Erler &
Kalinowski,
Inc.

FINAL
REMOVAL ACTION WORKPLAN

MORSE PARK
1010 - 1024 Morse Avenue
Sunnyvale, California

Prepared for:

City of Sunnyvale
Sunnyvale, California

Prepared by:

Erler & Kalinowski, Inc.
1870 Ogden Drive
Burlingame, California 94010
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January 2012

EKI B10004.00

Consulting engineers and scientists

18 January 2012

To Potential Recipients of Electronic Files:

Erler & Kalinowski, Inc. ("EKI") has provided our CLIENT, the City of Sunnyvale with paper copies of the Final Removal Action Workplan, Morse Park, 1010 – 1024 Morse Avenue, Sunnyvale, California, dated January 2012, prepared by EKI. An electronic copy of this report, including the text, tables, figures, and appendices, is provided per the request of the Department of Toxic Substances Control in *.pdf (i.e., Adobe Acrobat) format.

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Sincerely,

ERLER & KALINOWSKI, INC.

Michelle Kriegman King, Ph.D.
Vice President

FINAL REMOVAL ACTION WORKPLAN

Morse Park
1010 - 1024 Morse Avenue
Sunnyvale, California

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Prepared for:

City of Sunnyvale
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18 January 2012

Mr. Alex Lee and Mr. Mark Piros
California Environmental Protection Agency
Department of Toxic Substances Control
700 Heinz Avenue Suite 200
Berkeley, California 94710

SUBJECT: Final Removal Action Workplan
Morse Park, Sunnyvale, California
(EKI B10004.00)

Dear Mr. Lee and Mr. Piros:

Erler & Kalinowski, Inc. ("EKI") is pleased to submit on behalf of our client, the City of Sunnyvale ("City"), selected revised pages of the *Draft Final Removal Action Workplan* ("draft RAW") for Morse Park, located at 1010 to 1024 Morse Avenue in Sunnyvale, California ("Site"), updated cover sheets, and two new Appendices which, once incorporated into the draft RAW, will become the *Final Removal Action Workplan* ("RAW") for the Site.

The draft RAW, dated November 2011, was circulated for a 34-day public comment period between 18 November 2011 and 21 December 2011. A public meeting was held on 6 December 2011 to discuss the draft RAW and solicit comments. DTSC did not received any comments on the draft RAW during the public meeting or during the public comment period.

Specifically, the items submitted with this letter include:

- Updated Cover Sheets
- Revised Table of Contents
- Revised Abbreviations and Acronyms
- Revised Executive Summary
- Revised Page 1 of Section 1
- Revised Section 7
- Revised Section 8
- New Appendix K
- New Appendix L

The figures, tables and appendices from the draft RAW, which are dated November 2011 and may include reference to the draft RAW, have not been updated or re-submitted, but they are considered to be part of the Final RAW.

We are pleased to have the opportunity to work with you on this project. Please call if you have any questions or wish to discuss these matters in greater detail (650-292-9100).

Very truly yours,

ERLER & KALINOWSKI, INC.

Michelle Kriegman King, Ph.D.
Vice President

Claudia A. Cuadrado, P.E.
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REGISTERED PROFESSIONAL ENGINEER
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signed 1/18/2012

Final Removal Action Workplan
1010-1024 Morse Park
Sunnyvale, California

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ABBREVIATIONS AND ACRONYMS

AMP	Perimeter Air Monitoring Plan
ARARs	Applicable or Relevant and Appropriate Requirements
BAAQMD	Bay Area Air Quality Management District
bbr	below baserock/structural fill
bcy	bank cubic yards
bgs	below ground surface
BMP	best management practices
Cal/EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHHSL	California Human Health Screening Level
CIH	certified industrial hygienist
City	City of Sunnyvale
COC	chemical of concern
Contractor	licensed remediation contractor
CSM	conceptual site model
cy	cubic yards
DTSC	California Department of Toxic Substances Control
EKI	Erler & Kalinowski, Inc.
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
HSP	Health and Safety Plan
HSC	California Health and Safety Code
LBNL	Lawrence Berkeley National Laboratory
MCL	Maximum Contaminant Levels
mg/kg	milligrams per kilogram
NAM	Numerical Advance Machining
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NOI	notice of intent
OSHA	Occupational Safety and Health Administration
OVM	organic vapor meter
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
QAPP	Quality Assurance Project Plan
RAOs	Removal Action Objectives
RAP	Remedial Action Plan
RAW	Removal Action Workplan
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
RWQCB	California Regional Water Quality Control Board, San Francisco Region

SAP	Soil Sampling and Analysis Plan
Site	Morse Park, Sunnyvale California
SSCG	Site-specific cleanup goal
STLC	Soluble Threshold Limit Concentration
SWPPP	Storm Water Pollution Prevention Plan
SVOC	semi-volatile organic compound
SWRCB	State Water Resources Control Board
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbon
TTLC	Total Threshold Limit Concentration
ug/L	micrograms per liter
URS	URS Corporation
USA	Underground Service Alert
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
UTL	upper tolerance level
VOC	volatile organic compound
WET	Waste Extraction Test

EXECUTIVE SUMMARY

Erler & Kalinowski, Inc. ("EKI") has prepared this Final Removal Action Workplan ("RAW") for Morse Park, located at 1010 to 1024 Morse Avenue in Sunnyvale, California ("Site"; see Figure 1) for our client, the City of Sunnyvale ("City"). It is our understanding that the City is interested in redeveloping the Site as a neighborhood park that will include playgrounds, play fields, picnic areas, walkways, shade trees, and lighting. Prior to the redevelopment process, the City is planning to conduct cleanup of contaminated soil at the Site as necessary to protect human health and the environment. The Site was leased to several tenants for private industrial use until recently and was historically part of a larger orchard prior to its current development.

This RAW has been prepared in compliance with the Site Voluntary Cleanup Agreement Docket No. HSA-VCA 11/12-001 (dated 8 August 2011), California HSC sections 25323.1 and 25356.1 and the California Environmental Protection Agency ("Cal/EPA"), Department of Toxic Substances Control ("DTSC") guidance memorandum entitled Removal Action Workplans – Senate Bill 1706 and dated 23 September 1998. DTSC is the lead agency responsible for oversight of the cleanup of soil at the Site.

Morse Park is located on the east side of Morse Avenue, just north of East Weddell Drive and the Hetch-Hetchy aqueduct (see Figure 2). The Site is approximately 5.2 acres in size and is identified by the following Santa Clara County Assessor's Parcel Number: APN 110-14-202. The Site is bordered to the north and east by recently-constructed residential townhome units; to the northeast by Global Crossing, a communication technology company; to the south by the Hetch-Hetchy aqueduct; and to the west by Morse Avenue and multi-family residential across Morse Avenue. The Site is currently occupied by five vacant commercial/industrial buildings and surrounding paved parking areas and landscaping.

Environmental investigations conducted at the Site to date include: (1) a Phase I Environmental Site Assessment ("ESA") conducted by URS Corporation ("URS") in 2009, (2) a reconnaissance-level Phase II subsurface investigation performed by EKI on 10 and 15 March 2010 (EKI, 2010a), and (3) additional soil sampling performed by EKI to provide additional characterization of the extent of arsenic, lead, and pesticides in soil in early July 2010 (EKI, 2010b).

Concentrations of chemicals detected in soil and groundwater were compared with applicable screening criteria to identify chemicals of concern ("COCs"). Applicable soil screening criteria included the California Human Health Screening Levels ("CHHSLs") for residential soil (OEHHA, 2010) and the estimated Site-specific arsenic background concentration of 17 mg/kg. Concentrations of constituents detected in groundwater samples were compared to California Maximum Contaminant Levels ("MCLs") (DHS, 2010). Only arsenic was retained as a soil COC for the Site and no COCs were identified for groundwater, based on this screening.

The Removal Action Objective ("RAO") for the Site is to minimize potential human exposure to soil having arsenic at concentrations exceeding its Site-specific background concentration, including potential exposures of future park users and on-Site workers.

The removal technologies considered for the reduction of COCs in Site soil are:

- No further action,
- Excavation and off-Site disposal, and
- Soil containment/in-place capping.

These removal technologies were evaluated and compared in terms of their effectiveness, implementability, cost, and compliance with Applicable or Relevant and Appropriate Requirements ("ARARs") and other criteria to be considered ("TBCs") to the extent practicable. Based on this evaluation, Excavation and off-Site Disposal is the recommended alternative. Overall, EKI believes that the Excavation and off-Site Disposal alternative best meets the RAO considering effectiveness, implementability, cost, and compliance with applicable ARARs and TBCs.

The recommended alternative entails excavation and off-Site disposal of COC-impacted soils and transportation of those soils to off-Site permitted disposal facilities. The anticipated excavation depths range from approximately 0.5 to 2.5 feet below ground surface ("bgs") (see Figure 9) and the anticipated quantity of soil to be excavated is 16,700 tons. All existing buildings will be demolished before cleanup activities are conducted at the Site. Some of the trees in the vicinity of the property boundary will be preserved, but the rest will be removed prior to cleanup activities. The excavation will be performed by a licensed remediation contractor ("Contractor") and will generally extend to the Site property boundary.

The following plans that will be implemented during Site cleanup activities are included in this RAW:

- A Transportation Plan (see Appendix B);
- A Decontamination Plan (see Appendix C);
- A Dust Control Plan (see Appendix D);
- A Perimeter Air Monitoring Plan or AMP (see Appendix E);
- A Storm Water Pollution Prevention Plan or SWPPP (see Appendix F);
- A Soil Sampling and Analysis Plan or SAP (see Appendix G);
- A Quality Assurance Project Plan or QAPP (see Appendix H); and
- An EKI Site-Specific Health and Safety Plan or HSP (see Appendix I).

The Transportation Plan specifies procedures for general and unique handling, transportation, and disposal of excavated soil and traffic control issues at the Site during Site cleanup activities. The Transportation Plan has been prepared following the DTSC guidance *Transportation Plan – Guidance for Developing Transportation Plans for Removal or Remedial Actions* (DTSC, 2001), and the City's requirements. The Contractor will be required to prepare an addendum to the Transportation Plan that specifies: (1) the actual off-Site disposal facilities and the transportation routes if actual disposal facilities vary from facilities listed in the Transportation Plan, (2) the Contractor's selected transportation company, and (3) any proposed deviations from procedures specified in the Transportation Plan. The Contractor will be responsible for implementing the Transportation Plan as approved by DTSC.

The Decontamination Plan specifies procedures for removal, collection, and containment of soil and other potentially contaminated material from equipment and transportation vehicles, decontamination of personnel and tools, and methods for temporary storage, characterization, treatment, and off-Site disposal of decontamination wastes generated during decontamination activities. The Contractor will be required to prepare an addendum to the Decontamination Plan if there are any proposed deviations from procedures specified in the Decontamination Plan. The Contractor will be responsible for implementing the Decontamination Plan as approved by DTSC.

The Dust Control Plan specifies measures to be undertaken to limit generation of dust, measures to be taken if dust is present on adjacent off-Site public streets, and measures to control such emissions following identification of problems as defined by airborne Action Levels specified in the AMP. The Contractor will be required to prepare an addendum to the Dust Control Plan if there are any proposed deviations from procedures specified in the Dust Control Plan. The Contractor will be responsible for implementing the Dust Control Plan as approved by DTSC.

To monitor the effectiveness of the Contractor's dust control practices, perimeter air monitoring will be conducted as described in the AMP. The AMP develops airborne Action Levels for identified airborne COCs and dust, describes air monitoring procedures, methods, and sampling frequencies, and specifies measures to be undertaken by the Contractor if airborne Action Levels are exceeded. EKI will be responsible for implementing the AMP approved by DTSC and the Contractor will be responsible for implementing contingency measures in response to notification from EKI that contingency measures are required based on air monitoring data.

The SWPPP specifies measures to be undertaken to limit storm water impacts from the Site such as reducing the sediment load to the storm water runoff from the Site during Site cleanup activities and preventing accidental spills from impacting storm water. The Contractor will be required to file a Notice of Intent ("NOI") with the SWRCB prior to Site cleanup activities. The Contractor will be required to prepare an addendum to the SWPPP, which shall be prepared by a Qualified SWPPP Developer, in accordance with the General Permit requirements for the project Risk Level determined for the Site, that includes: (1) a copy of the NOI and receipt letter, (2) determination of the Risk Level for the Site, (3) Material Safety Data Sheets for chemicals used or stored on the site during construction, (4) an example BMP inspection form, (5) emergency contact information, and (6) any proposed deviations from the procedures specified in this SWPPP. The Contractor will be responsible for implementing the SWPPP as approved by DTSC.

The SAP describes specifications and procedures for collecting soil samples to verify that the soil cleanup goal has been achieved and to characterize stockpiled soil for disposal. EKI will be responsible for implementing the SAP as approved by DTSC.

The QAPP provides a description of field and laboratory procedures to be followed to ensure that samples collected from the Site yield representative data. EKI will be responsible for implementing the QAPP as approved by DTSC.

EKI's Site-specific HSP was prepared in accordance with Federal and California Occupational Safety and Health Administration ("OSHA") standards for hazardous waste operations (29 CFR 1910.120) and Title 8, CCR Section 5192). The Contractor will prepare its own HSP in accordance with the Contract Documents. The Contractor will be responsible for health and safety of their employees and workers sub-contracted to them at the Site. The Contractor's HSP must be reviewed and signed by a certified industrial hygienist ("CIH"). The Contractor's HSP is to address Site-specific issues, Site COCs, hazard communication, notification of workers, worker protection, and other topics required by applicable laws and regulations.

At the completion of Site cleanup activities, EKI will prepare a completion report on behalf of the City that describes implementation of the Site cleanup activities. The report will contain the following items:

- Summary of Site cleanup field activities and observations;
- Documentation of implementation of and conformance with the Plans specified as Appendix B to I;
- Documentation of laboratory analytical results for confirmation soil sampling, or other sampling needs as deemed necessary based on field observations and conditions;
- Documentation of quantities of soil disposed off-Site; and
- Documentation of final extent of excavation and rough grading.

The public participation requirements for the RAW process include: (1) the development of a community profile, (2) publishing a notice of the availability of the draft RAW for public review and comment (see Public Notice in Appendix K), (3) making the draft RAW and other supporting documents available at DTSC's office and in the local information repository (Sunnyvale´s City Hall One-Stop Counter and Public Library), and (4) responding to public comments received on the draft RAW and California Environmental Quality Act ("CEQA") documents (see Appendix L).

The City conducted the following additional activities: (1) a Fact Sheet (see Appendix K) describing the Site and the proposed removal action was sent out to the Site mailing list and posted online in DTSC's Envirostor website (http://www.envirostor.dtsc.ca.gov/) on 17 November 2011, (2) a 34-day public review and comment period was established for the draft RAW between 18 November 2011 and 21 December 2011, (3) a public meeting was held during the public comment period, and (4) Site documents were made available in electronic format on DTSC's publicly-accessible Envirostor database.

The public meeting was held on 6 December 2011 to discuss the draft RAW and solicit comments. DTSC did not received any comments on the draft RAW during the public meeting or during the public comment period (see Appendix K).

DTSC has prepared an Initial Study and Negative Declaration for the Site to ensure that CEQA requirements have been satisfied (see Appendix L).

1. INTRODUCTION

Erler & Kalinowski, Inc. ("EKI") has prepared this Final Removal Action Workplan ("RAW") for Morse Park, located at 1010 to 1024 Morse Avenue in Sunnyvale, California ("Site"; see Figure 1) for our client, the City of Sunnyvale ("City"). This report has been prepared by EKI on behalf of the City in accordance with the Consultant Services Agreement between the City and EKI, dated 1 February 2011. It is our understanding that the City is interested in redeveloping the Site as a neighborhood park that will include playgrounds, play fields, picnic areas, walkways, shade trees, and lighting. Prior to the redevelopment process, the City is planning to conduct cleanup of contaminated soil at the Site as necessary to protect human health and the environment. The Site was leased to several tenants for private industrial use until recently and was historically part of a larger orchard prior to its current development.

A RAW is one of two remedy selection documents that may be prepared for a hazardous substance release site pursuant to California Health and Safety Code ("HSC") Section 25356.1. This RAW has been prepared in compliance with the Site Voluntary Cleanup Agreement Docket No. HSA-VCA 11/12-001 (dated 8 August 2011), California HSC sections 25323.1 and 25356.1 and the California Environmental Protection Agency ("Cal/EPA"), Department of Toxic Substances Control ("DTSC") guidance memorandum entitled Removal Action Workplans – Senate Bill 1706 and dated 23 September 1998.

1.1 Removal Action Process

The RAW process, including the regulatory background and the RAW objectives, is described in the following sections.

1.1.1 Regulatory Basis for the RAW

In California HSC Section 25323.1, a RAW is defined as "a workplan prepared or approved by the Department (DTSC) or a California Regional Water Quality Control Board (RWQCB) which is developed to carry out a removal action, in an effective manner, that is protective of the public health and safety and the environment."

DTSC is the lead agency responsible for oversight of the cleanup of soil at the Site. DTSC and the City have entered into a Voluntary Cleanup Agreement. A RAW is appropriate when the estimated cost of the removal action is less than $2,000,000. If the estimated capital cost of implementing the chosen action will exceed $2,000,000, a Remedial Action Plan ("RAP") should be prepared. The estimated cost of the removal alternative recommended in this RAW is estimated to be less than $2,000,000 (see Appendix A, Tables A-1 and A-2).

1.1.2 Objectives of the RAW

The objectives of this RAW are to:

- Present and evaluate existing conditions of the Site;
- Establish appropriate removal action objectives ("RAOs") for protection of human health and the environment; and
- Evaluate alternatives and identify a final recommendation for a removal action at the Site that is protective of human health and the environment.

1.1.3 Elements of the RAW

To accomplish the objectives stated in the preceding section, and satisfy regulatory requirements, this RAW includes the following elements:

- A description of the nature and extent of the chemicals of concern ("COCs") at the Site;
- The goals to be achieved by the removal action;
- An analysis of the alternatives considered and rejected, and the basis for the rejection, including a discussion of effectiveness, implementability, and cost of each alternative;
- A description of the recommended alternative and an implementation plan; and
- An administrative record list (see Section 9).

1.1.4 Site Specific Plans Included in the RAW

The following plans are included in this RAW:

- A Transportation Plan (see Appendix B);
- A Decontamination Plan (see Appendix C);
- A Dust Control Plan (see Appendix D);
- A Perimeter Air Monitoring Plan ("AMP," see Appendix E);
- A Storm Water Pollution Prevention Plan ("SWPPP," see Appendix F);
- A Soil Sampling and Analysis Plan ("SAP," see Appendix G);
- A Quality Assurance Project Plan ("QAPP," see Appendix H); and
- An EKI Site-Specific Health and Safety Plan ("HSP," see Appendix I).

1.2 Site Setting and Land Use History

Morse Park is located on the east side of Morse Avenue, just north of East Weddell Drive and the Hetch-Hetchy aqueduct (see Figure 2[1]). The Site is approximately 5.2 acres in size and is identified by the following Santa Clara County Assessor's Parcel Number: APN 110-14-202.

The Site is bordered to the north and east by recently-constructed residential townhome units;[2] to the northeast by Global Crossing, a communication technology company; to the south by the Hetch-Hetchy aqueduct; and to the west by Morse Avenue and multi-family residential across Morse Avenue.

The Site is relatively flat and lies at an elevation of approximately 24 feet above mean sea level (USGS Mountain View quadrangle, 1997). The regional ground surface in the vicinity of the Site slopes gently downward to the northeast.

The Site (and surroundings properties) appeared to be primarily vacant land in the early 1900s and was used as agricultural land from at least 1939 until the mid- to late-1970s when it was developed to its current configuration with the existing structures (URS, 2009).

The Site is currently occupied by five commercial/industrial buildings and surrounding paved parking areas and landscaping. Four of the buildings are wooden-framed, single story, multi-tenant structures each measuring approximately 17,000 square feet in size (1010, 1012, 1014, and 1016 Morse Avenue; see Figure 2). These buildings are divided into tenant suites ranging in size from approximately 400 to 2,000 square feet. The fifth Site building at 2020 and 2024 Morse Avenue is a concrete tilt-up office/manufacturing building, measuring approximately 17,000 square feet in size.

Since development of the Site, former Site tenants that may have or are reported to have stored chemicals on the Site are listed below. The approximate dates of operation, if known or reported, are also indicated below.

<u>1010 Morse Avenue</u>

International Machine Products (1986)
Hoffman Machining – Suite 6 (1986 through 2009)
Econoscope – Suite 5 (1987-1992)
Powerpoint Colorways/Fabric Banners – Suites 2 and 24 (2001-2008)

[1] The City has dedicated a 20 foot wide setback for street landscaping, which is located between Morse Avenue and the western Site boundary. This strip includes large existing trees and a recently improved sidewalk.

[2] Former uses of these residential areas, based on aerial photos, include: primarily vacant land in the early 1900s; agricultural land from at least 1939 until the mid- to late-1970s; and commercial/industrial use probably from the late-1970s until the late-2000s, when the townhouse units were constructed).

1012 Morse Avenue

Services Transmachining (2001)
Johnson & Cecil Machining – Suite 6 (1991)
Holmes Machine (1982-1986)
Better Plastics (1986)
Swiss Screw Products (1986)
Transtext Manufacturing (1982)
Graph Print – Suite 4 (1989-1992)

1014 Morse Avenue

Tony's Machine Shop – Suite 3 (1986-1991)
Hybrid Machine Products (1982-1986)
AJ Machinery (1982)
Aztec Printing
Inko Industrial Corporation – Suite 22 (1989)
Xerox – Suite 13 (1986)
Technical Machining – Suite 4 (1998)

1016 Morse Avenue

Machine Service Consultants – Suite 19 (1991)
Expanding World (plastics extrusion) – Suite 21 (1988)

The majority of the last tenants on the Site were commercial tenants, e.g., offices with light storage warehousing, with limited or no chemical use or storage. All of the tenants have vacated the Site, given notification from the City regarding pending demolition and re-use of the Site as a neighborhood park.

Former machine shop tenants are listed below; their locations are also shown on Figure 2:

- Hoffman Machining – 1010 Morse Avenue, Suite 6
- James Machining – 1012 Morse Avenue, Suites 10 and 11
- Numerical Advance Machining ("NAM") – 1012 Morse Avenue, Suite 16
- R&R Machining – 1016 Morse Avenue, Suite 19
- ExcelFab – 1020 Morse Avenue

As part of the Phase II investigations (EKI, 2010a), EKI observed the above tenant spaces. The Site buildings are constructed with slab-on-grade concrete floors. None of the tenant spaces contained floor drains or utility sinks, with the exception of the ExcelFab facility, which contained one utility sink and employee restrooms. The concrete floors of the James Machining and NAM spaces were moderately oil-stained at the base of various metal working machines. The concrete floor surfaces of the ExcelFab, Hoffman Machining, and R&R Machining spaces were relatively free of oil staining.

1.3 Site Owner

The Site has been owned by the City since approximately 1991. The Site was leased until recently to a number of tenants for private industrial and commercial uses. Past uses have included machine shops and metal fabrication. The Site was developed initially in the mid- to late-1970s, and was part of a larger orchard prior to its current development. The City intends to demolish the existing structures and redevelop the Site into a public park.

1.4 Purpose of the RAW

Based on the information developed during the Site characterization activities, DTSC has determined that further action is required for the Site due to elevated concentrations of arsenic detected in soil samples collected from the Site.

The RAW will go through a public review process. Following completion of the public comment period, DTSC will consider and prepare written responses to the comments received. The RAW will be revised, as necessary, in response to the comments received. If significant changes are not required, DTSC will then approve the RAW for implementation. When the remedy has been implemented, a Removal Action Completion Report (see Section 5.11) will be submitted to DTSC for review and certification.

2. SITE CHARACTERIZATION

A summary of Site assessment activities conducted to date, including the results of environmental investigations conducted at the Site during 2010, are discussed in the sections below. Tables 1A through 1C provide a summary of chemical analyses for soil and grab groundwater samples collected from the Site during these investigations and Tables 2 and 3 summarize the analytical results.

2.1 Site Assessment and Characterization Conducted to Date

2.1.1 Phase I Environmental Site Assessment

URS Corporation ("URS") conducted, on behalf of the City, a Phase I Environmental Site Assessment ("ESA") at the Site on 2009. The purpose of the Phase I ESA was to evaluate whether current or historical activities on or near the Site may have resulted in significant impacts by hazardous substances or petroleum products. The Phase I ESA did not include sample collection and analysis.

According to the Phase I ESA, no evidence of recognized environmental conditions ("REC") in connection with the Site was revealed, except for the following:

- Although an asbestos and/or lead-based paint survey was not conducted as part of the Phase I ESA, the age of the buildings on-Site makes it possible that some materials contain asbestos and/or lead-based paint. If building demolition is planned, an asbestos and lead-based paint survey should be conducted to ascertain the content of the building materials through the collection and laboratory analysis of samples. The potential presence of asbestos and/or lead-based paint at the Site was identified as a potential REC.[3]
- Based on a history of agricultural land use in the Site vicinity, pesticides may have been previously used at the Site. The potential presence of pesticides at the Site was identified as a potential REC.
- Two properties, Milne Truck Lines Inc and Bob's Towing, which are located less than 500 feet cross or upgradient of the Site, were identified as having underground storage tanks ("USTs") that once or currently store significant quantities of gasoline and/or diesel fuel. The condition of these tanks at both properties is unknown; therefore these off-Site properties were identified as a potential REC for the Site.

2.1.2 Phase II Subsurface Investigation

EKI performed, on behalf of the City, a reconnaissance-level Phase II subsurface investigation at the Site on 10 and 15 March 2010 (EKI, 2010a). Table 1A provides a summary of chemical analyses for soil and grab groundwater samples collected from the Site during this investigation.

[3] A subsequent survey of the buildings for the presence of lead-based paint and asbestos containing materials was completed by The Cohen Group of San Mateo, California (Cohen, 2010). These materials will be abated, as necessary, prior to demolition of the buildings.

The analytical results are summarized in Tables 2 and 3 and the laboratory data sheets included in Appendix J.

The Phase II sampling investigation at the Site consisted of the following:

- Collection of shallow soil samples (generally collected between 1 and 1.5 feet below baserock/structural fill ("bbr") and between 2.5 and 3 feet bbr) at 10 locations (SU1 through SU10, see Figure 2) on the Site to screen for the presence of agricultural chemicals in soil, e.g., pesticides, lead, arsenic, that may have been applied to the Site during orchard use of the Site;
- Collection of shallow soil samples at the base of two pad-mounted transformers (see sampling locations NTRAN and ETRAN on Figure 2) on the Site to screen for the presence of polychlorinated biphenyls ("PCBs") and petroleum hydrocarbons in soil; and
- Collection of grab samples of shallow groundwater (generally collected between 4 and 14 feet bbr) at 5 locations (SU1, SU3, SU4, SU5, and SU6) on the Site to screen for the presence of COCs in groundwater, e.g., petroleum and volatile organic compounds ("VOCs"), which may have originated from on-Site or off-Site areas. EKI collected grab samples of shallow groundwater from boreholes placed in the inferred downgradient (i.e., northeast, see Section 2.1.4) direction from current and reported former industrial users of the Site to screen for the presence of COCs that may have been released from such operations.

A summary of the findings and recommendations of the March 2010 Phase II investigation is presented below:

- Shallow soil on the Site contains lead and arsenic at concentrations above potentially relevant environmental regulatory screening criteria for unrestricted land use, and above typical background concentrations for South Bay soils. The presence of elevated lead and arsenic in soil on the Site may be due to the previous orchard use of the Site, e.g., possible application of lead-arsenate as a pesticide. Given intended future use of the Site as a public park, further assessment of the presence of lead and arsenic in soil on the Site, and/or evaluation of possible removal alternatives appears warranted.
- Shallow soil on the Site at the locations sampled by EKI contains certain organochlorine pesticides, e.g., DDE and DDD, at detectable concentrations. The reported concentrations, however, do not exceed potentially relevant environmental regulatory screening levels (i.e., California Human Health Screening Levels ("CHHSLs") for residential soil (OEHHA, 2010) and RWQCB Environmental Screening Levels ("ESLs") (RWQCB, 2008)) for unrestricted land use.
- Shallow soil samples collected at the base of the two pad-mounted transformers on the Site did not contain detectable levels of PCBs.
- Tetrachloroethylene ("PCE"), a common degreasing solvent, was detected in two of the five grab groundwater samples collected on the Site between 4 and 14 feet bbr, at locations SU1 and SU3 (see Figure 2) at concentrations of 1.02 micrograms per liter ("ug/L") and 7.6 ug/L, respectively. The concentration of PCE in the grab groundwater sample collected from borehole SU3 exceeds its RWQCB drinking water ESL of 5 ug/L, but is below its non-

drinking water ESL of 120 ug/L. Grab groundwater sample locations SU1 and SU3 are situated in the general downgradient direction from Site buildings 1014 and 1012 Morse Avenue (see Figure 2). Machine shops currently exist (in 2010) in the 1012 Morse Avenue building, and machine shops formerly existed in the 1014 Morse Avenue building. These current or past machine shops may be the source for the PCE in groundwater on the Site. It is also possible that the source for the PCE in groundwater is from an off-Site, upgradient property, e.g., south of the Site. The presence of relatively low concentrations of PCE in groundwater on the Site should not impact future redevelopment or use of the Site as a public park. During Site demolition, excavation for the park, and preparation for re-use, if soils containing PCE or other contaminants are encountered, the soils should be managed in accordance with applicable laws and regulations.

- Based on available historical land use information reviewed by EKI, past uses of the Site have included machine shops, metal fabrication facilities, print shops, and plastics extrusion. Typical chemical use at such facilities includes petroleum hydrocarbons, e.g., hydraulic and cutting fluids, and degreasing or cleaning solvents. If released during operations, such chemicals may be present in soil beneath these former use areas, e.g., beneath concrete floor slabs, and/or along sanitary sewer or storm drain lines on the Site. During Site demolition and preparation for re-use, impacted soils encountered should be managed in accordance with applicable laws and regulations. It is recommended that a Soil Management Plan be prepared in advance of Site demolition activities that would prescribe protocols for worker protection and appropriate characterization and handling of impacted soils if encountered during demolition, future grading, or other Site redevelopment activities.[4]

2.1.3 Additional Soil Characterization

At the request of the City, in early July 2010, EKI performed additional soil sampling to provide additional characterization of the extent of arsenic, lead, and pesticides in soil on the Site (EKI, 2010b). Tables 1B and 1C provide a summary of chemical analyses for soil samples collected from the Site during this investigation within areas outside of the buildings´ footprint and within them, respectively. The analytical results are summarized in Table 2 and the laboratory data sheets included in Appendix J.

The primary purpose for the additional soil sampling was to provide additional data for use in the preparation of an engineering cost estimate for remediation of soils on the Site given the proposed future land use as a neighborhood park. To achieve the primary objectives, EKI performed the following:

- Collected soil samples from discrete depth intervals (i.e., 0 to 0.5 feet bbr; 1 to 1.5 feet bbr; and 1.5 to 2 feet bbr) within the upper approximate 2 feet of soil from 31 sample grids[5] (including the on-Site buildings) placed across the Site (see Figure 2) to identify the vertical extent of COCs above potentially-relevant regulatory agency land use screening criteria;

[4] Procedures for addressing unknowns are included in the remedy in this RAW.

[5] In general, the size of each grid area is approximately 90 feet by 90 feet.

- Collected soil samples from the structural fill immediately under the concrete slab at the five existing site buildings to screen for the presence of COCs in the structural fill layer;
- Collected composite soil samples from the upper 2 feet of soil as a whole from the 31 sample grids placed across the Site to attempt to simulate soil conditions across the Site under a hypothetical "soil mixing" or roto-tilling scenario, which could potentially be implemented as part of site preparation for redevelopment or for remediation; and
- Collected discrete soil samples for analysis from below reported, recent machine shop use areas in the Site buildings and at selected locations near the Site perimeter (see Figure 2).

A summary of the results of this investigation is presented below:

- Arsenic is generally present in the upper 6 inches of soil across the Site, beneath the baserock and structural fill, at concentrations above potentially relevant screening criteria for land use as a public park. Arsenic concentrations generally attenuate[6] to background concentrations by 18 to 24 inches below the baserock and structural fill. Thus, remediation of the upper approximate 1 to 2 feet of soils on the Site would likely be required by the regulatory agencies for re-use of the Site as a public park.
- Lead was detected above its residential (unrestricted) land use CHHSL of 80 milligrams per kilogram ("mg/kg") in roughly one-half of the composite samples collected from the upper 6 inches of soil on the Site. Lead concentrations generally attenuate[6] to typical background concentrations by 18 to 24 inches below the baserock and structural fill.
- Chlorinated pesticide concentrations in all soil samples collected from the Site are below potentially relevant screening criteria for use of the Site as a public park.
- The results of the full depth Cell Composite soil samples, performed to simulate mixing or roto-tilling of the upper approximate 2 feet of soil (a potential remediation strategy), indicate that arsenic concentrations across much of the Site would not likely decrease to levels below average background arsenic concentrations following such mixing. Thus, roto-tilling or mixing of shallow soil on the site to reduce overall chemicals concentrations does not appear to be a viable remediation option for the Site given its intended land use.
- The structural fill under the buildings did not contain pesticides above the laboratory reporting limits and arsenic and lead were present at background concentrations.
- Results of the individual discrete soil sample concentrations were comparable to the depth-discrete composite samples indicating that significant dilution of chemical concentrations did not occur during the compositing process.
- The Waste Extraction Test ("WET") and Toxicity Characteristic Leaching Procedure ("TCLP") tests were performed on all soil samples that could potentially be classified as California or federal Resource Conservation and Recovery Act ("RCRA") Hazardous Waste, respectively, based on lead or arsenic concentrations. The lead and arsenic concentrations in the WET and TCLP extracts were all less than the California and RCRA regulatory levels

[6] Arsenic and lead concentrations did not attenuate to background concentrations in soil samples collected from grid area C13.

indicating that impacted soil at the Site would not be classified as a hazardous waste if excavated.

- Samples of shallow soil collected beneath the concrete floor of three former machine shops on the Site did not contain petroleum hydrocarbons as gasoline or VOCs above the laboratory reporting limits. However, during removal of the building slabs at these locations and the several other machine shop locations on the Site, if impacted soil is discovered, the soil should be managed in accordance with applicable laws and regulations.

2.1.4 Site Geology and Hydrogeology

The Site is located in the northern portion of the Santa Clara Valley. The Santa Clara Valley is a large structural depression in the Central Coastal Ranges of California, which extends southeast from San Francisco Bay and is bounded by the Diablo Range on the northeast, and by the Santa Cruz and Gabilan Ranges on the southwest. The Valley is filled with alluvial deposits washing in from the Santa Cruz Mountains and the Diablo Range. In the Santa Clara Valley, the maximum depth of the alluvial materials is in excess of 1,500 feet.

Based on observations made by EKI during drilling and sampling on the Site in March 2010, the depth to first encountered groundwater on the Site ranges from approximately 9 to 12 feet below ground surface. Based on a review of available information for the Site and nearby properties identified in the Geotracker website, the direction of shallow groundwater flow is generally to the northeast.[7]

According to stratigraphic logging conducted in March 2010 Phase II Investigation (refer to Section 2.1.2 for further details), the shallow stratigraphy at the Site below the Site´s improvements (i.e., 0.25 to 2.5 feet of concrete, asphalt, topsoil, baserock, or fill soil) generally consists of the following units:

1. Approximately 2 to 4.5 feet thick layer of black silty clay transitioning at some locations to a very dark grayish brown silty clay (up to 2 feet thick);
2. A layer of light olive brown silty sand up to 11 feet in thickness with clay or sand lenses, which range in thickness from approximately 0.5 to at least 2 feet; and
3. Silty clay mottled with olive or yellowish brown clay.

2.1.5 Background Concentrations of Metals

Because trace metals occur naturally in soil, it is important to distinguish naturally occurring or background concentrations of metals from those related to impacts caused by Site activities. For this reason, U.S. Environmental Protection Agency ("U.S. EPA") (1989, 1992) and DTSC

[7] According to closure summaries for properties in the vicinity of the Site, the general groundwater flow direction is: (1) east to northeast for a UST site located approximately 100 feet south of the Site at 925 Morse Avenue (Santa Clara Valley Water District, 1997a), (2) northeast for a UST site located approximately 400 feet north of the Site at 438 Toyama Drive (Santa Clara Valley Water District, 1997b), and (3) north to northeast for a UST site located approximately 600 feet northeast of the Site at 1036 Kiel Court (County of Santa Clara, 2006).

(1999) do not intend metal releases to be remediated to concentrations that are below naturally-occurring background concentrations. The determination of the naturally-occurring background concentration for arsenic is critical because risk-based soil screening criteria are generally below typical arsenic background concentrations. According to SFRWQCB (2008), site-specific or regional-specific background concentrations can be substituted for risk-based concentrations at sites where the conceptual model indicates that concentrations are indicative of site-related contamination.

Background metal concentrations were estimated for soils in the Northern Santa Clara County as part of the *Background Metal Concentrations in Soils in Northern Santa Clara County, California in: Recent Geological Studies in the San Francisco Bay Area* (Scott, 1995). The background concentration for arsenic based on the maximum detection is 20 mg/kg. Background concentrations of metals were also estimated for soils at the Lawrence Berkeley National Laboratory's ("LBNL") as reported in the *Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory*, June 2002 (LBNL, 2002). The background arsenic concentration for all geologic classifications found at the LBNL (excluding the Great Valley Formation) was estimated at 24 mg/kg. A Site-specific background concentration of arsenic was developed in the following sections. A background concentration was not developed for lead because background concentrations are typically less than risk-based screening levels.

2.1.5.1 Site-Specific Arsenic Background Concentration

EKI estimated a Site-specific arsenic background concentration using the available arsenic data for the Site. The assumption inherent in this approach is that a set of spatially distributed site soil samples will contain both arsenic concentrations that reflect background conditions and arsenic concentrations that reflect contamination overprinted on background conditions. DTSC recognizes the desirability of estimating background metals concentrations from ordinary site data and has acknowledged this approach in *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities*, dated February 1997 (DTSC, 1997). DTSC further discussed specific approaches to estimating arsenic cleanup goals in *Arsenic Strategies: Determination of Arsenic Remediation Development of Arsenic Cleanup Goals*, dated 16 January 2009 (DTSC, 2009).

2.1.5.2 Sample Selection

A variety of soil samples were collected and analyzed during the Phase II investigation of the Site. The largest number of samples with the widest spatial distribution was depth interval cell composites collected during the July 2010 Site-wide sampling event, which consisted of the following:

- Collection of subsurface soil samples at 120 locations beneath parking areas and buildings on Site;
- Preparation of depth interval composite samples from 31 contiguous spatial cells; and
- Submission of composite soil samples to the laboratory for arsenic and lead analysis. The shallowest composite samples were also analyzed for pesticides.

This set of soil samples was favorable for background analysis in that all the samples were:

- Collected from a variety of spatial locations and depths across the Site;
- Collected at the same time using the same sampling methods; and
- Analyzed at the same laboratory using the same low-detection limit analytical method, U.S. EPA Method 6020, which is less susceptible to positive interference problems than U.S. EPA Method 6010.

The specific samples of interest for identifying background arsenic were three sets of 31 composites (93 total composite samples) collected at three different depth intervals below the bottom of the baserock/structural fill that had been emplaced at the time the Fair Oaks Industrial Complex was built on the Site. The three depth intervals were designated as follows:

- B interval 0 to 0.5 feet below baserock/structural fill ("bbr"),
- D interval 1 to 1.5 ft bbr, and
- E interval 1.5 to 2 ft bbr.

Arsenic sampling results from the grid soil sampling is included in Table 2. A boxplot of arsenic concentrations by depth interval (Figure 3) shows that arsenic decreases with depth, which is reasonable given that lead arsenate pesticides would be expected to be highest at the pre-building ground surface. Figure 3 suggested that the B and D interval samples could be excluded from the background analysis because many of these data would represent lead arsenate contamination superimposed on background. The E interval sample analyses were selected as the basis for background arsenic evaluation because there would be little if any lead arsenate impacts yet still provide a reasonable statistical mass, (i.e., 31 samples) for further graphical and statistical analysis.

2.1.5.3 Outlier Identification

In accordance with the DTSC (2009a) guidance, outliers were identified using the Fourth Spread technique. For the E interval data set, the boxplot (Figure 4) shows that one sample could be considered an outlier with 44.1 mg/kg arsenic. This outlier was removed from the background data set.

2.1.5.1 Population Analysis

The remaining data were plotted on a cumulative probability plot (Figure 5) using Minitab (version 16), which shows that these data fit a single population lognormal model (i.e., the p value shown on the plot is greater than 0.05). The 95th percentile of the fitted lognormal distribution is 14 mg/kg. Like all population distribution models, the model shown on Figure 5 is a statistical entity based on a limited amount of data. As such, it cannot capture the full range of concentrations that could be found were the sampling and analysis truly exhaustive. In particular, it is impossible to <u>know</u> the true maximum background arsenic concentration; it can only be estimated. If it were possible to collect and analyze other, entirely independent sets of

samples, the resulting estimates of the 95th percentile would likely all be different. Hence, fundamental uncertainty is associated with such an estimate. This fundamental uncertainty is addressed by associating a statistical tolerance interval with the distributional threshold selected to represent the upper end of background. A tolerance interval is a calculated range of values within which an individual measurement should fall when measuring a known value. In this instance, the tolerance interval being calculated is associated with the 95th percentile of the arsenic background population distribution. A 95% upper tolerance level ("UTL") on the 95th percentile functionally means that we are 95% confident that the given interval contains at least 95% of all future measurements we could make if we were attempting to determine the 95th percentile from many additional independent investigations. The 95% UTL is represented on Figure 5 by the curving line to the right of the linear fitted population model.

Hence, the upper end of the lognormal model has the following population parameters:

Parameter	Arsenic Concentration (mg/kg)
95th Percentile	14
95% UTL on the 95th Percentile	17

The 95% UTL on the 95th percentile of the modeled background population, i.e., 17 mg/kg, is recommended as the background arsenic concentration for the Site. This value will generally be applied as an upper bound value for comparison to existing site data and confirmation sampling results.

2.2 Nature and Extent of Contamination

The following sections summarize the analytical results of soil and grab groundwater samples collected from the Site during the environmental investigations conducted by EKI in March and July 2010 (see Sections 2.1.2 and 2.1.3, respectively) and the conceptual site model ("CSM") for the Site. Sampling locations are shown on Figure 2.

2.3 Soil Analytical Results and Human Health Risk Screening

2.3.1 Soil Screening Criteria

Concentrations of chemicals detected in soil were compared with applicable screening criteria to identify COCs. Applicable screening criteria included the California CHHSLs for residential soil (OEHHA, 2010). The Site-specific background concentration of 17 mg/kg is used as the screening criterion for arsenic.

2.3.2 Metals

Analytical results of arsenic and lead analyses for soil samples are presented in Table 2. Detected concentrations of arsenic and lead in soil samples exceeded one or more screening criteria at one or more sampling locations. These metals are further discussed below.

2.3.2.1 Arsenic

Arsenic was detected in soil samples at concentrations ranging from 3.75 mg/kg to 53.1 mg/kg. Arsenic concentrations in soil exceeded its upper-bound background concentration of 17 mg/kg at 49 of the 144 soil samples. Therefore, arsenic is considered to be a COC in soil at the Site.

2.3.2.2 Lead

Lead was detected in soil samples at concentrations ranging from 4.64 mg/kg to 190 mg/kg. Lead concentrations in soil exceeded the CHHSL for residential soil of 80 mg/kg at 24 of the 144 soil samples. However, the representative concentration of lead in soil, which was estimated to be approximately 57[8] mg/kg, is below the CHHSL for residential soil. Therefore, lead is not present in soil at levels that may pose a significant risk to human health for unrestricted land use. Lead is not retained as a COC in soil at the Site.

2.3.3 Soil Analytical Results for PCBs and Organochlorine Pesticides

PCBs were not detected above laboratory reporting limits in the 2 shallow soil samples collected in the vicinity of transformers that are located within the Site.

Analytical results for organochlorine pesticides for soil samples are presented in Table 2. DDD, DDE, and DDT were the only pesticides detected in soil samples above laboratory reporting limits. DDD was detected at concentrations ranging from 0.0132 mg/kg to 0.0225 mg/kg. DDE was detected at concentrations ranging from 0.016 mg/kg to 0.657 mg/kg. DDT was detected at concentrations ranging from 0.013 mg/kg to 0.0358 mg/kg. DDD, DDE, and DDT concentrations in soil did not exceed their respective CHHSLs for residential soil (2.3 mg/kg, 1.6 mg/kg, and 1.6 mg/kg, respectively). Therefore, DDD, DDE, and DDT are not present in soil at levels that would pose a significant risk to human health for unrestricted land use. DDD, DDE, and DDT are not retained as COCs in soil at the Site.

2.4 Groundwater Analytical Results and Human Health Risk Screening

2.4.1 Groundwater Screening Criteria

Concentrations of constituents detected in groundwater were compared with applicable screening criteria to identify preliminary groundwater COCs. Concentrations of constituents detected in groundwater samples were compared to California Maximum Contaminant Levels ("MCLs") (DHS, 2010).

[8] The representative concentration of lead in soil was calculated as the 95% upper confidence limit ("UCL") of the mean of the lead concentrations in soil using all the lead data for the Site (i.e., 144 soil samples) and the latest version of the ProUCL software (version 4.1.00). The ProUCL software recommended using the 95% Chebyshev UCL of 57.19 mg/kg as the 95% UCL for lead in soil.

2.4.2 TPH and VOCs

Analytical results of TPH and VOCs for grab groundwater samples are presented in Table 3. TPH-g, TPH-d and TPH-mo were not detected above laboratory reporting limits in any of the grab groundwater samples collected from the Site. PCE was the only volatile organic compound ("VOC") detected in the grab groundwater samples above laboratory reporting limits. PCE was detected in two of the five grab groundwater samples collected on the Site, at locations SU1 and SU3 at concentrations of 1.02 ug/L and 7.6 ug/L, respectively. PCE was detected slightly above the California MCL in the grab groundwater sample collected from boring SU3. As mentioned before, PCE was also detected above the drinking water resource ESL (5 ug/L), but below its non-drinking water ESL of 120 ug/L. PCE is, however, not retained as a COC because the presence of relatively low concentrations of PCE in groundwater on the Site do not indicate a significant source of PCE is present at the Site, if any, and the low levels of PCE in groundwater should not impact future redevelopment or use of the Site as a public park. However, given that it is unclear whether the low levels of PCE detected in groundwater on the downgradient property boundary (i.e., eastern property boundary) are from on-Site or off-Site sources, field screening will be performed with an organic vapor meter ("OVM") under the slabs of the building located at 1010 and 1012 Morse Avenue immediately after removal of the slabs during demolition to verify that there were not on-Site releases of VOCs. This screening is discussed further in Section 5.4.2.

2.5 Waste Classification

A solid waste may be classified as a hazardous waste under the federal RCRA regulations promulgated in the Title 40 of the Code of Federal Regulations ("CFR"), Part 261. The State of California implements the RCRA hazardous waste identification regulations through regulations contained in Title 22 of the California Code of Regulations ("CCR").

A solid waste is a RCRA hazardous waste due to the toxicity characteristic (40 CFR §261.24) if the concentration of a chemical in the extract from the TCLP exceeds the regulatory criterion for that chemical.

Criteria for determining if a solid waste is a hazardous waste under California regulations are included in 22 CCR §66261. A solid waste is a California hazardous waste if the total concentration of a constituent exceeds its Total Threshold Limit Concentration ("TTLC") criterion, or if the concentration of a constituent in the extract from the WET (22 CCR §66261, Appendix II) exceeds its Soluble Threshold Limit Concentration ("STLC") criterion. If the soil is not a hazardous waste pursuant to RCRA, but one or both of the California criteria listed above are exceeded, the soil will be referred to as a non-RCRA (California) hazardous waste. If none of the criteria listed above are exceeded, the soil will be referred as non-hazardous waste.

As shown in Table 2, none of the applicable waste classification criteria were exceeded and, therefore, soil from the Site is classified as non-hazardous waste if it is excavated. It is anticipated that when Site soil is excavated it will be managed according to its assigned waste classification without further analysis, unless requested by the landfills accepting the soil. However, if any observations or additional data are collected that indicate the waste

classification criteria described above are not applicable or are not adequate to properly classify the waste, the applicable criteria will be utilized.

2.6 Conceptual Site Model

The following CSM describes EKI's current conclusions regarding identified COCs, contaminant sources, potentially complete current and future exposure pathways, and potential receptors for the Site. These aspects of the CSM for the Site are summarized below:

COCs: As discussed above, arsenic is the only COC in soil at the Site. No COCs were identified for groundwater.

Contaminant Sources: The presence of elevated arsenic in shallow soil on the Site may be due to the previous orchard use of the Site, e.g., possible application of lead-arsenate as a pesticide.

Current Exposure Pathways and Potential Receptors: The Site is currently vacant and completely covered by buildings and pavement. No current potential receptors were identified and all potential exposure pathways are deemed incomplete assuming the existing buildings and pavement are in place.

Future Exposure Pathways and Potential Receptors: The Site is going to be developed as a park. Potential receptors include park users, park construction workers, and groundskeepers/maintenance workers. The potentially complete exposure pathways for park construction workers are direct contact with and ingestion of soil and inhalation of particulates during park redevelopment if no removal actions are implemented before the park is constructed. The potentially complete exposure pathways for park users and groundskeepers/maintenance workers are direct contact with and ingestion of soil and inhalation of particulates if no removal actions are implemented before the park is constructed and the impacted soil is not capped. The data collected by EKI during environmental investigations conducted at the Site are sufficient to develop the removal action alternatives for the Site based on the above-described CSM.

2.7 Identification of COCs

As discussed above, arsenic is the only COC in soil at the Site. No COCs were identified for groundwater.

3. IDENTIFICATION OF REMOVAL ACTION GOALS AND OBJECTIVES

This section outlines RAOs, which are specific to a site area or to a contaminated medium, such as soil or groundwater, and are developed for the protection of human health and the environment. RAOs can address both chemical concentrations and potential exposure pathways. Protection can be achieved by reducing the mass, volume, toxicity, or mobility of chemicals of interest, by reducing potential exposures, or by a combination of these approaches. This section also summarizes proposed cleanup goals for the Site.

3.1 Identification of Removal Action Objectives

To attain the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP") goals of implementing removal actions that protect human health and the environment and maintaining protection over time, the following RAO is established for the Site:

- Minimize potential human exposure to soil having arsenic at concentrations exceeding its Site-specific background concentration, including potential exposures of future park users and on-Site workers.

3.2 Identification of Potential ARARs and TBCs

RAOs are developed by considering, among other things, Applicable or Relevant and Appropriate Requirements ("ARARs"). ARARs are defined in the NCP, 40 CFR Part 300.430(e)(2)(i), as follows:

- Applicable Requirements: Cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, removal action, location, or other circumstance found at a Comprehensive Environmental Response Compensation and Liability Act ("CERCLA") site.
- Relevant and Appropriate Requirements: Cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, removal action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the site that their use is well-suited to the particular site.

ARARs typically are separated into three categories:

1. Chemical-Specific ARARs: These are health-based or risk-based standards that define the allowable limits of specific chemical constituents found in or discharged to the environment. They can provide cleanup and discharge levels that can determine site removal goals. Most chemical-specific ARARs are applicable to water sources

potentially used for drinking water; few are available for ambient air or soil. MCLs for drinking water are examples of potential chemical-specific ARARs.

2. Location-Specific ARARs: These requirements can apply to natural site features, such as wetlands, flood plains, or the presence of endangered species, and to man-made features and institutional factors, including landfills, zoning requirements, and places of historical or archaeological significance. Location-specific ARARs restrict the types of removal actions that can be implemented based on site-specific characteristics or location.
3. Action-Specific ARARs: These ARARs are technology-based or activity-based limitations that can set performance and design restrictions. They specify permit requirements and engineering controls that must be instituted during site activities, or restrict particular activities.

Federal and state non-promulgated standards, policies, or guidance documents, and local requirements, are not ARARs. However, according to the NCP guidance, these items are also to be considered when evaluating and selecting removal actions necessary to protect human health and the environment. These non-promulgated, non-binding factors are designated "other criteria to be considered," or "TBCs." Potential chemical-, location-, and action-specific ARARs and TBCs for the Site are identified, listed, and described in Table 4.

3.3 Site-Specific Cleanup Goal for Arsenic

EKI proposes to use the estimated Site-specific background arsenic concentration of 17 mg/kg as the Site-specific cleanup goal ("SSCG") for arsenic. As the estimated background concentration represents the upper-bound concentration of ambient arsenic in soil at the Site, EKI proposes to meet the SSCG by ensuring that concentrations in individual soil samples are below the SSCG (i.e., this value will generally be applied as an upper bound value), with the following exceptions, which will be will be evaluated case-by-case and will need DTSC approval, but are consistent with DTSC guidance (DTSC, 2009):

- Additional soil removal to meet the arsenic SSCG may not be necessary at isolated areas with arsenic concentrations slightly over the SSCG[9] where the data indicate that the extent of contamination is not significant, and

- Removal of soil around the roots of existing trees located right outside of the property boundary that encroached into the Site as well as removal of soil around the roots of a tree within the Site boundaries that will not be removed as part of the park development activities will be only performed to the extent that is feasible and that would not jeopardize the tree.

[9] Given that the arsenic SSCG is based on the 95% UTL on the 95th percentile, arsenic concentrations slightly greater than 17 mg/kg may still represent background.

Detected concentrations of arsenic in soil above the proposed SSCG are shown in bold in Table 2. The distribution of arsenic in soil for the composites samples collected in July 2010 for different depth intervals is presented on Figures 6 through 8.

4. IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

The purpose of this Section of the RAW is to identify and screen possible removal action alternatives that may best achieve the RAOs discussed in Section 3. The removal action alternatives were screened and evaluated on the basis of their effectiveness, implementability, and cost.

The removal technologies considered for the reduction of COCs in Site soil are:

- No further action,
- Excavation and off-Site disposal, and
- Soil containment/in-place capping.

These removal technologies are described in the following sections in terms of their effectiveness, implementability, cost, and compliance with ARARs and TBCs to the extent practicable.

The acceptance criteria of effectiveness, implementability, cost, and compliance with ARARs and TBCs were selected to determine how the alternatives compare with one another and to identify trade-offs between them.

1. Effectiveness: This criterion addresses how well a removal action satisfies the RAOs in the short and long term, and addresses protection of human health and the environment during construction and implementation of removal actions.

2. Implementability: This criterion is meant to assess implementability considering the technical and administrative feasibility of each alternative, as well as the availability of needed goods and services to perform the removal action. Other implementability considerations include the ability to monitor removal action effectiveness and the ability to obtain approvals and permits.

3. Cost: This criterion evaluates the cost of removal action alternatives, including both total long-term and short-term costs.

4. Compliance with ARARs and TBCs: This criterion evaluates if the remediation technologies comply with the applicable ARARs and TBCs.

Table 5 summarizes the comparison of alternatives in terms of these acceptance criteria. An on-Site soil treatment alternative was not chosen for detailed alternative analysis. On-Site soil treatment (for example soil mixing" or roto-tilling) was not considered to be a viable removal action for the Site in terms of the acceptance criteria of effectiveness. The data in Table 2 for the full cell composites for a depth of 2 feet bbr show that arsenic concentrations would not be reduced to levels below 17 mg/kg by roto-tilling. In any case, soil mixing to reduce arsenic concentrations would probably not be an acceptable alternative for DTSC.

4.1 Alternative 1: No Further Action

As required by DTSC, the No Further Action alternative has been included to provide a baseline for comparisons among other removal alternatives. The No Further Action alternative would not require implementing any measures at the Site, and no costs would be incurred. This action includes no institutional controls, no treatment of soil, and no monitoring.

Under the No Further Action alternative, COCs would remain in place at their current concentrations and there would be no reduction in the potential risks. The No Further Action alternative would allow potential human to the existing Site soil contamination upon redevelopment of the Site as a park. As a result, acceptance by the State and the community would be unobtainable.

4.1.1 Effectiveness

Under this alternative, construction activities could have a short-term impact on on-Site workers and public receptors off-Site if the park is constructed without implementing any control measures (e.g., dust control). Park construction workers would be exposed to arsenic impacted soil during park construction. Upon redevelopment of the Site as a park, some of the impacted soil may be covered by new park features and some impacted soil may be exposed to park users. This alternative does not meet the RAO of minimizing or eliminating human exposure to COC-impacted soil. No reduction in toxicity, mobility, or volume of Site COCs would result under this alternative. This alternative is, therefore, not effective.

4.1.2 Implementability

The No Further Action alternative would not require implementing any measures at the Site, so it is easily implementable.

4.1.3 Cost

No costs would be incurred under the No Further Action Alternative.

4.1.4 Compliance with ARARs and TBCs

The No Further Action Alternative does not comply with ARARs and TBCs.

4.2 Alternative 2: Excavation and Off-Site Disposal

Excavation and Off-Site Disposal entails physical removal of COC-impacted soils from the Site and transporting those soils a permitted landfill for disposal. Prior to soil excavation at the Site, the buildings, existing paved surfaces, and all trees except one would have to be removed. Demolition of the Site buildings and removal of pavement and trees would have to be performed as part of the park project, before excavation activities would commence.

Costs associated with Excavation and Off-Site Disposal would include excavation equipment, soil profiling, soil removal, confirmation soil sampling, transport, disposal charges, and

engineering oversight. The estimated volume of non-hazardous waste for off-Site disposal is approximately 10,410 per bank (in-place) cubic yards ("bcy") (16,700 tons). Backfill of the excavation will occur as part of the construction of the park. The Site will be filled and graded, as needed for the park.

4.2.1 Effectiveness

The Excavation and Off-Site Disposal alternative would effectively reduce health risks from potential exposures to construction workers and park users in the long-term. Contaminated soil would be removed in areas where contamination is above the SSRG and transported to an appropriate landfill for disposal. Disposing of the soil in a permitted landfill would reduce potential future human health risks associated with contaminated soil.

The anticipated duration of excavation activities under the Excavation and Off-Site Disposal alternative is approximately ten weeks. The Excavation and Off-Site Disposal alternative would potentially have decreased effectiveness in the short-term as a result of dust generated during excavation that could impact on-Site workers and public receptors off-Site. In addition, the Excavation and Off-Site Disposal alternative could have short-term impacts due to transportation requirements at the Site during excavation activities (i.e., truck routes, staging, and decontamination). However, this alternative would include appropriate engineering controls such as personal protective equipment for on-Site workers, dust suppressant measures, perimeter air monitoring, and other traffic controls, that would limit construction related impacts (i.e., would increase the short-term effectiveness) of the alternative. It is anticipated that the Excavation and Off-Site Disposal alternative would be most effective in the long-term because impacted soil would be removed from the Site.

4.2.2 Implementability

The Excavation and Off-Site Disposal alternative is easily implemented with standard equipment and construction equipment. Contaminated soil that would need to be excavated and transported off-Site could be both loaded and transported off-Site during excavation activities or stockpiled on-Site. This alternative uses readily available equipment and experienced and licensed contractors to perform work. Adequate transportation capacity exists in the area with numerous licensed hazardous waste haulers available. It is assumed that excavated soil would be loaded into trucks on-Site and that trucks will use Morse Avenue as a point of access to and egress from the Site. Several disposal facilities are easily accessible from the Site for disposal of non-hazardous (Class II) waste. Adequate capacity exists at many permitted disposal facilities for disposal of 16,700 tons of soils. The Excavation and Off-Site Disposal alternative would require additional effort to develop and execute the engineering controls described above in order to protect the health of on- and off-Site receptors, and to manage on-Site transportation.

4.2.3 Cost

The cost to excavate contaminated soil into end-load dump trucks is assumed to be $4.40 bcy and the cost for transportation and disposal of non-hazardous waste $40 per ton. The estimated cost for soil removal, transportation, and disposal of 10,410 bcy (16,700 tons) of non-hazardous

waste would be approximately $670,000. The total estimated present worth cost of this alternative is $1,410,000 (Table 5). Supporting information for the estimated cost for this alternative is included in Appendix A.

4.2.4 Compliance with ARARs and TBCs

The Excavation and Off-Site Disposal alternative will comply with the applicable ARARs and TBCs to the extent practicable.

4.3 Alternative 3: Soil Containment / in-Place Capping

Soil Containment / In-Place Capping alternative entails capping of shallow soil to limit direct contact with COC-impacted soil, recording of a land use covenant, and preparation of a Soil Management Plan. Subsurface workers would be protected by appropriate worker health and safety protocols. The cap would likely consist of one of the following cap materials: at least two feet of clean soil (including landscaped areas), above ground structures, and concrete pavement to be constructed as part of redevelopment of the park.

Costs associated with capping would include materials and labor for the construction of the cap and cap maintenance and repair costs.

4.3.1 Effectiveness

Soil Containment / In-Place Capping alternative would prevent direct exposure to soil for construction workers working at the Site after installation of the cap and for park users in the long-term, but would not reduce the risks for construction workers performing subsurface work prior to or after the installation of the cap.

The Soil Containment / In-Place Capping alternative would potentially have decreased effectiveness in the short-term as a result of dust generated during grading operations for the construction of the park that could impact on-Site workers and public receptors off-Site. However, this alternative would include appropriate engineering controls during Site grading for construction of the cap, such as dust suppressant measures, that would limit construction related impacts (i.e., would increase the short-term effectiveness) of the alternative.

It is anticipated that with on-going monitoring and maintenance of the cap system and the implementation of health and safety protocols for future subsurface activities, this alternative would be effective in the long-term. Recording of a deed restriction would prevent future redevelopment of the Site for unrestricted uses.

4.3.2 Implementability

This alternative is readily implementable with standard equipment and construction equipment. However, installation of a soil cover would result in a mounded Site, which could be less desirable for future park use, unless artificial turf is used to create the capping material. Also, additional effort would be required under Alternative 3 (compared with Alternative 2) for the

installation and on-going monitoring of the cap system, recording of a land use covenant, and preparation and implementation of the Soil Management Plan.

4.3.3 Cost

The present worth of annual costs for annual cap maintenance is approximately $170,000 (assumed thirty-year maintenance schedule). The total estimated present worth cost of this alternative is $1,080,000 (Table 5). Supporting information for the estimated cost for this alternative is included in Appendix A.

4.3.4 Compliance with ARARs and TBCs

The Soil Containment / In-Place Capping alternative will comply with applicable ARARs and TBCs to the extent practicable.

4.4 Comparison of Alternatives and Recommended Removal Action Alternative

Alternative 1 does not meet the RAO for the Site, so it is not an effective alternative. The other alternatives meet the RAOs for the Site, and Alternative 3 is more cost effective than Alternative 2 (see Table 5). However, Alternative 2 removes impacted soil from the Site without any long-term obligations and land use covenants that are associated with capping of the Site (Alternative 3). Based on the evaluation of the alternatives presented above, Alternative 2 is the recommended alternative. Overall, EKI believes that the Excavation and off-Site Disposal alternative best meets the RAO considering effectiveness, implementability, cost, and compliance with applicable ARARs and TBCs.

5. REMOVAL ACTION IMPLEMENTATION

As discussed in the previous section, the recommended alternative entails excavation and off-Site disposal of COC-impacted soils and transportation of those soils to off-Site permitted disposal facilities. Implementation of the removal action consists of a series of separate tasks. The following sections discuss each task and the activities of which they consist: selecting excavation locations (Section 5.1); permits, notifications and site preparation (Section 5.2); excavation methodology (Section 5.3); control measures (Section 5.4); air monitoring during excavation (Section 5.5); field variances (Section 5.6); confirmation soil sampling (Section 5.8); schedule of removal activities (Section 5.9); backfill and Site restoration (Section 5.10); and Removal Action Completion Report (Section 5.11).

5.1 Selecting Excavation Locations

As shown on Figure 9, the City is planning to excavate soils represented by sample IDs that end with the term "DEPTH" that exceed the SSCGs for arsenic. The anticipated excavation depths range from approximately 0.5 to 2.5 feet below ground surface ("bgs") and the anticipated quantity of soil to be excavated is 16,700 tons. All existing buildings will be demolished before cleanup activities are conducted at the Site. One tree within the Site will be preserved, but the rest will be removed prior to cleanup activities. The excavation will be performed by a licensed remediation contractor ("Contractor") and will generally extend to the Site property boundary. Due to concerns to protect adjacent above-grade neighboring structures, use of adjacent streets, and protection of street trees, lateral extents of the excavations will not proceed beyond the excavation support structures or buffer zones, as deemed necessary by the City or on results of a geotechnical evaluation. Final limits of the excavations will be generally surveyed by a licensed surveyor and the survey information will be included in the Removal Action Completion Report (see Section 5.11).

Soil excavated during the construction and remediation activities may be stockpiled or, pending pre-approval of waste profiles from the City-approved disposal facilities selected by the Contractor, excavated soil will be directly loaded into trucks and transported to the appropriate disposal facilities (Class II facility).

5.2 Contingent On-Site Soil Management

Based on the excavation depth and extent shown on Figure 9, it is estimated that approximately 16,700 tons of soil will be excavated and disposed of at an off-Site permitted disposal facility. In the event that the initial lateral and/or vertical extent of the excavation would need to be significantly increased by several thousand tons (for instance, based on the confirmation soil sampling results or if a major amount of previously unknown, visually-impacted soil is uncovered), the City may, with DTSC concurrence, consolidate some of the excess impacted soil to another area within the Site (for example underneath a planned asphalt parking area or other area that will be capped based on the design of the park) instead of disposing of the soil off-Site in order to contain costs.

This contingent, on-Site management of excess soil would be implemented if the excavated amount increases by several thousand tons of soil, such soil is not a hazardous waste, the chemical constituents are not mobile (i.e., do not present a significant threat of leaching to groundwater), and with DTSC approval of the consolidation location. The area where the excess soil would be placed will have to be capped, a land use covenant would have to be recorded, a Soil Management Plan would have to be prepared and implemented, and the cap would require on-going monitoring and maintenance. The land use covenant would have to include the following minimum provisions and restrictions: (1) prohibited uses, (2) soil management, (3) prohibited activities, (4) non-interference with cap, (5) access for DTSC, (6) access for operation and management, and (7) inspection and reporting requirements.

5.3 Permitting and Site Preparation

The Contractor will be required to procure necessary permits prior to beginning cleanup activities on the Site. Permits required could include an OSHA excavation permit, submitting a notification form to the Bay Area Air Quality Management District ("BAAQMD"), and a City grading/excavation permit.

To comply with the Construction Activities Storm Water General Permit (State Water Resources Control Board ("SWRCB") Order No. 2009-0009-DWQ), the Contractor shall prepare and submit a Notice of Intent to the SWRCB.

Main tasks to be performed prior to commencement of Site cleanup activities are summarized below.

- Preparation of a RAW (this document) that describes the details of work to be implemented and the sequence of cleanup actions. The City will submit a draft RAW to DTSC for review, the RAW will be circulated for public comment, and the City will submit a final RAW for DTSC approval.
- Completion of Contract Documents for procurement of a Contractor to perform the cleanup activities.
- Preparation of a fact sheet and notice to be posted in the newspaper regarding the 30-day public comment period. Facilitation of a public meeting during the public comment period may be required.
- Selection of a Contractor and completion of contract negotiation and award.
- Contractor procurement of necessary permits, and utility clearances prior to the commencement of excavation activities at the Site.
- Coordination of pre-approval for waste disposal classifications with potential off-Site permitted disposal facility as determined to be necessary by the Contractor.
- Identification of trees in the vicinity of the property boundary that will be preserved.

5.3.1 Site Specific Plans for Site Cleanup Activities

The following plans are included in this RAW:

- A Transportation Plan (see Appendix B);
- A Decontamination Plan (see Appendix C);
- A Dust Control Plan (see Appendix D);
- A Perimeter Air Monitoring Plan or AMP (see Appendix E);
- A Storm Water Pollution Prevention Plan or SWPPP (see Appendix F);
- A Soil Sampling and Analysis Plan or SAP see Appendix G);
- A Quality Assurance Project Plan or QAPP (see Appendix H); and
- An EKI Site-Specific Health and Safety Plan or HSP (see Appendix I).

The following subsections summarize the contents of each plan and describe requirements for the Contractor to prepare a Contractor Site-specific HSP, to prepare a Contractor addendum to the Transportation Plan and SWPPP, and to prepare a Contractor addendum to the Decontamination Plan and Dust Control Plan, if necessary. Copies of these plans will be retained on-Site during Site cleanup activities. The plans will assist in the management of the construction activities for Site cleanup by identifying techniques the Contractor should use to implement Site cleanup. The final plans and the Contractor plan addendums will be submitted as an amendment or addendum to the final RAW.

5.3.1.1 Summary of Transportation Plan

EKI has prepared a Transportation Plan, which is included in Appendix B. The Transportation Plan specifies procedures for general and unique handling, transportation, and disposal of excavated soil and traffic control issues at the Site during Site cleanup activities. The Transportation Plan has been prepared following the DTSC guidance *Transportation Plan – Guidance for Developing Transportation Plans for Removal or Remedial Actions* (DTSC, 2001), and the City's requirements.

The Contractor will be required to prepare an addendum to the Transportation Plan that specifies: (1) the actual off-Site disposal facilities and the transportation routes if actual disposal facilities vary from facilities listed in the Transportation Plan, (2) the Contractor's selected transportation company, and (3) any proposed deviations from procedures specified in the Transportation Plan. The Contractor will be responsible for implementing the Transportation Plan as approved by DTSC.

5.3.1.2 Summary of Decontamination Plan

EKI has prepared a Decontamination Plan, which is included in Appendix C. The Decontamination Plan specifies procedures for removal, collection, and containment of soil and other potentially contaminated material from equipment and transportation vehicles, decontamination of personnel and tools, and methods for temporary storage, characterization, treatment, and off-Site disposal of decontamination wastes generated during decontamination activities. The Contractor will be required to prepare an addendum to the Decontamination Plan if there are any proposed deviations from procedures specified in the Decontamination Plan. The Contractor will be responsible for implementing the Decontamination Plan as approved by DTSC.

5.3.1.3 Summary of Dust Control Plan

EKI has prepared a Dust Control Plan, which is included in Appendix D. The Dust Control Plan specifies measures to be undertaken to limit generation of dust, measures to be taken if dust is present on adjacent off-Site public streets, and measures to control such emissions following identification of problems as defined by airborne Action Levels specified in the AMP. The Contractor will be required to prepare an addendum to the Dust Control Plan if there are any proposed deviations from procedures specified in the Dust Control Plan. The Contractor will be responsible for implementing the Dust Control Plan as approved by DTSC.

5.3.1.4 Summary of Perimeter Air Monitoring Plan

To monitor the effectiveness of the Contractor's dust control practices, perimeter air monitoring will be conducted as described in the AMP, prepared by EKI and included in Appendix E. The AMP develops airborne Action Levels for identified airborne COCs and dust, describes air monitoring procedures, methods, and sampling frequencies, and specifies measures to be undertaken by the Contractor if airborne Action Levels are exceeded. EKI will be responsible for implementing the AMP approved by DTSC and the Contractor will be responsible for implementing contingency measures in response to notification from EKI that contingency measures are required based on air monitoring data.

5.3.1.5 Summary of Storm Water Pollution Prevention Plan

EKI has prepared a SWPPP, which is included in Appendix F, in accordance with the regulatory requirements for construction storm water pollution management and best management practices ("BMP") that will be implemented, such as those published by the California Department of Transportation (Caltrans, 2003). The SWPPP specifies measures to be undertaken to limit storm water impacts from the Site such as reducing the sediment load to the storm water runoff from the Site during Site cleanup activities and preventing accidental spills from impacting storm water. The Contractor will be required to file a Notice of Intent ("NOI") with the SWRCB prior to Site cleanup activities.

The Contractor will be required to prepare an addendum to the SWPPP, which shall be prepared by a Qualified SWPPP Developer, in accordance with the General Permit requirements for the project Risk Level determined for the Site, that includes: (1) a copy of the NOI and receipt letter, (2) determination of the Risk Level for the Site, (3) Material Safety Data Sheets for chemicals used or stored on the site during construction, (4) an example BMP inspection form, (5) emergency contact information, and (6) any proposed deviations from the procedures specified in this SWPPP. The Contractor will be responsible for implementing the SWPPP as approved by DTSC.

5.3.1.6 Summary of Soil Sampling and Analysis Plan

A Soil Sampling and Analysis Plan or SAP, included as Appendix G, has been prepared by EKI and describes specifications and procedures for collecting soil samples to verify that soil cleanup

goals have been achieved and to characterize stockpiled soil for disposal. EKI will be responsible for implementing the SAP as approved by DTSC.

5.3.1.7 Summary of Quality Assurance/Quality Control Plan

A QAPP, included as Appendix H, has been prepared by EKI and provides a description of field and laboratory procedures to be followed to ensure that samples collected from the Site yield representative data. EKI will be responsible for implementing the QAPP as approved by DTSC.

5.3.1.8 Summary of the EKI Site-Specific Health and Safety Plan

A Site-specific HSP will specify, among other things, employee training and personal protective equipment, training and medical surveillance requirements, standard operating procedures, and a contingency plan that conforms to the requirements of 29 CFR 1910.120 et seq. and other applicable Federal and State laws and regulations, including Title 8, CCR Section 5192.

EKI's Site-specific HSP, presented in Appendix I, was prepared in accordance with Federal and California Occupational Safety and Health Administration ("OSHA") standards for hazardous waste operations (29 CFR 1910.120) and Title 8, CCR Section 5192). See Section 6 for more details.

The Contractor will prepare its own HSP in accordance with the Contract Documents. The Contractor will be responsible for health and safety of their employees and workers sub-contracted to them at the Site. The Contractor's HSP must be reviewed and signed by a certified industrial hygienist ("CIH"). The Contractor's HSP is to address Site-specific issues, Site COCs, hazard communication, notification of workers, worker protection, and other topics required by applicable laws and regulations.

5.3.2 Utility Clearance

Prior to initiating excavation activities, Underground Services Alert ("USA") will be notified by the Contractor and EKI at least two working days in advance of initiating Site cleanup activities to clear excavation areas of utilities. In addition, the planned excavation area will be surveyed for the presence of existing utilities by a private utility locating service.

5.3.3 Initial Site Preparation

Prior to initiation of cleanup activities on the Site, the Contractor's field crew will be conducting initial mobilization activities that are non-invasive. The allowable activities include setting up field offices (if necessary), constructing a decontamination pad, underground utility line location, preparing dust control measures, marking the excavation areas, and other pre-excavation activities.

5.3.4 Site Security

Prior to cleanup activities on the Site, the Contractor shall construct perimeter fencing and lockable gates to restrict access to the Site. Contractor will be responsible for maintaining Site security and will promptly repair, maintain, or install new fencing, as needed, to maintain Site security at all times.

Full-scale cleanup work described in the next section can begin when the preparatory activities described in this section are complete.

5.4 Excavation Methodology and Management of Unknowns

5.4.1 Excavation Equipment and Methods

The specific equipment and means that will be utilized to implement this work will be at the discretion of the Contractor. It is anticipated that this soil cleanup project can be accomplished with standard excavation and backfill equipment. Some of the equipment expected to be used at the Site includes track-mounted hydraulic excavators, backhoes, water trucks, end dump trucks, bulldozers, and compactors.

To the extent possible, excavated soils will be directly loaded into trucks for off-Site disposal to reduce handling and potential dust emissions. Trucks will then be covered and transported to designated disposal facilities permitted for the waste. To accomplish direct loading of trucks for soil disposal, soil has been pre-characterized and will need to be designated as acceptable to the selected, permitted disposal facility prior to the start of soil cleanup activities. Refer to the Transportation Plan in Appendix B for more specific details.

Per Sunnyvale's noise ordinance, work hours are limited to weekdays between 7:30 am and 6:00 pm. However, it is anticipated that actual work hours for this project will be limited to between 7:30 am and 4:30 pm. The Contractor shall comply with all local sound control and voice level rules, regulations and ordinances which apply to any work performed.

Excavated soils that may potentially require waste characterization during soil cleanup activities and prior to off-Site disposal will be stockpiled on-Site. Stockpiled soil will be handled as potential hazardous waste until proven otherwise. Soil stockpiles will be managed in accordance with procedures outlined in the Dust Control Plan and the SWPPP (Appendix D and F, respectively). Stockpiled soil will be placed on plastic sheeting (minimum 10-mil thickness) and securely covered with plastic sheeting (minimum 10-mil thickness). All stockpiles will be covered at the end of each work day and when not being actively handled. After classifying the soil stockpiles, the soil will be trucked to the appropriate permitted off-Site disposal facilities.

Dewatering is not anticipated to be conducted during cleanup activities. If necessary, water removed from the excavation will be stored on-Site and will be transported and disposed at an appropriately permitted off-Site facility or facilities in accordance with methods and procedures described in the Transportation Plan (Appendix B).

5.4.2 Soil Management Protocols for Stained or Odorous Soil

If potentially contaminated soil is encountered during excavation, the protocols summarized below will be followed:

- If visibly stained or odorous soil is observed during excavation activities, the City, and DTSC will be notified and a representative Evaluation Soil Sample will be collected and analyzed to evaluate chemical concentrations in the soil. Chemical analyses of soil samples collected from visibly contaminated or odorous soil if encountered will be determined in consultation with DTSC, but will likely include petroleum hydrocarbons, VOCs, and Title 22 metals.

- If chemical concentrations in the Evaluation Soil Sample exceed published screening criteria for unrestricted use (such as CHHSLs), impacted soil will be excavated, characterized for disposal purposes, and disposed of off-Site at an appropriately licensed facility. Confirmation soil samples will be collected to verify that the impacted soil has been removed. As indicated in Section 15.2, excess soil could be considered for on-Site soil management, so long as the chemicals of concern are not mobile and not likely to present a risk of leaching to groundwater. On-Site soil management will not occur until DTSC approves the proposed location-specific soil management approach.

In addition to the general protocols for stained and odorous soil described above, field screening will be performed with an OVM under the slabs of the building located at 1010 and 1012 Morse Avenue immediately after removal of the slabs during demolition. The objective of the screening is to assess if a source of PCE or other VOCs are present under these buildings. The screening will consist of baggie samples collected over a 20 ft by 20 feet grid, including samples near the restroom floor drains and from visibly stained or odorous soil, if observed. EKI has assumed that up to 10 soil samples will be sent to an analytical laboratory for analysis for VOCs by U.S. EPA Method 8260 if high OVM readings (i.e., generally greater than 25 ppmv above background) are observed in the baggie samples. Analytical results will be compared to published residential screening levels and the potential extent of the release will be considered to evaluate if further action is warranted. Such action will be discussed with DTSC.

5.4.3 Management of Unknown Underground Structures Uncovered During Remediation Activities

In the event an unknown underground container or structure (e.g., underground storage tank, sump, drum or pipe) is discovered during Site remediation activities, all work in the vicinity of the underground container or structure will cease and the City and DTSC will be contacted to determine the appropriate course of action.

The above requirement does not apply to an encountered pipe if it is an active or abandoned utility, such as sanitary sewer, water, gas, or steam lines, because they are not anticipated to have contained potentially hazardous materials.

5.4.4 Excavation Around Trees

As discussed in Section 3.3, removal of soil around the roots of existing trees located right outside of the property boundary that encroached into the Site as well as removal of soil around the roots of a tree within the Site boundaries that will not be removed as part of the park development activities will be only performed to the extent that is feasible and that would not jeopardize the tree

5.5 Control Measures

Control measures to be implemented during excavation activities associated with the removal of impacted soil include measures for decontamination (see Decontamination Plan in Appendix C), dust control (see Dust Control Plan in Appendix D), and measures to reduce or prevent the discharge of pollutants associated with storm water discharges (see Storm Water Pollution Prevention Plan in Appendix F).

5.6 Air Monitoring During Excavation

Air monitoring will be performed during excavation activities associated with the removal of impacted soil as described in Appendix E.

5.7 Field Variances

Variances from the workplan will be discussed with DTSC prior to any action being taken except for emergencies (i.e., when an immediate response is required). DTSC will be notified if an emergency response is implemented. The field variances will be documented in the Removal Action Completion Report to be prepared for the project (see Section 5.11).

5.8 Confirmation Soil Sampling

Confirmation soil samples will be collected once the initial lateral and vertical extents of the excavation have been reached, as described in the Soil Sampling and Analysis Plan (see Appendix G).

5.9 Schedule of Removal Activities

Removal activities are anticipated to commence in spring 2012 and will be completed within approximately 14 to 16 weeks. EKI has assumed that one to two weeks will be required for setup and staging prior to excavation activities, up to 10 weeks will be required for excavation and soil off-haul, and an additional three to four weeks will be required for final confirmation sampling, overexcavation, and surveying.

5.10 Backfill and Site Restoration

After excavation activities are completed, the excavation areas will be surveyed. Backfilling will be performed as part of park construction. The Site will be roughly graded such that drainage velocities do not result in soil erosion. Hydroseeding may also be used to stabilize shallow soil.

The Site will remain fenced from the start of demolition, during the remediation phase and throughout the construction of the park.

To the extent necessary for the park development, the excavations will be backfilled with clean import fill that complies with City requirements and compacted to specifications to be provided by the City in the bid documents for the park. Final grading of the backfill will be accomplished in accordance with specifications provided by the City in the Contract Documents for the park. Analytical data of potential backfill materials will be reviewed by the City, EKI, and DTSC prior to being transported to the Site.

5.11 Removal Action Completion Report

At the completion of Site cleanup activities, EKI will prepare a completion report on behalf of the City that describes implementation of the Site cleanup activities. The report will contain the following items:

- Summary of Site cleanup field activities and observations;
- Documentation of implementation of and conformance with the Plans specified as Appendix B to I;
- Documentation of laboratory analytical results for confirmation soil sampling, or other sampling needs as deemed necessary based on field observations and conditions;
- Documentation of quantities of soil disposed off-Site, including manifests or bills of lading for the disposed soil; and
- Documentation of final extent of excavation and rough grading.

6. HEALTH AND SAFETY PLAN

All contractors will be responsible for operating in accordance with the most current requirements of State and Federal Standards for Hazardous Waste Operations and Emergency Response (CCR, Title 8, Section 5192 and 29 CFR 1910.120). On-Site personnel are responsible for operating in accordance with all applicable regulations of OSHA outlined in the State General Industry and Construction Safety Orders (CCR, Title 8) and Federal Construction Industry Standards (29 CFR 1910 and 29 CFR 1926), as well as other applicable federal, state and local laws and regulations. All personnel shall operate in compliance with all California OSHA requirements. In addition, California OSHA's Construction Safety Orders (especially CCR, Title 8 Sections 1539 and 1541) will be followed as appropriate.

The Contractor will prepare its own HSP in accordance with the Contract Documents and health and safety standards as specified by the federal and California OSHA. The Contractor will be responsible for health and safety of their employees and workers sub-contracted to them at the Site. The Contractor's HSP must be reviewed and signed by a CIH. The Contractor's HSP shall address Site-specific issues, Site COCs, hazard communication, notification of workers, and other topics required by applicable laws and regulations. The Contractor will submit the HSP to DTSC prior to initiation of field work

EKI's Site-specific HSP, presented in Appendix I, was prepared in accordance with Federal and California OSHA standards for hazardous waste operations (29 CFR 1910.120) and Title 8, CCR Section 5192).

EKI's Site-specific HSP includes the following:

- Description of activities and potential hazards;
- Level of personal protection that will be used during sampling activities;
- Definition of exclusion, contaminant reduction, and support zones;
- Required personal protective measures, including work zone air monitoring;
- Key health and safety personnel;
- Training;
- Medical monitoring; and
- Emergency response plan.

7. PUBLIC PARTICIPATION

The public participation requirements for the RAW process include: (1) the development of a community profile, (2) publishing a notice of the availability of the draft RAW for public review and comment (see Public Notice in Appendix K), (3) making the draft RAW and other supporting documents available at DTSC's office and in the local information repository (Sunnyvale´s City Hall One-Stop Counter and Public Library), and (4) responding to public comments received on the draft RAW and California Environmental Quality Act ("CEQA") documents (see Appendix L).

The City conducted the following additional activities: (1) a Fact Sheet (see Appendix K) describing the Site and the proposed removal action was sent out to the Site mailing list and posted online in DTSC's Envirostor website (http://www.envirostor.dtsc.ca.gov/) on 17 November 2011, (2) a 34-day public review and comment period was established for the draft RAW between 18 November 2011 and 21 December 2011, (3) a public meeting was held during the public comment period, and (4) Site documents were made available in electronic format on DTSC's publicly-accessible Envirostor database.

The public meeting was held on 6 December 2011 to discuss the draft RAW and solicit comments. DTSC did not received any comments on the draft RAW during the public meeting or during the public comment period (see Appendix K).

Prior to the start of removal activities at the Site, a work notice will be distributed to surrounding residents and businesses that describes the removal activities, when they will begin, and their anticipated duration.