US Army Corps
of Engineers®
Los Angeles District

Los Angeles River Ecosystem Restoration Feasibility Study

DRAFT – APPENDIX K
HTRW SURVEY REPORT

September 2013

US Army Corps
of Engineers

Los Angeles District

Geotechnical Branch, Geology & Investigations Section

DRAFT HTRW Survey Report of the
Los Angeles River Ecosystem Restoration Project Study Area, Los Angeles County, CA

August 2013

ACRONYMS USED IN THIS APPENDIX

AAI: All Appropriate Inquiry (ASTM abbreviated ESA method)

ASTM: American Society for Testing and Materials

CAA: Clean Air Act (federal environmental law)

CERCLA: Comprehensive Environmental Response Cleanup and Liability Act (federal environmental law)

CFR: Code of Federal Regulations

CWA: Clean Water Act (federal environmental law)

DTSC: Department of Toxic Substances Control (California environmental regulatory agency for soil)

EA: Environmental Assessment

EDR: Environmental Data Resources (private environmental data search record storehouse)

EIR: Environmental Impact Report (state environmental impact report)

EIS: Environmental Impact Statement (federal environmental reporting requirement)

ER: Engineering Regulation (Corps of Engineers internal regulations)

ERA: Ecological Risk Assessment

ESA: Environmental Site Assessment (general environmental reporting guideline by ASTM)

ESASs: Environmental Site Assessment Standards (category of environmental ASTM standards within the ASTM standards)

F4: Feasibility 4 (level 4 of the Corps of Engineers feasibility study process)

FS: Feasibility Study (CERCLA step)

HHRA: Human Health Risk Assessment

HTRW: Hazardous, Toxic and/or Radioactive Waste (Corps of Engineers program terminology)

IRA: Interim Removal Action (CERCLA step)

IRAP: Interim Removal Action Plan (CERCLA step)

LARWQCB: Los Angeles Regional Water Quality Control Board (California regulatory agency for Los Angeles area water)

LUST: Leaking Underground Storage Tank

NEPA: National Environmental Policy Act (federal environmental law)

NPL: National Priority List (list of USEPA Superfund sites)

OMRRR: Operation and Maintenance Repair, Rehabilitation, and Replacement (Corps of Engineers operations and maintenance phase for Civil Works projects)

OSHA: Occupational Safety and Health Act (federal safety law)

PAH: Poly Aromatic Hydrocarbon

PCE: Tetrachloroethylene

PED: Planning Engineering Design (Corps of Engineers combined planning and engineering process/phase; occurs prior to actual construction of project)

Phase I ESA: Phase I Environmental Site Assessment (ASTM method)

Phase II ESA: Phase II Environmental Site Assessment (ASTM method)

PPA: Project Partnership Agreement (Agreement between Corps and non-Federal Sponsor to construct, operate and maintain a project)

PRP: Potential Responsible Party

RAP: Remedial Action Plan (CERCLA step)

RCRA: Resource Conservation and Recovery Act (federal environmental law)

REC: Recognized Environmental Condition

RI: Remedial Investigation (CERCLA step)

RP: Responsible Party

SARA: Superfund Amendments and Reauthorization Act (federal environmental law amending CERCLA)

SFVSS: San Fernando Valley Superfund Site (CERCLA-USEPA regulated)

SI: Site Investigation (CERLCA step)

SWRCB: State Water Resources Control Board (California environmental regulatory agency for water)

TCE: Trichloroethylene

TSCA: Toxic Substances Control Act (federal environmental law)

USACE: U.S. Army Corps of Engineers

USDOT: U.S. Department of Transportation

USEPA: U.S. Environmental Protection Agency (federal environmental regulatory agency)

UST: Underground Storage Tank

VOC: Volatile Organic Carbon

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1.0 PURPOSE

The Los Angeles River (LAR) Ecosystem Restoration Feasibility Study (Study) evaluates and proposes alternatives that will provide habitat restoration and associated benefits to portions of the river near downtown Los Angeles and Burbank. The purpose of this report is to identify and list potential hazardous, toxic, and radioactive waste (HTRW) impacts to the alternative plans that will be considered for this Study. This report also provides general recommendations and costs associated with any such identified HTRW impacts.

2.0 INTRODUCTION

The introduction begins with Section 2.1, HTRW. This section includes discussion and definition of the U.S. Army Corps of Engineers (Corps) HTRW terminology and its programmatic relationship to federal environmental laws, Corps Civil Works policy and the ASTM standards for environmental HTRW surveys. It also provides cursory explanation of the difference between NEPA environmental, biological, and CERCLA type environmental HTRW surveys.

Sections 2.2 through 2.4 discuss definitions of and differences among hazardous substances, hazardous wastes and hazardous materials and their relationship to HTRW.

Section 2.5 provides further discussion of the relationship between HTRW and the civil works program and other Corps programs.

Section 2.6 provides a short history, definition and discussion of the ASTM standards that can be applied for performing HTRW environmental surveys.

Section 3 is the HTRW report for the project area with results.

Section 4 is a concise summary of the report results.

Sections 5and 6 discuss the HTRW impacts to the project and without project scenario and groundwater conditions.

Sections 7 to 8 provide a summary of the overall report findings and a detailed summary of the Corps HTRW Regulations related to Civil Works projects. It also provides recommendations for future HTRW work that needs to be completed for this project.

Section 8 provides a random order of magnitude cost due to the high HTRW impacts that were identified for this project.

2.1 Hazardous, Toxic, and/or Radioactive Waste

Corps, Engineering Regulation (ER) 1165-2-132, “Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects”, dated June 26, 1992, provides guidance for

consideration of HTRW issues and problems within project boundaries or which may affect/be affected by Corps Civil Works projects. HTRW is a term used by the Corps, and it primarily addresses “hazardous substances” as defined under CERCLA. CERCLA-regulated hazardous substances do not include pure petroleum substances, such as those that are derived or from commercial fuel or natural gas products. CERCLA-regulated hazardous substances include hazardous substances from the other major federal laws of CWA (toxic pollutants), CAA (hazardous air pollutants), TSCA (imminently hazardous chemical substances or mixtures) and RCRA (hazardous wastes). These laws can be thought of as fitting under the one umbrella of CERCLA for regulation of federal hazardous substances. The term HTRW generally does not include pure petroleum substances that emanate from fuel or natural gas products. However, ER 1165-2-132 also provides guidance for identifying and addressing petroleum substances of concern.

ER 1165-2-132 outlines procedures to facilitate early identification and consideration of HTRW issues in all phases of a study or project.

To accomplish early identification, the Corps schedules and performs HTRW surveys and reports during the initial Civil Works planning and design portions of the Civil Works project phases. These surveys are performed often at the reconnaissance level. Such surveys are conducted most often by following the procedures found in the commercial Environmental Site Assessment Standards (ESAs) written by the American Society for Testing and Materials (ASTM). Surveys can also be conducted by following any other type of Federal, local and/or state guidance or procedures that may be applicable to the HTRW concerns of the Corps project. ASTM Environmental Site Assessment Standards are specifically written for application to the environmental engineering field (discipline). The ASTM standards for ESAs are written as separately numbered, titled, but closely related ASTM standards within the set of ASTM ESAs. The standards are titled “Environmental Site Assessments (ESA)”.

The two ASTM titles and their procedures most commonly used by the Corps for HTRW surveys and reports are ASTM E-1527-05, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (Phase I ESA) and ASTM E-1528-06, "Practice for Environmental Site Assessments: Transaction Screen Process (AAI)”. Federal regulations and additional information directly related to ESA (HTRW survey) procedures can be found in the United States Environmental Protection Agency (USEPA) "Standards and Practices for All Appropriate Inquiries" (AAI, 40 CFR Part 312). Either a Phase I ESA or AAI or both are typically selected and used during the early stages of a Civil Works project development phase. In the planning development phase, the AAI is most typically selected, followed by a Phase I ESA, if warranted. A Phase I ESA was not conducted for this F4 Feasibility HTRW Survey Report. A brief AAI was conducted as part of the Corps’ previous F3 Feasibility Main Report for this project. This F4 HTRW Survey Report is instead based on summary results and information from the F4 HTRW AAI and recent information gathered from the State Water Resources Control Board (SWRCB) online “Geotracker” HTRW environmental database. The “Geotracker” website was accessed for this project as recently as May 2013.

Of additional note, ESAs are sometimes confused with Environmental Assessments (EAs) conducted in accordance with National Environmental Policy Act (NEPA). A NEPA EA is a brief evaluation of environmental resources and the potential impacts on these resources from a proposed action, used to determine whether such an action may have significant impacts and thus must be evaluated in a more comprehensive study, an Environmental Impact Statement (EIS). In the case of the current study, an EIS is being performed, and the information in this appendix will be used in the impact analysis in that EIS.

The HTRW survey only considers project-area HTRW impacts which are a recognized and known material threat to human health and the environment. These HTRW impacts surveyed are all CERCLA hazardous substances, RCRA hazardous waste and/or non-CERCLA petroleum product contaminants already released or have a material threat potential to be released within the study area land or on adjacent lands. The HTRW survey also considers those known properties, lands and businesses that are identified or regulated as having or generating hazardous waste or possessing or using hazardous substances or petroleum products that are in general compliance with CERCLA and RCRA laws. HTRW impacts are not intended to include those impacts that generally do not present a threat to human health or the environment. Additional details on the proper ASTM selection process and use are explained in more detail within Section 2.6 below, titled *ASTM Standards for Corps of Engineers Environmental (HTRW) Surveys.*

It is important to note that there may be <u>unknown</u> HTRW impacts to the study area which were not fully disclosed and listed from the set of known sites or properties found during the HTRW site search performed for this HTRW survey. This survey was prepared using the list of HTRW sites supplied as part of the previous 2009 F3 HTRW abbreviated AAI efforts and according to sites found on the latest online web update of the CWQB's Geotracker HTRW site listings specific to Los Angeles, California. <u>Unknown</u> HTRW impacts could also consist of newly discovered HTRW or buried historical type HTRW that is not observed on the land surface or not found from the list of known HTRW search sites. Newly discovered HTRW is sometimes encountered during the future construction phases of work for a typical Civil Works project. Also, newly discovered HTRW can sometimes be derived from residual (leftover) forms of contamination existing within the soils, soil vapor, air, surface water and groundwater media from known and listed HTRW sites. This occurs when undefined portions of the remaining known residual HTRW are encountered at known HTRW properties.

The most common way HTRW can have impacts is if it is released into the surrounding property environment and remains there and is a current material threat to human health or the environment. The most persistent HTRW is often found as residual forms of HTRW contamination in the soils, surface and groundwater of the surrounding land near the release. Except for soil vapor, HTRW found in air is not as common because releases of HTRW into air are usually instantaneous and do not linger for long around HTRW properties. Air contaminants in the form of soil vapor do linger for longer around HTRW properties and thus soil vapor is the most common medium where HTRW air contamination is persistent.

The HTRW survey analysis for this report focused on these types of releases into the adjacent property and environment within a 500 foot distance of the habitat footprint areas. The analysis does not include evaluation of hazardous materials stored or used at or near the study area. Generally, hazardous materials are not considered part of HTRW impacts, unless or until they have been released to the environment, at which point they would be considered a hazardous substance or waste, according to CERCLA and RCRA. Further details on how hazardous materials, hazardous waste and hazardous substances are regulated by law and addressed in this HTRW survey report are explained in the following subsections.

2.2 Hazardous Materials

Hazardous materials are the common chemicals and chemical products used for various reasons within the workplace. This use or safe use is specifically regulated by the Occupational Safety and Health Act (OSHA). The transportation of hazardous materials in commerce is also regulated, but by the U.S. Department of Transportation (USDOT). HTRW hazardous substances are found as chemical ingredients in many commonly used industrial and household hazardous materials, which are manufactured in the form of liquids, solids, gases and/or mixtures. Hazardous materials can be relatively stable and harmless to humans and the environment, but only if certain precautions are followed such as: proper use in accordance with directions and intended uses; proper storage; proper management; proper disposal; and control with the proper engineering, environmental and personal protective measures and/or equipment. Hazardous materials can be quite dangerous if any such precautions are not followed. Releases of HTRW from hazardous materials most often occur as a result of accidental leaks and releases to soil and surface water, etc. This is often caused by improper storage and disposal. Under these situations the releases become HTRW impacts. It is important to note that hazardous materials by themselves (in useable form or as properly used in the workplace) are not hazardous substances, nor regulated as such, until such materials are released to the environment. In such a case they would become a hazardous substance. In all cases, hazardous materials are not supposed to be released to the environment, unless it is properly permitted or regulated to do so, otherwise it is unlawful. The most common example of a lawful or permitted way that hazardous materials are released into the environment is by properly disposing of them as a hazardous waste into a landfill in accordance with RCRA procedures.

2.3 Hazardous Waste

Most hazardous waste in the U.S. is generated directly from the waste byproduct activities of active industries or businesses and is a regulated form of solid waste. This special type of solid waste must be managed, transported, labeled and disposed of in a manner far different from ordinary solid waste (garbage). Hazardous waste is defined and regulated under the Federal environmental law of the Resource Conservation and Recovery Act (RCRA)[1]. Its basic

[1] RCRA "hazardous waste": Hazardous wastes are usually generated by active commercial or industrial activities and may be classified as "listed" hazardous wastes or "characteristic" hazardous wastes by the EPA.

definition under RCRA is a solid waste (or combination of solid wastes) which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may: (1) cause or contribute to an increase in mortality or an increase in serious irreversible, or incapacitating illness; or (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. In addition, under RCRA, USEPA establishes four characteristics that will determine whether a substance or solid waste is considered hazardous, including ignitability, corrosiveness, reactivity, and toxicity. Any solid waste that exhibits one or more of these characteristics is classified as a hazardous waste under RCRA. In addition to the characteristic definition, a hazardous waste is also defined as that found on the hazardous waste list. This list is prepared by the USEPA where the hazardous wastes are found by common name, chemical name, etc. Any hazardous waste not found on this list could still be a hazardous waste according to its characteristics. Indeed most of the hazardous wastes disposed of in the U.S. are defined as characteristic type wastes.

Hazardous waste could become an HTRW impact if it is previously known to have been released onto properties or it is observed as being improperly stored or managed and e.g., shows evidence of leaking containers and of staining soil, etc.

- Characteristic Waste - exhibits at least one of the four "characteristics" of hazardous waste (ignitability, corrosivity, reactivity, or toxicity), and
- Listed Waste - appears on one of the four hazardous wastes lists (F-list, K-list, P-list, or U-list), or Individual states may regulate particular wastes more stringently than mandated by federal regulation. This is because the U.S. EPA is authorized to delegate primary rulemaking authorization to individual states. Most states take advantage of this authority, implementing their own hazardous waste programs that are at least as stringent as the federal program.

ER 1165-2-132
26 Jun 92

TABLE 1

COST SHARING OF HTRW ACTIVITIES WITH
CIVIL WORKS PROJECTS AND STUDIES
ON NON-FEDERAL LANDS

HTRW ACTIVITY	PROJECT PHASE	COST SHARING
1. Environmental investigation to identify any existence of HTRW.	Reconnaissance	Reconnaissance
	Feasibility	Feasibility
	PED	Construction
	Construction	Construction
	OMRRR	OMRRR
2. Studies required for recognizing existence and extent of any HTRW, and studies required to evaluate alternative project plans.	Reconnaissance	Reconnaissance
	Feasibility	Feasibility
	PED	Construction
	Construction	Construction
	OMRRR	OMRRR
3. Development of a response plan for dealing with the HTRW. Includes studies and determine the appropriate response.	Any	100% Non-Federal (including responsible parties)
4. Response measures to relocate HTRW or to treat the HTRW in place.	Any	100% Non-Federal (including responsible parties)

NOTE: The costs for studing and remediating HTRW on Federally-owned lands will be assigned on a case-by-case basis.

2.4 Hazardous Substance

Hazardous substances are most often found on properties as a result of being released in the surrounding environment. The releases from properties often manifest in the form of pollutants or contaminants into the surrounding environment. Once released, hazardous substances become regulated and defined according to the Federal environmental law of CERCLA . Hazardous substances are regulated and defined in terms of those substances either specifically designated in a listed form as hazardous under CERCLA. They are also those hazardous substances identified under the other major federal environmental laws of RCRA and the Toxic Substances Control (TSCA), Clean Water and Clean Air Acts (CWA and CAA).

2.5 HTRW and the Corps of Engineers Civil Works Program

HTRW has implications across all programs within the Corps but affects the Civil Works program differently than other Corps programs, such as the military appropriated FUDS and Army appropriated O&M programs. HTRW issues at Civil Works studies and projects are addressed as outlined in ER 1165-2-1320. The ER states the Corps policy for addressing HTRW issues and outlines the timing and cost sharing requirements for HTRW encountered during the standard Civil Works project Planning, PED and Construction phases. Goals of the ER are to identify the level of detail for HTRW investigation for each Civil Works phase of the project, promote early detection and response by appropriate responsible parties, determine viable options to avoid HTRW problems, and establish a mechanism for resolution of HTRW issues. The Corps policy provides the following:

a. Civil Works project funds are not be used for HTRW related activities except as specifically stated in the policy or provided for specifically in law (see paragraph 6a, ER 1165-2-132).

b. The construction of Civil Works projects should be avoided in HTRW contaminated areas, where practicable. The Corps and project Sponsor will cost share environmental investigations to identify existence of HTRW (see paragraph 6b, ER 1165-2-132).

c. If not practicale to avoid HTRW for a project, the Sponsor is responsible for ensuring that development and execution of HTRW response actions (CERCLA response) are accomplished at 100% Sponsor provided cost. The Sponsor is responsible for all costs associated with the required response (remediation) of any known or unknown HTRW contamination existing at the project throughout all of the Corps Reconnaissance, Feasibility, Planning, Engineering and Design (PED), Construction and Operation Maintenance, Repair, Replacement and Rehabilitation (OMRRR) programmatic project phases. The Sponsor is also 100% responsible for all costs associated with the required response plan, i.e. CERCLA remedial action plans. The Sponsor is also responsible for ensuring that response actions are accomplished in accordance with federal, state and local environmental laws. No in-kind project cost credit will be given to the Sponsor for these activities. The response action is determined during the investigation and study

activities leading up to the actual response. The purpose of the cost sharing agreement and its timing are to ensure that all known HTRW is accounted for prior to construction as much as possible. This will ensure that quantities of known HTRW identified and to be removed from the project in areas that cannot be avoided are accounted for. This will further ensure a more accurate cost estimate for that HTRW identified as having to be remediated during the construction phase of the project (see paragraph 6c, ER 1165-2-132).

d. Costs for remediation and handling of contaminants not regulated under CERCLA will be credited to the Sponsor if the cost of these activities is required as part of a validly promulgated federal, state or local regulation (i.e. costs can be project shared for remediation of petroleum or natural gas pure product contaminants, etc. that are released at project properties). Petroleum related contaminants are typically regulated under Federal and State petroleum clean up programs, i.e. leaking underground storage tank programs, etc. In such cases, the cost will be calculated in the economic analysis as the fair market value of the land considering the non-CERCLA contamination, and the cost of remediation will be a construction cost. Credit will not be allowed for both costs of the remediation and for the value of the land as if it were clean (see ER 1165-2-132).

The ER further provides that the Civil Works project must include the appropriate article in the Project Partnership Agreement (PPA) to address the Sponsor's responsibility for addressing hazardous substances. The Sponsor is encouraged to pursue recovery costs for investigations/studies and response from PRPs or RPs, as applicable, for all properties where unknown, known or potential HTRW contamination exists. The PPA between the Corps and the Sponsor does not limit the Sponsor's rights to recover any response costs.

In short, Corps policy is to identify HTRW issues early in the project process and avoid construction within HTRW-contaminated areas or properties, where practicable. Where impracticable to do so, the Corps will share the costs of survey to identify the existence and extent of HTRW, but any response or remediation activities required, including studies to determine the appropriated response are 100 % non-Federal costs and should be completed prior to construction. Although response costs are not cost shared, the presence of HTRW can affect alternative plan selection.

USACE's ER 1165-2-132, HTRW Guidance for Civil Works Projects is summarized in Section 2.5 above. This ER also outlines the timing and cost sharing requirements for HTRW encountered during the standard Civil Works project Planning, PED and Construction phases. The Corps will cost share for investigations and studies for known and unknown HTRW contamination, except for the response plan and the actual response throughout all Corps Civil Works programmatic project activity/category type phases. This is clearly shown below in Table 1 (page 5) from ER 1165-2-132:

2.6 ASTM Standards and Corps of Engineers Environmental HTRW Surveys

As stated in the HTRW introduction above, the Corps often utilizes ASTM standards and procedures in the performance of Environmental HTRW Surveys.

The ASTM Standard E-1527 was originally published in 1993. The purpose of the standard is to define good commercial and customary practice for performing ESAs of real estate parcels. The original purpose of an ESA was to satisfy the "Innocent Landowner" provisions of the CERCLA, thereby reducing the liability associated with taking ownership of property where hazardous substances or wastes are present. The ASTM Standard has been revised periodically since 1993 in response to changes in good customary practices and in response to changes or amendments the CERCLA in the form of Superfund Amendments and Reauthorization Act of 1986 (SARA); the Asset Conservation, Lender Liability, and Deposit Insurance Protection Act of 1996 (Lender Liability Amendments); and Small Business Liability Relief and Brownfields Revitalization Act of 2001 (Brownfields Amendments). The recent changes in the 2005 Standard are a result of the AAI requirements. The goal of the ASTM Standard is to determine if "Recognized Environmental Conditions" are present on the property being assessed. The term "recognized environmental condition" (REC) is defined in the standard as: "...the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis are not recognized environmental conditions." The AAI Regulations were developed to establish specific standards and requirements for investigating the prior ownership and historical use of a property in order to qualify for certain landowner liability protections to property owners under CERCLA.

3.0 F4 FEASIBILITY LEVEL HTRW SURVEY REPORT

The Los Angeles River Ecosystem Restoration project study area is very large in extent and the current land use is mixed residential and medium to light industrial. The land use history of the study area indicated that HTRW impacts would be moderate to heavy. This is because historic land use in much of the study area has been made up of densely compact residential, extensive infrastructure (construction of flood channels, bridges, railroads and major highways, airports and dams) and industrial (medium to heavy manufacturing/industry). From the late 1930s to the early 1950s the area was involved in heavy manufacturing of aircraft, automotive, as well as medium durable goods manufacturing. The heavy manufacturing use has given way to medium to light industrial use from 1960 to present.

There is plentiful evidence of historic operations involving HTRW from particularly intense industrial land use within the San Fernando Valley, plus light to medium industry and small

service business adjacent to the study area. Much of the current larger HTRW impacts to the study area are due to pollution from the older heavy to medium aircrafts, durable goods and transportation industry. There are many numerous smaller HTRW impacts from contemporary light to medium industry and service businesses (i.e. gasoline stations, small businesses, dry cleaners, auto repair shops, etc). The sheer size of the study area was too large for a detailed site visit and interview of every property owner of every potential HTRW site that is known and listed from the previous F3 AAI summary of HTRW records, which was performed in 2005. This AAI summary listing was gathered from the 2005 HTRW environmental database archive search of a mile wide corridor plot of the habitat study area. This search included all known Indian tribes, and state/local and federal government RCRA and CERCLA related environmental information and records. This archive was purchased by the Corps from Environmental Data Resources (EDR) Inc., one of several commercial clearinghouse retailers that sell HTRW archival database information for use in preparing Site Assessments according to the Standards. The EDR archive database was used to prepare an abbreviated AAI type of HTRW survey inquiry. This inquiry was part of the previous F3 Feasibility Main Report.

As most of the AAI inquiry database work had been partially completed beforehand and was not formally written, and because the number of HTRW sites within 1 mile to the study area is extensively large, the full ASTM Phase I ESA was not followed as the procedure for preparing this HTRW Survey Report. Instead, this F4 type HTRW Survey Report is a refinement of the original abbreviated AAI inquiry. It is a formal ASTM AAI report and is based on the HTRW summary results from the previous F3 AAI HTRW Survey and the "Geotracker" online website. An online inquiry was made of this website for recent and available online HTRW environmental records pertaining only to "active and open" HTRW properties near or within 500 feet of the habitat footprint of the study area. In addition, select listed active and open sites from the older 2005 AAI database search from within the 500 foot buffer were also included. The 500 foot buffer was chosen as a cutoff distance instead of a larger distance, i.e. one mile or more, for the HTRW environmental database listed properties, because this distance represents a reasonable search distance based on the land use history of the area and because most of the potential HTRW contamination risk to the project is from the list of HTRW impacted properties that are closest to the study area of concern. This HTRW search/inquiry did not specifically consider or target any particular one of the final array of habitat alternative footprint plans considered for this project. This AAI search and analysis includes all detailed alternatives considered for the project. As previously mentioned, only "active and open" HTRW listed properties within approximately 500 feet of the alternatives were considered as part of this HTRW Survey Report.

This approach is more useful and practical at this stage of planning, because it focuses on the latest known "active and open" HTRW site records listing from Geotracker and the older 2005 AAI database listings closest to the project footprints that are likely to pose the greatest HTRW risk or concern or human and environmental exposure to the study area. There are also "closed and inactive" HTRW sites listed as well, but these sites are <u>not</u> included in this survey, as HTRW contamination within them is considered by State, Federal and local CERCLA/RCRA regulatory authorities, as mitigated. This means these are "closed case" sites that require no further remedial action because any residual HTRW contamination still present on these closed sites has been remediated to the extent that it is no longer a threat to the public health or environment.

After review of the previous 2005 AAI listing and the latest Geotracker website data search, any remaining listed HTRW sites (properties) of potential concern were judged as to their significance according to Recognized Environmental Conditions (RECs) for HTRW. Significant RECs or HTRW impacts for this project are those properties/sites that are routinely moved forward for recommendation for either a follow up ASTM Phase I or Phase II ESA HTRW survey. The Phase I ESA could include a further detailed site visit, property owner interview, and additional historical HTRW records search of files such as fire insurance maps, land title searches, historical topography and aerial photos, if available. The Phase II ESA site investigation is typically reserved only after conducting a full Phase I ESA. However, it could be implemented if RECs from the AAI screening are conclusively evident enough to preclude or skip the use of a Phase I ESA. In such case, the Phase II would involve additional steps of providing a field work plan and performing an actual environmental HTRW field site assessment. A Phase II site assessment would involve the collection and laboratory analysis of environmental samples to confirm the presence, extent and concentration of hazardous substances believed to have been released into the environmental media such as soil, sediment, groundwater, air and surface water.

3.1 Summary of F3 Feasibility AAI Summary Records and Geotracker Search Listing

Table 1 shows the 2005 AAI and Geotracker listings of all known CERCLA/RCRA type environmental records and data from potential HTRW sites or properties, with addresses that could be mapped within approximately a 500 foot distance of the habitat footprints. It contains those listings that are of significant HTRW impact to the project RECs, recognized environmental conditions or those impacts that are a material threat to human and ecological environment. The database search yielded a list of approximately 22 open and active environmentally regulated properties that are considered as having a potential HTRW impact to the project, i.e. they are all RECs. All of these 22 properties have had undergone previous HTRW investigations equal to or beyond the level of either an ASTM Phase I and/or ASTM Phase II (equivalent to a CERCLA PA/SI and RI/FS, etc.). Based on this survey, some of the RECs have more of a potential HTRW impact to the study project than others. 3 of the 22 are of a high HTRW impact to the study compared to the remaining 19. The 3 high HTRW impact sites are the one NPL Federal site (San Fernando Valley Superfund Site) and the two California State DTSC (Taylor Yard G1 and G2) regulated parcel sites, while the rest of the 19 sites are of low impact. The 22 impacted HTRW properties are shown in Maps 1 to 5 at back of this report.

Table 1 **Results of the HTRW Database Inquiry/Search for Mapped REC Properties Only**		
Database	**Brief Database Description**	**Records Found**
Federal Records		
NPL	National Priority List (Superfund) Database Listed: • San Fernando Valley Superfund Site (SFVSS) (**High Impact**)	1
State Records		
SWRCB	State Water Resources Control Board (Los Angeles Regional Water Quality Control Board) Listed: • San Fernando Consolidated Facility • Three Chevron Gas Stations • former Bortz Oil • Shell Gas Station • former Triangle Gas Station • former Hawkes Finishing • Mt Sinai (Forest Lawn) cemetery • former Albion Dairy • BNSF Tower • Valspar Corp • Chromal Plating & Grinding Co • Infinity Outdoor Co • Gannett Outdoor Systems Inc • MTA • Morton Intl Whittaker Corp • Union Pacific Railroad-Cornfield Yard	16
DTSC	California Department of Toxic Substances and Control Listed: • former Manufacture Gas Plant • former Manufacture Gas Plant • Bortz Oil • Taylor Yd G1 (**High Impact**) • Taylor Yd G2 (**High Impact**) • Union Pacific Railroad-Cornfield Yard (also listed as a SWRCB site, but only counted once)	5
	Total <u>Mapped and Listed</u> REC Records Found	**22**

The complete HTRW records data for the more than 1,400 properties listed from the F3 Corps Feasibility Report AAI HTRW environmental database search are not shown on this table. This is because the records shown in this Table 1 are only those from the list of environmental records that were found to have HTRW impact, i.e. “actual RECs”, at a distance of 500 feet from the habitat footprints.

Instead, these records are available as an electronic archive report within the Los Angeles District Corps of Engineers Planning Division (office) working files for this project. If needed,

copies of this entire database can be made available upon request to the Corps study project manager, Ms. Kathleen Bergmann or the Corps Geotechnical Branch, POC: Mr. Jeffrey Devine (213) 452-3579.

Further discussion of the results, project conditions and recommendations for this HTRW Survey Report are found in the following sections.

3.2 Follow Up Identification of One Additional Potential High Impact HTRW Site at Piggyback Yard Property

The Piggyback property is a modern railroad freight transfer yard, used for the intermodal (truck to rail and rail to truck) transport of modern semi-truck cargo containers. It is located at the southern end of the LAR study boundary. The official name and address for this property is: Union Pacific Railroad Company Los Angeles Transit Center; 750 Lamar Street, Los Angeles, CA 90031. Piggyback has already been identified as property to be acquired and is included as a habitat footprint the LAR project. It makes up a large portion of the overall acreage of the project and is included in most of the final alternatives considered for this project.

The AAI search and results for this report indicate no HTRW concerns for the Piggyback property. That is, no records were found of any active or open environmental regulatory CERCLA related HTRW concerns or files or actions associated with this property. Environmental records information found for this property listed only a few minor reported regulatory actions, which consisted of past small one-time spills of hazardous materials from within railcars unloaded at this property. The spills were remedied to the satisfaction of the local California environmental regulatory authorities and no further regulatory action was required. Also, much of the existing surface at this property is asphalt paved, and except for the railcars themselves, there are no maintenance facilities or related buildings on this property, nor are there any activities that involve the use, treatment or storage of large amounts of hazardous materials.

However, some concerns still remain regarding HTRW for the Piggyback property that has been noted by the project Sponsor (City of Los Angeles). Much of the additional information regarding such concerns for this property was obtained during discussions that occurred during the follow up AFB meetings. The most important information was obtained during a recent search of the USGS historic topographic map collection. This search revealed the presence of a railroad maintenance yard shown on the historical 1953 topographic map. This yard is expressed on this map as a cluster of elongated buildings centered about a railroad round table. This cluster of buildings is also labeled on the map as “Union Pacific Maintenance Yard”. This map is shown as Map 6 at the back of this report. On the upper northern area of this same map, the same label is applied to the Taylor Yard property. The map reveals evidence that both maintenance yards were active on or about 1953. Further review of historic topographic maps after 1953 showed no similar markings or labels. This indicates that the maintenance yard did not exist sometime <u>after</u> 1953.

The AAI search revealed that no Phase I or II ASTM, or CERCLA type investigations or actions have been conducted to date in order to determine the actual presence of HTRW at Piggyback property due to a release. Therefore, there is no actual confirmation of the presence of HTRW at

this property due to a release. But, based on the recent findings from the historic USGS 1953 map and the fact that HTRW is still present at Taylor Yard, it is possible that HTRW may still exist at Piggyback Yard. It is also important to note that the historical maintenance activities at Taylor Yard contributed to the majority of its present HTRW contamination. Because Piggyback Yard and Taylor Yard were in use at the same time, similar activities most likely occurred at both of these properties. Based on the historical similarities of these two properties, Piggyback Yard is likely to contain some amount of HTRW contamination and is therefore carried forward as a REC.

Table 2
Results of the Follow Up Discovery of Piggyback Yard Property,
Non HTRW Database Inquiry/Search and Non-mapped REC Description

Database or Source	Records found
• USGS Historical Topgraphic Map Database (online), 1953 USGS Topographic Map of Los Angeles, showing Piggyback Yard	1
Total non-Mapped and non-Listed REC Records Found	**1**

4.0 SUMMARY OF THE F3 AAI AND GEOTRACKER DATABASE HTRW SEARCH SITES THAT ARE RECS AND THE NON-MAPPED REC OF PIGGYBACK YARD

The F3 AAI and Geotracker database inquiry/search results reported within this F4 HTRW Survey Report include 22 listed HTRW sites total (Table 1), plus one additional HTRW site (Table 2) that is a non-mapped REC. The total HTRW sites for this report are **twenty three**. All of these listed and mapped sites are RECs, because each property or site is still open and subject to State of California environmental regulatory enforcement by the Regional Water Quality Control Board, Department of Toxic Substances and Control, and/or the Federal U.S. Environmental Protection Agency, there has been a detected release of a combination of fuel, solvents (VOCs), metals, PAHs and related contaminants into the surrounding groundwater or soils from these sites, and residual contaminants still remain at the sites. The Piggyback Yard site is a REC because of additional information obtained from the 1953 historical USGS topographic map of Los Angeles, which shows this property and Taylor Yard under use for similar purposes in the mid-20th century.

Of the 23 properties (sites), 3 are of high HTRW impact concern for the project study alternatives. These properties are the SFVSS, which is a widespread and pervasive HTRW contaminated groundwater plume, and the two Taylor Yard parcel G1 and G2 properties. These two properties are most heavily contaminated by HTRW in soils and soil vapor. The rationale for the 3 high impacts sites are as follows:

SFVSS: A very large release of solvent petroleum contamination exists within the surrounding groundwater from the one San Fernando Valley Superfund (SFVSS) site. This release is primarily a mapped groundwater plume of VOCs and metals that extend into a very large southern portion of the entire San Fernando Valley and run all along the east side of the Los Angeles River, which is where a large portion of the habitat footprint is planned, affecting project Reaches 1 through 6. This plume is shown on Figures 2 to 5 at the back of this report. It is currently being remediated by the USEPA via a large series of pump and treatment wells that are strategically located amongst the plume. One such set of wells, the Pollock Well Field, is located approximately less than 1/2 mile northwest from the Taylor Yard G1 and G2 properties. This treatment has been ongoing for approximately 10 years and has effectively stabilized much of the higher HTRW concentration impacted areas of the plume. Figures 2 to 5 show the extent of plume as of 2010, which shows the inner portions of the plume at higher concentrations than the outer portions. It is assumed that the plume will take some additional time (approximately 10 to 20 years) to further reduce in its size and concentration, as much of this depends on the ongoing treatment efficiency of the USEPA pump and treat response. For the purposes of projecting the impacts of SFVSS on the project, it is assumed that the plume will shrink over time, but may not likely be reduced in scale soon enough such that it would no longer impact the project properties closest to it before the construction phase begins. Therefore, it is assumed that the relative shape and concentrations mapped as of 2010 will be the same or similar during construction phase of the LAR Ecosystem project.

The Sponsor is responsible at 100% non- project costs for the response of any HTRW contamination for the SFVSS property that affects the construction activities for the restoration project. Dewatering during construction is the most likely activity that will be affected by the HTRW contamination in groundwater from this property. It is likely that this response will consist primarily of short term pump-treatment and disposal of treated discharge water on or near the study area. This is the most direct and effective remediation method. There are other remediation methods such as long term pump and treat and bioremediation/enhancement that are effective but require more time for cleanup, and therefore, are not suitable for the short time frame needed to construct the habitat.

It is important to note that the habitat footprint crosses mostly the outer edge of the SFVSS HTRW groundwater plume as shown on the maps at the back of this report. Because of this, it is likely that lower concentrations of HTRW contaminants from the SFVSS property will be encountered during dewatering than would be encountered near the center of the plume. =

<u>Taylor Yard G1 and G2</u>: The contamination at the G1 and G2 sites is a complex mixture of metals, solvents (VOCs), PAHs and fuels. Even though some contamination has been remediated by the RP, significant residual HTRW still exists at both of these properties. The contamination at G2 in particular is still very extensive and is a complex mixture of the aforementioned contaminants. An additional amount of it is scheduled to be remediated again in the future. However, some amount of residual contamination is planned to remain at G2 under the RP's remediation scenario. Both sites have had screening-baseline level human health risk assessment reports prepared. A screening-baseline level ecological risk assessment report was only prepared for the G2 site and not the G1 site. The planned amount of residual contamination leftover from the planned remediation at both these sites is such that it will satisfy primarily industrial human health standards. The habitat footprint for these two sites under the study

alternatives is very large and includes coverage for 100% of these sites/properties. If the residual contamination is left on these properties according to current conditions for land use, it will most likely not meet the future conditions for land use needed to meet the ecological or human health risk and exposure standards for land use of the restoration project. The Sponsor is responsible for 100% costs for the response of any HTRW contamination for these two properties such that it meets the future land use requirements for this LAR project. The Sponsor has committed to undertaking necessary remediation and providing "clean sites" prior to construction of the LAR restoration project. These costs would not be cost shared as part of the restoration project. It is likely that this response will consist primarily of excavation-removal-hauling efforts directed towards remediation of soil and soil vapors. This is the most direct and effectively remediation method. There are other remediation methods such as soil vapor extraction, bioventing, etc. that are effective but require more time for cleanup, and therefore, are not suitable for the short time frame needed to construct the habitat.

The rest of the 19 listed and mapped HTRW REC properties are low impacts to the restoration project because existing contamination is not as extensive or widespread and the habitat footprints are adjacent to and not within these REC properties. However, these 19 properties may still have HTRW impacts to a restoration project, because there is a possibility that future study project construction activities, especially dewatering, will encounter this residual contamination. It is likely that undefined portions of the known residual groundwater contamination at these properties could be encountered as wandering plumes and such. This is because groundwater contaminants of fuel, solvents and metals still exist as residual contaminants within the known/defined groundwater plumes at these 19 properties. This type of contamination is persistent and highly mobile. It is likely that there are remnant or relic plumes that may have migrated away from these properties, and are, therefore, likely to be encountered during project future construction activities.

The 22 known HTRW impacted properties are shown on Maps 1 to 5 at back of this report. The extent of the HTRW contaminated shallow groundwater for the SFVSS is shown on Figures 2 to 5 at back of this report. These figures show the extent of the Total Chromium, Hexavalent Chromium (metals), PCE and TCE (solvents) present within the upper approximately 50 feet of shallow groundwater for the end of year 2010, as reported by the USEPA.

Piggyback Yard is one additional non-listed and non-mapped HTRW REC property that impacts the restoration project, because the extent and presence or existence of HTRW is unknown. The property has historic similarity with Taylor Yard, which is presently contaminated with HTRW, and is shown on Map 6 at the back of this report.

5.0 PROJECT CONDITIONS

5.1 Future Without Project Conditions

The RECs for the 22 properties/sites will continue to exist for the foreseeable future because:

- Remediation, monitoring, sampling and testing of the contaminants at most of these properties continues; residual contamination exists that is not yet safe to the public health

and/or environment; the regulatory case files are still "open"; and the properties will continue to be managed under the authority of the appropriate California environmental regulatory agencies.

The RECs for the Piggyback Yard property/site will continue to exist for the foreseeable future because:

- This property has a land use history similar to that of Taylor Yard, which is still heavily contaminated by HTRW. Information regarding the presence and extent of the HTRW contamination at Piggyback is unknown at this time.

5.2 Future With Project Conditions

The RECs for the 22 properties and the Piggyback Yard will not continue to exist because:

- The HTRW impacts that now exist to the LAR study project are due to material threat of the undefined portions of the existing residual HTRW and contaminants that are likely to be encountered during construction of this project near the 19 low HTRW impact properties. The same impacts also exist for the 3 high HTRW impact properties due to the material threat of the defined portions of the existing residual HTRW, the contaminants that are highly likely to be encountered during future project construction activities, and because these 3 properties are directly within a large percentage of the habitat footprint needed for this project and cannot be avoided. The RECs (HTRW and contaminants) from these 22 properties will not exist in the future, because they will be properly addressed by the remediation (response) activities. The response for each property will be specifically tailored (site specific) to the final land use for each property. All response will be undertaken at 100% non-cost-shared costs by the Sponsor. As part of the cost sharing eligible portions of this project, these properties must be properly identified/investigated by both the Sponsor and the Corps prior to construction of this LAR study project. In addition, the strategy/purpose under each step for the investigation activities specific to each property must also be reviewed and agreed to by the local environmental regulatory agencies (either the DTSC and the LARWQCB, depending on the site). The extent of any of final response will be resolutely dependent on satisfying the specific land use for the LAR project and the human/ecological health risks specific to this project land use.

5.3 Current Conditions

- The Recognized Environmental Condition is: There is an existing HTRW impact to the project because as there is a potential for contamination to the groundwater and soils within a 500 feet distance of the habitat study area or directly beneath the habitat footprint areas.

6.0 GROUNDWATER CONDITIONS

6.1 Summary of Groundwater Conditions and Related Discussion

The groundwater exists in the form of an unconfined aquifer throughout most of the project study area. This aquifer contains both shallow and deep groundwater portions that differ in general quality. The shallow portion extends from ground surface to approximately 100 feet below ground surface, while the deeper part extends from 100 feet below ground surface to approximately 200 feet. Both portions of this unconfined aquifer are co-mingled and widely contaminated with known HTRW in the form of VOCs and Chromium metals. As previously mentioned (Section 4), this groundwater contamination is officially known as the SFVSS, a Federal CERCLA Superfund site. It is being addressed through an ongoing response consisting of groundwater well pump and treatment that has been active for approximately 10 years. Because it is a Superfund site, the response is being conducted and managed by the USEPA.

Much of the property acquired or to be acquired for this project lies within or adjacent to the SFVSS site. The HTRW contaminated shallow aquifer portion of the SFVSS is likely to be encountered during construction and also after completion of this project. The groundwater encountered during construction will be a temporary activity that will occur whenever groundwater is encountered for areas of the project requiring excavation. Any HTRW contaminated groundwater encountered during dewatering, either from the SFVSS or from localized contamination, will need to be treated and disposed of in accordance with local and California State water quality requirements. Groundwater contamination, unlike soil contamination, cannot be effectively addressed prior to construction in order to provide complete remediation at groundwater contaminated areas/properties. Addressing contaminated groundwater during construction, including treatment and disposal, would be the responsibility of the Sponsor at 100% non project cost.

After construction, certain areas of the project will contain built features such as wetlands and open bottom areas. These features are permanent and are purposely built to establish habitat that will connect more directly with the Los Angeles River. The shallow aquifer already intercepts discharges or coincides with much of the LAR surface. Because of this interaction, some of these features may likely encounter HTRW contaminated groundwater from the SFVSS on a long term basis.

The pump and treatment response for the SFVSS has captured much of the higher concentrations of the HTRW contaminants within the shallow groundwater aquifer. There are lower and residual concentrations of contamination, which exist at the peripheral edges of the plume (see Figures 2 to 5 at back of this report) that still remain to be captured. Open bottom areas and weep and drain holes exist within the LAR channel/levee. These devices were built into the channel/levee for the purpose of relieving and draining this structure of surrounding pounded ground water. These devices have provided a continuous and open pathway for discharge of groundwater, including any uncaptured HTRW contaminated groundwater from the SFVSS that might or might have already migrated into the LAR.

It is very likely that some portions of the edge of the SFVSS HTRW contaminated groundwater plume are or have already discharged into the river on a continual basis. Therefore, the presence

of certain project features such as wetland and open bottom areas should not interfere or promote migration of this plume since some of it is or has already migrated into the LAR. The construction of unique habitat features should not interfere with or alter the existing pathways of migration of contaminated groundwater beneath the Study area.

The high HTRW impact properties will also undergo construction of various beneficial habitat types planned for the project, such as wetlands. Wetlands are known to naturally degrade HTRW contaminants, which can result in additional improvements beyond response. The presence of this particular feature and the combinations of active responses should further reduce migration of HTRW contamination plumes into the LAR after the project is built.

Planned irrigation of proposed features could result in leaching contaminants to the underlying shallow groundwater system. Infiltration of surface runoff and rainfall could have a similar impact. However, the potential adverse impacts to the existing groundwater system associated with the infiltration of irrigation and surface runoff can be minimized by limiting irrigation and surface runoff. As part of operation and maintenance requirements, landscape irrigation should be limited to the extent necessary to establish vegetation and minimize infiltration and leaching of soil contaminants. To this end, the habitat plans need to also include a water budget and provide potential remediation technologies if applicable. This potential threat to the underlying shallow groundwater system can be eliminated by the complete removal of contaminated soils beneath areas that will experience irrigation, surface runoff and erosion.

Further details regarding the recommendations and costs for HTRW contaminated groundwater are mentioned in Sections 9 and 10 below.

7.0 SUMMARY OF HTRW SURVEY REPORT

7.1 Extent of HTRW impacts

This appendix identifies 23 properties that are impacted by HTRW and contamination within 500 feet of the project footprint. Three of these properties are of high HTRW impact to the project. Nineteen are low impact. One is of unknown impact but has historic use characteristics similar to high impact sites.

The REC for 22 of 23 sites/properties exists based on the environmental database screening and record listing that still shows ongoing HTRW related remediation, monitoring, sampling, testing and residual contamination occurring at most of these sites. This residual contamination is not yet deemed safe to the public health and/or environment, according to environmental laws and requirements of the appropriate environmental regulatory agencies, and as a result, the individual HTRW property/site case files remain “open”. From the record list, there is no listing of any of these 22 cases as having been closed. The residual solvent/metal contamination in the groundwater is pervasive in major portions of the shallow groundwater throughout the project study area, particularly at the SFVSS property. Dewatering of the shallow groundwater table that will occur during future project construction activities is highly likely to encounter solvent/metals HTRW contaminants that reside from the SFVSS groundwater plume. However, it is anticipated that low concentrations of HTRW contaminants will be encountered from this

property during future construction dewatering activities adjacent or near it. This is because much of the habitat footprint alternatives are located on the outer edges of the SFVSS groundwater plume.

The REC for the one Piggyback Yard property exists based on the historical similarities between this property and the Taylor Yard property, which is currently a high impact HTRW site with existing known amounts of heavy HTRW contamination. The presence and extent of the HTRW contamination at Piggyback Yard is unknown at this time because it has never had cause to or has never before been formally investigated for the presence of HTRW. The full impact of HTRW at this site on this project will continue to remain unknown until such time a formal investigation is undertaken. Any HTRW impacts for Piggyback Yard are assumed to be the same as that existing for Taylor Yard at this time. Further CERCLA type investigations and studies (PA/SI to RI/FS or ASTM Phase I to II steps) will need be undertaken before the impacts are ascertained fully.

The extent of the undefined portions of the known residual groundwater and/or soils contamination at all 23 properties is not known at this time. Only the extent of the known residual groundwater and/or soils contamination is currently being addressed. There is a possibility that future activities related to construction and maintenance of the habitat project will encounter portions of both known or undefined but known residual groundwater and/or soils contamination. In addition, the water discharge from these activities will need to be approved and permitted prior to release according to the Los Angeles RWQCB water quality standards and in a manner that is protective of both the existing groundwater and surface water resources in the area. This may involve a 401 certification, NPDES or waste discharge permits specific to the dewatering discharge method chosen for this project. Petroleum, solvent and metal related contamination exists within approximately a 500 feet distance to the habitat study area footprints and is, therefore, a material threat. This is a Recognized Environmental Condition according to the ASTM AAI standard and is in turn a HTRW impact to the Corps of Engineers Los Angeles River Ecosystem Restoration project study area.

7.2 Project related actions to be undertaken

The 3 properties of Taylor Yard G1 and G2 and the SFVSS are identified as HTRW impacted properties that cannot be avoided for any of the final array of alternatives selected for this project. Because of this, the Sponsor should begin coordination and consultation with the USEPA, appropriate California environmental regulatory agencies, and/or PRPs or RPs regarding investigation/studies and remediation activities for these properties. These negotiations will need to be undertaken prior to their purchase and acquisition as part of this project. This should commence long before the formal project PPA for construction of this project is signed. Ideally this should begin now during the planning feasibility phase of this project, because much lead time is needed to complete environmental negotiations with the regulators for these two properties. The HTRW concerns for these properties to the project can be effectively addressed by further investigations/studies, reviews and analyses, along with selecting the most effective remediation methods. This should be done by early negotiations with the environmental regulators, along with developing a clear strategy that follows the CERCLA cleanup process. Because they are project cost sharing partners, both the Sponsor and the Corps will need to collaborate in these activities as well. Both the Corps and the Sponsor

should also begin the strategy of and cost allocation sharing for the required HTRW investigation/study for remediation activities needed prior to land acquisition of these two properties.

The relative project costs for addressing the 3 high HTRW impact properties range from approximately **$2,575,000 to $6,825,000.** These are random order magnitude costs given for direct activities related to addressing the HTRW impacts and do not include Corps or Sponsor related supervision/administration and technical review costs. A major portion of this cost involves remediation related to future construction dewatering activities.

A more intensive ecological risk assessment needs to be performed for both the Taylor Yard G1 and G2 high HTRW impact properties in order to determine the impact that leftover residual contamination will have on the habitat and ecological system that is planned for these properties. In addition, the human health risk assessment should be further refined for these two sites and include risk calculations and analyses using the recreational/park human population planned uses for the habitat project. Only the industrial exposure for humans has been studied or made part of the current human health risk assessment performed by the current landowner/responsible party (Union Pacific Rail Road). The full impact to all human populations that will use the planned habitat area for recreation or park use still needs to be addressed and analyzed. This needs to be done in the form of a revised human health risk assessment in order to address the HTRW impacts to humans for the habitat park setting.

The 19 low impact HTRW properties may have HTRW impacts for the future construction dewatering activities. This is because there is a possibility that undefined portions of the known residual HTRW contaminated groundwater at these properties could be intercepted or encountered during dewatering. The Sponsor and the Corps should begin a strategy for addressing this possibility before the PPA and before construction. This can be accomplished by performing a limited groundwater review, investigation and study, along with a limited groundwater modeling exercise to help predict responses to future dewatering activities to this concern. The relative project cost for addressing the 19 low HTRW impact properties ranges from approximately **$750,000 to $1,500,000.** The low end range of cost involves a limited ASTM Phase II or CERCLA SI type study/investigation to ascertain the actual amounts/extent of undefined HTRW contamination that potentially exist for the 19 properties. The high range of cost is for remediation/monitoring/permitting in the event that a significant amount of undefined HTRW groundwater contamination is encountered during future construction dewatering activities. These costs are also for direct activities related to addressing the HTRW impacts and do <u>not</u> include Corps or Sponsor related supervision/administration and technical review costs.

There is insufficient information from the search/inquiry to determine the true extent or level of contamination, or severity of the HTRW impact that the entire 22 properties pose to the project planning activities. This is particularly the case for the 19 low impact HTRW properties. The recommended actions are to perform a more rigorous review of the available HTRW environmental reports or data case files of each of the 22 sites. The review would involve visiting and obtaining the files from the LARWQCB and DTSC for the listed REC sites. The review would also likely involve more intense discussions with regulatory agency personnel or scientists about the severity of the HTRW contamination at the 22 sites. A site visit to all 22 sites is also recommended to gain a clearer understanding of the nearby topography and features of each site. Until a more rigorous review of the Board files are performed, additional and more

accurate planning recommendations such as whether future full Phase I or Phase II type ESAs are needed cannot be made at this time.

Approximate random order of magnitude costs are given for the assumed HTRW impacts for this project in Section 10 below.

7.3 Construction sequencing for cost efficiency

The response for excavation/haul/removal of HTRW contaminated soils at the high impact HTRW properties and any other HTRW impacted properties should stop after the final haul and removal that is required to clear all areas of these properties found to be impacted with HTRW. Areas leftover after excavation and free of HTRW, i.e. soils with contamination below the action levels (cleanup levels) specific to each property should not be further backfilled with fresh or uncontaminated soils or materials. Backfilling should be minimized to the freshly excavated ground surface elevations (grades). This finished ground should resemble an uneven hummocky surface with depressions where HTRW contaminated soils have been removed.

The sequencing of these events will reduce future construction costs associated with re-handling the clean filled areas devoid of HTRW, i.e. will reduce costs associated with double-handling of soils and materials used during final grading of project. This is expressed in Figure 1 below.

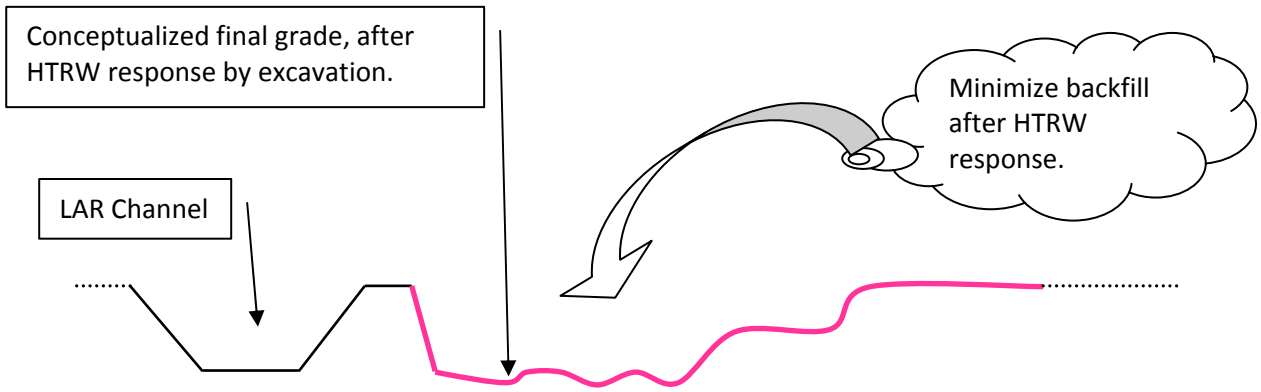


Figure 1 - Conceptual Grading of HTRW Sites

8.0 RECOMMENDATIONS

8.1 Additional Environmental Investigation

Additional environmental investigation will be required to characterize the distribution and chemical constituents of the contaminated soil and groundwater conditions throughout much of the feasibility area. The scope of these studies should be directed to the development of Remedial Action Plans that are ultimately approved by the local environmental regulatory agencies and compatible with the needs of the future restoration project. General recommendations are as follows:

a. To establish a rational basis for development of a work plan that will be approved by the local regulatory agencies; the initial phase of work should focus on a thorough review and evaluation of the publicly available data. In areas where a significant amount of environmental data has been compiled, such as the Taylor Yard properties, investigation will be limited to the extent necessary to establish criteria for evaluation of potential human and ecologic health risks. In areas where existing information is limited, such as Piggyback Yard, additional environmental investigation should follow industry approved protocols for conducting Phase I and Phase II investigations in compliance with regulatory requirements. For the 19 HTRW sites adjacent to the project footprint, a review and evaluation of existing Phase I documentation could be beneficial and should be considered.

b. The Sponsor should begin to take the lead on negotiations and coordination with the appropriate Federal and California state environmental regulatory agencies for the 2 high HTRW impact properties of Taylor Yard G1 and G2 and for Piggyback Yard regarding specific investigation/studies and remedial activities for these properties. This needs to be done in order to more fully ascertain and identify the future CERCLA phases of work as well as their schedule and costs. The Corps will need to collaborate in these efforts as well.

c. An environmental scientist/toxicologist and the necessary additional Corps HTRW specialists need to be added as part of the Project Delivery Team. The toxicologist is a critical team member whose expertise is especially needed to review and provide technical input and recommendations for future CERCLA phases of work. This expertise is also needed to address the human and ecological health risks associated with future land use requirements.

8.2 Approach to HTRW Impacted Soil

All HTRW impacted soil within the project footprint must be remediated by the Sponsor to the requirements of the local environmental regulatory agencies, which include the DTSC and the LARWQCB, and be compatible with the future land uses for and needs of the restoration project. At this time, those areas with HTRW impacted soil to be addressed by the Sponsor are anticipated to be the Taylor Yard G1 and G2 sites and the Piggyback Yard. The methodologies utilized to remediate HTRW impacted soils, regardless of their location, extent and degree of contamination must be compatible with the planned ecosystem restoration features. To preclude the adverse impact of contaminated soil leaching downward and further contaminating the shallow groundwater system, all contaminated soil should be removed from areas that are planned as wetlands, areas that will be irrigated and areas that will be subject to erosion and infiltration of surface water runoff. Within areas where contaminated soil is remediated by removal and off-site disposal, the resulting excavations should not be filled with clean soil beyond the level of the planned ecosystem restoration grades. The Sponsor must complete remediation that is acceptable to the environmental regulatory agencies and according to the land use for the project selected final alternatives prior to restoration project construction at those sites.

8.3 Approach to HTRW Impacted Groundwater

Contaminated groundwater within the limits of the SFVSS site is on-going and is expected to continue for the foreseeable future. Localized groundwater contamination from remnant contamination at some of the 19 adjacent sites may also be encountered during dewatering activities. Contaminated groundwater encountered in excavations during construction and during dewatering operations must be treated and disposed of in accordance with the requirements of the local regulatory agencies. The persistent and shallow nature of the groundwater beneath the proposed restoration features, the widespread nature of the groundwater contamination, and potential impacts associated with local soil contamination make environmental cleanup of the groundwater prior to construction of the restoration features infeasible. As a result, it is anticipated that cleanup of contaminated groundwater will occur concurrently with construction of the ecosystem restoration facilities. It is recognized that the Sponsor will design, implement, coordinate and fully fund all treatment and disposal of contaminated groundwater encountered during construction. Dewatering and treatment operations should be designed so that they do not adversely impact the ongoing pump and treatment operations for the SFVSS at the nearby Pollock Well Field.

8.4 HTRW Cost Update

The HTRW cost estimate for this project needs to be updated based on the results of Sponsor led negotiations and coordination.

9.0 COSTS

A preliminary cost estimate was prepared for the 3 high impact HTRW properties within the project study area because they encompass almost 100% of the habitat footprint for the final array of alternatives selected for this study project. This is a random order of magnitude estimate and was also prepared as an aide to help determine the choice of the final project alternative. It includes a summary of the CERCLA/HTRW phases of work needed to complete investigations and studies leading up to the remediation, as well as the remediation itself. All costs are direct costs and are shown in the following table. The direct costs are given and are the costs for the actual investigation and response work needed to be performed in order to complete the HTRW response requirements for this study project. The required indirect costs for supervision and administration by the Corps and Sponsor, and inflation/escalation costs are not included. Costs shown in the table for investigations and studies, i.e. SI, RI to FS, etc., are eligible to be cost shared between the Sponsor and the Corps as part of the overall project costs. Costs shown in the table for the actual HTRW response, i.e. IRAP, RAP and Remediation or RA, are 100% paid for as a cost by the Sponsor. The HTRW cost estimate herein has been prepared as a separate cost for this feasibility study. This is the only HTRW cost estimate prepared for this project, and is a separate HTRW cost estimate that is not part of the overall parametric project costs shown in this project's general cost appendix.

Table 3 Preliminary HTRW Costs for 3 High HTRW Impact Properties

CECRLA/HTRW environmental phase of work	HTRW property	Random Order Magnitude Total Cost	Rationale
Remedial Investigation = RI	Taylor Yard G1 and G2	$325,000.	Overall costs for RI through FS lower because both properties are assumed to be combined into single timed level of work effort throughout all of these environmental phases of work. Note: size of existing HTRW contamination is smaller than G2.
Revised human health and ecological risk assessment = HHRA & ERA		$125,000.	
Feasibility Study = FS		$225,000.	
Remedial Action Plan = RAP		$250,000.	
Remediation or RA		$1 million to $3.5 million.	Costs for remediation are conservative and difficult to determine at this time (during feasibility study). Actual remediation methods will depend on final land use and habitat project alternatives and negotiations with environmental regulators and current property owner (RP). None of these actions are yet fully developed. Accurate remediation costs are typically developed later on during commencement of the CERCLA FS.
Total Cost for Taylor Yard G1 and G2 = **$1,925,000 to $5,425,000.**			
Site Investigation and Remedial Investigation = SI/RI	SFVSS	$350,000.	These phases of work are combined and abbreviated because the assumed magnitude and complexity of unknown HTRW contamination/impacts to project properties is low (groundwater remediation is the only expected response action), and the timing is accelerated since most of this HTRW type will be encountered <u>during</u> <u>Construction</u> phases of dewatering. This abbreviated work activity is needed in order to stay within the Construction phase schedule of the project. This SI/RI work may <u>not</u> need to occur if IRA is accepted by regulatory agencies as substitute.
Interim Removal Action Plan = IRAP		$50,000.	Substitute for RAP. Will consist of general dewatering plans and CWA permitting actions/applications and coordination/approvals with LARWQCB.
Interim Removal Action = IRA		$250,000 to $1,000,000.	Conservative and based on large quantity of HTRW contaminated groundwater encountered w/shallow groundwater at random areas at properties and includes treatment prior to discharge or disposal. This phase is assumed to substitute in place of a formal Remediation with FS and will consist mainly of dewatering pump and treatment during Construction phase.
Total Cost for SFVSS = **$650,000 to $1,400,000 million; or $300,000 to $900,000 (lower cost assumes no SI/RI needed and can go directly to IRA).**			
Total Cost for all 3 High HTRW Impact Properties = **$2,575,000 to $6,825,000.**			

Table 4 Preliminary HTRW Costs for 19 Low HTRW Impact Properties*

CECRLA/HTRW environmental phase of work	HTRW property	Random Order Magnitude Total Cost	Rationale
Remedial Investigation = RI or Site Investigation = SI	19 low HTRW impact properties	$350,000.	Overall costs for RI or SI.
Interim Removal Action Plan = IRAP		$50,000.	Substitute for RAP. Will consist of general dewatering plans and CWA permitting actions/applications and coordination/approvals with LARWQCB.
Interim Removal Action = IRA		$350,000 to $1,100,000.	Conservative and based on moderate quantity of HTRW contaminated groundwater encountered w/shallow groundwater at random areas at properties and includes treatment prior to discharge or disposal. This phase is assumed to substitute in place of a formal Remediation with FS and will consist mainly of dewatering pump and treatment during Construction phase.
Total Cost for all 19 Low HTRW Impact Properties = **$750,000 to $1.5 million; or $400,000 (lower cost assumes no SI/RI needed and can go directly to IRA).**			

*Note: Table 4 does not include HTRW costs for Piggyback Yard as the extent and characterization of HTRW is unknown.

FIGURES 2 TO 5: MAPS SHOWING 2010 EXTENT OF HTRW GROUNDWATER CONTAMINATION AT SAN FERNANDO VALLEY SUPERFUND SITE

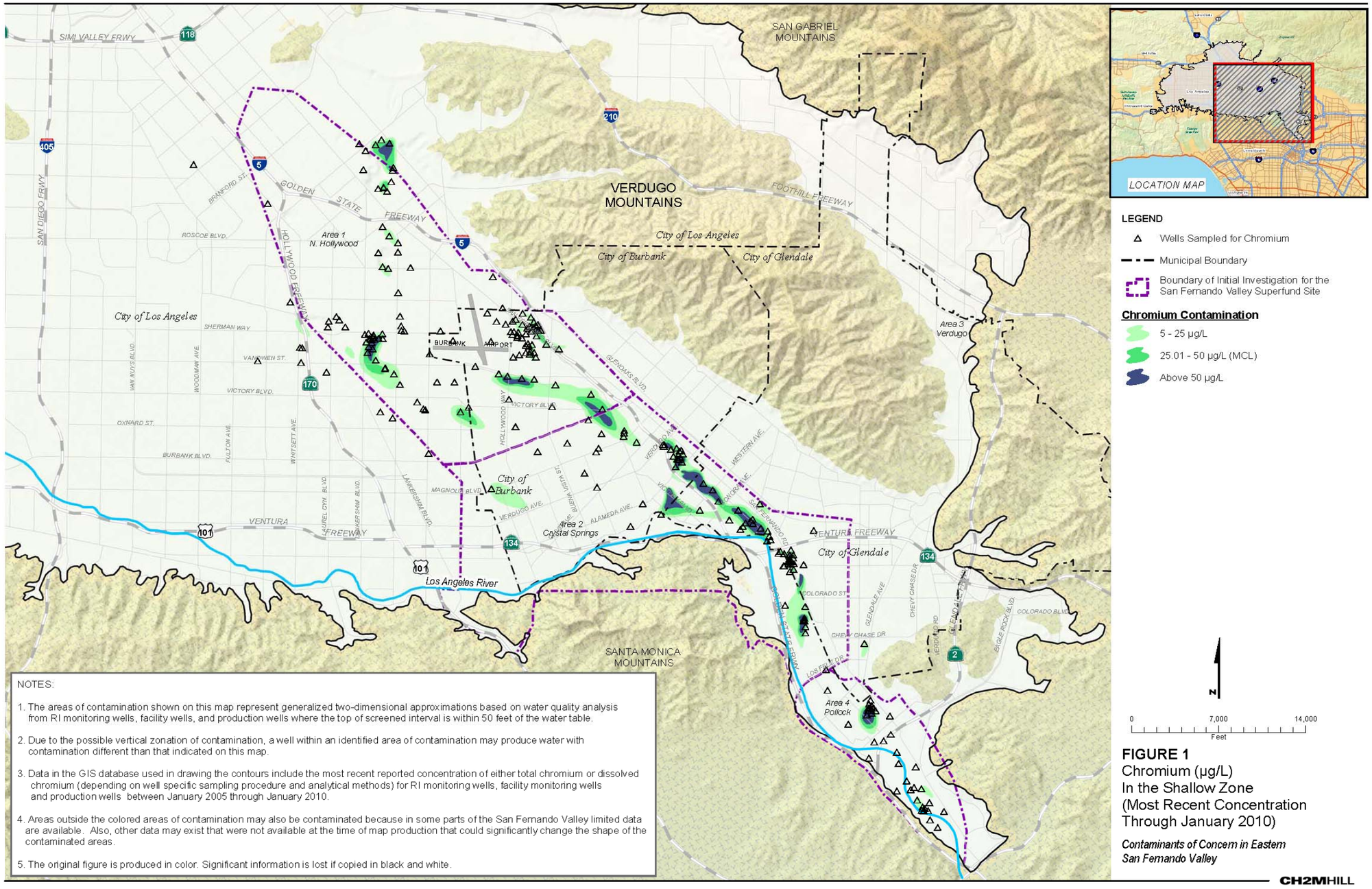


Figure 2. SFVSS/Total Chromium shallow groundwater contamination extent 2010. (from USEPA).

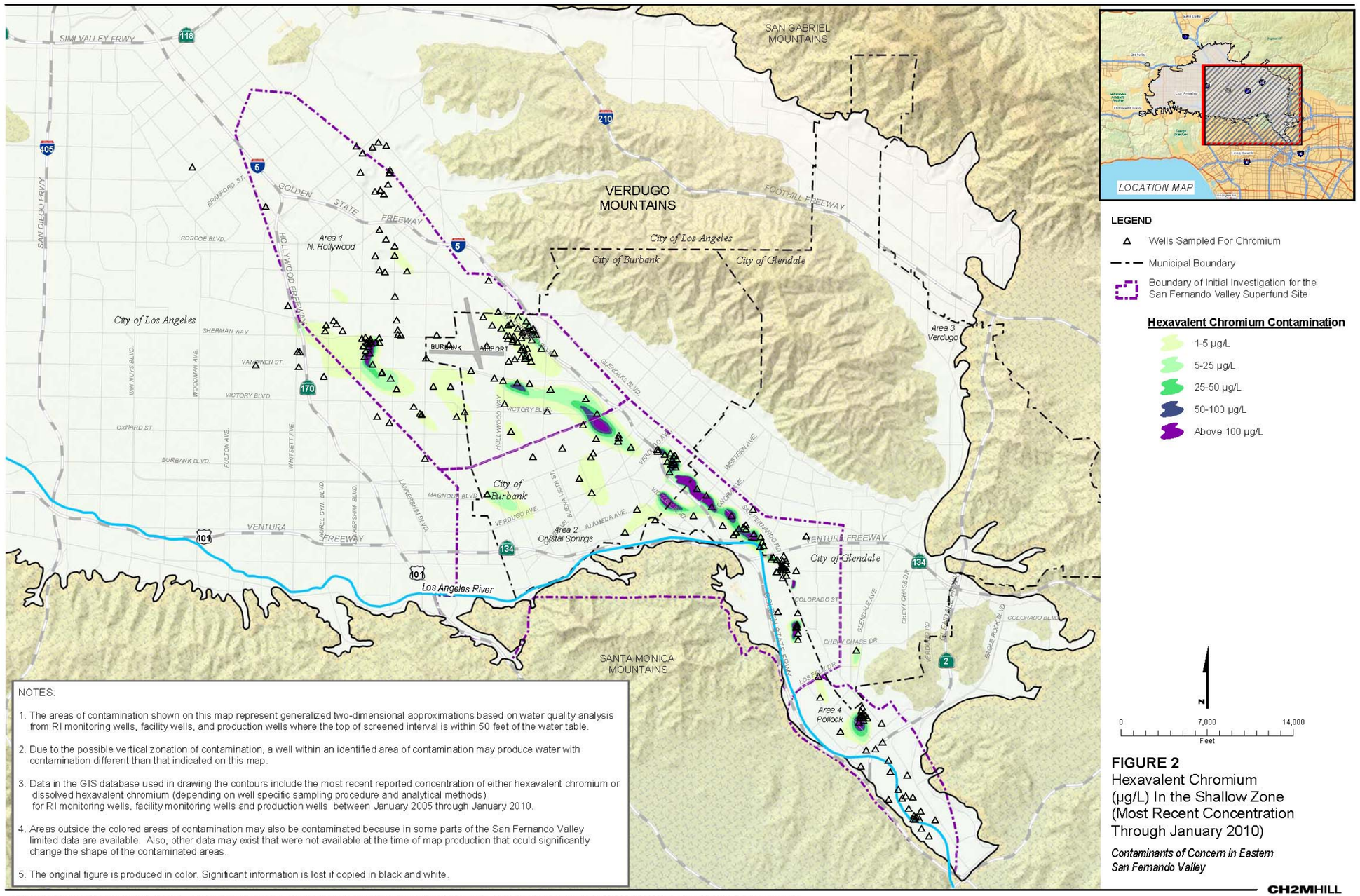


Figure 3. SFVSS/Hex Chromium shallow groundwater contamination extent 2010. (from USEPA).

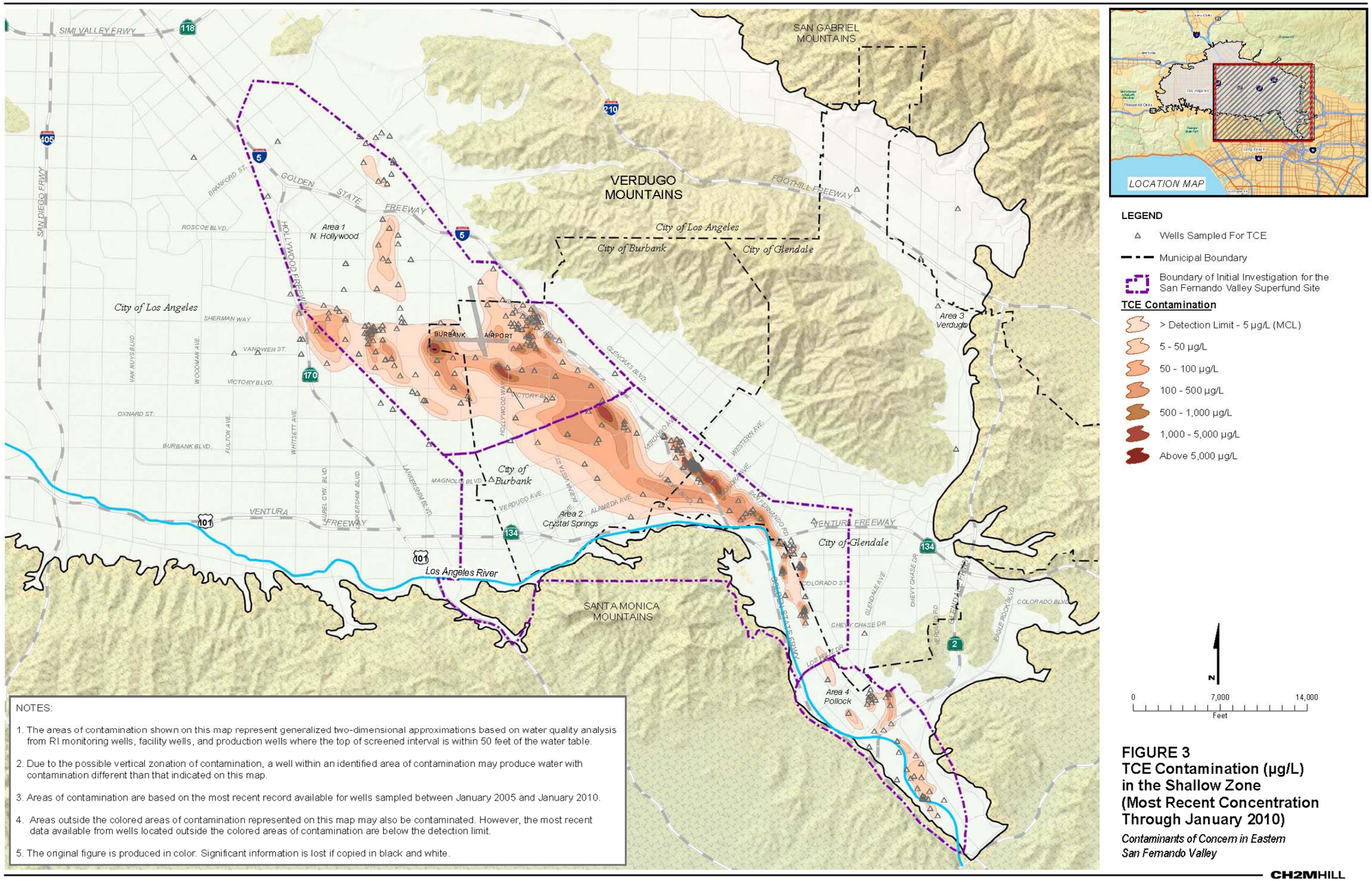


Figure 4. SFVSS/TCE shallow groundwater contamination extent 2010. (from USEPA).

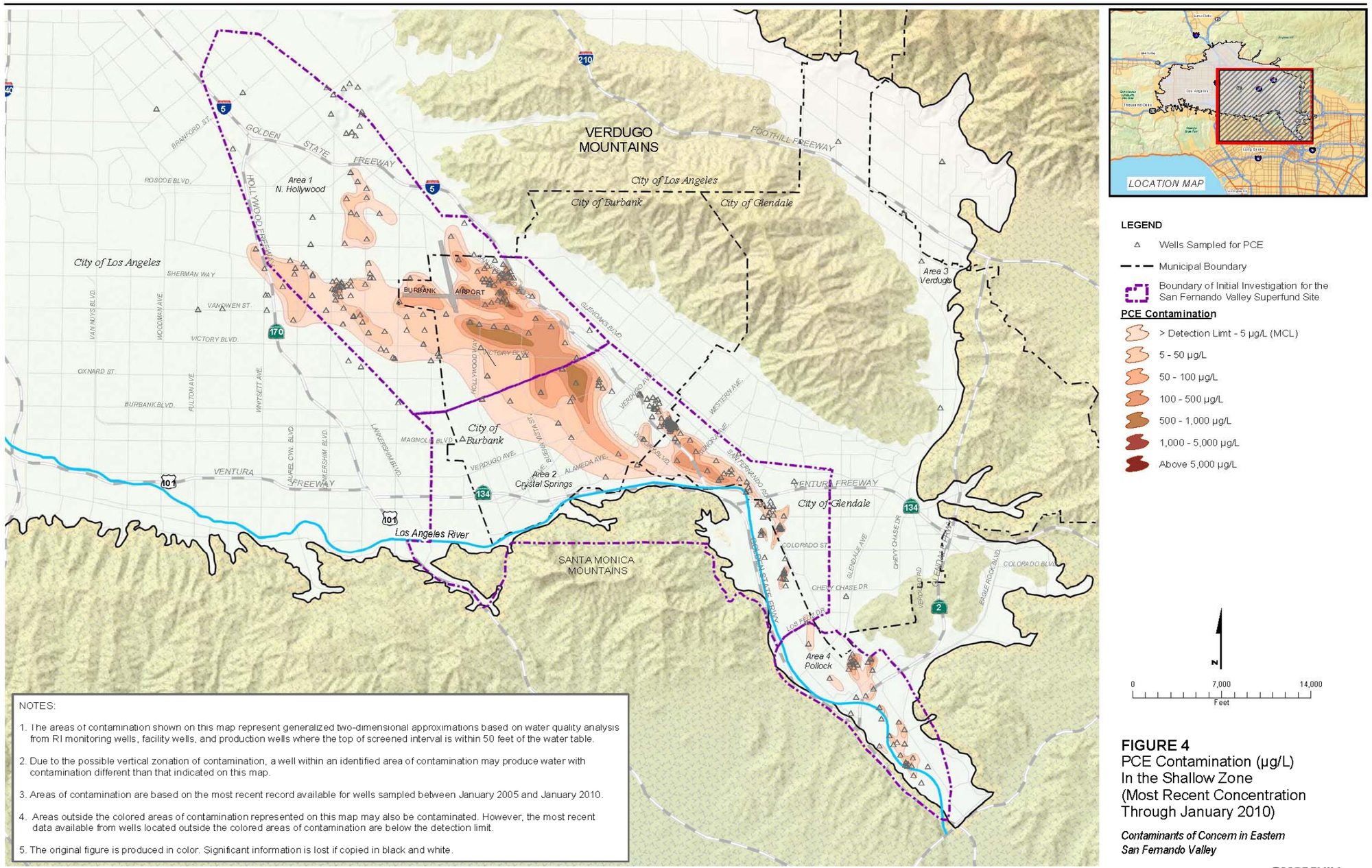
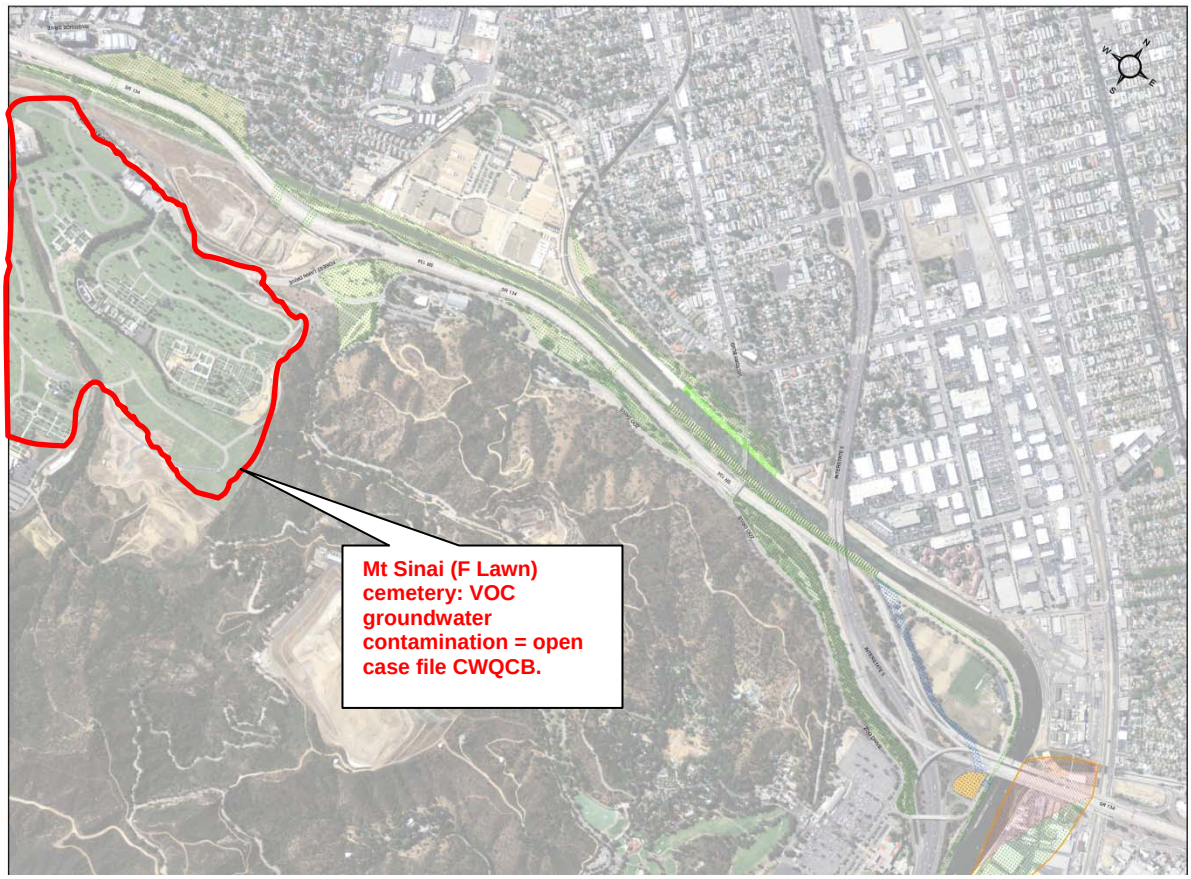
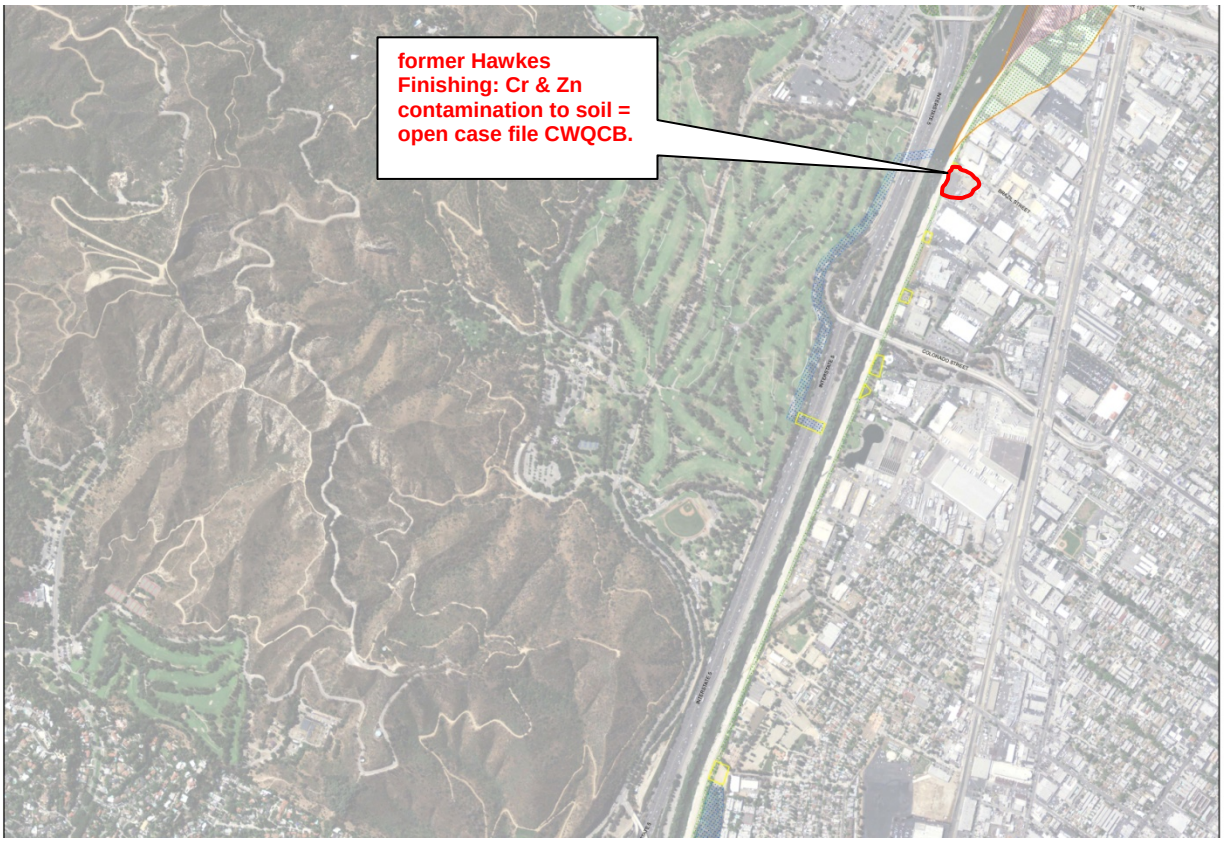


Figure 5. SFVSS/PCE shallow groundwater contamination extent 2010. (from USEPA).

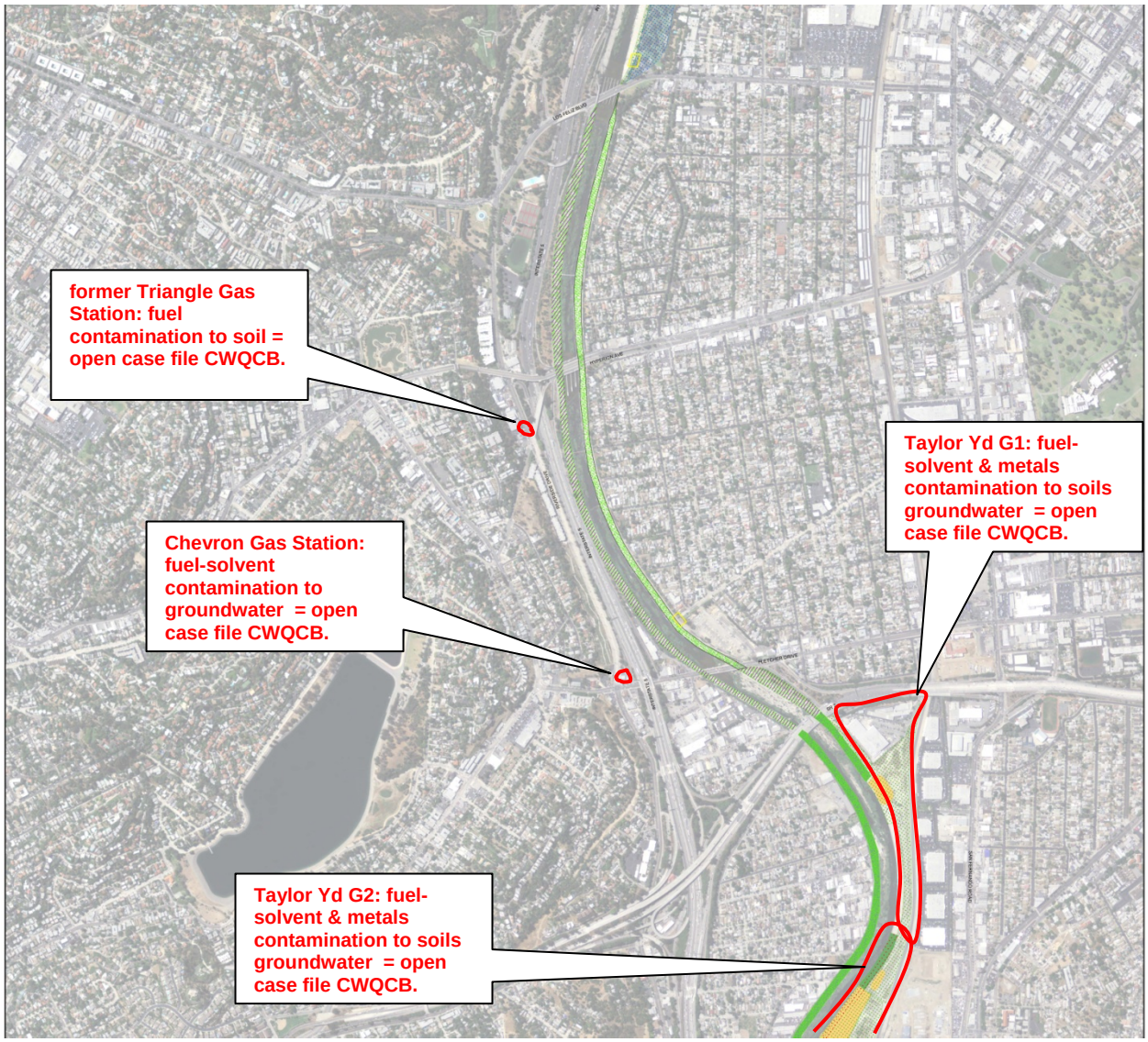
MAPS 1 TO 5: MAPS SHOWING ALL 22 HTRW IMPACTED PROPERTIES MAPPED FOR LOS ANGELES RIVER ECOSYSTEM RESTORATION PROJECT



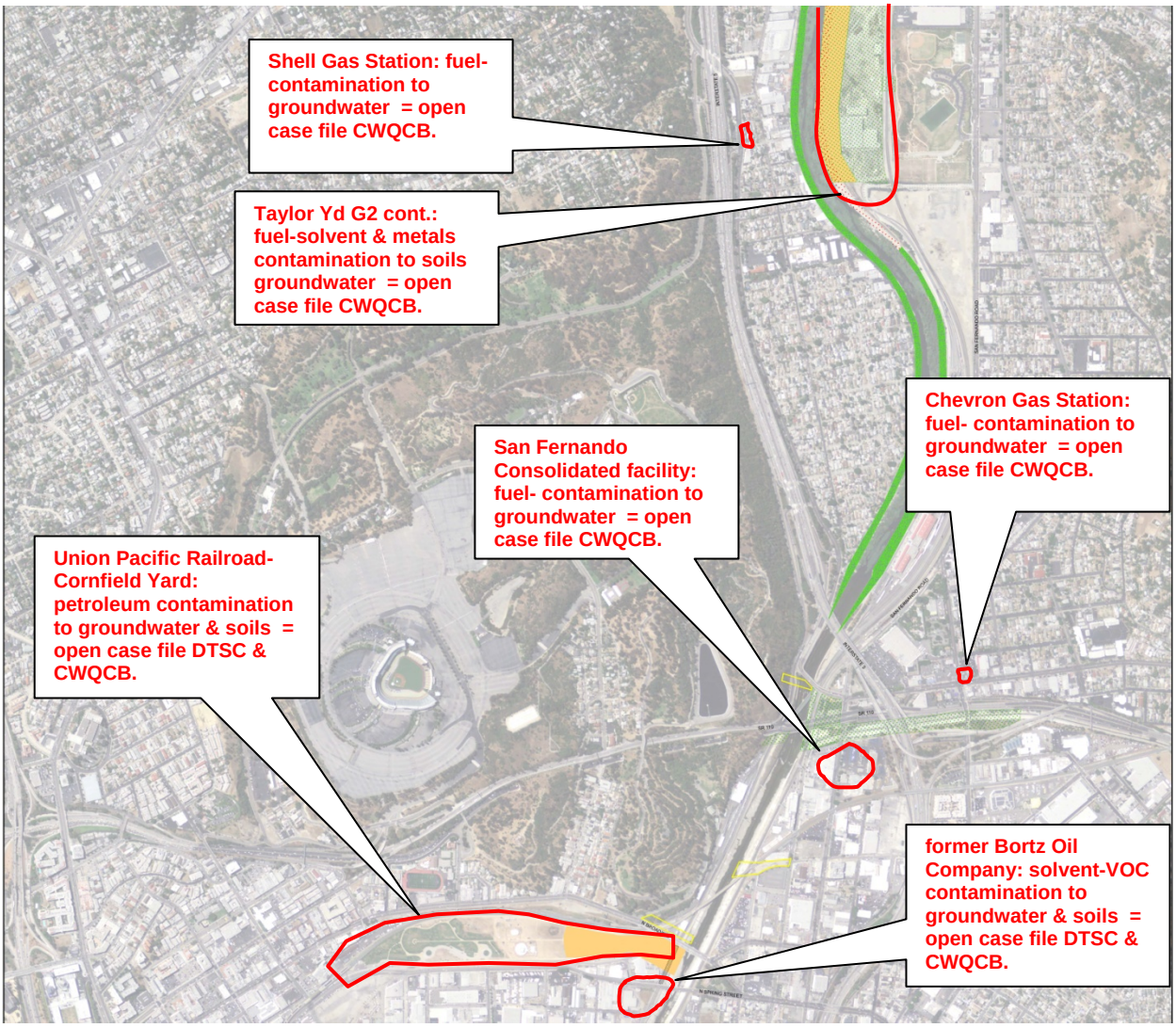
Map 1. Mt Sinai property, one of twenty two HTRW impacted properties.



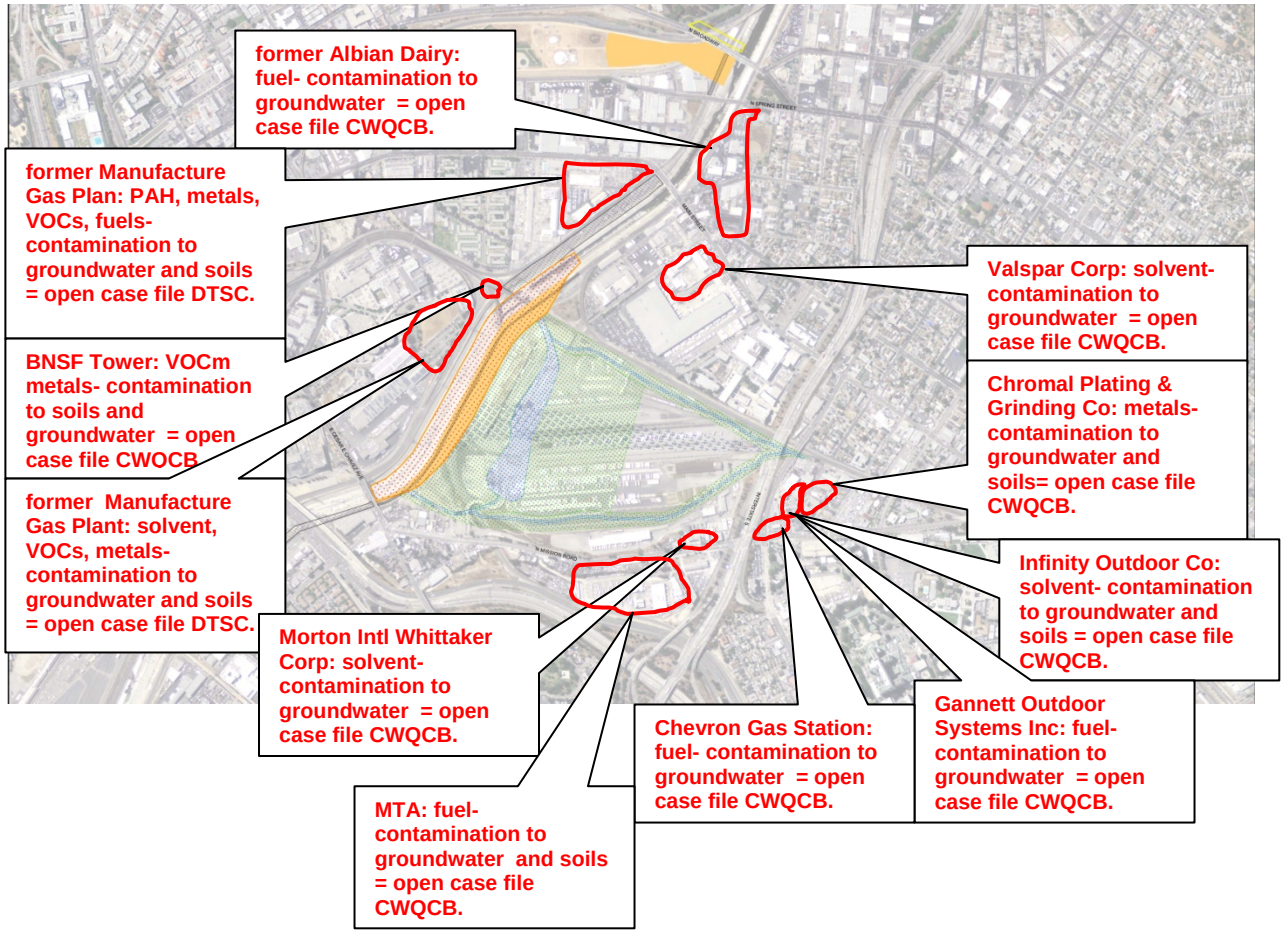
Map 2. former Hawkes Finishing property, one of twenty two HTRW impacted properties.



Map 3. Triangle Gas, Chevron Gas, Taylor Yd G2 and G2 properties, four of twenty two HTRW impacted properties.

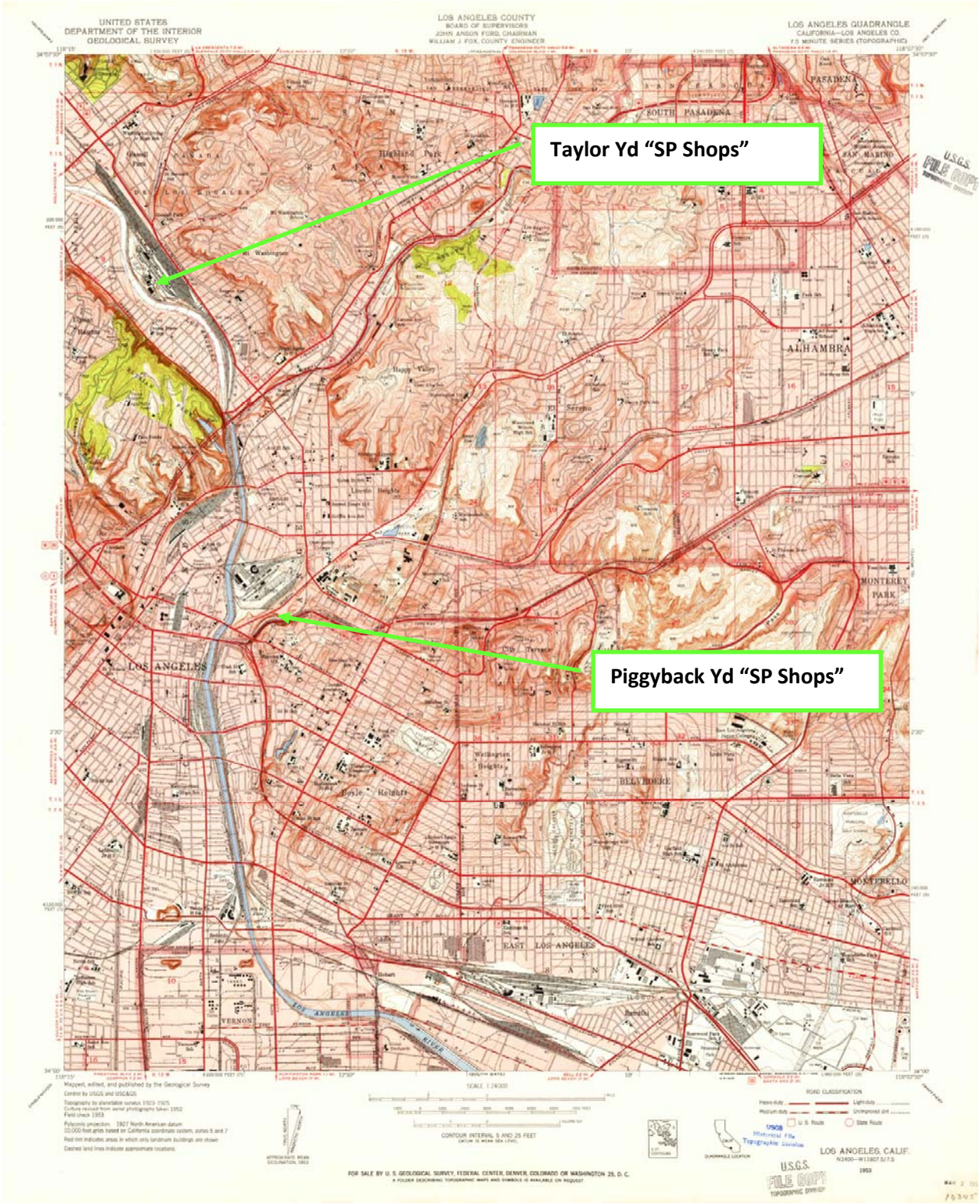


Map 4. Taylor Yd G2 cont., Shell Gas, Chevron Gas, SF Consolidated and Bortz Oil properties, four of twenty two HTRW impacted properties.

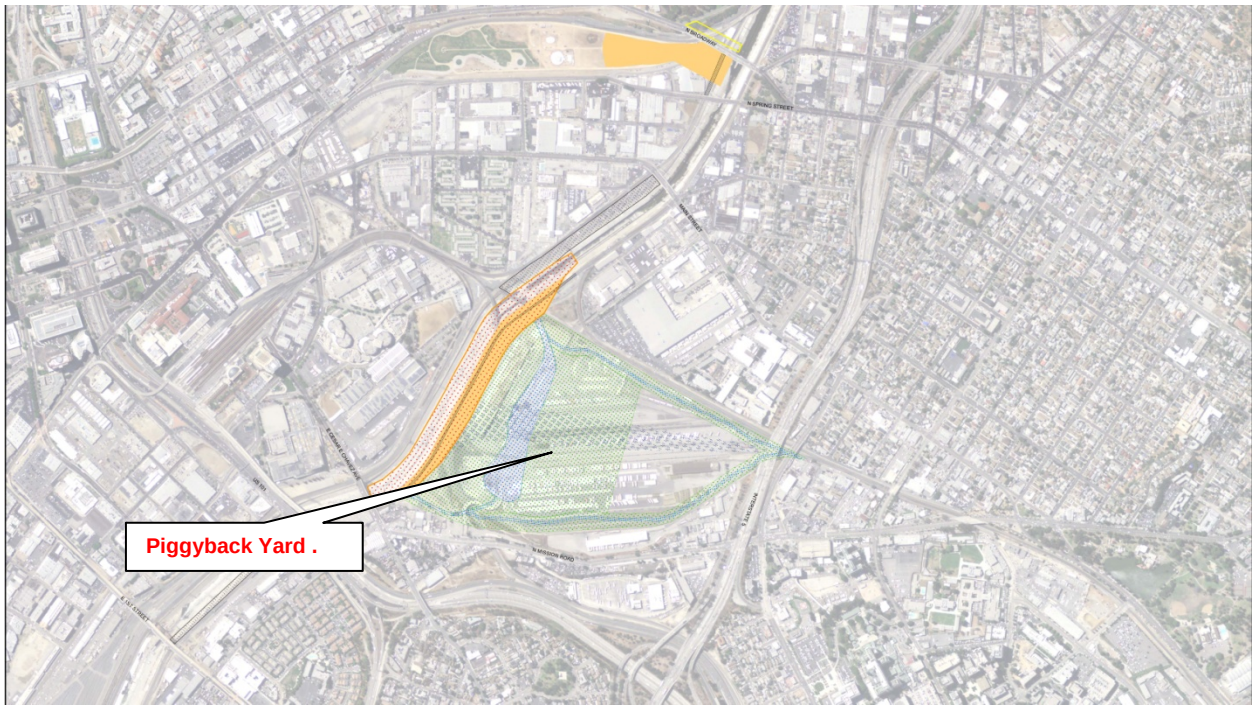


Map Figure 5. Albian Dairy, MFG plant, BNSF Tower, MFG plant, Morton Intl, Valspar Corp, Chromal Plating, Infinity Outdoor, Gannett Outdoor, Chevron Gas and MTA properties, eleven of twenty two HTRW impacted properties.

MAPS 6: MAP FIGURES 6A AND 6B SHOWING 1953 HISTORIC USGS TOPOGRAPHIC MAP OF LOS ANGELES AND RECENT AERIAL PHOTOGRAPH OF PIGGYBACK YARD



Map Figure 6a. Piggyback & Taylor yards, "SP Shops", 1953 USGS historic topographic map.



Map Figure 6b. Piggyback Yard, one of twenty two HTRW impacted properties.