible Staff Person: Kevin D. Brown, CEG	**Title:** Engineering Geologist

II. Site Information

Site Facility Name: Bayer (former Miles/Cutter/Berkeley Unified School) and Miles Cutter Lab (subsite within the Bayer site above)	**RWQCB Case No.:** 01-0972 and 01S0045 **City of Berkeley Case No.:** TT01-0972
Site Facility Address: 800 Dwight Way for # 01-0972 and Unknown 4th and Parker St. address listed for # 01S0045, Berkeley, CA	
URF Filing Date: 9/3/86 for Case No.: 01-0972; no URF was filed/found for Case No.: 01S0045	
Global ID No. (GeoTracker): T0600100895 and T00600191476 (B38 UST subsite within T00100895)	
Responsible Party: Bayer HealthCare, LLC , 800 Dwight Way Berkeley CA, 94701 Attention: Mr. Jeffrey Bowman, 510-705-4870; jeffrey.bowman@bayer.com	
Property Owner: Bayer HealthCare, LLC. 800 Dwight Way, Berkeley CA, 9470 Attn.: Mr. Jeffrey Bowman	

Tank #	Size in Gallons	Contents	Removed or Active	Date

See Attachment 1 for UST details

III. Release and Site Characterization Information

Cause and Type of Release: Underground fuel Storage Tanks (17 removed between 1986 and 1993)		
Site Characterization Complete? Yes	**Date Approved by Oversight Agency:** 08/10/2016	
Monitoring Wells Installed? Yes	**Number:** 21	**Proper Screened Interval?** Yes
Highest Groundwater (GW) Depth (feet below ground surface/fbgs): 8.98 fbgs	**Lowest GW Depth:** 16.03 fbgs	**GW Flow Direction:** southwest
Most Sensitive Current GW Use: No known drinking water supply wells within half a mile radius of Site		
Most Sensitive Potential GW Use: Drinking water source		
Probability of GW Use: Unknown		
Are Drinking Water Wells Affected? No	**Hydrologic Unit:** East Bay Plain Groundwater Basin	
Is Surface Water Affected? No	**Nearest Surface Waters:** San Francisco Bay (Aquatic Park Estuary) 200 feet west	
Offsite Beneficial Use Impacts: None identified		
Reports on file? Yes	**Where are reports filed?** San Francisco Bay Regional Water Quality Control Board and City of Berkeley, Toxics Management Division	

IV. Treatment / Disposal Methods

Material	Amount	Action	Date
All UST removals have been conducted under the jurisdiction of the City of Berkeley Toxics Management Division and Fire Department. Transport and disposal of site environmental wastes has been conducted under applicable federal and California regulations and disposal manifests indicating waste quantities, too numerous to list here, are maintained in the regulatory record; included as appendices in report documents uploaded to the State Water Board GeoTracker online database. Disposal records are also maintained at the Bayer HealthCare, LLC, Berkeley, CA, Environmental Affairs office.			

Maximum Documented Contaminant Concentrations - Before and After Cleanup

Contaminant	Soil (mg/kg)		Water (µg/L)		Contaminant	Soil (mg/kg)		Water (µg/L)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)	51	51	0.510	0.150	**Vinyl chloride**	ND	ND	NA	0.079
TPH (Diesel)	9,200	9.9	13	1.1	**Alcohol**	500*	ND	ND	ND
Benzene	14	14	0.86	0.088	**Ethanol**	720*	ND	ND	ND
Toluene	110	110	ND	ND	**TCE**	ND	ND	0.012	0.0132
Ethylbenzene	NA	0.15	0.0036	ND	**DCE**	ND	ND	NA	0.008
Xylenes	160	160	0.0023	130	**Comments**				
Methyl tert-butyl ether (MtBE)	NA	NA	ND	ND	• "Before" soil concentrations based on highest detected concentration in soil prior to remediation. "After" soil concentrations based on highest detected results from UST removal activities. • "Before" groundwater concentrations based on highest detected concentration after UST removals. "After" concentrations based on groundwater monitoring conducted between 1991-1998				
Oil/grease	NA	NA	6,800	0.017	NA = not analyzed; ND = none detected				
Acetone	230*	ND	0.0036	ND	* = composite sample from stockpile				

V. Closure

Does completed corrective action protect existing beneficial uses per the Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Basin Plan? Yes		
Does corrective action protect public health for current land use? Yes		
Site Management Requirements: The City of Berkeley Toxics Management Division has placed a note in the City of Berkeley building permit application system. Building permit applications will be reviewed for underground work, excavation, and dewatering activities. Additional project costs for mitigations may be incurred as a result of regulatory oversight.		
Should corrective action be reevaluated if the land use changes? Yes		
Monitoring Wells Destroyed? Yes	**Number Destroyed:** 21 (See Attached Figures 2 and 3)	**Number Retained:** 0
Enforcement Actions Taken: None		
Enforcement Actions Rescinded: None		

VI. Additional Comments

This case meets the low-threat closure criteria in the State Water Board's Low-Threat Underground Storage Tank Case Closure Policy, as shown below.

General Criteria
a. The unauthorized release is located within the service area of a public water system;
b. The unauthorized release consists only of petroleum;
c. The unauthorized ("primary") release from the UST systems has been stopped;
d. Free product has been removed to the maximum extent practicable;
e. A conceptual site model that assesses the nature, extent, and mobility of the release has been developed;
f. Secondary source has been removed to the extent practicable;
g. Soil or groundwater has been tested for methyl tert-butyl ether (MTBE) and results reported in accordance with Health and Safety Code section 25296.15; and
h. Nuisance as defined by Water Code section 13050 does not exist at the site.

Media-Specific Criteria
1. Groundwater. This Site fits best into Specific Criterion No. 1 because historical Site groundwater monitoring and grab-groundwater sampling showed no detection of any hydrocarbon contamination or VOCs above levels of regulatory concern. The existing residual concentrations groundwater associated with releases from the referenced underground storage tanks (USTs) has been shown to be of limited extent, with no significant potential for migration to sensitive surface waters (Aquatic Park Lagoon) or to groundwater resources.
2. Petroleum Vapor Intrusion to Indoor Air. The site meet criteria No. 2a and 2b being under the jurisdiction of building permitting restrictions enforced by the city of Berkeley. In addition, a soil-gas study was conducted in June 11, 2015 in accordance with the City of Berkeley Mitigation Monitoring and Reporting Program (Section VIII Hazards) that requires evaluation of potential vapor intrusion risk associated with soil gas at proposed new building site. The soil-gas survey was conducted in the footprint of the Bayer QC building (B83) and showed a few chlorinated and hydrocarbons related VOCs were detected but that the compounds were all at trace or low levels below any of the ESL values for potential risk of vapor intrusion. A post-development indoor air survey at Bayer's 921 Parker Street facility showed no contaminants above regulatory thresholds.
3. Direct Contact and Outdoor Air Exposure. The Site meets criteria No. 3a because the existing residual concentrations in soil associated with releases from the referenced underground storage tanks (USTs) has been shown to be of limited extent, with no significant potential for migration to groundwater. In addition, historical site specific soil and groundwater data indicate de-minimus to non-detectable region-wide CVOC concentrations in site soil and groundwater.

The only onsite direct exposure pathway that is potentially complete is exposure risk to a construction or trench worker excavating into the residual soil contamination. The construction worker could be temporarily exposed to the soil via dermal contact or inhalation of hydrocarbon vapors released from freshly disturbed contaminated soil. The City of Berkeley Toxics Management Division has placed a note in the building permit application system under which building permit applications are reviewed for underground work, excavation, and dewatering activities.

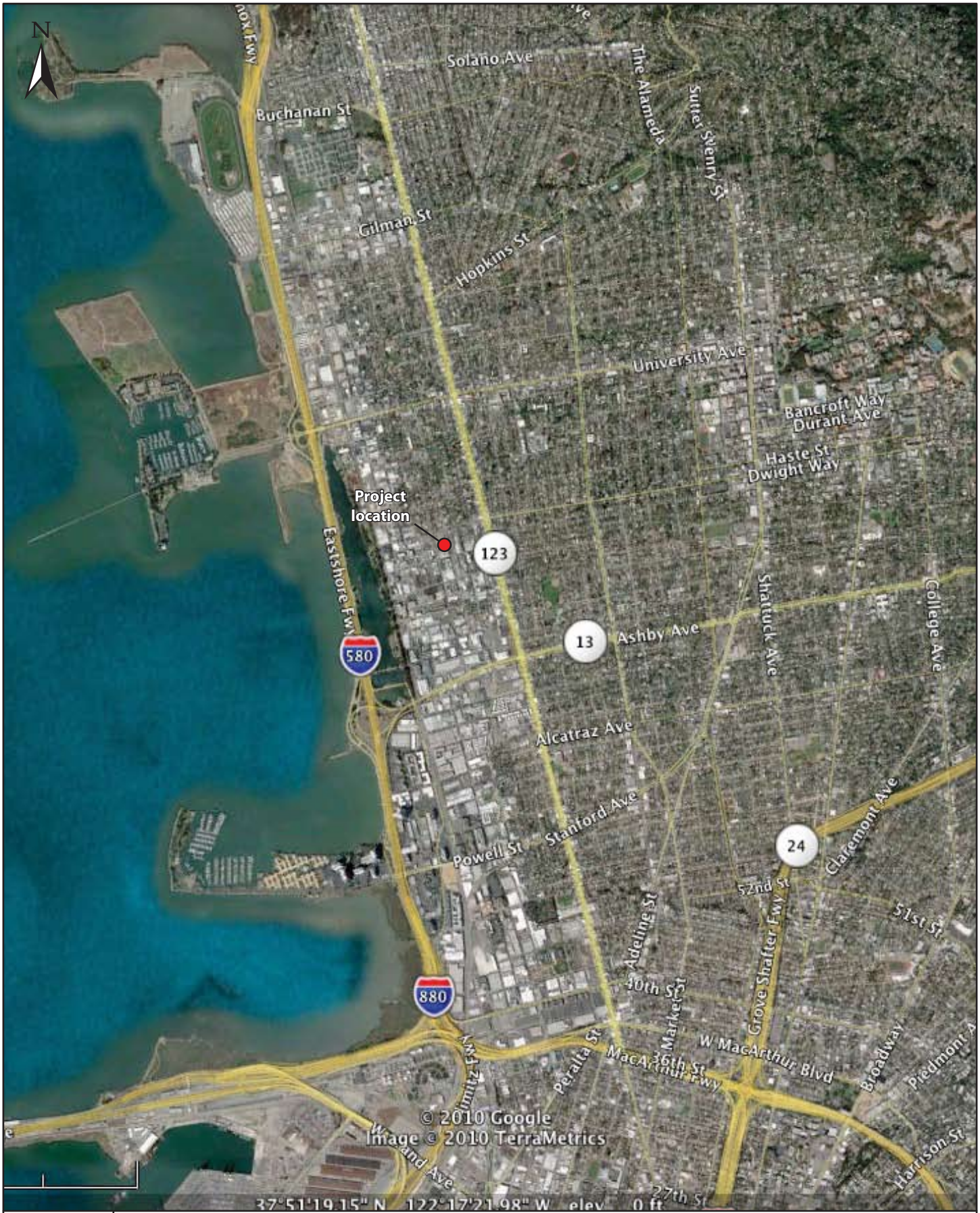
VII. Technical Reports, Correspondence, etc., Reviewed For This Closure Recommendation

Bayer Former Building 12 Well Closure Report Bayer Berkeley Campus, California	March 28, 2001
Stellar Environmental Solutions, "Petition for "No Further Action"	May 15, 2002
Soil Disposal Documentation Report Bayer Building 55 Autoclave Relocation Project, Berkeley, California	December 6, 2002
Soil Disposal Documentation Report Bayer Building 81 Property, Berkeley, California	January 24, 2005
Documentation of Closure of Seven Groundwater Monitoring Wells Bayer Corporation's Main Campus and South Property Development	November 9, 2009

Regional Water Quality Control Board, "Case Closure for Miles, Inc. Building 38 Sub-Site	July 6, 1993
Requirement for a Technical Report (Well Destruction Report) - San Francisco Bay Regional Water Quality Control Board	02/06/2015
Post Development Indoor Air Survey Letter Report for the Bayer Childcare Facility at 921 Parker Street, Berkeley	July 13, 2012
Phase I/II Environmental Site Assessment Building 87, Bayer Campus, Berkeley, CA	October 3, 2013
Report of Findings for the Pre-Demolition Soil Profiling for Offsite Disposal, Bayer Building 80, Bayer Campus, Berkeley, California	December 4, 2013
Completion of the Soil-Gas Survey to meet the requirements of Hazardous Waste related Mitigation Measure 1 (Haz-1) per Use Permit UP20140033/Mitigation Monitoring and Reporting Program for Proposed New Construction	June 16, 2015

The documents listed here do not include all site documents produced from 1986 to present. All site documents can be found with the various regulatory agencies and on the state GeoTracker database.

This Case Closure Summary document and the related CASE CLOSURE LETTER shall be retained by the lead agency as part of the official Site file.



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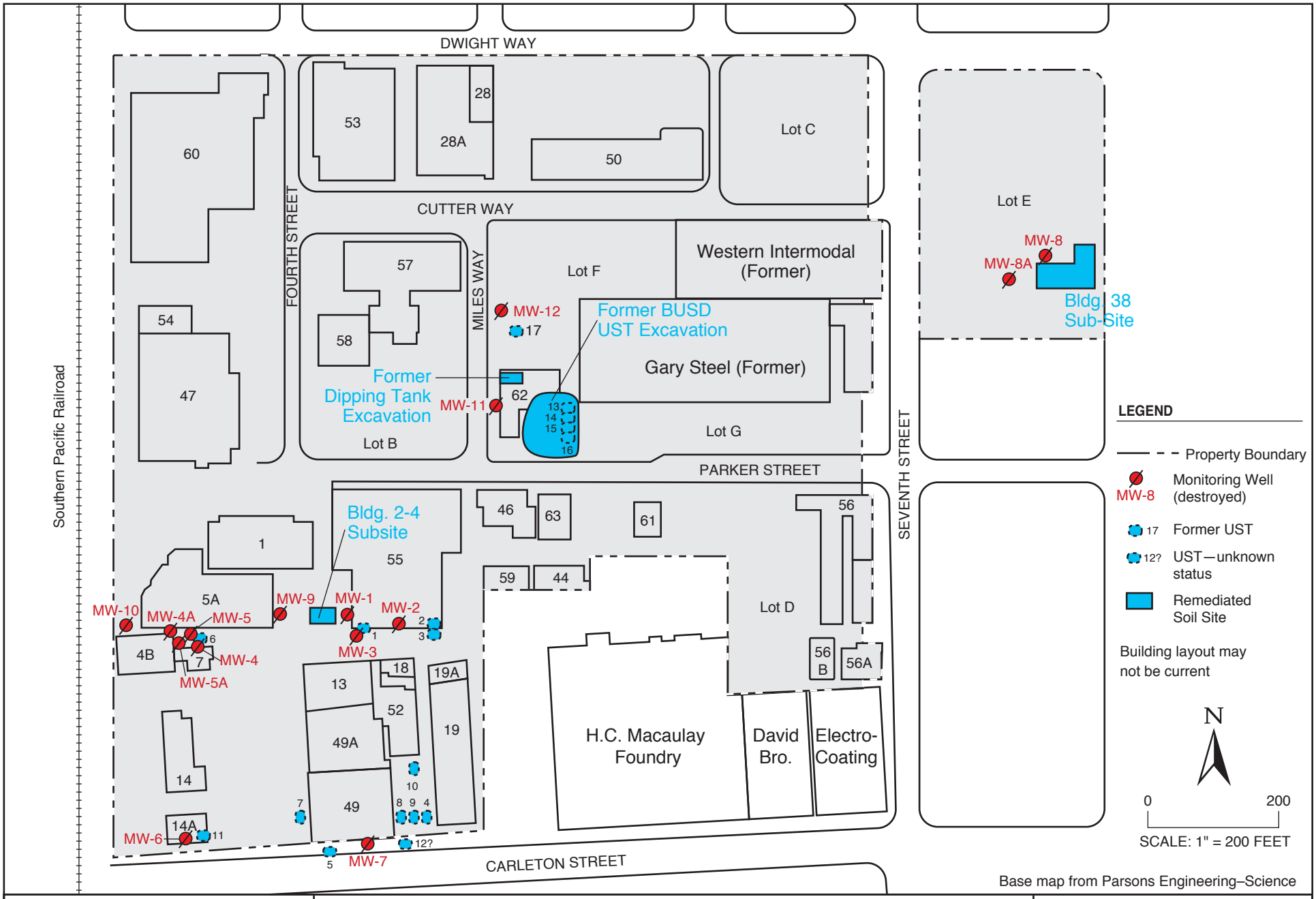
SITE LOCATION MAP

921 Parker Street, Berkeley, CA	By: MJC	JULY 2010
	Figure 1	

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

2010-13-01



Base map from Parsons Engineering–Science

STELLAR
ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

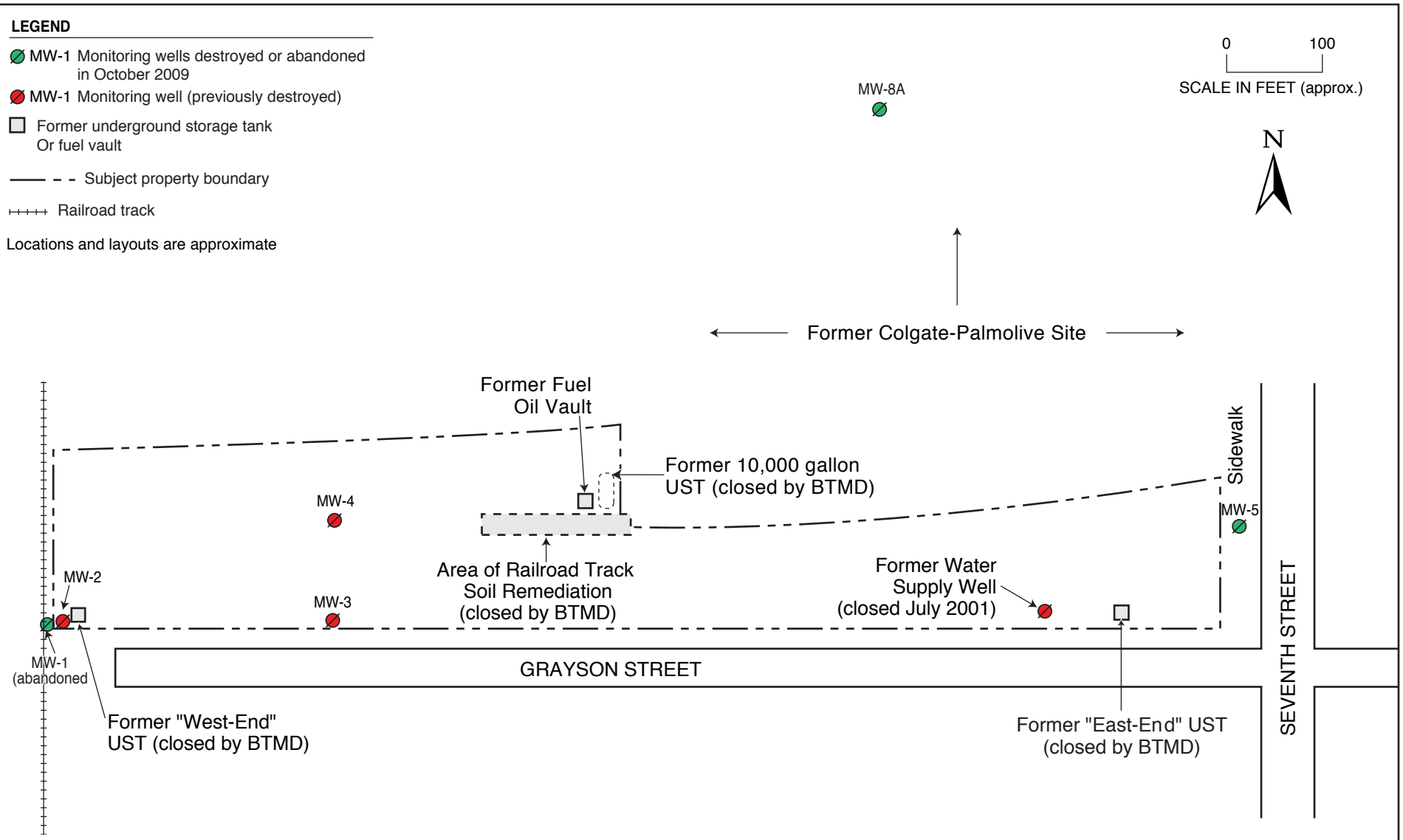
SITE PLAN WITH FORMER USTs AND WELLS

Bayer Corporation, Berkeley, CA

Figure 2

by: MJC | AUGUST 2016

2016-13-04



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

LOCATION OF DESTROYED AND ABANDONED WELLS
BAYER CORPORATION (FORMER PQ CORPORATION SITE)
801 Grayson St., Berkeley, CA

Figure 3

by: MJC | AUGUST 2016

2016-13-03

Attachment 1
Summary Table of UST Systems
Bayer (former Miles/Cutter/Berkeley Unified School District)

UST No.	Capacity	Piping	Contents	Free Product	Soil	Groundwater	Barrels	Closed		Notes
1	12000 gal	Unknown	#2 Fuel Oil	No	900 cu.yd.	None	None	1986/7		Aka: "12K1"
2	12000 gal	Unknown	#2 Fuel Oil	No	unknown	None	None	1986/7		Aka: "12K2"
3	12000 gal	Unknown	#2 Fuel Oil	No	unknown	None	None	1986/7		Aka: "12K3"
4	6000 gal	Unknown	acetone	No	None	None	None	1989		Aka: "Tank D" or "T6"
5	6000 gal	Unknown	acetone	No	None	None	None	1989		Aka: "Tank A" or "T17", confirmation soil samples "ND"
6	550-650 gal	Unknown	Diesel/Gasoline	No	1400 cu.yd.	None	None	1989		Aka: "Tank F" or "T18", excavation confirmation samples were ND for gasoline and BTEX. Diesel detected at 21 mg/kg
7	6000 gal	Unknown	ethanol	No	None	None	None	1989		Aka: "Tank E" or "T19" Confirmation soil samples and GW, "ND"
8	6000 gal	Unknown	acetone	No	None	None	None	1989		Aka: "Tank B" or "T4" In temporary closure until removed in 1991
9	6000 gal	Unknown	waste acetone	No	None	None	None	1989		Aka: "Tank C" or "T6" In temporary closure until removed in 1991
10	6000 gal	Unknown	denatured alcohol	No	None	None	None	1989		Aka: "Tank G" or "T14" In temporary closure until removed in 1990
11	350 gal	Unknown	diesel	No	330 cu.yd.	None	None	1990		
12	Unknown	Unknown	gasoline	No	None	None	None	Unk.		Unable to locate tank or removal history. Investigative work suggests no significant impact.
13	500 gal	Unknown	waste oil	No	1850 cu.yd.	2700 gal	None	1993		Located on former Berkeley Unified School District property
14	7500 gal	Unknown	gasoline	No	Incl. above	Incl. above	None	1993		As above
15	7500 gal	Unknown	gasoline	No	Incl. above	Incl. above	None	1993		As above
16	7500 gal	Unknown	diesel	No	Incl. above	Incl. above	None	1993		As above
17	10000 gal	Unknown	diesel	No	Incl. above	Incl. above	None	1993		As above

Cal/EPA

San Francisco Bay
Regional Water
Quality Control Board

2101 Webster Street
Suite 500
Oakland, CA 94612
(510) 286-1255
FAX (510) 286-1380
BBS (510) 286-0404

Pete Wilson
Governor

August 5, 1997
File No. 2198.17(gal)
01S0107

Mr. Russell J. Kirschenbaum
Carleton Center
2700 Seventh Street
Berkeley, CA 94710

Subject: Final Case Closure for Carleton Business Center, 2700 Seventh Street, Berkeley, Alameda County.

Dear Mr. Kirschenbaum,

Board staff have reviewed your July 10, 1997, submittal requesting Board staff review your consultants "Third Party Review" and reassess our previous Conditional Case Closure dated November 18, 1992.

Our review of the submitted material has given us a more thorough understanding of the case. Given our review of your submittal and that both the City of Berkeley and the California Department of Health Services has issued "no further action" letters for the subject site, we can rescind our November 18, 1992, Conditional Case Closure and issue Final Case Closure for the subject site.

Based upon the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action is required for the subject property, the case is closed. The deed notice as previously required by our November 18, 1992 letter no longer applies.

Please contact George Lincoln at (510) 286-3815 if you have any questions regarding this matter.

Sincerely,

Loretta K. Barsamian
Executive Officer

Stephen I. Morse, Chief
Toxics Cleanup Division

APPENDIX B
DTSC CLEAN IMPORTED FILL MATERIAL INFORMATION ADVISORY

SOIL AND GROUNDWATER MANAGEMENT PLAN
Bayer Campus Parcels 1, 2, 3, and 4
820 Parker Street
Berkeley, California

Farallon PN: 2483-001

Information Advisory
Clean Imported Fill Material

October 2001

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

It is DTSC's mission to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality, by regulating hazardous waste, conducting and overseeing cleanups, and developing and promoting pollution prevention.

State of California

California Environmental Protection Agency

Executive Summary

This fact sheet has been prepared to ensure that inappropriate fill material is not introduced onto sensitive land use properties under the oversight of the DTSC or applicable regulatory authorities. Sensitive land use properties include those that contain facilities such as hospitals, homes, day care centers, and schools. This document only focuses on human health concerns and ecological issues are not addressed. It identifies those types of land use activities that may be appropriate when determining whether a site may be used as a fill material source area. It also provides guidelines for the appropriate types of analyses that should be performed relative to the former land use, and for the number of samples that should be collected and analyzed based on the estimated volume of fill material that will need to be used. The information provided in this fact sheet is not regulatory in nature, rather is to be used as a guide, and in most situations the final decision as to the acceptability of fill material for a sensitive land use property is made on a case-by-case basis by the appropriate regulatory agency.

Introduction

The use of imported fill material has recently come under scrutiny because of the instances where contaminated soil has been brought onto an otherwise clean site. However, there are currently no established standards in the statutes or regulations that address environmental requirements for imported fill material. Therefore, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) has prepared this fact sheet to identify procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material. Such sites include those that are undergoing site remediation, corrective action, and closure activities overseen by DTSC or the appropriate regulatory agency. These procedures may also apply to construction projects that will result in sensitive land uses. The intent of this fact sheet is to protect people who live on or otherwise use a sensitive land use property. By using this fact sheet as a guide, the reader will minimize the chance of introducing fill material that may result in potential risk to human health or the environment at some future time.

Overview

Both natural and manmade fill materials are used for a variety of purposes. Fill material properties are commonly controlled to meet the necessary site specific engineering specifications. Because most sites requiring fill material are located in or near urban areas, the fill materials are often obtained from construction projects that generate an excess of soil, and from demolition debris (asphalt, broken concrete, etc.). However, materials from those types of sites may or may not be appropriate, depending on the proposed use of the fill, and the quality of the assessment and/or mitigation measures, if necessary. Therefore, unless material from construction projects can be demonstrated to be free of contamination and/or appropriate for the proposed use, the use of that material as fill should be avoided.

Selecting Fill Material

In general, the fill source area should be located in nonindustrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include former agricultural waste process byproducts such as manure or other decomposed organic material. Undesirable sources of fill material include industrial and/or commercial sites where hazardous ma-

Potential Contaminants Based on the Fill Source Area

Fill Source:	Target Compounds
Land near to an existing freeway	Lead (EPA methods 6010B or 7471A), PAHs (EPA method 8310)
Land near a mining area or rock quarry	Heavy Metals (EPA methods 6010B and 7471A), asbestos (polarized light microscopy), pH
Agricultural land	Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A), heavy metals (EPA methods 6010B and 7471A)
Residential/acceptable commercial land	VOCs (EPA method 8021 or 8260B, as appropriate and combined with collection by EPA Method 5035), semi-VOCs (EPA method 8270C), TPH (modified EPA method 8015), PCBs (EPA method 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA Method ID-191)

**The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 7199*

Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 subsamples per location
Volume of Borrow Area Stockpile	**Samples per Volume**
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

terials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Undesirable commercial sites include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities. Undesirable industrial facilities include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, etc. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Documentation and Analysis

In order to minimize the potential of introducing contaminated fill material onto a site, it is necessary to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that any such documentation should be signed by an appropriately licensed (CA-registered) individual. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual. If

metal analyses are performed, only those metals (CAM 17 / Title 22) to which risk levels have been assigned need to be evaluated. At present, the DTSC is working to establish California Screening Levels (CSL) to determine whether some compounds of concern pose a risk. Until such time as these CSL values are established, DTSC recommends that the DTSC PEA Guidance Manual or an equivalent process be referenced. This guidance may include the Regional Water Quality Control Board's (RWQCB) guidelines for reuse of non-hazardous petroleum hydrocarbon contaminated soil as applied to Total Petroleum Hydrocarbons (TPH) only. The RWQCB guidelines should not be used for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCS). In addition, a standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports.

When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. The table above can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I or PEA may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with DTSC or appropriate regulatory agency. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I or PEA, it is recommended that one (1) sample per truckload be collected and analyzed for all compounds of concern to ensure that the imported soil is uncontaminated and acceptable. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses). This sampling frequency may be modified upon consultation with the DTSC or appropriate regulatory agency if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding acceptance criteria be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, the DTSC recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. Compositing samples for volatile and semivolatile constituents is not acceptable. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, the DTSC recommends that a Phase I or PEA be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with the DTSC.

For further information, call Richard Coffman, Ph.D., R.G., at (818) 551-2175.